CSAR Service - Management Report

December 2000

This report documents the quality of the CSAR service during the month of December 2000.

A more comprehensive report is provided quarterly, which additionally covers wider aspects of the Service such as information on Training, Application Support and Value-Added services.

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

1. Introduction

December has seen the T3E workload remain high and the upgrade of the Origin 2000 (Fermat) implemented.

This document gives information on Service Quality and on actual usage of the CSAR Service during the reporting period of December 2000. The information, in particular, covers the availability and usage of the following two main CSAR Service High Performance Computing (HPC) systems:

- Cray T3E-1200E/776 (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
Fujitsu Service 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
Help Desk						
Non In-depth Queries - Max Time to resolve 50% of all queries (working days)	< 1/4	< 1/2	< 1	< 2	< 4	4 or more
Non In-depth Queries - Max Time to resolve 95% of all queries (working days)	< 1/2	< 1	< 2	< 3	< 5	5 or more
Administrative Queries - Max 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 (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 December 1st to 31st inclusive.
Overall, the CPARS Performance Achievement in December was less than satisfactory (see Table 3); i.e. Yellow measured against the CPARS performance targets.
The Fujitsu availability figures are included in Table 2, but not Table 3 as they have zero weighting in CPARS terms.

CSAR Service - Service Quality Report - Actual Performance Achievement

Service Quality Measure	2000 Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
HPC Services Availability												
Availability in Core Time (% of time)	100%	96.11%	99.70%	100%	100%	99.70%	100%	100%	100%	100%	100%	94.90%
Availability out of Core Time (% of time)	99.70%	98.52%	99.50%	99.5%	99.40	99.40	100%	100%	100%	100%	99.40	98.49%
Number of Failures in month	1	4	2	1	1	2	0	0	0	0	2	4
Mean Time between failures in 52 week rolling period (hours)	563	230	486	437	515	461	461	626	730	1095	673	584
Fujitsu Service Availability												
Availability in Core Time (% of time)	100%	100%	100%	100%	100%	100%	100%	98.4%	100%	100%	100%	100%
Availability out of Core Time (% of time)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Help Desk												
Non In-depth Queries - Max Time to resolve 50% of all queries	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Non In-depth Queries - Max Time to resolve 95% of all queries	<1	<1	<2	<1	<2	<1	<2	<2	<2	<1	<3	<3
Administrative Queries - Max Time to resolve 95% of all queries	<0.5	<0.5	<2	<1	<2	<0.5	<0.5	<2	<2	<0.5	<0.5	<5
Help Desk Telephone - % of calls answered within 2 minutes	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Others												
Normal Media Exchange Requests - average response time	0	0	0	0	0	0	0	0	<0.5	0	<0.5	<0.5
New User Registration Time (working days)	0	0	0	0	0	0	0	0	0	0	0	0
Management Report Delivery Times (working days)	10	10	10	10	10	10	10	10	10	10	10	10
System Maintenance - no. of sessions taken per system in the mont	2	2	2	1	1	2	2	2	2	1	2	1

Table 2

Notes:

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

   [Turing availability x 122 / (122 + 3.5)] + [Fermat availability x 3.5 / (122 + 3.5)]

2 Mean Time between failures for Service Credits is formally calculated based on a rolling 12 month period.

Table 3 gives Service Credit values for the month of December. 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

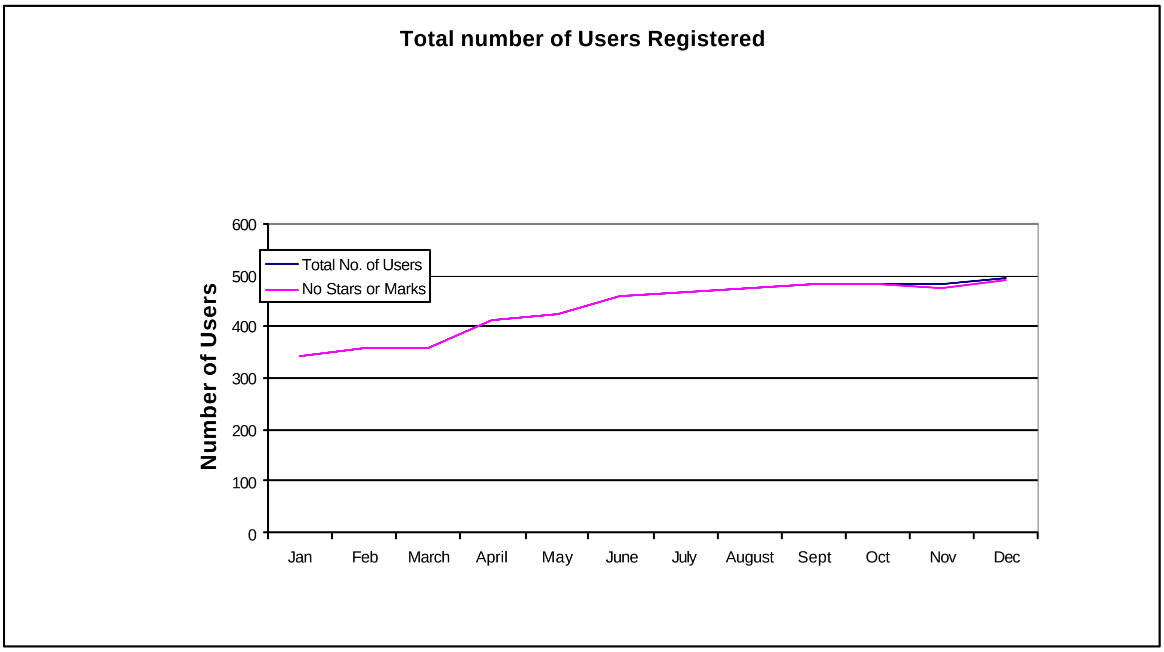
										2000		
Service Quality Measure	**Dec**	**Jan**	**Feb**	**March**	**April**	**May**	**June**	**July**	**Aug**	**Sept**	**Nov**	**Dec**
HPC Services Availability												
Availability in Core Time (% of time)	-0.058	0.078	-0.039	-0.058	-0.058	-0.039	-0.058	-0.058	-0.058	-0.058	-0.058	0.195
Availability out of Core Time (% of time)	-0.039	0	-0.039	-0.039	0	0	-0.047	-0.047	-0.047	-0.047	0	0
Number of Failures in month	-0.008	0.008	0	-0.008	-0.008	0	-0.009	-0.009	-0.009	-0.009	0	0
Mean Time between failures in 52 week rolling period (hours)	-0.008	0.008	0	0	-0.008	0	0	-0.008	-0.008	-0.009	-0.008	-0.008
Help Desk												
Non In-depth Queries - Max Time to resolve 50% of all queries	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019
Non In-depth Queries - Max Time to resolve 95% of all queries	-0.016	-0.016	0	-0.016	0	-0.016	0	0	0	-0.016	0.016	0.016
Administrative Queries - Max Time to resolve 95% of all queries	-0.019	-0.019	0	-0.016	0	-0.019	-0.019	0	0	-0.019	-0.019	0.046
Help Desk Telephone - % of calls answered within 2 minutes	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004
Others												
Normal Media Exchange Requests - average response time	0	0	0	0	0	0	0	0	-0.002	0	0	0
New User Registration Time (working days)	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019
Management Report Delivery Times (working days)	0	0	0	0	0	0	0	0	0	0	0	0
System Maintenance - no. of sessions taken per system in the mont	0	0	0	-0.003	-0.003	0	0	0	0	-0.003	0	-0.003
Monthly Total & overall Service Quality Rating for each period:	-0.09	0.01	-0.06	-0.09	-0.06	-0.06	-0.09	-0.08	-0.08	-0.10	-0.06	0.11

Table 3

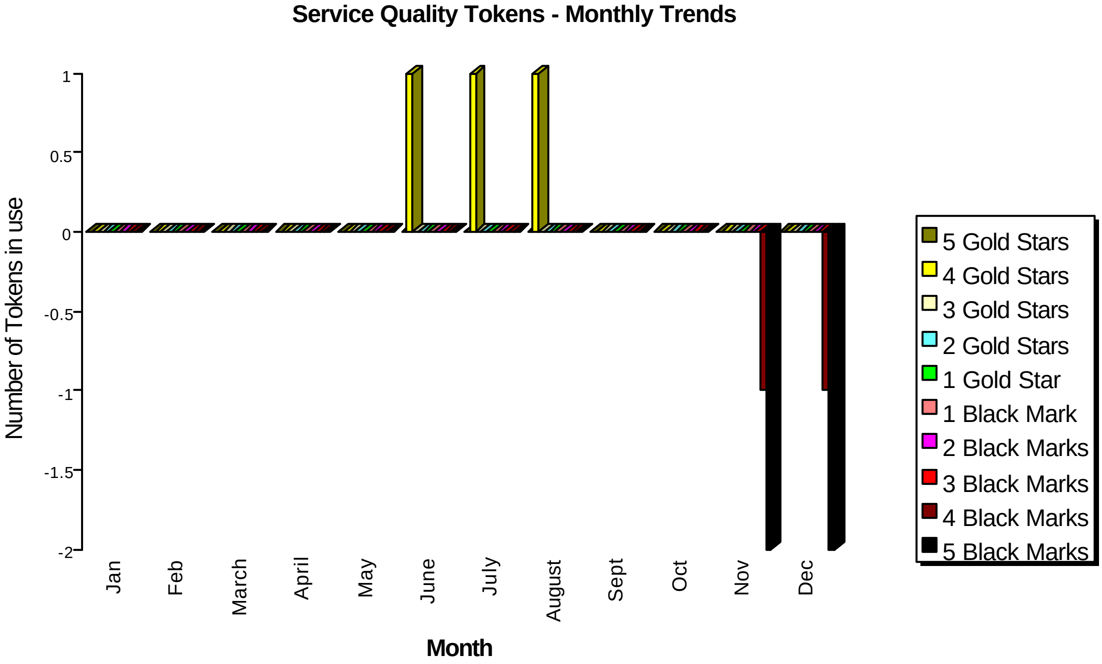
2.2 Service Quality Tokens

The current position at the end of December 2000 is that three of the 492 registered users of the CSAR Service had used Service Quality Tokens.

The graph below shows the total number of registered users on the CSAR Service and the number of users holding a neutral view of the service.



The graph below illustrates the monthly usage trend of quality tokens:



The current status of the Stendahl tokens, is that there are three users with outstanding black marks against the system, due to the queue times being long on the Turing system.

SUMMARY OF SERVICE QUALITY TOKEN USAGE

No of Stars or Marks	Consortia	Date Allocated	Reason Given
5 Black Marks	CSN003	27/11/00	Excessive Queue times
5 Black Marks	CSN003	27/11/00	Excessive Queue times
4 Black Marks	CSN003	24/11/00	Excessive Queue times

2.3 Throughput Target against Baseline

The Baseline Target for throughput was fully achieved this month due to plenty of work over the period. The actual usage figure was 142% of Baseline capacity.

Job Throughput Against Baseline CSAR Service Provision

Period: 1st to 31st December 2000

	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?	367,726	523,455	**142.35%**
	Baseline Capacity for Period (T3E PE Hours)	**Job Time Demands in Period**	**Job Demand above 110% of Baseline during Period (Yes/No)?**
2. Have Users submitted work demanding > 110% of the Baseline during period?	367,726	521,478	Yes
		Number of Jobs at least 4 days old at end Period	**Number of Jobs at least 4 days old at end Period is not zero (Yes/No)?**
3. Are there User Jobs oustanding at the end of the period over 4 days old?		5	Yes
		Minimum Job Time Demands as % of Baseline during Period	**Minimum Job Time Demand above 90% of Baseline during Period (Yes/No)?**
4. Have Users submitted work demands above 90% of the Baseline during period?		119%	Yes
	Number of standard Job Queues (ignoring priorities)	**Average % of time each queue contained jobs in the Period**	**Average % of time each queue contained jobs in the Period is > 97%?**
5. Majority of Job Queues contained jobs from Users for more than 97% during period?	4	59.6%	No

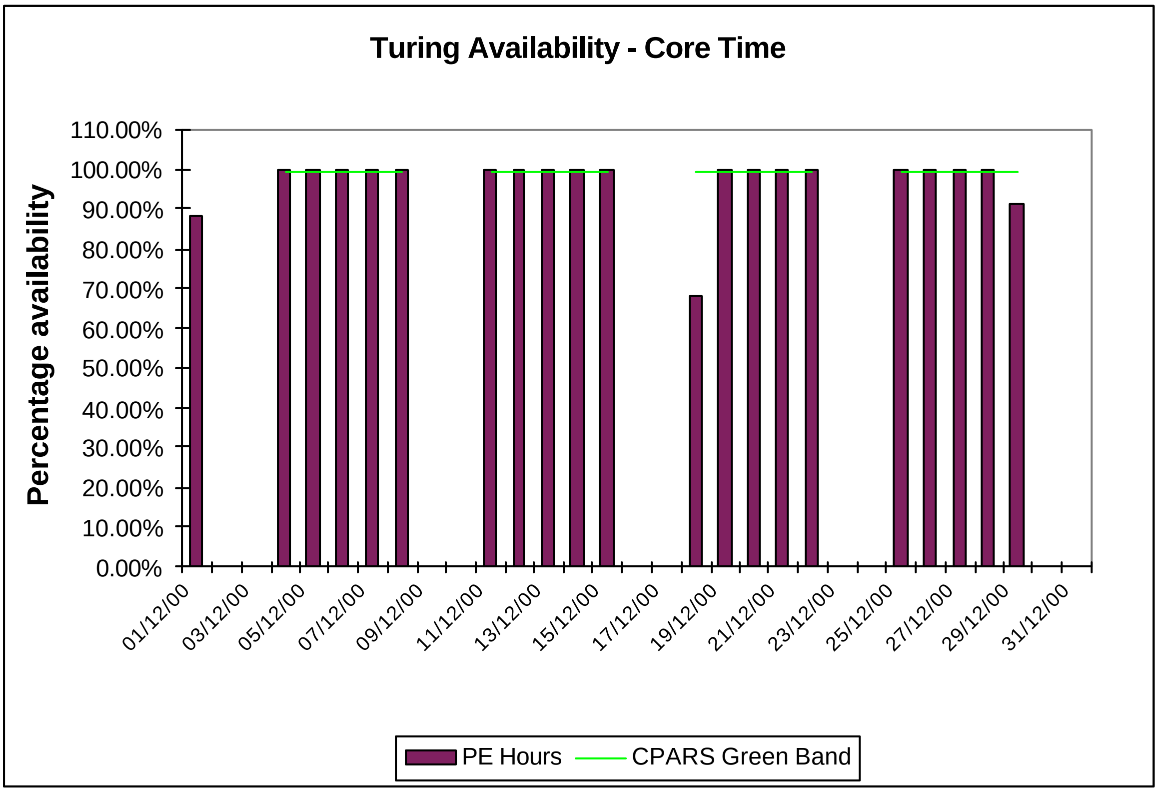
3. System Availability

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)

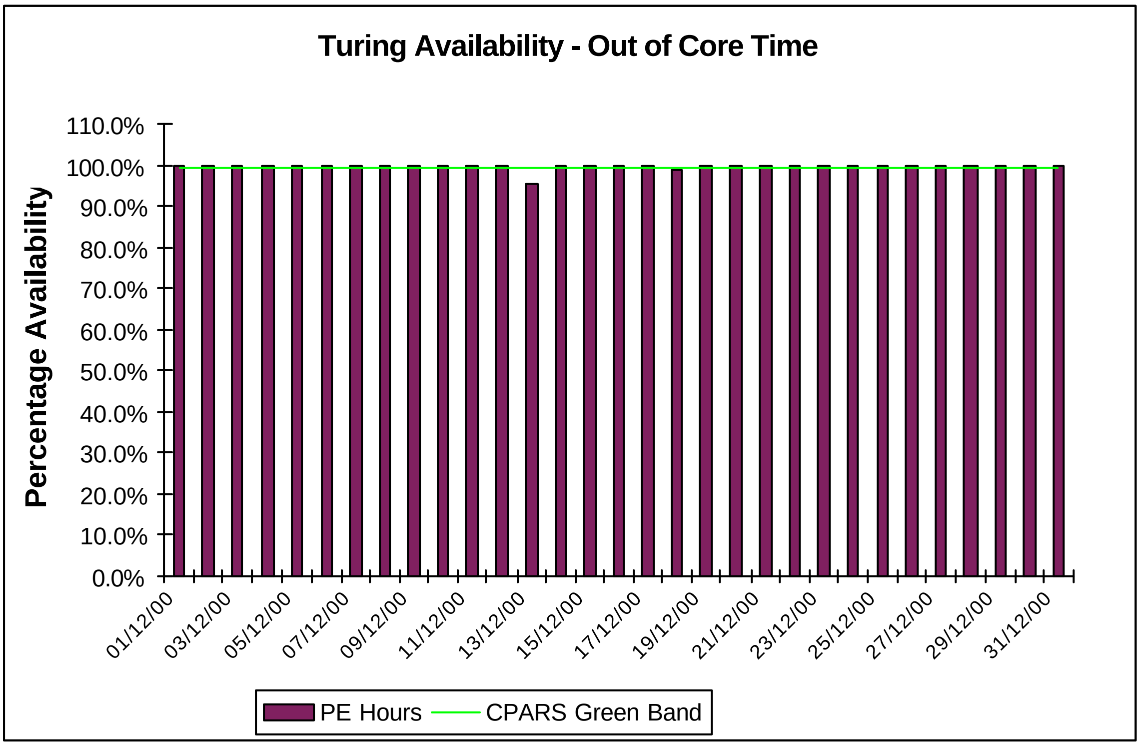
The following graphs show the availability of Turing both in core time and out of core time respectively during the period of 1st to 31st December.

Turing availability for December:



Availability of Turing in core time during December was good with the exception of the three breaks in service, one due to a power supply failure and the other two due to environmental problems.

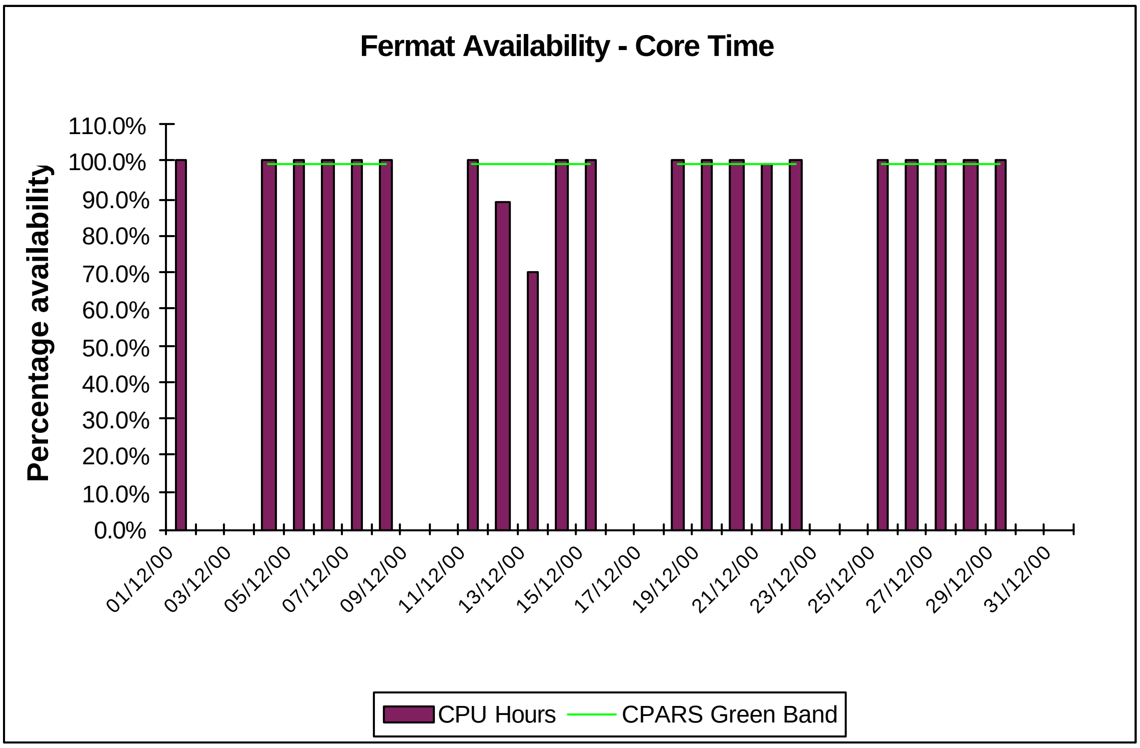
Turing disk storage also suffered a hardware failure on the 17th December. It proved necessary to recover the ehome1 file system from the previous full backup.



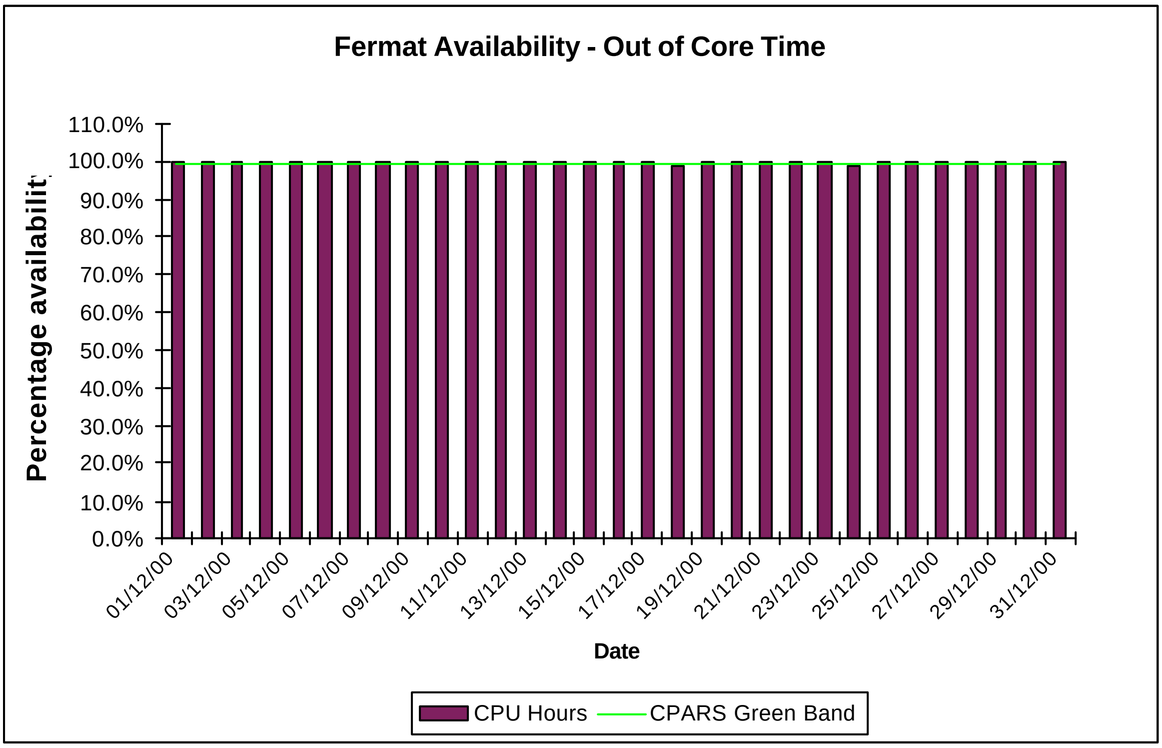
Availability of Turing out of core time during December was good with the exception of two incidents resulting in system down time.

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 December was good with the exception of the upgrade period during the 12th and 13th .



Availability of Fermat out of core time during December was good.

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 December 1st to 30th is provided by Project/User Group, totalled by Research Council and overall. This covers:

- CPU usage — Turing: 523,455 PE Hours Fermat: 1,196.45 CPU Hours
- Fujitsu CPU usage — Fuji: 1,238.89 CPU Hours
- User Disk allocation — Turing: 58.45 GB Years Fermat: 21.69 GB Years
- HSM/tape usage — 1,003.25 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 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 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.

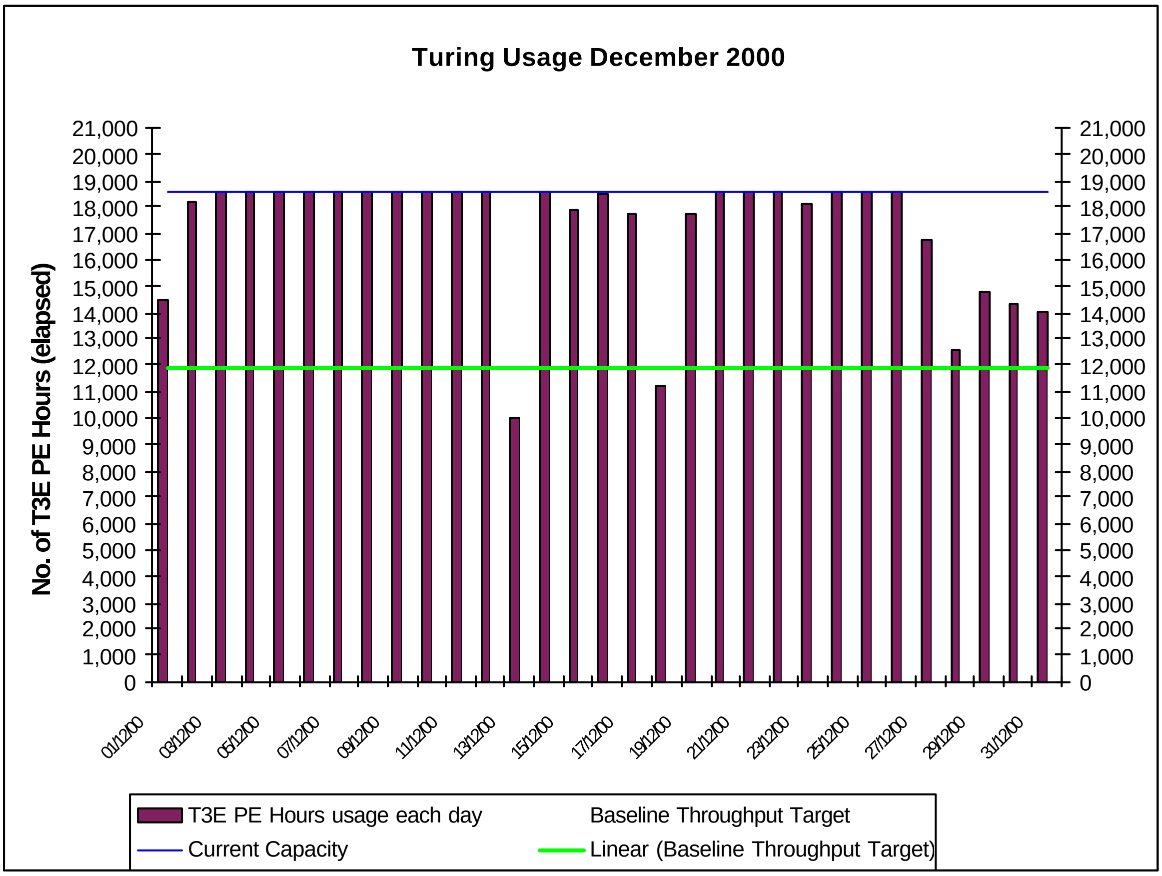
d) Medium Performance Disk (Origin) allocated for User Data by month, showing the allocated space each month in GBytes, split by Research Council. The Baseline Capacity (1.5 Terabytes) is shown by an overlaid horizontal line.

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 December 2000. 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 December:



The above usage graph for the Turing system shows that the overall workload was variable, though as can be seen from the graph, there were few periods with low work volumes.

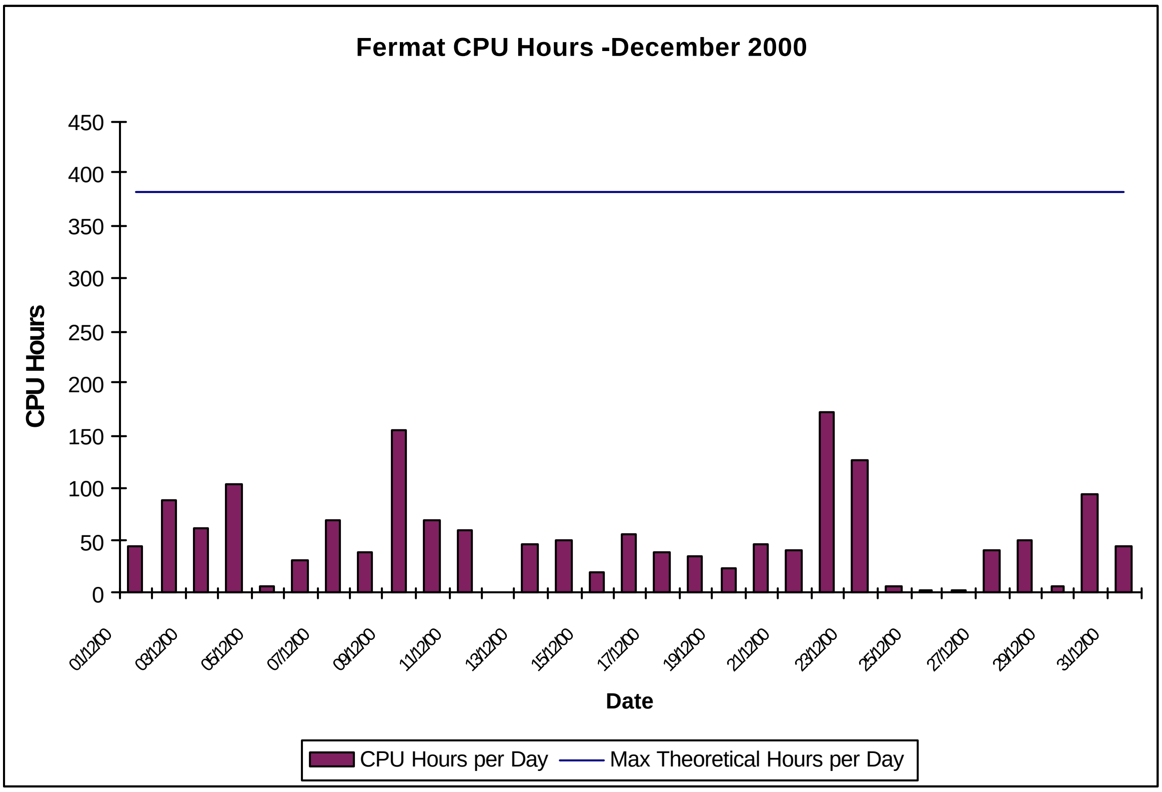
The above graph also indicates the workload reached 100% of maximum theoretical capacity for a large part of the month.

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.

In particular, Turing will continue to start large jobs above 256 PEs, including 512 PEs, every night they are queued subject to the overall workload.

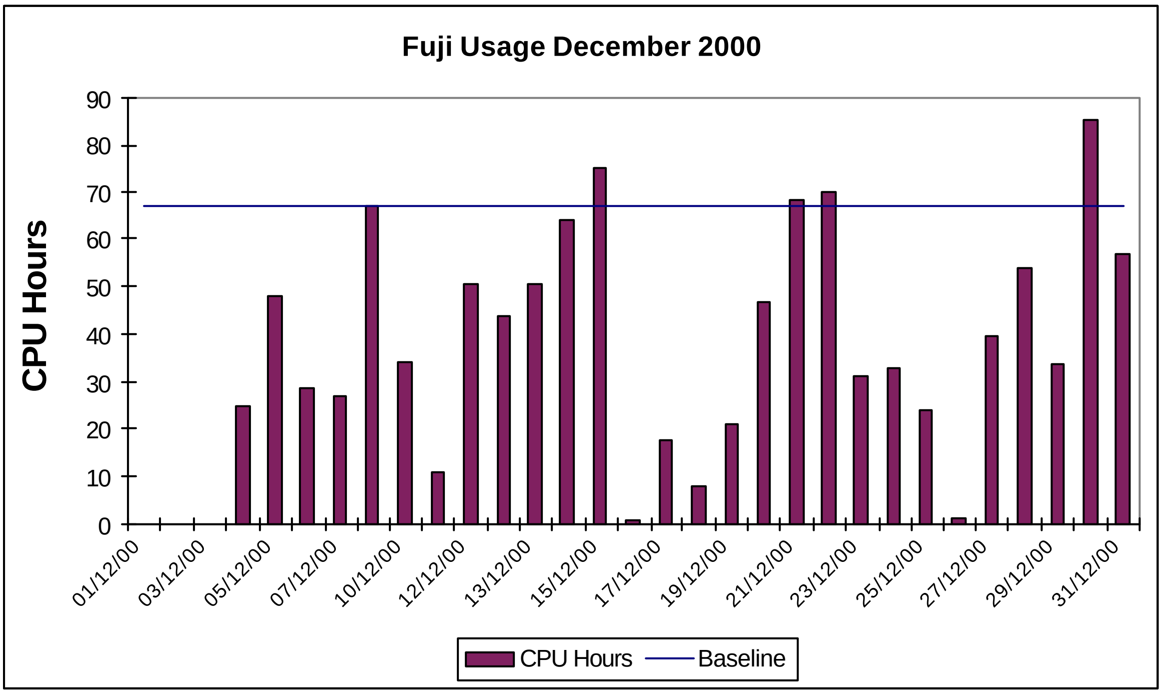
4.2 SGI Origin2000 System (Fermat)

The usage of the Origin system was low for the month with the daily usage of the system averaging only 10% of theoretical maximum. The groups most heavily using the Fermat system are CSE006 (Briddon) , CSE013 (Leschziner) and CSN003 (O'Neil).



The next graph shows the utilisation of the, now fully integrated Fujitsu system.

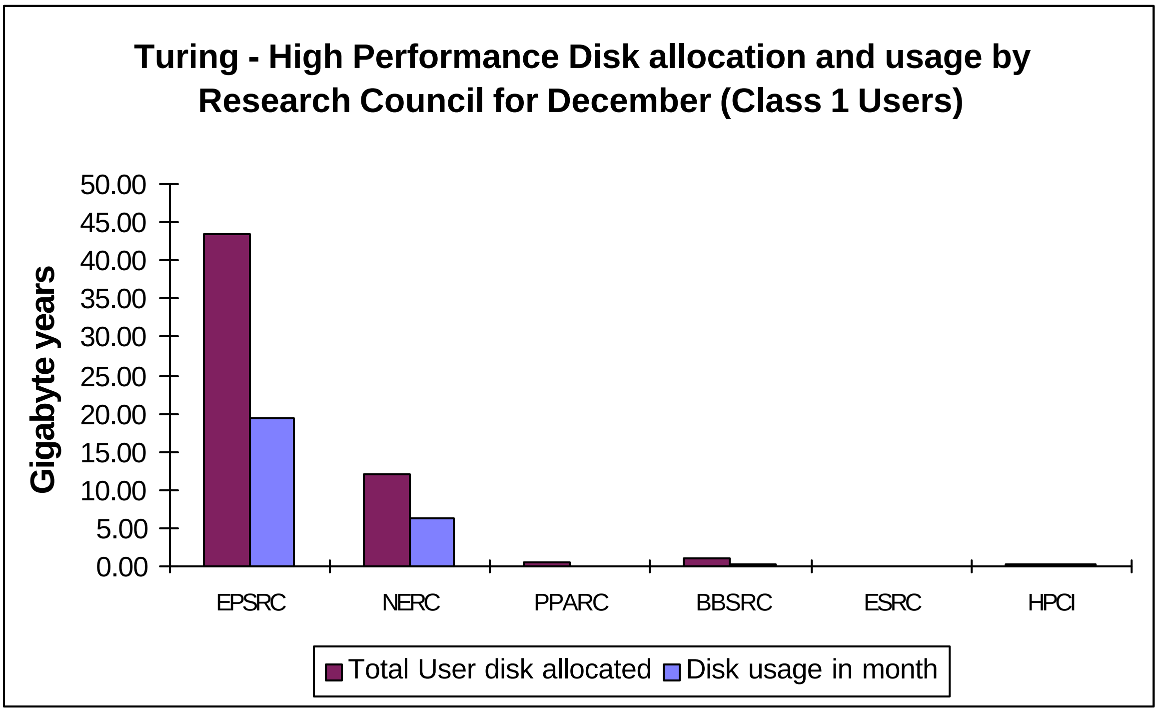
4.2.1 Fujitsu VPP 300/8 System (Fuji)



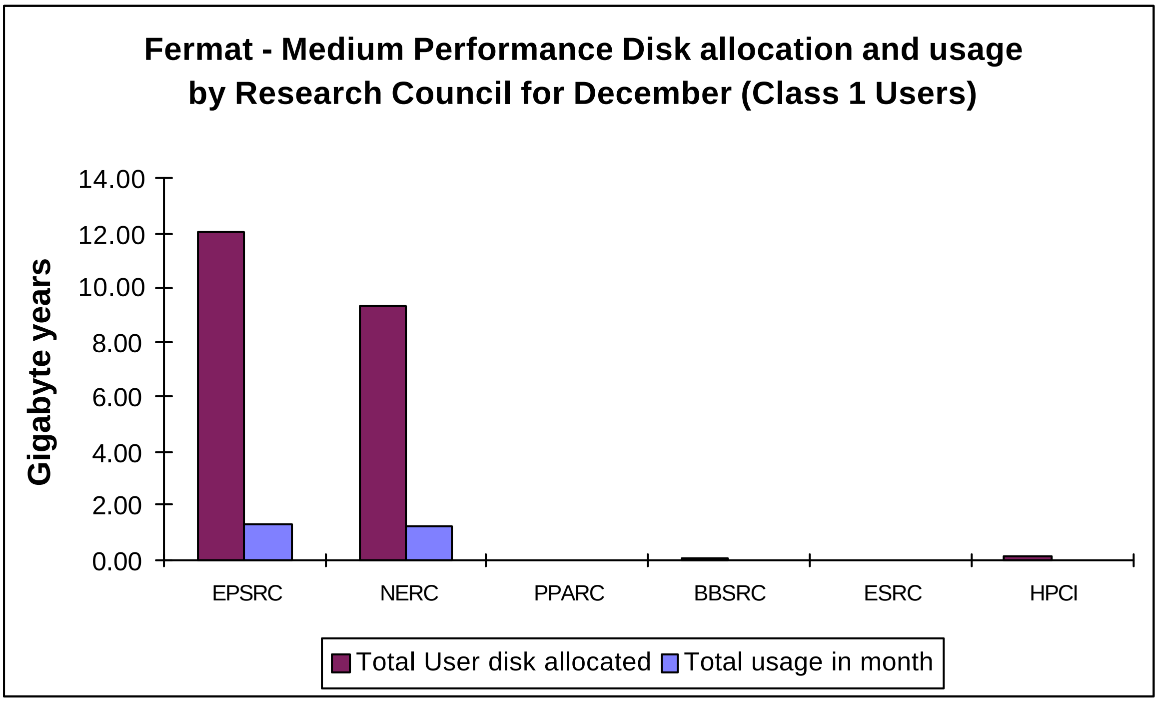
Utilisation of the Fujitsu system was variable this month, with the overall utilisation being below Baseline.

4.3 Disk/HSM Usage Charts

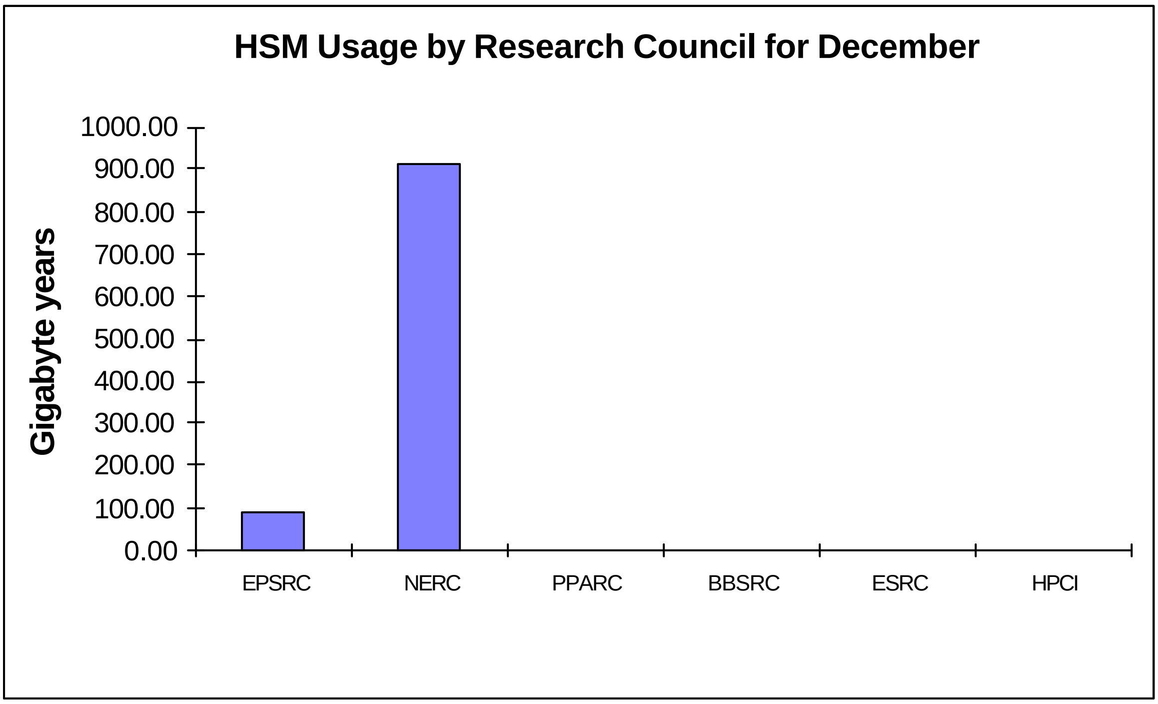
The graphs below show current disk and HSM allocations and usage.



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

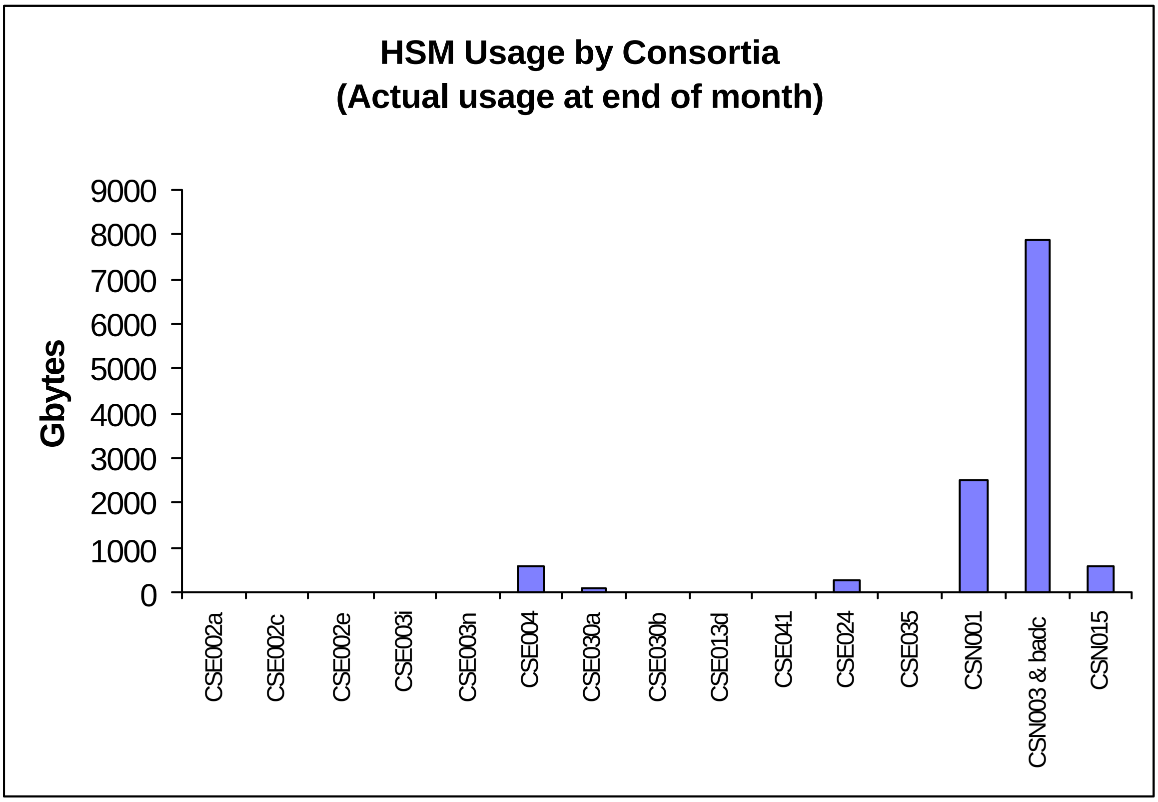


The above graph shows the disk allocations against usage on average of the disk on Fermat.

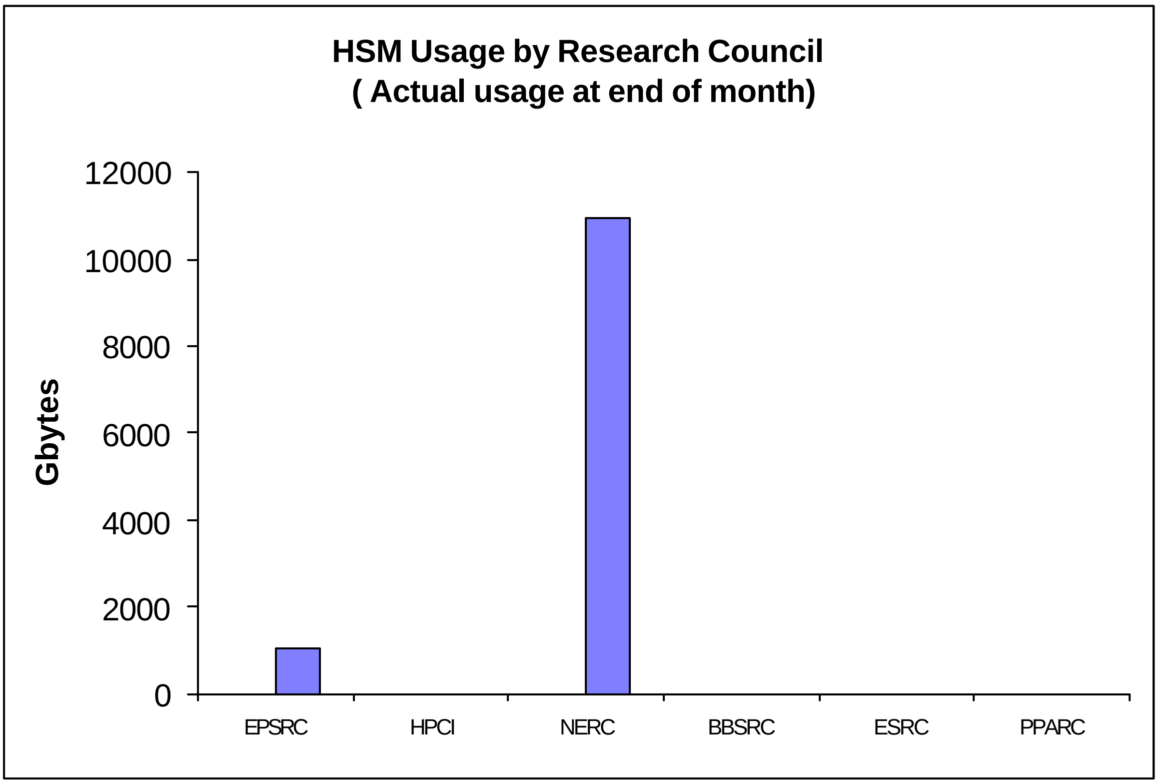


The above graph shows the total usage of the HSM facility by Research Council.

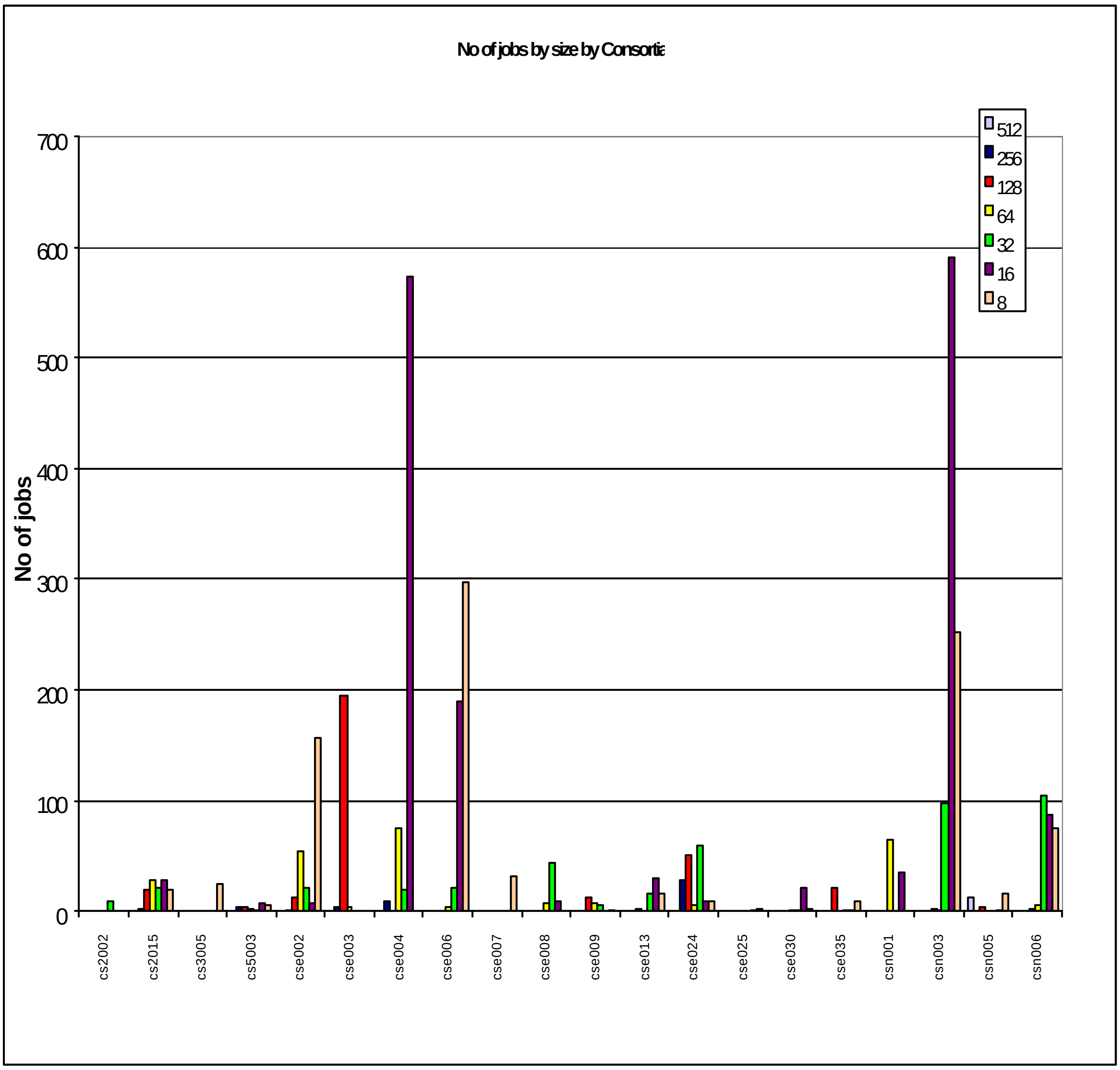
The next two graphs give actual usage of HSM by Research Council and by Consortium.



CSE002 (Gillan), CSE004 (Sandham), CSE024 (Tennyson), CSN001 (Webb), CSN003 (O'Neill) & CSN015 (Proctor) were the major users of HSM resource.

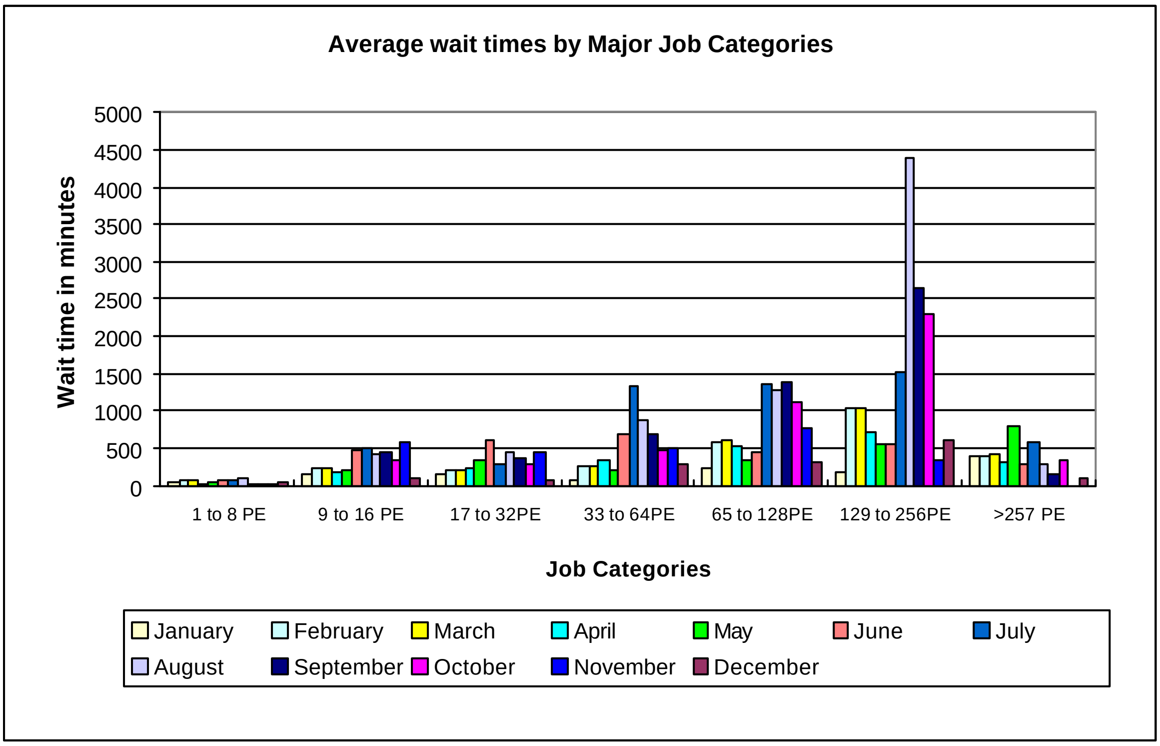


Job statistics for Turing:

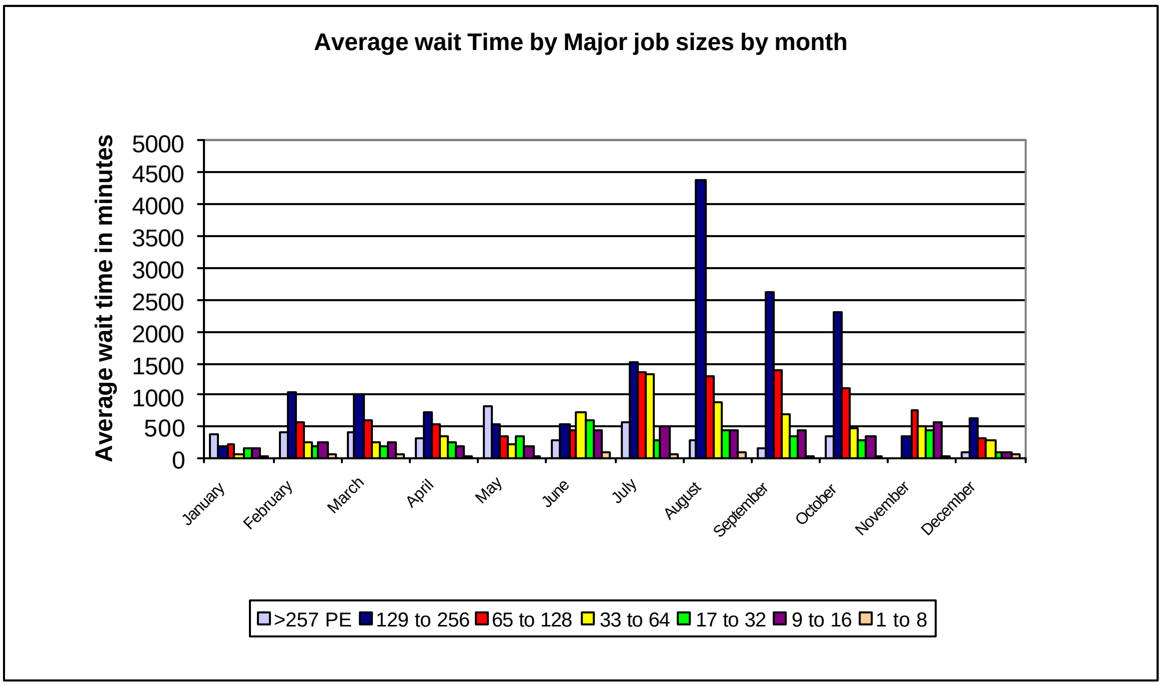


The above graph shows the number of jobs of the major sizes run in the period 1st to 31st December 2000.

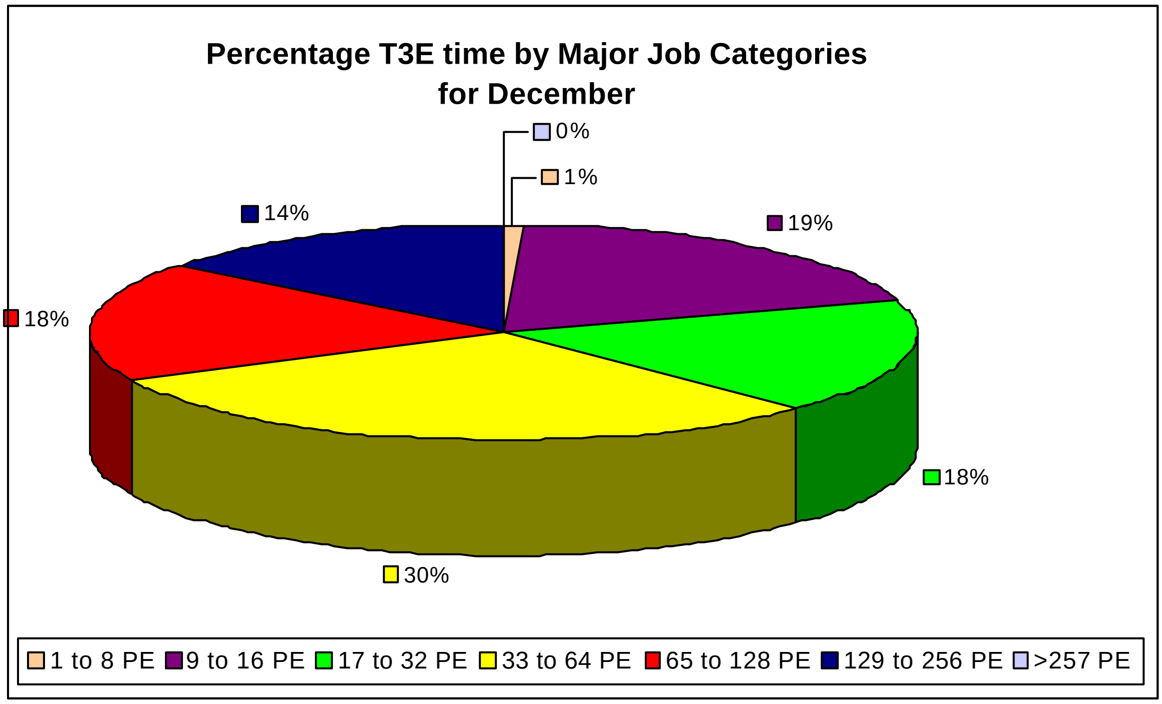
The next graph shows the wait times in minutes for the major categories of jobs.



The chart above shows the average wait time trend over the last 12 months. Wait times for jobs in the range of 33 to 256 PE's have reduced although the workload on the system remains heavy.

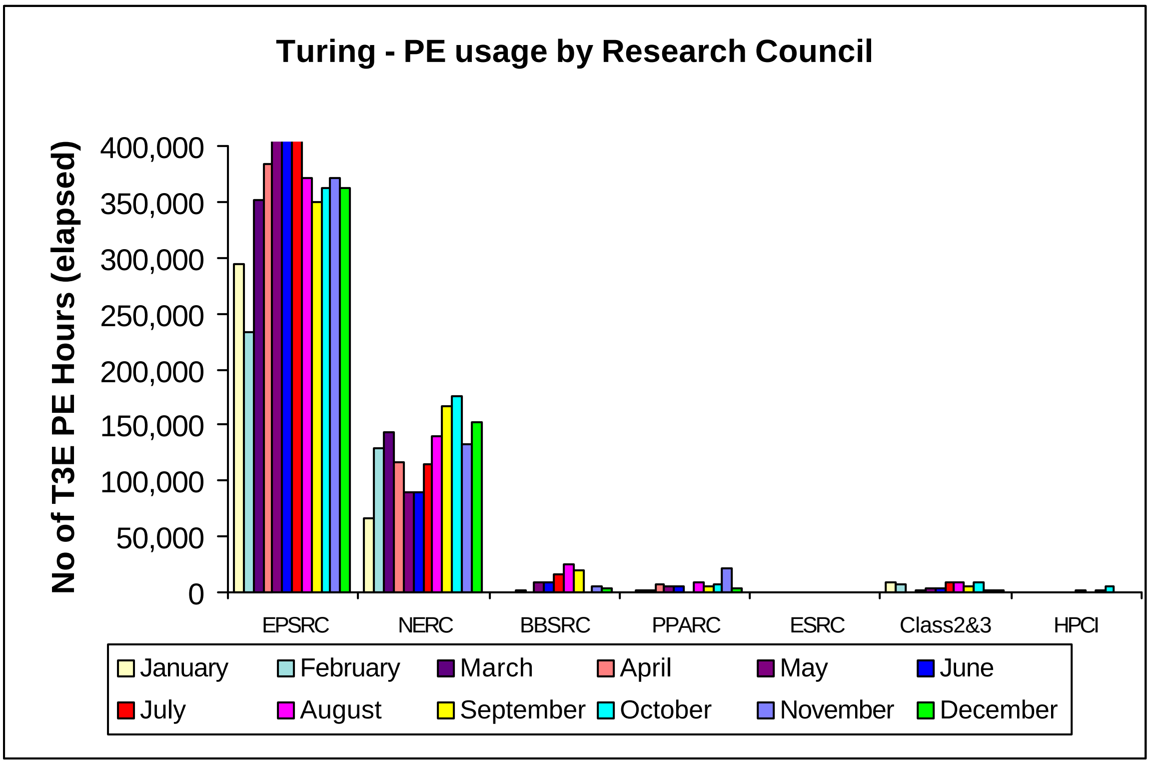


It can be seen from the above graph that enhancements to the scheduling on Turing did reduce the average wait times but attention must now be paid to ensure sufficient head room exists in the system to bring the currently long wait times back to reasonable levels.

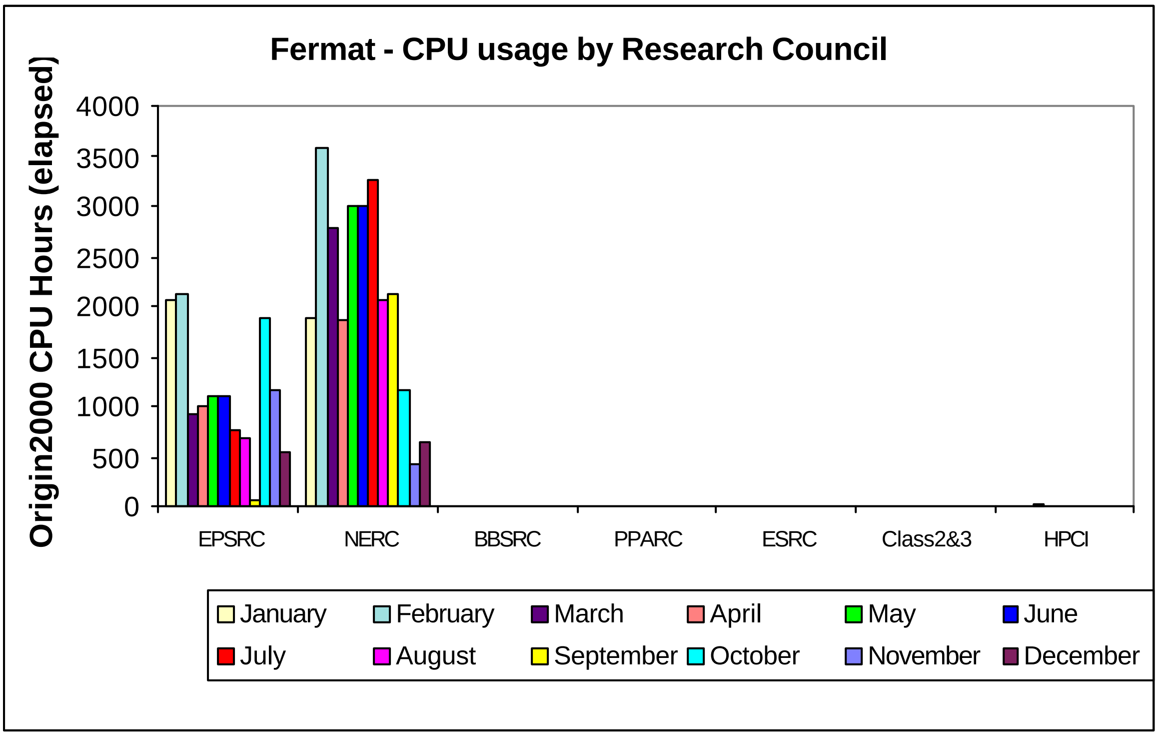


The largest proportion of the workload on Turing, 62%, was greater than 32 PEs in size.

The proportion of work greater than 128 PEs in size remained significantly high.



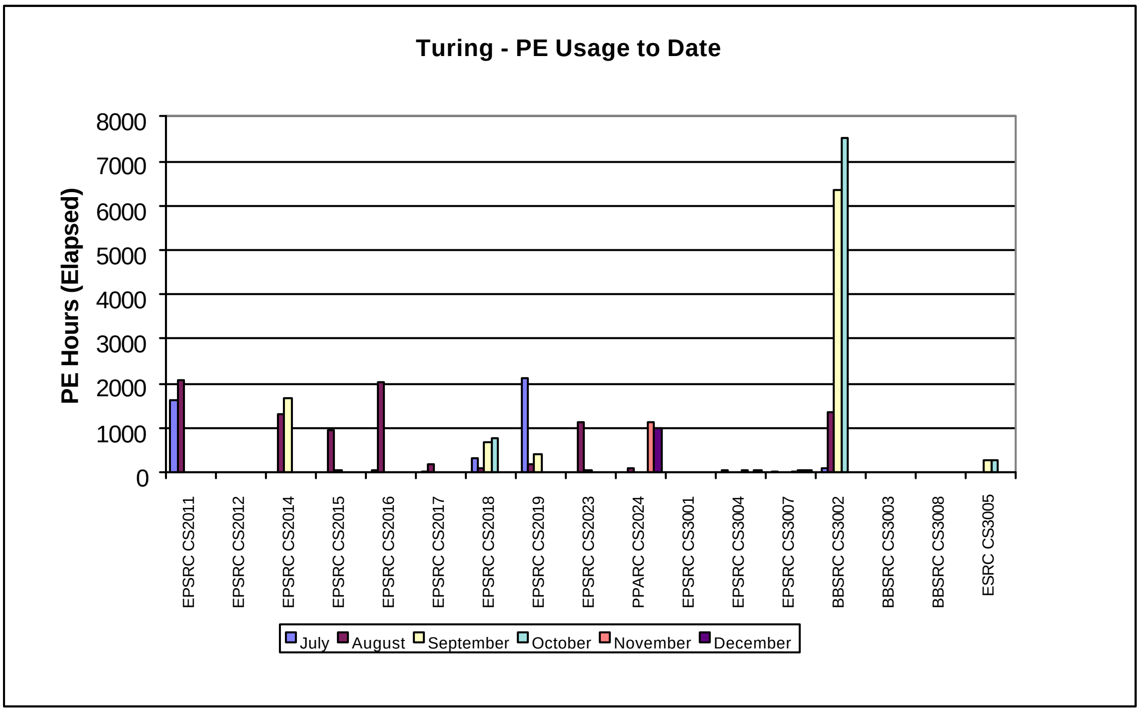
Turing PE usage is shown by Research Council during the past 12 months of service in the above chart.



Origin 2000 CPU usage is shown by Research Council during the past 12 months of service in the above chart.

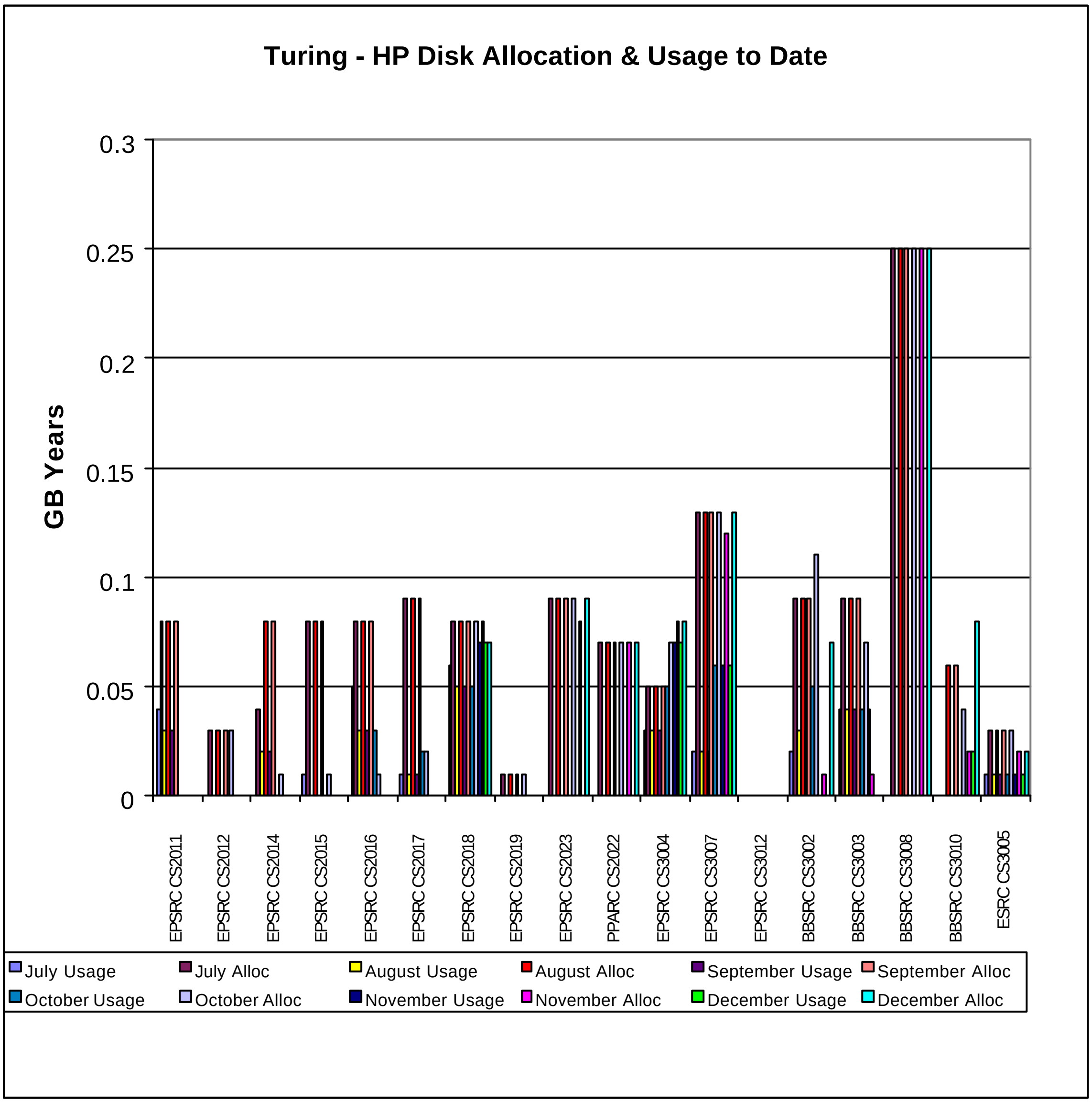
4.4 Class 2 & 3 Usage Charts

The next series of charts show the usage of the system by the class 2 & class 3 users. The usage is shown by project and identifies the Research Council of the individual projects.

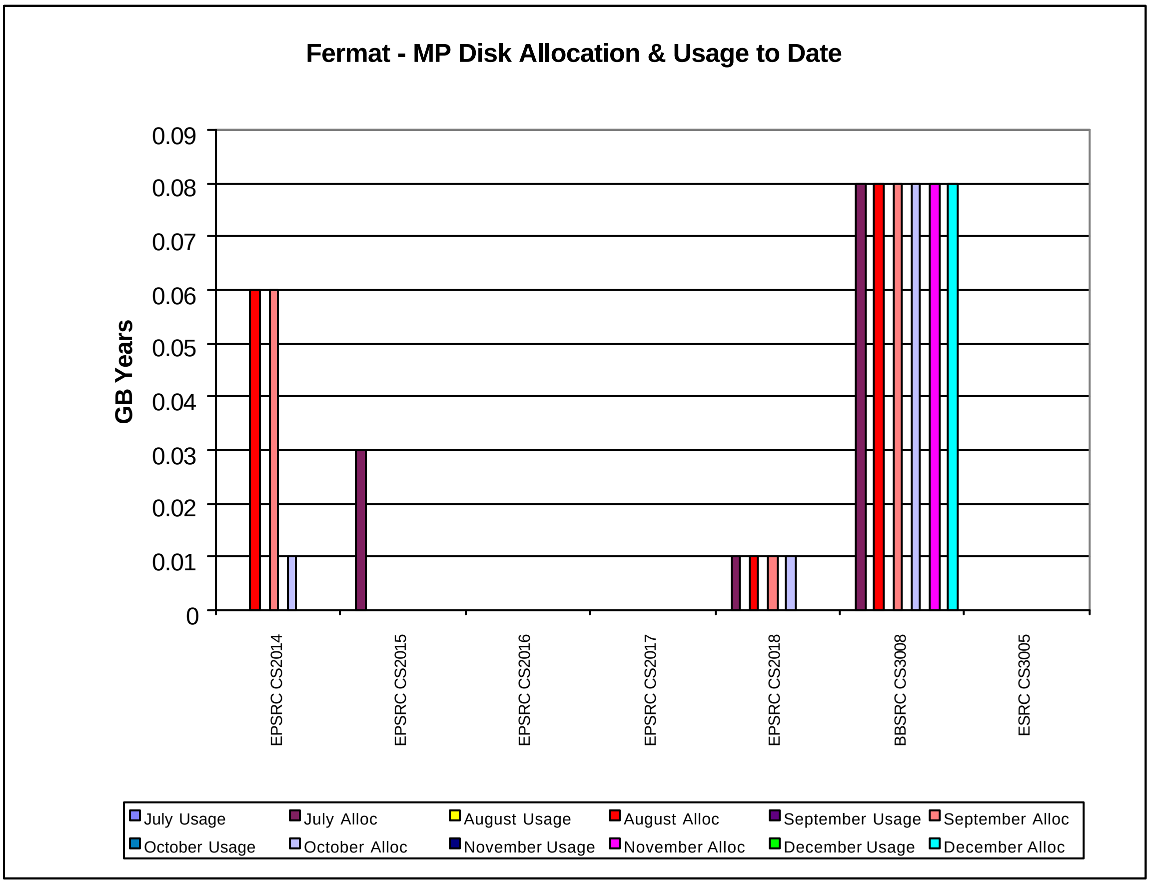


The above chart shows the most significant PE usage of the Turing system by class 2 and class 3 users.

The chart showing the CPU usage of the Fermat system by class 2 and class 3 users, has not been included due to near zero usage.



The above chart shows the most significant disk allocations on the Turing system for class 2 and class 3 users.



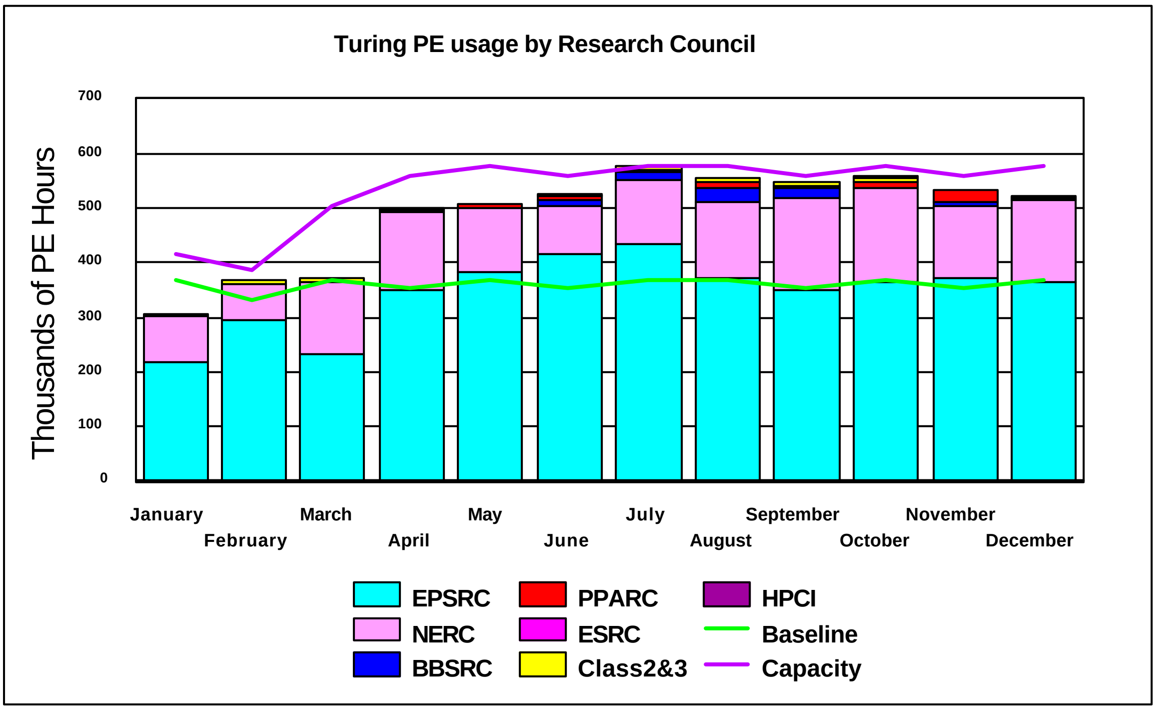
The above chart shows the most significant disk allocations on the Fermat system for class 2 and class 3 users.

There is currently no HSM usage by class 2 and class 3 users.

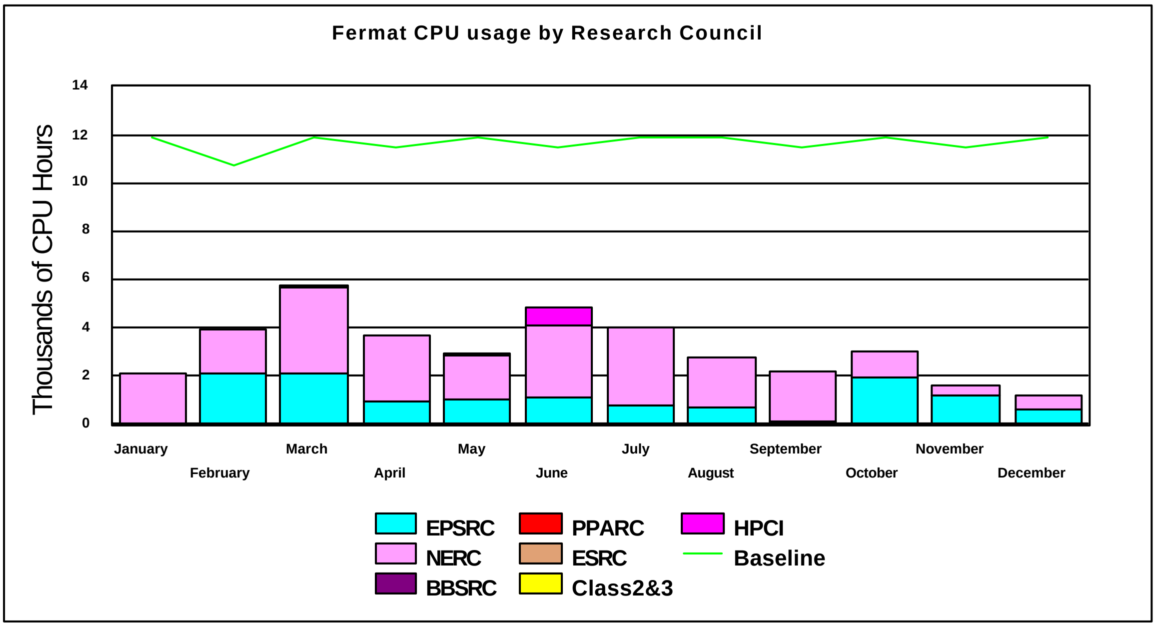
4.5 Charts of Historical Usage

In all the Usage Charts, the baseline varies dependant on the number of days in each month, within a 365-day year.

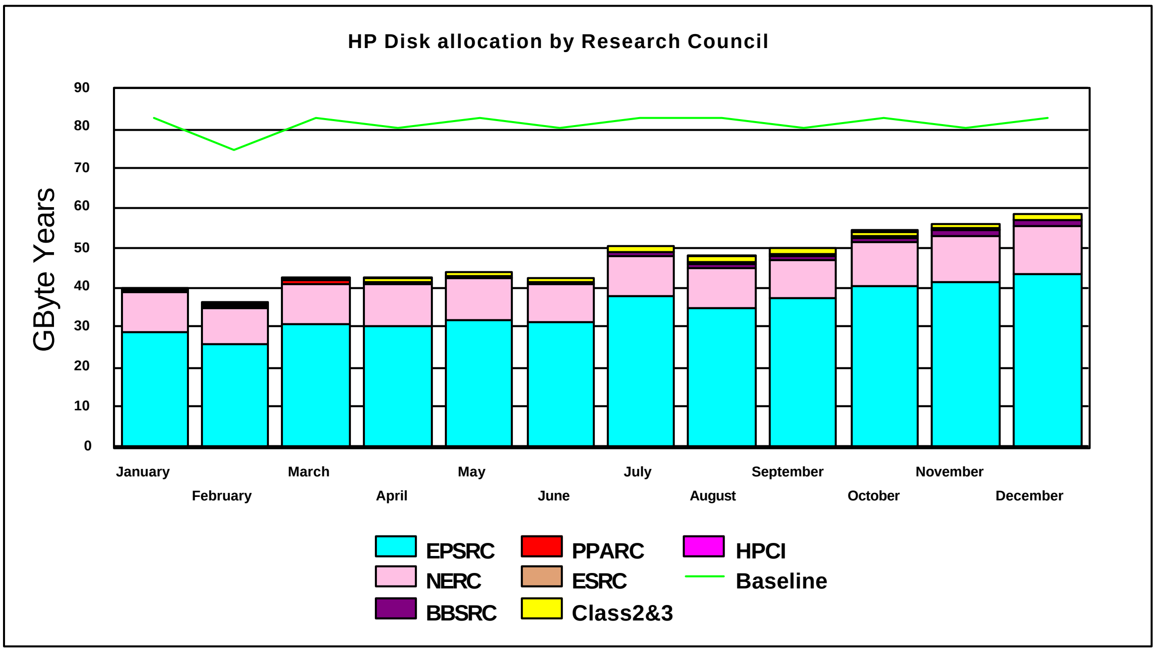
The graph below shows the PE hour's utilisation on Turing by Research Council for the previous 12 months.



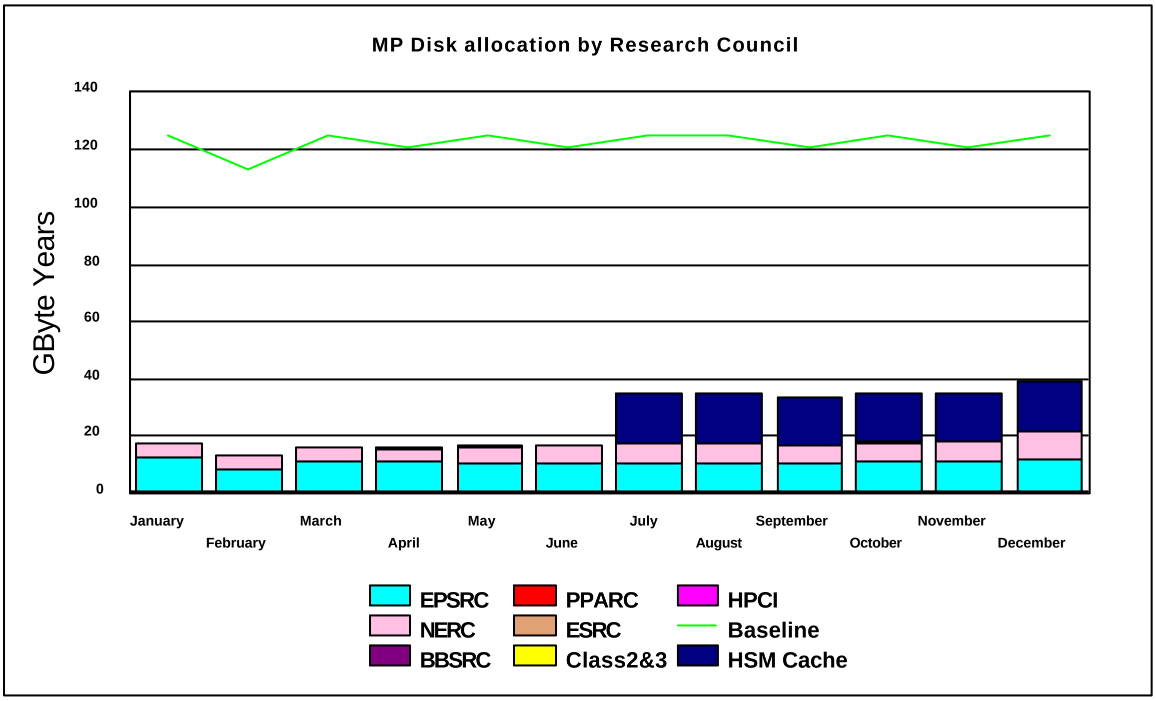
The graph below shows the historic CPU usage on Fermat by Research Council for the previous 12 months.



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

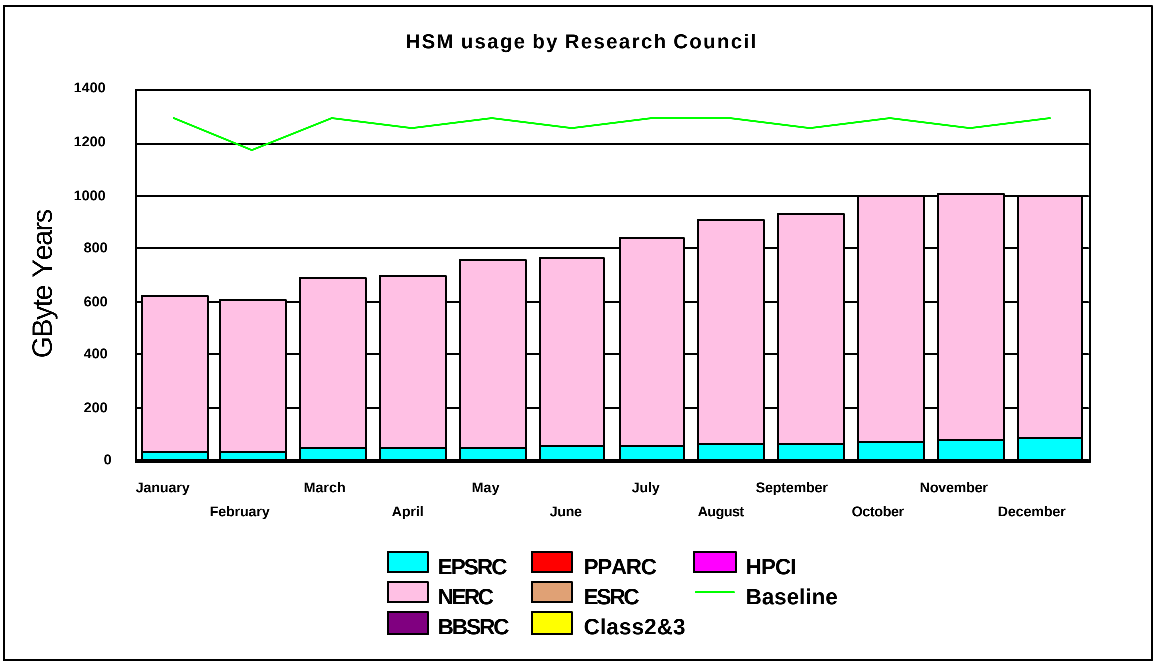


The preceding graph illustrates the historic allocation of the High Performance Disk on Turing.

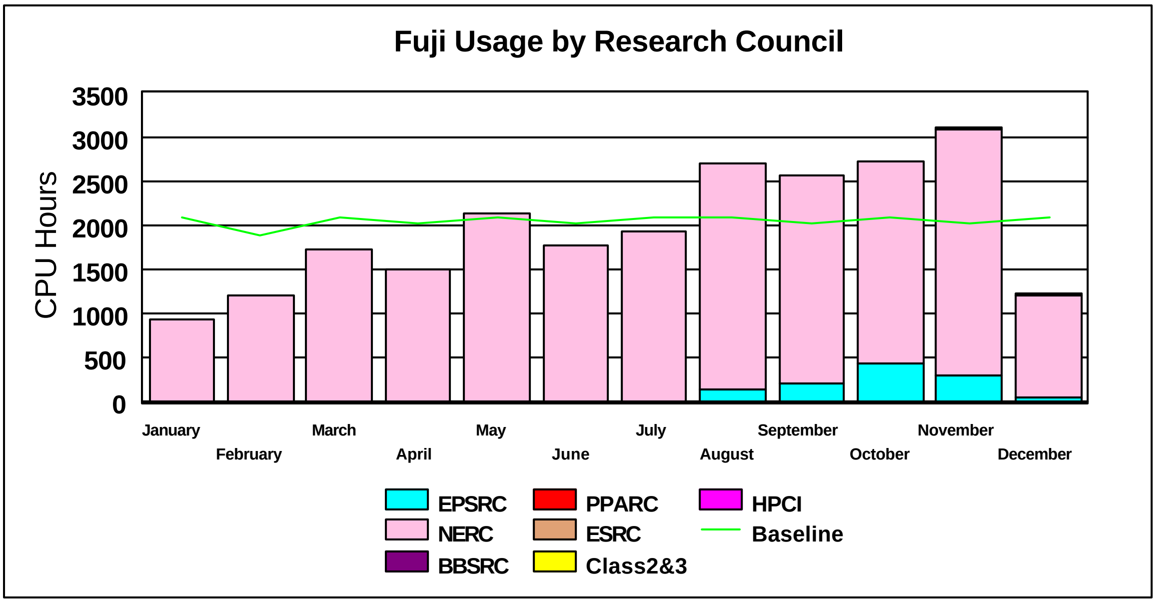


The graph above illustrates the historic allocation of the Medium Performance Disk on Fermat.

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



The next chart shows the historic usage of the Fuji system.



The Fujitsu system was over baseline again this month.

EPSRC usage was from CSE004, while ESRC usage was from CSS002.

4.5 Guest System Usage Charts

There is at present no guest system usage to report.

5. Service Status, Issues and Plans

5.1 Status

The service continues to run almost at full capacity.

During the month, 63% of the jobs run on Turing were larger than 32 PEs in size.

The development work on the IA64 based system is continuing with the next phased implementation due to be completed in March.

The new Origin 128 (Fermat) and Compaq (Kelvin) systems are nearing readiness for production use.

5.2 Issues

Wait times continue to be monitored with every effort being taken to ensure that they are kept at manageable levels, where possible.

5.3 Plans

The upgraded Origin 2000 systemis now in the final stages of the configuration process, before being release as a batch engine to provide increased capacity. This will bring down the wait times on the Turing queues, initially for shorter jobs but as work migrates away from Turing this will benefit the larger jobs.

6. Conclusion

December 2000 saw the overall CPARS rating at Yellow due in part to some environmental problems that were encountered.

The baseline was exceeded by over 42% with the largest proportion of the workload being the larger job sizes.

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 December 2000

Appendix 2 contains the Percentage shares by Consortium for December 2000

Appendix 3 contains the Percentage shares by Research Council for December 2000

Appendix 4 contains the Training, Applications and Optimisation support figures to the end of December 2000

Appendix 5 contains a reference table of the Consortia name, the subject area and the PI name.

Appendix 1

The summary accounts for the month of December 2000 can be found at the URL below

http://www.csar.cfs.ac.uk/admin/accounts/summary.shtml

Appendix 2

Percentage PE time per consortia for Turing in December 2000

Consortia	% Machine Time
CSE002	12.26
CSE003	8.28
CSE007	3.76
CSE021	0.75
CSE023	0.00
CSE025	0.00
CSE030	0.00
CSE006	19.94
CSE026	5.38
CSE004	6.05
CSE010	0.00
CSE011	0.00
CSE013	7.69
CSE014	0.00
CSE016	0.00
CSE018	0.00
CSE022	0.01
CSE027	0.00
CSE029	0.00
CSE040	0.00
CSE041	0.01
CSE043	0.00
CSE008	0.00
CSE009	3.41
CSE024	0.00
CSE033	0.00
CSE035	1.67
CSE019	0.00
CSE020	0.00
CSE034	0.00
CSE036	0.00
HPCI Southampton	0.00
HPCI Daresbury	0.00
HPCI Edinburgh	0.00
CSN001	1.79
CSN002	0.00
BADC	0.00
CSN003	17.50
CSN005	0.00
CSN006	8.17
CSN007	0.00
CSN009	0.00
CSN010	0.00
CSN011	0.01
CSN012	0.00
CSN013	0.02
CSN015	1.63
CSN017	0.07
CSB001	0.00
CSB002	0.71
CSB003	0.00
CSP002	0.71
CSP003	0.00
CSS001	0.00
CSS002	0.00
CS2001	0.00
CS2002	0.00
CS2003	0.00
CS2004	0.00
CS2006	0.00
CS2007	0.00
CS2008	0.00
CS2009	0.00
CS2010	0.00
CS2011	0.00
CS2012	0.00
CS2014	0.00
CS2015	0.00
CS2016	0.00
CS2017	0.00
CS2018	0.00
CS2019	0.00
CS2020	0.00
CS2022	0.00
CS2023	0.00
CS2024	0.19
CS3001	0.00
CS3002	0.00
CS3003	0.00
CS3004	0.01
CS3005	0.00
CS3007	0.01
CS3008	0.00
CS3010	0.00

Percentage CPU time per consortia for Fermat in December 2000

Consortia	% Machine Time
CSE002	0.01
CSE003	0.03
CSE007	0.00
CSE021	0.00
CSE023	0.00
CSE025	0.00
CSE030	0.05
CSE006	8.33
CSE026	0.00
CSE004	6.73
CSE010	0.00
CSE011	0.00
CSE013	20.44
CSE014	0.00
CSE016	0.00
CSE018	0.00
CSE022	0.00
CSE027	0.00
CSE029	0.00
CSE040	0.00
CSE041	2.82
CSE043	0.00
CSE008	0.00
CSE009	0.00
CSE024	0.00
CSE033	0.00
CSE035	0.00
CSE019	0.00
CSE020	0.00
CSE034	0.00
CSE036	2.28
HPCI Southampton	0.00
HPCI Daresbury	0.00
HPCI Edinburgh	0.00
CSN001	0.66
CSN002	0.00
BADC	0.03
CSN003	30.98
CSN005	0.00
CSN006	0.00
CSN007	0.00
CSN009	0.00
CSN010	0.00
CSN011	0.00
CSN012	0.00
CSN013	0.00
CSN015	0.08
CSN017	22.99
CSB001	0.00
CSB002	0.00
CSB003	0.00
CSP002	0.00
CSP003	0.00
CSS001	0.00
CSS002	0.00
CS2001	0.00
CS2002	0.00
CS2003	0.00
CS2004	0.00
CS2006	0.00
CS2007	0.00
CS2008	0.00
CS2009	0.00
CS2010	0.00
CS2011	0.00
CS2012	0.00
CS2014	0.00
CS2015	0.00
CS2016	0.00
CS2017	0.00
CS2018	0.00
CS2019	0.00
CS2020	0.00
CS2022	0.00
CS2023	0.00
CS2024	0.00
CS3001	0.00
CS3002	0.00
CS3003	0.00
CS3004	0.00
CS3005	0.00
CS3007	0.00
CS3008	0.00
CS3010	0.00

Appendix 2

Percentage disc allocation by Consortia for Turing in November 2000

Consortia	%Allocation
CSE002	30.22
CSE003	8.09
CSE007	1.18
CSE021	0.04
CSE023	0.00
CSE025	0.00
CSE030	17.65
CSE006	1.18
CSE026	0.07
CSE004	6.62
CSE010	0.00
CSE011	0.95
CSE013	0.88
CSE014	0.00
CSE016	0.59
CSE018	0.00
CSE022	0.16
CSE027	0.07
CSE029	0.00
CSE040	0.00
CSE041	0.07
CSE043	0.14
CSE008	0.00
CSE009	4.42
CSE024	0.52
CSE033	0.45
CSE035	1.04
CSE019	0.00
CSE020	0.00
CSE034	0.00
CSE036	0.04
HPCI Southampton	0.00
HPCI Daresbury	0.14
HPCI Edinburgh	0.14
CSN001	11.03
CSN002	0.09
BADC	0.00
CSN003	3.22
CSN005	0.00
CSN006	5.89
CSN007	0.00
CSN009	0.00
CSN010	0.00
CSN011	0.41
CSN012	0.00
CSN013	0.00
CSN015	0.18
CSN017	0.02
CSB001	0.07
CSB002	1.92
CSB003	0.05
CSP002	0.88
CSP003	0.04
CSS001	0.21
CSS002	0.00
CS2001	0.00
CS2002	0.00
CS2003	0.00
CS2004	0.00
CS2006	0.00
CS2007	0.00
CS2008	0.00
CS2009	0.00
CS2010	0.00
CS2011	0.00
CS2012	0.00
CS2014	0.00
CS2015	0.00
CS2016	0.00
CS2017	0.00
CS2018	0.13
CS2019	0.00
CS2021	0.00
CS2022	0.13
CS2023	0.14
CS2024	0.00
CS3001	0.00
CS3002	0.02
CS3003	0.02
CS3004	0.14
CS3007	0.21
CS3008	0.45
CS3005	0.04
CS3010	0.04

Percentage disc allocation by Consortia for Fermat in November 2000

Consortia	%Allocation
CSE002	27.14
CSE003	0.99
CSE007	0.00
CSE021	0.00
CSE023	0.00
CSE025	0.00
CSE030	22.58
CSE006	0.44
CSE026	0.00
CSE004	6.76
CSE010	0.00
CSE011	0.00
CSE013	0.55
CSE014	0.00
CSE016	0.00
CSE018	0.00
CSE022	0.00
CSE027	0.22
CSE029	0.00
CSE040	0.00
CSE041	0.00
CSE043	0.44
CSE008	0.00
CSE009	0.44
CSE024	0.16
CSE033	0.00
CSE035	0.00
CSE019	0.00
CSE020	0.00
CSE034	0.00
CSE036	0.05
HPCI Southampton	0.00
HPCI Daresbury	0.11
HPCI Edinburgh	0.44
CSN001	22.58
CSN002	0.00
BADC	0.00
CSN003	15.66
CSN005	0.00
CSN006	0.00
CSN007	0.00
CSN009	0.00
CSN010	0.00
CSN011	0.00
CSN012	0.00
CSN013	0.00
CSN015	0.00
CSN017	0.11
CSB001	0.00
CSB002	0.44
CSB003	0.00
CSP002	0.00
CSP003	0.11
CSS001	0.00
CSS002	0.00
CS2001	0.00
CS2002	0.00
CS2003	0.00
CS2004	0.00
CS2006	0.00
CS2007	0.00
CS2008	0.00
CS2009	0.00
CS2010	0.00
CS2011	0.00
CS2012	0.00
CS2014	0.00
CS2015	0.00
CS2016	0.00
CS2017	0.00
CS2018	0.00
CS2019	0.00
CS2021	0.00
CS2022	0.00
CS2023	0.00
CS2024	0.00
CS3001	0.00
CS3002	0.00
CS3003	0.00
CS3004	0.00
CS3007	0.00
CS3008	0.44
CS3005	0.00
CS3010	0.00

Percentage usage of HSM by Consortium for December 2000

Consortium	% Usage
CSE002	0.84
CSE003	0.09
CSE030	0.83
CSE004	4.52
CSE013	0.11
CSE041	0.08
CSE024	2.47
CSE035	0.03
CSN001	20.66
BADC	9.09
CSN003	56.34
CSN015	4.75

Appendix 3

Percentage PE usage on Turing by Reserch Council for December 2000			Percentage CPU usage on Fermat by Reserch Council for December 2000		
Research Council	% Usage		Research Council	% Usage	
EPSRC	69.22		EPSRC	45.27	
HPCI	0.00		HPCI	0.00	
NERC	29.18		NERC	54.73	
BBSRC	0.71		BBSRC	0.00	
ESRC	0.01		ESRC	0.00	
PPARC	0.89		PPARC	0.00	

Percentage Disc allocated on Turing by Research Council for December 2000			Percentage Disc allocated on Fermat by Research Council for December 2000		
Research Council	% Allocated		Research Council	% Allocated	
EPSRC	74.85		EPSRC	55.56	
HPCI	0.29		HPCI	0.55	
NERC	20.82		NERC	42.97	
BBSRC	2.02		BBSRC	0.41	
ESRC	0.27		ESRC	0.00	
PPARC	1.06		PPARC	0.14	

Percentage HSM usage by Research Council for December 2000		
Research Council	% usage	
EPSRC	8.97	
HPCI	0	
NERC	90.85	
BBSRC	0	
ESRC	0	
PPARC	0	

Appendix 4

The following tables show the training and support resource usage by the consortias in person days to the cuurent month.

			Application Support		Optimisation Support			
Code	PI	Subject	Application Support for December 2000	Total Application Support from July 2000	Optimisation Support for December 2000	Total Optimisation Support from July 2000	Total Support Used	Training Used
Cse002	Dr Phil Lindan	Support for the UKCP	1	10.25			142.25	-
Cse003	Prof. Ken Taylor	HPC Consortiums 98- 2000	1	1			4	6
Cse004	Dr Neil Sandham	UK Turbulence						2
Cse006	Dr Patrick Briddon	Covalently Bonded Materials						
Cse007	Dr Matthew Foulkes	Quantum Many Body Theory					1	2
Cse009	Dr Ben Slater (Catlow)	HPC in Materials Chemistry		5		3	8	
Cse010	Dr John Williams	Free Surface Flows					15.95	
Cse011	Dr John Williams	Open Channel Flood Plains					2.18	
Cse013	Prof Michael Leschziner	Complex Engineering Flows						3
Cse014	Dr Cassiano de Oliverira (Goddard)	Probs in Nuclear Safety						
Cse017	Dr Kai Luo	Large Eddy Simulation and Modelling of Buoyant Plumes and Smoke Spread in Enclosures						
Cse021	Dr Julie Staunton	Magentisim						1
Cse024	Dr Robert Allan (Tennyson)	ChemReact 98-2000						-
Cse025	Dr Niels Rene Walet(Bishop)	Nuclear Theory Progamme						1.5
Cse027	Dr M Imregun	Excitation Mechanisims						
Cse030	Prof M Cates	HPC for Complex Fluids	5	15		5	45	7
Cse033	Dr M Imregun	Tubomachinery core compressor						

Cse041	Dr M Imregun	Flutter and Noise Generation						
Cse043	Dr J J R Williams	Numerical Simulation of flow over a rough bed						4
Csn001	Mrs Beverly de Cuevas (Webb)	HPCI Global Ocean Consortium					2	1
Csn003	Dr Lois Steenman-Clark (O'Neill)	UGAMP						4
Csn005	Dr Huw Davies	Constraining Earth Mantle					27	6
Csn010	Dr Jason Lander (Mobbs)	Flow over Complex terrain					-	-
Csn015	Dr Roger Proctor	Atlantic Margin Metocean Project						3
Csn017	Dr Antony Payne	Stability of the Antarctic Ice Sheet						2
Csb001	Dr David Houldershaw (Goodfellow)	Macromolecular Interactions					2	2
Csb003	Dr John Carling (Williams)	Anguilliform Swimming						-
Csp002	Dr Sandra Chapman	Nonlinear process in solar system and astrophysical plasmas						4
Csp003	Prof Andrew Lyne	Computing Resources for Precision timing of Millisecond Pulsars		1			2	4
Css001	Dr I J Turton	Human Systems Modelling						
Css002	Dr Robert Crouchley	Dropout in panel surveys						2
ukhec	Ms K Jaffri							2
Cs2001	Dr Sudhir Jain	3D Ising Spin Glass						-
Cs2002	Dr Ingrid Stairs (Lyne)	Millisecond Pulsars					0.25	-

Cs2007	Choularton	Precipitation in the Mountains						1
Cs2008	Dr Matthew Genge	Extraterrestrial Mineral Surfaces					7.91	
Cs2012	Prof Ning Qin	Monotone Integrated Large Eddy Simulation						1.5
Cs2014	Dr Vladimir Karlin	Dynamics of intrinsically unstable premixed flames						2
Cs2015	Mr Pablo Tejera-Cuesta	Nonlinear Methods in Aerodynamics						1.5
Cs2016	Dr Jim Miles	Investigation of Scaline Properties of Hierarchical Micromagnetic Models						-
Cs2021	Dr A R Mount	A Computational Study of the Luminescence of Substituted Indoles						1
Cs2022	Dr Philippa Browning	Numerical simulation of forced magnetic reconnection						2
Cs3001	Mr John Andrew Staveley	Helical Coherent Structures					0	3
Cs3002	Dr Keir Novik	Simulations of DNA oligomers						2
Cs3004	Prof Nick Avis	Computational Steering and Interactive Virtual Environments						1
Cs3005	Mr Behrouz Zarei	Simulation of Queuing Networks						3
Cs3006	Mr F Li	Quantifying Room Acoustic Quality						1
Cs3007	Emma Finch	Development ofa 3D Crustal Lattice Solid Model	5	5		5	10	-

Cs3008	Dr B J Alsberg	Development of a 3D QSAR method based on quantum topological descriptors					-	-
Cs3009	Dr D Flower	Epitope Prediction Methods based on molecular dynamics simulation					-	-
Cs3010	Dr K Kemsley	Investigation of electromyographic recordings of muscle activity during chewing, and of relationships with perceived flavour and texture, in model and real food systems					-	1
Cs3012	Prof Jim Austin	Evaluation of binary neural networks on a vector parallel processor					-	2
		Totals	12	37.25	0	13	269.54	72.5

Appendix 5

Code	PI	Subject	Subject Area
Cse002	Dr Nicolas Harrison (Gillan)	Support for the UKCP	Physics
Cse003	Prof. Ken Taylor	HPC Consortiums 98- 2000	Physics
Cse004	Dr Neil Sandham	UK Turbulence	Engineering
Cse006	Dr Patrick Briddon	Covalently Bonded Materials	Materials
Cse007	Dr Matthew Foulkes	Quantum Many Body Theory	Physics
Cse008	Dr Mark Vincent (Hillier)	Model Chemical Reactivity	Chemistry
Cse009	Dr Ben Slater (Catlow)	HPC in Materials Chemistry	Chemistry
Cse010	Dr John Williams	Free Surface Flows	Engineering
Cse011	Dr John Williams	Open Channel Flood Plains	Engineering
Cse013	Dr David Aspley (Leschziner)	Complex Engineering Flows	Engineering
Cse014	Dr Cassiano de Oliverira (Goddard)	Probs in Nuclear Safety	Engineering
Cse016	Dr Stewart Cant	Turbulent Combustion	Engineering
Cse018	Dr Stewart Cant	Turbulent Flames	Engineering
Cse019	Dr Jason Lander (Berzins)	ROPA	Information Technology
Cse020	Dr Marek Szularz	Symmetric Eigenproblem	Information Technology
Cse021	Dr Julie Staunton	Magentisim	Physics
Cse022	Mr Niall Branley (Jones)	Turbulent Flames	Engineering
Cse023	Allen	Liquid Crystalline Materials	Robin Pinning
Cse024	Dr Robert Allan (Tennyson)	ChemReact 98-2000	Chemistry
Cse025	Dr Niels Rene Walet (Bishop)	Nuclear Theory Progamme	Physics
Cse026	Dr Maureen Neal	J90 move	
Cse027	Dr M Imregun	J90 move	
Cse028	Prof. P.W. Bearman	J90 move	
Cse029	Dr David Aspley (Leschziner)	J90 move	Engineering
Cse030	Prof M Cates	HPC for Complex Fluids	Physics
Cse031	Brebbia	J90 move	
Cse033	Dr M Imregun	Tubomachinery core compressor	Chemistry
Cse034	Dr Paul Durham	R&D of liner/non-linear systems	Mathematics
Csn001	Mrs Beverly de Cuevas (Webb)	HPCI Global Ocean Consortium	
Csn002	Dr Mark Vincent (Hillier)	Pollutant Sorption on Mineral Surf	
Csn003	Dr Lois Steenman-Clark (O'Neill)	UGAMP	
Csn005	Dr Huw Davies	Constraining Earth Mantle	
Csn006	Dr John Brodholt (Price)	Density Functional Methods	
Csn007	Dr John Brodholt (Price)	Density Functional Methods	
Csn008	Hulton	Sub-Glacial Process	
Csn009	Dr Roger Proctor		
Csn010	Dr Jason Lander (Mobbs)	Flow over Complex terrain	
Csn011	Dr Ed Dicks (Thorpe)	J90 move	
Csb001	Dr David Houldershaw (Goodfellow)	Macromolecular Interactions	
Csb002	Dr Adrian Mulholland (Danson)	Stability of Enzymes at high temp	
Csb003	Dr John Carling (Williams)	J90 move	
Css001	Dr Stan Openhaw	Human Systems Modelling	
Css002	Dr Robert Crouchley	Dropout in panel surveys	
Hpcid	Dr Robert Allan		
Hpcie	Dr David Henty		
Hpcis	Dr Denis Nicole		
Cs2001	Dr Sudhir Jain	3D Ising Spin Glass	
Cs2002	Dr Ingrid Stairs (Lyne)	Millisecond Pulsars	
Cs2003	Mr Tom Coulthard	Holocene Sediment Fluxes	
Cs2004	Dr A. Paul Watkins	Internal Combustion Engine	
Cs2005	Mr Sean Walsh	Arabidopsis Genome	
Cs2006	Prof. Walter Temmerman	Superconductivity & Magmetisim	
Cs2007	Choularton	Precipitation in the Mountains	
Cs2008	Dr Matthew Genge	Extraterrestrial Mineral Surfaces	
Cs3001	Mr John Andrew Staveley	Helical Coherent Structures	