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Case Study

Performance Testing for a State Government Department Client

PROBLEM STATEMENT:

Client is a major State Government Department which has planned to transition their existing SAP instance database from DB2 to SAP Hana. As a part of this transition, it was pertinent to test the performance of the system to ensure non-functional requirements are met and system is stable under peak transaction and user load.

SNAPSHOT

Industry: State Government

Business Unit: Testing Services

Services: Performance Testing Services

OBJECTIVES:

Objectives of this Performance Testing exercise include:

- Determine whether the to be SAP system is capable of supporting the target number of concurrent users (400) on SAP FIORI portal while retaining its functional stability and responding within pre-defined guidelines.

- Determine whether the system is capable of supporting constant user load over a long duration of time.

- Perform Baseline Testing with 50% load on current SAP Environment.

- Determine whether the system is capable to support 200% stress load (i.e., 800 SAP FIORI portal users) while retaining its functional stability and responding within pre-defined guidelines.

- Determine whether the system is capable of supporting the target transaction rate while retaining its functional stability and responding within pre-defined guidelines.

- Identify any bottlenecks preventing the achievement of performance targets and provide recommendation for the resolution.

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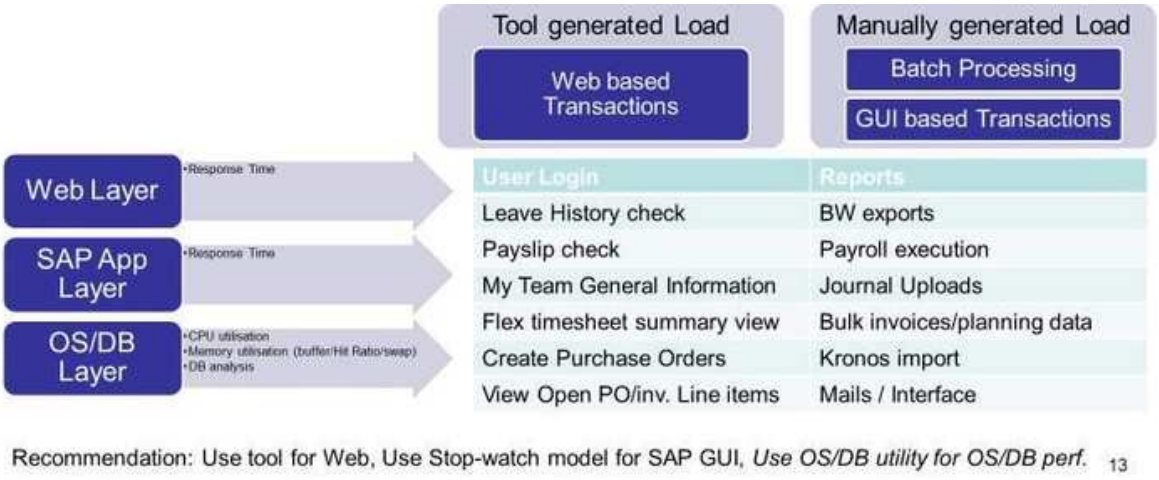
SOLUTION:

What Was Developed:

Performance testing approach

The following types of performance testing were conducted as part of this project -

- Shake out testing
- Baseline/Benchmark Testing
- Load Testing
- Stress Testing
- Soak testing



During testing, the following aspects of system performance were monitored to ensure the system meets basic performance criteria:

- Load: the volume of work that the system is processing, expressed in terms of concurrent users and transaction rate:
- Response time: the time it takes the servers to respond to client requests;
- Error rate: the number of errors as a factor of the total number of transactions;
- Server Resource Consumption: the infrastructure utilisation while under load;
- Stability: the system's ability to behave in a consistent manner.

TECHNOLOGY STACK:

Key Tool used:

Micro Focus Load Runner

EXECUTIVE SUMMARY:

Overall findings from Performance testing:

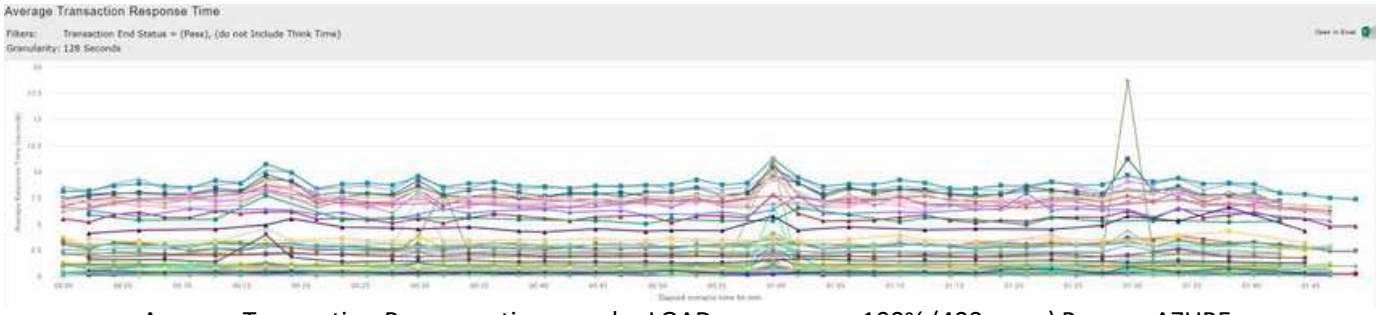
Conclusions:

- System was found to be capable of supporting 200 and 400 concurrent users in the AZURE environment. During the load test, the response times for all key transactions were within acceptable SLA's in this environment.
- There is massive improvement in transaction response time performance in AZURE environment as compared to On-Premise traditional environment.
- Server parameters (Memory, Disk, Network) in AZURE were always within acceptable limit for 200 users and 400 users test.
- System was stable and capable of support 400 users load test (in AZURE) with payroll run and batch job executed in the background with no major degradation in response times.
- System was stable and capable of support 800 users stress test.
- One key transaction took more than 5 seconds during 400 users (in AZURE) with batch jobs and payroll run
- Spike in CPU utilisation was observed during Soak testing when payroll run was executed in parallel.
- One Key transaction and few internal transactions took more than 5 secs during stress test which needs further investigation.
- Spike in CPU utilisation was observed during Stress testing which needs further investigation.

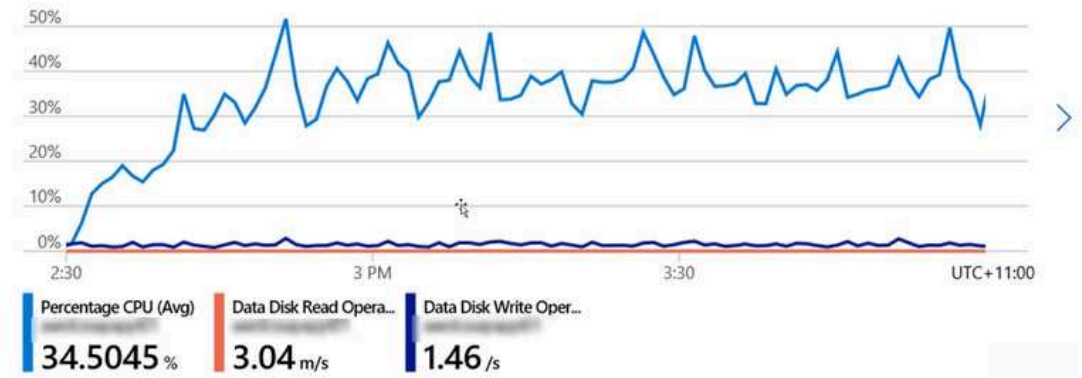
Running VUsers Graph - LOAD TESTING WITH 100% (400 USERS) PEAK ON AZURE

OUTCOMES:

- Major performance improvement noticed after migration from DB2 in on-premise environment to SAP Hana in Azure.
- No specific recommendation required for the AZURE environment for 200 users (50% load) and 400 users (100% load) tests since the system was able to handle concurrent users with response time within acceptable SLA's.
- Further investigation was needed for increase in transaction response time for one key transaction and a few internal transactions for during Stress test (800 users). Also, there was increase CPU utilization observed during Stress test which needed investigation. After fixing a few configuration settings on the SAP server and DB queries the issues were re-tested and resolved.



Average Transaction Response time graph - LOAD TESTING WITH 100% (400 USERS) PEAK ON AZURE



SAP Server Graph - LOAD TESTING WITH 100% (400 USERS) PEAK ON AZURE

Contact us:

1300 232 286

Suite 402, 56 Station Street East Parramatta NSW 2150 Australia