UNIVERSITY OF MINNESOTA COMPUTER CENTER
Deadstart Systems Newsletter

TABLE OF CONTENTS

NOTICE OF CHANGES TO THE SYSTEM

Don Mears changed SUPIO to allow a larger number of PDP-11 ports and to
correct a password for site 2C. Don also changed DUMPPDP so that it
dumps all 32K of PDP memory.

Jeff Drummond takes this week's prize for most prolific contributor.
Jeff scoured the 501, 509, 518 and 527 NOS release materials and extracted
every correction to PFLOAD, PFDUMP and PFS. Recent difficulties (cat-
astrophic, no less) with loading and dumping of permanent files inspired
this work. Jeff mercifully provided me with this abundant description.

1) PFLOAD processing of type parity errors was corrected by fixing COMCRDW.

2) A problem which occurred when dumping or loading files with between
    213 and 244 permit entries was corrected.

3) PF interlocks are now cleared if PFLOAD or PFDUMP is terminated by
    an operator kill.

4) Disable OP=N on PFLOAD and treat all loads as noninitial.

5) Repair processing of EOF control words by PFLOAD and PFCOPY.

6) Various buffer control word aborts in PFDUMP and PFLOAD were corrected.

7) Files attached in APPEND/MODIFY mode while PFDUMP is running will no longer be dumped.

8) PFU was corrected to refrain from indicating false VE errors on a device.

9) Misleading error messages were corrected.

10) Repair PFDUMP so that device activity counts are decremented after operator drop.

11) Correct an error where PFU could be called twice with the same read list.

12) A problem where PFLOAD would occasionally bash a control-word was fixed.

13) Efficiency of catalog image processing was improved.

14) A problem in PFLOAD where the wrong files were sometimes loaded was fixed.

15) PFLOAD will now issue an error message when ERROR IDLE is set.

16) PFLOAD scratch file processing was corrected.

Brad Blasing corrected a problem in 1UD, the ECS allocation PP routine. The problem has a long history. On the Cyber 172, all ECS reads and writes are done through CPU0. Some time ago we discovered that a ECS user could use a USECPU(1) command and thus use CPU 1 for computing and CPU0 for ECS transfers. A job like this could have deleterious effects on system performance. Consequently we changed 1UD so that all 1UD requests caused an implicit USECPU(0). Unfortunately, we didn't distinguish between the two types of ECS request - an informational request and an allocation request. Brad recently learned that CCL, during preset, always issues an informational request to find out how much ECS is available in the system. Hence all jobs on the C172 which use CCL were subject to the implicit USECPU(0). Since most jobs use some CCL commands this resulted in a rather poor distribution of CPU power among C172 jobs. Brad changed 1UD so that only allocation type requests result in the USECPU(0). Brad also corrected CALLPRG so that it calls the relocatable loader with a proper amount of memory.

Andy Hastings installed the following changes.

1) USERS/DSD was changed to match the DSD E,F display and to delete the MSAL command.

2) Some PURGMAC's were added to COMCMUM so that CALLCPU doesn't get so many errors during assembly.

3) Some annoying colons were removed from the PREVIEW report.

4) Andy corrected the ENTER (and Z) command to add terminators when a delimited statement does not contain a terminator rather than when a delimited statement does not end with a terminator. The problem was that commands which use the Z option could not be used on ENTER commands.

5) Andy installed several changes in preparation for his secure password entry enhancements (see DSN 7,6 P. 39). The changes relate mostly to securing space in the TELEX terminal table.

Tom Kovarik changed CATLIST so that family name is part of the CATLIST report.

PROPOSED CHANGES TO THE SYSTEM

LGO. - by B. E. Blasing

Currently, when Cyber Loader is called via a "LOD" RA+1 request (which is used by the load-and-go feature of most languages) it loads the program from LGO (usually) and executes it. Prior to executing, it leaves a control statement in CCDR (RA+70B) of "LGO." Unfortunately this causes a problem for CALLPRG who also uses "LOD" to load relocatable, control statement callable programs like ASM11. The original control statement is overwritten by "ASM11." and all parameters on the control statement image are lost. I propose that Cyber loader not do this and leave the original control statement there. The only external effect is that Pascal users who use the procedure CSIMAGE, and the load-and-go feature will now see:
     PASCAL(name,,/L-,G+)
instead of:
     LGO.

Pascal could be modified to put "LGO." in CCDR before calling Cyber Loader if necessary.

//////////

More on Xerox 9700 Queue Dumping - by the 9700 Task Force

The Xerox 9700 queue dumper will have options for either conversion or transparent mode. Conversion mode will accept a 6-bit or a 6/12-bit display code file or an 8/12-bit ASCII file and convert it to a packed 8-bit ASCII file to be written on magnetic tape. Transparent mode will accept a file that is already in the packed 8-bit ASCII format.

The mechanism for recognizing which mode is desired is to use the IC parameter in the ROUTE statement.

ROUTE(lfn,DC=XE,IC=BIN) will tell the queue dumper to use transparent mode.

ROUTE(lfn,DC=XE,IC=DIS,EC=A9) will tell the queue dumper to convert a 6/12-bit display code file.

ROUTE(lfn,DC=XE,IC=ASCII) will tell the queue dumper to convert an 8/12-bit ASCII code file.

The full table of combinations of IC and EC when DC=XE is:

(DC=XE)	No EC parameter	EC=A6	EC=A9
No IC parameter	Convert 6-bit	Convert 6-bit	Convert 6/12-bit
IC=DIS	Convert 6-bit	Convert 6-bit	Convert 6/12-bit
IC=ASCII	Convert 8/12-bit	Undefined	Convert 8/12-bit
IC=BIN	Transparent	Transparent	Transparent

If the user doesn't put in any Xerox 9700 control codes in the output file (in a manner to be described in some future proposal), the queue dumper will set defaults of single-sided copy in landscape mode, 66 lines/page, standard character font and normal paper. This matches a line printer as close as possible.

The REP=n parameter in the ROUTE statement will be translated to the appropriate 9700 control code. It will cause the 9700 to print n copies of the file including the banner page.

We decided to recommend to the Directors' Staff that the queue dumper charge the user for conversion mode. The actual mechanism would be to output an accounting message giving the net SRU's for the queue dumper's operation on each user file. Thus, both conversion mode and transparent mode would be accounted, though transparent mode will just be charged for the file transfer to the magnetic tape. The actual charges (in SRU's) would be printed on the last page of the 9700 output.

Our reasoning for the charge is to be fair to both transparent mode and conversion mode users. Transparent mode users have already paid for conversion elsewhere, probably while running their job on the Cyber to do the conversion. The result will be that all 9700 charges are paid by the user and are not added to UCC's overhead.

////////////

Cray Station Installed, Part II - by T. W. Lanzatella and K. C. Matthews

Several points of the previous proposal, Cray Station Installed (DSN 7,7 P. 46) were left open. Principally, the means of indicating which path a job must take in order to reach the Cray was left undecided. Considering that the proposal offered no detailed solutions this is justifiable. Also left open was what to do with output from Cray jobs entered with the SUBMIT command. This proposal addresses both of these problems in detail.

The method used to transfer jobs to the Cray is an important user interface. The goal of this design is to provide a consistent method of entering Cray jobs. In fact, a proper solution should address the general problem of how to move Cyber files anywhere else in the UCC network. The problem at hand is how a Cyber user runs a job on the Cray. Soon we will have to ask the question: how does a Cyber user run a job on the VAX or on the St. Paul IBM or how does a Cyber user transfer a permanent file to the Cray?

Jobs are entered into our system either by reading a deck of cards through a batch station or by using the SUBMIT command. A person using the Cray or any other computer ought to be able to use either mechanism. In this proposal, we will suggest a general solution to the problem. The solution will require that you accept some new notions about job structure and the treatment of output files.

Our plan makes use of a principle which has been bandied about for several weeks. That is, when a file is presented to the system which has to be moved elsewhere, the process of preparing the file for transport should be separate from the transport process. The file preparation process is: translating, blocking or validating. The transport process is placing the file into the proper queue and later processing by the system.

For Cray-bound jobs originated by time sharing users we will use the SUBMIT command to preprocess jobs. We have to provide two paths to the Cray: one through the Station and one through CQDUMP. To distinguish the two paths we will add a new parameter to the SUBMIT command. The new parameter will be TM (for Transfer Method). The TM-option can have two values: either STATION or TAPE (STATION by default). Most users will never have to use the TM-option. We are also faced with the possibility of having to talk to two Cray machines. To provide this capability, we will invent a new value for the MI-option, say CRAY25. The command:

        SUBMIT(lfn,MI=CR,TM=TAPE)

would send a job (on lfn) to the UCC Cray. The command:

        SUBMIT(lfn,MI=CRAY25)

would send a job via the Station to the Mendota Heights Cray.

Once SUBMIT has performed its usual duties like reformatting, it will do some special things depending on whether or if the MI option is CR or CRAY25. The special processing will entail building a Cray JOB and ACCOUNT command. The difference between the two options lies in the fact that the Mendota Cray runs without passwords while the UCC Cray runs with.

At this point, SUBMIT has a job which is ready to be placed in the queue. Instead of calling DSP, SUBMIT will load a CPU program called STREAM. The STREAM utility is a new command which takes care of placing nonMMF files in various queues. The format of the STREAM command is:

STREAM(lfn,TY=type,MI=machine,TM=transfer method) where
lfn is the file to be moved,
type is the file type - either IN, OUT or PF,
machine is the destination machine - either CR or CRAY25
transfer method is either TAPE or STATION.

Initially, only one TY-option will be allowed - IN.

STREAM is a very general utility which functions like Route except that
it sends files to devices which are not part of the MMF complex. Although
STREAM has a limited function now, we see an increasing need for the
utility especially if the number of computers in the network increases.
The advantage of using STREAM is that we avoid having to add any new
features to Route.

Output from submitted Cray jobs will be treated differently than for
submitted Cyber jobs. We will continue to disallow printed output from
SUBMIT jobs because we simply don't know where to print it. Since we
receive output files for submitted Cray jobs and because the user will
pay for the transfer back to the Cyber, we ought to save the output.
The output will be retained on the submitting user's user number as a
permanent file named after the submitted job. For those jobs which spawn
several output files, the output will be appended to a single file named
after the submitted job. A strong justification for this behavior is
that forcing the user to explicitly route all output would place a
tremendous burden on Cray users. They would have to use a Cray-Dispose
command which would probably stretch into two lines.

One objection to the previous proposal was that dayfiles for submitted
Cray jobs should be prepended to file DAYFILE just as is done for Cyber
jobs. We will treat this as a desirable objective. The feature will
be easier to install once the entire mechanism is in place.

For batch users who want to run Cray jobs we will invent a new command,
JOB. The JOB command will really be a entry point in SUBMIT but will
behave differently. The intention behind suggesting the JOB command is
to provide a new notion about job structure. When a JOB command is
encountered, everyting which follows will be packaged up, validated and
reformatted (if necessary). When JOB is finished, it will call STREAM
to put the file into the proper queue. The format of the JOB command is
the same as for SUBMIT; it will also have a TM-option. The JOB command
will have some restrictions on its use. It will be legal only if it appears
immediately following a jobcard, USER card and optional BIN card. This
is to prevent situations where a user mistakenly places multiple JOB
statements in a deck. Output from batch jobs entered this way would
return to their site of origin. JOB would be illegal from time sharing
origin or from within a SUBMIT job.

Why do we need the JOB command and why can't this capability be placed
into SUBMIT? First, we think that with the impending installation of
a network linking together all computers in the state, we will need a
more versatile means of getting jobs to the various hosts than with a
mere jobcard parameter. Space in OVJ is limited. By using JOB, the

task of job classification and validation will not be constrained.
Special cases can be easily delt with. Users would not have to perform
a lot of file manipulation in order to move a job to a foreign host.
JOB also affords a clear, logical delineation between batch jobs and
SUBMIT jobs.

One suggestion which constitutes a departure from current dogma is the
MI-option on SUBMIT and JOB. By allowing the value CRAY25 we are saying
that some MID's can be specified on the SUBMIT command which cannot be
specified on the jobcard. This is by design. The MID's which can be
specified on the jobcard will be a subset of all possible MID's; that is,
only those MID's which are part of the MMF complex in the CDC sense.
To this end, the MICR jobcard option will be eliminated.

The system changes necessary to install this feature are as follows.

Cray-bound jobs in the input queue will be signified by special priority
just as they are now. Because we will have four types of Cray job, three
more special priorities have to be defined. Since we can assign as many
as 77B values which are below MNPS, this will not be a problem.

SUBMIT will have to be changed by adding:

  1) a TM-option,

  2) special processing for MI=CRAY25 and for MI=CR,

  3) a new entry point, JOB, and associated processing.

CQDUMP and CQLOAD will be changed so that jobs from two different Crays
can be processed and a new fast attach file, MARS, will be installed for
use with TM=TAPE,MI=CRAY25-type jobs.

Local mod GENMMF will be simplified by deleting much code which supported
non-Cyber mainframes. The PP routines affected are: OVJ, DSP, OEF,
1AJ, QAC, DSD, 1CJ, UFM and UQM.

The new CP program, STREAM, will have to be written.

///////////

SYSTEM MAINTENANCE: People and Procedures

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

Thanks to Steve Reisman and Bob Williams for taking extensive notes
and to Larry Liddiard who chaired the meeting in my absence.

The first proposal discussed was the Cray Station proposal (by TWL)(see
DSN 7,7 P. 46). The proposal made five points.

1) The concept of writeup CRAY was approved.

2) The use of a new MI to signify a Cray-bound-via-station job versus a utility like EXPORT was left open. General sentiment favored the utility however. Some felt that SUBMIT should be the utility. Given this preference, we will prepare a specific proposal.

3) Regarding point 3, the proposal must have been unclear. The system group somehow construed that the suggestion was to eliminate the BIN card from a Cray-bound job. What I meant was that a station job should not contain a COS job card or ACCOUNT statement.

These statements will instead be provided by the input spooling task. The reason for this is not only to make the format of station jobs identical to CQDUMP jobs but also to gain control of the Cray job name – a prerequisite for point 4.

4) Point 4 was approved.

5) Point 5 addressed the treatment of output from submitted jobs. Like point 2 this was left undecided. Some felt that dayfiles from Cray jobs should be treated like dayfiles from Cyber jobs. We will address this in a specific proposal.

Bob Williams' remarkable accounting proposal was accepted (see DSN 7,7 P. 50). For those who had trouble discerning the proposal, the suggestion was that time sharing sessions terminated by time-out or hang-up should be accounted only if the user does not recover. Additionally, PROFILE data should be entered into the account file after every session recovery.

Archive enhancements were discussed (see DSN 7,7 P. 53). As far as I can tell, the only conclusion reached was that using the UCW as a permanent file qualifier is possible. I have no idea as to whether the system group thought the feature was desirable. We will take this up again at the next meeting.

Larry announced that the 730 hardware is due on 22 May with installation occuring during the Memorial day holiday. Larry also announced that he wanted to switch the current version of M77. The new version has many bugs fixed and much improved optimization. The system group nixed this idea since we have a rule of not changing the product set during the quarter. Marisa suggested that Larry's new version be made available as a FETCH type package and a message be added to the current version suggesting that the FETCH version is more reliable. This plan was accepted.

//////////

Callprg and Library Tape News - by M. Riviere

On May 12, the following changes were implemented on the Cyber 172 and
74 Callprg index:

S. Yen introduced the three new BMDP programs; BMDPLR, BMDPKM and BMDP8V.

S. Collins installed the procedures FICHE and X9700 as fetch type packages.
These procedures can be used to produce files for microfiche and XEROX
9700 printing.

K. McMahon and B. Reents removed the entries for the future version of
HTEKLIB and inserted a future version of VIEW.

I updated the future versions of the FTN and FTN5 compilers with the CDC
PSR level 531 versions. I also updated to the same level the COMPASS
assembler and the libraries FORTRAN, FCL5LIB and SYSLIB that are retrieved
with future FTN and FTN5. In addition, I made several CDC texts used
by the 531 products available with the FETCH,TEXT531 statement.

No modifications are scheduled for May 19. The next set of Callprg
index and Library Tape changes will be taking place on June 2. Modif-
ications for that date should be submitted before noon on May 28th.
After June 2, the next set of changes will be made on June 14. Please
remember to plan for that date the changes that have to take place during
the quarter break.

//////////

Cyber 74/172 Deadstart Dump Analysis from Wednesday, 1 April to
Thursday, 7 May - by J. J. Drummond

Wednesday, 1 April	Cyber 74

08:02   N.A.
The disk drive for PN=SHA went down and a level zero deadstart was required
to reconfigure the drives. No dump was taken.

Friday, 3 April	Cyber 74/172

01:01   N.A.
A power flucuation caused both systems to crash and a level zero deadstart
was required on both systems (down for just over two hours). No dump
was taken.

Monday, 20 April	Cyber 172

21:34   DD2010
1TO hung doing disk error processing on an 885 drive. The channel apparently
hung empty.

18:12   DD2011
DSP hung doing disk error processing on an 885 drive (see DD2010).
The channel apparently was hung empty.

Monday, 27 April   Cyber 74/172

07:39   N.A.
Both systems were up late due to a freon problem on the Cyber 172. No
dump was taken.

Tuesday, 28 April   Cyber 74

13:40   DD2012
CPUMTR died and a level three recovery was successful. From the dump,
it appears as if CPUMTR jumped to absolute location zero in the middle
of copying an exchange package.

Tuesday, 28 April   Cyber 172

22:25   DD2013
PFU hung attempting to attach a fast-attach file (RSXD72). This could
be the old problem of trying to dump a resource file that's interlocked
due to magnetic tape activity.

Wednesday, 29 April   Cyber 74

14:55   DD2014
MTR appears to have gone berzerk and hung pp's (three of which were in
the idle loop) and including itself. MTR may have destroyed part of
itself - further investigation is required.

Wednesday, 29 April   Cyber 172

20:10   DD2015
CIO hung on an MST which was being run on a drive known to have problems.
7SI (disk error processor) shouldn't have hung though even if the drive
was bad. No resolution appears likely.

23:10   DD2016
The PF activity count was left incremented and the operators were unable
to unload or mount removable packs. A level three recovery was successful.

Thursday, 30 April   Cyber 172

08:03   N.A.
The system hung when (apparently) an unrecovered write error caused an
error idle status to be set on DN66. A level three recovery was required
to unhang the system. KCM cleared the error idle status later. No dump
was taken.

02:00   DD2017
RESEX hung at a user control point and (along with MAGNET) was dead to
the world. STOPping MAGNET had no effect and a level three recovery was
successful.

Thursday, 7 May   Cyber 74

                                                                         DD2020
CPUMTR got a mode one error processing control point 22 (there are only
20 control points on the Cyber 74)! The running exchange package has
a number of inconsistancies.

/////////

MERITSS (currently Cyber 720) Deadstart Dump Analysis from
4/17 to 5/7 - by B. E. Blasing

Mon., 4/27, 07:36   No Dump

A freon problem caused the mainframe to do a controlled shutdown.

Mon., 4/27, 16:34   No Dump!

CPUMTR moded out. The operators forgot to take a dump.

Mon., 5/4, 10:07   No Dump

A confident systems programmer discovered a long standing bug in DDF
while using it to read ECS. The problem was reproducable so no dump
was taken and the problem has been fixed.