8. COMPUTER STATISTICS

IBM SYSTEMS 30/11/81 - 27/12/81

Weekly availability is uptime/168.
MVT availability is based on 40% contributions from each 195 and 20% from the 3032.

SYSTEM AVAILABILITY - % of 672 hrs available

MVT - 83.3%, CMS - 81.7%, ELECTRIC - 80.1%.

MVT THROUGHPUT

Average jobs/week	14428
Average CPU hrs/week	181

TERMINAL SYSTEM USERS

	CMS	ELECTRIC
Registered users	683	1248
Active users	284	570

SERVICE LEVELS

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

MVT Batch	Core size	P12	P10	P8
	0 - 210k	1.1	6.4	1.4
	212k - 350k	-	3.4	1.7
	352k - 560k	-	1.6	4.5

TERMINAL SYSTEMS

Response to trivial command during peak period:

CMS	Week 1	Week 2	Week 3	Week 4
% <1 sec	94.0	95.0	96.0	95.0
% <3 secs	99.4	99.7	99.8	99.7

ELECTRIC

% <2 secs	69.2	78.1	88.3	88.6
% <5 secs	84.2	90.4	95.5	95.6

USAGE FOR CURRENT FINANCIAL YEAR

MVT and ELECTRIC totals are for 39 weeks, CMS totals are for 12 weeks from 5/10/81.

Board	MVT 195hrs	ELECTRIC AUS	CMS AUS
ASR	445	597	48
Engineering	713	325	84
Nuclear Physics	5658	4870	530
Science	1156	1642	174
Central Funding	189	779	2736 *
NERC	140	340	117
External	134	530	60
TOTAL	8435	9083	3749

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

Note: During Christmas week all machines closed down at 15.00 hrs with a scheduled loss of 81 hours.
CMS was only monitored until 23/12/81.

ICF SYSTEMS

AU USAGE BY BOARD - periods 8104-8113

Board	Prime	GEC	DEC-10	TOTAL
ASR	186	421	25	632
Engineering	11002	4149	5502	20653
Nuclear Physics	21	39	0	60
Science	328	639	1906	2873
Central Funding	4154	1243	1342	6739
System Overheads	3647	396	2977	7020
External	312	251	192	755
TOTAL	19650	7138	11944	38732

9. DIARY

March 1982 - Prime user Group meeting at UMIST

IBM Preventative Maintenance Dates

During 1982 Routine Preventative Maintenance will take place on the following days from 1800 - 2200 hours. Login messages on the ELECTRIC and CMS services will be issued prior to each maintenance session as a reminder.

21 Jan	18 Feb	18 Mar	22 Apr	20 May	17 Jun
22 Jul	19 Aug	16 Sept	21 Oct	18 Nov	16 Dec

Air-conditioning Shutdown

The two shutdowns of all computer systems (except network equipment) scheduled during 1982 for the maintenance of air-conditioning plant are:

0800 hrs Friday 16 April till late Monday 19 April

0800 hrs Friday 10 Sept till late Monday 13 Sept

10. INDEX

The following is a list of articles published in FORUM during 1981, all of which are still valid.

Rutherford and Appleton Laboratories

FORUM

195 COMPUTER NEWSLETTER

Newsletter of the SERC Central Computing Facility

No. ~~20~~ 19 January 1982

1. SERC INITIATIVES IN COMPUTING

Distributed Interactive Computing

The appearance in the market place of cheap high powered single user computer systems with good interactive capabilities via high precision displays, linked together by high speed local area networks, heralds a completely new way for most SERC Investigators to satisfy the major part of their computing requirements.

Within the next few years, many such systems will be available from different manufacturers. Consequently there is a likelihood of many different systems being purchased in the SERC environment leading to a great deal of duplication of basic software development.

SERC sees a need for a coordinated development plan to ensure that the UK makes the best use of its finances and its limited manpower. The SERC has therefore decided on a strategy for creating a common hardware and software base for software development which will encompass all scientific subject areas. Initially the common software base for single user systems will be PASCAL and FORTRAN running under the UNIX operating system implemented on the common hardware base of the ICL PERQ single user computers linked locally by Cambridge Rings and nationally by the X25 wide area network systems (SERCnet and PSS).

SERC Subject Committees will participate in the implementation of this policy by central purchasing of PERQs for grantholders through RAL Computing Division and by ensuring that investigators use the PERQ in all appropriate circumstances as well as encouraging them to follow the common base software development policy. The Common Base Policy is not the same as standardisation, however, and it will evolve as the state of the art improves. Further technical details of the Common Base Policy will be made available soon.

The ICL PERQ

The PERQ is a high powered, single user computer system with a high precision display system which provides a significant improvement in the quality and speed of interaction. Its main features are:

High Speed Processor - 1 million 'high level' MIPS giving approximately 2/3 the CPU power of VAX 11/780. The CPU is microprogrammable for further speed gains.

High Quality Display - A4 size, 1024 x 768 pixel, high resolution black and white display with 60Hz non-interlaced refresh rate. Pictures can be moved cleanly and rapidly. The clarity of text and diagrams is equal to a printed A4 page.

User Friendly I/O Devices - a 2-D tablet and voice synthesiser allied to the high quality screen, enable a much improved man-machine interface to be created.

Large Virtual Memory - a 32 bit address paged virtual memory system.

Local Filestore - a 24 Mbyte Winchester disk and 1 Mbyte floppy give a single user a large amount of local storage capacity.

Fast Communications - local communication at 10 Mbits/sec via Cambridge Ring. Standard RS232 serial and IEEE 488 parallel interfaces are also provided.

A high quality, superbly interactive computing system is created if each Investigator has his own single user PERQ linked to his colleagues' PERQs and other departmental computing resources by a Cambridge Ring, with inter-University cooperation being fostered by the National X25 network connections.

The Common Base Policy

The whole academic community, not just Computer Science, is a major user and developer of software and so the degree of ease with which software can be developed affects the scientific productivity of many researchers.

The SERC hopes to increase this productivity by:

(1) facilitating scientific cooperation with:

(a) person to person links
(b) computer to computer links
(c) common software and hardware base policy.

(2) exploiting software tool production by making tools/techniques widely known and available in forms which can be readily used by the whole user community.

Academic software technology is very non-uniform in that the knowledge, experience, tools, techniques and equipment vary considerably between projects. Collection of the best existing tools, packages and

techniques into a uniform framework will make the 'whole' more effective than the 'sum of diverse parts'. This will be achieved via EMR contracts to move existing software into the common base, specific purchases, the direct results of SERC research projects using the common base equipment and the 'snowball' effect that will be generated as a natural consequence of providing a state of the art hardware base.

The Common Base Policy briefly is:

(a) common software base - portable tool kit written in PASCAL under Unix operating system. User programs to be PASCAL or FORTRAN under Unix.

(b) common hardware base - PERQs, Cambridge Rings, PSS and SERCnet X25 connections.

(c) common access to special tools - ie network access to single site running service for special tool, eg big machine dependent theorem proving system, GAELIC circuit design package.

A common base does not imply rigid standardisation however.

Computer technology develops at a rapid pace and it is expected that the next few years will see the cost of single user systems decrease and their quality and capability increase. Therefore today's PERQ is seen as only the first machine forming the common hardware base. The common base will develop over the coming years.

2. CENTRAL COMPUTER REPLACEMENT

FORUM 16 reported that we were about to go out to tender for replacements for the IBM Central Computers although it warned that there was no significant finance until April 1983 allocated to the replacement programme. As described below, the situation now looks more hopeful.

The requirement specified two IBM-compatible computers - one to replace both 360/195 back-ends and the other to replace the 3032 front-end. The tender exercise has been held and as a result the SERC Central Computing Committee decided that at this time the requirement would be most effectively met by an IBM 3081D as the back-end system and an AMDAHL V/7A as the front-end. There are insufficient funds at present to proceed with both of these systems but, recognising the very high costs incurred in maintenance and energy on the elderly 360/195s, the Committee recommended to Council that the purchase of a 3081 be made as soon as possible. The 3032 situation will be reviewed in due course.

Council considers the recommendation at its January meeting. If it is approved, we expect to place an order for a 16Mbyte 16 channel IBM 3081D for delivery no later than June. An additional disk system has been ordered.

One 360/195 will be replaced immediately, the other will be removed within a few months. The 3081 is slightly less than two 360/195s in raw processor power, but gives much larger memory and channel capacity and can support modern software.

Much of the user pressure is currently on front-end facilities. Because of this and because of the need to start development connected with a move to manufacturer-supported operating software (MVS), we are preparing a plan whereby the 3081 assumes the (enlarged) front-end role as well as running a large batch workload. The 3032 would then run purely as a batch system. Once the second 195 goes there will be some loss of total batch throughput capacity.

3. CENTRAL COMPUTING COMMITTEE NEWS

On the financial side SERC has not been as harshly treated as other Research Councils funded by DES. Even so the Central Computing facilities will be working to extremely tight budgets for the next 5 years, particularly on the recurrent side.

The SERC Computing Coordinator was asked by the committee to carry out a review of future funding and management of Interactive minicomputers and workstations connected to SERCnet. This is regarded as part of the process of integrating the ICF into the Central facilities. The review will cover all systems including both those funded centrally and by Boards.

Allocations of computer resources were agreed for the year 1982/83. They are shown in the following table:

	Batch CPU hours	CRAY	ELECTRIC AUs	CMS AUs	ICF AUs
ASR	700	120	600	1750	4063
EB	950	75	375	1000	40625
NP	8100	120	4200	13500	4063
SB	2950	995	1125	3250	16250
Sec's Dept	400	50	600	4000	12186
External	200	140	600	1500	4063
	13300	1500	7500	25000	81250

Note that the replacement of the 360/195s by the 3081 may mean that these allocations will be reduced.

An outline plan was approved to rundown the ELECTRIC service to 3750 AUs in 1983/84 and 1000 AUs in 1984/85. By then almost all current users of ELECTRIC should have been transferred to CMS or ICF systems for all front-end work.

4. PSS APPLICATION PROCEDURE

The SERC now has a gateway to British Telecomms Packet Switching Service (PSS), which is available to any SERC network users. To use the gateway (RLXA) a user must be registered on the gateway machine. Users with an existing PSS account can access any SERCnet host without incurring any charges but shortly, all users will need to be registered on the gateway to assess the total traffic. Existing users will be notified of any changes. SERCnet users will be charged at the appropriate rate based on the number of Kilosegments transferred (currently 23p/Kilosegment + 23p per hour).

To obtain an account on the gateway a user must satisfy the SERC that he has the means to pay for his usage. In the case of grantholders this will normally come from the relevant committee. Anybody wishing to use the gateway must apply by completing section 4 of an AL54, plus other relevant details, and sending the completed form to the Applications Secretary at RAL.

At present it is difficult to give guidelines to the cost of PSS but for interactive work an hour will probably cost less than 50p. Anyone requiring further details should contact Dr M R Jane at RAL ext 408.

5. GEC INSTALLATION NEWS

A new 4090 was installed at Cambridge in November last year, replacing the 4070 which was installed at the Heriot-Watt University in Edinburgh. Between now and April the moves will be:

1. A new 4090 to be installed at Cardiff (Jan)
2. Cardiff's 4070 to replace an existing 2050
3. A new 4090 to be installed at Bristol (Feb)
4. Bristol's 4085 to be installed at Birmingham
5. Birmingham's 4080 to replace an existing 2050
6. A new 4090 to be installed at Rutherford
7. Rutherford's 4085 to be installed at Cranfield
8. Cranfield's 4070 to replace an existing 2050

The three 2050s to be upgraded are at Reading, Durham and Southampton, but upgrading not necessarily in that order. After this game of 'musical computers' the situation at the end of the financial year should be:

4090 at Rutherford (RLGK) - development machine
4090 at Rutherford (RLGB)
4070 at Rutherford (RSGA) - old Appleton Machine
4085 at Birmingham (BHGA)
4082 at Bradford (BDGA)
4090 at Bristol (BRGA)
4090 at Cambridge (CAGA)
4090 at Cardiff (CFGA)
4085 at Cranfield (CDGA)
4070 at Glasgow (GWGA)
4070 at Heriot-Watt (HWGA)
4070 at Newcastle (NEGA)
4070 at QMC (ZMGA)
4085 at Sheffield (SHGA)

There are also GECs running ICF software at:

Manchester (MAGA)
UCL (ZUGA)
ROE (REGA)
NERC (Swindon) (HQGA)
NERC (Keyworth) (KWGA)
Reading (RGGA)
Durham (DUGA)
Southampton (SNGA)
PSS Gateway (RLXA)

Reading, Durham and Southampton are upgraded 2050s.

6. USEFUL TELEPHONE NUMBERS

The following is a list of useful extensions available on Abingdon (0235) 21900:

OPERATIONS GROUP

Shift Leader	280 or Abingdon 834486	
Head of Operations	515	D G House
Head of Resource Management	408	M R Jane
Grant Assessment	6105	B G Loach
Operations Management	6623	P C Thompson
Telecommunications	515	P Blanshard
Telecommunications	515	C Balderson
ICF Resource Management	6188	G A Lambert
ICF Resource Management	6188	R T Platon
Central Computing Resource Management	6553	S H Ward
Mag Tape Library	333	
External Post Room	429	
Telecomms	6389	
Starlink Operations	6471	
ICF Operations	345	
FR80	239	

MISCELLANEOUS

Program Advisory Office	6111
Prime and GEC Support	6293
Documentation	272
Receptionist	6296
R E Thomas	6219
Editor, FORUM	6609

7. ITEMS FROM UMIST NEWSLETTER NO. 197

ACSL

The ACSL simulation language has been mounted on the UMIST PRIME 750. Documentation is available from the User Support Staff, Room C62, Control Systems Centre, UMIST, Manchester, M60 1QD. Tel 061-236-3311 ext 2161.

FORTRAN COURSE - ADVANCED

The SERC (ICF) at UMIST is considering the possibility of running an advanced FORTRAN course similar to the course held at RAL on 14 May 1981.

The course will probably cover:

1. The effect on the running of FORTRAN programs of Virtual Memory and Segmentation.

2. The use of PRIME specific subroutines instead of FORTRAN READ and WRITE statements, to improve the efficiency of Input/Output.

Any users interested in attending such a course should contact Mr I L Cook, Operations/Support Manager, Control Systems Centre, UMIST, PO Box 88, Manchester M60 1QD.