



ARCHER2

SP Quarterly Report

July – September 2022
EPCC
The University of Edinburgh



Document Information and Version History

Version:	1.0
Status	Release
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Reviewer(s)	Alan Simpson

Version	Date	Comments, Changes, Status	Authors, contributors, reviewers
0.1	09/12/2021	Template created	Jo Beech-Brandt
0.2	05/10/2022	Added heatmap and scheduling coefficient	Jo Beech-Brandt, Clair Barrass
0.3	12/10/2022	Added ISO Details	Anne Whiting
0.4	12/10/2022	Added draft updates from SP and accommodation	Paul Clark
0.5	13/10/2022	Review	Alan Simpson
1.0	14/10/2022	Version for UKRI	Alan Simpson, Jo Beech-Brandt



1 The ARCHER2 Service

This is the report for the ARCHER2 SP Service for the Reporting Period: 1st July – 30th September 2022.

1.1 Service Highlights

- We are delighted to report that we have passed our external audits for ISO 9001 Quality Management and ISO 27001 Information Security with flying colours. This reflects the importance we place on delivering the best service to our users and to keeping their data secure.
- A new 100Gbps firewall was introduced for the ARCHER2 service in August, which provides near line rate speeds while continuing to provide excellent protection.
- A total of 78 pieces of query feedback were received this quarter from 3304 queries handled, with all of them graded good, very good or excellent; 80% were graded as excellent. A donation of £78 was made to our selected service charity, Save the Children (£1 per query feedback).
- The ARCHER2 Test and Development System (TDS) has been handed over to EPCC for integration. Once this platform is in place, EPCC can test and verify newer software and functionality.
- As part of our continual improvements around the ACF, all of the ARCHER2 cabinet power supplies have been upgraded to a newer Data Centre standard.
- The planned work to make the /home filesystem securely available to the Puma2 server was completed and data transfers are ongoing to allow this to be deployed.

1.2 Forward Look

- We have been preparing for our ISO 22301 Business Continuity and Disaster Recovery external audit in October. We want to ensure that we are well prepared for identified risks and minimise any interruptions to the delivery of services to our users. When major incidents happen, as they occasionally they do, we want to be prepared to handle them as smoothly as possible and to minimise impact to our users.
- With the deployment of the TDS, EPCC will be exploring providing different types of filesystems to support more varied workloads.

2 ARCHER2 Performance Report

This is the contractual performance report for the ARCHER2 SP Service for the Reporting Periods from 1 July 2022 until 30 September 2022.

2.1 Service Points and Service Credits

The Service Levels and Service Points for the SP service are defined by EPSRC in Schedule 2.2 of ARCHER2 SP Service Contract.

The Working Day (WD) for the ARCHER2 Service is 10 Working Hours (WH) as the Service operates from 0800-1800. The Median Time to Resolution is measured in WD.

- **Availability:** *Service Threshold: <=96.5%; Operating Service Level: >98.0%, ≤ 98.5%.*
- **ARCHER2_SP_Level1 (MTR):** The Median Time to Resolution, of all SP queries falling within Level 1 resolved by the Contractor in the Reporting Period. *MTR Service Threshold: >1 WD; Operating Service Level: >0.3 WD, ≤ 0.45 WD.*
- **ARCHER2_SP_Level2 (MTR):** The Median Time to Resolution, of all SP queries falling within Level 2 resolved by the Contractor in the Reporting Period. *MTR Service Threshold: >8 WD; Operating Service Level: >2 WD, ≤4 WD.*
- **ARCHER2_SP_Level3 (MTR):** The Median Time to Resolution, of all SP queries falling within Level 3 resolved by the Contractor in the Reporting Period. *MTR Service Threshold: >25 WD; Operating Service Level: >12 WD, ≤16 WD.*
- **Initial Response to Queries (%):** The percentage of the total number of SP queries assigned to the Contractor in the Reporting Period responded to within 3 Working Hours. *Service Threshold: <96.00%; Operating Service Level: 98.00 – 98.99%.*
- **Query User Satisfaction (%):** The percentage of the total number of query satisfaction surveys completed in each Reporting Period, rating the quality of the resolution of Queries by the Contractor as “Good”, “Very Good” or “Excellent”. *Operating Service Level: 82.00 – 87.99%*

2.1.1 Service Points

Metric	July 2022		Aug 2022		Sep 2022		Q3 2022	
	Perf	Points	Perf	Points	Perf	Points	Perf	Points
Availability	100%	-3	100%	-3	100%	-3	100%	-3
SP_Level1 (MTR)	0.00	-2	0.00	-2	0.00	-2	0.00	-6
SP_Level2 (MTR)	0.05	-2	0.06	-2	0.11	-2	0.06	-6
SP_Level3 (MTR)	0	-2	6.49	-2	0.16	-2	3.32	-6
Initial Response (%)	100%	-1	100%	-1	100%	-1	100%	-3
Query Satisfaction (%)	100%	-2	100%	-2	100%	-2	100%	-6
Total		-12		-12		-12		-30

2.1.2 Service Credits

As the Total Service Points are negative (-36), no Service Credits apply in 3Q22.

2.2 SP Query Statistics

The metrics were specified by EPSRC in Schedule 2.2 of ARCHER2 SP Service Contract.

- **Assigned:** The number of SP queries assigned to the Contractor within each query resolution category in the Reporting Period.

- **Resolved:** The number of SP queries resolved by the Contractor within each query resolution category in the Reporting Period.
- **Backlog:** The number of SP queries assigned to the Contractor that remained unsolved within each query resolution category in the Reporting Period
- **Correspondence:** The average number of pieces of correspondence generated for SP queries in each query resolution category.
- **First Response:** The average time taken for the Contractor to first respond to the Originator of the SP query.

July 2022					
Service level	Assigned	Resolved	Backlog	Correspondence	First Response
SP_Level1	1037	1037	0	0.1	0:00:37
SP_Level2	85	87	33	7.4	0:18:29
SP_Level3	1	0	2	0	0:00:00
August 2022					
Service level	Assigned	Resolved	Backlog	Correspondence	First Response
SP_Level1	1096	1096	0	0.1	0:00:27
SP_Level2	96	100	35	7.3	0:18:35
SP_Level3	0	1	1	8	0:06:28
September 2022					
Service level	Assigned	Resolved	Backlog	Correspondence	First Response
SP_Level1	914	914	0	0.1	0:00:28
SP_Level2	72	81	26	7.8	0:21:50
SP_Level3	2	1	2	8	1:35:02
Q3 2022					
Service level	Assigned	Resolved	Backlog	Correspondence	First Response
SP_Level1	3047	3047	0	0.1	0:00:30
SP_Level2	246	255	26	7.5	0:19:35
SP_Level3	4	2	2	8	0:50:45

2.3 Query Resolution

Metric	Jul 2022		Aug 2022		Sep 2022		Q3 2022	
	MTR	Resolved	MTR	Resolved	MTR	Resolved	MTR	Resolved
SP_Level1	0:00:08	1037	0:00:12	1096	0:00:00	914	0:00:07	3047
SP_Level2	0:32:38	87	0:35:34	87	1:03:29	81	0:38:55	255
SP_Level3	0:00:00	0	64:51:23	1	1:36:45	1	33:14:04	2
Total		1124		1184		996		3304

A total of 3304 queries were resolved by the ARCHER2 SP Service in the Reporting Period. The percentage of user queries responded to within 3 hours was 100%.

During this quarter, a query was incorrectly killed before being assigned to the CSE team. The query appeared to be empty but we now believe it was just taking a long time to load due to the size of the file. An acknowledgement email was not sent to this user. The query contained a Technical Assessment (TA) for the Access to HPC Call and when the user had not heard back from us, they got in touch to enquire about the status of the query. We ensured that the TA was completed in plenty of time for the user to meet the call deadline. To avoid a similar issue reoccurring, a safeguard was implemented within SAFE that ensures the query has fully loaded before it is possible to kill it.

2.4 Query Feedback

During July, there were 31 feedback scores received during this period. 100% were Good, Very Good or Excellent with 77% given the highest score of Excellent.

During August, there were 21 feedback scores received during this period. 100% were Good, Very Good or Excellent with 86% given the highest score of Excellent.

During September, there were 26 feedback scores received during this period. 100% were Good, Very Good or Excellent with 77% given the highest score of Excellent.

2.5 Maintenance and Outages

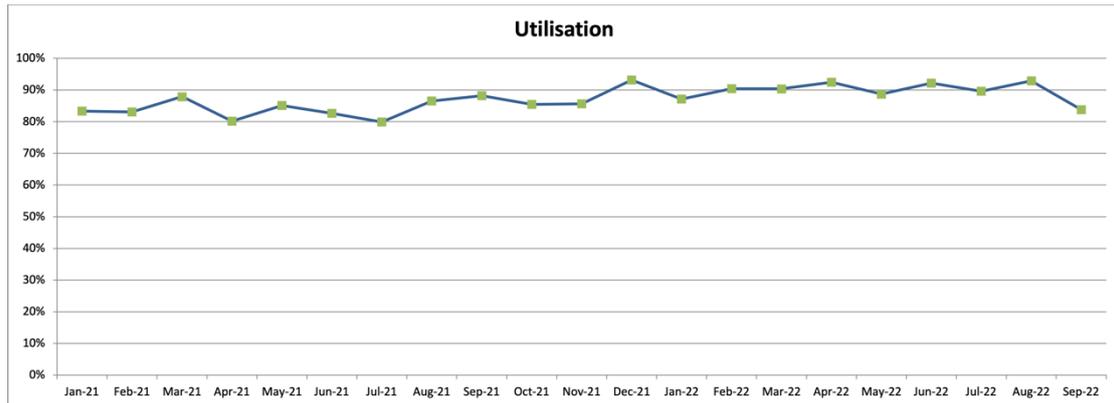
As Service Integrator, SP reports on all outages for the quarter and we have marked where the outage is to be attributed. During this quarter, there were no outages attributable to SP.

Type	Start	End	Duration	User Impact	Reason	Attribution
Full	14/07/22 2200	15/07/22 1350	15h 30mins	No access to system	Significant power outage affecting large areas of Lothians	Accommodation
Partial: Some Compute Nodes	18/07/22 1400	20/07/22 1000	42h	Increased queue times and reduced node availability	Reduced number of compute nodes available as very high temperature in the Edinburgh area caused cooling issues.	Emergency
Full	19/07/22 1400	19/07/22 1830	4h 30mins	Login access not available, no jobs able to start, running jobs failed	Internal DNS and Kubernetes failure on the system	HPE
Partial: Some Compute Nodes	11/08/22 1230	12/08/22 1130	23h	Increased queue times and reduced node availability	Reduced number of compute nodes available as very high temperature in the Edinburgh area caused cooling issues.	Emergency
Partial	31/08/22 0900	31/08/22 1100	2h	No access to login nodes, data and SAFE. Running jobs not affected and new jobs will start.	Essential updates to the network configuration	Accommodation
Partial: Some compute nodes	12/09/22 0900	07/10/22 1700	4 weeks	Groups of four cabinets will be removed from service	HPE carrying out essential work on the ARCHER2 system	HPE

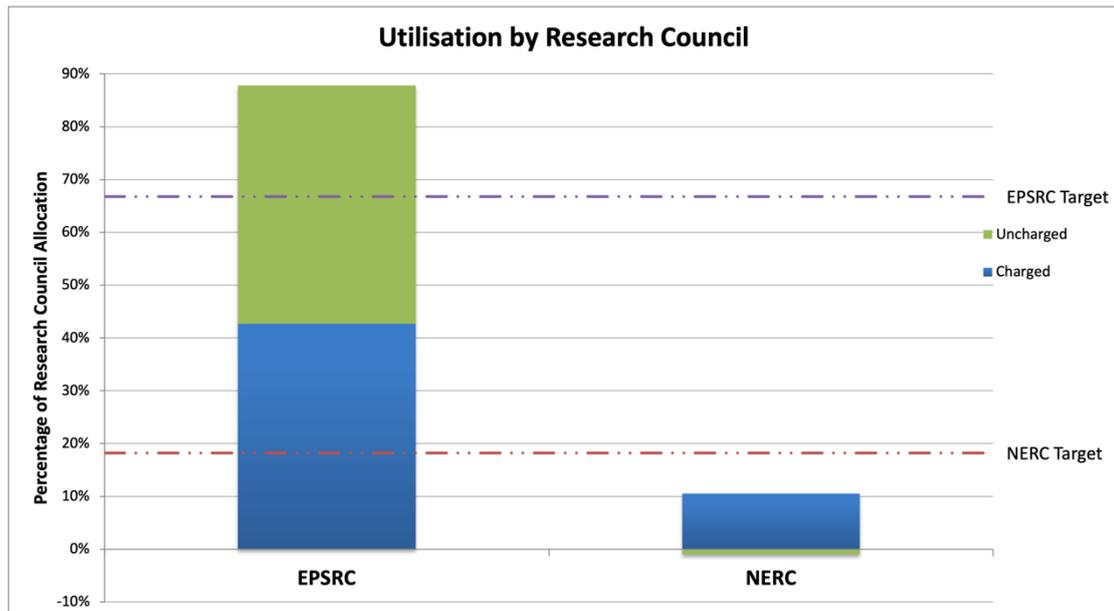
3 ARCHER2 Service Statistics

3.1 Utilisation

Utilisation from 1 July – 30 September is 89% which is slightly decreased from 91% the previous quarter. Utilisation for July was 90%, for August 93% and for September 84%. The decrease in utilisation in September was due to groups of four cabinets being removed from service to allow HPE to carry out essential work on the ARCHER2 system and thus reducing the overall availability of the service.

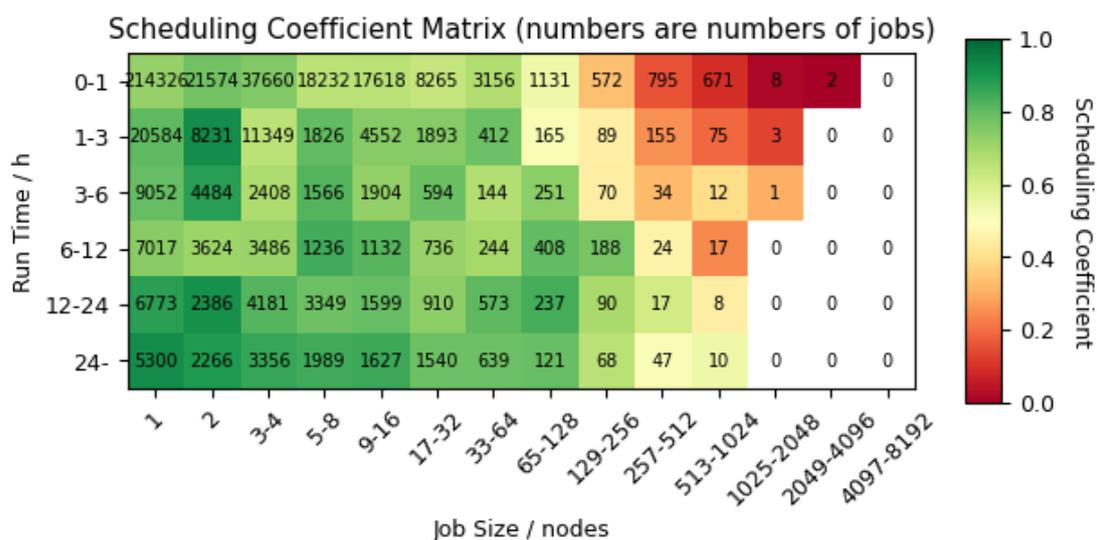


The utilisation by the Research Councils, relative to their respective allocations, is presented below. This bar chart shows the usage of ARCHER2 by the two Research Councils presented as a percentage of the total Research Council allocation on ARCHER2. It can be seen that EPSRC exceeded their target this quarter with their usage being at 87.7% (against their target of 66.8%) but NERC missed their target with utilisation being 9.6% (against their target of 18.2%).



3.2 Scheduling Coefficient Matrix

The colour in the matrix indicates the value of the Scheduling Coefficient. This is defined as the ratio of runtime to runtime plus wait time. Hence, a value of 1 (green) indicates that a job ran with no time waiting in the queue, a value of 0.5 (pale yellow) indicates a job queued for the same amount of time that it ran, and anything below 0.5 (orange to red) indicates that a job queued for longer than it ran. As may be expected, the system is very busy and users are having to queue for longer than on ARCHER2. Measures were introduced to try to alleviate the queue such as limiting the large, long jobs and placing limits on the number of jobs that one user can run at any time.



The usage heatmap below provides an overview of the usage on ARCHER2 over the quarter for different job sizes/lengths. The colour in the heatmap indicates the number of CUs expended for each class, and the number in the box is the number of jobs of that class.

