

Performance And Scalability In Oracle9i And SQL Server 2000

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Overview

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- **Brief Background**
- **Approach to the study**
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 2. Baseline Definition (Functional Tests)
 3. Performance Tests
 - Load and Stress testing
 4. Analysis Report
 - Analysis report and Possible explanation for the outcome
- **Timeline**
- **Literature Survey**
- **Possible Project Extensions**
- **Conclusion**

Objective of Research

- To investigate performance and scalability capabilities of these two RDBMS :
 - Oracle9i and SQL server 2000
- And finally explain the results

Brief Background

- **Performance** : “is the average speed at which data is accessed , that is speed and efficiency at which a database processes requests”.
- **Scalability** : “is a system's ability to process more workload, with a proportional increase in system resource usage”.

<http://www.theserverside.com/articles/index.tss>

Approach To The Study

Exploratory Approach

1. Input definition

➤ Scenarios (-Searching the database, -Adding a record to the DB)

➤ Workload Model

User Profile	% C	% S	T%
Search DB	20	50	70
Add Record	10	20	30

➤ Identification of Counters (which and where to measure)

-Index Searches /sec , -transactions/sec

C=Simultaneous Users , C=Concurrent Users , T= Total Users

Approach To The Study (Cont..)

2. Baseline Definition (Functional Tests) :

“A Baseline is a set of measurements that tell you how a server behave under normal conditions ” *Kevin Kline. Quest*

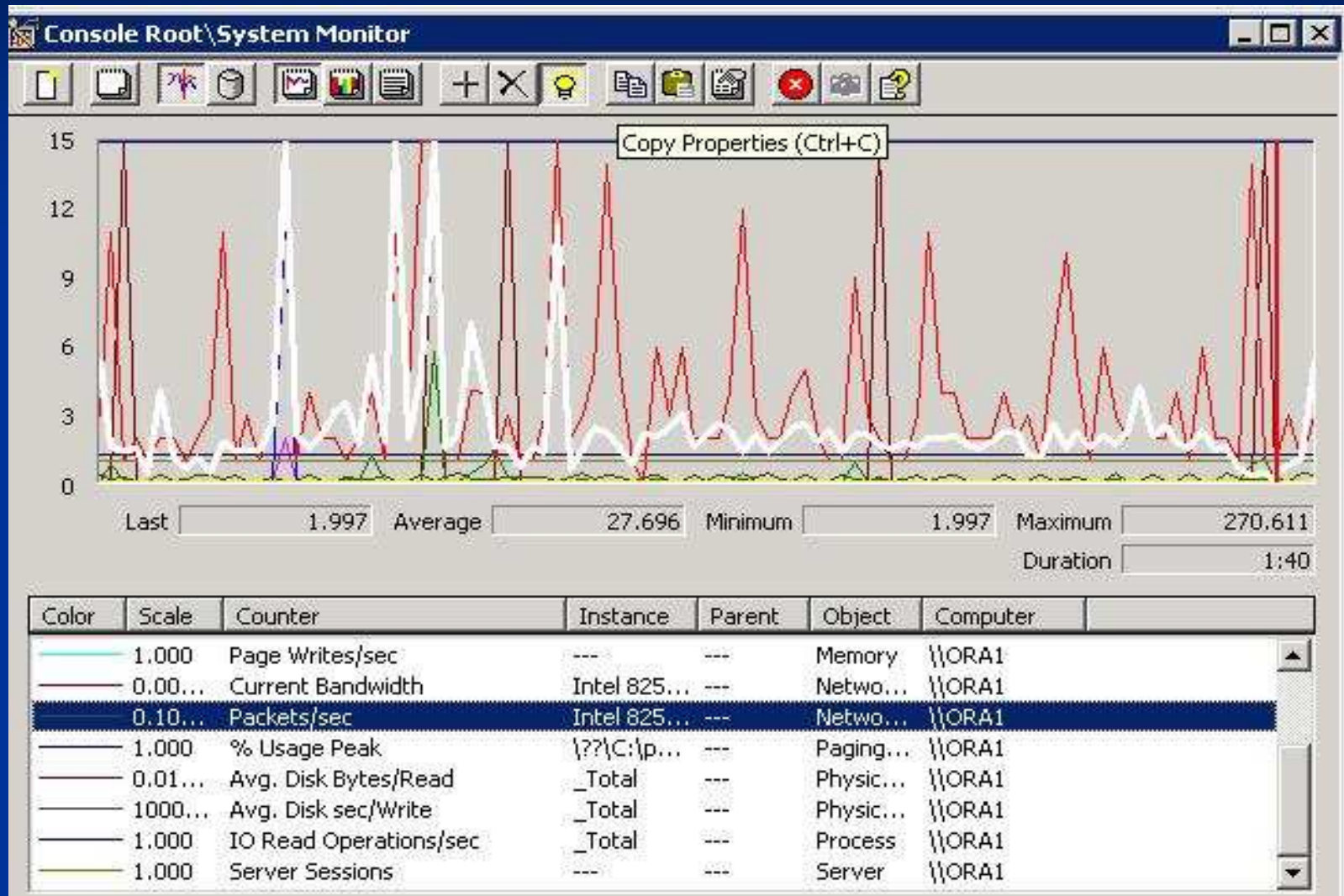
-Identifies problems that arise when the server is at rest, some of which may need to be corrected before load testing.

✓ Tools I will use for this process include

- System Monitor (Allows for viewing of Real and saved log statistics)
- Quest Spotlight for better graphical analysis

Sample Baseline

Sample Created using System Monitor for Oracle9i



Approach To The Study (Cont..)

3. Performance Tests.

a. **Load testing:** performed to analyse how the server performs under different kinds of load levels.

Measurable quantities :

- Response times, Throughput rates,
- Resource utilization (CPU, VMemory ,D I/O, Network latency)
- To identify the servers breaking point.

✓ **Tools I will use** -System Monitor

-Quest Central

-Data and Virtual User generators

-SQL Tuning tools

-Performance Monitoring toolkit

Approach To The Study (Cont..)

b. **Stress testing** : performed to determine how a server will behave under extreme load, beyond the servers capacity. Identifies system's breaking point (bugs)

-Will be implemented using Load generators (the concept of simultaneous and concurrent users will be integral)

Issues to track

- Synchronization issues,
- Race conditions,
- memory leaks
- Loss of data

Analysis And Results

➤ Results for analysis will be in different forms :

✓ Tables

✓ Diagrams

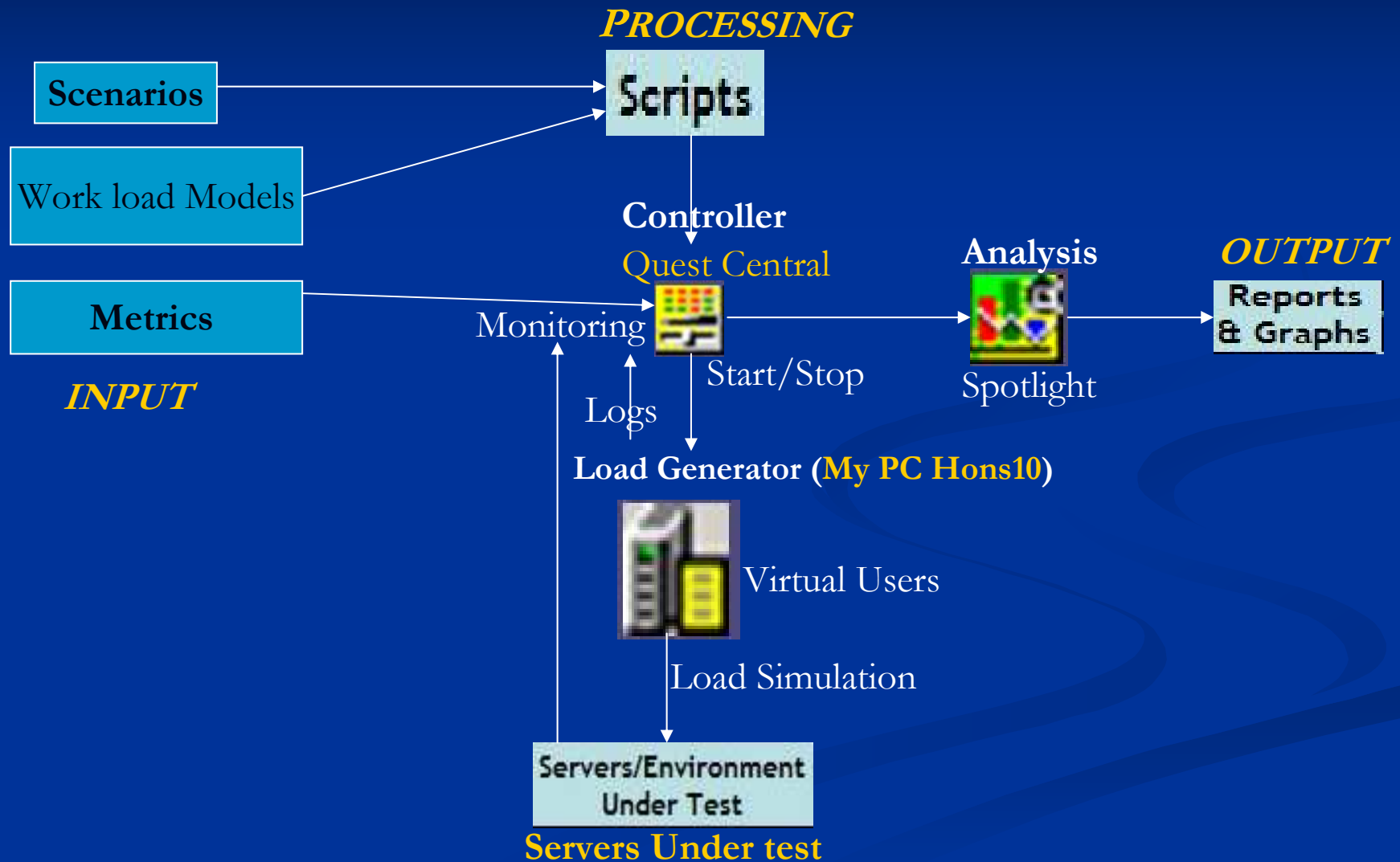
✓ Graphs showing

-throughput versus user load

-response time versus user load

-Resource utilisation versus load

Implementation Diagram



Basic Time Line

Understand the Products (CONT....) and read more papers	2nd term
Search for Dummy databases and start on my Literature Survey	2nd term- 2 weeks
Start running the performance tests	2nd term
Continue with evaluation and prepare for last presentation	Second semester
Write-up	3rd term
Final project write up	Due 7/11

Literature Survey/Available Resource

- Oracle.com ...Oracle 9i documentation.
- Microsoft.com...Online SQL server 2000 documentation.
- Software
 - <http://www.quest.com>
 - http://www.loadtest.com.au/types_of_tests/load_tests.htm

Possible Extensions to the Project

- To apply knowledge gained to open source databases.
- Perform the same experiment but on a different Operating System e.g. Linux .

Conclusion

- Hope to say conclusively which of the two databases performs best (**Note:** excluding matters of integrity, security.....)
- Produce a document DBA could use to:
 - Optimise and tune their server's configuration in a bid to achieve maximum performance.

Questions

Thank You !!