

HPCx Service Report

November 2006

1 Introduction

This report covers the period from 0800 on 1 November 2006 to 0800 on 1 December 2006. This was a service month of 720 hours.

2 Usage

2.1 Availability

Incidents

During this month, there were 9 incidents, none of which were at SEV1. The following table indicates the severity levels of the incidents, where SEV 1 is defined as a *Failure* (in contractual terms). The definitions used for severity levels can be found in Appendix A.

| <i>Severity</i> | <i>Number</i> |
|-----------------|---------------|
| 1 | 0 |
| 2 | 2 |
| 3 | 7 |
| 4 | 0 |

The MTBF figures for this month were as follows:

| <i>SEV1</i> | <i>Incidents</i> | <i>MTBF</i> |
|----------------|------------------|-------------|
| IBM | 0.0 | ∞ |
| Site | 0.0 | ∞ |
| External | 0.0 | ∞ |
| <i>Overall</i> | 0.0 | ∞ |

Serviceability

Scheduled downtime for this month was 13 hours.

| <i>Attribution</i> | <i>UDT</i> | <i>Serviceability</i> |
|--------------------|------------|-----------------------|
| IBM | 0:00 | 100.0 |
| Site | 0:00 | 100.0 |
| External | 0:00 | 100.00 |
| <i>Overall</i> | 0:00 | 100.0 |

2.2 CPU Usage by Consortium

Main Service

| Consortium | CPU Hours (Parallel) | CPU Hours (Other) | AUs charged | %age of charged AUs |
|------------|-------------------------|----------------------|----------------|------------------------|
| e01 | 105784 | 152 | 508719 | 8.0% |
| e03 | 18 | 0 | 85 | 0.0% |
| e05 | 184011 | 1609 | 893348 | 14.1% |
| e06 | 5279 | 260 | 26669 | 0.4% |
| e08 | 26377 | 0 | 126992 | 2.0% |
| e14 | 49813 | 0 | 239824 | 3.8% |
| e15 | 1543 | 0 | 7428 | 0.1% |
| e17 | 9592 | 11 | 46235 | 0.7% |
| e18 | 0 | 0 | 1 | 0.0% |
| e19 | 21 | 1 | 107 | 0.0% |
| e20 | 22088 | 1 | 106347 | 1.7% |
| e22 | 28 | 0 | 134 | 0.0% |
| e23 | 9361 | 0 | 45067 | 0.7% |
| e24 | 344062 | 2 | 1656481 | 26.1% |
| e25 | 0 | 0 | 1 | 0.0% |
| e26 | 684 | 0 | 3292 | 0.1% |
| e27 | 85 | 0 | 409 | 0.0% |
| e31 | 0 | 0 | 0 | 0.0% |
| e32 | 7175 | 0 | 32815 | 0.5% |
| e33 | 12369 | 0 | 59548 | 0.9% |
| e35 | 17082 | 116 | 82797 | 1.3% |
| e36 | 4182 | 0 | 20134 | 0.3% |
| e37 | 36380 | 0 | 175149 | 2.8% |
| e38 | 31 | 0 | 148 | 0.0% |
| e39 | 25257 | 35 | 121766 | 1.9% |
| e40 | 1 | 0 | 3 | 0.0% |
| e42 | 167333 | 36 | 805791 | 12.7% |
| e45 | 2908 | 0 | 13999 | 0.2% |
| e48 | 804 | 0 | 3873 | 0.1% |
| e49 | 1969 | 1 | 9483 | 0.1% |
| e50 | 5057 | 0 | 24347 | 0.4% |
| e51 | 148 | 12 | 771 | 0.0% |
| e54 | 1673 | 0 | 8055 | 0.1% |
| e55 | 0 | 0 | 1 | 0.0% |

| | | | | |
|--------------------|---------|------|---------|-------|
| <i>EPSRC Total</i> | 1041113 | 2238 | 5019820 | 79.0% |
|--------------------|---------|------|---------|-------|

| | | | | |
|-------------------|--------|-----|---------|-------|
| n01 | 124895 | 29 | 601435 | 9.5% |
| n02 | 54302 | 9 | 261473 | 4.1% |
| n03 | 54677 | 134 | 263882 | 4.2% |
| n04 | 12766 | 2 | 61472 | 1.0% |
| <i>NERC Total</i> | 246639 | 173 | 1188262 | 18.7% |

| | | | | |
|--------------------|-----|----|------|------|
| p01 | 646 | 11 | 3163 | 0.0% |
| <i>PPARC Total</i> | 646 | 11 | 3163 | 0.0% |

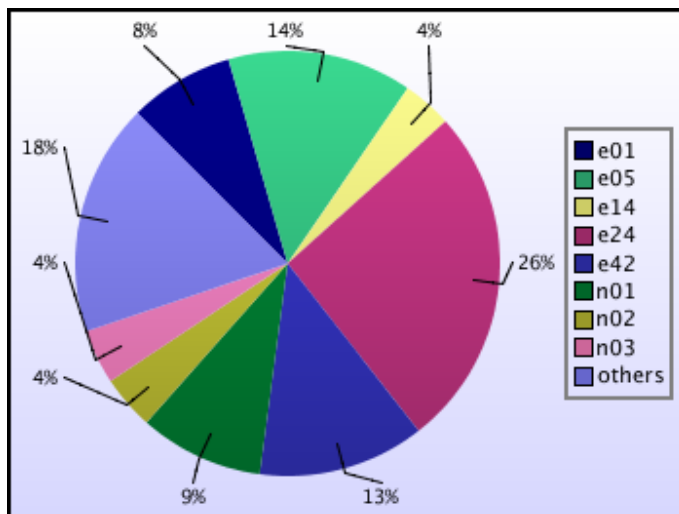
| | | | | |
|--------------------|-------|----|-------|------|
| c01 | 17636 | 36 | 85081 | 1.3% |
| <i>CCLRC Total</i> | 17636 | 36 | 85081 | 1.3% |

| | | | | |
|--------------------|-----|----|------|------|
| b08 | 256 | 24 | 1344 | 0.0% |
| <i>BBSRC Total</i> | 256 | 24 | 1344 | 0.0% |

| | | | | |
|-----------------------|------|---|-------|------|
| x01 | 5040 | 8 | 24302 | 0.4% |
| <i>External Total</i> | 5040 | 8 | 24302 | 0.4% |

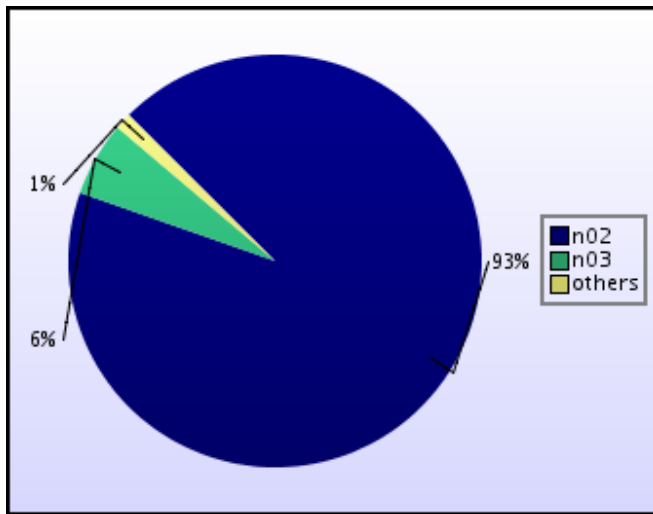
| | | | | |
|-------------------|------|----|-------|------|
| z001 | 6330 | 14 | 30542 | 0.5% |
| z002 | 5 | 0 | 25 | 0.0% |
| z004 | 54 | 0 | 261 | 0.0% |
| z06 | 48 | 2 | 240 | 0.0% |
| <i>HPCx Total</i> | 6437 | 16 | 31069 | 0.5% |

Use by project



Development Service

| <i>Consortium</i> | <i>CPU Hours (Parallel)</i> | <i>CPU Hours (Other)</i> | <i>AUs charged</i> | <i>%age of charged AUs</i> |
|-------------------|-----------------------------|--------------------------|--------------------|----------------------------|
| n01 | 0 | 0 | 0 | 0.0% |
| n02 | 115993 | 371 | 560227 | 93.6% |
| n03 | 1796 | 0 | 8649 | 1.4% |
| n04 | 6073 | 40 | 29431 | 4.9% |
| <i>NERC Total</i> | 123862 | 411 | 598307 | 100.0% |



2.3 CPU Usage by Job Type

The figures for *Raw AUs* given here show the number of AUs actually supplied by the system to users' jobs.

Main service

| <i>Number of processors</i> | <i>Raw AUs</i> | <i>%age</i> | <i>Number of jobs</i> |
|-----------------------------|----------------|-------------|-----------------------|
| ≤32 | 659080 | 10.4% | 4026 |
| 33–64 | 621980 | 9.8% | 1007 |
| 65–128 | 844852 | 13.3% | 743 |
| 129–256 | 1098642 | 17.3% | 521 |
| 257–512 | 1645491 | 25.9% | 114 |
| 513–1024 | 1474281 | 23.2% | 61 |
| >1024 | 0 | 0.0% | 0 |

Utilisation by region

Under Phase 3, the regions are:

- Capacity Region (50 nodes, for jobs using ≤128 CPUs)
- Capability Region (96 nodes, principally for jobs using >128 CPUs)
- Interactive-parallel Region (2 nodes)

Capacity Region (50 nodes, jobs using ≤128 CPUs): a total of 2125912 raw AUs were used; that is 76.7% of the total available in this region

Capability Region (96 nodes, jobs using >128 CPUs): a total of 4218413 raw AUs were used; that is 79.2% of the total available in this region

Overall utilisation was 78.18%.

Development Service

| <i>Number of processors</i> | <i>Raw AUs</i> | <i>%age</i> | <i>Number of jobs</i> |
|-----------------------------|----------------|-------------|-----------------------|
| ≤32 | 533709 | 89.5% | 5034 |
| 33–64 | 27776 | 4.7% | 193 |
| 65–128 | 34843 | 5.8% | 99 |
| 129–256 | 0 | 0.0% | 0 |

Overall utilisation of the development service was 84.23%.

2.4 Slowdown and Job Wait Times

Slowdowns

Slowdown is a widely used measure of the relative wait times of different classes of jobs. It is defined as:

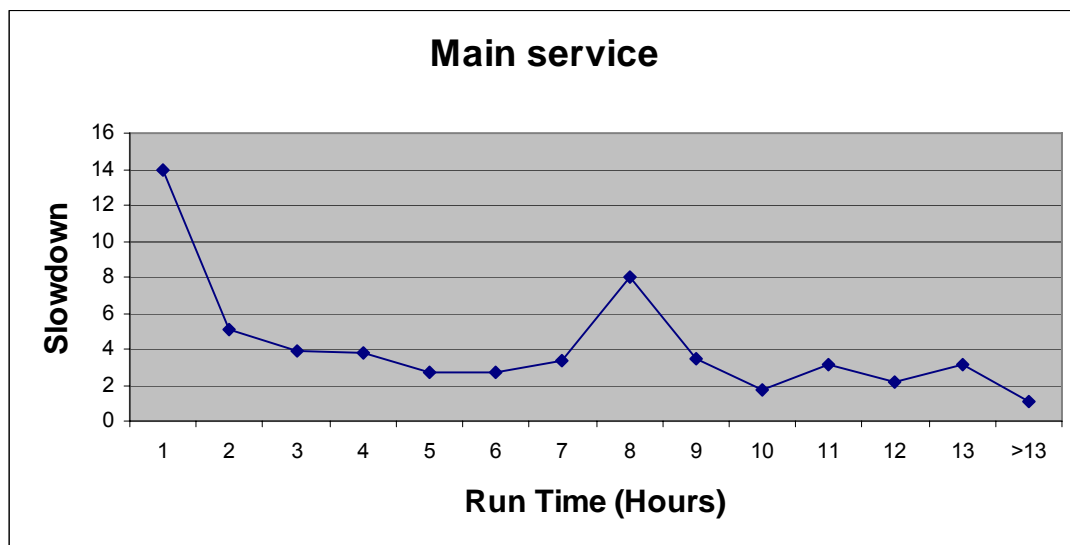
$$\text{Slowdown} = (\text{job run time} + \text{job wait time}) / (\text{job run time})$$

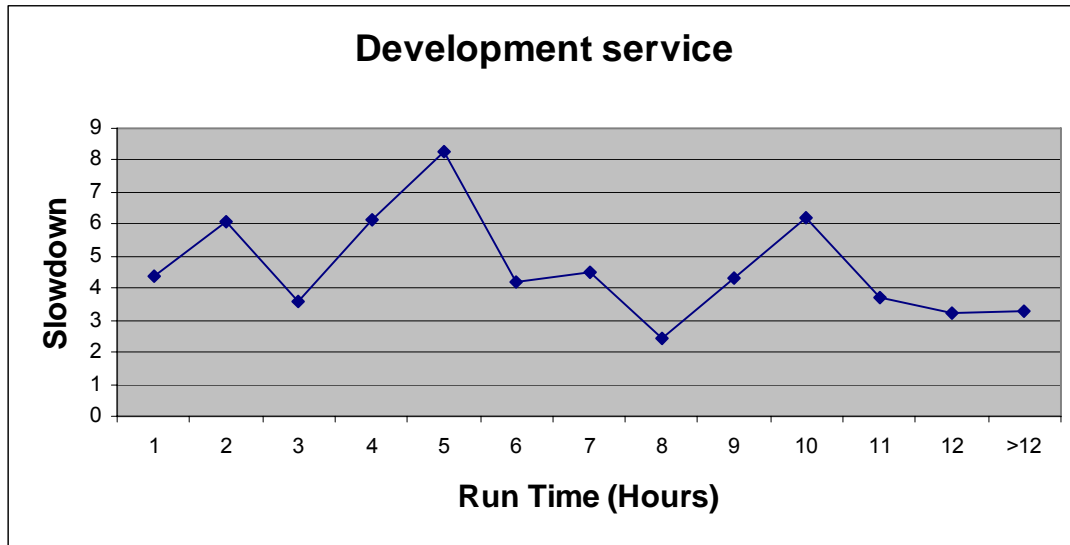
Slowdowns of less than around 10 are usually regarded as reasonable.

On both services, slowdowns are currently satisfactory.

Slowdowns by runtime

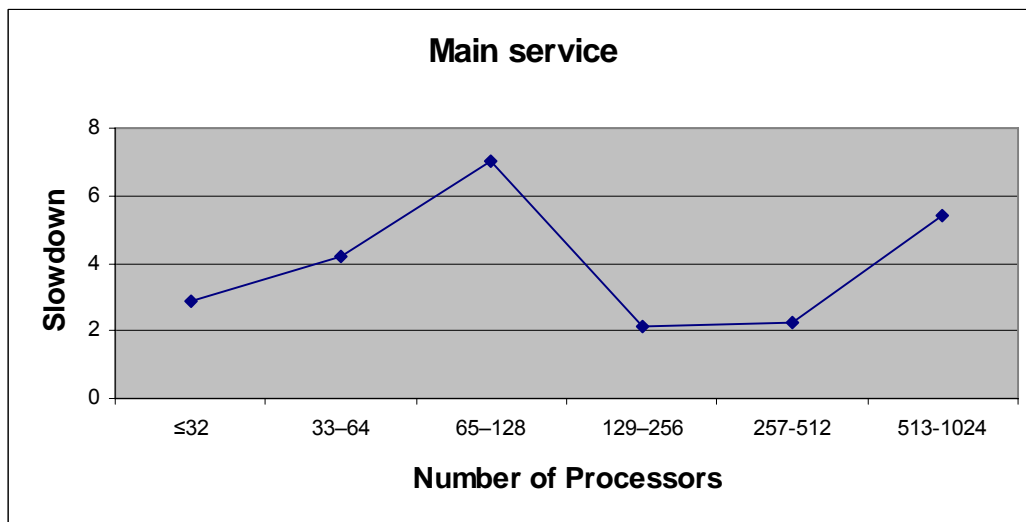
The following graphs show the slowdowns recorded for jobs of differing run times, ignoring those which ran for less than 5 minutes.

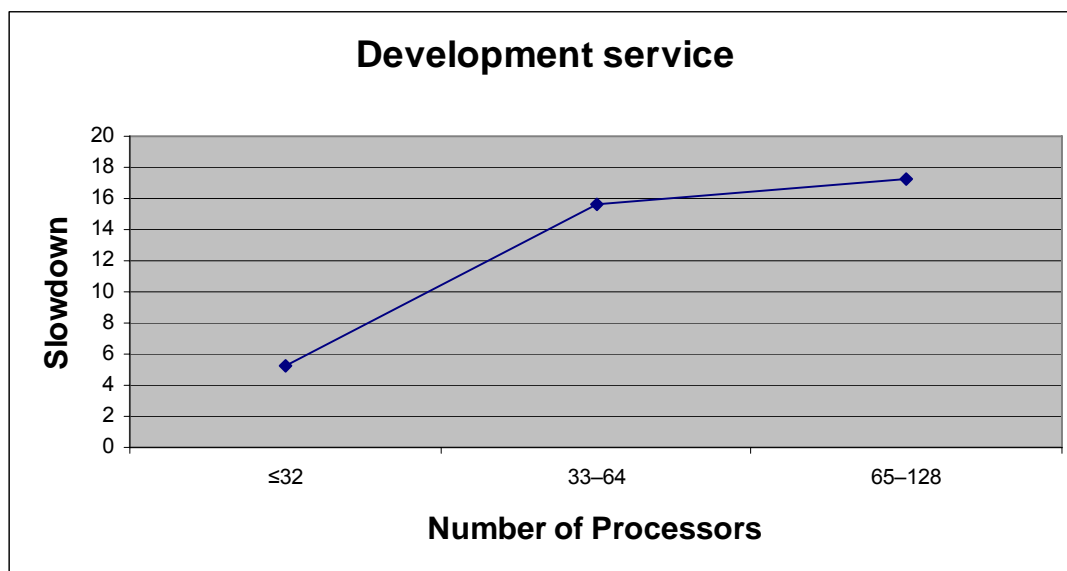




Slowdowns by number of processors

In the graphs below, we plot the slowdown figures against the number of processors used. Jobs which ran for less than 1 hour are ignored.



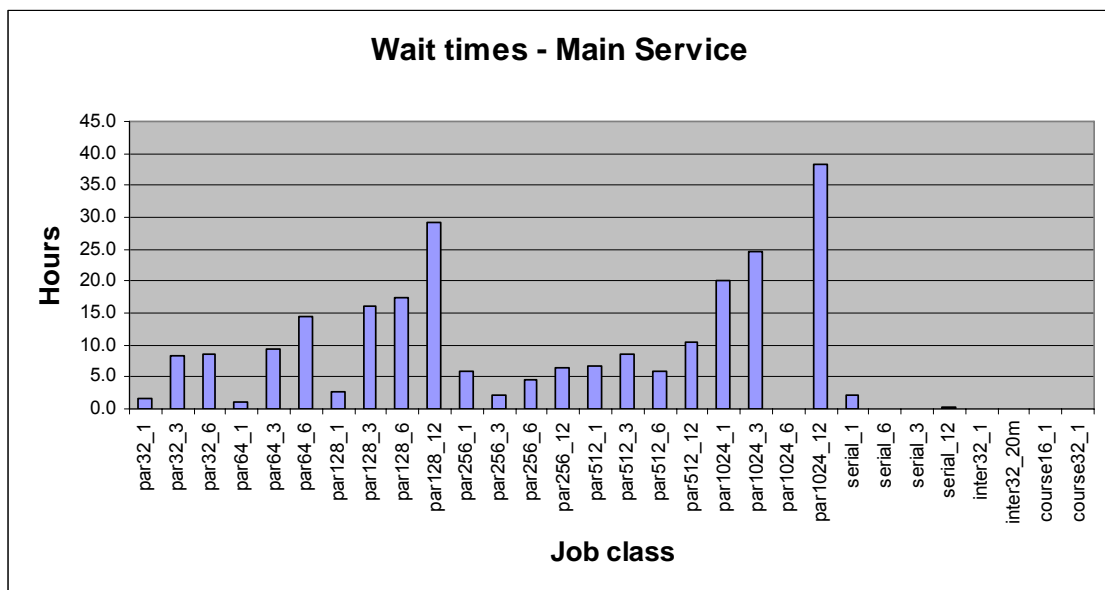


Job wait times

The following table and graph shows the average wait time (in hours) for each class of job on the main service.

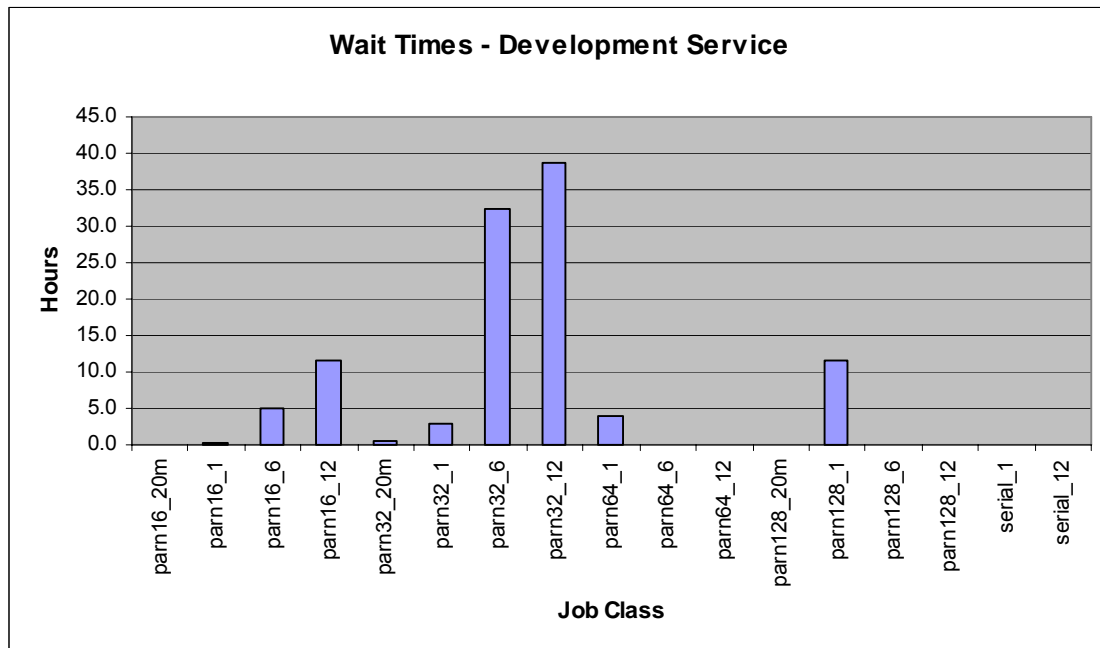
| Job Class | Category | Maximum Number of CPUs | Maximum Job length | Average wait time | Number of Jobs |
|-----------|----------|------------------------|--------------------|-------------------|----------------|
| par32_1 | parallel | 32 | 1 | 1.6 | 2485 |
| par32_3 | parallel | 32 | 3 | 8.3 | 339 |
| par32_6 | parallel | 32 | 6 | 8.5 | 1201 |
| par64_1 | parallel | 64 | 1 | 1.0 | 488 |
| par64_3 | parallel | 64 | 3 | 9.5 | 42 |
| par64_6 | parallel | 64 | 6 | 14.4 | 477 |
| par128_1 | parallel | 128 | 1 | 2.6 | 464 |
| par128_3 | parallel | 128 | 3 | 16.1 | 82 |
| par128_6 | parallel | 128 | 6 | 17.5 | 52 |
| par128_12 | parallel | 128 | 12 | 29.2 | 145 |
| par256_1 | parallel | 256 | 1 | 5.8 | 315 |
| par256_3 | parallel | 256 | 3 | 2.0 | 36 |
| par256_6 | parallel | 256 | 6 | 4.7 | 49 |
| par256_12 | parallel | 256 | 12 | 6.4 | 103 |
| par512_1 | parallel | 512 | 1 | 6.7 | 34 |
| par512_3 | parallel | 512 | 3 | 8.5 | 9 |
| par512_6 | parallel | 512 | 6 | 6.0 | 4 |
| par512_12 | parallel | 512 | 12 | 10.5 | 67 |
| par1024_1 | parallel | 1024 | 1 | 20.1 | 22 |
| par1024_3 | parallel | 1024 | 3 | 24.8 | 2 |
| par1024_6 | parallel | 1024 | 6 | 0.0 | 0 |

| | | | | | |
|-------------|-------------|------|----|------|------|
| par1024_12 | parallel | 1024 | 12 | 38.3 | 37 |
| serial_1 | serial | 1 | 1 | 2.2 | 943 |
| serial_6 | serial | 1 | 6 | 0.0 | 102 |
| serial_3 | serial | 1 | 3 | 0.0 | 39 |
| serial_12 | serial | 1 | 12 | 0.2 | 58 |
| inter32_1 | interactive | 32 | 1 | 0.0 | 2507 |
| inter32_20m | interactive | 32 | 1 | 0.0 | 858 |
| course16_1 | interactive | 16 | 1 | 0.0 | 23 |
| course32_1 | parallel | 32 | 1 | 0.0 | 0 |



The wait times for the development service are shown below.

| Job Class | Category | Maximum Number of CPUs | Maximum Job length | Average wait time | Number of Jobs |
|-------------|----------|------------------------|--------------------|-------------------|----------------|
| parn16_20m | parallel | 16 | 20 mins | 0.0 | 760 |
| parn16_1 | parallel | 16 | 1 hour | 0.2 | 1834 |
| parn16_6 | parallel | 16 | 6 hours | 5.0 | 238 |
| parn16_12 | parallel | 16 | 12 hours | 11.7 | 276 |
| parn32_20m | parallel | 32 | 20 mins | 0.5 | 296 |
| parn32_1 | parallel | 32 | 1 hour | 3.0 | 1410 |
| parn32_6 | parallel | 32 | 6 hours | 32.4 | 123 |
| parn32_12 | parallel | 32 | 12 hours | 38.7 | 97 |
| parn64_1 | parallel | 64 | 1 hour | 4.0 | 193 |
| parn64_6 | parallel | 64 | 6 hours | 0.0 | 0 |
| parn64_12 | parallel | 64 | 12 hours | 0.0 | 0 |
| parn128_20m | parallel | 128 | 20 mins | 0.0 | 0 |
| parn128_1 | parallel | 128 | 1 hour | 11.5 | 99 |
| parn128_6 | parallel | 128 | 6 hours | 0.0 | 0 |
| parn128_12 | parallel | 128 | 12 hours | 0.0 | 0 |
| serial_1 | serial | 1 | 1 hour | 0.1 | 11654 |
| serial_12 | serial | 1 | 12 hours | 0.0 | 22 |



2.5 Disk Occupancy

Home Space

Home space is the part of the disk space that is regularly backed up.

| <i>Consortium</i> | <i>Disc Occupancy (Mb)</i> | <i>Disc Quota (Mb)</i> |
|-------------------|----------------------------|------------------------|
| b02 | 34,058.10 | 50,000 |
| b03 | 52,710.50 | 50,000 |
| b08 | 2,486.50 | 50,000 |
| c01 | 144,708.80 | 150,000 |
| e01 | 54,627.10 | 58,829 |
| e02 | 23,079.30 | 38,829 |
| e03 | 75,859.30 | 225,012 |
| e05 | 314,489.70 | 534,500 |
| e06 | 284,322 | 300,000 |
| e08 | 75,573.80 | 100,000 |
| e10 | 74,316.60 | 150,000 |
| e11 | 37,018.60 | 100,000 |
| e14 | 93,054.60 | 100,000 |
| e15 | 40,687.50 | 50,000 |
| e16 | 132.9 | 20,000 |
| e17 | 40,382.30 | 50,000 |
| e18 | 28,781.70 | 40,000 |
| e19 | 1,417.30 | 40,000 |
| e20 | 59,001.20 | 60,000 |
| e21 | 488.3 | 50,000 |
| e22 | 4,765.40 | 10,000 |
| e23 | 1,976.20 | 50,000 |
| e24 | 68,042.70 | 365,000 |
| e25 | 9,426.80 | 50,000 |
| e26 | 16,368.50 | 20,000 |
| e27 | 17,437.80 | 20,000 |
| e29 | 20,835.10 | 30,000 |
| e30 | 0.1 | 40,000 |
| e31 | 40,978.20 | 50,000 |
| e32 | 47,038.40 | 50,000 |
| e33 | 1,389.70 | 50,000 |
| e34 | 0.1 | 50,000 |
| e35 | 26,925.10 | 100,000 |
| e36 | 48,183.70 | 50,000 |
| e37 | 76,457.10 | 100,000 |
| e38 | 7,212.70 | 50,000 |
| e39 | 12,987.30 | 50,000 |
| e40 | 5,932.90 | 50,000 |

| | | |
|------|------------|---------|
| e41 | 1,521.20 | 100,000 |
| e42 | 17,687.50 | 100,000 |
| e45 | 10,670.70 | 50,000 |
| e46 | 0.2 | 50,000 |
| e47 | 0.1 | 50,000 |
| e48 | 4.9 | 50,000 |
| e49 | 37,375.20 | 50,000 |
| e50 | 2,994.10 | 13,000 |
| e51 | 4,135.20 | 50,000 |
| e52 | 11.2 | 50,000 |
| e53 | 1,396.70 | 50,000 |
| e54 | 1,079.80 | 50,000 |
| e55 | 1,664 | 50,000 |
| e56 | 47,508.90 | 50,000 |
| e57 | 0.1 | 50,000 |
| n01 | 47,817.70 | 100,000 |
| n02 | 146,656.90 | 298,000 |
| n03 | 55,678.30 | 100,000 |
| n04 | 287,490 | 299,999 |
| p01 | 177,275 | 200,000 |
| x01 | 46,140.60 | 50,000 |
| x02 | 8,746.20 | 20,000 |
| x03 | 4,227.40 | 50,000 |
| z001 | 400,692.30 | 500,000 |
| z002 | 58,009.90 | 124,000 |
| z003 | 0.2 | 3 |
| z004 | 77,925.60 | 100,000 |
| z05 | 4,188.40 | 30,000 |
| z06 | 54,631 | 75,000 |
| z07 | 28,573.20 | 50,000 |

Workspace

| <i>Consortium</i> | <i>Disc Occupancy (Mb)</i> | <i>Disc Quota (Mb)</i> |
|-------------------|----------------------------|------------------------|
| b02 | 14.8 | 1,025 |
| b03 | 47,907.90 | 100,000 |
| b08 | 5,093.10 | 50,000 |
| c01 | 99,996.60 | 100,000 |
| e01 | 1,057,807.40 | 1,249,995 |
| e02 | 8,354.80 | 10,000 |
| e03 | 9.8 | 500,000 |
| e05 | 268,235 | 548,004 |
| e06 | 312,336.60 | 400,000 |
| e08 | 140.8 | 5,000 |
| e10 | 284,222.90 | 400,000 |
| e11 | 37,638.30 | 100,000 |
| e14 | 201,116.10 | 250,000 |

| | | |
|-----|--------------|-----------|
| e15 | 37,318.10 | 100,000 |
| e16 | 0.2 | 60,000 |
| e17 | 16,553.30 | 100,000 |
| e18 | 24,819.60 | 80,000 |
| e19 | 174,400.60 | 200,000 |
| e20 | 928,544.60 | 1,000,000 |
| e21 | 1.2 | 100,000 |
| e22 | 0.1 | 20,000 |
| e23 | 40,819 | 100,000 |
| e24 | 3,320,763.40 | 4,282,000 |
| e25 | 121,752.50 | 150,000 |
| e26 | 0.1 | 40,000 |
| e27 | 0.5 | 40,000 |
| e29 | 5,296.10 | 8,000 |
| e30 | 0.1 | 80,000 |
| e31 | 96,128.50 | 100,000 |
| e32 | 97,239 | 100,000 |
| e33 | 39,780.20 | 100,000 |
| e34 | 0.1 | 100,000 |
| e35 | 0.2 | 200,000 |
| e36 | 8,379 | 50,000 |
| e37 | 75,866.30 | 150,000 |
| e38 | 0.1 | 100,000 |
| e39 | 0.2 | 100,000 |
| e40 | 0.3 | 100,000 |
| e41 | 5,122 | 200,000 |
| e42 | 249,129.20 | 300,000 |
| e45 | 0.1 | 100,000 |
| e46 | 0.1 | 50,000 |
| e47 | 0.1 | 160,000 |
| e48 | 5,088.90 | 200,000 |
| e49 | 25,224.20 | 50,000 |
| e50 | 10,217.70 | 100,000 |
| e51 | 0.2 | 100,000 |
| e52 | 0.2 | 50,000 |
| e53 | 1,631.90 | 150,000 |
| e54 | 0.2 | 100,000 |
| e55 | 0.2 | 100,000 |
| e56 | 99,999.40 | 100,000 |
| e57 | 0.1 | 100,000 |
| n01 | 255,084.40 | 800,000 |
| n02 | 1,867,168.50 | 2,099,004 |
| n03 | 809.2 | 41,002 |
| n04 | 254,903 | 750,000 |
| p01 | 41,764.40 | 50,000 |
| x01 | 120,036 | 160,000 |
| x02 | 0.2 | 20,000 |
| x03 | 177.7 | 50,000 |

| | | |
|------|------------|---------|
| z001 | 410,115.20 | 500,000 |
| z002 | 900.8 | 770 |
| z003 | 0.2 | 3 |
| z004 | 4,576.60 | 25,000 |
| z05 | 4,739.70 | 20,000 |
| z06 | 57,307.60 | 100,000 |
| z07 | 20.9 | 20,000 |

Development service space

This is the disk space reserved for users of the development service.

| <i>Consortium</i> | <i>Disc Occupancy (Mb)</i> | <i>Disc Quota (Mb)</i> |
|-------------------|----------------------------|------------------------|
| n01 | 0 | |
| n02 | 5,447,313.80 | 7,920,003 |
| n04 | 242,725 | 526,899 |

2.6 Tape Archive

Note that a tape is counted in the *Usage* column even if it is only partly occupied.

| <i>Consortium</i> | <i>Usage (Tapes)</i> | <i>Quota (Tapes)</i> | <i>Files</i> | <i>Data (Gb)</i> |
|-------------------|----------------------|----------------------|--------------|------------------|
| c01 | 2 | 2 | 7231 | 65 |
| e01 | 50 | 50 | 148914 | 4754 |
| e03 | 5 | 5 | 18797 | 429 |
| e14 | 10 | 10 | 259586 | 416 |
| e15 | 1 | 3 | 26 | 6 |
| e24 | 10 | 10 | 14459 | 1524 |
| e26 | 2 | 2 | 545 | 27 |
| e42 | 5 | 5 | 29528 | 495 |
| n01 | 244 | 250 | 30288 | 26402 |
| n02 | 280 | 325 | 292741 | 35085 |
| n04 | 28 | 30 | 116775 | 3740 |
| z001 | 7 | 10 | 11045 | 67 |
| z002 | 3 | 4 | 5802 | 15 |
| z06 | 1 | 3 | 833 | 68 |

3 Support

3.1 Helpdesk

Classifications

| <i>Category</i> | <i>Number</i> | <i>% of all</i> |
|-----------------|---------------|-----------------|
| Administrative | 51 | 51 |
| Technical | 39 | 39 |
| In-depth | 9 | 9 |
| PMR | 1 | 1 |
| TOTAL | 100 | 100.0 |

The PMR category indicates in-depth queries that result in Problem Management Reports for IBM.

| <i>Service Area</i> | <i>Number</i> | <i>% of all</i> |
|---------------------|---------------|-----------------|
| Phase 3 platform | 83 | 83 |
| Website | 2 | 2 |
| Other/general | 15 | 15 |
| TOTAL | 100 | 100.0 |

Performance

| <i>All non-indepth queries</i> | <i>Number</i> | <i>%</i> | <i>Target</i> |
|--------------------------------|---------------|----------|---------------|
| Finished within 24 Hours | 75 | 83.3 | 75% |
| Finished within 72 Hours | 90 | 100 | 97% |
| Finished after 72 Hours | 0 | 0 | N/A |

| <i>Administrative queries</i> | <i>Number</i> | <i>%</i> | <i>Target</i> |
|-------------------------------|---------------|----------|---------------|
| Finished within 48 Hours | 51 | 100 | 97% |
| Finished after 48 Hours | 0 | 0 | N/A |

Experts Handling Queries

| <i>Expert</i> | <i>Admin</i> | <i>Technical</i> | <i>In-Depth</i> | <i>PMR</i> |
|---------------|--------------|------------------|-----------------|------------|
| epcc.ed.ac.uk | 37 | 12 | 3 | 0 |
| dl.ac.uk | 4 | 9 | 3 | 1 |
| Sysadm | 10 | 18 | 3 | 0 |
| Other people | 0 | 0 | 0 | 0 |

3.2 Training

| <i>Title of Course</i> | <i>Start Date</i> | <i>Length (Days)</i> | <i>Place days</i> | <i>HPCx User Days</i> | <i>HPCx Staff Days</i> |
|--------------------------------------|-------------------|----------------------|-------------------|-----------------------|------------------------|
| Tools for High Performance Computing | 10 /11/2006 | 1 | 12 | 11 | 0 |

4 Staffing

4.1 Science Support Staffing

Daresbury Laboratory

| <i>Name</i> | <i>Days</i> |
|--------------|-------------|
| Ashworth | 16.9 |
| Blake | 2.2 |
| Bush | 22.0 |
| Guest | 5.5 |
| Johnstone | 22.0 |
| Jones | 2.1 |
| Plummer | 11.0 |
| Sunderland | 21.0 |
| Thomas | 0 |
| Total (Days) | 102.7 |
| FTEs | 5.8 |

EPCC

| <i>Name</i> | <i>Days</i> |
|-------------|-------------|
| Simpson | 21.8 |
| Booth | 20.5 |
| Henty | 8.5 |
| Smith | 13.3 |
| Bull | 10.2 |
| Fisher | 5.0 |
| Hein | 16.1 |
| Jackson | 8.4 |
| Pringle | 0.0 |
| Reid | 7.4 |
| Stratford | 8.3 |
| Nazarova | 7.2 |
| Trew | 4.3 |
| Gray | 13.4 |
| D'Mellow | 8.4 |
| Hill | 0.2 |

| | |
|--------------|-------|
| Johnson | 0.8 |
| Maynard | 0.7 |
| Weiland | 23.8 |
| Other staff | 20.7 |
| Helpdesk | 1.3 |
| Total (Days) | 200.3 |
| FTEs | 11.3 |

Reported under *Other staff* are the additional contributions of recently-graduated MSc students, employed on a temporary basis.

Overall Levels

| | <i>FTEs</i> |
|-------|-------------|
| DL | 5.8 |
| EPCC | 11.3 |
| Total | 17.1 |

4.2 Systems Staffing

| <i>Name</i> | <i>Days</i> |
|--------------|-------------|
| Andrews | 22.0 |
| Blake | 0.0 |
| Brown | 22.0 |
| Fisher | 7.5 |
| Georgeson | 11.0 |
| Franks | 14.4 |
| Jones | 19.0 |
| Shore | 0.0 |
| BITD | 17.6 |
| | |
| Total (Days) | 113.5 |
| FTEs | 6.4 |

Note: BITD covers a range of bookings from a support department who provide approximately 1 FTE to support computer room operations, electrical and mechanical site services and networking and security. Roughly a dozen staff charge time to the project in amounts which vary from month to month. We believe that it adds no value to report these individual bookings although a full listing can be provided annually if required.

5 Summary of Performance Metrics

| <i>Metric</i> | <i>TSL</i> | <i>FSL</i> | <i>Monthly Measurement</i> |
|---|------------|------------|----------------------------|
| Technology serviceability | 80% | 99.2% | 100.0% |
| Technology MTBF (hours) | 200 | 300 | ∞ |
| Number of AV FTEs | 7.5 | 10 | 17.1 |
| Number of training days per month | 20/12 | 25/12 | 24/11 |
| Non in-depth queries resolved within 3 days | 85% | 97% | 100.0% |
| Number of A&M FTEs | 3.75 | 5.75 | 6.4 |
| A&M serviceability | 80% | 99.6% | 100.0% |

Appendix A: Incident Severity Levels

SEV 1 — anything that comprises a FAILURE as defined in the contract with EPSRC.

SEV 2 — NON-FATAL incidents that typically cause immediate termination of a user application, but not the entire user service.

The service may be so degraded (or liable to collapse completely) that a controlled, but unplanned (and often very short-notice) shutdown is required or unplanned downtime subsequent to the next planned reload is necessary.

This category includes unrecovered disc errors where damage to filesystems may occur if the service was allowed to continue in operation; incidents when although the service can continue in operation in a degraded state until the next reload, downtime at less than 24 hours notice is required to fix or investigate the problem; and incidents whereby the throughput of user work is affected (typically by the unrecovered disabling of a portion of the system) even though no subsequent unplanned downtime results.

SEV 3 — NON-FATAL incidents that typically cause immediate termination of a user application, but the service is able to continue in operation until the next planned reload or re-configuration.

SEV 4 — NON-FATAL recoverable incidents that typically include the loss of a storage device, or a peripheral component, but the service is able to continue in operation largely unaffected, and typically the component may be replaced without any future loss of service.

Appendix B: Projects

B.1 Current Projects

EPSRC Projects

| <i>Code</i> | <i>Class</i> | <i>Title</i> | <i>PI</i> |
|-------------|--------------|---|---------------------------|
| e01 | 1 | UK Turbulence Consortium | Dr Gary Coleman |
| e05 | 1 | Materials Chemistry using Terascaling Computing | Prof Richard Catlow |
| e06 | 1 | UK Car-Parrinello Consortium | Prof Paul Madden |
| e07 | 2 | Turbulent Plasma Transport in Tokamaks | Dr Colin M Roach |
| e08 | 2 | Organic Solid State | Prof Sarah Price |
| e10 | 1 | Reality Grid | Prof Peter Coveney |
| e11 | 1 | Bond making and breaking at surfaces | Prof Sir David A King |
| e14 | 1 | Blade and Cavity Noise | Prof Neil Sandham |
| e15 | 2 | CSAR/HPCx Collaboration | Dr Mike Pettipher |
| e16 | 1 | Cardiac virtual tissues | Prof Arun V Holden |
| e17 | 1 | Integrative Biology | Dr David Gavaghan |
| e18 | 1 | DARP: Highly swept leading edge separations | Prof Michael A Leschziner |
| e19 | 1 | Edinburgh Soft Matter and Statistical Physics Group | Prof Michael E Cates |
| e20 | 1 | UK Applied Aerodynamics Consortium | Dr Ken Badcock |
| e21 | 1 | Intrinsic Parameter Fluctuations in Decanometer MOSFETs | Prof Asen M Asenov |
| e22 | 1 | Preconditioners for finite element problems | Prof David J Silvester |
| e23 | 1 | Exploitation of Switched Lightpaths for e-Science Applications | Prof Peter Clarke |
| e24 | 1 | DEISA - Distributed European Infrastructure for Supercomputing Applications | Dr David Henty |
| e25 | 1 | Turbulent vortex motion in stratified flows | Dr Gary Coleman |
| e26 | 1 | Simulation of Radioprobing | Dr Charlie Laughton |
| e27 | 1 | SPICE | Prof Peter V Coveney |

| | | | |
|-----|---|--|--------------------------|
| e29 | 1 | Free-surface-piercing circular cylinders | Dr Eldad Avital |
| e30 | 1 | Metal/Oxide Interfaces at the Atomic Level | Dr Nora de Leeuw |
| e31 | 1 | Lateral Straining of Wall-Bounded Turbulence | Dr Gary N Coleman |
| e32 | 1 | Rapid Prototyping of Usable Grid Middleware | Prof Peter V Coveney |
| e33 | 1 | Engineering Functional Coatings | Prof Roger Smith |
| e34 | 1 | Dissolution of Bioactive Phosphate Glasses | Dr N de Leeuw |
| e35 | 1 | Non-adiabatic processes | Dr T Todorov |
| e36 | 1 | Jets in Cross-Flow | Dr Y Yao |
| e37 | 1 | LESUK_3 | Prof J J McGuirk |
| e38 | 1 | Viscoelastic deformation in 3D non-linear media | Prof Greg A Houseman |
| e39 | 1 | The Supergen 5 biological fuel cells consortium | Prof FA Armstrong |
| e40 | 1 | Computational Quantum Many-Body Theory | Prof R Needs |
| e41 | 1 | Flow in Weapon Bays | Dr George N Barakos |
| e42 | 1 | Computational Combustion for Engineering Applications | Prof K Luo |
| e45 | 1 | Metals under extreme conditions | Prof Mike Gillan |
| e46 | 1 | Advanced materials with complex architectures | Dr Paul Mummery |
| e47 | 1 | Parallel stochastic analysis for geo-engineering | Dr Michael A. Hicks |
| e48 | 1 | Organised structure in turbulent flows | Prof Sergei Chernyshenko |
| e49 | 1 | Integrated Programme of Research in Aeronautical Engineering | Prof Michael Leschziner |
| e50 | 1 | Biological interface with materials | Prof John Harding |
| e51 | 1 | Super-computing data mining | Dr Mike Pettipher |
| e52 | 1 | Spacecraft force modelling | Dr M Ziebart |
| e53 | 1 | Large-scale communication networks | Prof J M Pitts |
| e54 | 1 | Free surface simulation of waves overtopping during storms | Dr D M Ingram |
| e55 | 1 | High-Reynolds-Number Near-Wall Flows | Prof Michael Leschziner |
| e56 | 1 | Infectious disease threats | Dr Iain Barrass |

Note: The original project e01 ended on 30 April 2005. The new UKTC project started on 1 March 2006. At the request of the PI it was assigned the same code as the old one, and inherited its disk space.

PPARC Projects

| <i>Code</i> | <i>Class</i> | <i>Title</i> | <i>PI</i> |
|-------------|--------------|---------------------------------|-------------------|
| p01 | 1 | Atomic Physics and Astrophysics | Prof Alan Hibbert |

NERC Projects

| <i>Code</i> | <i>Class</i> | <i>Title</i> | <i>PI</i> |
|-------------|--------------|--|--------------------|
| n01 | 1 | Large-Scale Long-Term Ocean Circulation | Dr David Webb |
| n02 | 1 | NCAS | Prof Alan J Thorpe |
| n03 | 1 | Computational Mineral Physics Consortium | Dr John Brodholt |
| n04 | 1 | Shelf Seas Consortium | Dr Roger Proctor |

BBSRC Projects

| <i>Code</i> | <i>Class</i> | <i>Title</i> | <i>PI</i> |
|-------------|--------------|----------------------------|------------------------|
| b02 | 1 | Modelling enzyme catalysis | Dr Adrian J Mulholland |
| b08 | 1 | IntBioSim | Prof M S Sansom |

CCLRC Projects

| <i>Code</i> | <i>Class</i> | <i>Title</i> | <i>PI</i> |
|-------------|--------------|--|--------------------|
| c01 | 1 | Daresbury Laboratory Facilities Agreement Consortium | Dr Richard J Blake |

Externally-funded Projects

| <i>Code</i> | <i>Title</i> | <i>PI</i> |
|-------------|--------------|---------------------|
| x01 | HPC-Europa | Dr Judy Hardy |
| x03 | IBM | Mr Derrick J Byford |

HPCx Projects

| <i>Code</i> | <i>Title</i> | <i>PI</i> |
|-------------|------------------------|------------------|
| z001 | HPCx Support | Dr Alan Simpson |
| z002 | Systems and Operations | Mr Mike Brown |
| z003 | Test Project | Dr Denis Nicole |
| z004 | HPCx Training | Dr David Henty |
| z05 | Outreach Projects | Dr Richard Blake |
| z06 | Application Porting | Dr David Henty |
| z07 | Package Installation | Dr Mike Ashworth |

B.2 Former Projects

| <i>Code</i> | <i>Class</i> | <i>Title</i> | <i>PI</i> |
|-------------|--------------|--|------------------------|
| b01 | 2 | Quantum Chemistry Studies of the Rusticyanin Protein Crystal | Prof Samar Hasnain |
| b03 | 1 | Towards a virtual outer membrane | Prof Mark S Sansom |
| b04 | 1 | Life sciences software development | Dr Jo L Dicks |
| b05 | 1 | Virtual forced evolution of catalytic transition metal complexes | Dr Marcus Durrant |
| b06 | 2 | Biomolecular computational chemistry | Prof Jonathan D Hirst |
| e02 | 1 | Ab-initio simulation of covalently bonded materials | Dr Patrick Briddon |
| e03 | 1 | Multi-photon, electron collisions and BEC HPC consortium | Prof Ken Taylor |
| e04 | 1 | Chemreact Computing Consortium | Prof Jonathon Tennyson |
| e07 | 2 | Turbulent Plasma Transport in Tokamaks | Dr Colin M Roach |
| e09 | 2 | Molecular Properties and their Geometry | Dr Mark R Wilson |
| e12 | 1 | Parallel programs for the simulation of complex fluids | Dr Richard J Blake |
| e13 | 1 | TeraGyroid project | Mr Mark Westwood |
| e28 | 1 | Towards the Dynome | Dr Jonathan W Essex |
| z09 | | HECToR Benchmarking | Dr Edward Smyth |
| x02 | | OHM Ltd | Dr Lucy MacGregor |
| n05 | 2 | Non-linear Wave-particle Instabilities in Plasmas | Dr Mervyn Freeman |