

UNIVERSITY OF MINNESOTA COMPUTER CENTER  
Deadstart Systems Newsletter

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TABLE OF CONTENTS

NOTICE OF CHANGES TO THE SYSTEM . . . . .	1
PROPOSED CHANGES TO THE SYSTEM. . . . .	2
NOS/KRONOS PF COMPATIBILITY - T.J. Salo. . . . .	2
TWO PROPOSALS FOR WRITEUP - M. Riviere . . . . .	3
IMPLEMENTATION OF TERMINAL ID'S - T.J. Salo. . . . .	3
SYSTEM MAINTENANCE. . . . .	5
UNUSED FILES ON CALLPRG - M. Riviere . . . . .	5
TAPE AND XMIT CALLPRG PACKAGE - M. Riviere . . . . .	5
CALLPRG AND LIBRARY TAPE NEWS - M. Riviere . . . . .	7
CYBER 74 DEADSTART DUMP ANALYSIS - K.C. Matthews . . . . .	7
6400 DEADSTART DUMP ANALYSIS - R.A. Williams . . . . .	8

NOTICE OF CHANGES TO THE SYSTEM

The following changes become effective on Thursday, 12 January 1978.

Tim Salo installed a useful change to 1SU, SUPIO's PP helper which should be a big help to operations. Program 1SU flashes a message after first being brought up if the PDP-11 is not responding. This provides immediate notification to operators that the front end needs to be reloaded. Tim also reworked input processing in SUPIO and rewrote output processing for minicomputer terminals.

John Strait repaired a bug in DSOSIM wherein interrupt processing would sometimes malfunction depending upon the sequence of commands input.

Marisa Riviere installed the following changes to CALLPRG.

1. Marisa corrected an error resulting from the recent enhancements to tape resident CALLPRG packages. The error caused spurious internal tape requesting jobs to be submitted causing a tape to be mounted and nothing else.
2. A long standing bug was repaired wherein internal tape request jobs would always use the CALLPRG index found on the CALLPRG user number rather than the fast attach copy.
3. A long standing bug in tape parity error processing was repaired. The program had assumed that certain information in the job communication area remained untouched between job steps but a clear core request was later added. This fix will help to provide much better data on the physical condition of CALLPRG tapes.
4. XMIT file processing was enhanced to include a check for file transfer failure.

5. XMIT file processing was altered to accommodate transfer of tape resident packages. This change was needed because file names associated with tape resident packages are prefixed with a number while the SEND command will not allow file names starting with a number.
6. Several unnecessary control statements were removed from CALLPRG XMIT jobs.
7. An error was repaired in FL and MF index entry processing which sometimes caused an XMIT job to fail.
8. CALLPRG will now print the message OTHER XMIT JOB ACTIVE - WAIT OR STOP if an interlock condition is set for a given terminal.
9. A long standing bug was repaired which sometimes caused control statement parameters to be lost when loading relocatable packages.

Brian Hanson delivered a new program COPYMF, a utility which is used to produce copies of multi-file tapes. Until now, multi-file tape copies required numerous LABEL commands to open each new section on the destination reel. To accommodate COPYMF, MAGNET and UFM were modified to allow a SSJ= program (COPYMF) to rewrite label information (see DSN 3, 21 p. 2).

Jim Mundstock and John Strait collaborated on a change to LDRUSX, the routine from SYSLIB used in replacement for unsatisfied externals at run time. The change allows LDRUSX to service calls from MNF's MANTRAP and from PASCAL's PASCMD in a compatible fashion. Jim's prior change caused LDRUSX to mode 1 if called leaving PASCAL users without a traceback if their programs bombed for calling an unsatisfied external.

Don Mears corrected an error in LTD processing of character translation tables when changing from the 64 character set to the 63 character set. The error was that LTD was translating : to 0 and % to 63B in TERM(TTY). Don also repaired a notable error in the PDP-11 TELEX front end wherein some users would be dropped due to a deadstart on the Cyber 74. Additionally, TTY input processing was cleaned up and some statistics gathering software was added to the front end program.

Tim Hoffmann altered the HELP utility to print an explanation when HELP begins to list a data record from writeup CONTROL. Tim also repaired an error in FILES processing of the SKIPR, SKIPF and SKIPFB commands. Previously, the commands bombed if the third parameter (count) was null while the fourth was not. A KRONOS PTRLIST item.

Jeff Drummond repaired an unspecified error in 1CJ processing of submit dayfiles.

#### PROPOSED CHANGES TO THE SYSTEM

NOS/KRONOS PF Compatibility - by T.J. Salo

Currently, our permanent file base cannot be used under both NOS and KRONOS because the value of PMFT (permanent file type) is different under the two systems. Therefore, the values of PMFT and SYFT should be interchanged under KRONOS. This will allow all files reloaded after changing the KRONOS PMFT to be used under either KRONOS or NOS.

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#### Two Proposals for Writeup - by M. Riviere

I would like to add a scroll parameter to Writeup. This parameter, when used, will cause the program to stop the printing of the output lists after printing a given number of lines and restart the printing when the return key is pressed. The number of lines can be given by the parameter and also be set to a default value of approximately 30 lines. This may be useful when listing writeups on high-speed CRT types of terminals. The parameter name could be SR.

For the time being Writeup aborts when it is interrupted. This can be modified to let the program handle the interrupts and continue listing upon the pressing of the return key. However, I do not find it very practical since the amount of information lost for each interrupt is relatively large.

These two modifications are independent from the programming point of view, but they are somewhat related with respect to documentation and user information. I think that if the two of them are going to be implemented they should be done at the same time.

I have been receiving some requests about the installation of these two features, and I would like the opinion of the Systems Group about them.

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#### Proposal for the Implementation of Terminal ID's - by T.J. Salo

The function of the remote job entry subsystems (SUPIO and EXPORT) is to route input and output queue files to and from remote terminals under the control of the user. This routing of queue files is currently implemented via what are referred to as terminal ID's or TID's. To the user a TID is a unique two character code, such as 2A or 49, associated with his or her terminal. Within the operating system a TID is a unique combination of job origin code and terminal number or ID. The first character of the TID is derived from the job origin code. The second character is the terminal number limited to the range "A" - "9". The ID field of the FST entry contains the terminal number.

Under this scheme a number of job origin codes are used solely for routing output queue files. For example, the three job origins associated with SUPIO are processed identically while the jobs of these origins are executing. When a job of one of these origins completes the job origin is, in effect, used only to generate the first character of the TID. The addition of a new terminal type, or more than 36 terminals of one type, implies the addition of a new job origin code under this scheme. Several other job origins are processed nearly identically with one another. The processing of submit origin jobs is identical with the processing of batch origin jobs except that 1CJ does not release output files to the queue for submit origin jobs (a difference with an informational content of one bit).

The FNT/FST entry contains all information necessary to route output queue files to a specific terminal or device:

FNT      42/jobname,6/job origin,6/file type,1/s,5/

FST      6/ID,6/eq,12/first track,18/,6/family,12/priority.

In NOS release 3 terminal ID's are defined and implemented for the routing of output queue files. Under this scheme output queue files are routed to a specific terminal

or device via a 21 bit TID saved in the FST. This TID is a user index hash for EI200 terminals on a KRONOS style ID for BATCHIO equipment. The routines DSP and COMPUSS set the TID in the output file FST as the file is released to the queue. The routine QAC searches for an output queue file matching a specified TID and other parameters. The format of the NOS output queue file FNT/FST is:

```
FNT    42/jobname,0/job origin,6/file type,1/s,5/
FST    3/device selection,3/external characteristics,6/eq
       12/first track,3/for code,21/TID,12/priority
```

### Proposal 1

The University of Minnesota remote job entry subsystems should use the NOS style TID for the routing of output queue files. Job origins will be used for scheduling purposes and differentiating classes of jobs which require radically different job processing. TID information will be saved in the input and output file system sectors and in the control point area. Specifically, the routines DSP and ROUTE will be modified to allow arbitrary two or three character TID's. COMPUSS will be modified to set the TID from the control point area in the output file FST. Several other routines (IAJ, LBA, LHS and SUPIO) will be modified to set up the input file system sector and control point area with the necessary TID information. MTR will use the TID from the control point area as the job origin mnemonic in dayfile messages. Additional words will be defined in the control point area with copies in the input and output file system sectors:

TIDW - Terminal ID word

24/ TID - terminal ID

12/ MID - Machine ID

12/ flags

10/ spare

1/ return dayfile to originating UI and MID

1/ suppress releasing of output files by 1CJ

12/ spare

IOJW - intermachine job origin word

24/ originating UI or TID

12/ originating MID

24/ spare

All jobs entering the system through SUPIO and EXPORT would be given EIOT origin. Jobs submitted via SUBMIT would be batch origin with a TID of SM. The stock mechanism for suppressing the release of output files to the queues (an ID of 77B) would be retained. Jobs XMITed or SUBMITed from another machine would be batch origin with the necessary information saved for 1CJ to release the dayfile to the queue to be returned to the originating user or terminal.

There are a number of advantages to the proposed implementation of TID's:

1. This proposed scheme is consistent with the NOS implementations of TID's. To continue with our present implementation of TID's would require additional patches to make it work under NOS. The code required to implement the proposed scheme is comparatively small and straightforward.

2. The number of job origins would be reduced under the proposed scheme. It is even possible to use only stock job origin codes. Conversion problems associated with NOS R3, NOS R4 and other packages (e.g. System 2000) will be considerably reduced by the use of stock origin codes.

There are, however, a few disadvantages with this proposed scheme:

1. It is a change from our current implementation of TID's. Several local programs, such as DIVERT, will have to be modified.
2. Input and rollout files will not have a TID in the FNT/FST entry. This has implications for operator and remote terminal displays.

## Proposal 2

The proposed NOS TID implementation should be partially implemented under KRONOS. In particular, the two character TID should be set in byte three of the output queue file FST entry. SUPIO and EXPORT will search for output files using this TID in byte three of the FST. This will allow a major portion of the conversion of SUPIO and EXPORT to be completed prior to going to NOS.

## SYSTEM MAINTENANCE: People and Procedures

Unused Files on the Callprg Account Number - by M. Riviere

The following Callprg files have not been used for the last 6 months:

NBMD05V	SISLIBK	BMD12S	NUMST58
DMPECS	NBMD08V	BMD12D	BASIC3
PFMTEXT	SMTEXT	BMD12V	GPM
SORT12	SNOBLC2	BMD07R	
SRTL12	BMDP1V	UPRIGHT	
SPSS60	BMD13S	BMD05S	

Refer to the October 11 DSN, (Vol. 3, No. 18) for how to obtain a list of the Callprg files maintained on your account number.

Please review your files and purge the unused ones.

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A Description of Tape Package and XMIT Package Problems on Callprg - by M. Riviere

I am trying to describe in this article how to solve the major problems encountered by users when Callprg fails to retrieve a tape resident package on the Cyber or a XMIT type package on the 6400.

My recent changes to Callprg include several corrections to error processing procedures and several corrections to XMIT file handling so that the number of failing jobs is very small. Callprg can, however, still fail in two basic ways.

A description of how to clear these error conditions, when they exist, is useful.

I am describing separately how to solve either one of the two cases (tapes and XMIT). I also include a description of the XMIT procedures for a better explanation.

## A. Parity Errors in Callprg Tapes

There were some problems in the tape parity error handling section of Callprg that, when a tape parity error occurred, produced any one of the following results:

1. An incompleted file was returned to the user.
2. An empty file was returned to the user.
3. Nothing was returned to the user.

These procedures have now been modified and a message of the form "PACKAGE NOT FOUND - SEE CONSULTANT" or "TAPE COPY FAILURE" will be issued.

Since tape files are now kept as pack files as long as they are accessed within one hour intervals and retrieved without waiting for successive tape jobs to all the users that need them, those messages will keep being issued to each user requesting the package for as long as the incompleted or empty files remain as such on the pack.

If it is desirable to make a further attempt to retrieve the package from the tape, it is important to note that no tape jobs will be issued for as long as the package's associated files remain on the working account number catalog. Those files have to be purged before a new tape job can be issued. The help line consultant or a person from the systems group can purge the files. The permanent file names associated with each package are given by the TF parameter of the index.

The definitive way to end the problem will be, of course, to replace the damaged tape. To make the replacement effective, the package's associated files, if any, have to be purged from the working account number at the time of replacement.

## B. Failures on Callprg 6400 XMIT-SEND Jobs

When an XMIT type Callprg package is requested by a 6400 user and the package does not happen to be already available on the Callprg or Writeup working account numbers, Callprg proceeds to execute what could be called its XMIT-SEND section.

The XMIT-SEND section briefly described consists of:

1. Issuing a job that creates a file on the working account number. This file has a name associated with the terminal's number that requested the job. (The file's format is 99NNN where NNN=terminal number.)
2. XMITing a job to request from the Cyber the packages (files) that have to be sent back.
3. Making the files public when they arrive, for the user's job to access them.
4. Purging the interlock file.

While the interlock file associated with a given terminal exists no other XMIT job can be started for the same terminal.

Most of the problems that made XMIT jobs fail are fixed and the number of failing XMIT jobs should be very small by now.

However, if an XMIT job fails, the interlock file is not purged until the XMIT-SEND procedures do so. The Callprg bouncer program will eventually purge these interlock types of files when they happen to be old (that is when they have not been used within an hour).

A message is now issued to the user when the XMIT condition is active. The text is "OTHER XMIT JOB ACTIVE - WAIT OR STOP."

If the interlock condition is active due to other previously requested and stopped XMIT transfers the condition will clear in a few minutes. If the interlock is active due to a Callprg failure or ECS transfer failure the condition may take up to 1 1/2 hours to clear.

The interlock condition can be cleared manually by purging the associated file(s) from the working account number.

The interlock files are public and can be seen in a Catlist of the working account numbers. The working account numbers are YZE6005 for Callprg packages and YZE6007 for Writeup packages.

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#### Callprg and Library Tape News - by M. Riviere

The only scheduled modification for Callprg is a change on PERMITS requested by T. Hoffmann. The change consists of removing unused parameters, and adding a pack name parameter (PN=) and a file name parameter for a file list (FN=). This change will take place on January 17.

The next Callprg and Library Tape modifications will be taking place on January 31. Modifications for that date should be submitted before noon, January 19.

As previously announced, all the public Callprg files on the SP pack were dumped and reloaded in order to reset their access counts. A Catlist report of the files from two days before the dump/load operation took place is on file CTL1229, on the Callprg account number on the STF pack.

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#### Cyber 74 Deadstart Dump Analysis - by K.C. Matthews

Unfortunately, there have been too many crashes to analyze individually. We were down a total of 53 times in December. Most of our crashes were due to the mysterious problem in which PPU's are acting strangely. Either a PPU seems to be executing in a wrong location, or an entire bank of PPU's will be stopped on central memory read/write instructions. I think that the two might be independent problems.

The engineers have spent a lot of extra time analyzing the crashes and testing the machine. They hope that they have found one of the problems. But on Saturday, 7 January, when the system was crashing mainly because of an ECS problem, we had one bank of PPU's hung on read instructions again. There was also a memory problem and a CPU error (in multiply 2) this past month. I hope to have a more stable period and a regular report in the next DSN.

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6400 Deadstart Dump Analysis (12/5-1/8) - by R.A. Williams

<u>DATE</u>	<u>DESCRIPTION</u>	<u>TAPE</u>
771205	The scopes went blank when an exchange package was dumped into low core for unknown reasons.	See 6400 Staff
771209	The 7054 844 disk controller hung the system twice due to hardware problems.	Fixed
771216	A PP reportedly was hung but in fact was not assigned. It was requesting a track chain illegally.	See 6400 Staff
780104	The system went down several times during the swapping of 844 disk controllers with the Cyber. The swapping was initiated to free up precious floor space on the Cyber side.	N.A.
780105	The system was taken down to add one of the three 844 controllers back into the system. It had been taken down as part of the controller swap.	N.A.