

# CS848 Management of Information Systems

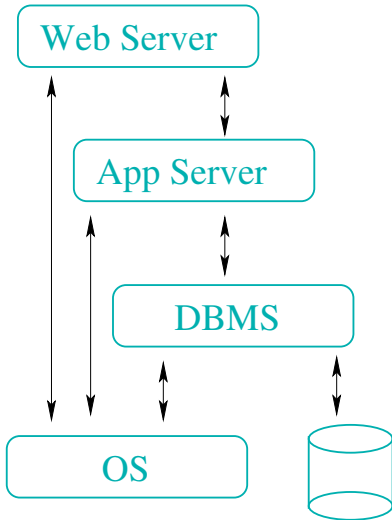
## Fall 2006

Ken Salem

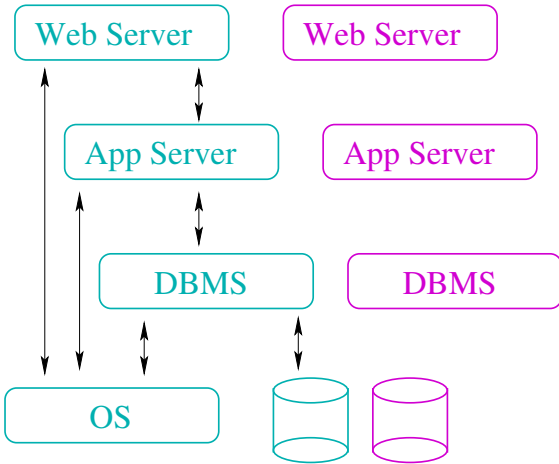
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University of Waterloo

September 13, 2006

# Multi-Tiered Applications

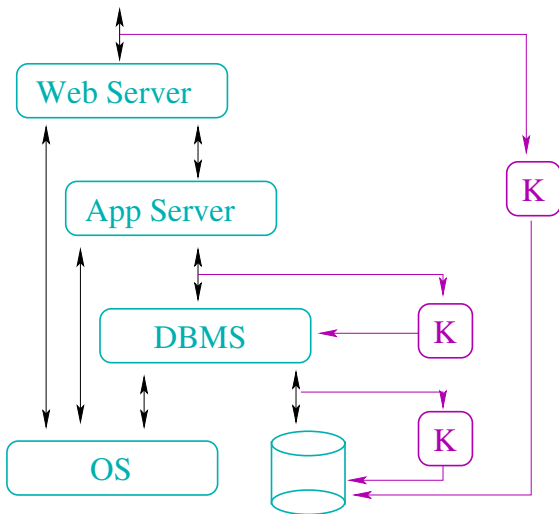


# Scalability

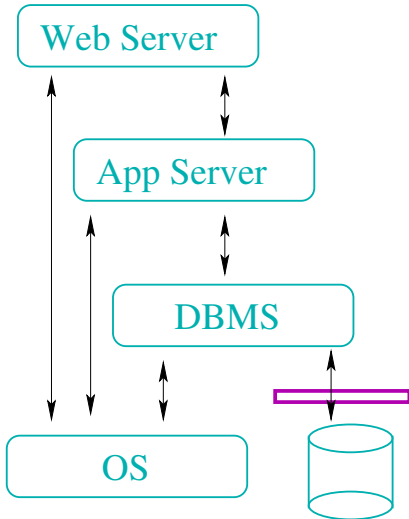


- how to add resources?
- how to provision apps? share load?
- how to scale DB?

# Control



# Virtualization



# Course Outline

## Database Replication and Caching:

- from (mostly) static replication of database tables to dynamic caching of query results
- DBMS and middleware implementations

## Virtualization:

- virtual machine monitors
- storage virtualization

## Applications of Feedback Control:

- admission control, resource allocation, scheduling
- in storage systems
- in database management systems
- in web servers and application servers

## Dynamic Provisioning:

- of databases
- of applications

## Assumed Background

- undergraduate course in **databases**
  - similar to CS348 or CS448 at UW
  - relational databases
  - query processing and optimization
  - transactions
- undergraduate course in **operating systems**
  - similar to CS350 at UW
  - system architecture
  - processes
  - memory management
  - storage systems, file systems

# Reading List

- reading list and schedule are on-line:  
`http://www.cs.uwaterloo.ca/~kmsalem`
- paper links in reading list lead to on-line bibliography, from which papers can be retrieved
- access to locally cached paper copies is password protected. Use:  
`Userid: cs848 Password: cs848`
- many other related papers can be found in the bibliography



# Research Paper Presentations

- 21 papers to be presented by students, up to three presentations per week
- 45-50 minutes per paper: 25 minute presentation followed by discussion
- presentations should:
  - Identify key aspects of the paper: What problem was addressed? How was it solved?
  - Put the paper in context: How does it relate to background material and other papers?
  - Raise issues for discussion: Strong points of the paper? Weaknesses or limitations? Possible extensions?

## Remember

Your audience has already read the paper that you are presenting.

# Paper Reviews and Class Participation

## Paper Reviews:

- plan on reviewing 4+ papers during the term
- reviews submitted before class via e-mail
- review form is available on-line

## Class Participation:

- you are expected to read each week's papers before coming to class (whether you are presenting/reviewing the paper or not)
- you are expected to participate in paper discussions

# Projects

- may be done individually, or in groups of two or three
- types of projects
  - work on an open research problem
  - design and build a useful tool
  - write a research survey
- details on-line
- project timeline
  - 13 October: 1 page project proposals due
  - 29 November: project presentations in class
  - 13 December: project papers/reports due

## Next Steps

- Send e-mail by Friday 15 September:

To: kmsalem@uwaterloo.ca Subject: CS848

- message body should include:
  - your name
  - your preferred e-mail address
  - titles of papers from the reading list that you would prefer to present. Choose up to 5 papers and prioritize your choices.
- I will try to have paper assignments on-line by Monday 18 Sept
- Next meeting: Wednesday 20 Sept at 12:00 noon