Multics Task Report   MTR - 026

TO: Distribution

FROM: David M. Jordan

DATE: January 7, 1974

SUBJECT: System Maintenance Status, November 24 - January 4

1. Significant Events

        In order to allow Gary to work on the tape projects the
Multics Installation Tools project has been integrated into
the System Maintenance Group. Beginning with this report
the MIS project status will be covered in this document.
        All wired down hardcore procedures in PL/1 have been
converted to Version 2. In addition, the Version 1
pl1_operators have been unwired. We continue to gradually
remove Version 1 procedures from the libraries.
        During this reporting period we not only survived
through numerous power-down/power-up sequences over the
holidays, but we also managed to get through while Roger was
on vacation for three weeks.

  A. Online System Installations

        During this reporting period there were 182 changes to
the online libraries, including an attempted installation of
the EIS pl1_operators_ which had to be pulled due to
hardcore and hardware problems. The hardcore problems have
been fixed, but the re-installation is still awaiting fixes
to the hardware for the MLR problem.
        In addition, a large number of changes were prepared
for installation. Answering Service 7.4, which contains a
variety of changes and fixes should be installed soon, and
the largest simultaneous installation yet attempted will
soon be tried when new versions of PL/1, FORTRAN, the
runtime routines for both and a new version of bound_math_
will all be installed at the same time.

  B. Other Installations

        During the past month and a half we continued to
install new systems at a rate of 2 per week, in spite of
three seperate holiday periods. During this time Multics
systems MSS 21.3d, 21.4, 21.4a, 21.5, 21.5a, 21.6, 21.7,
21.8, and 21.8a were installed. Included among the many
changes and fixes installed were the software for the

_____

                            - 1 -

MTS-500 tape system, call limiters on hardcore gates, a change of the Initializer's access name from .sys_control.a to Initializer.SysDaemon.z, and the new version of the star/equals convention.

In addition to the Multics changes, Bos systems 1.30 and 1.31 and Salvager system 2.26 were installed. The Bos systems included changes for the MTS-500 tapes, the DSU-191 disks, and the new Operators' console interface. Salvager 2.26 included fixes for the Active mode and salv_esd, and the long awaited change to allow the Salvager to automatically expand the fsdct as new storage space is added.

C. Crash Analysis

During the past 6 weeks the system reliability appears to have improved significantly. In addition, we have begun to receive fixes for a large number of bugs that individually were accounting for one crash or less per week. These fixes have, however, had a fairly substantial impact on overall reliability as the figures below indicate. Unfortunately, a couple of major software changes are expected in the near future which could result in a large number of crashes again.

	Nov 24-30	Dec 1-7	Dec 8-14	Dec 15-21	Dec 22-28	Dec Jan 29-4	Total
Hardware	2	3	5	1	3	3	17
Hardware Suspected	3	1	2	0	0	0	6
Software	5	5	6	9	0	1	26
Software Suspected	1	3	3	0	0	0	7
Not Yet Analyzed	0	0	0	1	1	4	6
Not Available	0	0	1	1	0	0	2
Other	1	0	3	0	1	0	5
Total	12	12	20	12	5	8	69

2. Problem Areas

The new EIS PL/1 compiler has recently demonstrated some possible anomolies in our procedures for charging for memory usage, as some programs appear to run faster and with fewer page faults but still cost nearly as much to run. Hopefully this problem can be looked into in the near future to determine if our procedures should be changed.

We are now in the middle of what will hopefully be the last major installation crunch on Multics. A number of major changes are about to be installed in an effort to meet distribution deadlines for HISI. This situation should ease as we near the end of January, but this could be a very busy month for installations.

Although it isn't really this group's responsibility at this point coming shortages of paper products and/or electricity and/or whatever else we may run out of may prove to have a serious impact on the continued smooth operation of Multics. Hopefully someone in the Operations area has been thinking about this, but it seems possible that some software changes might be required to ration what may become very scarce resources.

3. <u>Task Status</u>

1. Multics Installation System Project Status

Work on the library tools continues, although we seem constantly faced with new changes to be made to the already existing system with the result that the more long-range tasks tend to be put off. At this point we are hopeful that all such minor enhancements and changes are underway and will soon be completed, although Gary's work on the tape project has cut into the amount of time he can work on such projects. Peter has done quite a bit of documenting over the past six weeks, with a variety of SPS and MTB documentation now completed. Hopefully over the next few weeks we can complete the several minor tasks currently in progress so that we can concentrate some effort on planning the rather massive documentation effot currently desired.

2. Other Tasks

Our other tasks proceded quite well over the past 6 weeks with a variety of installations of new or upgraded code. We're not yet to the point of looking for new tasks, but our current lists are beginning to shrink noticably.

4. <u>Work Planned for the Coming Month</u>

During the next several weeks we have a number of major installations planned. Included among the changes expected are: the final phase of the new directory control (MSS 22.0), some significant changes to the command loop and signalling mechanism, new disk software for the DSU-191's, the first phase of the new iox_, new versions of pl1_operators_, the PL/1 compiler, FORTRAN, and the various runtime packages associated with the compilers. All in all it looks to be a very busy time for the installers.

In addition, we hope to complete a variety of tasks associated with bringing the level of our installation tools which are still not installed (such as exec coms) up to system standards. Also we hope to work out a fairly detailed set of tasks to accomplish the documentation of the new library tools.

If any time is left over from the above we hope to do

some reviewing of the current library contents to allow the
removal of obsolete or unused modules.

TASK AREA   Maintenance (Online Libraries)

TASK DESCRIPTION	PERSONNEL	START	FINISH	CHANGES/STATUS
Online installations	Scherer Kelley	continuing	task	
Maintain source lists	Roach	continuing	task	
Maintain cross reference lists	Scherer (Kelley)	continuing	task	new lists generated 01/04/74
Maintain info file archives	Roach	continuing	task	
Maintain listings	Dratel (Kelley)	continuing	task	

TASK DESCRIPTION	PERSONNEL	START	FINISH										CHANGES/STATUS
Crash Analysis	Rakip (Jordan)	continuing task											
Hardcore Installations	Rakip (Jordan)	continuing task											
Operator Interface	Jordan (Roach)	continuing task											
Maintain Hardcore Cross References	Jordan Rakip	continuing task											

PROJECT Multics System Maintenance and Assurance   DATE January 7, 1974

TASK AREA   User Interface

TASK DESCRIPTION	PERSONNEL	START	FINISH	CHANGES/STATUS
Consulting	All	continuing task		
MPRF Handling	All	continuing task		
MMTU Handling	Spall	continuing task		

TASK AREA Library Maintenance Programming Support

TASK DESCRIPTION	PERSONNEL	START	FINISH	CHANGES/STATUS
Maintain and improve library submission tests.	Scherer	continuing task		
convert cross references to v2.	Scherer	4/15/73		Shelved for lack of time
Upgrade all online installation tool exec coms for the 6180 and install in the libraries and document them.	Scherer	3/26/73		
Modify generate MST and check MST to recover gracefully when unable to mount a tape	Rakip			Project shelved by MCR board
Modify the hardcore updater to cease using CACL's and to maintain a seg-system data base	Jordan	10/25/73	11/12/73	Installed
		10/25/73	11/12/73	
Upgrade update include and cleanup to eliminate MSL, etc., and to bring them up to standards	Scherer	10/22/73	11/2/73	Installed
		10/22/73	11/2/73	
Modify approved routines to reflect recent library changes	Scherer	11/20/73	11/2/73	Installed
		11/20/73	12/15/73	

PROJECT Multics System Maintenance and Assurance   DATE January 7, 1974

TASK AREA   Programming Support

TASK DESCRIPTION	PERSONNEL	START	FINISH	CHANGES/STATUS
Update development reload.ec and system test exec_coms	Jordan	continuing	task	
Look into compare_source_statement as replacement for cpa.				Compare pl1 source statements ignoring differences in comments and formatting –
Design and implement an online system for registering modules being worked on, etc.				Proposal submitted to Gintell. Here is has man-power
Look into the possibility of maintaining a module change history log.				May be part of sign out log project
Look into the possibility of making the source libraries generally accessable to users.				

TASK DESCRIPTION	PERSONNEL	START	FINISH	M-M	CHANGES-STATUS
library_info (li): code, document command which replaces msl_info (HIGH)	Dixon	10/05/73	10/30/73	1.5	add options to command
library_map (lm): code, document command which replaces (HIGH)	Dixon	05/25/73 06/30/73	06/25/73 01/30/74	3	add options to command
msl_global_format (HIGH) library_print (lpr): code, document command which prints groups of library segments (HIGH)	Dixon	03/10/73 10/02/73	04/01/73 01/30/74	1 2	prints segments now; make it print archive components, chase links, print MSFs, etc
library_descriptor (ld): code, document the library descriptor data base compiler	Dixon	12/15/73	01/10/74	2.0	lexer done; semantic analyzer underway
multics_libraries_: recode to use tables generated by library_descriptor_compiler	Dixon	01/10/74	01/15/74	.5	
library_brief_map (lbm): code, document replacement for Roach's segment_list (MEDIUM)	Dixon	12/07/73	12/30/73 02/15/74	.5	
li/lm: get and output ACLS, initial ACLS, extra status (MEDIUM)	Dixon	12/15/73	12/30/73 02/15/74	1.5	
li/lm/lpr: add sorting options to commands (LOW)	Dixon	01/01/74	01/15/74 02/15/74	.5	
lm/lpr: gather and output statistics on library segments (LOW)	Dixon	01/15/74	01/30/74 02/30/74	1.5	
library_search_rules (lsr): code, document command which lists directories searched by li/lm/lpr for a given library (LOW)	Dixon	01/15/74	01/30/74 02/30/74	1.5	
library_get (lgt): rewrite gls to use library descriptor				2	

TASK DESCRIPTION	PERSONNEL	START	FINISH	M-M	BUDGET-STATUS
library_cleanup (lcln): clean up the code; use library descriptor				1.5	
library_object_cref (loc): rewrite cross_reference to use library descriptor				2.5	
library_include_cref (lic): rewrite lcref to use library descriptor & source maps in standard obj segs				2	

TASK DESCRIPTION	PERSONNEL	START	FINISH	M-M	CHANGED-STATUS
MTB describing MTS and its future plans (i.e. changes/documentation)	Kelley		12/21/73		* done
update_seg: SPS command documentation	Kelley		12/21/73		* done
update_seg: enhance automatic documentation (MCR 189)	Kelley	01/02/74 01/02/74	01/25/74		progressing
update_seg: remove "a" access mode references from MIS (MCR 224)	Kelley	12/26/73	12/28/73		ambitious hardcore changes
MTB describing documentation format for MIS	Kelley				not started
update_seg: Increase size of online installations (MCR 188)	Kelley				not started