

CS755

System & Network Architectures and Implementation

M. Tamer Özsu

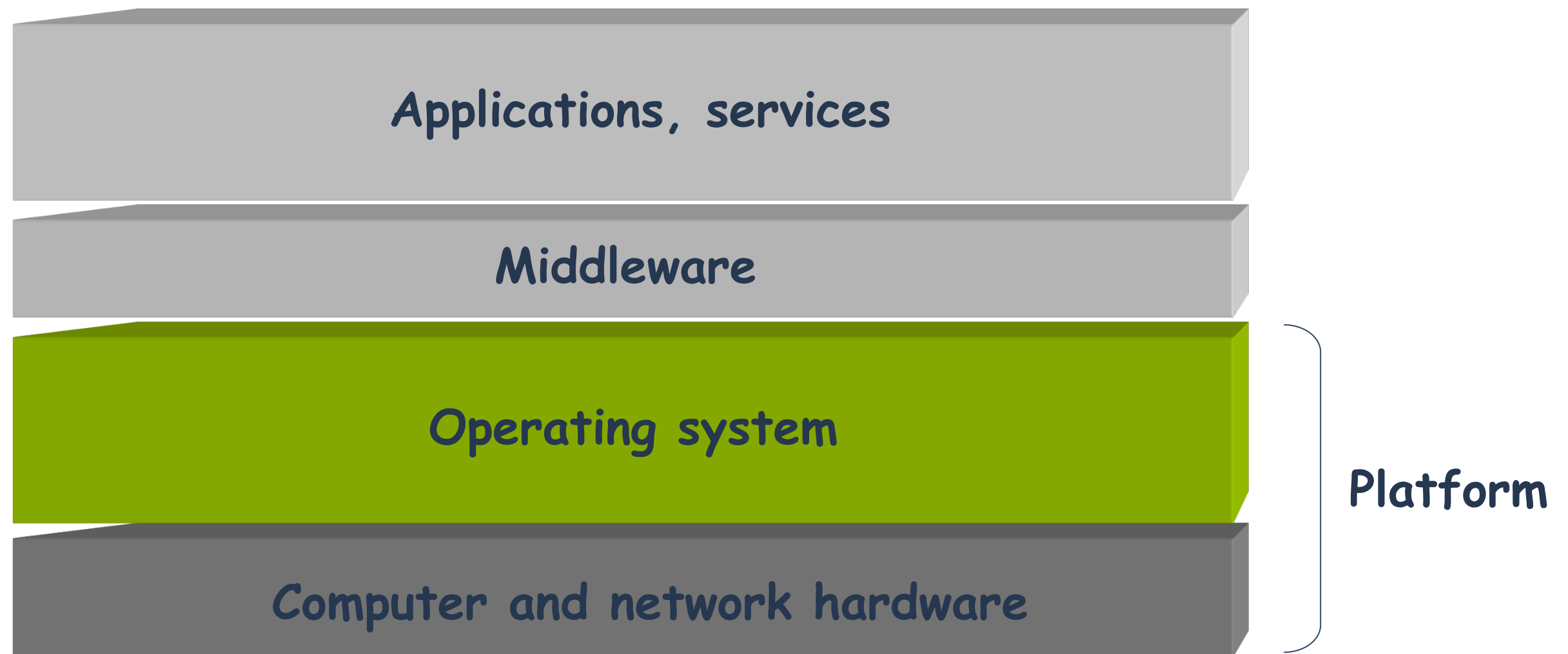
DC 3350

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Course Objective

- This course provides a graduate-level overview of the fundamentals of building distributed computer systems, and the underlying computer network technology and protocols.
- The structure of distributed systems using multiple levels of software is emphasized. Specific topics include:
 - ➔ distributed services,
 - ➔ distributed file systems and replication,
 - ➔ distributed naming,
 - ➔ fault-tolerance considerations
 - ➔ security and protection,
 - ➔ Internet protocols,
 - ➔ data transmission basics

Typical Layering in DSs



Course Modules

- **Module 1:** Introduction & Distributed System Architectures
- **Module 2:** Transport Layer Protocols
- **Module 3:** Network Layer Protocols
- **Module 4:** Data Link Layer Protocols and Physical Layer
- **Module 5:** Remote Service Invocation & Naming
- **Module 6:** Synchronization
- **Module 7:** Distributed File Systems & Data Replication
- **Module 8:** Fault Tolerance
- **Module 9:** Security
- **Module 10:** Peer-to-Peer Computing
- **Module 11:** Cloud Computing

Course Information

- Intended Audience:
 - ➔ CS 755 is a course for CS graduate students and should be taken if the student does not have background in networking (e.g., CS456) and distributed systems (e.g., CS454)
 - ➔ This is NOT a combination of 654 and 656.
- Prerequisites:
 - ➔ Students are expected to understand the fundamentals of programming languages, data structures, operating systems, and algorithms, each at least at the level of an introductory course.

Course Information

- Lectures:
 - ➔ T-Th 9:30-10:50 in DC3313
 - ➔ After second lecture, first half of the class will be lecture, second half will be class discussion of papers (see web page)
- No office hours – Send me email if you need to see me
- Administrative stuff:
 - ➔ See course web page:
 - ◆ <http://www.cs.uwaterloo.ca/~tozsu/courses/CS755/F13>

Course Documents

- No required textbooks, but will rely on the following:
 - ➔ A.S. Tanenbaum and M. van Steen, *Distributed Systems: Principles and Paradigms*, 2nd edition, Prentice-Hall, 2007.
 - ➔ J. F. Kurose and K. W. Ross, *Computer Networking: A Top Down Approach*, 5th edition or 6th edition, Addison-Wesley, 2009 or 2012.
- Course Home Page:
 - ➔ <http://www.cs.uwaterloo.ca/~tozsu/courses/CS755/F13>
 - ➔ Home page will include all the slides used in the course.
 - ➔ You are responsible for checking the course page regularly.