Advanced Systems Lab - Milestone I

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Abstract

This document, describes the message queuing system which was build. Architecture and design choices are shown and explained. Further test scenarios and test loads are defined. Resulting test output is described and analysed.

1 Messaging System

In this section the system under test (or middle ware component) is described.

1.1 Overview

2 Messaging System

3 Design Decisions

3.1 Schead Load

Schead load blocking reqeust response queues suboptimal
If queue full, immediately stop request

3.2 NIO vs IO

NIO VS Blocking IO

3.3 Connection Pooling

3.4 Buffer Pooling

3.5 Message Transmission

4 Performance Relevant Features

4.1 Overview

During a brainstorming session, a broad spectrum of performance relevant features were extracted, see figure 3. Then, the primary features (PF, orange) and the secondary features (SF, green) were chosen according to the group membmers domain specific knowledge and presumptions.

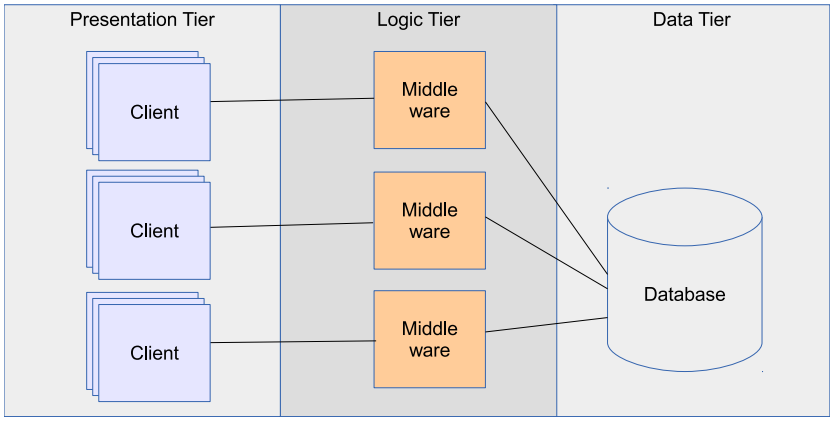

Figure 1: System Overview

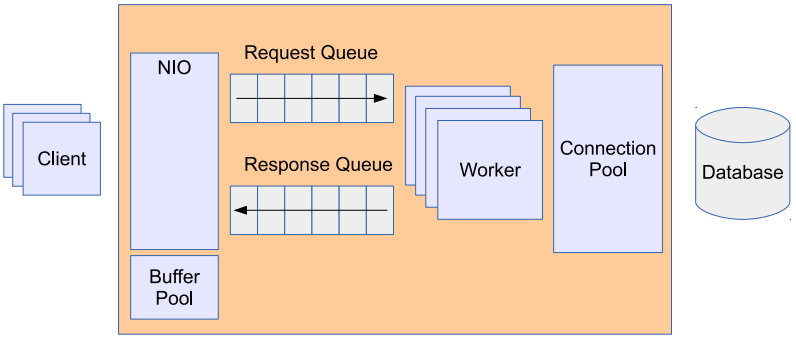

Figure 2: Middleware's main Components

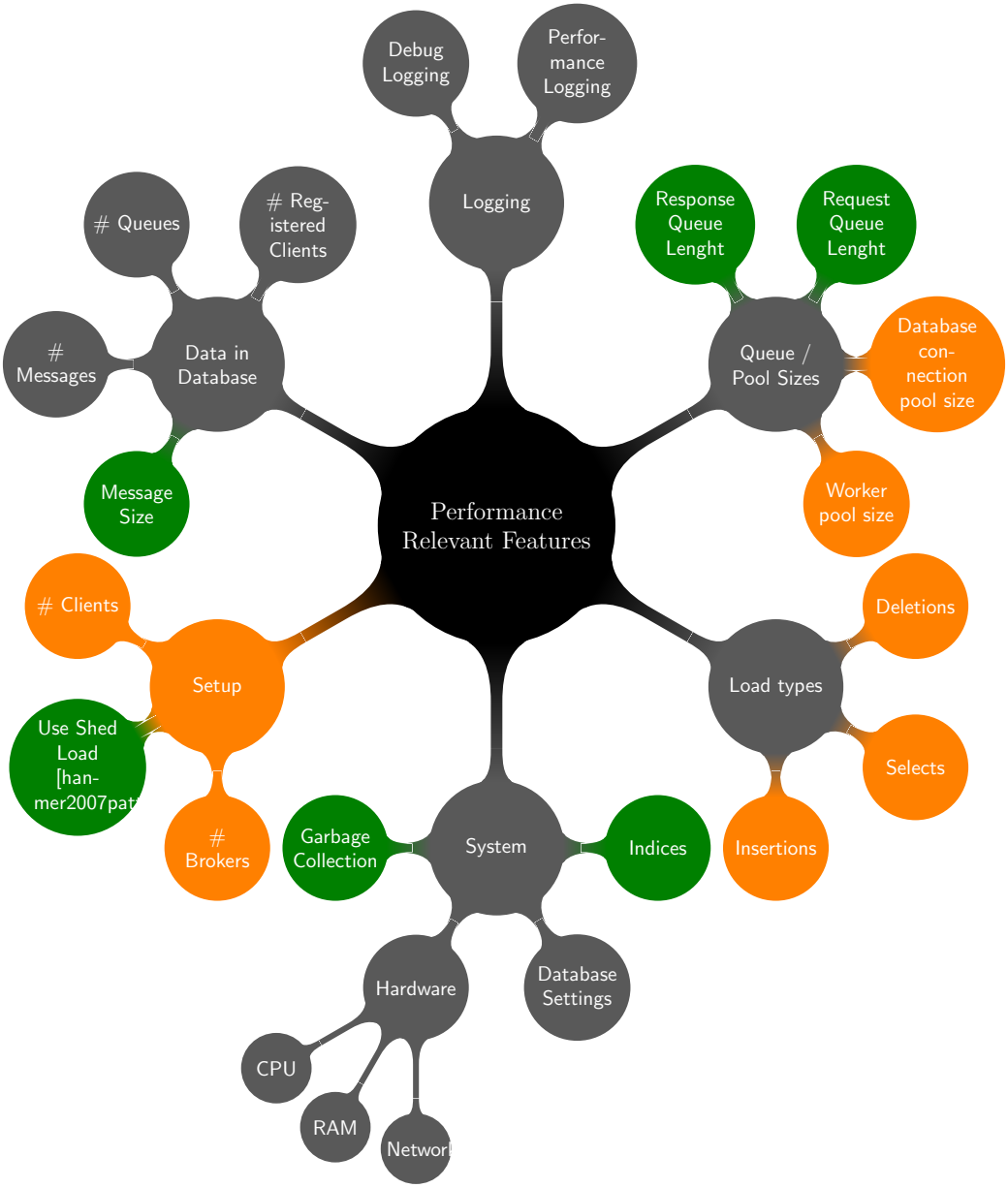

Figure 3: Performance relevant features mind map

4.2 Primary features

According to figure 3, the primary features are as follows:

1. **# Clients** The amount of clients interacting with the system.
2. **# Brokers** The amount of brokers interacting with the system.
3. **Database connection pool size** The amount of database connections per broker to the database.
4. **Worker pool size** The amount of workers per broker.
5. **Insertions** When many insertions occur (send a message).
6. **Deletions** When many deletions occur (read a message and remove it from the queue).
7. **Deletions** When many deletions occur (read a message, but don't remove it from the queue).

5 How We Measured Our System

5.1 Hypothesis

6 References

http://dl.acm.org/citation.cfm?id=SERIES12798.1557393

@bookhanmer2007patterns, title=Patterns for fault tolerant software, author=Hanmer, Robert, year=2007, isbn = 0470319798, 9780470319796, publisher=Wiley Publishing

7 Notes - to delete

7.1 What should be included in this report

7.1.1 System Code

- Code
- Scripts for experiment

7.1.2 Experimental data

- Basic tests ans simple traces
- Long running traces, Raw data and graphs for all experiments

7.1.3 Written report

- Architectural diagrams
- Interface description
- explanation of the system design
- Description of all experiments
- statistical treatment of data
- commentary analysis