

# PRENTICE COMPUTER CENTRE

UNIVERSITY OF QUEENSLAND, ST. LUCIA, QUEENSLAND, AUSTRALIA. 4067.



## NEWSLETTER

N-254

11-August-80

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## 1.0 NEW NETWORK FACILITY

A new facility is now available which allows RSX-11 systems to be connected to the network and to communicate with the other computers already on the network. The facility is implemented by connecting the RSX system to a special PDP-11 node via a TELECOM line and adding special network software to the RSX operating system.

The PDP-11 node is named RSXANF and appears in the list of active nodes provided in response to a NODE command to the KL10 or KA10. RSXANF is a standard DEC DN80 series node but with extra software written by the Centre to support the new facility. When an RSX system is connected in this way it appears to the network as another standard network node and is known to the network by the node name and number which is assigned to it. eg - CHEM (41).

With the new facility, a user on any terminal attached to the RSX system may connect to the network and log in to either the KA10 or KL10 provided he has a normal user account on the target machine. After he has logged in to a DEC10 he may do any normal DEC10 work, but in addition he may transfer files between his system and the DEC10 and he may direct line printer output from the DEC10 to his local RSX printer.

The RSX user may also connect to the OTC's MIDAS service and will shortly be able to connect with the CSIRO network. If any RSX users are interested in connecting to other RSX systems via the network then that facility can be provided also by arrangement with the Centre.

The same set of facilities are currently being developed for RT-11 system users though on a somewhat reduced scale.

For users who wish to implement the facility the Centre will provide the required software and arrange the necessary TELECOM connection.

The software consists of the standard DECnet network software plus special tasks VTY, NETLPT and FAL. VTY provides the DEC10 virtual terminal access, NETLPT provides for network print spooling and FAL allows file transfers.

### 1.1 Virtual Terminals.

The RSX task VTY is invoked by means of the LOGIN command, eg-

>LOG <cr>

VTY will then initiate a connect to the network which will normally result in the user being connected to the KL10. He may then log in on the KL10 or SET HOST to connect to another host. In any case, INITIA will be run on the DEC10 to which he is connected and the normal identification information will be typed, eg, -

Prentice KL 603A #23 14:39:22 TTY137 system 1189

Connected to Node RSXANF(24) Line # 3  
Please LOGIN

To return to the RSX system the user should log off the DEC10 and then type the control character <GS> which is output by <control-]> on most terminals.

For further details, users are referred to the DEC10 HELP file on VTY which may be obtained by typing -

HELP VTY <cr>

or

PRI HLP:VTY.HLP <cr>

### 1.2 File Transfers.

To perform file transfers between the DEC10 and the RSX system, the DEC10 program ACCESS and the RSX task FAL are used. File transfers are invoked only from the DEC10 and only to and from the RSX system from which the user is logged in.

ACCESS will transfer ASCII files without any problems but other types of files such as object files or files with FORTRAN carriage control characters may not work or may require some special combination of switches. In short, if binary files are to be transferred, advice should be sought from the Centre on how best to proceed.

For further details on using ACCESS, users are referred to the DEC10 HELP file on ACCESS which may be obtained by typing -

HELP ACCESS <cr>

or

PRI HLP:ACCESS.HLP <cr>

### 1.3 Network Spooling.

For output to be directed to the RSX printer it is necessary for a DEC10 spooler to be running and communicating with the RSX task NETLPT. Then the simplest way to direct output to the local printer is to type the standard network command -

LOCATE (node number) <cr>

and thereafter all PRINT commands will cause output to be spooled to that node. The DEC10 spooler will not start sending output however if the RSX spooler has control of the printer. When the RSX spooler has finished it should normally relinquish control of the printer.

Because of the ( so far ) intermittent requirement for network spooling the DEC10 spoolers for other than the central printers are not normally running. However, RSX node users may ring the Centre's Supervising Operator and request that a spooler be started up. A spooler could be run on a more regular basis if the demand warrants.

#### 1.4 CLINK

For some time now similar facilities have been available via the DEC10 program CLINK and associated RSX modules (Newsletter N229, MAY 1978) so some comparisons between CLINK and ACCESS/VTY are warranted.

CLINK uses the DECnet error free link protocol DDCMP but it is implemented as user level code which adds to the machine cost to users. ACCESS uses the same protocols but they are part of the standard system/network software for which users are not directly charged. ACCESS costs are around half those of CLINK. ACCESS is also potentially cheaper and faster than CLINK on error prone lines because all the retransmissions are done by the network nodes (eg, the DN87) and not the DEC10 as is the case with CLINK.

CLINK operates with the RSX/RT system connected over a standard terminal line to the DEC10, therefore a user can connect his PDP-11 or a terminal to the line as the need arises. ACCESS/VTY on the other hand requires that the PDP-11 be connected to the network via a dedicated DECnet line which cannot be used for an ordinary terminal; terminal access to the DEC10 is therefore always via VTY.

CLINK will only allow one virtual terminal to run at any time and then only if the terminal is interfaced to the PDP-11 via a DL-11. ACCESS allows multiple virtual terminals using DL-11, DZ-11 or DH-11 interfaces.

The choice between the two systems depends upon the users requirements. Probably, with small RT-11 systems with occasional need for file transfers, CLINK is more appropriate.

#### 1.5 Line Speeds

The speed of the line connecting the PDP-11 to the network is of some concern. Most terminal lines on campus run at 300 bits per second which is appropriate for many hardcopy terminals. Many video terminals will run a good deal faster, but are usually run at 300 bps also because the lease costs for TELECOM links increase rapidly with speed.

It is technically possible to connect PDP-11's to the network at 300 bps but it is not recommended as a practical proposition. There are two aspects to the problem:

Firstly, the terminal performance when connected to the DEC10 via VTY may be unacceptable with the 300 bps line. This is because the DDCMP protocol requires the insertion of about twenty extra characters per line typed in or out of the terminal. At 1200 bps this is generally not a problem. CLINK does not use DDCMP for normal terminal operations but the response at 300 bps is still not as good as for a directly connected terminal.

Secondly, transfers of large files can take too long at 300 bps, especially on an error prone line. What is "large" or "too long" of course depends on individual requirements and we are happy to discuss the matter with users.

## 1.6 Communications Interfaces

An additional communications interface may also be required for the PDP-11. Connection at 300 or 1200 bps requires a DL-11. Connection at 2400 bps and higher requires a synchronous interface such as a DUP-11. A DL-11 costs around \$700 and a DUP-11 costs about \$1300. However the Computing Policy Committee has allocated some funds specifically for the purchase of communications interfaces to facilitate connection of departmental minicomputers to the network.

Persons who are interested in any aspect of connection of PDP-11's to the network are invited to ring me in the first instance.

John Barker  
extension 3016

## 2.0 NEW VERSION OF SORT

There is a new version of SORT on NEW:. This version is 4B(10435)-2 and is a DEC maintenance release. There is also a UQ modification which allows for ersatz devices to be used with the /TEMP switch. DOC:SORT.DOC contains a history of DEC edits since SORT-3A.

SORT-4B has been included in NEW:LIBOL.REL (COBOL-12A) and NEW:FORLIB.REL (FORTRAN-5A). NEW:FORLIB.REL and NEW:SORT.EXE will replace the current versions at the end of August.

Greg Ensbey  
extension 2833

### 3.0 NEW VERSION OF MACRO

A new version of MACRO is available on NEW:. This version (53A) is primarily a maintenance release, but some important differences do exist. These are:-

1. Unary operators now properly take precedence over all binary and shift operators. The hierarchy is now as follows:-
  1. All unary operators (+, -, ^-, ^D, ^O, ^B, ^F, ^L, E, K, M, G)
  2. Shift operators (B-shift, underscore-shift)
  3. Logical binary operators (!, ^!, &)
  4. Multiplicative operators (\*, /)
  5. Additive operators (+, -)
2. MACRO now observes TOPS-10 message levels
3. MACRO now types out the BREAK and CORE messages for each module in a PRGENDED source file

Other changes are numerous bug fixes - see DOC:MACRO.DOC for full details.

All being well, this version will be moved to STD: at the beginning of November.

Mark Robbie  
extension 2833

### 4.0 SYSTEM 1022: SPECIAL INTEREST GROUP

The next meeting of the Group will be held at 5 pm on Wednesday, 3rd September in the Client Room, Hawken Building.

The special topic will be use of the 1022 Report Generator.

Tony Bird  
extension 3944



## 5.0 REDUCING SPSS OUTPUT

With a large number of users now making use of SPSS, a few reminders are offered concerning the generation of unnecessary statistics, tables etc., and the elimination of errors before the major run is attempted.

1. Section 1.1.1 (pp. 3-4) of the SPSS Manual (2nd ed.) gives pertinent advice and warnings about the temptation to request all possible variations. Treat this seriously - unnecessary output is both meaningless and costly.
2. Where a complete run fails because either cost limit or time limit is exceeded, modify the SPSS control deck to remove those procedures which have been successfully completed during the previous run, eg. in an SPSS Newsletter, a sorry tale is recorded of the user who ran CROSSTABS to produce four 10 x 100 tables and two 100 x 100 tables for some 90,000 cases, allowing the job 15 minutes of CPU time. The time limit was exceeded after the four smaller tables had been produced. The job was then re-submitted, the only change made being an increase in time allowed. Result: The same output as on the first occasion.

While this user's trouble in part stemmed from another source (see item 4 below), the point can still be made that the control deck should have been amended to eliminate the production of the four smaller tables on the second run.

3. When attempting a new SPSS project
  1. Test all procedures on a small set of data before attempting the total job
  2. Use the EDIT facility to check for syntax errors
  3. Write output to disc rather than LPT, and check the success or otherwise of the run from terminal before printing. (See MNT-3 pp. 5.16 - 5.19 in relation to some of the above items.)
4. Request only those variables on the PROCEDURE card, and those options and statistics on the OPTIONS and STATISTICS cards, which have meaning in terms of your immediate project.

Continuing the story begun in item 2 above, the user required only the chi-square statistic, but on his STATISTICS card he had specified ALL. In this case, statistics 6,7,8 and 9 (Kendall's Tau b and c, Somer's D and gamma) created a major problem because of the large tables and large file. It has been estimated that for the case cited, the running time would have been of the order of a few hours. (These statistics require the counting of the number of concordant and discordant pairs, a process for which the time required is proportional to the number of cells in the table x the



number of non-empty cells. Thus, for each 100 x 100 table, with a small number (F) of non-empty cells, the number of items to be counted is about 10,000 x F.)

Thus, this hapless user spent most of his time and money attempting to generate statistics for which he had no use!

5. Remember that the basic guideline is:

purposeful NOT prodigious output.

Barry Maher  
extension 3021

#### 6.0 INFORMATION CONCERNING COURSES AND SEMINARS

The next series of formal courses are being planned for

(1) November 1980

and (2) January-February 1981

At this stage, it is envisaged that courses will be conducted in those areas for which a constant demand exists - Introductory Course, SPSS, Introductory Fortran, RUNOFF, Typesetting, VG, 1022.

However, we are open to suggestion. If there are courses in other packages which you would like added to the above list, please contact me (ext. 3021). Suggestions for seminars or demonstrations are also welcome.

Details of courses to be offered will appear in the next newsletter.

Barry Maher  
extension 3021

## 7.0 TCS ROUTINES UPDATED

Numerous accumulated software updates have been applied to the TCS library routines. These correct problems in zero length draws, clipping, character rotations, block mode errors and spurious carriage returns.

Mark Williams  
extension 3022

## 8.0 GT-40 RIDES AGAIN

Yes folks, once again that veteran of innumerable lunar missions, the GT-40, is operational. And to go with it, the software has been updated.

For those not familiar with the GT-40, here's a quick description. It's a dynamic vector graphics system, managed by a PDP-11/10. Picture information is stored in the PDP-11's memory. A display processor continuously converts the information into vectors on the VT-11 display. There's also a light pen, to aid interactive applications. The GT-40 system is usually connected by a terminal line to the PDP-10. Applications programs on the '10 send and receive controlling information.

Now onto the software. There isn't anything new - mostly programs have just been recompiled. All software comes from DECUS, circa 1977. It lives on device PLO:, on both systems.

SKIM.EXE demonstrates the PICTUREBOOK software. It gives a running display of the graphics facilities, and simultaneously shows the subroutine calls invoked to produce the picture. Great for those who haven't the faintest idea how to control PICTUREBOOK.

PICLET.EXE interactively draws vectors, graphs, or text. You can drive the GT-40 by sitting at the keyboard and typing in the function names and parameters, then suddenly they appear. It, too, uses the PICTUREBOOK software.

GLIB10.REL is the library file of PICTUREBOOK subroutines. This version uses FORTRAN-10 linkage - the other version, GLIB.REL, uses FORTRAN-4 linkage.

There's more information about GT-40 software and usage at the centre. We don't have any manuals for sale (scarcer than hen's teeth!) but you can have a loan. Don't forget, you need to check with the operator at the Centre's Accounts-Enquiries section before using the GT-40. Preferably, book the time you want - it's free!

Be watching for our next episode, "Son of GT-40"! We might have news of an RL01 disk so that RT-11 can be run.

Mark Williams  
extension 3022

## 9.0 SPOOLING FACILITY FOR SERIAL PRINTERS

The Centre has developed some new software to allow users to spool printer output to a serial printer on a terminal line. This software will be of interest to users who are looking for the convenience of local output at minimum cost. For instance, in a terminal laboratory situation, it is now easy to direct output directly to a printer in the same area.

Up to this point, spooled printer output has only been available from one of the Centre's batch stations (Hawken, Commerce or Griffith), or the self service printer in the Hawken Building. Users could of course, always type output on their terminals but that is usually not satisfactory.

Printers connected in this fashion are not operated like the self service facility wherein each user must log in to get his output. Each printer so connected appears to the network as a normal batch station style printer with an associated network node number allocated by the Centre.

To direct output to the local printer, the user types the normal network command

. LOCATE nn

where nn is the allocated node number for that printer. Thereafter, all output resulting from a PRINT command, or output from a program run by the user, will be spooled directly to the local printer.

Output from all users who locate to the same node number will be output on the printer in the order (more or less) that the print requests were queued. Users will have to attend to their own separation and distribution of output.

The terminal line used for the new facility cannot be used for normal terminal operation - it has to be dedicated to the spooling operation.

Each serial printer installed requires a separate print spooler to be run which occupies a job slot on the KA10 or KL10. If the printer is required to be running most of the time - eg. Monday to Friday 9 to 5 - then the associated spooler will be automatically started up by the Centre operations staff each day. If the printer is

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only required intermittently, say for a few hours per day, then the users will have to ring the Centre and request that their spooler be started up as they require it.

It is assumed that users will purchase their own printers and supply their own stationery. Therefore, the Computer Centre will only charge the cost of running the spooler which at the present time will be about \$0.015 cents per page.

Any serial printer may be used for the new facility provided it uses XON/XOF for control of output, for example, the DEC LA180. The line speed required is whatever is appropriate for the printer being used.

Would anyone having any interest in the new facilities please ring me in the first instance.

John Barker  
extension 3016

#### 10.0 SYSTEMS PERFORMANCE - JUNE

##### Hardware

KA - The memory parity problem which caused quite a number of crashes during April and May was cured early in June.

KL - On 11 June an additional 256K words of main memory was brought on-line, bringing the total memory to 768K.

Both the DN87s were reconfigured and additional long awaited communications hardware installed, bringing the total number of lines on each DN87 to about 100. This has caused quite a number of crashes, however the overall downtime has been minimal.

Director  
extension 2189



# SYSTEM PERFORMANCE REPORT

For node KA10 there were 25 working days in the period 1/Jun/80 to 30/Jun/80

	<	KA10	>	
		HHH:MM		%
1. Total system running time		461:11		100.0
less time used for:				
2. Scheduled maintenance		23:07		5.0
3. Dedicated operations tasks		3:44		0.8
4. Dedicated systems development		0:00		0.0
5. Equals time scheduled for use		434:20		94.2
less lost time due to:				
6. Unscheduled maintenance		0:58		0.2
7. Hardware faults		8:44		1.9
8. Software faults		1:35		0.3
9. Unresolved		0:57		0.2
10. Environmental conditions		0:25		0.1
11. Equals time available to users		421:41		91.4
12. Effective user uptime (11./5.)				97.1
13. Number of crashes				18
14. Mean availability between crashes				23:26
15. Mean time to recover crashes (minutes)				38
16. Total number of Jobs				7034

# S Y S T E M P E R F O R M A N C E R E P O R T

For node KL10 there were 27 working days in the period 1/Jun/80 to 30/Jun/80

	<	KL10	>	<	DN87A	>	<	DN87B	>
		HHH:MM	%		HHH:MM	%		HHH:MM	%
1. Total system running time		463:28	100.0		463:28	100.0		463:28	100.0
less time used for:									
2. Scheduled maintenance		21:05	4.5		21:05	4.5		21:05	4.5
3. Dedicated operations tasks		10:58	2.4		10:58	2.4		10:58	2.4
4. Dedicated systems development		4:27	1.0		4:27	1.0		4:27	1.0
5. Equals time scheduled for use		426:58	92.1		426:58	92.1		426:58	92.1
less lost time due to:									
6. Unscheduled maintenance		1:41	0.4		0:00	0.0		0:00	0.0
7. Hardware faults		0:54	0.2		0:21	0.1		0:01	0.0
8. Software faults		0:12	0.0		0:02	0.0		0:05	0.0
9. Unresolved		0:32	0.1		0:58	0.2		1:00	0.2
10. Environmental conditions		0:25	0.1		0:25	0.1		0:25	0.1
11. Equals time available to users		423:14	91.3		425:12	91.7		425:27	91.8
12. Effective user uptime (11./5.)			99.1			99.6			99.6
13. Number of crashes			9			21			22
14. Mean availability between crashes			47:02			20:15			19:20
15. Mean time to recover crashes (minutes)			11			4			3
16. Total number of Jobs			12593						