

1. COMPUTER STATISTICS
IBM SYSTEMS 28/12/81 - 24/1/82

Weekly availability is uptime/168.

SYSTEM AVAILABILITY - % of 672 hrs available

MVT - 90.4%, CMS - 98.8%, ELECTRIC - 87.5%.

MVT THROUGHPUT

Average Jobs/Week 10040
Average CPU hrs/Week 191

TERMINAL SYSTEM USERS

CMS ELECTRIC
Registered users 705 1243
Active users 288 477

SERVICE LEVELS

Percentage of prime shift short jobs not turned round inside guideline:

MVT Batch Core size P12 P10 P8
0 - 210k 5.0 11.1 1.9
212k - 350k - 7.4 4.4
352k - 560k - 2.4 5.8

TERMINAL SYSTEMS

Response to trivial command during peak period:

CMS Week 1 Week 2 Week 3 Week 4
% <1 sec * 95.4 94.3 92.9
% <3 secs * 99.7 99.6 99.5

* CMS was not monitored between 28/12/81 and 3/1/82. Averages are over the remaining 3 weeks.

ELECTRIC

% <2 secs 98.8 88.8 78.4 68.6
% <5 secs 99.6 95.9 87.3 84.1

USAGE FOR CURRENT FINANCIAL YEAR

MVT and ELECTRIC totals are for 43 weeks.
CMS totals are for 16 weeks from 5/10/81.

Board	MVT 195hrs	ELECTRIC AUS	CMS AUS
ASR	497	623	101
Engineering	759	339	103
Nuclear Physics	6224	5181	715
Science	1212	1714	221
Central Funding	215	832	3586 *
NERC	153	364	141
External	140	565	71
TOTAL	9200	9618	4936

* These entries include some usage due to "service" functions which are strictly an overhead and should be accounted separately.

ICF SYSTEMS

AU USAGE BY BOARD - periods 8104-8201

Board	Prime	GEC	DEC-10	TOTAL
ASR	193	455	25	673
Engineering	12155	4425	5883	22465
Nuclear Physics	30	51	0	82
Science	352	658	2008	3019
Central Funding	4521	1371	1442	7335
System Overheads	4127	431	3229	7788
External	342	275	199	817
TOTAL	21720	7666	12786	42179

12. DIARY

USER MEETINGS

25 February 1982 - Rutherford Prime Users Meeting in the Colloquium (R27), 10.30am

9 March 1982 - Progress on Data Processing Standards for Particle Physics in the Colloquium (R27)

The topics to be covered include: FORTRAN 77, graphics, links and networks. This meeting will primarily be of interest to the particle physics community, to whom details have been sent. Please contact Mrs Anne Johnson, Building R36 at RAL for a programme and application form if you are interested.

17 March 1982 - IBM Group Representatives in RAL Lecture Theatre

The programme for this meeting includes items on mainframe procurement, initial thoughts on MVS, some aspects of operations, progress reports on charging and control, VNET and networking as well as a general session.

March 1982 - Prime User Group at UMIST

The following dates have been decided on for DECsystem-10 Users Committee meetings during 1982:

Wednesday 10 March
Wednesday 2 June
Wednesday 1 September
Wednesday 10 November

The time and place for these four meetings is 10.30 am at the James Clark Maxwell Building, King's Buildings, Edinburgh.

Rutherford Appleton Laboratory

FORUM

COMPUTER NEWSLETTER

Newsletter of the SERC Central Computing Facility

No. 20 February 1982

1. APOLOGIES

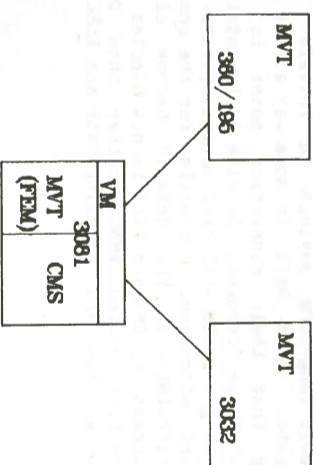
The January issue of FORUM was wrongly numbered as 20. It should have been 19 and the Editor apologises sincerely for this error. Would you please renumber your January copy to 19 as this February issue of FORUM is correctly labelled as No. 20. The keener amongst you will have spotted that the PERQ seemed very powerful. It should have been described as a 1 MIP (high level) machine.

2. CENTRAL COMPUTER REPLACEMENT

The SERC Council, at its meeting on 21 January 1982, agreed to the purchase of a 16 Mbyte, 16 channel IBM 3081D to be installed at Rutherford Appleton Laboratory (see January 1982 issue of FORUM). Delivery will be in June. Capital funds, allocated to Central Computing in future years, have been brought forward to reduce the very high maintenance and energy costs of the 360/195s.

It is proposed that one 360/195 is removed when the 3081 is delivered and the other one removed a few months later. (The vast amount of space freed in this way will be further supplemented by the removal of the Univac 1108 which RAL currently runs on behalf of NERC).

After acceptance, the 3081 will simply replace one 360/195. It is planned after a month to swap the 3081 and the 3032 front-end. The 3081 will then run an enlarged front-end CMS service and the 'FEM' (the front-end MVT system) will also be able to run much more batch work than at present. It is because the front-end facilities are subject to the greatest pressure that this tactic is being adopted.



In September, by which time the 3081 should be tuned to its new role, the rear-end 360/195 should be removed. There will then be a net loss of batch capacity of about 1500 - 2000 hours per year. However, some capital funds remain allocated to Central Computing in financial years 83/84 and 84/85 and a continuation of the replacement plan is expected.

None of these manoeuvres should have any effect on the user's view of the system other than a change in service levels. The 3081 is a modern machine and gives the opportunity to move on to a supported operating system, thus putting the RAL Central Computing on a very stable basis.

3. USE OF AUS IN CMS

The following is a brief description of the way in which AUS are calculated and how they are used in a normal terminal session. The algorithm currently in use for calculating AUS from the resources used is:

$$AUS = K C(t) [A \times \text{cpu secs} + B \times \text{connect secs} + C \times \text{spooled I/O} + D \times \text{non-spooled I/O}]$$

where:

$$A = 1.00000$$

$$B = 0.00060$$

$$C = 0.00035$$

$$D = 0.00800$$

$$K = 0.00410$$

and C(t) is given in the following table:

TIME	C(t)	TIME	C(t)
00.00 - 08.00	0.1	13.00 - 18.00	1.0
08.00 - 09.00	0.4	18.00 - 22.00	0.4
09.00 - 12.00	0.8	22.00 - 24.00	0.1
12.00 - 13.00	0.6	w/e public holidays	0.1

The charge rate for jobs submitted to CMSBATCH is as in the table, except that it never rises above 0.4.

The number of AUS used at any time in a terminal session can be determined by issuing the AUS command, which also returns the CPU time, connect time, spooled I/Os and non-spooled I/Os used for the calculation. The current charge factor and ration for the account can be obtained using

AUS CF and AUS RATION. As can be seen, the most expensive time is on weekday afternoons. Issuing the AUS command periodically can help users to find out where they, in particular, are using most AUS.

The most significant contributors to the AU charge for a session are normally the CPU time used and the non-spooled I/O. Non-spooled I/O is any transfer of data which does not involve the spool, for instance reading or writing files on disk. Spooled I/O refers to transfer of data between devices which do use the spool, ie virtual and real printers, punches and readers.

The most common commands which use AUS heavily tend to be large compilations, assemblies and running jobs. Optimisation in compilations can increase the cost dramatically and it may well be worth requesting no optimisation while debugging. The Fortran compiler is much cheaper than the HX compiler when the HX compiler is requested using full optimisation (which is the default). In a test using a program of roughly 450 lines of Fortran, the FORTHX compiler was more than four times as expensive as FORTGI. At present there is no optimisation available for the FORTRVS compiler and it compares roughly with FORTGI.

Large compilations and jobs are best run in the CMSBATCH machine which has a lower charge rate than normal CMS machines during the day. The output is returned via the spool and can be examined using the BROWSE command. This is much cheaper than reading the returned files on to a disk to look at them. Any files which require printing can be transferred directly to the real printer and then the only non-spooled I/O involved in processing those files is that done by the BROWSE command.

Another expensive command is LOAD for large TEXT files. When possible, a MODULE file should be generated using LOAD and GENMOD so that the loading is only done once and subsequent runs can use the module.

If a high proportion of large files exist on a disk, it may be worthwhile to re-format the disk to use a larger block size. This cuts down the number of AUS used in reading the files since a smaller number of I/Os will be required. However, the number of blocks available on the disk will be reduced so it is not useful for a disk of small files.

Most commonly used CP and CMS commands are comparatively inexpensive in AUS, for instance QUERY and SET commands, MSG, LINK and ACCESS. The AU cost of LISTFILE, BROWSE, HELP and commands such as COPYFILE, COMPARE, TYPE and PRINT obviously depend also on the size of the file being processed. A typical XEDIT session uses AUS in rough proportion to the number of XEDIT subcommands issued. A very rough guide is 0.1 to 0.5 AUS for a half hour of XEDIT at the maximum charge rate.

A good idea of where AUS are being used in a particular machine can be obtained using CP SPOOL CONSOLE START * to spool the console to the users own virtual reader. The command CP SPOOL CONSOLE STOP CLOSE should be used to close the file. If the AUS command is issued periodically throughout a session, the console log can be examined later to find out which were the most expensive commands.

4. WORKSTATIONS AND TELECOMMUNICATIONS

Two major programmes of work are scheduled for the next 6 months. These are conversion from HASP to VNET and in addition a programme of workstation upgrades.

The initial 'home' installations of VNET are just about complete. As expected a small number of implementation problems have shown but they have been identified and fixed. RAL workstations will now be converted to VNET at a rate of approximately one per week, with a site specific User's Manual being produced for each change. Any comments on VNET (whether problems or usage) should be sent to Program Advisory Office - CMS ID=US, ELECTRIC ID=US

Workstation Upgrades

In the ICF area a small number of sites are being given larger machines and the redundant machines will be re-configured to provide a larger and improved workstation facility at certain GEC2050 sites. The displaced GEC2050 hardware will be used to enlarge non-networked GEC2050s which currently cannot connect to the SERC network. At other sites existing ICF facilities will be modified where necessary to accommodate an existing population of GEC2050 users and the GEC2050 removed.

The following table indicates those sites for which changes have been agreed:

Site	RAL connection equipment	Current	Upgrade
Bangor	SERCNET	GEC2050	DEC10-Gateway
Southampton	SERCNET	GEC2050	GEC4070
Reading	SERCNET	GEC2050	GEC4070
Durham	SERCNET	GEC2050	GEC4070
Bristol	SERCNET	GEC2050	ICF-GEC4090
Sussex	SERCNET	GEC2050	ICF-PRIME
Surrey	HASP-M/W	GEC2050	ICF-PRIME
Westfield	HASP-M/W	GEC2050	SERCNET-GEC2050
Edinburgh-Unix-Phys	HASP-M/W	PDP11/40	SERCNET-GEC2050
Exeter	HASP-M/W	GEC2050	PDP11/40

SERC Network

It has been decided to extend the SERC Network with Packet Switch Exchanges to be installed in Edinburgh, London, Cambridge and CERN. The main purpose of these PSEs is to rationalise complex operational circuits where a number of otherwise independent connections share the same physical line. Ideally each PSE will be independently connected to at least two other PSEs in the Network. A further potential effect is to produce considerable long-term savings in Private Wire rental costs. This will in some way affect most users, in that their connection point to the Network will be changed. Service implementations of terminal protocols will need to incorporate the new Network addresses. Schedules for the changes will be circulated as the details become clear. Network access to CMS and VNET is now handled by a virtual machine called VMNCP rather than DMNCP running under FEM and handling HASP and ELECTRIC traffic.

PACX

New PACX software is in use which enables a message stored in PACX to be displayed on making a connection. In addition a number of ports have been changed from ELECTRIC access to CMS and made up to 4800 bps. This process will continue as the use of ELECTRIC goes down.

It is intended to standardise on 4800 bps line speeds in CMS and ELECTRIC. However there are technical modifications that need to be made to the communication lines. A few slots will be retained at other speeds for those terminals which require them.

5. MAXIMUM MVT REGION SIZE

When the IBM 3081D begins service it will provide part of the MVT batch service. The restriction of 1.4 Mbytes maximum REGION size could in principle be eased. Likewise there will be less need to penalise jobs with large core requirements. This will be of particular benefit to programs with large Overlay Structures. Users with programs of this nature are requested to contact J C Gordon in User Interface Group (CMS ID is JCG, ELECTRIC ID is PY). See also the item on Trial MVS.

6. TRIAL MVS SYSTEM

As part of the move to the MVS operating system on the IBM 3081D (see January issue of FORUM, item 2), we will be introducing a trial MVS system, hopefully in the latter part of this year. In order to identify users who would benefit most from time on this system, we wish to contact groups whose work consists of large core jobs but with limited input/output. In particular we would like to hear from anyone who finds the size (1.4M) of the 195 a restriction. Potential users should contact J C Gordon at RAL, exts 6574 and 6111. CMS ID=JCG or ELECTRIC ID=PY.

7. VM SPOOL

Too many files are being left on the Spool for long periods. Users are urged to remove them quickly. Unclaimed files are erased if not removed in reasonable time.

8. EXTRACT FROM MINUTES OF CCSUM - 6/1/82

The following items of interest have been taken from the Central Computing Site Users Meeting held on Wednesday 6 January 1982.

(a) The second string of Memorex disks has now been accepted. The Short Lived Data facility

has been expanded from 400 Megabytes to 917 Megabytes and is entirely on 3350 equivalent disks. The next tasks are to convert RHEL02, 3, 4 and 5 and so expand the Long Lived Facility from 1100 to 1600 Megabytes. After that data will be removed from Setup disks which will then be withdrawn.

(b) The BROWSE facility for ASCII terminals has been installed and is working with no apparent problems.

(c) A CMS version of CPUFT is to be installed in mid-January.

(d) The V S Fortran Library has now become available to users during January.

(e) Logging in to alternative CMS accounts has now been implemented.

(f) The TMS writeup will soon be available.

(g) From 1 April 1982 it is intended to issue Priority 1 rations in proportion to the authorised allocation.

9. TELEPHONE NUMBERS

In the previous issue of FORUM a list of useful extensions was published. It should be noted that Dr M R Jane is Head of Resource Management and Communications. A fuller explanation of the section inappropriately headed as MISCELLANEOUS is now offered.

USER INTERFACE GROUP	
Head of UIG	6219 R E Thomas
Editor, FORUM	6609 J Brown
Prime Support	6293 M F Bolger
CEC Support	6293 J J C Hutchinson
Program Advisory Office	6111
Documentation	272
ATLAS CENTRE ADMINISTRATION	
Receptionist	6296

10. INDEX

List of articles in FORUM 16
16.1 Introduction
16.2 Changes at RAL
16.3 Central Computer Procurement
16.4 IBM VS FORTRAN Program
16.5 Extract from minutes of PRIME User Meeting
16.6 Questions raised at CCR meeting, 13/7/81
16.7 Courses
16.8 Diary
16.9 Any offers - information needed about tapes
16.10 Computer Statistics
16.11 Index

Newsletter of the SERC Central Computing Facility

Supplement to FORUM No. 20

February 1982

SUPPORTED PACKAGES ON THE IBM CENTRAL SYSTEM

1. SUPPORT CATEGORIES

There are four levels of support, as follows:

1. MAXIMUM SUPPORT
 - Complete documentation
 - Support always available in office hours
 - Immediate maintenance
2. HIGH SUPPORT
 - Good documentation
 - Support usually available in office hours
 - High priority maintenance
3. STANDARD SUPPORT
 - Basic documentation
 - Limited support - list of local experts available
 - Maintenance referred to issuing body
4. MINIMUM SUPPORT
 - Usually some documentation
 - Support not usually available
 - No maintenance

2. HOW TO FIND OUT MORE ABOUT PACKAGES

The packages listed below are those afforded some level of support at the end of December 1981. Initial queries may be directed to the Program Adviser, who will either deal with the query, or where appropriate, put the user in touch with the appropriate expert. No commitment is implied on anyone to continue support of a particular package but certain packages are offered with minimum notices of withdrawal periods specified. If users have any suggestions as to additions, deletions, corrections or changes which should be made to this list they should contact D. H. Trew, User Interface Group, Computing Division.

The following abbreviations are used in the list below: BCRG - Bubble Chamber Research Group; CD - Computing Division; DL - Daresbury Laboratory; HEP - High Energy Physics Division; SA - Space & Astrophysics Division; SNS - Spallation Neutron Source Facility; ICF - Interactive Computing Facility; Tech - Technology Division.

PACKAGE	LEVEL	SUPPORT	DESCRIPTION
SCRIPT	Std	CD	Text Processing System
SIMULA	Min	ICF	Simulation
SHELLX	Min	DL	Crystallography
SMART	Std	CD	Real Time Monitor for VM
SMOG	High	CD	Graphics
SPICE	Min	ICF	Circuit Design
SRAM	Std	CD	CASORT Sort/Merge callable from high level languages
SSP Library	Min	CD	Scientific Subroutine Package
STACKER	Min	CD	7 to 9 track Tape Conversion
STAGE2	Min	CD	Macro Processor
STAIRS	Min	CD	Information Retrieval
SUMX	Std	CD	Statistics Package
TDMS	Std	CD	Disk and Tape Management
TPELEC	Std	SNS	Copies 4080 tape files to ELECTRIC
TRANFILE	Std	CD	File Transfer between CMS/OS & CERN, DESY, DL
TRANSFER	Std	SNS	Copies ELECTRIC files to 4080 tapes
TRIAE	Min	HEP	Book-keeping system for the analysis of experiments/tape management
VICAR	Std	SA	Image Processing
XEDIT	MAX	CD	Display Editing System for CMS
XRAY74	Min	DL	Crystallography
ZBOCK	Std	HEP	A Dynamic Memory Management System

3. LIST OF SUPPORTED PACKAGES

PACKAGE	LEVEL	SUPPORT	DESCRIPTION
ALCHEMY	Min	DL	Quantum Chemistry Compiler
ALGOL	Min	CD	Direct Channel Partial Wave Analysis
APPLE	Min	BCRG	Finite Element
ASAS	High	SNS	Three Body Partial Wave Analysis
ASCOLI	Min	BCRG	360 Assembler
ASSEMBLER(F)	Max	CD	360 Assembler
ASSEMBLER(VS)	High	CD	Statistical Analysis Program
ASTAP	Min	Tech	Quantum Chemistry
ATMOL	Min	DL	Formatted listing of BABBAGE programs
BABBAGE XREF	Std	SNS	Compiler
BCPL	Std	CD	Berkeley Data Base Managem System
BDMS	Min	Durham	Finite Element
BERSAFE PH2	High	TECH	Finite Element
BERSAFE PH3	High	TECH	Finite Element
BERDYNE	High	TECH	Finite Element
BMDX72	Min	CD	Bio-Medical Statistics Package
BUEDDY	Std	Tech	2-D Eddy Current Program
CAMAL	Min	CD	Symbolic Algebra
CAPSTAN	Min	CD	Critical Path Analysis
CASORT	Min	AEFE	Sort/Merge
CASORT	Std	CD	Lists/Copies Sequential Files
CCOPY	Std	CD	Lists or Copies Source Files
CLIST	Std	CD	Subroutine Library
CERN Library	Std	CD	Translator:generates ASK for ILLIAC IV
CFD/CFDX	Min	CD	Compilers
COBOL(E,F,ANS)	Std	IBM	Text Processing
COCOA	Min	CD	Copies GEC 4080 tapes
COPYTP	Std	SNS	Subroutine Library
CPC Library	Std	CD/CPC	Simulation
CSL	Min	ICF	Continuous System Modelling
CSMP 1	Min	CD	Continuous System Modelling
CSMP 3	Min	CD	Continuous System Modelling
DIRMAINT	Std	CD	VM Directory Maintenance
DMS	Std	CD	Display Management System
DSKSOL	Std	Tech	Solves large sets of linear equations
ELARKIVE	High	CD	Electric File Archive Facility
ELMUG/ELFR80	High	CD	Output ELECTRIC Graphics Files
ELOUTPUT	High	CD	ELECTRIC Files to Printer/Punch/Tape
ELDIRE	High	CD	Batch Access to ELECTRIC Directories
ELSEND	High	CD	Batch Access to ELECTRIC Files
ELUSER	High	CD	Batch Access to ELECTRIC
ELECTRIC	Max	CD	Text Editing
FAMULUS	Std	CD	Text Sorting and Indexing
FAPLOT (ENPLOT)	Std	CD/HEP	Histogramming Package
FELIB	High	TECH	Finite Element Library
FEMGEN	High	Tech	Finite Element
FEMVIEW	High	Tech	Finite Element Routines
FORTTRAN G1	Max	CD	Compiler
FORTTRAN H	Max	CD	Compiler
Extended Plus	Max	CD	Compiler
FORTTRAN VS	Std	CD	Fortran 77 Compiler CMS only
FOWL	Std	CD	Monte-Carlo Phase Space Program

PACKAGE	LEVEL	SUPPORT	DESCRIPTION
GENSTAT	Min	CD	Statistics package
GEOMETRY, KINEMATICS & ORACLE	Min	BCRG	Film Analysis Programs
GEROFF	Min	CD	Text Processing System
G-EXEC	Max	NERC	Relational Data Base and General Data Handling System
GFUN	Std	Tech	Magnet Design
GINO-F	Std	CD	Graphics
GPSS	Min	CD	Simulation
GRAPHICS/SUMX	Min	BCRG	SUMX with Graphics Options(MUGWUMP)
Harwell Library	Std	CD	Subroutine Library
HBOOK	Std	HEP	Histogramming Package
HBOOK	Std	HEP	Histogramming Package
HBOOK	Std	HEP	Graphics (part of HBOOK)
HYDRA	Std	HEP	Program Management with Dynamic Memory (some)
IBM Utilities	Std	CD	Solution of Sparse linear equations
ICCG	Std	Tech	Database Report Generator
INFOL	Std	HEP	Histograms/Scatter Plots via MUGWUMP
JSPLOT	Min	BCRG	Text Processing Index System
KWIC360	Min	CD	Message Switching
MAST	High	CD	Minimizing Package from CERN
MINUIT	Std	Oxford	Structured FORTRAN pre-processor
MORTRAN	Std	HEP	Initialises and checks GEC 4080 tapes
MTUT	Std	SNS	Graphics Package and Filestore
MUGWUMP	High	CD	Graphics Package and Filestore
MUGWUMP	High	CD	Graphics Package and Filestore
MAG Library	Std	CD	MAG Subroutine Library(MARK8)
NAP	Min	Tech	Circuit Design
NEWPAC	Min	Tech	Finite Element
OLYMPUS	Min	CD	Standardises Programdesign/structure
OSDITTO	Std	CD	Tape and Disk Utilities
OSFLOW	Std	CD	Flowcharting Program
OPAL	Min	HEP	OPAL-GEANT Monte Carlo Software
PASCAL	Min	CD	Compiler
PATCHY	Std	HEP	Source code maintenance in multi-version programming
PE2D	High	Tech	To Solve 2 Dimensional Equations of the Laplacian, Poissonian, Helmholtz or Diffusion Type
PFORT	Min	Tech	Fortran Verifier
PITFAL	High	CD	Location of Program Abend Addresses
PLANT/SUPPLY	High	CD	Dynamic Substitution Facility for CMS
PLUTO78	Std	CD	Molecular Drawing Program
PL/1 (F)	Std	CD	Compiler
PL/1 (optimizing)	Std	CD	Compiler
PL360	Min	CD	Compiler
PPE	Std	CD	Problem Program Evaluation
PREIFP	High	Tech	Interfaces FEMGEN and PACK
PREVIEW	High	Tech	Interfaces FEMVIEW and PACK
PRINT	Std	SNS	Prints files on a GEC 4080 tape
PURL	Std	CD	Pre-Publication Text Preparation
REDUCE	Min	CD	Algebraic Manipulation
RL Library	Std	CD	Subroutine Library
RL Utilities	Std	CD	RL Program Library Utilities