

MOBILITY, PORTABILITY, REPLICATION AND CLUSTERING

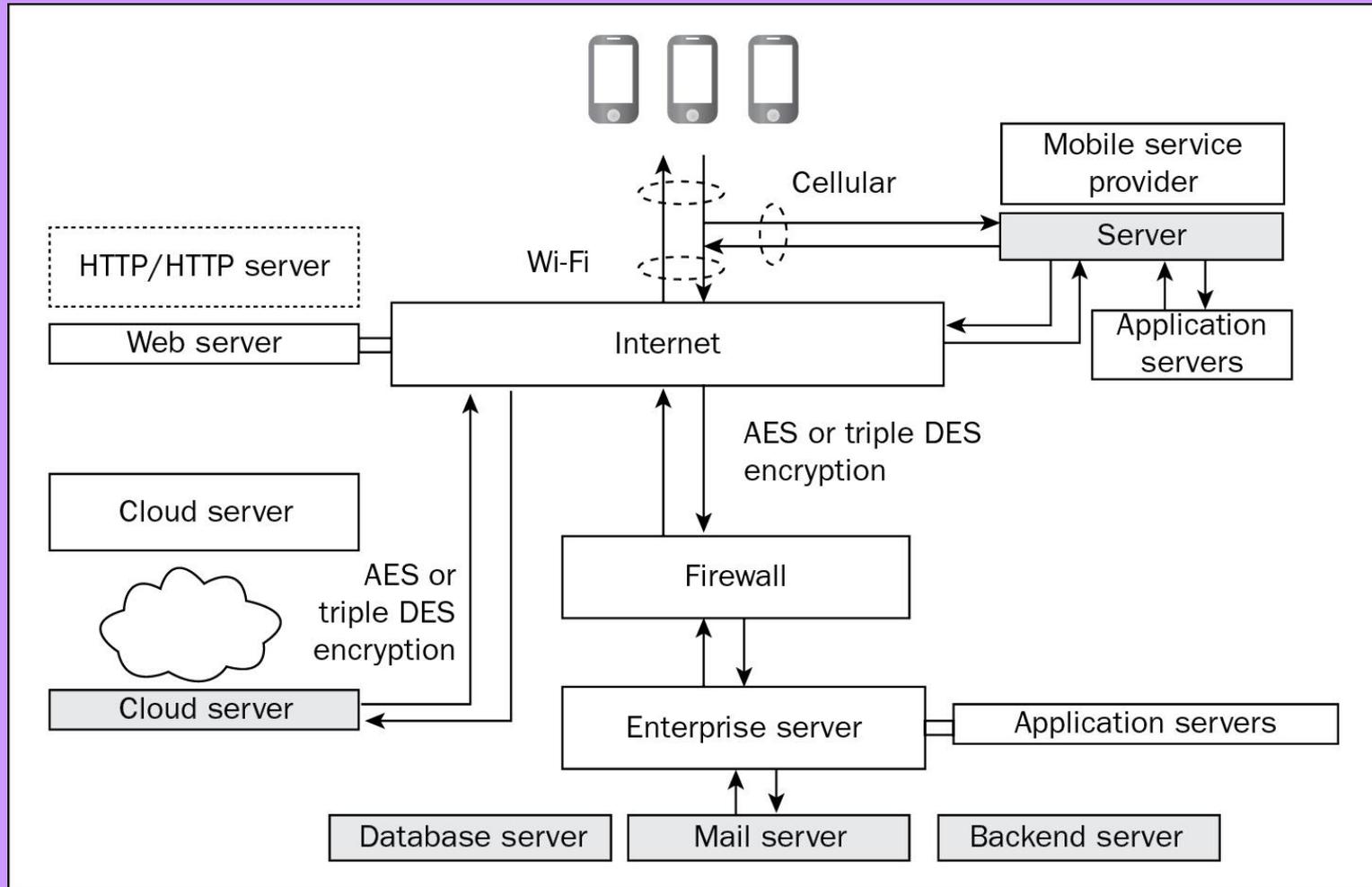
Lesson 01

Mobile Data Management

MOBILE SYSTEMS MANAGEMENT OF DATA AND DATABASES

- Data management entails access to distributed databases
- Involves data sharing between mobile, fixed hosts, servers, application servers, and cloud servers
- Mobile computing systems require full or partial replication from the databases

DATA SHARING BETWEEN MOBILE, FIXED HOSTS, SERVERS, APPLICATION SERVERS, AND CLOUD SERVERS



MOBILITY SUPPORT OF DATABASE SYSTEMS

- SQL Anywhere mobile database
- IBM's DB2 Everyplace (relational database that connects to enterprise synchronization server)
- Oracle 9i Lite— A database for mobile and embedded devices based on Oracle 9i, which allows tracking and making changes to definitions of database objects.

MOBILITY SUPPORT OF DATABASE SYSTEMS

- Microsoft SQLCompact, SQL Lite (provides local and client storage at Web browser and binding to many programming languages)
- Sybase Remote Server, Synchronologic iMOBILE, and
- Xtnd-Connect-Server (Extended Technologies).

MOBILITY SUPPORT OF DATABASE SYSTEMS

- UltraLite, A compact RDMS with features to create mobile databases for smartphones, hand-held computers, and tablet PCs and built-in synchronization client that tracks changes made in UltraLite and UltraLite Java edition (UltraLiteJ) databases.

DATABASE MANAGEMENT IN MOBILE ENVIRONMENT

- Support to N-tier (one or many) data processing
- Requirement of extended transaction models and partitioning of the objects while ensuring the correct transactions and processing of queries

DATABASE MANAGEMENT IN MOBILE ENVIRONMENT

- Maintenance of atomicity, consistency, integrity, and durability of data during transactions
- Support to sharing with a portion of data at the mobile computing system and rest distributed spatially
- Processing at the client side as well as the server side

ISSUES WITH THE MOBILITY

- Location management in slow- and fast-changing environment
- Secure transactions and authentication
- Heterogeneity and therefore, variations in performance and reliability
- Data recovery during mobile transactions and disconnected operations

ISSUES WITH THE MOBILITY

- Management of the use of locks in mobile transactions
- Efficient structure plan of distributing the data
- Efficient query-processing plan
- Ensuring energy resources by power-aware computing and hardware design

ISSUES WITH THE MOBILITY

- Data replication schemes at one or more systems (e.g., pictures can be at mobile as well as personal cloud, server, or Web service such as Picasso, Instagram, etc.)
- Maintenance of data integrity in distributed environment

PORTABILITY

- The servers and cloud services are rich in resources
- Portability of data is defined as *the* ability to move or replicate data among the different applications, operating systems, and computing environments.

PORTABILITY

- Takes into account the interoperability between the applications and the integration of applications

SUMMARY

- Data management using access to distributed databases
- Data sharing between mobile, fixed hosts, servers, application servers, and cloud servers
- Full or partial replication from the databases

SUMMARY

- Issues with the Mobility
- Location management, Secure transactions and authentication, Heterogeneity, maintenance of data integrity in distributed environment

SUMMARY

- Issues of Portability the interoperability between the applications and the integration of applications

End of Lesson 01

Mobile Data Management