INSPIRED TESTING

POWERED BY DYNAMIC TECHNOLOGIES

CREATING PERFORMANCE IN DURBAN UNIVERSITY OF TECHNOLOGY

Performance Testing Closeout Report

03-12-2025

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DOCUMENT CONTROL

1.1 DOCUMENT INFORMATION

Document Name	Durban University of Technology– Performance Closeout Report
Version	V 1.0

1.2 VERSION HISTORY

Revision	Author	Date	Changes/Comments
0.1	Keagan Smith (Inspired Testing)	2025/12/01	Initial Draft
0.2	Dylan Luis (Inspired Testing)	2025/12/01	Additional content
0.3	Keagan Smith (Inspired Testing)	2025/12/02	Additional content and review
0.4	Tomek Zawistowski (Inspired Testing)	2025/12/03	Review
1.0	Keagan Smith (Inspired Testing)	2025/12/03	Final Review and distributed

1.3 DOCUMENT REVIEW

Name	Position	Action
John Ramontsheng	Solutions Developer	R
Thabani Dhlamini	Director: Information Systems	A, R
Nkorwana Jonas Mosehla	Director: Icts Customer Service	A, R
Dylan Luis	Performance Test Lead	R
Keagan Smith	Performance Test Engineer	R
Claudia Fouche	Delivery Manager	I

Key: Actions: A = Approval, R = Review, I = For Information

1.4 TEST REPORT APPROVAL

Test Report Version	Name	Approved	Date Approved
V.1.0	Thabani Dhlamini		
V 1.0	Nkorwana Jonas Mosehla		

EXECUTIVE SUMMARY

2.1 PURPOSE OF THE PROJECT

The primary objective of the performance testing for the Application Submission workflow was to evaluate the system's performance under the predefined user load.

Neoload was employed as the performance testing tool to facilitate both script creation and user load simulation, accurately replicating user activity within the Durban University of Technology QA test environment, based on the provided user journeys listed below.

2.2 THE APPROACH

Performance testing scripts were formulated and created by utilising the user journeys provided by the Durban University of Technology. They included:

#	User Journey
1	Application

2.3 LOAD PROFILING

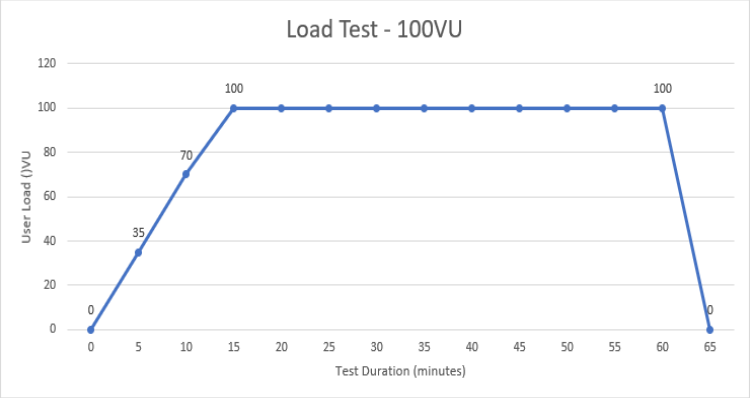
The below concurrent user load values were used is our test execution.

TEST SCENARIO 1: LOAD TEST

Load Testing evaluates how a system performs under expected user traffic to ensure it meets performance requirements, focusing on response times and throughput during normal usage.

Test configuration:

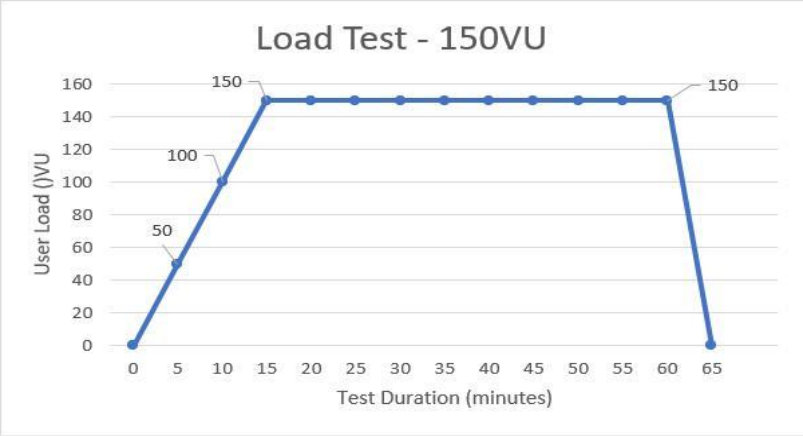
- Test Duration: 1 hour.
- Max Users: 100VU
- Peak Load reached 15 minutes into the test.



TEST SCENARIO 2: LOAD TEST

Test configuration:

- Test Duration: 1 hour.
- Max Users: 150VU
- Peak Load reached 15 minutes into the test.



HIGH LEVEL SUMMARY OF PERFORMANCE METRICS

Below are the high-level and summarized findings from the performance execution results.

RESULTS OVERVIEW

- **95th Percentile**– This represents the 95th percentile response time for the transactions during runtime and is given in seconds.
- **Max** - This represents the maximum response time for a single transaction during runtime and is given in seconds.
- **Count** – This represents the total count of all the Business Processes transactions.

Performance Test Type	Date	Test Name	# of Users	95th Perc	Count	Pass Rate
Load_Test_100VU	30-11-2025	Load_Test_100VU	100VU	50,5	11262	0%
Load_Test_150VU	30-11-2025	Load_Test_150VU	150VU	78,4	11874	0%

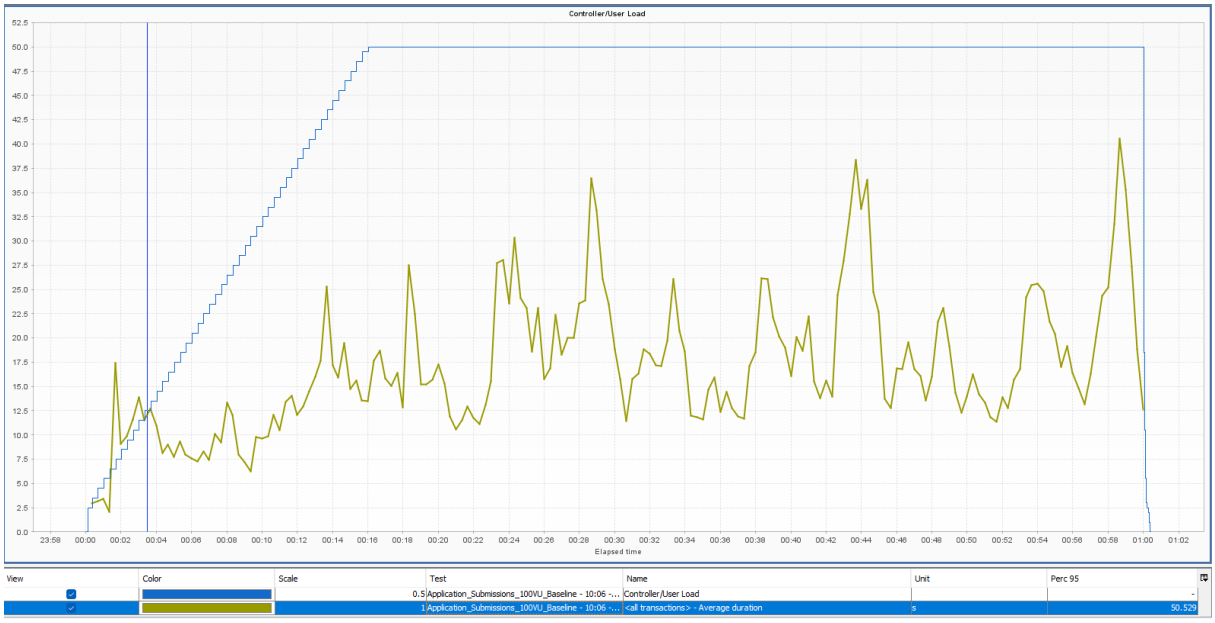
The table above represents the overall 95th Percentile, Max and Count for all performance tests executed that were used for result analysis purposes.

APPLICATION SUBMISSIONS:

LOAD TEST 1: APPLICATION SUBMISSIONS

Figure 1: The figure below illustrates the response times for Application Submissions. This test was executed with a 100-user load to evaluate system performance.

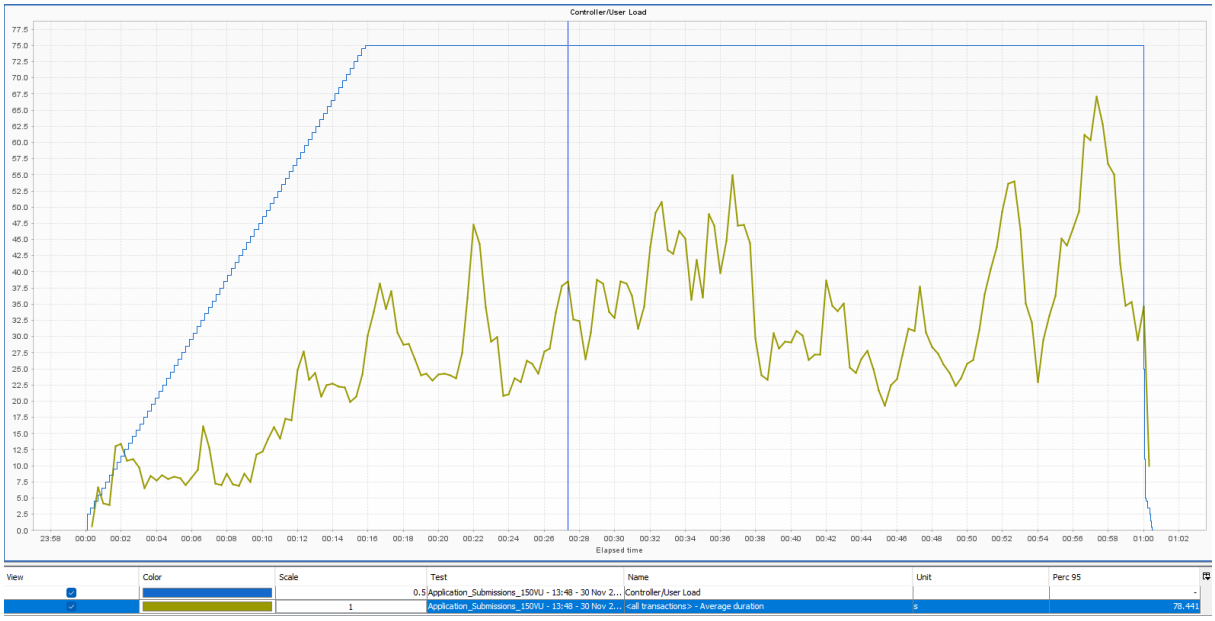
All response time measurements are reported using the 95th percentile, as this metric provides a more accurate representation of the experience of the majority of users. Unlike averages, which can mask performance spikes, the 95th percentile highlights higher-end response times and offers clearer insight into real-world system behaviour under load.



The response times indicate that the system has considerable room for improvement, with the **95th percentile response time recorded at 50.529 seconds** during the load test. The test completed **321 submissions within the one-hour window**, which is **significantly below the expected throughput of 800 submissions**. This reduced throughput is primarily due to **prolonged system response times**, with individual submissions taking **up to 942 seconds to complete**, well above the **expected threshold of 393 seconds**.

LOAD TEST 2: APPLICATION SUBMISSIONS

Figure 2: The figure below illustrates the response times for Application Submissions. This test was conducted with a 150-user load to evaluate the systems performance.



The results of the 150 VU load test show that the system's performance continues to demonstrate **significant room for improvement** under increased load. The test recorded a **95th percentile response time of 78.441 seconds**, which is notably higher than the 50.529 seconds observed during the 100 VU test. Despite the increased virtual user count, the test completed **only 326 submissions within the one-hour window**, which remains **substantially below the target of 800 submissions**.

The limited throughput is primarily due to **prolonged system response times**, with some individual submissions taking **up to 1653 seconds to complete**, far exceeding the **expected threshold of 393 seconds**. Since this behaviour was observed across both the 100 VU and 150 VU tests - each using the **same workflows and data sets** - these performance challenges appear to be linked to **environmental or configuration constraints** rather than test design.

PERFORMANCE MONITORING

LOAD TESTS: APPLICATION SUBMISSIONS

Performance monitoring reflects statistics collected over a three-hour period for both load tests. The first test was executed at **10:06 AM on 30 November** and the second test was executed at **13:48 PM on 30 November**.

Analysis of the monitoring metrics shows that the **infrastructure looks healthy and performing optimally with no evidence of resource saturation**. Any slowness observed during performance testing is likely stemming from **slow database calls, application logic, or PeopleSoft's inherent processing overhead.** Unfortunately, no performance monitoring was setup on the database to analyse metrics and confirm any bottlenecks.

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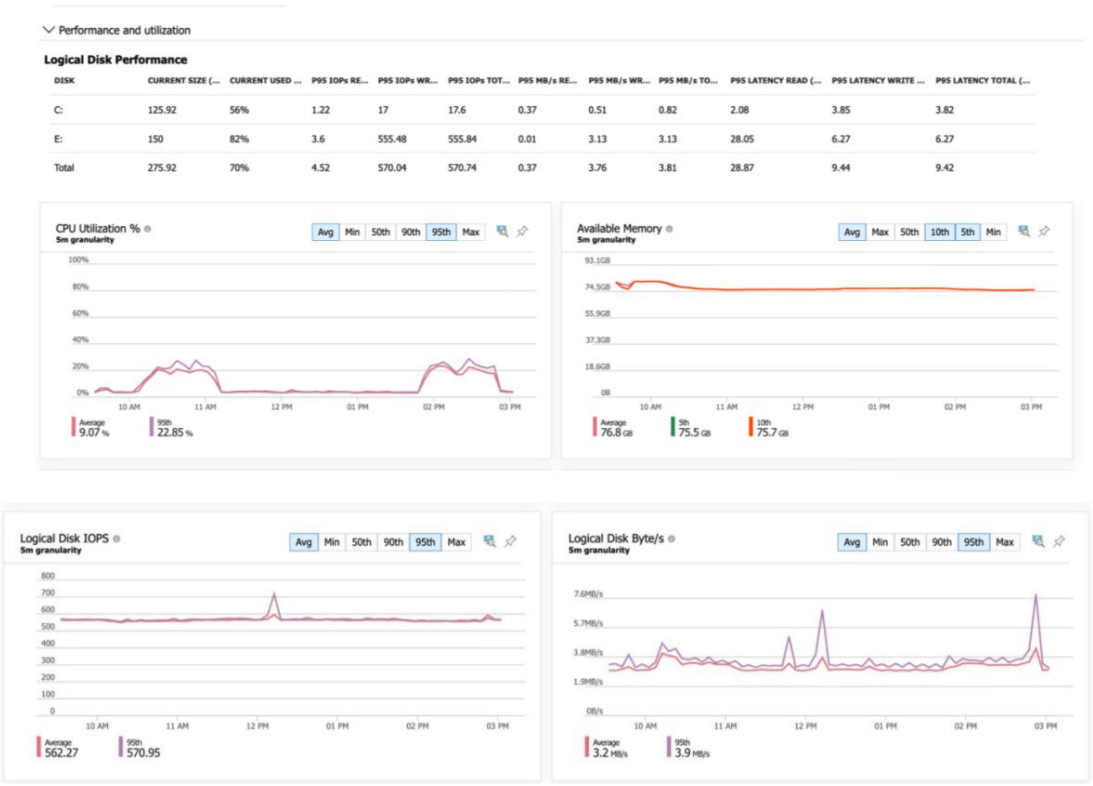

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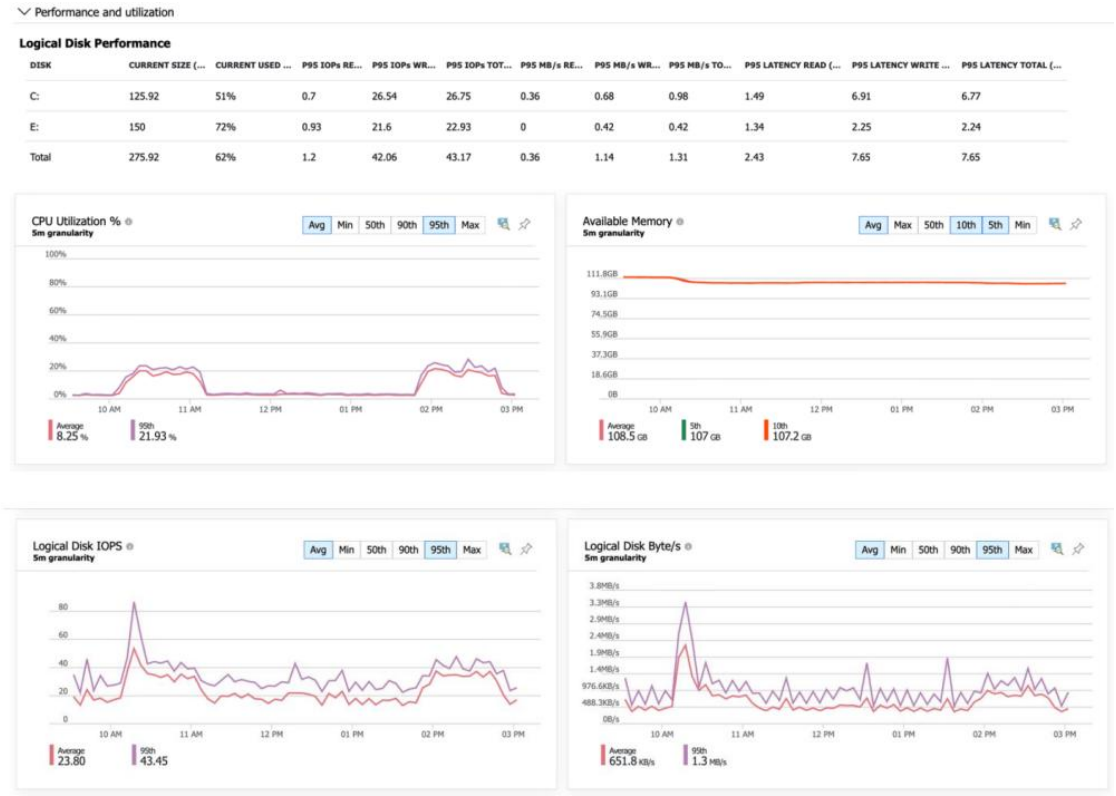

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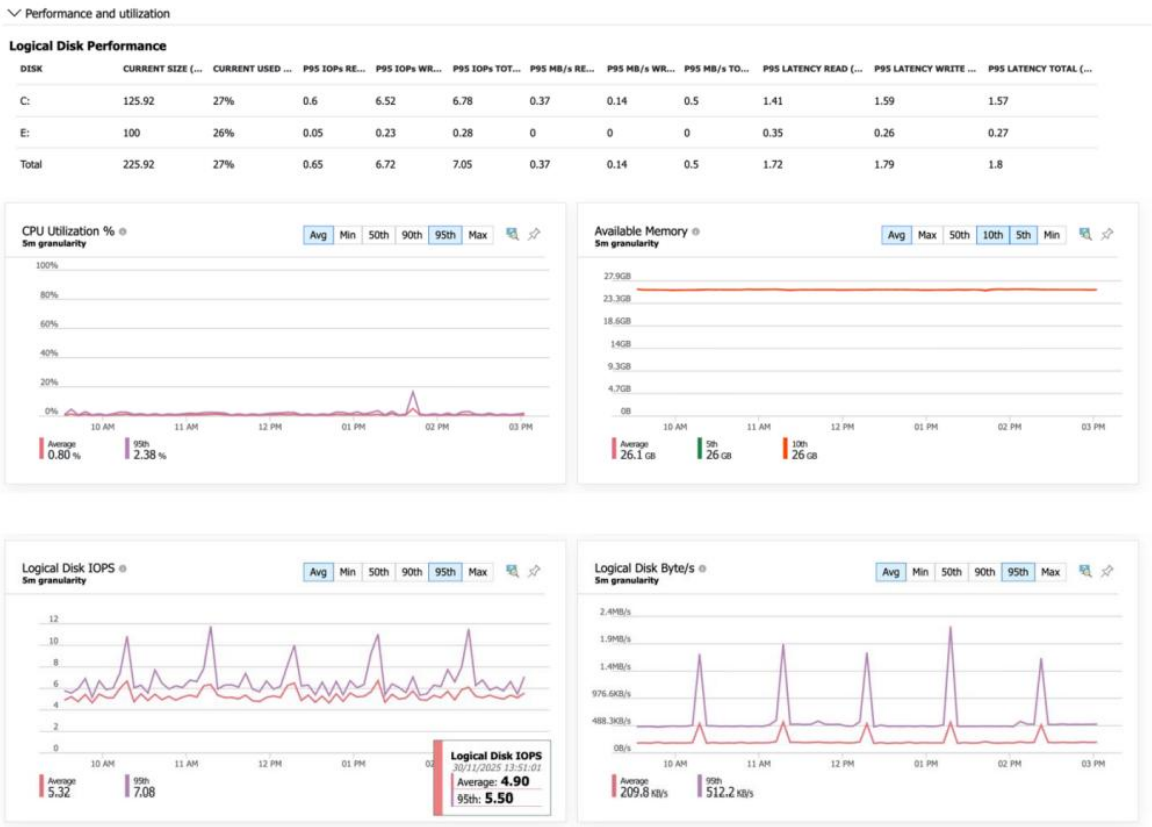

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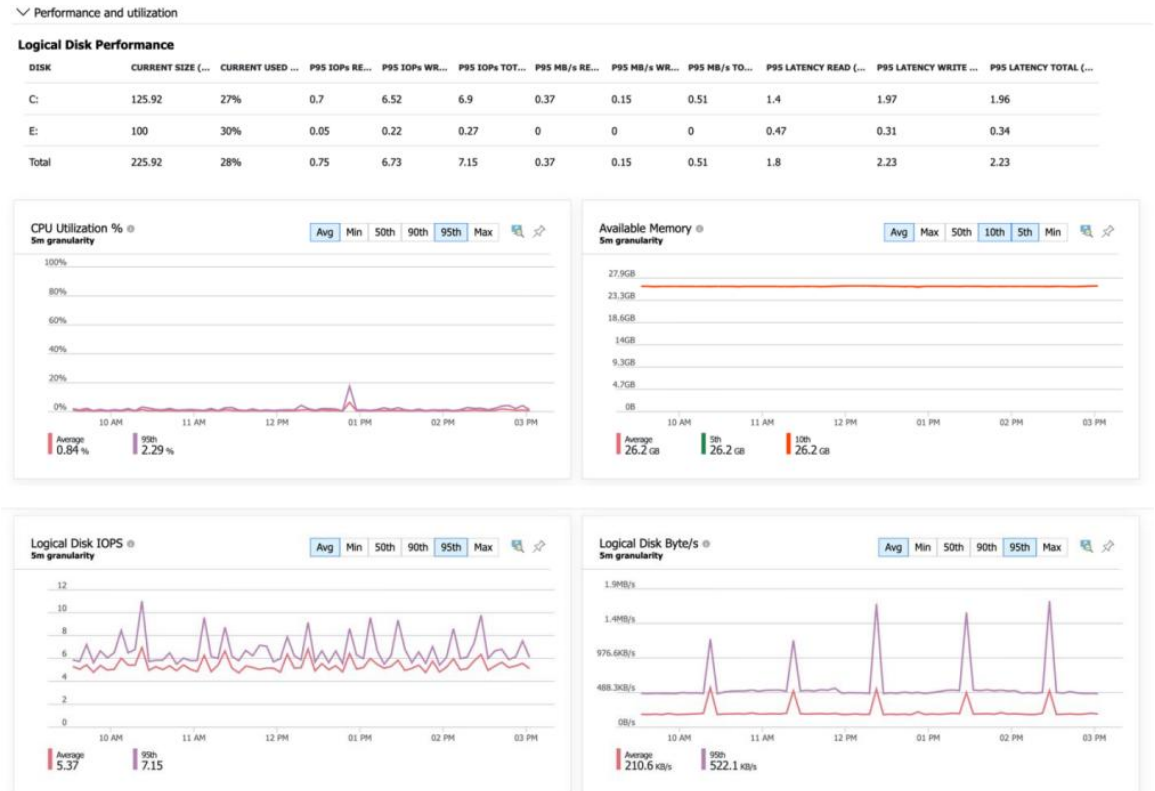

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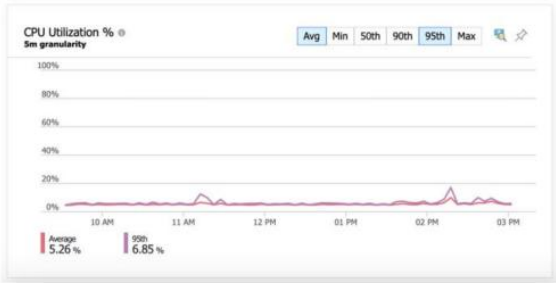
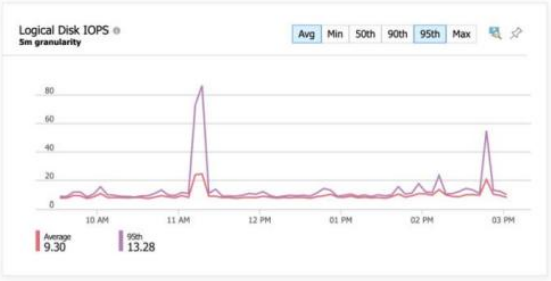
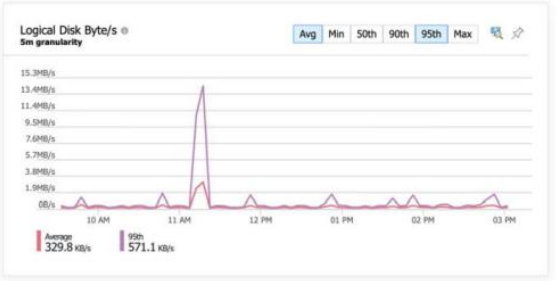
Performance and utilization

Logical Disk Performance

DISK	CURRENT SIZE (...	CURRENT USED ...	P95 IOPs RE...	P95 IOPs WR...	P95 IOPs TOT...	P95 MB/s RE...	P95 MB/s WR...	P95 MB/s TO...	P95 LATENCY READ (...	P95 LATENCY WRITE ...	P95 LATENCY TOTAL (...
C:	254.86	75%	1.18	11.55	13.25	0.1	0.46	0.5	1.98	2.22	2.17
D:	300	2%	0.08	0	0.08	0	0	0	1.79	0	1.79
E:	150	46%	0.07	0	0.07	0	0	0	0.98	0	0.98
Total	704.85	38%	1.38	11.97	13.38	0.1	0.46	0.56	3.99	2.25	4.36





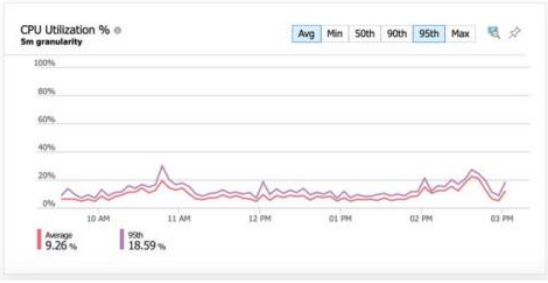


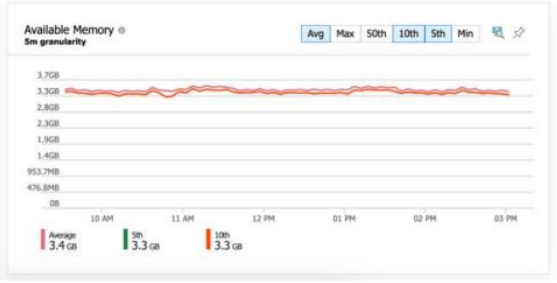
psvmqazanweb01:

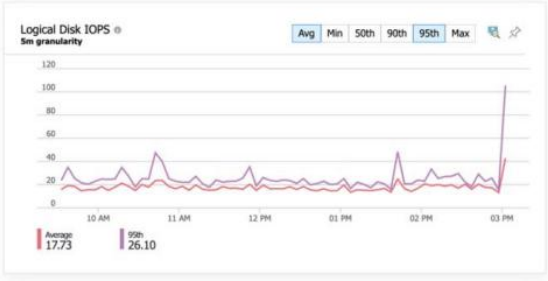
Performance and utilization

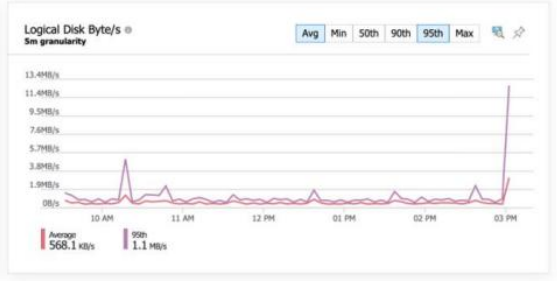
Logical Disk Performance

DISK	CURRENT SIZE (...	CURRENT USED ...	P95 IOPs RE...	P95 IOPs WR...	P95 IOPs TOT...	P95 MB/s RE...	P95 MB/s WR...	P95 MB/s TO...	P95 LATENCY READ (...	P95 LATENCY WRITE ...	P95 LATENCY TOTAL (...
C:	125.92	38%	3.28	22.11	24.61	0.37	0.83	1.05	3.99	8.63	8.42
E:	150	88%	0.13	2.52	2.7	0	0.02	0.03	0.51	2.92	2.75
F:	150	1%	0.07	0.32	0.38	0	0	0	0.34	0.26	0.34
Total	425.92	43%	3.5	23.56	25.78	0.37	0.84	1.06	4.62	10.66	10.99







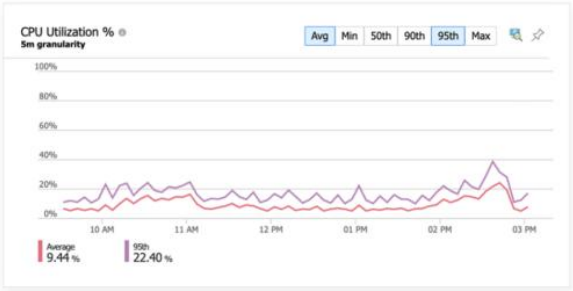


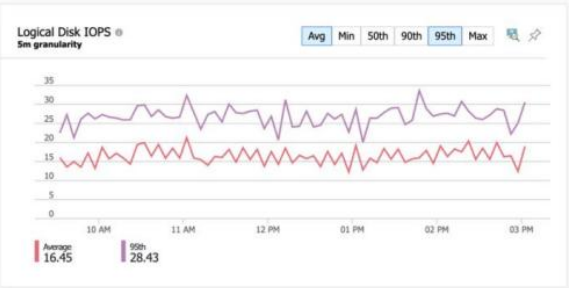
psvmqazanweb02:

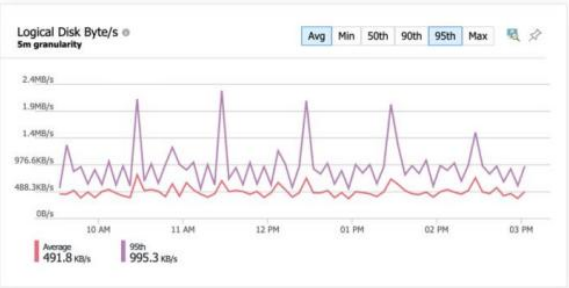
Performance and utilization

Logical Disk Performance

DISK	CURRENT SIZE (...	CURRENT USED ...	P95 IOPs RE...	P95 IOPs WR...	P95 IOPs TOT...	P95 MB/s RE...	P95 MB/s WR...	P95 MB/s TO...	P95 LATENCY READ (...	P95 LATENCY WRITE ...	P95 LATENCY TOTAL (...
C:	125.92	35%	0.75	26.46	26.89	0.37	0.64	0.97	2.19	7.92	7.81
E:	150	85%	0.07	2.57	2.65	0	0.03	0.03	0.59	1.3	1.28
Total	275.92	62%	0.82	28.03	28.47	0.37	0.65	0.97	2.59	8.76	8.73







CHALLENGES

Test Data Preparation
The project initially relied on DUT to provide the necessary test data; however, it was later confirmed by the Accenture team that generating bulk test data was not feasible. As a result, the inspired team had to develop NeoLoad scripts to create the data manually. This unplanned activity was time-consuming and required temporary removal of certain QA environment restrictions, introducing additional delays.

PeopleSoft API Capture and Scripting Complexity
During scripting, inconsistencies were identified in the way PeopleSoft APIs were captured. This required restructuring the sequence of API calls within NeoLoad to achieve stable execution. A key challenge was the lack of explicit error messages from PeopleSoft responses often appeared successful even when the process failed, forcing the inspired team to validate progress by monitoring the front end rather than relying on API feedback.

Data Creation Script Execution Issues
After completing the scripts, the team encountered failures when running them for data preparation. This was initially suspected to be caused by Mimecast, but further collaboration with the infrastructure team revealed the DUT VPN as the underlying issue. Script execution became unreliable when the VPN was enabled and manually toggling the VPN on and off was the only temporary workaround. The issue has been escalated to DUT for further investigation to determine the root cause of the VPN instability.

CONCLUSION

KEY FINDINGS

- A review of the performance results indicates that the system has room for improvement and performance optimizations.
- Performance monitoring shows that the system infrastructure looks healthy and is performing optimally with the exception of monitoring metrics available for the database server.
    - These results suggest that the slow response times may be related to long-running database operations or potential load on the database server.
    - However, this cannot be confirmed at this stage, as no monitoring data was available for the database during testing.
    - Verification will require retesting with proper database-level monitoring enabled to accurately identify and validate any performance bottlenecks within the database layer.

ACHIEVEMENT OF GOAL

- The primary objective of the performance tests was to evaluate the system's availability and stability during the execution of the Application Submission workflow.
- This objective was **partially** met by applying a predefined user load to the Durban University of Technology test environment and monitoring system performance throughout the test execution.
- The target was to process 800 application submissions within a one-hour period.
    - However, due to slower-than-expected system response times, the tests achieved a maximum of 321 complete submissions, significantly below the expected throughput.
    - This variance highlights potential performance constraints within the system that require further analysis and optimization.

CLOSE-OUT COMMENTS

- The performance testing results indicate that the Durban University of Technology system is operational, but displays clear opportunities for performance enhancement.
- During testing, both the application and web servers showed stable and healthy performance profiles, with no significant resource constraints or anomalies detected.
    - However, due to the absence of monitoring data from the database server, its behaviour could not be assessed.
    - As a result, while we cannot conclusively attribute the observed bottlenecks to the database layer, it remains the only component without validated performance metrics and therefore warrants further investigation.
    - The recommended **next steps** include enabling detailed monitoring on the database server, analyzing potentially long-running operations and then rerunning the performance tests to confirm whether the database is contributing to the long running response times.

APPENDIX 1 – EXECUTION TIMES

The Performance tests that were executed are listed below, with their corresponding start times and dates. Times indicated are in (SAST) time zone.

SCENARIO 1: LOAD TEST

- Load Test 1 - 100VU - 1HR - 10:06 AM - 30 Nov 2025
- Load Test 2 - 150VU - 1HR - 13:48 PM - 30 Nov 2025

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