Case Study Discussion

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Agenda

- Design a System
- Classical approach
- Advanced approach
- Architecture decision

Design a System

- Mail Server
- All problems have to be recorded with time in a log
- If there is a operational fault, with the help of log file it should be cleared.

v1:Classical Approach

- No centralized appraoch
- make all the log in a file
- grep function needed to search

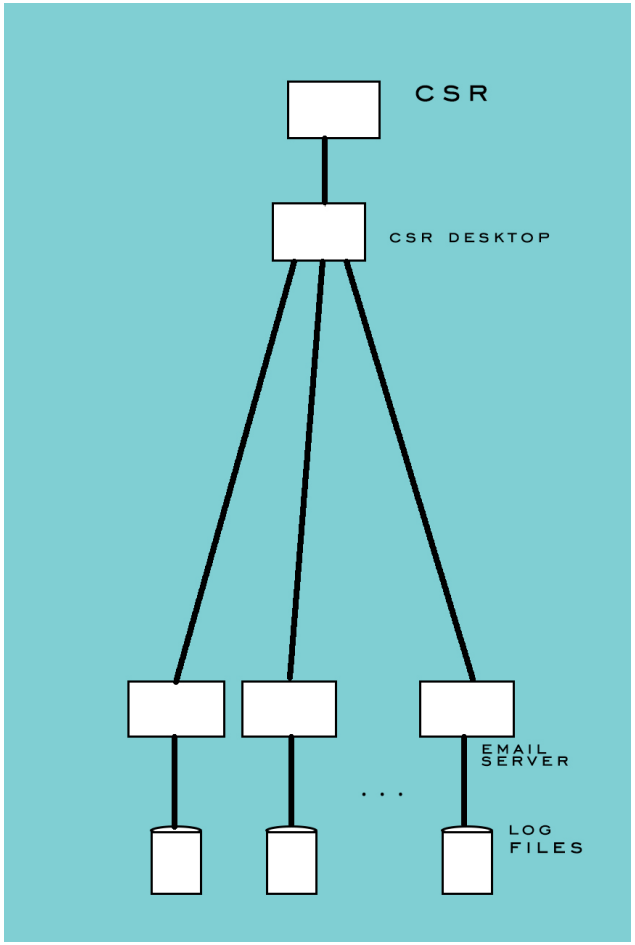

Figure : Architecture

v2: With RDMS

- centralized appraoch
- make all the log file in RDMS
- Indexing is needed

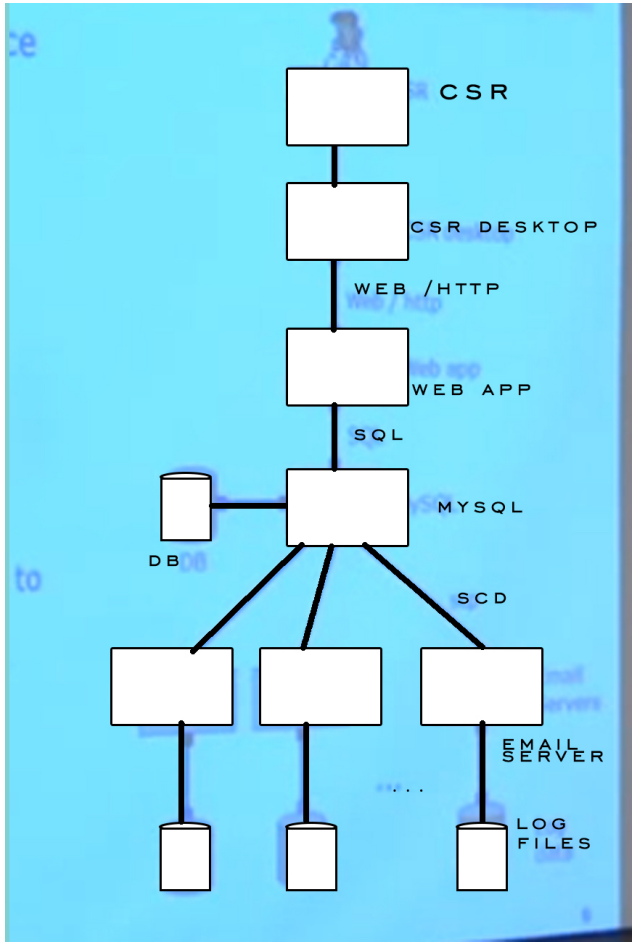

Figure : Architecture

v2: With Mapreduce

- centralized appraoch
- make all the log file in a distributed file system.
- Indexing is faster using Mapreduce.

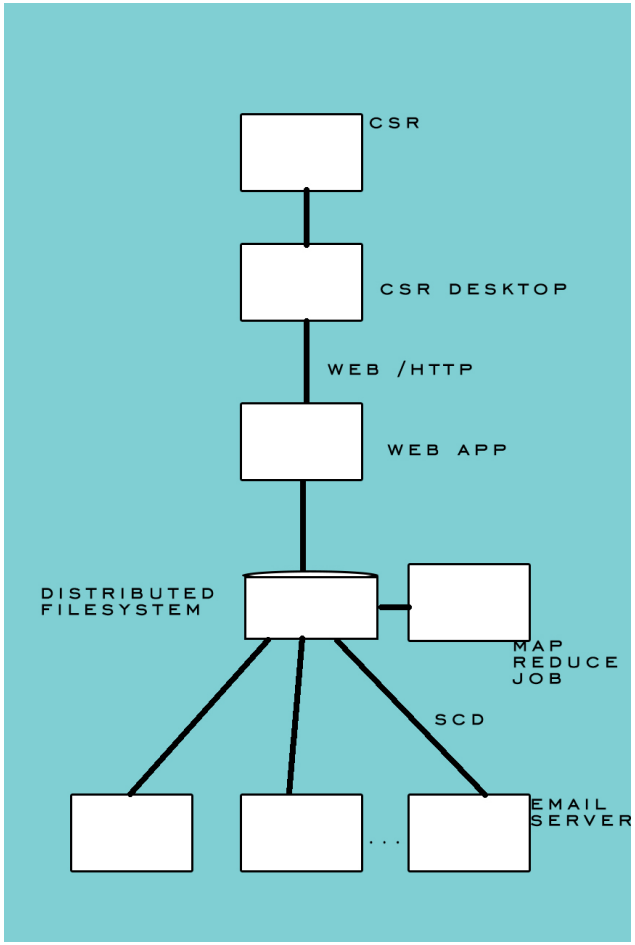

Figure : Architecture

Architecture - Tradeoff

Tradeoff: Data Freshness

- In version 1 Queries run on current data.
- In Version 2 Queries run on 10 minutes old data
- In Version 3 Queries run on 10-20 minutes old data

Tradeoff: Scalability

- In Version 1 Slow down (for Dozens of Servers)
- In VErsion 2 Speed and Stability problem (for Hunderends of Servers)
- In version 3 No Problem yet

Tradeoff: Adhoc Query ease

- In version 1 Regular Expression.
- In Version 2 SQL Expression.
- In Version 3 Mapreduce program.

case study

Figure : Architecture Business Cycle realtes to A-7E avionics systems

References I

[1] Len Bass, Paul Clements *"Software Architecture in Practice"*, Chapter 17

Thank you