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NOTICE OF CHANGES TO THE OPERATING SYSTEM

The following changes will go into production on 17 July 1975.

N. L. Reddy contributed the following modifications:

1. Program 1CJ now saves the length of OUTPUT files in the system sector.
2. Program 1CJ writes a message to the user dayfile whenever a non-primary OUTPUT, PLOT or PUNCH file is released to the queue. The format of the new message is:

RELEASED TO QT PRU COUNT, lfn.

where QT is a queue type.

3. Program 1BA was modified to output on extra line of information on the banner page. The new line gives the length of the job output file in decimal KPRU's. Additionally, program 1BA now builds a page eject into output file banner pages. Previously, the function was performed by LCD through format channel selection.
4. The recent security violation prompted the following fix to LDQ/DMQ. In KRONOS 2.1.2, the LDQ/DMQ utilities are renamed to QLOAD and QDUMP. The new programs are also restructured into (0,1) overlays and all queue load/dump commands are preprocessed by a new program QFSP. This new program, QFSP, has been implemented and the programs QLOAD and QDUMP (previously LDQ and DMQ) have code which checks for system origin requests.
5. A new feature of the 2.1.2 QLOAD/QDUMP is that the FI field on dump tape labels is now the date on which the dump was taken.

Alan Johnston supplied a new feature and a level 9 fix to the job scheduler. The mod adds two new parameters to the SERVICE command for DSD and to the IPRDECKS. The first new parameter, QP, sets the queue priority for a job scheduled to a control point. This priority is set only when the scheduling of the job does not exceed the AM parameter, or if the current priority in the INPUT/ROLLOUT queue is lower than the job's origin QP. The second new parameter, CT, sets the category that the jobs origin is placed in when the job scheduler counts available memory. This is used to group sets of origins together for the AM parameter. The value of CT should be set between zero and MXOT-1. If the value of CT is set at or above MXOT, then the scheduler treats the category as zero.

Don Hammes modified DISPOSE so that the length of a DISPOSED file is stored in the file system sector.

Marisa Riviere delivered a final version of RFM for inclusion in the system program libraries.

Bill Elliott contributed the following modifications:

1. Because specifying NS = 0 on a LABEL card causes IMT to hang, NS = 1 is forced.
2. Because removable pack jobs perform sluggishly in the timed event queue, Bill has modified MAGNET to get these jobs to roll in on event. This modification also allows jobs active on a removable device to complete while locking out new jobs if an UNLOAD has been performed on the device.
3. Add information to the E,P display to inform operators how many resources a job is requesting and to get jobs with resources already in use out of the system faster.
4. A modification which may help to make LB = NS operational.
5. A modification which disables internal requests for tapes and disks for jobs with TXOT origin.

The following report is due to Kevin Matthews and describes the modifications which he introduced to the operating system.

I. Mod PPRBIN

Binary search of PP programs.

A mod called PPRBIN adds a CPU monitor function (SPLM) which searches the PPU Peripheral Library Directory. This mod has been in the system on a test basis for several months, and has performed satisfactorily. Tests indicate that it significantly shortens (by 3 milliseconds out of 11 milliseconds) the load time for an ECS resident PP overlay. The monitor function adds about 40B words to CPUMTR, but the Central Memory Resident portion of KRONOS is no longer because PP program SFP (Scope Function Processor) can be removed from Central Memory to ECS or disk. The monitor function can optionally collect statistics on PP overlays loaded. The following routines are affected.

PPR - to use function SPLM in overlay load routine;
 CPUMTR - to add SPLM monitor function;
 SYSEDIT - to sort PP library table for binary search; delete CDC code for SFP;
 SLL - to delete CDC special code for SFP;
 COMDTFN - to document new function SPLM;
 PPTEXT - to define new function SPLM; to delete references to CDC special SFP words;
 SFP - changed to handle new entry conditions required by other changes.

II. Mod PMS

During spring quarter, I put a hodgepodge of changes into the system to collect performance measurement statistics. I now want to formalize this data collection and have a consistent scheme for collecting performance measurement data. This data will be especially helpful when we get the 808 disks. I hope we can try various arrangements of file assignments and use the data to decide which arrangement helps throughout the most.

As a first step, I have introduced a mod called PMS (Performance Measurement Statistics). This mod defines a table in Central Memory which holds measure-

ment data. The entries in this table are defined in a new common deck COMSPMS.

The largest areas in the table are those used for collecting PP overlay load counts and Monitor Function Usage. These areas take up 754B words of central memory. One feature of the modset is that these tables need not be in core. One can enter in the CMRDECK

PMS = XXXX.

where XXXX is the octal length of the performance measurement statistics area. (The length cannot be less than a minimum required value, currently 30B). If the PMS table is not long enough for the measurement of certain items, they are simply not gathered.

Nine bits have been defined in the system status word USSTL (43B) in low core. This word holds the ENABLE/DISABLE bits for various console controllable options. These nine bits select PMS options. They can be controlled from the console by

ENABLE, PMSXX.
DISABLE, PMSXX.

where XX is an octal number between 0 and 10B. These bits may also be toggled by the IPRDECK commands

PMS,XX.

at deadstart time.

Currently, only PMS bit 00 is used. If this option is enabled, a statistics dayfile message is issued for each job rollout. The remaining bits will be controlled by K. C. Matthews. Programmers should not add options which depend on these bits without coordinating the mod through KCM.

The following routines were modified.

PPTEXT - to define statistics pointer word in low core (MSP); to define PMS options in SSTL
CPUMTR, MTR - to gather statistics
SLL - to clear PP overlay load table after a SYSEDIT.
LRI, LRO - to gather rollin/rollout statistics.
SET - to generate word PMSP in low core; to implement PMS = CMRDECK command; to implement PMS, IPRDECK command.
DSD - to add ENABLE/DISABLE PMS commands.

III. Mod MTRFCN

Mod MTRFCN generalizes common deck PPCOM so that new monitor functions can be properly defined.

IV. Mod CPMTUI

This is a permanent change to CPUMTR to prevent track zero from being dropped by an errant PP program.

V. Mod *FREEBE changes mod FREEBE:

That mod defined the FRE = entry point which specifies that the job will not be charged CP time or PRU's transferred for the FRE = program (RESEX is the only FRE =). This mod was changed so that the uncharged CPU time is charged at the SYSTEM control point.

VI. Mod ISFUI

Modifies deck ISF to test for proper positioning of the CEJ/MEJ switch, as previously suggested in a memo to the Systems Group.

VII. Mod CIOU1

This mod makes it illegal for CIO to write on track 0 of any mass storage device. It was in the system when track 0 was being destroyed in May. Since it requires very little overhead in CIO, it is being added as a permanent mod to help spot future system malfunctions.

VIII. Mod 1CKU1

This mod to 1CK is already in the system. It now becomes a permanent mod. The mod adds two features to the code that writes the TRT on a permanent file device.

1. The TRT is verified to make sure that the label track of the device is still intact. It can help prevent the permanent file catalog tracks from being destroyed, although damage may be irrecoverable by the time 1CK is called.
2. An extra copy of the TRT is kept on an unused cylinder of 844 devices. This makes it possible to recover the TRT in some cases.

IX. Mod KLG0010

This mod is a Kludge, and is already in the system. It checks the direct access file chains and the indirect access data chain on permanent file devices. We hope to find the permanent file problems of June with this mod. Since extensive overhead is added to the CPUMTR code for dropping track chains, this mod should not be considered permanent.

Routines affected:

- CPUMTR - Check that the first track of a chain being dropped is not in any permanent file chain.
- 1CK - Verify that all permanent file chains terminate with a proper EOI byte.
- PFM - Clear direct access bit when purging direct access files to interface properly with the CPUMTR change above.

PROPOSED CHANGES TO THE OPERATING SYSTEM

Reader of the DSN are directed to two important documents published recently, which will not be reprinted in the DSN due to their size. The first is a collection of memos by Kevin Matthews which propose:

1. The afore mentioned change to ISF to check for the CEJ/MEJ option when deadstarting the CYBER 74.

2. That the DISPOSE utility be renamed to ROUTE and that a separate ROUTE program and macro be written so as to simplify maintenance and documentation of the utility.
3. In the light of all of the accumulated local changes to the permanent file FET, the FET should be expanded, reorganized and documented to simplify implementation of KRONOS 2.1.2.

The second document is the product of the ad hoc committee on documentation standards. The proposals set forth in that document have been accepted by the executive committee and all individuals concerned are working on their respective assignments. As the proposals become reality, guidelines will be published in the DSN.

PASCAL and SNOBOL

Below are listed proposed changes to PASCAL and SNOBOL to be implemented September 1.

PASCAL currently suffers from too long a field length for time-sharing jobs if the user program is greater than 2000 lines. If other changes are made to PASCAL it may get even longer. Therefore, one overriding change is to shrink the size of the compiler. Other changes will not be to the language but instead will restore features present in the old compiler:

1. Print an error message summary at the bottom of the listing.
2. Implement a value initialization facility.

Work will be done in creating a TELEX PASCAL subsystem.

SNOBOL needs to be changed to flush the OUTPUT buffer on time limit abort and to perform EREXIT recovery.

A. Mickel

Kevin Matthews proposes to write a new PP program which would be used exclusively to gather operating system statistics such as queue sizes, RA + 1 requests, rollouts and rotary usage statistics.

As stated in a memo by Andy Mickel and John Strait, dated 75/05/01, the present STATISTICS dayfile message LOCP is meaningless in regards to many CALLPRG program usage. Tom Lanzatella proposes to modify program LAJ to output another message to the STATISTICS dayfile. The new message would be prefixed by LOOV and would appear whenever LDR loads a (0,0) overlay.

Jim Foster has suggested that the current reprieve time granted after a TIME LIMIT abort is far too large at 20 seconds. Jim has suggested that 4 seconds would be more appropriate. The code necessary for this change is minimal, however, the amount of user education is large requiring both SYSNOTES and NEWSLETTER articles. Tom Lanzatella will insure that the change is implemented by the second Thursday in August and that the necessary articles are written and published in the UCC NEWSLETTER (which will be published during the first week of August).

SYSTEM MAINTENANCE: PROCEDURES AND PEOPLE

Deadstart Tape and Deadstart Systems Newsletter schedule:

The following DST/DSN schedule was proposed and accepted by the Systems Group.

Deadstart tapes are written on the first and third Tuesdays of each month. The deadline for submission of mods for inclusion in the system is the first and third Monday of each month. No modifications will be accepted without a written report explaining the purpose and function of the modification. Operating System program libraries maintained under user number LIBRARY will be updated as soon as the deadstart tape is determined to be operational. The Deadstart Systems Newsletter will be published on the second and fourth Tuesday of each month and a new deadstart tape will be implemented on the second and fourth Thursday of each month.

The recent security violation caused by sly and malicious use of the DMQ/LDQ utility has prompted an immediate change in the catalog type of all permanent files (accept CPL) maintained under user number library, pack name STF and SYSTEM. These files are all PRIVATE files PERMITTED to selected staff members. If you have a need to access these files, contact Tom Lanzatella.

SUMMER PROJECTS SUMMARY - A. Mickel

Below is a brief description of summer projects currently occupying the Systems Groups' time. Data is primarily from the July 10, 1975, Systems Group meeting although some information comes from the meetings of May 22, June 12, and June 26. The target dates are September 1 or fall quarter unless otherwise noted. The order of people presented is that of seating position in the last meeting; persons not present or deceased are last.

- W. Elliott - Nine track tape work
 Tape use document
 MF501
- N. Reddy - Bring size of EXPORT down from 11K
 Aim toward stability, help in documentation
 Implement I/O Queue protection from KRONOS 2.1.2
- B. Johnson - Work with Don McCullough on SUPIO protocol for minicomputers
 Gather PDP-11 statistics (formerly a well-kept secret)
 Develop maintenance routines
- T. Salo - Work on Dump Queue, Load Queue, QFM (complete)
 Recover Permanent files from crashed disks routine
 Enhance loading of indirect permanent files by chain
 Work on Reblock Version III (both ways + verifying)
 Implement stranger tape writer (pack up records)
 PF FORTRAN ROUTINES FOR RTN 4 USING RECORD MANAGER
- K. Matthews - Do documentation (KRONOS 2.1 Manuals Update, permanent file
 document) with TWL and DRL
 Work on PF incremental dumps procedures
 Implement password hashing for MODVAL
 Operator drop messages (WJE)
 ECS rollout (winter quarter)
 CKP - RESTART fix to include ECS
- T. Lanzatella - Deadstart Systems Newsletter
 Documentation with KCM and DRL
 Help reorganize mod scheme
 Rotary (timesharing) usage statistics (SEPT 1)
 IAJ 0,0 overlay loader messages for statistics

PLONE
Relocatable loader statistics, common loader (January)

D. Hammes - Queue file PP routines work
Convert MIMIC for FTN calling sequence

M. Riviere - Identify CALLPRG files
New procedures for changing library tape for CDC compilers
and libraries
Put in ALGOL 3 timesharing mods when ready
New policy on MNF versions; FETCH(MNF)

B. Stahl - Heavy bug investigation
MNF compiler work

H. Kurs - Record Manager Short Course
Level 8 and 9 of Record Manager
FTN4 and COBOL4 for September

A. Mickel - PASCAL and SNOBOL short courses done
SNOBOL files and documentation
PASCAL and LISP documentation
Dayfile statistics for language processor usage
User's Manual chapters 3,5, and 6

B. Williams - Cyber Loader
Merging Meritss and Mirje

J. Eikum - Merging Meritss and Mirje
~~Work on SUPRO problems with Reddy (Duluth)~~
~~SYSTEM EFFICIENCY, LEVEL 9~~

J. Strait - PASCAL subsystem on Mirje
PASCAL compiler work

S. Lenz - Finish MIXAL documentation
Put up UTALGOL
Work on ALGOL3 timesharing mods

J. Mundstock - General MNF work
CALLPRG work
Implement Fortran Common Library (FCL) for FTN
Record Manager and MNF (winter)

A. Johnston - Dayfile output limits from Procedures files
~~Timesharing Usage Statistics~~

A. Nonymous - PP routine to monitor P register (SPY)
(deceased) SNP (snap dump)