

CSAR Service - Management Report

February 1999

This report documents the quality of the CSAR service during the month of February 1999.

A more comprehensive report will be provided quarterly, which will additionally cover wider aspects of the Service such as information on Training, Application Support and Value-Added services. The first quarterly report will be published in April 1999, as agreed by the CfS Management Board.

These and other such reports will be made available through the Web to authorised staff within EPSRC and the other Research Councils, to CfS staff and CSAR Service users. The reports will be indexed in a similar way to which other useful information and news is listed for selection.

1. Introduction

This month has seen a variable workload on the system, again with a wide spread of job sizes ranging from 1PE to 512PE jobs, however at times the system has been severely under loaded. This has resulted in the first period of idle time on the system. This occurred on the morning of Sunday 28th February.

The reliability of the system has improved this month during core time, however there were three service breaks out of core time.

This document gives information on Service Quality and on actual usage of the CSAR Service during the reporting period of February 1999. The information, in particular, covers the availability and usage of the following two main CSAR Service High Performance Computing (HPC) systems:

- Cray T3E-1200E/576 (Turing)
- SGI Origin2000/16 (Fermat).

The information is provided in both textual and graphical form, so that it is easier to see trends and variances.

2. Service Quality

This section covers overall Customer Performance Assessment Ratings (CPARS), HPC System availability and usage, Service Quality Tokens and other information concerning issues, progress and plans for the CSAR Service.

2.1 CPARS

Table 1 gives the measure by which the quality of the CSAR Service is judged. It identifies the metrics and performance targets, with colour coding so that different levels of achievement against targets can be readily identified. Unsatisfactory actual performance will trigger corrective action.

CSAR Service - Service Quality Report - Performance Targets

Service Quality Measure	Performance Targets					
	White	Blue	Green	Yellow	Orange	Red
HPC Services Availability						
Availability in Core Time (% of time)	> 99.9%	> 99.5%	> 99.2%	> 98.5%	> 95%	95% or less
Availability out of Core Time (% of time)	> 99.8%	> 99.5%	> 99.2%	> 98.5%	> 95%	95% or less
Number of Failures in month	0	1	2 to 3	4	5	> 5
Mean Time between failures in 52 week rolling period (hours)	>750	>500	>300	>200	>150	otherwise
Help Desk						
Non In-depth Queries - Maximum Time to resolve 50% of all queries (working days)	< 1/4	< 1/2	< 1	< 2	< 4	4 or more
Non In-depth Queries - Maximum Time to resolve 95% of all queries (working days)	< 1/2	< 1	< 2	< 3	< 5	5 or more
Administrative Queries - Maximum Time to resolve 95% of all queries (working days)	< 1/2	< 1	< 2	< 3	< 5	5 or more
Help Desk Telephone - % of calls answered within 2 minutes	>98%	> 95%	> 90%	> 85%	> 80%	80% or less
Others						
Normal Media Exchange Requests - average response time in month (working days)	< 1/2	< 1	< 2	< 3	< 5	5 or more
New User Registration Time (working days)	< 1/2	< 1	< 2	< 3	< 4	otherwise
Management Report Delivery Times (working days)	< 1	< 5	< 10	< 12	< 15	otherwise
System Maintenance - no. of scheduled sessions taken per system in the month	0	1	2	3	4	otherwise

Table 1

Table 2 gives actual performance information for the period of February 1st to 28th inclusive. Overall, the CPARS Performance Achievement was satisfactory (see Table 3), i.e. green measured against the CPARS performance targets.

CSAR Service - Service Quality Report - Actual Performance Achievement

Service Quality Measure	1998		1999						
	Nov.	Dec.	Jan	Feb	March	April	May	June	July
HPC Services Availability									
Availability in Core Time (% of time)	99.99%	97.20%	99.70%	100%					
Availability out of Core Time (% of time)	98.53%	98.41%	100%	99.40%					
Number of Failures in month	2	5	1	3					
Mean Time between failures in 52 week rolling period (hours)	400	174.1	231	229					
Help Desk									
Non In-depth Queries - Maximum Time to resolve 50% of all queries (working days)	1	<0.25	<0.25	<0.25					
Non In-depth Queries - Maximum Time to resolve 95% of all queries (working days)	4	5	<1	<2					
Administrative Queries - Maximum Time to resolve 95% of all queries (working days)	2	<1	<1	<3					
Help Desk Telephone - % of calls answered within 2 minutes	100%	100%	100%	100%					
Others									
Normal Media Exchange Requests - average response time in month (working days)	0.5	0	<0.5	0					
New User Registration Time (working days)	2	0	<2	0					
Management Report Delivery Times (working days)	10	10	10	10					
System Maintenance - no. of scheduled sessions taken per system in the month	4	1	2	2					

Table 2

Notes:

- HPC Services Availability has been calculated using the following formulae, based on the relative NPB performance of Turing and Fermat:

$$[\text{Turing availability} \times 122 / (122 + 3.5)] + [\text{Fermat availability} \times 3.5 / (122 + 3.5)]$$

Table 3 gives Service Credit values for the month of February. These will be accounted on a quarterly basis, formally from the Go-Live Date. The values are calculated according to agreed Service Credit Ratings and Weightings.

CSAR Service - Service Quality Report - Service Credits

Service Quality Measure	1998		1999						
	Nov.	Dec.	Jan	Feb	March	April	May	June	July
HPC Services Availability									
Availability in Core Time (% of time)	-0.058	0.078	-0.039	-0.058					
Availability out of Core Time (% of time)	0.000	0.039	-0.047	0					
Number of Failures in month	0.000	0.016	-0.008	0					
Mean Time between failures in 52 week rolling period (hours)	0.000	0.016	0.008	0.008					
Help Desk									
Non In-depth Queries - Maximum Time to resolve 50% of all queries (working days)	0.000	-0.019	-0.019	-0.019					
Non In-depth Queries - Maximum Time to resolve 95% of all queries (working days)	0.031	0.046	-0.016	-0.016					
Administrative Queries - Maximum Time to resolve 95% of all queries (working days)	0.000	-0.016	-0.016	0.016					
Help Desk Telephone - % of calls answered within 2 minutes	-0.004	-0.004	-0.004	-0.004					
Others									
Normal Media Exchange Requests - average response time in month (working days)	-0.002	0.000	-0.002	0					
New User Registration Time (working days)	0.000	0.000	0	0					
Management Report Delivery Times (working days)	0.000	0.000	0	0					
System Maintenance - no. of scheduled sessions taken per system in the month	0.006	-0.003	0.000	0					
Monthly Total & overall Service Quality Rating for each period:	-0.01	0.08	-0.07	-0.04	0.00	0.00	0.00	0.00	0.00

Table 3

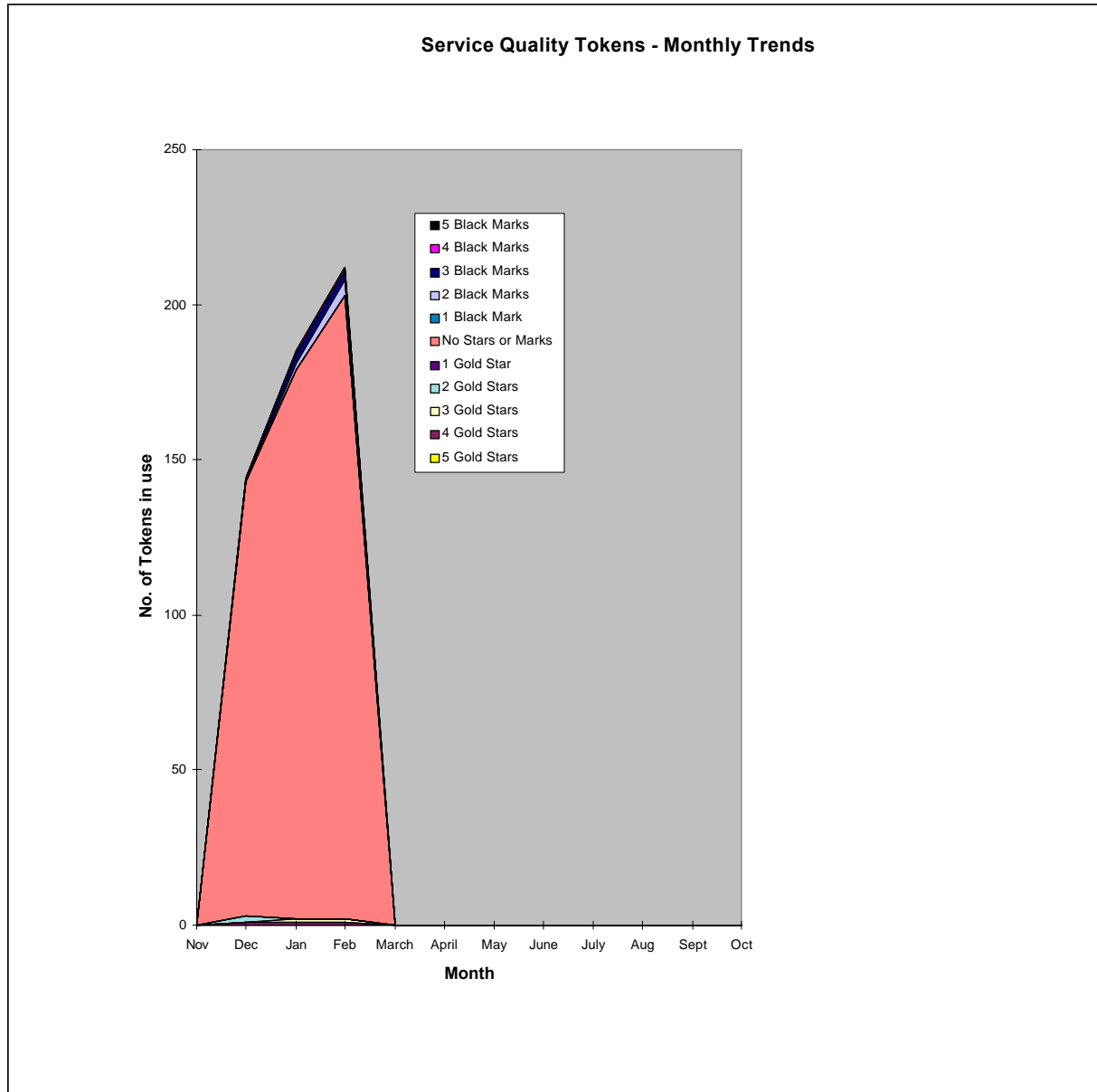
2.2 Service Quality Tokens

The current position at the end of February 1999 is that 11 of the 212 registered users of the CSAR Service had used Service Quality Tokens. See below:

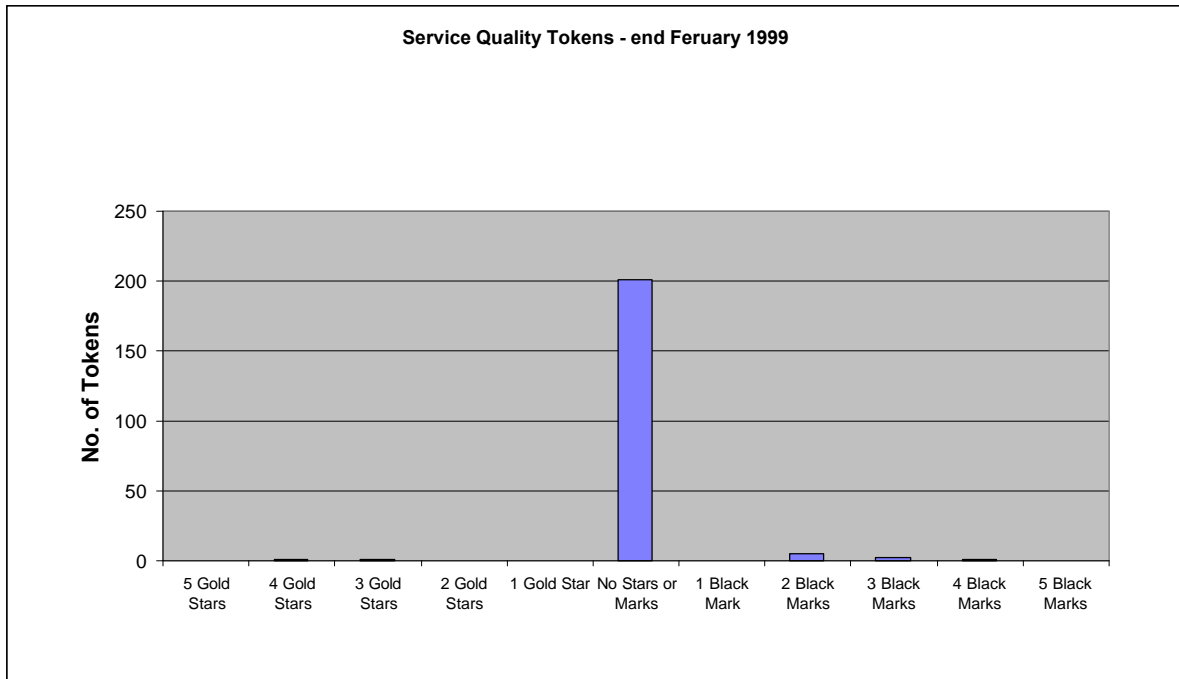
Service Quality Tokens

	Position as at end of each month											
	Nov	Dec	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct
5 Gold Stars	0	0	0	0								
4 Gold Stars	0	1	1	1								
3 Gold Stars	0	0	1	1								
2 Gold Stars	0	2	0	0								
1 Gold Star	0	0	0	0								
No Stars or Marks	0	140	177	201								
1 Black Mark	0	0	0	0								
2 Black Marks	0	0	2	5								
3 Black Marks	0	1	3	3								
4 Black Marks	0	0	1	1								
5 Black Marks	0	0	0	0								
Total No. of Users	40	144	185	212								

The area graph below illustrates the monthly usage trend of quality token usage:



In the form of a bar chart, the current statistics are:



The current picture still shows that the majority of users have not yet had a cause to use the quality token facility.

Black marks are being awarded for the speed of the web and for the lack of a sub consortia facility. These issues are both well in hand, the new web server based in Manchester has now been installed and is running in parallel with the existing server to provide an enhanced service.

2.3 Throughput Target against Baseline

The Baseline capacity was not fully utilised this month due to insufficient workload. Actual percentage utilisation compared with Baseline during the 28-day period was 94.27%.

Job Throughput Against Baseline CSAR Service Provision

Period: 1st to 28th February 1999

	Baseline Capacity for Period (T3E PE Hours)	Actual Usage in Period (T3E PE Hours)	Actual % Utilisation c/w Baseline during Period
1. Has CfS failed to deliver Baseline MPP Computing Capacity for EPSRC?	326,790	308,057	94.27%
2. Have Users submitted work demanding > 110% of the Baseline during period?	326,790	330,097	No
3. Are there User Jobs outstanding at the end of the period over 4 days old?		Number of Jobs at least 4 days old at end Period 0	Number of Jobs at least 4 days old at end Period is not zero (Yes/No)? No
4. Have Users submitted work demands dropped below 90% of the Baseline during period?		Minimum Job Time Demands as % of Baseline during Period 0%	Minimum Job Time Demand above 90% of Baseline during Period (Yes/No)? No
5. Majority of Job Queues contained runnable jobs from Users for more than 97% during period?	Number of standard Job Queues (ignoring priorities) 4	Average % of time each queue contained jobs in the Period 76.3%	Average % of time each queue contained jobs in the Period is > 97%? No

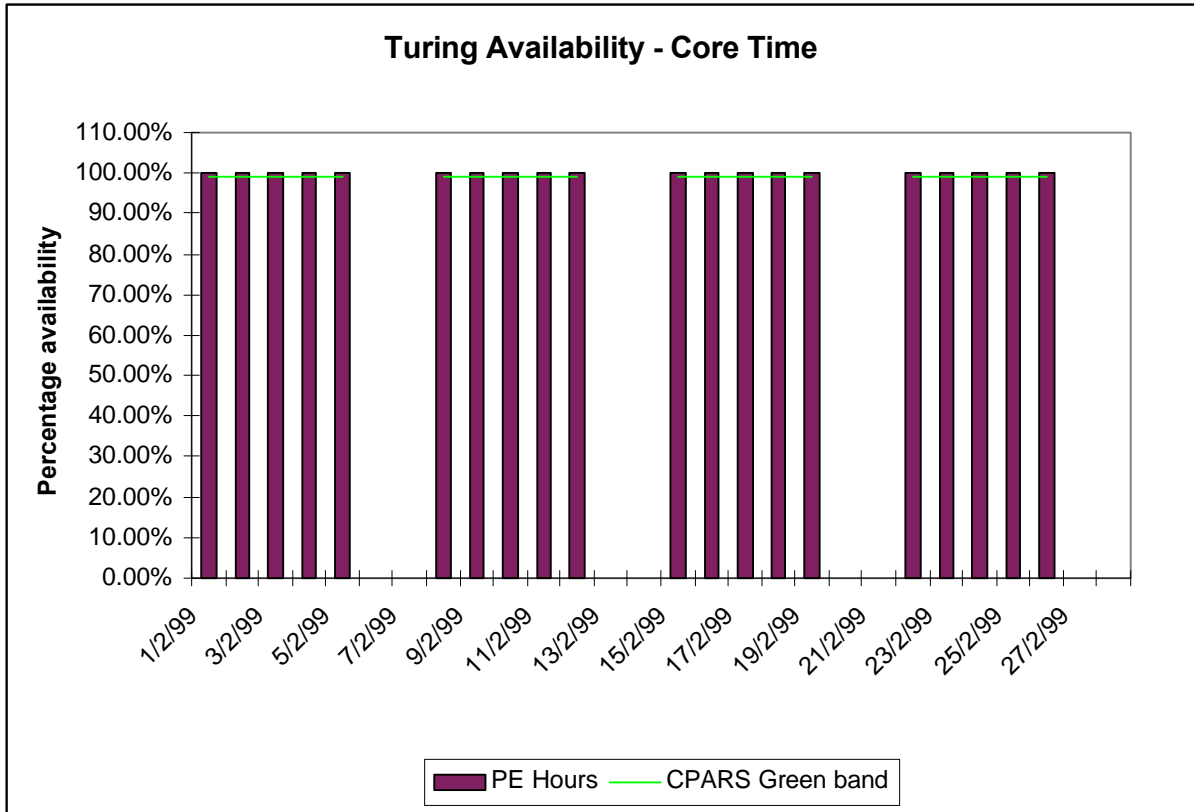
2. System Availability

Service availability each reporting period is calculated as a percentage of actual availability time over theoretical maximum time, after accounting for planned breaks in service for preventative maintenance.

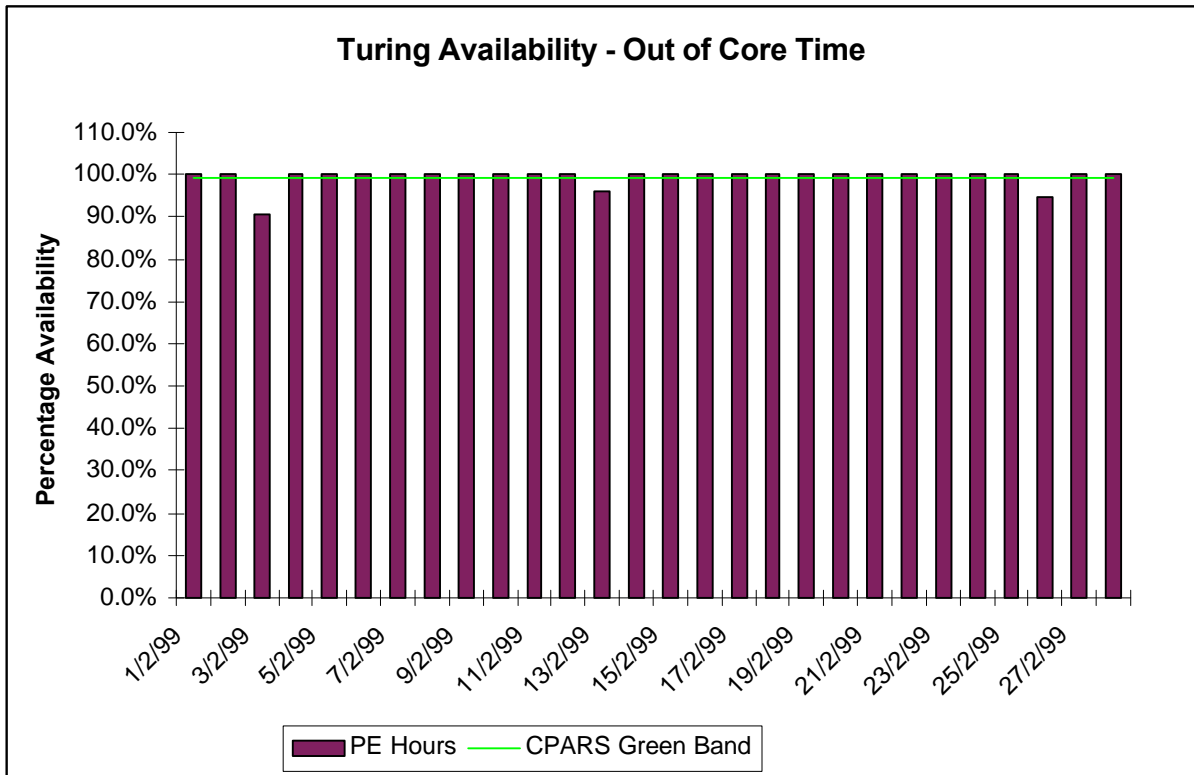
3.1 Cray T3E-1200E System (Turing)

The following graphs show the availability of Turing both in core time and out of core time respectively during the period of 1st to 28th February. There was unplanned unavailability of the system on the 3rd, 13th and the 26th February due to PE failures. Availability of Turing during core time was excellent with an average availability of 100% throughout the month.

Turing availability for February:



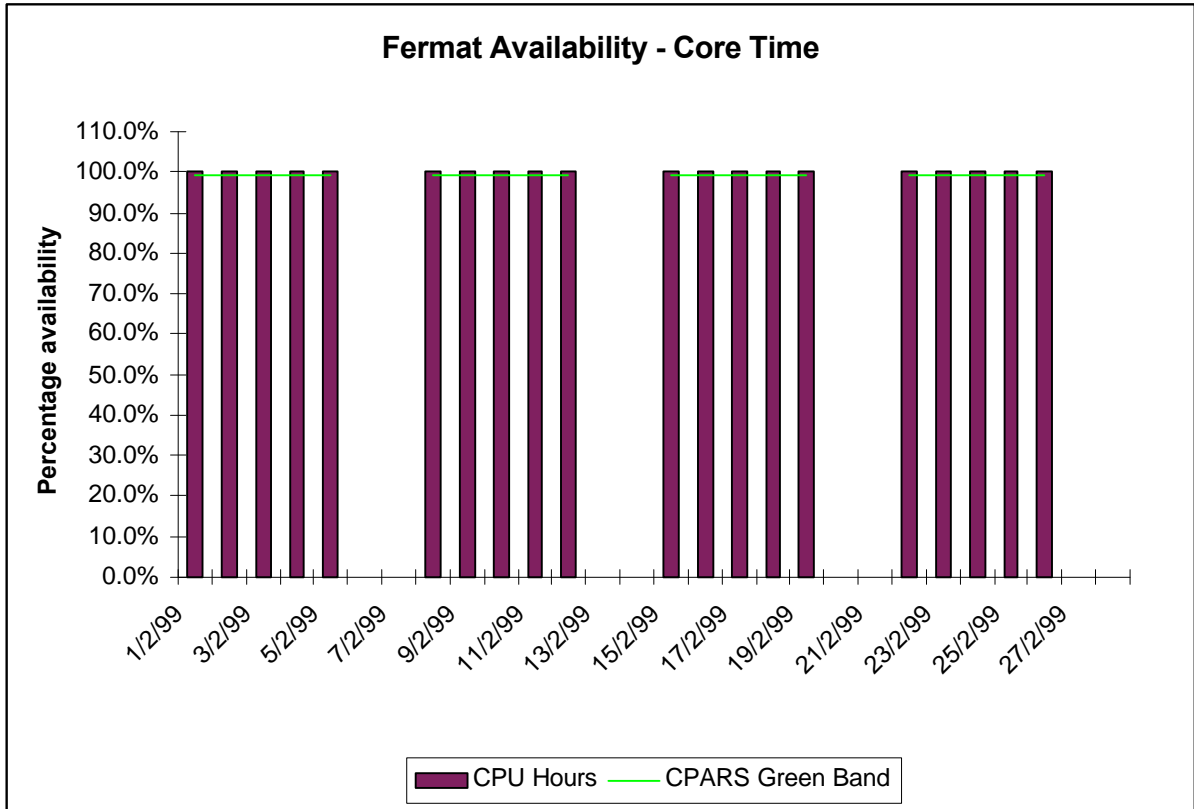
Availability of Turing in core time during February was excellent.



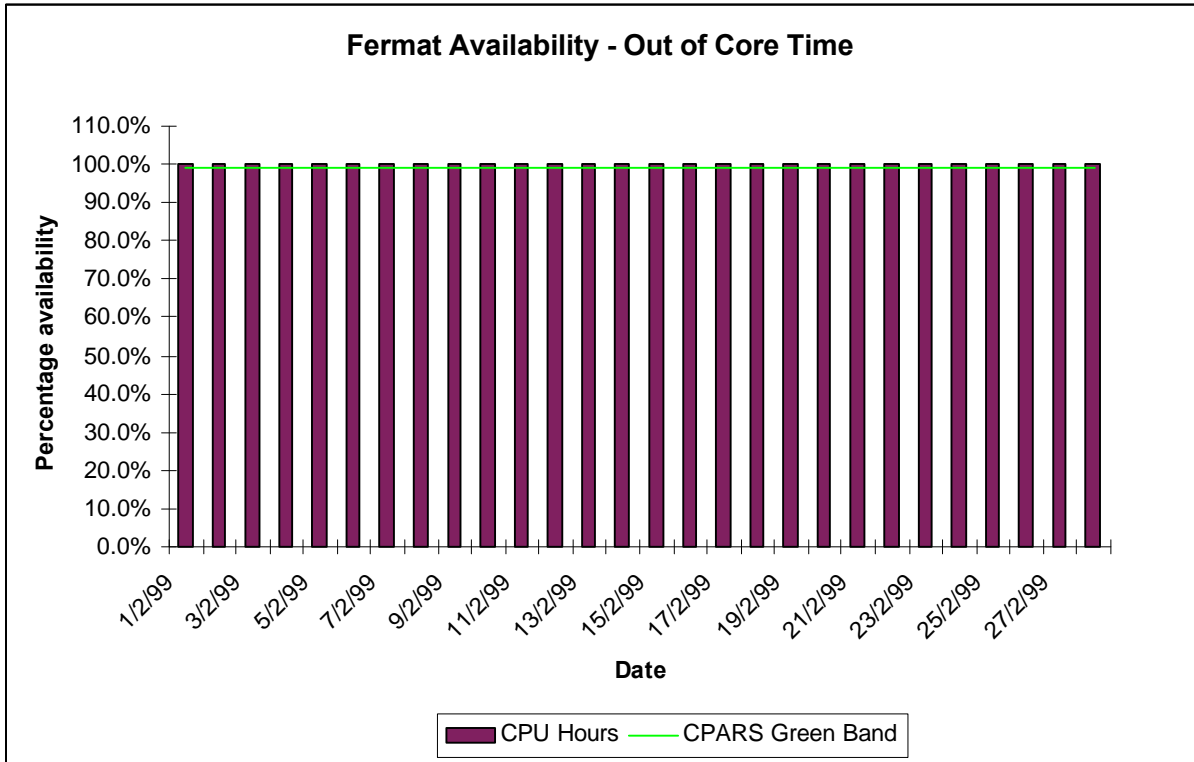
Availability of Turing out of core time during was good apart from the three PE failures during the month.

3.2 SGI Origin2000 System (Fermat)

The following graphs show the availability of Fermat both in core time and out of core time respectively.



Availability of Fermat in core time during February was excellent.



Availability of Fermat out of core time during February was excellent.

4. HPC Services Usage

Usage information is given in tabular form, in Appendices, and in graphical format. The system usage information for the period of February 1st to 28th is provided by Project/User Group, totalled by Research Council and overall. This covers:

- | | | |
|------------------------|--------------------------|-------------------------|
| • CPU usage | Turing: 308,057 PE Hours | Fermet: 5,053 CPU Hours |
| • User Disk allocation | Turing: 44.32 GB Years | Fermat: 18.73 GB Years |
| • HSM/tape usage | 125.83 GB Years | |

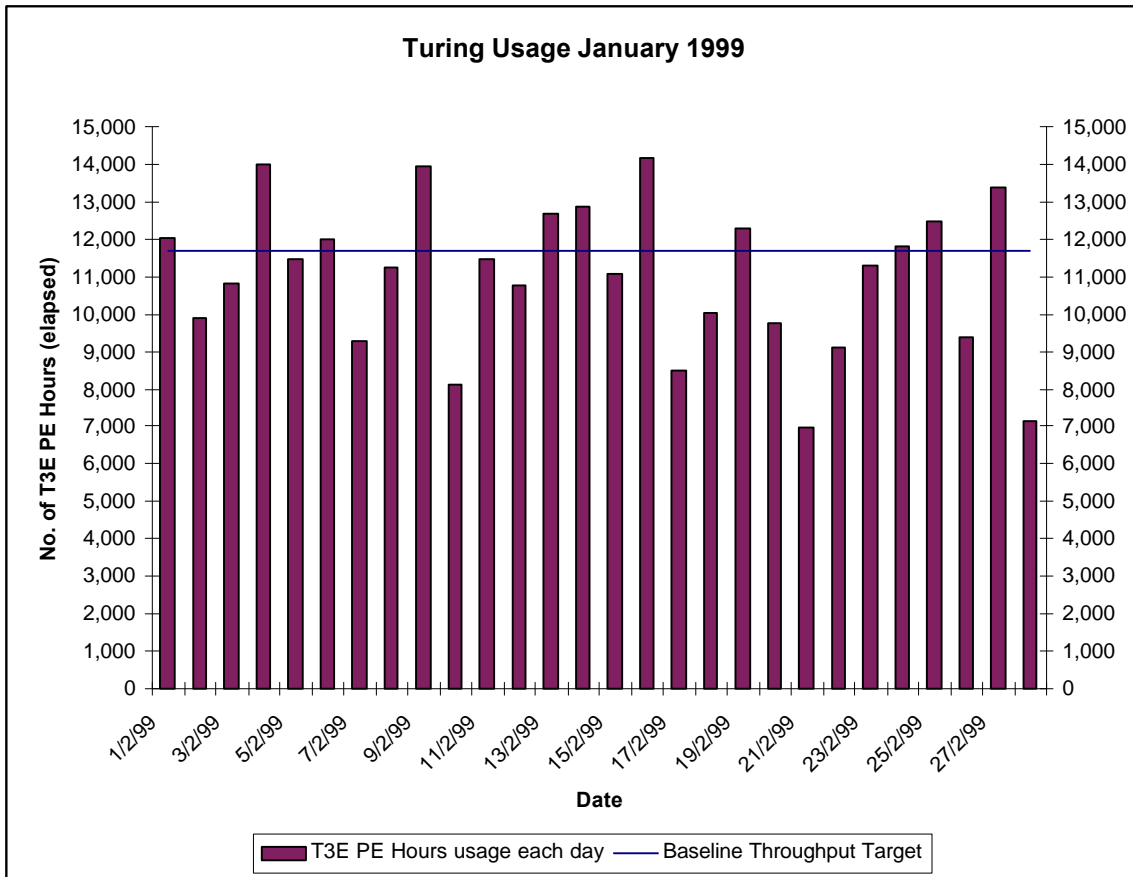
In addition, the following graphs are provided to illustrate usage per month, historically:

- a) MPP (T3E) Usage by month, showing usage each month of CPU (T3E PE Elapsed Hours), split by Research Council and giving the equivalent GFLOP-Years as per NPB. The Baseline Capacity (103 GFLOP-Years) is shown by an overlaid horizontal line.
- b) SMP (Origin) Usage by month, showing usage each month in CPU Hours, split by Research Council and giving the equivalent GFLOP-Years as per NPB. The Baseline Capacity (3.5 GFLOP-Years) is shown by an overlaid horizontal line.
- c) High Performance Disk (T3E) allocated for User Data by month, showing the allocated space each month in GBytes, split by Research Council. The Baseline Capacity (1 Terabyte) is shown by an overlaid horizontal line.
- d) Medium Performance Disk (Origin) allocated for User Data by month, showing the allocated space each month in GBytes, split by Research Council. The Baseline Capacity (1.5 Terabytes) is shown by an overlaid horizontal line.
- e) HSM/Tape Usage (T3E) by month, showing the volumes held each in GBytes, split by Research Council. The Baseline Capacity (16 Terabytes) available will be shown by an overlaid horizontal line.

4.1 Cray T3E-1200E System (Turing)

The following graph shows the usage of Turing during each day of February 1999. Note that there is some variance on a day-to-day basis as the accounts record job times, and thus CPU usage figures, at the time of job completion which could be the second actual day for large jobs. At present, there is a 12 hour limit on jobs, so that they are check-pointed, and computational time lost due to any failure is well managed.

Turing usage for January:

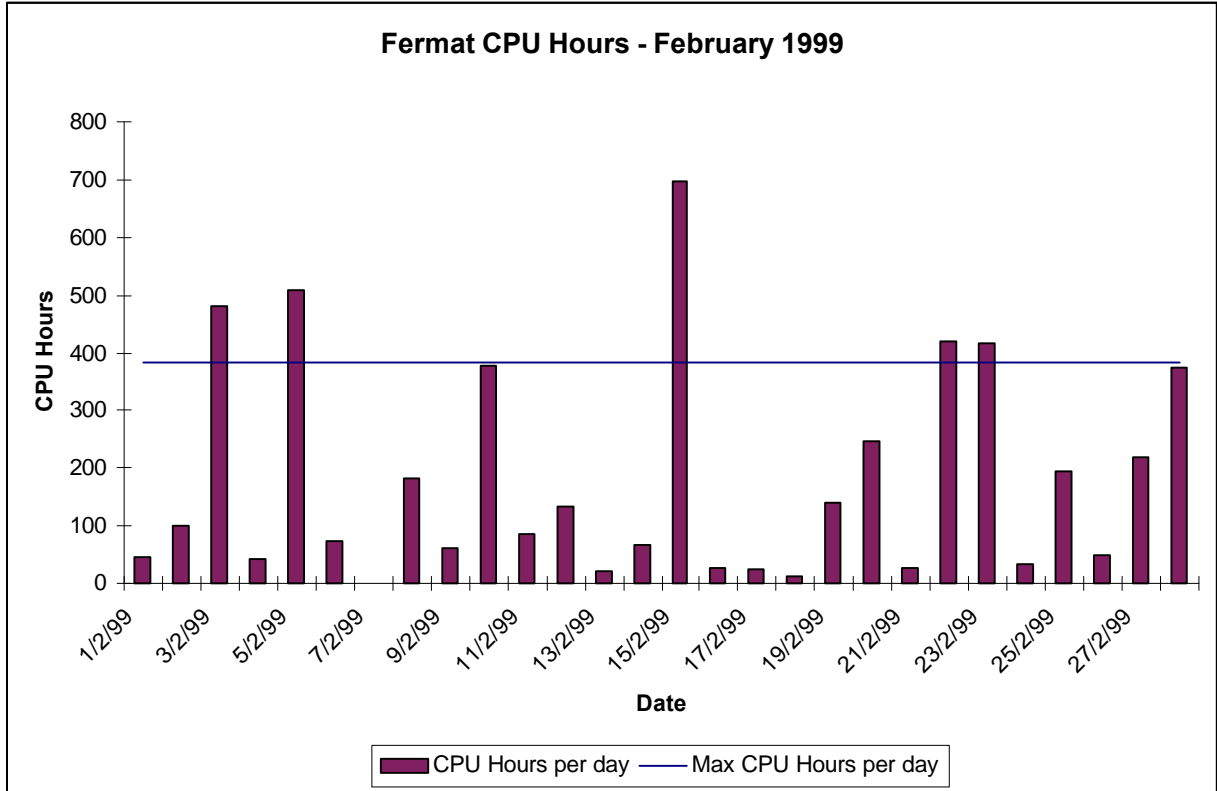


The above usage graph for the Turing system shows that the overall workload tailed off towards the end of each week. This resulted in the system running, on average, under baseline. The extreme effect of this was seen on Sunday 28th February when the batch queues on Turing were idle for a short period.

Fine tuning of the CfS scheduling system will continue to ensure minimal wasting of PE resource, in order to fit in a number of different sized jobs (e.g. 32, 64, 128, 256) thus facilitating maximised job throughput.

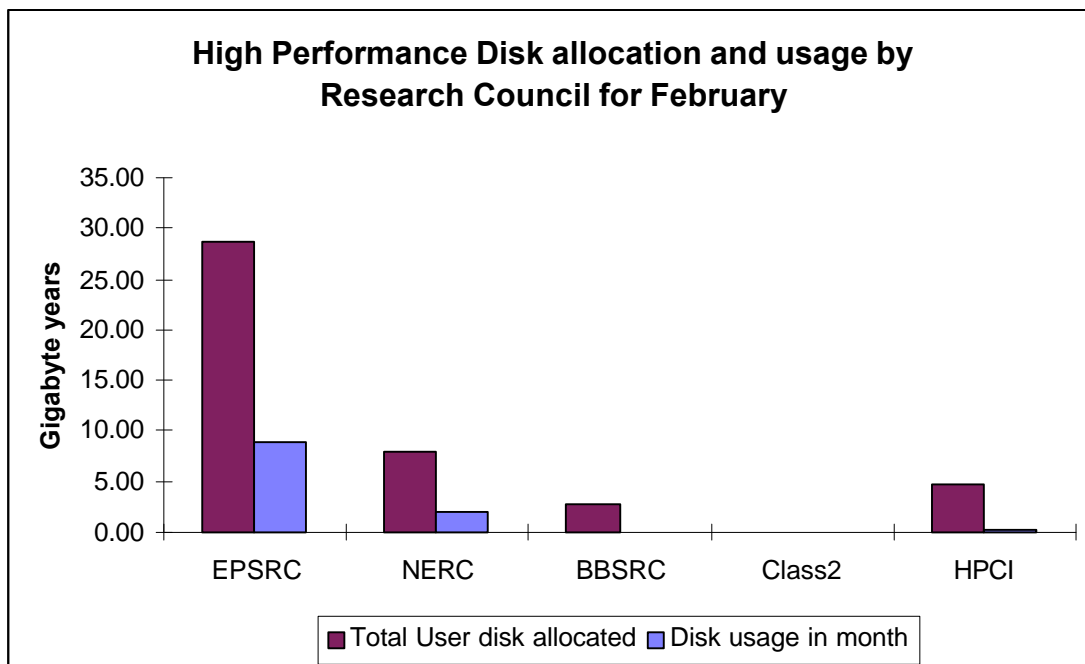
4.2 SGI Origin2000 System (Fermat)

The usage of the Origin system was good for the month with the daily usage of the system averaging 46.9% of theoretical maximum. This figure does not show that in some periods CPU time is running at 99.9% of the total available CPU time. The groups most heavily using the Fermat system are CSE002, CSN001 and CS2003.

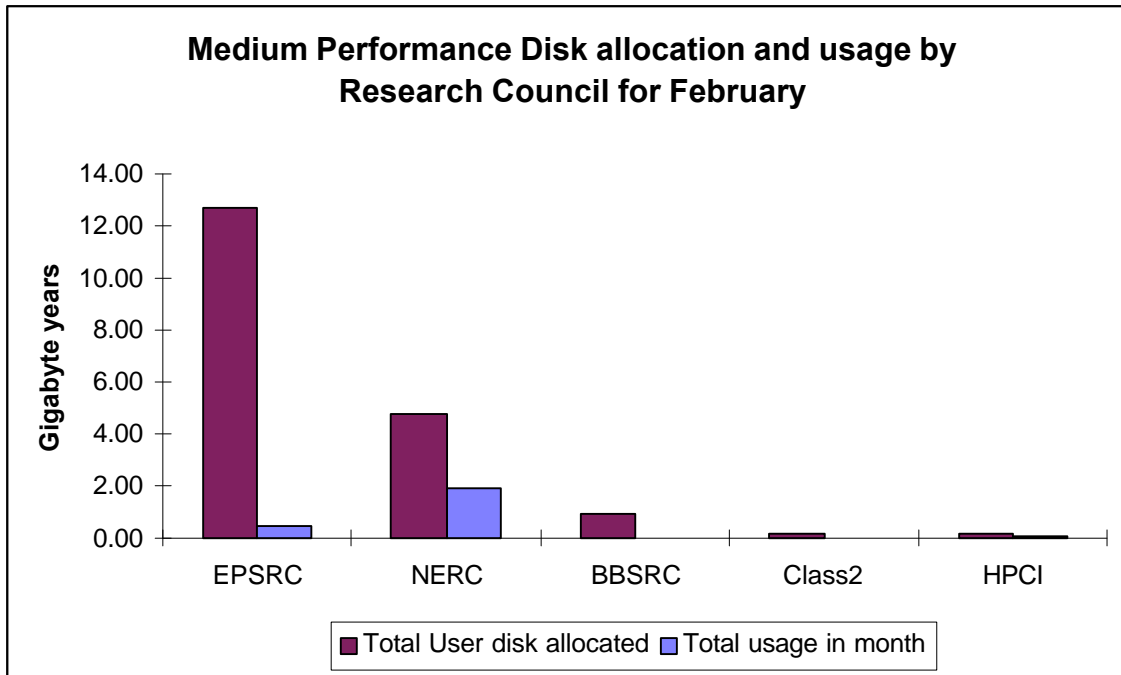


4.3 Disk/HSM Usage Charts

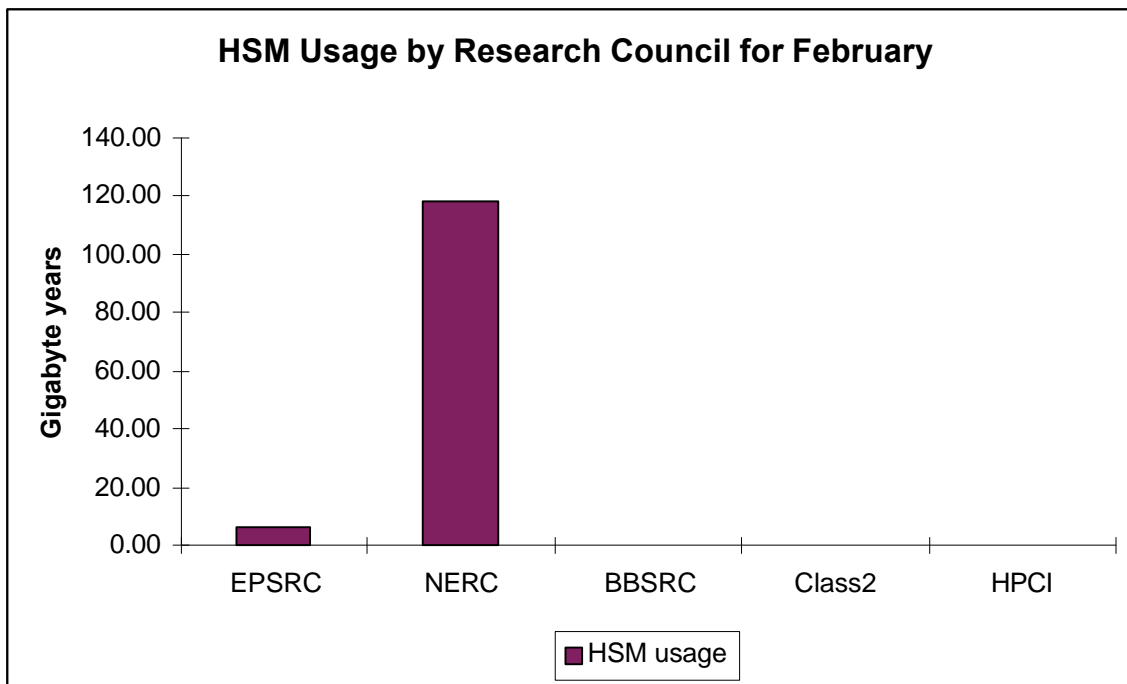
The graphs below show current disk and HSM allocations and usage.



The preceding graph shows actual usage against the current allocation of disk on the Turing system.

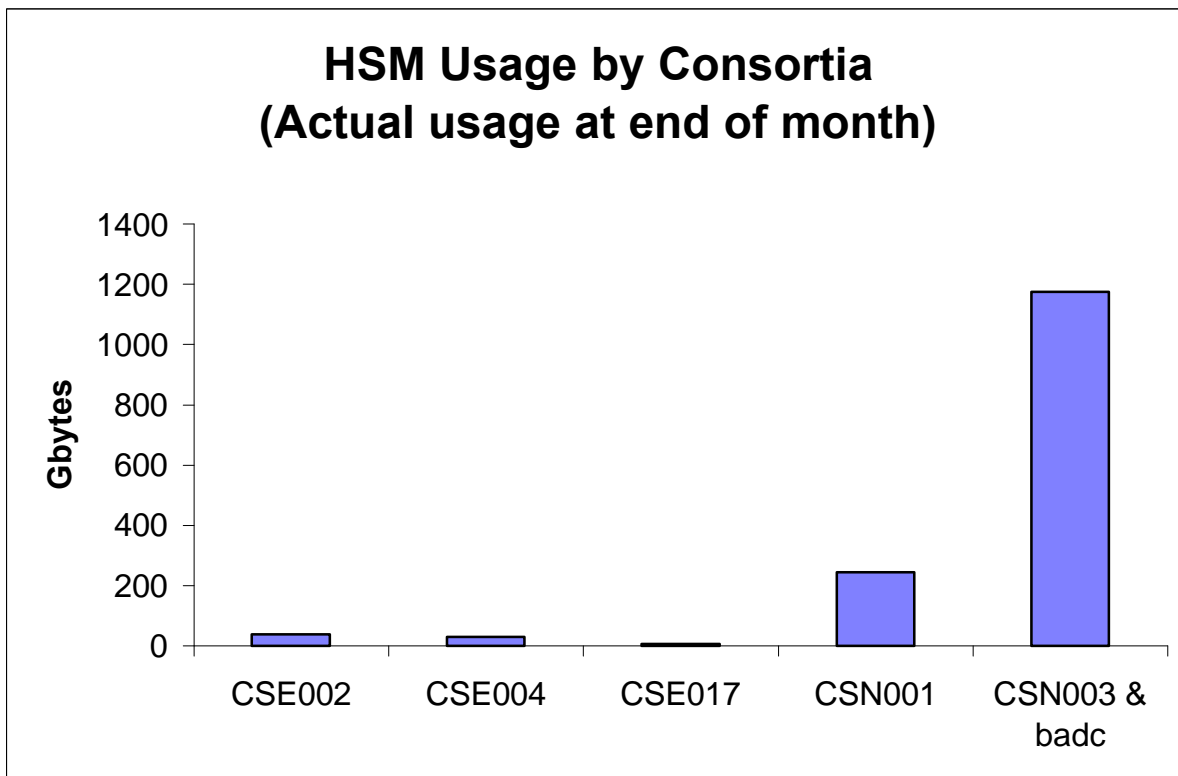
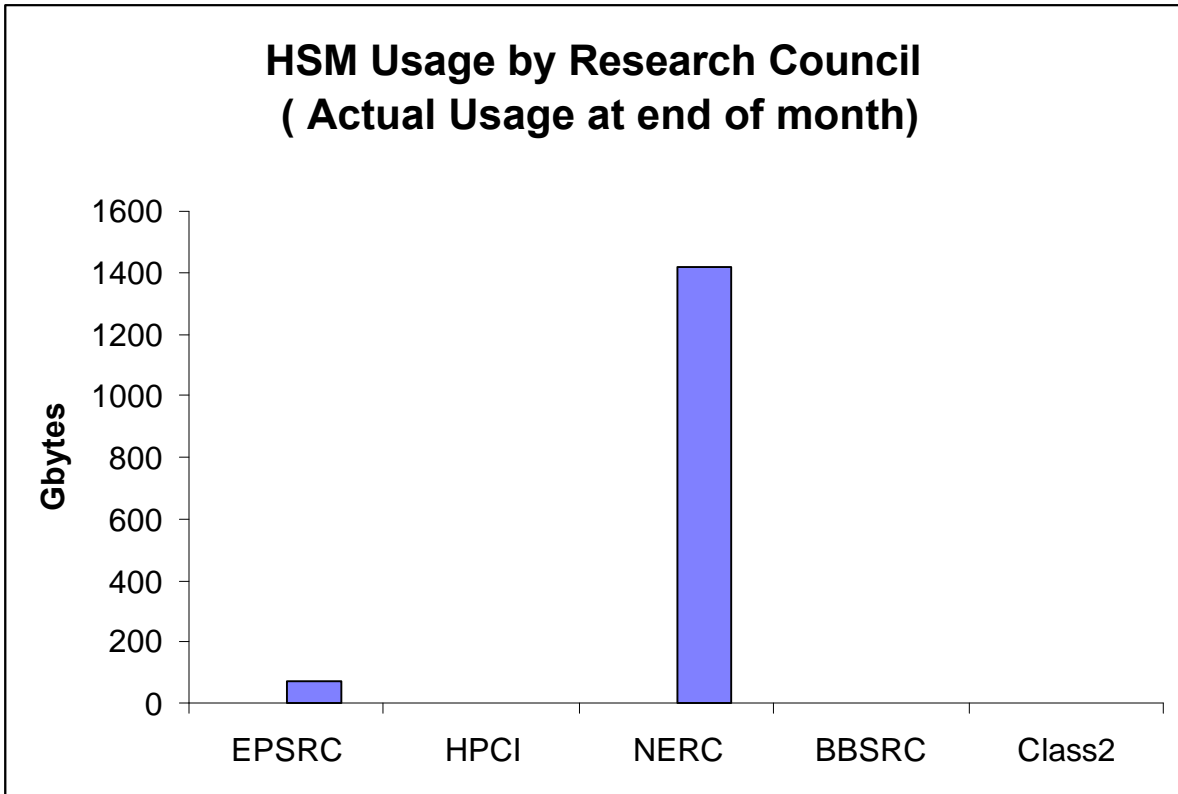


The above graph shows the disk allocations against usage of the disk on Fermat.

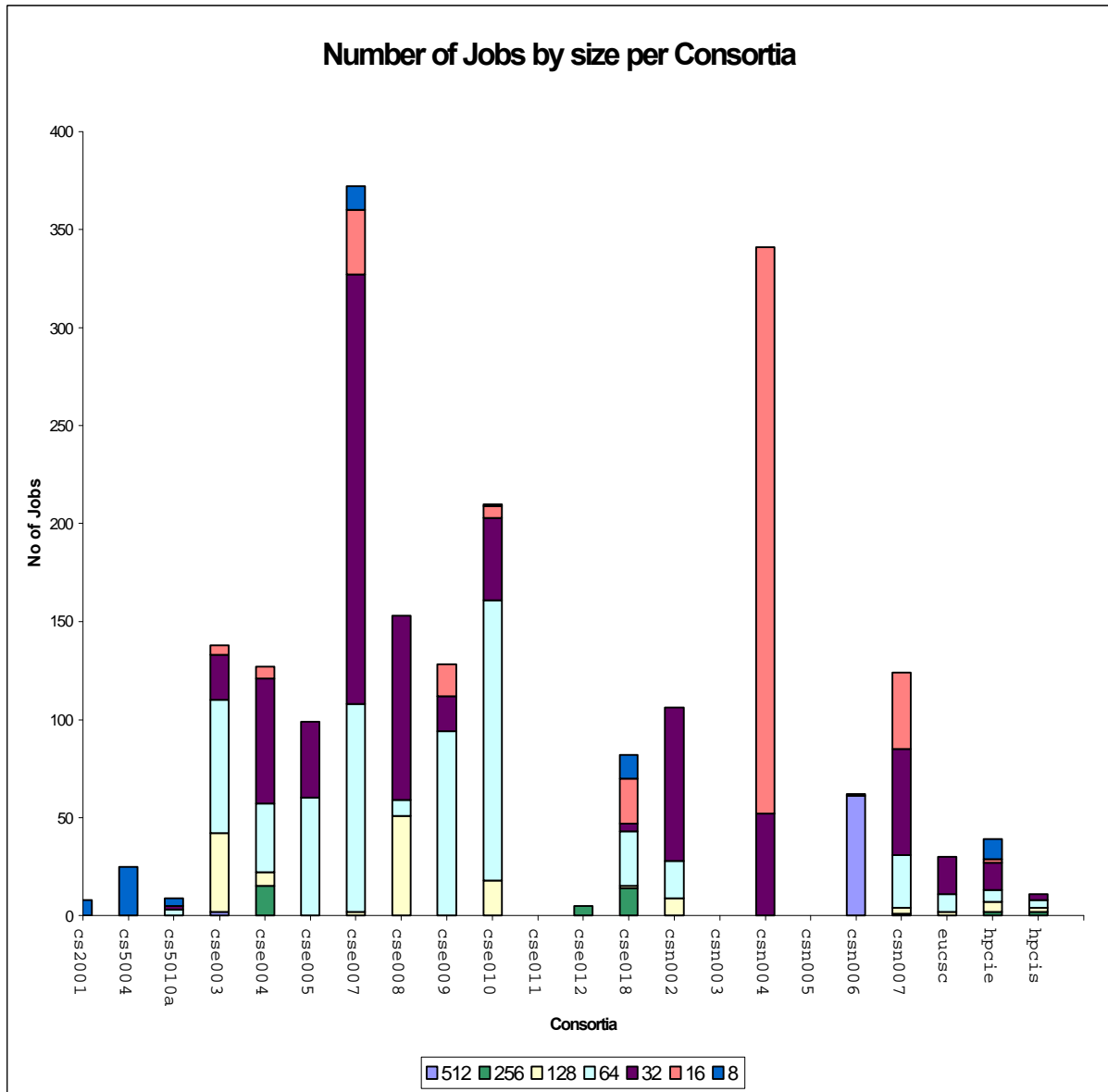


The above graph shows the total usage of the HSM facility by Research Council.

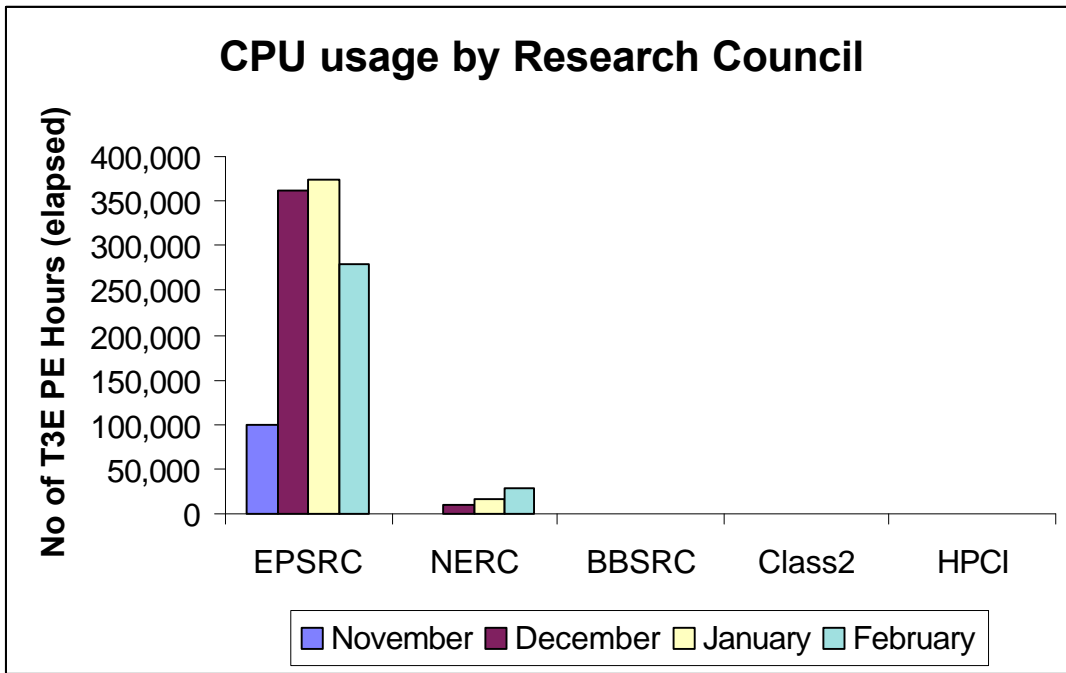
The next two graphs give actual usage of HSM by Research Council and by Consortium.



Job statistics for Turing:



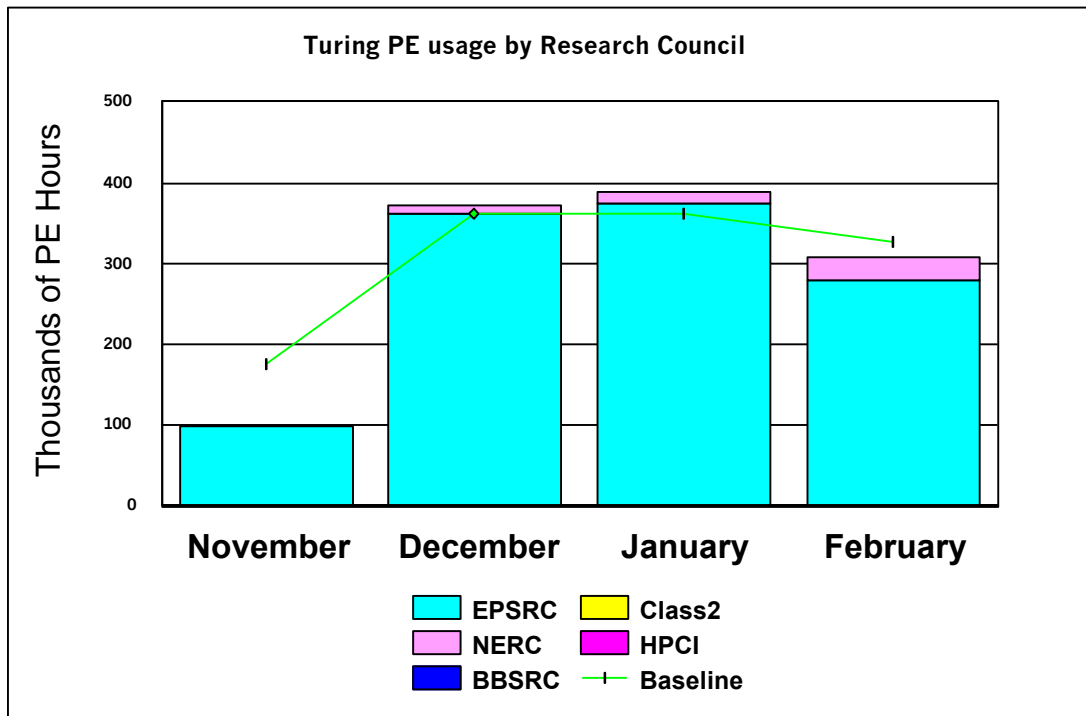
The above graph shows the number of jobs of the major sizes run in the period 1st to 28th of February 1999.



Turing PE usage is shown by Research Council during the months of service to date in the above chart.

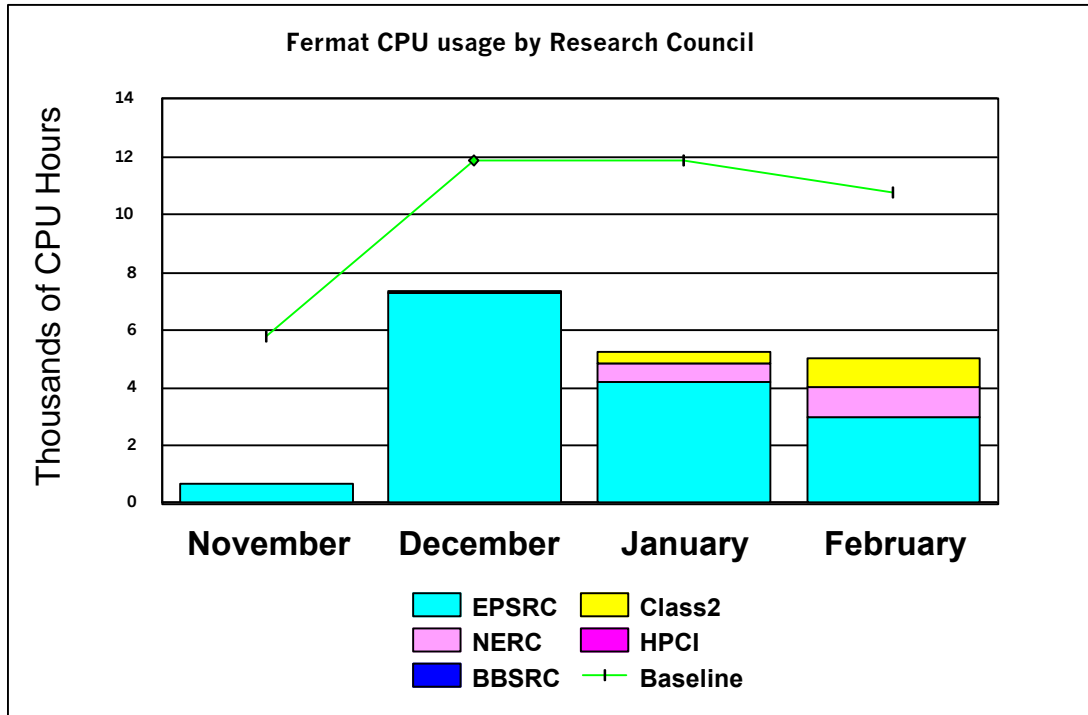
4.4 Historical Usage Charts

The graph below shows the PE hour's utilisation on Turing by Research Council from November. The baseline varies dependant on the number of days in each month, within a 365 day year. The reduced Baseline in November 1998 represents half a month.

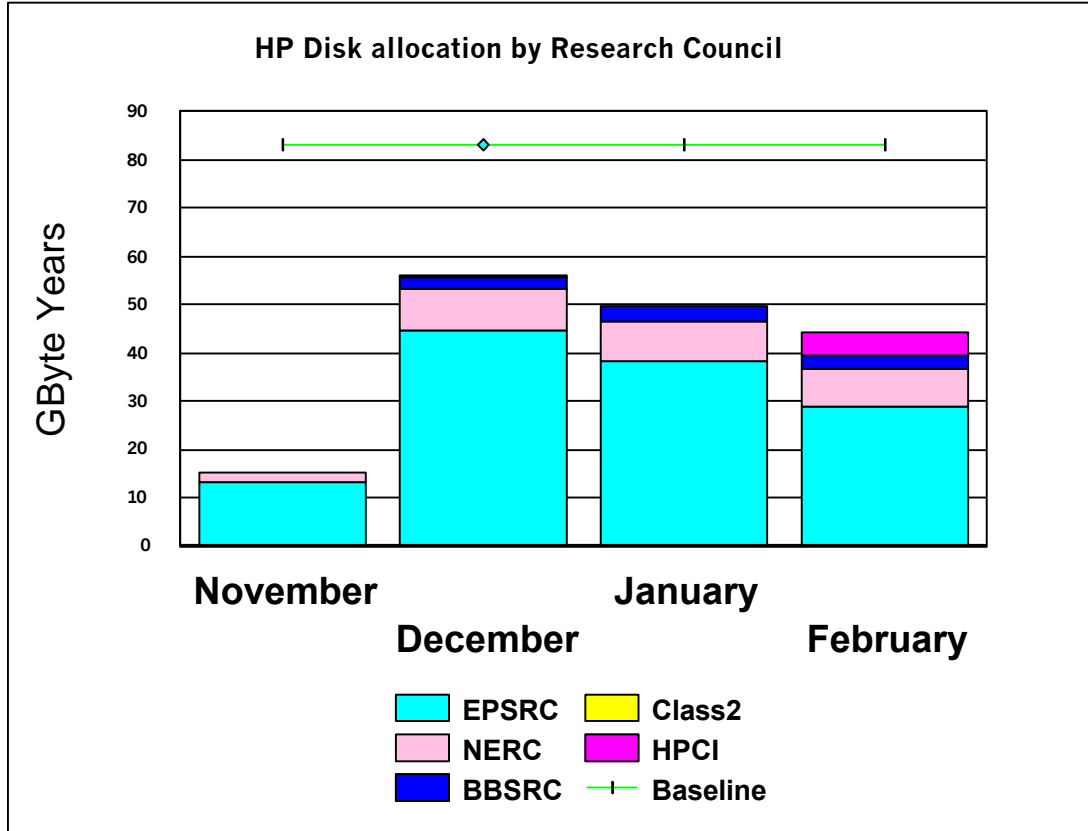


The graph below shows the historic CPU usage on Fermat by Research Council from November.

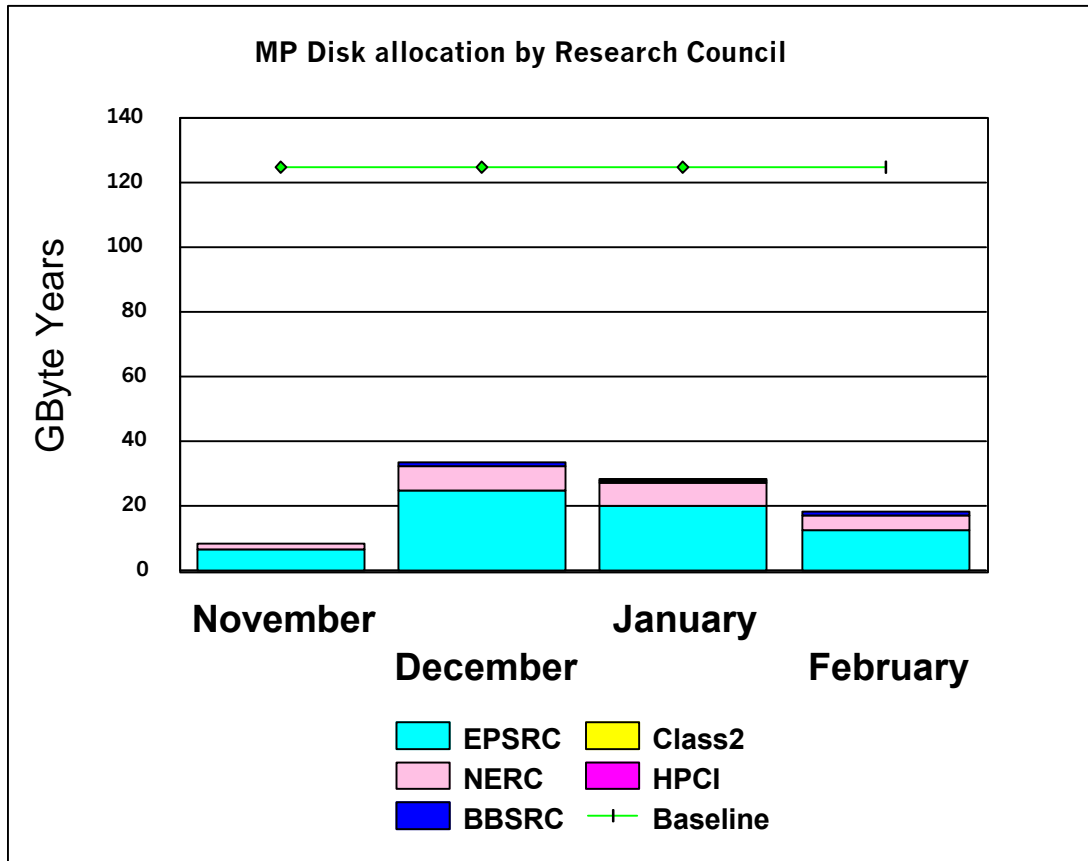
The baseline varies dependant on the number of days in each month, within a 365 day year. The reduced Baseline in November 1998 represents half a month.



The next series of graphs illustrates the usage of the disk and HSM resources of the system.

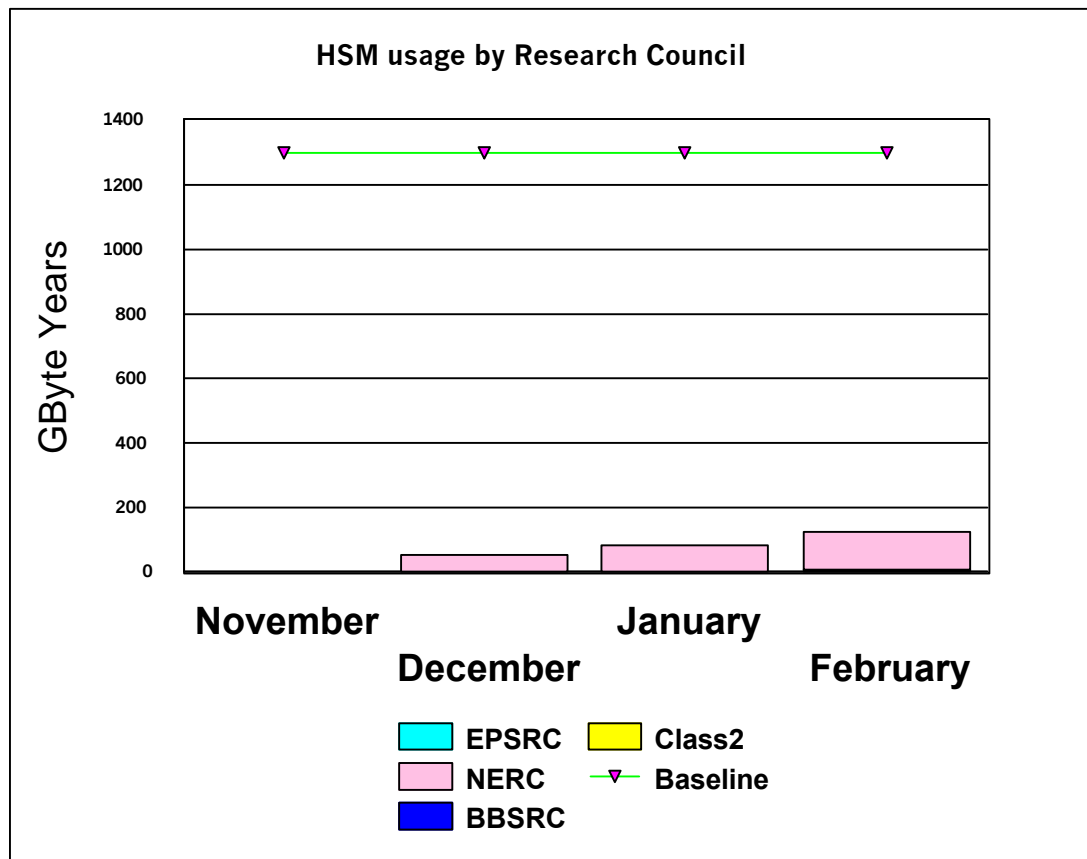


The preceding graph illustrates the historic allocation of the High Performance Disk on Turing.



The graph above illustrates the historic allocation of the Medium Performance Disk on Fermat.

The graph below shows the historic HSM usage by Research Council funded projects. The primary usage is for NERC.



5. Service Status, Issues and Plans

5.1 Status

This month saw three system breaks on Turing all for PE failures. However the overall service reliability remains good. The T3E is planned to have a software upgrade on the 9th March to version 2.0.4

5.2 Issues

The throughput of interactive work became an issue during February. A fix was identified, tested and implemented during the month to stop batch work from blocking interactive jobs within agreed PE limits. Interactive work has now been reported as running efficiently on the system.

The new help desk server has been installed and early feedback is quite promising regarding the speed of access to the web pages.

5.3 Plans

The introduction of sub-consortia is continuing with the testing of the facility being undertaken shortly. The enhanced Trading Pool and Capacity Planning pages are undergoing final testing whilst the PI & RC reporting pages continue to be refined.

The second CSAR User forum is to be held in London at Imperial College on Monday 29th March.

6. Conclusion

February 1999 was overall a good month for the Service in regard to Service Quality. Continued management attention will be given to maximise the throughput of the Service, whilst balancing as fairly as practicable the shares between Projects and jobs of the varying sizes.

Appendix 1 contains the accounts for February 1999

Appendix 2 contains the Percentage shares by Consortium for February 1999

Appendix 3 contains the Percentage shares by Research Council for February 1999

Appendix 1

CfS Supercomputer Service

Usage report for Research Council Projects

From Monday 1-Feb-99 to Sunday 28-Feb-99

Account		----- CPU Usage (Hours) -----				--- Storage (GB-Years) ---			
		Inter	Priority	Normal	Low	Total	D-Usage	D-Allocn	HSM
CSE001 Admin users	turing	-	-	-	-	-	0.00	0.01	-
	fermat	-	-	-	-	-	0.00	-	-
Total for Subject									
EPSRC Administration	turing	-	-	-	-	-	0.00	0.01	-
	fermat	-	-	-	-	-	0.00	-	-
CSE002 gr/m01753 Gillan	turing	9.94	23.41	29507.89	-	29541.24	3.90	6.30	-
	fermat	2571.23	-	-	-	2571.23	0.21	2.30	3.13
CSE003 gr/m01784 Taylor	turing	120.61	33.12	49156.01	-	49309.74	0.82	2.68	-
	fermat	70.63	-	-	-	70.63	0.01	2.68	0.00
CSE007 gr m05348 Foulkes	turing	2.24	-	55002.41	-	55004.65	0.17	0.27	-
	fermat	-	-	-	-	-	0.00	0.27	-
cse021 GR/L95427 Staunton	turing	0.14	-	0.00	-	0.14	0.02	0.08	-
	fermat	-	-	-	-	-	0.00	0.08	-
Total for Subject									
Physics	turing	132.93	56.53	133666	-	133855	4.91	9.33	-
	fermat	2641.87	-	-	-	2641.87	0.22	5.33	3.13
CSE006 gr/m05201 Briddon	turing	199.69	0.84	61795.60	-	61996.12	0.08	2.68	-
	fermat	-	-	-	-	-	0.00	0.01	-
Total for Subject									
Materials	turing	199.69	0.84	61795.60	-	61996.12	0.08	2.68	-
	fermat	-	-	-	-	-	0.00	0.01	-
CSE004 gr/m08424 Sandham	turing	30.71	-	18075.65	-	18106.37	1.67	2.68	-
	fermat	0.95	-	-	-	0.95	0.18	2.68	2.56
CSE010 gr/l04108 Williams	turing	-	-	-	-	-	0.00	0.08	-
	fermat	-	-	-	-	-	0.00	0.08	-
CSE011 gr/k52317 Williams	turing	0.07	-	129.35	-	129.43	0.99	3.07	-
	fermat	-	-	-	-	-	0.00	0.08	-
cse013 gr/k43902 Leschzine	turing	-	-	-	-	-	0.00	0.77	-
	fermat	0.60	-	-	-	0.60	0.00	0.77	-
cse014 GR/K73466 Goddard	turing	19.45	-	676.04	-	695.49	0.00	0.03	-
	fermat	0.03	-	-	-	0.03	0.00	-	-
CSE016 GR/K96519 Cant	turing	-	-	-	-	-	0.00	0.00	-
	fermat	-	-	-	-	-	0.00	0.00	-
cse017 GR/L58699 Luo	turing	13.58	-	13590.71	-	13604.29	0.17	0.34	-
	fermat	2.22	-	-	-	2.22	0.03	0.15	0.32
cse018 GR/L68353 Cant	turing	-	-	-	-	-	0.00	0.00	-
	fermat	-	-	-	-	-	0.00	0.00	-
cse022 GR/L98527 Jones	turing	-	-	-	-	-	0.01	0.77	-
	fermat	-	-	-	-	-	0.00	-	-
Total for Subject									
Engineering	turing	63.82	-	32471.76	-	32535.58	2.85	7.74	-
	fermat	3.80	-	-	-	3.80	0.21	3.76	2.87
CSE008 GR/M07624 Hillier	turing	5.12	851.47	14682.99	-	15539.58	0.01	0.08	-
	fermat	-	-	-	-	-	0.00	0.08	-
CSE009 gr/m07441 Catlow	turing	77.06	1894.51	30742.98	-	32714.55	1.01	6.14	-
	fermat	358.32	-	-	-	358.32	0.01	0.77	-

CfS Supercomputer Service

Account		----- CPU Usage (Hours) -----					----- Storage (GB-Years) -----			HSM
		Inter	Priority	Normal	Low	Total	D-Usage	D-Alloccn		
cse024 GR/M44453 Tennyson	turing	9.27	1919.27	0.03	-	1928.57	0.05	2.68	-	
	fermat	-	-	-	-	-	0.00	2.68	-	
Total for Subject										
Chemistry	turing	91.45	4665.24	45426.00	-	50182.69	1.06	8.90	-	
	fermat	358.32	-	-	-	358.32	0.01	3.53	-	
CSE019 cr/173104 Berzins	turing	0.84	-	-	-	0.84	0.02	0.08	-	
	fermat	4.70	-	-	-	4.70	0.00	0.08	-	
Total for Subject										
Information Technology	turing	0.84	-	-	-	0.84	0.02	0.08	-	
	fermat	4.70	-	-	-	4.70	0.00	0.08	-	
Total for Council										
EPSRC	turing	488.73	4722.61	273359	-	278571	8.92	28.74	-	
	fermat	3008.68	-	-	-	3008.68	0.44	12.70	6.00	
HPCI Southampton	turing	5.65	-	39.90	-	45.56	0.13	4.60	-	
	fermat	2.23	-	-	-	2.23	0.07	0.08	-	
HPCI Daresbury	turing	8.29	302.81	90.81	-	401.91	0.03	0.08	-	
	fermat	-	-	-	-	-	0.00	0.08	-	
HPCI Edinburgh	turing	0.40	-	5.55	-	5.94	0.00	0.08	-	
	fermat	27.28	-	-	-	27.28	0.01	-	-	
Total for Council										
HPCI	turing	14.34	302.81	136.26	-	453.41	0.16	4.76	-	
	fermat	29.52	-	-	-	29.52	0.08	0.15	-	
csn001 SOC Core Strategic	turing	14.08	19.32	238.76	-	272.16	1.42	3.84	-	
	fermat	1048.17	-	-	-	1048.17	0.15	3.84	20.29	
csn002 gr3.10789 Hillier	turing	-	-	-	-	-	0.00	0.08	-	
	fermat	-	-	-	-	-	-	0.08	-	
badc	turing	-	-	-	-	-	-	-	-	
	fermat	2.80	-	-	-	2.80	1.64	-	62.27	
csn003 UGAMP O'Neill	turing	2.69	0.01	2297.36	-	2300.06	0.28	0.54	-	
	fermat	1.78	-	-	-	1.78	0.14	0.54	35.61	
csn005 GR9/2909 Davies	turing	0.55	-	4800.07	-	4800.61	0.43	1.13	-	
	fermat	-	-	-	-	-	0.00	0.35	-	
csn006 GR9/3550 Price	turing	14.18	1771.64	15198.01	-	16983.84	0.10	2.07	-	
	fermat	-	-	-	-	-	0.00	-	-	
csn007 GST/02/1454 Price	turing	0.88	-	4675.50	-	4676.38	0.00	0.31	-	
	fermat	-	-	-	-	-	0.00	0.00	-	
Total for Council										
NERC	turing	32.38	1790.98	27209.71	-	29033.06	2.24	7.95	-	
	fermat	1052.75	-	-	-	1052.75	1.92	4.80	118.16	
CSB001 27/B07117 Goodfello	turing	-	-	-	-	-	0.00	0.92	-	
	fermat	-	-	-	-	-	0.00	0.92	-	
CSB002 86/B10059 Danson	turing	0.01	-	-	-	0.01	0.02	1.92	-	
	fermat	-	-	-	-	-	0.00	-	-	
CSB003 117/SO9645 Williams	turing	0.00	-	-	-	0.00	0.00	0.00	-	
	fermat	-	-	-	-	-	0.00	0.00	-	
Total for Council										
BBSRC	turing	0.01	-	-	-	0.01	0.02	2.84	-	
	fermat	-	-	-	-	-	0.00	0.92	-	

CfS Supercomputer Service

Account		----- CPU Usage (Hours) -----					--- Storage (GB-Years) ---		
		Inter	Priority	Normal	Low	Total	D-Usage	D-Alloca	HSM
cs2001 CompApps3D Jain	turing	-	-	-	-	-	0.00	0.04	-
	fermat	-	-	-	-	-	0.00	-	-
cs2003 GST/02/0760 Coultha	turing	-	-	-	-	-	-	-	-
	fermat	962.67	-	-	-	962.67	0.01	0.15	-
Total for Council									
Class 2	turing	-	-	-	-	-	0.00	0.04	-
	fermat	962.67	-	-	-	962.67	0.01	0.15	-
euukcp	turing	-	-	-	-	-	0.99	-	-
	fermat	-	-	-	-	-	-	-	-
eugamp	turing	-	-	-	-	-	0.04	-	-
	fermat	-	-	-	-	-	-	-	-
euqub	turing	-	-	-	-	-	0.00	-	-
	fermat	-	-	-	-	-	-	-	-
euocam	turing	-	-	-	-	-	0.12	-	-
	fermat	-	-	-	-	-	-	-	-
euqmw	turing	0.00	-	-	-	0.00	2.57	-	-
	fermat	-	-	-	-	-	-	-	-
euhpci	turing	-	-	-	-	-	0.17	-	-
	fermat	-	-	-	-	-	-	-	-
euston	turing	-	-	-	-	-	0.03	-	-
	fermat	-	-	-	-	-	-	-	-
eural	turing	0.00	-	-	-	0.00	1.73	-	-
	fermat	-	-	-	-	-	-	-	-
eubbk	turing	-	-	-	-	-	0.07	-	-
	fermat	-	-	-	-	-	-	-	-
earlyu	turing	-	-	-	-	-	-	-	-
	fermat	-	-	-	-	-	0.10	-	1.66
dummy	turing	-	-	-	-	-	0.00	-	-
	fermat	-	-	-	-	-	0.00	-	-
Total for Subject									
eu accounts	turing	0.00	-	-	-	0.00	5.73	-	-
	fermat	-	-	-	-	-	0.10	-	1.66
Total for Council									
Research	turing	0.00	-	-	-	0.00	5.73	-	-
	fermat	-	-	-	-	-	0.10	-	1.66
Total									
Research Councils	turing	535.47	6816.40	300705	-	308057	17.07	44.32	-
	fermat	5053.62	-	-	-	5053.62	2.55	18.73	125.83

Appendix 2

Percentage PE time per consortia for Turing in February 1999		Percentage CPU time per consortia for Fermat in February 1999	
Consortia	% Machine Time	Consortia	% Machine Time
CSE002	31.23	CSE002	53.15
CSE003	9.36	CSE003	7.04
CSE007	14.15	CSE007	0.003
CSE021	0	CSE021	0
CSE006	13.91	CSE006	0
CSE004	5.14	CSE004	0.037
CSE010	0	CSE010	0
CSE011	0	CSE011	0
CSE013	0	CSE013	0
CSE016	0	CSE016	0
CSE017	2.19	CSE017	0.003
CSE018	0	CSE018	0
CSE022	0.002	CSE022	0
CSE008	11.98	CSE008	0.04
CSE009	7.89	CSE009	20.28
CSE024	0.15	CSE024	0
CSE019	0.003	CSE019	0.04
HPCI Southampton	0.001	HPCI Southampton	0.31
HPCI Daresbury	0	HPCI Daresbury	0
HPCI Edinburgh	0	HPCI Edinburgh	0
CSN001	3.50	CSN001	11.71
CSN002	0	CSN002	0
BADC	0	BADC	0.12
CSN003	0.30	CSN003	0.013
CSN005	0.12	CSN005	0
CSN006	0.06	CSN006	0
CSN007	0	CSN007	0
CSB001	0	CSB001	0
CSB002	0.006	CSB002	0
CS2001	0	CS2001	0
CS2003	0	CS2003	7.23

Percentage disc allocation by Consortia for Turing in February 1999		Percentage disc allocation by Consortia for Fermat in February 1999	
Consortia	%Allocation	Consortia	%Allocation
CSE002	11.96	CSE002	30.27
CSE003	6.15	CSE003	10.87
CSE007	0.62	CSE007	1.10
CSE021	0.18	CSE021	0.32
CSE006	6.15	CSE006	0.04
CSE004	6.15	CSE004	10.87
CSE010	0.18	CSE010	0.32
CSE011	7.03	CSE011	0.32
CSE013	1.76	CSE013	3.12
CSE016	0	CSE016	0
CSE017	0.44	CSE017	0.46
CSE018	0	CSE018	0
CSE022	1.76	CSE022	0
CSE008	2.79	CSE008	0.18
CSE009	14.05	CSE009	3.12
CSE024	6.15	CSE024	10.87
CSE019	0.18	CSE019	0.32
HPCI Southampton	10.54	HPCI Southampton	0.32
HPCI Daresbury	0.18	HPCI Daresbury	0.32
HPCI Edinburgh	0.18	HPCI Edinburgh	0
CSN001	8.78	CSN001	15.50
CSN002	0.06	CSN002	0.11
BADC	0	BADC	0.00
CSN003	1.22	CSN003	2.16
CSN005	1.22	CSN005	2.16
CSN006	4.75	CSN006	3.40
CSN007	0.92	CSN007	0
CSB001	2.10	CSB001	3.72
CSB002	4.39	CSB002	0
CS2001	0.08	CS2001	0
CS2003	0	CS2003	0.25

Percentage usage of HSM by Consortium for February 1999	
Consortium	% Usage
CSE002	2.50
CSE003	0
CSE007	0
CSE021	0
CSE006	0
CSE004	2.10
CSE010	0
CSE011	0
CSE013	0
CSE016	0
CSE017	0.30
CSE018	0
CSE022	0
CSE008	0
CSE009	0
CSE024	0
CSE019	0
HPCI Southampton	0
HPCI Daresbury	0
HPCI Edinburgh	0
CSN001	16.30
CSN002	0
CSN003 & BADC	78.80
CSN005	0
CSN006	0
CSN007	0
CSB001	0
CSB002	0
CS2001	0
CS2003	0

Appendix 3

<u>Percentage PE usage on Turing by Reserch Council for February 1999</u>		<u>Percentage CPU usage on Fermat by Reserch Council for February 1999</u>	
<u>Research Coucil</u>	<u>% Usage</u>	<u>Research Coucil</u>	<u>% Usage</u>
EPSRC	90.00	EPSRC	59.00
HPCI	0.100	HPCI	0.60
NERC	9.00	NERC	21.00
BBSRC	0	BBSRC	0
Class2	0	Class2	19.00

<u>Percentage Disc allocated on Turing by Research Council for February 1999</u>		<u>Percentage Disc allocated on Fermat by Research Council for February 1999</u>	
<u>Research Council</u>	<u>% Allocated</u>	<u>Research Council</u>	<u>% Allocated</u>
EPSRC	65.55	EPSRC	72.04
HPCI	10.90	HPCI	0.64
NERC	16.95	NERC	23.36
BBSRC	6.49	BBSRC	3.72
Class2	0.08	Class2	0.25

<u>Percentage HSM usage by Research Council for February 1999</u>	
<u>Research Council</u>	<u>% usage</u>
EPSRC	4.80
HPCI	0
NERC	95.17
BBSRC	0
Class2	0