

UNIVERSITY OF MINNESOTA COMPUTER CENTER
Deadstart Systems Newsletter

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NOTICE OF CHANGES TO THE SYSTEM

Bob Williams installed the following modifications from the 6400 system.

- 1) The MODVAL default validations have been set to conform with MERITSS requirements. This change does not effect CYBER 74 accounting since all new user numbers on the CYBER 74 are initialized with a fixed set of directives.
- 2) A new bit, CACC, has been added to the Access Word of the VALIDUZ file. The new bit validates use of ACCOUNT/USER cards. All users on the CYBER 74 will have this permission.
- 3) Program LTD now writes its idle loop address into TELEX low core. Knowing the LTD idle loop address, a CP program can scan TELEX terminal tables looking for hung ports.
- 4) The GAME command has been added to TELEX. The command *GAME,lfn* is equivalent to *A,lfn/UN=GAME.*.
- 5) The BARROW terminal type has been added to TELEX. With this terminal type, the back arrow (normally used as a backspace) is treated as a normal character and passed directly to the user program. This feature is used by the CAI labs.
- 6) Program lTO was modified so that up to 777B pots can be dumped. Previously, only 7 pots could be dumped per request. On a busy system with many time-sharing users, this limitation could seriously impair response time.

- 7) TELEX now has MASTER user capability, allowing a master user to LOGOFF any subordinate user.
- 8) The APL subsystem now calls APLUM rather than APL*CYBER.
- 9) The MNF subsystem on TELEX now calls a special short version of MNF called TSF. Field length for the new TSF is only 41K.

Bob also repaired a bug in subsystem processing in PFILES. Previously, the subsystem associated with a file was not being recorded correctly.

Marisa Riviere repaired a small bug in CATALOG which, under certain conditions, outputs an extra blank page.

Tom Lanzatella repaired a problem in the MAGNET preview display which caused the DSD ENABLE/DISABLE table to appear garbled. This problem was a result of the DELAY installation. Tom also installed a modification prepared by A. F. Johnston before he departed. This modification installs NOTICE/NOTIFY hooks in TELEX.

Bill Elliott installed a new common deck, COMCBKP. The new program is an interactive breakpoint routine. Bill also installed a new version of the 66X firmware, A10.

Bob Zalusky reinstalled Don Hammes' DIVERT modification. Program SET now recognizes the AUTO DIVERT command in the IPRDECK. Bob also reinstalled his portion of the DELAY feature. Bob's portion of the feature has the following effects:

- 1) Two new bits are defined in the SSTL word in low core.
 - a) ENABLE/DISABLE. This bit indicates whether the low rate mechanism is enabled or disabled. The bit is set or cleared with two new DSD commands ENABLE/DISABLE LOWRATE.
 - b) LOW RATE STATUS. This bit indicates whether or not low rate charging is active. Low rate charging can be activated or deactivated with the new DSD command LOWRATE.
- 2) If LOWRATE is disabled, jobs will be read directly into the normal input queue. The LOWRATE DSD command will simply toggle LOWRATE STATUS.
- 3) If LOWRATE is enabled and LOWRATE STATUS is active then jobs will run at low rate. If LOWRATE is enabled and LOWRATE STATUS is not active then jobs with a DELAY on the job card will be stored in a special DELAY queue.

If LOWRATE is enabled and LOWRATE STATUS is activated manually then QREC will be called to load delayed jobs into the input queue. If LOWRATE STATUS is not activated manually, the system will automatically call QREC to load delayed jobs into the input queue.

Bruce Johnson introduced a source copy of the program PDP. This program is used for loading and dumping the PDP-11. Bruce also installed a modification to SUPPIO which defines several new terminals.

Bill Sackett installed a new PP program OSC used by AUTO DIVERT.

Jim Mundstock altered WRITEUP to output a page eject before printing an indexed writeup.

In preparation for the installation of a new version of TELEX, presently under development by N. L. Reddy, we have removed the STIMULATOR entry from the CMRDECK. In the future, staff members who enter the STIMULATOR into the CMRDECK should always assign a non-zero channel. We have also defined a new equipment in the CMRDECK called DW. This equipment corresponds to the envisioned DECWRITER which will be used to monitor BATCHIO status and for tape assignment.

Kevin Matthews added a new KCL function called LIT. The statement, LIT(NAME), returns the binary value of the display code equivalent of NAME. The argument, NAME, must be a 0-3 character alphanumeric string. In COMPASS notation, LIT(NAME) is equivalent to OR NAME. Kevin also installed a rather extensive modification which allows the system to have two different rollout devices. In addition to being a feature on the 6400 system, we discussed this modification last summer in a system group meeting. The mod removes the LGO file byte from the MSAL word and replaces it with a byte for short rollout files. In this instance, short means less than eight sectors. Byte 3 in the MSAL word (called RO) is now used to specify the device to be used for long rollout files (greater than 8 sectors). The new byte, byte 4 (called RS) is used to specify the device to be used for short rollout files. The intention is to specify the 808 as the long rollout device and ECS as the short rollout device. The rollout files for TELEX jobs which have completed a job step are short enough to fit in one ECS track of 8 words.

PROPOSED CHANGES TO THE SYSTEM

Jim Mundstock suggests that program WRITEUP be modified so that if output is bound for a timesharing terminal then all carriage control characters should be stripped off.

Bill Elliott has received a collection of modifications from the Raytheon Corporation. Listed below are those which are most appealing.

- 1) Require UNLOCKed status in order to enter any of the following DSD commands:
 - a) BLITZ
 - b) CHECKPOINT SYSTEM
 - c) OFF or ON *for ms equipment*

Entering any of these commands mistakenly can result in confusing or fatal consequences.

- 2) Have DIS set a CP priority of 40 to eliminate the need to enter ENPR when the CP is very busy.
- 3) Log changes to the DATE or TIME in the error log.

4) Modify the ENQUIRE, JN= command to allow:

- Missed*
- a) E,JN=JOBNAME to search for a specific job.
 - b) E,JN=XXXX to search for all jobs beginning with XXXX instead of the current hash code.

Do not

5) Eliminate normal completion messages from the system dayfile - sending them only to the user dayfile - for the following programs: CATALOG, CATLIST, COPYC, GTR, LIBEDIT, LIBGEN, LISTLB, OPLEDIT, PACK, PURGALL, SUBMIT, VERIFY, and VFYLIB.

Report

Bob Zalusky has suggested that users with CSJ permission be allowed to RFL above their service limits.

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TRACK LIMIT PROCESSING - by K. C. Matthews

In the last DSN, I considered briefly the problem of CIO processing of track limits. In solving the problem, I wanted to have the action taken by CIO to depend on a bit in an installation processing option word. Instead, I have followed a suggestion of N. L. Reddy and have tied the CIO processing to a bit in the Mass Storage Table (MST) for each device.

First, let me restate the problem. When CIO requests mass storage tracks for a write operation, occasionally no tracks are available. If this occurs, this is known as a "track limit." CIO then checks to see what kind of a request was involved. If it was a request for tracks on any equipment, CIO simply tries the track request again. This case would occur when tracks were needed for a new file, and no tracks were available on any temporary file device in the system. All temporary devices would have to be full for this to happen. This situation occurs rarely or never in our system. If tracks are needed on a specific equipment (usually to write on an existing temporary or permanent file) CIO checks the user error processing bit in the FET. If this bit is set, a track limit error response is returned to the user. Otherwise, a message "EQNN TRACK LIMIT" is displayed in the B display and the request is retried. The B display message is not intensified. This message is also displayed in the case of a new file, but then the equipment number is always given as "00". This is because the equipment number field in CIO contains 0 for a new file. In both cases, CIO pauses for storage relocation and checks for any error flags (like operator drop) before retrying the request.

The request for track is processed in the CPU monitor (CPUMTR). When CIO is continually requesting tracks, CPUMTR is kept very busy. Typically 40% - 60% of the CPU time is used by CPUMTR during these cases. The entire system, including Telex jobs, feels the impact of this CPU saturation. The first goal of the mod I propose was to cut down the CPUMTR activity during a track limit.

A mod called TKLIM has been introduced which partially solves the problem. First, the PPU pause bit is set so that the B display message is intensified in order that the operator might more readily notice it. Then, as before, the user error processing bit is checked only if the write occurs on an already existing file. The, in either case, CIO goes into a loop for 577B tries at the following.

- 1) Check the MST directly (without going through CPUMTR) to see if the number of free tracks on the device is sufficient for the request. If sufficient, go to 5.

- 2) Pause for relocation and check error flags.
- 3) Delay 128 microseconds.
- 4) Decrement loop counter, go to 1 if not yet 5777B tries.
- 5) Request track again from CPUMTR.
- 6) If tracks are available, re-enter main code in CIO.
- 7) If tracks not available, check a bit in MST for track limit abort.
If bit is set, abort job.
If bit is not set, set loop counter to 5777B, go to 1.

In the above loop, the device checked for a new file is always equipment zero, whether or not EQ00 is a temporary device. This check could be improved, but the case does occur rarely.

The entire loop takes about 1 second to execute.

Note that even if the abort on track limit bit is set, the job is not aborted for 1 second in case tracks become available during the second.

On a timesharing system, aborting the job is less disastrous than on a batch system. The intent is to have the abort bit set for all devices on the 6400, but only for the removable devices on the CYBER 74.

The introduction of this mod required the following other changes. A *TKL,NN.* command is added to deadstart which sets the track limit abort bit for a specific equipment. A *TKL,NN* command in DSD toggles the track limit abort bit for equipment. Note that the Lienke criterion has not been followed in naming these commands, but a few bytes are thereby saved in DSD and SET.

The following deficiencies exist with the current implementation.

At deadstart time, there is no convenient way to take away the TKL (pronounced tickle) bit once it has been set for a device. One would have to re-enter the EQ entry for the equipment. The same is true, however, of the REMOVE, TEMP, PF, and ASR commands at deadstart time. One way to fix the problem would be to add commands which remove these specific bits (UNTKL, UNTEMP, UNREMOVE). Another way would be to have the TKL, TEMP, ASR, and REMOVE commands all toggle their respective bits. This would be consistent with how the TEMP and TKL commands in DSD function. The current CMR decks would also still function since all the bits affected are initially not set. This is the method I prefer.

Another deficiency is that the status of the TKL bit is not displayed in any of the E displays. It most logically should be displayed in the "E,M" display where currently 12 other bits are being displayed as alpha characters over a field of dashes. The E,M display is the longest overlay in DSD, however. Adding code to the longest DSD overlay is harmful to DSD in general. Also, there is physically not much room left on the tube for adding characters to the E,M display. The display could possibly be expanded to two lines per equipment.

The mod TKLIM requires that a generalization mod GEN008 be added to the system. This mod defines the bits in the three words in the MST reserved for installation use. Mods are also added to deadstart to set these words correctly, and a general IDU function is added to change bits in the MST. This function is used by the TKL command in DSD.

SYSTEM MAINTENANCE: People and Procedures

CALLPRG - LIBRARY TAPE NEWS - M. Riviere

On July 16 H. Kurs replaced the level 11 CALLPRG products COBOL, CB4LIB, COPYCL, COPY8P, ESMATE, FILE, TXGEN, SISTAT, SMTEXT and SORTMRG with the level 12 versions. All these products are available as Future CALLPRG packages.

Also on July 16, J. Strait changed Future PASCAL to current and current to Past. John also replaced the PASCAL library with a new version updated to level 2 and renamed it to PASCLIB. The new name is the one used in PASCAL documentation.

Also in July 16, I replaced RELTEXT with an updated version from the level 12 common decks.

On July 24, B. Hanson changed his PROCPAC routines in FT3LIB on the Library Tape and in Future, Fortran on CALLPRG. Brian has the documentation of PROCPAC available as WRITEUP, PROCPAC.

Also on July 24 H. Kurs replaced S2000 with a version created with ZAP, level 2.40-L. J. Mundstock provided a new version of Future, MNF which interfaces with COMPASS level 12 and has corrected code to handle the NE operation. This version of MNF will become the current MNF for the CYBER-6400 merged System.

Also on July 24, James changed RUNSYS, INPUT\$, and RANIOC in FT3LIB on the Library Tape. James added the entry point Q8NTR= to RUNSYS and removed the record with the same name. In RUNIOC, INPUT\$, and INOUT\$, he fixed a problem with coded I/O and an EOF problem in coded files.

Another modification to FT3LIB was made by Bartley Johnson. He provided a new corrected version of CSQRTE.

Bill Elliot introduced two CALLPRG Fetch type files, SORTOPL and SQUEEZ. SORTOPL sorts records on a library or on a Modify OPL in alphabetical order. SQUEEZ squeezes COMPASS lists to reduce two pages to one. These two packages are from Raytheon Laboratories, Massachusetts.

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SYSTEM CONSOLIDATION TEST DAY, OR, THE MYSTERIOUS CASE OF THE PHANTOM SYSTEM SECTOR -
by R. Williams

The first test day for the consolidated CYBER 74 - 6400 operating system took place last Sunday afternoon. Approximately 20 different users participated in the test and the performance of the system was markedly mediocre.

Even before TELEX was brought up, a deadstart, the only deadstart, was performed as a VERIFY called from COPYEI hung on an RFL request. A dump is available for anyone interested in fixing this (hint). After TELEX had been up for 10 minutes, all permanent file commands quit working, aborting with time limits and program stops. The problem was diagnosed as caused by the fact that a system sector had been deposited in the middle of the PFILES binary by some experimental DELAY QUEUE routines running on the CYBER (somehow this type of consolidation was not expected). The staff worked together to fix the problem and, after overcoming this delay things went smoothly. The following list indicates some of the problems that were reported by users and our preliminary appraisal of them. Following each are the initials of

those who have volunteered to investigate the trouble, or those who have been unanimously voted most likely to:

- 1) COPYEI hung in X status on an RFL down for VERIFY.
- No ideas on cause. WTS/RAW
- 2) E,F yields no length for files.
- Looks good to us. Length is blank if file is unwritten. WTS/RAW
- 3) CALLPRG gives "DEMAND VALIDATION ERROR" on "FUTURE,FTN."
- Not particularly upsetting but has implications for other things such as XMITTS to the CYBER. Caused by a request to get CALLPRG products off pack SP. EJM
- 4) USERS/DSD does not work.
- Command buffer is too small. TWL
- 5) Several MNF LIBRARY programs do not work. These include WORDY, PAGES, and ALPHBTZ.
- Unsatisfied externals. TDH/JLL
- 6) Users can ASSIGN,MS,XX past their file limit.
- RESEX does not honor user local file limit. WJE/WTS
- 7) UNSAVE is a TELEX command but missing from PFILES and thus does not work.
- Looks like a CDC error. RAW
- 8) A user complained about the B1=1 restriction for SYSLIB common decks.
- Complaint acknowledged. RAW
- 9) End of block bytes put out: "A".
- Suspect that no end of line byte followed 0001 byte as required by the documentation. RAW
- 10) E,F lists INPUT* file.
- We might consider eliminating the list of INPUT* files.
- 11) A user asked for an E,M facility which would yield the current B display message.
- This is a suggestion. RAW
- 12) LIBGEN's completion message has increased in size yielding an incomplete terminal message.
- CDC is being consistent. This problem has existed in other packages for a while. RAW
- 13) A user suggested that all common deck entry names should be standardized (as SYS=, WOD).
- This is a suggestion. RAW
- 14) The sequence LOAD,BIN;ULIB; REDUCE; EXECUTE gives loader errors but has worked in the past.
- This needs investigation. RAW/TWL
- 15) The placement of 747574--- in a word, where the 74 does not start on a byte boundary, use to suppress the ? prompt but no longer does.
- This does not seem to be documented as a feature but deserves further study. RAW

- 16) The CYBER LOADER fails to work with PASCAL or MNF.
- Apparently a known problem. RAW/TWL
- 17) OUT gives a weird response.
- Weird, but true. Not a problem. RAW
- 18) WRITEUP puts out page eject carriage control on index heading.
- This should be changed by having CALLPRG check output file type. EJM
- 19) CALLPRG does not return SCRL.
- This is aesthetically displeasing. EJM
- 20) Unsatisfied externals are not printed on load errors.
- This did not happen to me from timesharing origin but deserves further procedure file study. RAW
- 21) MNF listing title says "Y of MINNESOTA".
- Might be nice to fix this. EJM
- 22) A suggestion was made that a complete writeup on MNF FORMAT and CROSS REFERENCE map changes would be nice.
- It would be nice. EJM/RAW
- 23) A user would like the loader "CALLED FROM XXX" message when unsatisfied externals are called to be based on line number.
- This may be tough but if it can be done should be based on origin type or K option. User also wants a TRACBCK subroutine. EJM
- 24) The system name was MIRJE MECC/MERITSS.
- This results from the fact that LTA has the name MIRJE assembled into it. RAW

In addition to these reports, several packages were unavailable for test:

- 1) XMIT/SEND JDD/NLR
- 2) NOTICE/NOTIFY WCW
- 3) TALK JVE/WCW
- 4) Protected Permanent Files TJS/WTS
- 5) DAYFILE utility enhancements RAW
- 6) A number of CALLPRG packages. (All CALLPRG product keepers should let Marisa know about their projected amount of use and availability, as well as field length and time requirements, on the 6400.).
- 7) Several writeups= TDH
Library Programs/FORTRAN subroutines
APLUM/APLCYB KJF/WTS
LISP ABM
- 8) COBOL was unavailable. EJM

Overall, we must say things are progressing reasonably well. Throughout, we followed the programmer's code: Total commitment to the user's problem; from creation to solution.

The Operating System Strategy Committee - T. W. Lanzatella

At the last Systems Group meeting we decided to form a new committee called the Operating Systems Strategy Committee. The purpose of this committee is to resolve and to evaluate operating systems proposals which exceed the scope of the Systems Group. The committee members are:

M. Skow (Chairman), K. C. Matthews, T. W. Lanzatella, R. Williams, N. L. Reddy and E. J. Mundstock. Our first meeting was spent in defining the goals and objectives of the new committee.

- 1) To consider all system changes in the frame of the life of the CYBER 74.
- 2) To evaluate new equipment, including communications equipment, and to determine whether installing such equipment is worthwhile.
- 3) To insure that documentation standards are fulfilled in all aspects of the operating system.
- 4) To act as a final decision making body with approval/disapproval authority over those systems changes which cannot be resolved in the System Group.

All of the above goals and objectives are, of course, subject to executive committee approval.