THE MULTI-TASKER
The Newsletter of the RSX-11/IAS Special Interest Group

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Letters and articles for publication are requested from members of the SIG. They may include helpful hints, inquiries to other users, reports on SIG business, summaries of SPR's submitted to Digital or other information for the members of RSX-11/IAS SIG.

All contributions should be "camera-ready copy" e.g. sharp black type in a 160x240 mm area (8 1/2" x 11" paper with 1" margins) and should not include xerox copies. If you use RUNOFF to prepare your contribution the following parameters have been found to be satisfactory:

.PAPER SIZE 60,80 .LEFT MARGIN 8 .RIGHT MARGIN 72 .SPACING 1

These parameters assume output on a lineprinter with a pitch of 10 char/inch. Adjust the parameters to maintain the same margins if another pitch is used.

The transcription of the RSX-11M Question and Answer Session at the 1980 Spring DECUS was prepared by Wayne R. Graves, Siemens Gammasonics, Inc.

This is the final issue of the Multi-tasker prepared by me.

It has been an enjoyable few years editing this newsletter and getting acquainted with many of you.

I will be continuing to use PDP-11 computer at work but my major operating system will now be UNIX.

Ralph Stamerjohn will be taking over from me at the San Diego Symposium. I hope he gets as much enjoyment out of editing the Multi-tasker as I have.

*Trademark Bell Laboratories

Mike Blake-Knox
Editor

A Transcription of the RSX-11M Question and Answer Session Held at the 1980 Spring DECUS Symposium in Chicago

1. When will Logic Manual for RSX-11MV3.2 be available?

No new manual. The next Logic Manual will not appear until 4.0.

2. The FORTRAN request directive does not return the IDS under RSX-11M Version 3.2 System. I would like to know whether you are aware of this and whether anybody else has encountered this problem.

Nobody else has had this problem--maybe you are having some other type of problem.

Counter Answer: I have the documentation with me to show.

Answer: Bring it.

3. What is the status of supervisor mode FORTRAN IV plus libraries?

The problem exists because of pure and impure code sections. Negotiations are underway to resolve this, but no indications as to its resolution are yet available.

4. CTRL-Z (EOF) in respond to a FORTRAN-IV Plus and FORTRAN IV read statement.

Was a BUG under 3.1; how it works now is poorly documented. The way it works in 3.2 is "correct".

5. We need "virtual common" as well as virtual arrays in F4P, as well as improved documentation.

There were 2 ways to implement virtual: (a) map to arrays (b) map to common. Partially due to the VAX implementation, the map to arrays was chosen. Unknown whether the other option will be implemented.

Documentation will improve.

6. Let slave tasks (specifically DBMS-11) run under RSX-11M+ Batch.

Substantial exec data structures required--promised in next release of 11M+.

7. Now can I modify RMDEMO to make it smaller? For example, to get rid of the Internal Buffer space to write to on LA36.

Reduce size of ext to 24K, also see next issue of the multi-tasker. Jim Downward also has a small version of RMDEMO on the San Diego 1979 SIG tape.

8. When will RSX-11M V4.0 be released? When a program accessing a magtape is aborted, the program is not actually aborted until the end of file is reached on tape. Will this be fixed on V4.0 so that the program aborts instantaneously and the tape is left where it is?

Don't know when V4.0 will be released. Can't be done, hard to take it offline.

9. I have an 11/34 with dual RK06 and full memory, I gened in the FCPRO2 disk handler and have a resident FCS library. Purging files with PIP is slow when there are several terminals running. There is no swapping and when RMD is used it shows IDLE for a significant fraction of the running time. What have I done wrong? There are 1000 files in the directory that are being purged.

Too many files in directory--cut down number directory entries! Try to have a directory no bigger than 8 blocks.

10. Print spooler to LP-11J printer. If printer is off-line, simply ejects form when placed online.

See March '79 Dispatch for a fix to this bug.

11. Re: Que Manager. Is it possible to eliminate the job page, and what happened to the blank page after the flag page?

No, and No.

12. I have submitted 2 SPR's on FORTRAN IV V2.2-5, all of which were done in the last 60 days, all of which were

answered with, It'll be fixed in the next release. When??

None given.

13. I have an LSI-11/23 and want to use a DZV-11 with RSX-11M. How do I do this since a DZ-11 is 8 lines and a DZV-11 is 4 lines?

Answer 4 to sysgen question concerning how many lines does DZ-11 have?

14. We're running V3.2 of RSX-11M and we use a common data area to transfer data between several tasks. Occasionally, part of this common region is overlayed by part of a task label block. In addition, the label block is totally reversed in memory. Since our system contains a lot of user-written drivers and privileged tasks, we think it is probably our problem, but we don't know where to start to solve it. What parts of RSX reference the task label block, and is it kept in memory while a task is installed?

Meet in campground.

15. I recently upgraded from M3.2 to M-PLUS. For the most part I find M-PLUS a good system. The M-PLUS batch processor (BAPO) will abort if a non-privileged user submits a job with an UIC on the $JOB line which is different from his login UIC. I contacted another M+ user who had also had the problem and SPR'ed it, got a response, and mailed it to me. The patch applied O.K., but the resulting BAP task would not run at all; it simply gave a syntax error message. As of the April Software Dispatch, there have been no SPR's published against M+ at all. Why is this, and is there a known solution to the batch crashing problem? Also, the parameter doesn't seem to work right.

DEC didn't know. See them in the campground.

16. I have RSX-11M PLUS. This is the standard system. XDT does not work after the system has been saved (although it works before the system has been saved.) Are you aware of this problem?

This is not a general problem. It is my problem.

17. We're trying to use a loadable TT driver with a

loadable database for M+ system crashes when first character is typed. Any inherent problem?

Confer in campground.

18. Why does mount command unload the tape drive if a typo error is detected in MCR command line? If you're not fast on your feet, the tape drive unwinds all of the leader. This can be frustrating!

Send in an SPR!!

19. What is the relationship between 11M and IAS? Is IAS going to be dropped? Why 2 systems so similar? Performance of M+ vs. IAS for program development and real-time. How many installations of each? (M, M+, IAS).

About 10,000 M systems. About 1,000 M+ systems. Most development is going to M and M+; very little to IAS.

20. If we had sysgened TKTN we would be getting 500 pages/day of Aborted by Directive messages. Without it we are missing task terminations from serious errors. Is there any way to get the error terminations without the others?

TKTN will have to be patched.

21. Why does LPPO crash and develop LPO lockup after: 1) Form has been changed to 1, 2) print command spools a file specifying Form 1.

There is an article in the March dispatch that shows the proper method to change forms.

22. Of the system tasks, (MCR, TKTN, PRT, SHF, etc.) which ones operate with interrupts disabled?

None. They do a call to $SWSTK, but this runs a priority 0, all interrupts enabled.

23. Since the V3.2 version of full duplex driver attempts DMA transfers of DH11 what is the problem in supporting 19.2k baud CRT transfers? (I/O driver manual implies that it does not; there is no SET command).

There is a zap to the driver that would allow that, but

system won't be able to handle the load.

24. When will FLX support 9-track mag tape for RT-11?

To be looked into. Someone in audience says RT-11 will read standard ANSI-mag tape, but someone said they tried and it didn't work. It appears ASCII files can be read, but not OBJ files or SAV files.

25. Global User Event Flags are sometimes used by layered products. Hasp uses 33 and 34. The only documentation we found was in the program listing. What other layered products use these flags and could they please be documented?

Do not know the answer. Will try to find out. Comment that MVX200 uses 3 Global event flags, but the sysgen process asks which ones you want to use.

26. Problem: How do I run several versions of a spanable utility from a single terminal. Possible solution: Rename each version. Example: PIPT2A, PIPT2B, etc., Has this been considered?

1) Problem with abort; which task to cancel(?); also possible virtual terminal problem. 2) Baylug has a member who has implemented the solution above. You have to abort the specific task running by name...

27. On 11-M V3.2 multi-user system on an 11/60. A non-privileged user may print and delete a file in another user's account. Are you aware of this inadequacy? Can it be fixed?

Patch to be published soon.

28. Where can one obtain timing for various executive functions such as AST's and executing calls and response-to-interrupt-plus-return-to-user-task?

Check poster paper written by Jim Downward and displayed downstairs at this meeting.

29. What is the status of the 3.2 Master Index?

In production--out in a few weeks--should be distributed automatically.

30. Does DEC have any plans to implement autobaud for the terminal driver on RSX-11M V4 (or earlier)?

Mumble mumble working on it - not before V4. There are several user written versions of autobaud. Baylug has a working patch.

31. The /DL works in an ODL if co-trees are used. How do I use the /DL in an .0dl?

Try it later.

32. Could QMG be fixed so it stops coming back into core?

DEC - On wish list. USER - What about a patch to make it come back in less often? DEC - We'll talk about it.

33. BRU>/DIR generates Junk in Listing, otherwise seems O.K.

Yes, that is true! It doesn't hurt your files; it is cosmetic and doesn't really matter. (I assume it will be fixed.) DEC does not intend to publish a fix in the Software Dispatch.

34. I retask Built the Taskbuilder with the Floating Point Switch as default. I used this version of TKB to do a sysgen. ACS does an odd address trap. No problems using the original Taskbuilder.

Look into it. Maybe task is too big to be privileged.

35. I have an extensive, online real time and control system that consistently does breakthrough writes. It is 2-3 slower under 3.2 than 3.1 using full-duplex terminal driver. Why?

Confer in campground.

36. Will the stop bit directives ever be expanded to include global and group global event flags? (in RSX-11M).

Next release.

37. Can RMDEMO be set up to take an MCR command line? Could the command line then accept commands to select devices to be displayed (as in the option selection page)?

Modify build file (V3.2). Possibly a new feature in V4.0.

38. What can one do about the attachment of the line printer by LPPO, when queue manager is running; problem is that one can't send anything directly to the devise as long as it's spooled.

Phase III Decnet supports remote spooling through queue manager. Jim Downward says new patch on 1980 Chicago SIG tape fixes the problem by getting the LPPO task to attach when printing is to be done, detach after it's finished.

39. What does >SET /BUF do with DBDRV? I did: >SET /BUF= DB: 1024. (Default=1024) and resulted in LOGIN.TXT read problem. Also, file being edited was lost.

Has to do with FCS buffer size not checked for compatibility with device buffer size. This is unpleasant...tough.

40. Have past bugs in doing asynch FCS operations under M3.2 or M+ been fixed?

They will check with the developer and try to find out what has been done.

41. Under 3.2 the half duplex DZ TT driver, dial up lines intermittently crash the system when the line disconnects.

(No answer given.)

42. How do I change the size of the Flag Page for my electrostatic printer? Was in PRT command file for RSX-11M V3.2.

Size on Forms Length switch in next release, possibly a patch.

43. How can I initiate an indirect command file or an MCR command such as SET/LOGFILE at a periodic interval such as 24 hours.?

Run a task which will spawn MCR and pass a command line to MCR.

44. BRU improperly handles large files > 30,000 blocks.

The proper handling of large files is being worked on. /EXCLUDE file, file, UIC is coming.

45. Re: KMC support of printer. What is proper timing for various printers, and why doesn't directory from PIP print correctly? Also, ODT list halts printing.

Doesn't make much difference, uses 50 microseconds per count and 900 LPM should be 0 or 1, slower printers 4 or 5. Lessens Unibus load. - PIP fix on autopatch. - Look into ODT - send SPR.

46. A create region directive on RSX-11M V3.2 (11/70 256k words) can create a region that reaches below the beginning of GEN. I have a crash dump showing the start of the region in the pool. An SPR is being submitted. A friend submitted one on the identical problem last fall - no response.

A patch is in the print cycle.

47. For the V3.2 print spooler: Is it possible to optionally use the manually-specified deletion specification (/DEL or/-DEL) within the usersupplied deletion determination ($DELCK) module?

Can't do it now, but sounds like a good idea. Maybe someday...

48. RSX-11M V3.2. Sysgened in RX02 as DOUBLE density. Can use floppy equivalent of tape 'STC' to set to SINGLE but can't send back to Double. I used a simple QIO call with one parameter.

Won't set to double if a single density floppy in unit. FMT utility will set device density. The driver senses the density of the floppy diskette and will ignore the QIO calls to set density.

49. On a heavily loaded system INS FOO, FIX FOO (not enough room), RUN FOO (task active), ABO FOO (task not active), UNFIX FOO (no response), REM FOO, system crash - this crashes both 3.1 and 3.2 system.

This problem has been SPRed, a fix has not been worked out yet.

50. Would it be possible to have the attaching of an inactive spooled line printer be an installation option for both M and M-Plus? We ran several electrostatic printer/plotters, and in order to do plotting on the device, we need to shut down the queue manager for that device, which makes managing a multi-user system a real pain.

Possible under M, not possible under M-PLUS. Have to make graphics tasks run under the Queue Manager.

51. BRU crashes system whenever it rewinds a TU10 or an 11/60, but works O.K. with TE16 on 11/70. Is there a patch?

3.1.2.1 Sep.'79 Software Dispatch article to MTDRV.

52. This might be a documentation question. The $LOCKL and $UNLKL subroutine present in V3.1 and V3.2 MCRDIS module are no longer called by the MCRDIS module in RSX-11M+ V1.0. We have a need for a dispatcher by our own and use MCRDIS and I need to know whether to call $LOCKL myself.

The answer is that $LOCKL is not good enough and it is necessary to call $SWSTK. $LOCKL will disappear in the next release. The answer was not clear whether this applies to 11M or to 11m+.

53. Why does STLOR work only for <u>local</u> event flags?

Already answered on 36.

54. Why does a utility task spool function (from MAC) interface not delete files upon completion as in V3.1

```
          /SP
               PIP Filename.EXT/SP
               MAC OBJ,LIST/SP=Source
```

Add $DELETE routine with a

```
               BCS
               RETURN
```

to allow files to delete automatically.

55. Is there any way to change your system disk on the fly on M+? (Shadow is unacceptable due to lack of write errors reported to task).

No, not that they will tell us about. But maybe the Shadow Error Task will help us.

56. How can a program put out QIO reads (without checkpointing) to two terminals, then checkpoint until input from either terminal is received? (11M V3.2, full-duplex driver; QIO from Fortran IV Plus Program).

Can attach with type-ahead (but may not handle control-C correctly).

57. RMDEMO does not show "up time" on our V3.2 system. Source code seems to conditionalize out the code.

Will consider putting code back like it was under V3.1 or add code to get actual system uptime like M+. On 11M V3.1 it did not show system "up time", it showed the "up time" of the RMDEMO program.

58. RSX-11M is designed to have real time support. Time spent at system state affects RSX-11M real time performance. Can DEC supply a list of tasks which use system state and their %time at this state? As a corrollary, how can one temporarily inhibit the shuffler from loading?

All privileged tasks distributed by DEC may be assumed to use system state. The relative amount of time for individual tasks is not known. There appears to be no way to inhibit shuffler except by removing it and later installing it. Probably best by using spawn directives to MCR.

59. PDP-11/34, RSX-11M V.3.2, FDX TT driver, DH-11 8KW driver, single user system, 4200 byte pool available. When read with prompt interrupted by C, terminal driver hands 60% of the time. (hang=> echoes ctrl-U on all input attempts).

Submit an SPR and confer with expert in campground.

60. After outputting to LP: from DMP, subsequent attempts to dump to TI: fail with message LUN LOCKED IN USE. Why? Is a fix available?

DEC will look into the problem. Suggest submitting SPR, also.

61. In regards to a FLX DOS formatted binary to Files 11

transfer--why does the FD.CR attribute bit get set? (RSX 3.2)

This bit will not get set in image mode. (Some concern was shown for the file extensions which are normally numeric). The /FB switch has no effect. REACTION - We'll look into it!!

62. Under 3.1. We are trying to use one of our 2 DZ11's (known to the system) to capute data at 2400 baud. We have hopefully disabled the interrupts for that DZ11. We are only getting about half of the data. We are doing physical I/O to DZ11. We were able to get all the data using a DL11-E, not known to the system, using physical I/O. Is the system doing something to us?

The DZ11 is getting polled once a second by the terminal driver and is probably resetting some bits in the CSR. See about how to do this properly in campground.

63. One-half duplex terminal driver in"read special terminators" (mode) will not "see" escape sequences generated by VT100 cursor keys. This makes it impossible to use VT100 in a "FORMS" Mode without resorting to single char QIO's. Any recognition of this problem?

DEC things it is possible in VT52 mode. I remain skeptical--will check.

64. On 3.2 clock que displays shows dozens of lines of real tasks, unreal tasks, and complete garbage--why? Will this cause any problems if we just ignore it?

Problem appears when there's nothing in que patch published(?) (Brian McCarthy).

65. Will future releases of 11M address the problem of setting number of lines per page for the line printer? Changing paper requires that one retask build Fortran, MAC, TKB, etc. There needs to be a place to declare paper size which is valid system wide.

To be submitted to Menu for voting by user community at large.

66. We are running V3.2 with user S/W development using Decnet, Pascal and Basic on the system. The system clock

stops for random periods of time. Any ideas why?

Kick it--possible hardware problem. Several users said their 11/34 clocks also stopped every once in a while. When DL 11-W used for clock.

67. I have experienced an old taskbuilder problem with the fast taskbuilder. Apparently, FTB does P-Section Alignment incorrectly. In partiulcar, the symptom is that Fortran V2.2 tasks with literal strings fail to run when FTB'ed, but runs OK when TKB'ed. Failure is with an odd address trap with PC at an odd address. Apparently, an odd length P-section ahead of the code which fails causes the following P-section stuff to be byte-bridged.

FTB Buy--I will submit on S.P.R., sometimes deletes object files, traps out.

68. How can you bring up DECNET with a 16K exec and have enough pool?

Probably requires 20K exec, but ask the DECNET people. DECNET uses a lot of pool.

69. We have a Gould Electrostatic Program which cannot withstand a high interrupt latency. Under 3.2 we have noticed problems when doing terminal I/O. Does the new TT-Driver work at PRI=7 more than the old driver?

The terminal driver does nothing at PRI=7.

70. Explain SHF...algorithm...do not tasks cycle through memory (checkpointed from low address, shuffled down, read it at high address)?

First pass checkpoints left to right--problem might exist--SHF is being reevaluated for next release.

71. Why does LBR under 3.2 complain about a comma between a Macro name and the first dummy argument while the assembler doesn't.

A patch has been issued.

72. Could auto-baud selection be added to the full-duplex terminal driver.

Under consideration.

73. In 3.1 or 3.2, using DZ's and DH's does DSR DTR drop on signoff, or can it drop on signoff. We plan on using a smart Gandolf PACX.

This question was not asked, the user had to leave.

74. Task spawning is of limited value due to name conflicts. Why cannot 11M use the TI as part of the name the same as in 11D? Spawning via MCR is not always a satisfactory solution.

Due to many executive changes required, this is unlikely to occur. Observation most name searches are through a subroutine search. It may be easier than you think!

Supplementary Comment: Can 11M resources be devoted to improving realtime activities.

75. BRU fails to restore RMS files properly. Bucket size is lost somewhere in Backup - Restore process leaving RMS file unusable.

February Software Dispatch contains patch.

76. Would like to specify TI on run command RUN FOO/term = TTn.

DEC will look into it. Look into Decus tapes for FRC.

77. (a) How do we eliminate checkpointing on terminal output feature in the terminal driver on an RSX-11M+ system? (b) When spooling output to an LP14 and the last line is not terminated by a carriage control character, the line is not printed, why?

1. Fixed in next release.
2. Do not declare the LP14 to be "Fast" in SYSGEN.

78. Does the RXS11M V3.2 FDX terminal driver discard characters received from a line before a previous character is completely processed (e.g. V3.1 code at ICHAR). Is D4 SILO used?

All input character processing up to loading into typehead buffer is done at device priority.

79. As there is no write lock on a floppy drives, could you supply a software write lock?

Yes, next version.

80. There is an apparant incompatability between the half and full duplex TTDRV. A "read-all" QIO with echo works properly in the half duplex driver, however, the full duplex driver does not echo all bits. For example: (1) Tab, 11(8), echo's as multiple spaces, (2) FF 14(8) echoes as multiple line-feeds.

DEC has not been able to reproduce this problem. Future documentation and discussion will be necessary.

81. When a task with a name of the form...xxx is run from MCR, its name may be...xxx or xxxTnn. Could the name always be xxxTnn as an option to facilitate intertask communication?

Will be put on wish list.

82. What are the impliations of dequeuing disk I/O requests in order of proximity to current head position particularly with respect to complexity and performance of a busy system.

Being looked at for M+, to provide an alternative queue order selectable on a per unit basis. This has already been done for IAS.

83. (a) How do you stop a print job that has multiple copies? (b) STOP/PROC LPPO/ABORT moves next job up in the queue, (c) START/PROC LPPO resumes printing of previous job (on next copy).

Previously published patched concerning start/proc LPPO/NEXT corrects the problem.

84. ABRT$ directive returns IS.SUC, but the aborted task does not go away until the task issuing the ABRT$ exits.

ABRT$ directive requires pool to abort a task. Our application only attempts to abort tasks when pool is critically low. Thus, the ABRT$ shows successful completion even though pool is not available to abort the task. But when the task issuing the ABRT$ exits sufficient pool becomes available to finish the abort of the desired task.

85. RSX-11M V3.2 FDX TT: Driver does not seem to use its private pool. Is this true? Can this pool be shown say on RMDEMO?

Yes it does! However, system pool is used for the I/O packet.

86. With respect to Creation/Revision date selection using BRU (and PIP in V 4.0); (1) Documentation is confusing, implies "on" capability, (2) Please include "on this date".

"On this date" is difficult due to time compare; combination of "before"...and "after" will be considered as wish list item.

87. Are there any plans to use the hardware separate I & D space capability for 11M? Any plans to share utility I-space or M or M+?

Had to leave, question was not asked.

88. What is the ENCRPT subroutine defined in ACNTBLD and HELBLD.

USER supplies the subroutine.

89. In CDA we have seen various undefined AST types, what are they?

(a) Undefined AST type seems to be due to CDA problem.
(b) Second AST (T.IAST) used for specified AST.

90. Any plans to support the COM IOP-DZ, KMC11 and DZ-11 with a driver in future versions?

Possibly in the next version; full duplex driver probably.

91. The full duplex terminal driver supports HFILL & VFILL which make unbuffered hardcopy terminals work nicely (i.e., no character loss on linefeed, carriage return) with the exception of EDT sessions. Why does EDT have to maintain its own set of terminal characteristics and is there a way of making EDT successfully work with a terminal that requires VFILL and/or HFILL?

No answer. Confer in the campground.

92. I currently must endure the slow task builder. At San Diego, I was told improvements to TKB were being considered that would increase the size of the work file. What is the status of such efforts?

Still looking at it, but is not too hard.

93. When MCR... is spawned with a command that causes another task to be made active, MCR dinks around with OCB pointers so that MCR's parent task becomes the parent of the task that MCR activated. Can a task such as CA. be made to do the same thing with a task that it in turn spawns.

Possibility of new M+ CHAIN directive being put in next version of 11M. Or specify AST in spawn directive in CA.

94. During an attempted restore by BRU, file headers got written in blocks 0, 1, 2, 3, 4 of system disk. What happened? How about multiple home blocks at 1,400, 1000, etc.?

Virtual block numbers somehow became logical block numbers. There is a patch out. Secondary home blocks would likely cause no problems.

95. Request that DEC print in the Dispatch Source checksums for all SLP patches, future and historical.

DEC does not publish the checksums, because in the past too many errors occurred in the checksums. Not acceptable answer. The discussion and question expanded to a general discussion of SPR problems. Yes, there are SPR problems, but please (1) Do what is quick and easy to do in 1 extra line per published patch. (2) Please, somebody publish the checksums for past patches to give me some assurance there is not an unknown bug lurking in the system.

96. Could you make IO.ATT and IO.DET return an error instead of queuing the request.

Had to leave, question not asked at the session.

97. RM02 disks on 3.2 using CDC disk packs (9877FF)-- I am unable to convince FMT to format these and use mfg-bad block. ZRMA diagnostic works (it will give 5 errors on mfg bad block, the first time).

FMT doesn't write last track currently, send in SPR and fix will be published.

98. Is it possible to set a terminal such that all special characters are ignored, i.e., something akin to SET/SLAVE which ignores ctrl-S, ctrl-0, ctrl-C, ctrl-X?

Set /RPA will solve the problem if the full duplex driver is used. If the half duplex driver is used, a "BRO" will clear the ctrl-S/ctrl-Q state.

99. Microprocessor-based controllers, non-DEC and possibly future DEC are getting I/0 blocks out of memory via NPR's, may not move the entire thing in one multiword NRP - what is the impact on RSX potential synchronization problems?

No problem doing it, have to keep the I/0 packet somewhere that is mapped. The TS11 controller already does this.

100. What is the prospect of getting either an RMS ACP or being able to build RMS in a supervisor mode library?

Since the largest RMS customer base are RSTS users and RSTS does not support either ACP's or supervisor mode libraries, DEC will attempt to find another solution to the problem.

101. When V3.2 runs out of pool, RMS files can become inaccessible, must copyfile to access it again.

Need to preallocate a bigger contiguous file to eliminate problems with window changing in system. Patch is coming to help.

102. Why is RMS-11 distributed with RSX-11M V3.2 instead of RMS-11K. RMS-11 is the same (functionally) as FCS.

Looking into the problem for next release.

103. I get the idea that most of the new development is going into 11M+ and I appreciate some of the new features. For instance, someone put considerable effort into checkpointable commons in RSX11M+ and they work. But with 11/70's, it is easy to add memory. What I would like to see is memory paving tricks, such as checkpointable commons added to V4 of ordinary RSX-11M. We have a big investment in

11/34's and would like to get more mileage out of them. I think that ordinary RSX-11M is being abandoned. I would like to second Colin Mercer's statement about adding bells and whistles.

They are putting directive-common options in ordinary RSX-11M.

104. Closing a file with truncate. (.TRNCL) requires write access to the file. If the file was opened with read access only, then in V3.1 the subroutine returned with C bit set. For V3.2, the task hangs with the PC re-pointed to the issuing QIO.

It is believed that a patch is available. It will be published.

105. Pool space on our 3.2 system appears to degrade with time. We've observed SET/COTERM...SET/NOCOTERN does not restore the pool space. We're not sure that this is the only source of the problem. (An SPR has been submitted.)

Observed; patch in progress.

106. Is specify DH11 as terminal driver for 11M, will it NPR a full write request?

DH will only NPR ≤ 36 bytes (term. buffer size) at a time. Has to do with multiple NRP's if >36 bytes.

107. Can you make SYSGEN a SYSGEN option? When reassembling single EXEC modules, SYSGEN should not be necessary; just TKB's of system and privileged tasks.

Will look into it for Autopatch.

108. Output files should not be generated on illegal checksums for PAT and SLP.

Will be looked at.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

OFFICE OF EARTHQUAKE STUDIES
Branch of Ground Motion and Faulting
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September 11, 1980

Below are some quickies and hidden gotchas we have found on our system (RSX-11M V3.2):

(1) To improve system performance, we REAssign work files for heavily used system utilities to a disk other than the system disk. After ASNing the target disk to WK:, we run the following command file, LB:[1,2]REASSIGN.CMD, as part of our startup procedure:

```
REA ...MAC 8. WK:     ! Big Macro Assembler
REA ...TKB 8. WK:     ! Big Task Builder
REA ...STB 8. WK:     ! Slow Task Builder
REA CRF... 7. WK:     ! Cross Reference Generator
REA ...F4P 6. WK:     ! Fortran IV-Plus
REA ...F4P 7. WK:     ! Fortran IV-Plus
REA ...F4P 8. WK:     ! Fortran IV-Plus
REA ...LBR 7. WK:     ! Librarian
```

(2) Beware: Users of FORTRAN IV/IV-PLUS Virtual Arrays--If you want to link your program to FCSRES, you must specify an APR register other than 7 (the default) in your task build command file, e.g., LIBR=FCSRES:RO:6. The Fortran run-time system dynamically re-maps APR 7 over your Virtual Arrays, causing strange behavior if you don't force FCSRES to another APR register. By the way Fortran programs that use Virtual arrays are limited to 28K Words for the same reason. So if TKB built your program without complaint, but it bombs out during OTS initialization, check the task size in the map file--its probably too big. (TKB does not complain because it is perfectly legal to build a 32KW task with additional VSECTs for dynamic re-mapping at run-time using the PLAS directives manually.)

(3) There is a very serious BUG in DRQIO that causes an incorrect mapping of IO.RVBs to IO.WLBs! If you include any subfunction bits along with IO.RVB (say, to the terminal driver), then the executive mapping to IO.RLB fails because it assumes the subfunction bits are all zeros when it checks for IO.RVB. If they are non-zero, the comparison fails and an IO.WLB is issued (without passing along the subfunction bits). A correction is forthcoming in a Software Dispatch, but since its a one-liner, here it is (for [11,10]DRQIO.MAC):

```
-563,563,/;MSH109/
     CMPB   #IO.RVB/256.,1(SP)     ;READ VIRTUAL FUNCTION?
```

(4) Another bug to watch out for that has a fix coming occurs when it is necessary to extend the index file on a system that supports the ACP optimizations to map the entire index file at MOUnt time--File-11 ACP trips over itself on the way back from performing the extend/window turn and crashes the machine. All disk structures are fine, but its still a bit unnerving. The problem can be avoided by using BRU to increase the size of the index file on a restore operation, if you know how close you are to running out of free headers. (I should note that this has only happened to us on disks that have lots of files, e.g. 5-7 thousand, and probably will never be seen at most installations.)

(5) Beware: The Terminal Independent Cursor Control feature of the new full duplex terminal driver is automatically activated if the high order byte of the vertical format control parameter is non-null. In systems without this feature (e.g. V3.1), the high byte was simply ignored. We had several programs that worked under 3.1 go haywire when they performed terminal I/O under 3.2 because they left whatever happened to be there in the high byte when loading the low byte of the Vfc parameter. (See section 2.15 of the I/O Drivers Reference Manual.)

(6) I recently stumbled on a very easy way to create fixed, blocked format ANSI mag-tapes for export from standard, variable length record files. PIP will automatically use ANSI "F" format if the disk file being written has fixed length records, so the trick is to perform the conversion from variable to fixed length record files on the disk as an intermediate step. DEC has given us a utility on the system that, with a few warnings, can perform the conversion just fine--FLX. By using the /FA switch with the desired record length (e.g., 80 for card image files), one can "convert" an RSX file to an RSX file (/RS/FA:n=/RS). The problem is that FLX will not allow a file specification on the output side, thus overwriting the input file if you try the conversion in place. This can be avoided by using a temporary, empty directory for these intermediate files, and specifying the full file name on the input side from another directory (/RS/FA:n=[g,m]/RS). You can then PIP these files to tape (with an appropriate block size) and delete them all when done. (For those of you that don't know it, IBM Fortran programs cannot process ANSI "D" format tapes, but only "F" format tapes. With release 3.0 of F4P, DEC Fortran programs can process either format for input and output.)

(7) Another little item I stumbled across while reading the F4P User's Guide was this mysterious run-time error #98.--User requested traceback. I have often wished such a feature existed as a user callable routine, but there was no indication in the manual of how one gets error #98. Well, the OTS manual tells us that errors are reported using the TRAP instruction with 128. plus the error number as its operand, so I assumed that all that was required was a two line subroutine consisting of a TRAP 128.+98. and a RETURN. Lo and behold, it works! Below is the entire USRTRC routine to generate a user traceback from Fortran:

```
            .TITLE    USRTRC
            .IDENT    /V1.0/
USRTRC::
            TRAP      128.+98.      ;Generate traceback
            RETURN                  ;(OTS Error #98.)

            .END
```


(I assume it will also work for FOR, but I do not have the manuals to check it out.)

(8) An undocumented (and, of course, unsupported) nifty item for F4P users: you may initialize variables in a DATA statement with hexadecimal constants by prefixing the constant with a "Z" (just like "O" for octal). Unfortunately, I could not get any form of a Z format specifier to work in an I/O statement to perform hexadecimal output conversion.

Enjoy,

Larry Baker

TECHNISCHE HOGESCHOOL DELFT

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Dear reader,

as every member of the active RSX-11M family knows, DEC has never satisfactory answered the demand for DCL, and doesn't seem to meet the requirements of the user community in a short time.

The need for a user-friendly operating language has encouraged some system managers and programmers to design their own software interface between the user and the RSX system utilities. James Downward did a good job in releasing CCL through the MYSKIT enhancements. CCL consists of a MACRO written task which gets all commands not acceptable for MCR and tries to match these commands with definitions stored on disk. Both system- and user-tables are known to CCL. CCL makes use of the undocumented feature of RSX-11M that MCR tries to pass all undecodable commands to a task installed as ...CA. , the Catch All task. Herein we can find the explanation for the message MCR--TASK NOT IN SYSTEM most users get when typing an illegal command: ...CA. is not present and can't be started! The implementing of a Catch All task is a straightforward business: no SYSGEN is needed, only install a task as ...CA. and the thing will work!

Although CCL works as a charm, there are a couple of nasty features. As the command tables are stored on disk, some time will be involved in decoding commands, especially when

the disks are heavily loaded. Adding internal commands to the CCI task involves on the other hand too much work in assembly language coding.

To improve the performance of the Catch All task, we wrote CCI (the name was chosen to reflect the name of the original task ?!). We wrote it as a FORTRAN program (could be assembler also) which tries to convert user commands to meaningful RSX equivalents. The syntax is like DCL, except for the switches, which are not allowed. All commands are coded in a memory resident table, saving core space whenever more than one CCI is active at one time. The contents of the table can be altered in-line. Each command is processed similarly. if filespecs are needed, CCI will ask for them, so:

```
DIR             converts to     PIP /LI
TYPE FILE.TXT       "       "   PIP TI:=FILE.TXT
COPY A.DAT B.DAT    "       "   PIP B.DAT=A.DAT
REN A.OLD A.NEW     "       "   PIP A.NEW/RE=A.OLD
FOR PROG            "       "   FTN PROG=PROG
```

(we had to change the name of the compiler to ...FTN to prevent MCR from decoding (badly) the command before ...CA. gets it). if you type only TYPE, CCI will ask you for the filespec with the question FILES? . As we support no DCL switches and some special features exist under RSX, new commands were introduced:

```
DIR/FREE        supported as    FREE
PIP *.*/PU          "       "   PURGE *.*
```

The user command is transformed to an RSX command with the help of 7 basic definitions per command:
- user command name (? chars)
- system task to be started (3 chars)
- output filespec needed?
- output switch needed?
- separator ("=") needed?
- input filespec needed?
- input switch needed?

In this way 5 types of commands can be defined:
- one filespec can be given though not necessary: e.g. DIR
- one filespec is necessary: e.g. TYP
- one filespec is necessary, both input filespec and output filespec have to be generated: e.g. PIP
- two filespecs are needed: e.g. COP
- start indirect command file from IP1:[1,5]:

```
LINK        becomes     @IP1:[1,5]CCILIN

EXECUTE         "       @IP1:[1,5]CCIEXE
```

The last type of commands is implemented for difficult command line processing.

Possibly this description of our solution gives the community new and better ideas. possibly someone has already a 'real' DCL working. Possibly you are interested to hear more about our solution. In each case, please contact me.

As to the question of James Downward in the August Multitasker about users having implemented the RMSKIT enhancements, especially the accounting stuff, we did it in our first CEN after the 3.2 release and are still using the same system. We are even so charmed by the power of the enhancements, that we refuse to use our freshly patched 'real DEC system' because of the lack of possibilities. I believe we will only be satisfied when DEC is going to support most of the RMSKIT features and a lot more. As for the reporting tasks, we use only the system info stored in SYSLOG.DAT (CPU usage, QIO's, checkpoint req., shf. req., pool fragmentation, logins/logouts, memory utilisation) to monitor from time to time the working of our system (11/60, 124K, FPP, DF:, 3*DK:, 2*DY:, 7*TT:, LP:, colour displays and AD/DA through own fast parallel I/O system, coupled 11/03's through own simple network software, activities: computer aided design of control structures, real time control, program development for RSX, RT11, M6800 and M6809 systems, text processing). We need only the data to be presented in a neat form, with info on startup and shutdown. The user data in RSX11.SYS (account file) is used for monitoring of user disk space usage and to get an idea of CPU and terminal time needs for special classes of users. No trace-back accounting is done.

In reading SYSLOG.DAT, slight changes have been implemented to the original CPUREP.FTN, the report task. The output is now spooled to printer, two passes are made (one for CPU statistics, one for memory figures), and the file is read SHARED. If you don't do this, you will from time to time have an empty account file, due to the fact that LOGTSK (the data-logger) writes from time to time info to the file, possibly when CPUREP is reading it. Make the writing action of LOGTSK SHARED also.

Finally something about text processing. Many fans of TECO should exist by this time. If they are still running TECO V28 (sources somewhere on the 11M distribution), they will notice it works hardly with VTEDIT.TEC and VT52.TEC. DEC confirms problems exist with old releases of TECO. This is a pity, as TECO is really smart! Try to get TECO V35 from a Digital center or anywhere else. If you don't have any succes, try to get it from a VAX, as we did: the task image will run as a charm (dont't put your VT100 in 'auto XON/XOFF' nor 'soft scroll' mode). if you have both VT100 and VT52/55 terminals, you will often hit the wrong keys when using the VT52 macro, and you will get sick of the enormous possibilities of VTEDIT. Don't start crying: we have developed SCREDI.TEC, which defines a simple list of useful commands and related keys, and furthermore gives you features as: text preformatting while you are typing (stop entering <CR> at the end of each line, TECO will do it for you), real formatting like RUNOFF does, and a bucketfull more of usefull commands. If you're interested,contact us.

Good luck to you all!

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Sears

SIMPSONS-SEARS LIMITED

Sept 16 1980

STAND-ALONE BRU

For those of you who use BRU to backup your mapped 64kW+ RSX-11M system and would like to have a tape bootable stand-alone BRU, may I suggest the following simple solution:

```
>SET /UIC=[1,54]
>PIP BRU.SYS=RSX11M.TSK/BL:258.      ! Create 64kW system
>PIP BRU.STB=RSX11M.STB
>VMR
ENTER FILENAME: BRU
VMR>TIME 16-SEP-80          ! You can't do this after booting tape
VMR>SET /POOL=1000          ! Make sure you have enough pool
VMR>SET /MAIN=TTPAR:*:400:TASK ! Full duplex terminal driver par
VMR>LOA TT:
VMR>SET /MAIN=DRVPAR:*:*:SYS
VMR>LOA DB:                         ! Disk driver
VMR>LOA MM:                         ! Tape driver
VMR>SET /TOP=DRVPAR:-*              ! Shrink partition
VMR -- INSTALLED TASKS MAY NO LONGER FIT IN PARTITION
VMR>! Up to this point we are creating a normal RSX-11M SYSTEM.
VMR>! ... Now the following works for any non-overlayed task.
VMR>SET /MAIN=BRU:*:1777:TASK       ! Create partition for BRU
VMR>INS BRU/PAR=BRU/CKP=NO          ! Install BRU in partition
VMR>FIX ...BRU                      ! Put BRU in system image
VMR>RUN ...BRU                      ! Activate it
VMR>SET /SLAVE=TT:                  ! There is no MCR
VMR>SAV MM:BRU                      ! Write system out to tape
VMR>^Z
```

The above tape is now bootable and contains an active BRU. We created the above system using the RSX-11M 3.2 executive for a mapped PDP 11/40 system with 124.kW using the full duplex terminal driver. The tape produced ran on our 11/70's (in 18 bit addressing mode) as well as our PDP 11/40 systems.

Yours sincerely,

BRBooth

B.R.Booth
Lead Systems Programmer

LIBERTY MUTUAL

Research Center, 71 Frankland Road, Hopkinton, Massachusetts 01748 • Tel. (617) 435-3452

September 9, 1980

Dear Editor:

We found that FLX was corrupting our RT-11 disks. The enclosed SPR (#11-32559) is self-explanatory. In view of the fact that we have lost two or three RKØ5's full of programs and data due to this problem, it would seem worth warning Multi-Tasker readers about it. The response to the SPR came back more quickly than I am accustomed to, tempting me to conclude that this problem may have already been known, but not published. If that were true it would be most unfortunate, I think, considering the serious repercussions that result if it were not known. On the other hand, how could DEC and such a large user community have gone unaware of such a basic design error for so long?

Unfortunately, the only removable media on my RSX system is RKØ5 at the moment. If you need machine readable input I can do many odd things on other systems like write TOPS-10 DECtapes (with OS/8). At some point in the future I expect to get a magtape for the 11 that will improve the situation. For future reference, do you have any guidelines on acceptable machine readable media and formats available?

Very truly yours,

Bob Hassinger

Robert Hassinger

SUBJECT: SPR NUMBER 11-32559

DIGITAL

SPR RESPONSE

	System	System Version	Component
SOFTWARE:	RSX 11M	3.2	UTILITIES

PROBLEM
STATEMENT

Filex destroys certain RT-11 directories.

RESPONSE:

Filex incorrectly maintains the directory of an RT-11 created disk. RT-11 maintains the directory as a linked list, while Filex assumed that since the directory is contiguous the directory segments (2 blocks each) would be in order by placement. RT-11 will upset this order under the following circumstances; a large file in a directory segment is deleted, and several small files are inserted in its place. The directory segment that the large file was in will overflow and the next available directory segment will be utilized, not necessarily the next segment by placement in the directory.

For example: If you create a disk under RT-11 and start adding files to it the order of the segments will be segment 1, 2, 3, 4, etc....
If you then delete a file that has its directory entry in the second directory segment and replace it with several smaller files the directory segment (#2) will overflow and the linkage will be segment 1, 2, 5, 3, 4, 6, 7, etc... (provided segment #5 was the first segment that was unused).

The proper solution to this problem will involve rather extensive modifications to Filex and as such will be done in a future release as it is not possible to patch this in the field.

As a temporary solution until these design changes are completed you may access your RT-11 disk properly if you (using the RT-11 system) squeeze your disk. This will take the directory and order it segment 1, 2, 3, 4, etc... in additio to squeezing the files.

Software Performance Reports

This section contains SPRs submitted to Digital by users. SPRs should always be sent directly to Digital. If you feel that a report should be published in The Multi-Tasker, you must send a duplicate copy to the editor (at one of the addresses on the cover). Users should be aware that SPRs published by this newsletter have not been checked for accuracy and that publication within the Multi-Tasker does not imply endorsement by the SIG. Implementation of suggested fixes must be at the user's own risk.

The following SPR on RSX-11M V 3.2 DRQIO was submitted by David Kristol (Mass. Computer Associates, Inc., 26 Princess Street, Wakefield, MA 01880):

PROBLEM:

In both the Introduction to RSX11M (4-4) and MCR Operations (2-16) manuals there is a statement that suggests privileged users can still MOUnt and access volumes on devices that are allocated to another user. However, this is not the case. While a privileged user can, indeed, MOUnt the volume, attempts to access files, even for reading, result in privilege violations.

ANALYSIS:

The access check in DRQIO above 35$ (after $DQIM2) is at least partially incorrect. Instead of checking whether the current task is privileged, you should check whether the terminal is privileged from which the task is running. The terminal need not be the owner of the device but must have mounted the volume on it.

SOLUTION:

Fix DRQIO. I know my analysis is incomplete, but clearly the DRQIO code is wrong.

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