

Lesson 3

Ways of Organising the Data

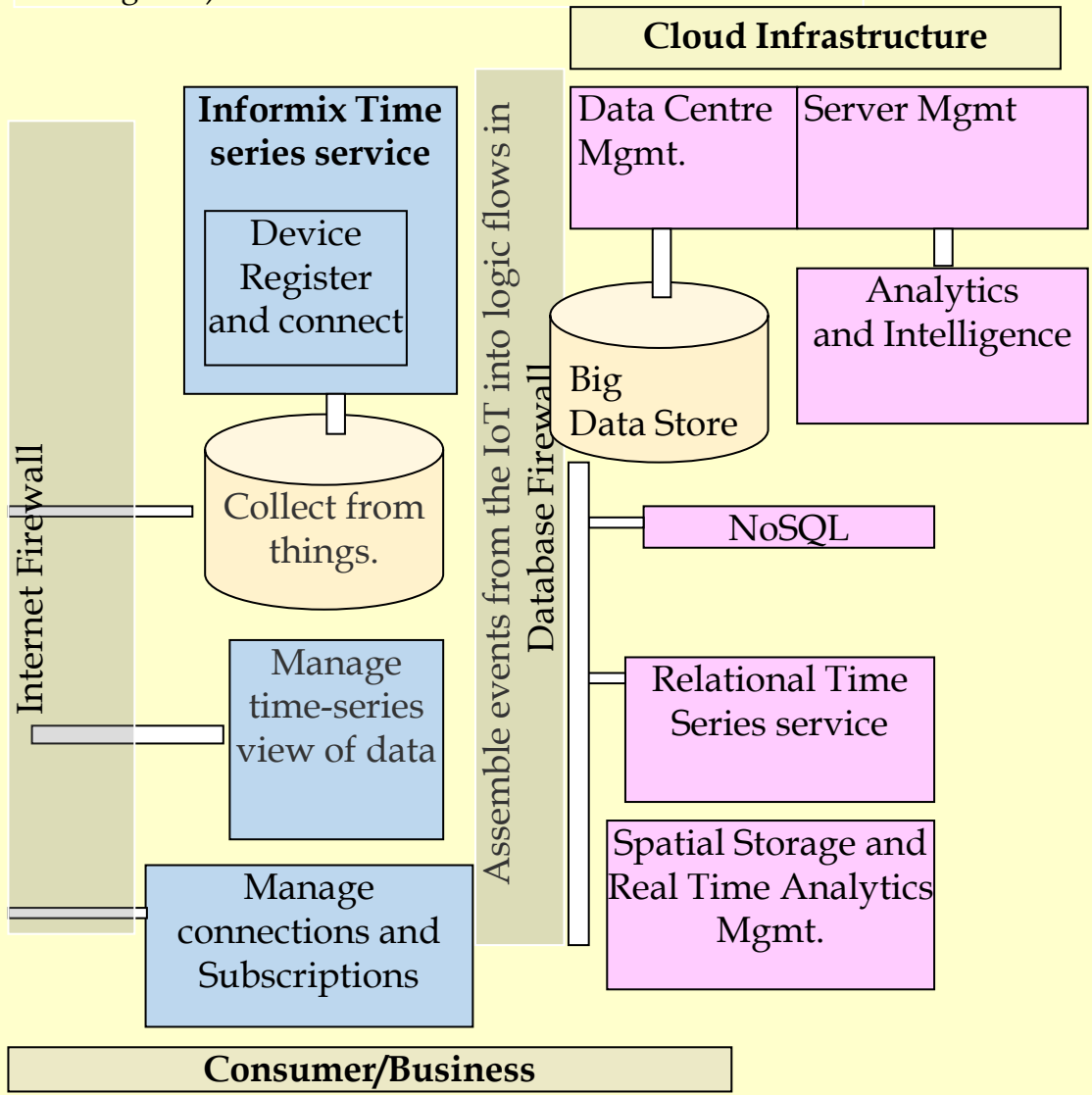
Data Organising

- Flat file
- Spreadsheet
- Database
- Relational database (only one scheme)

Data Organising

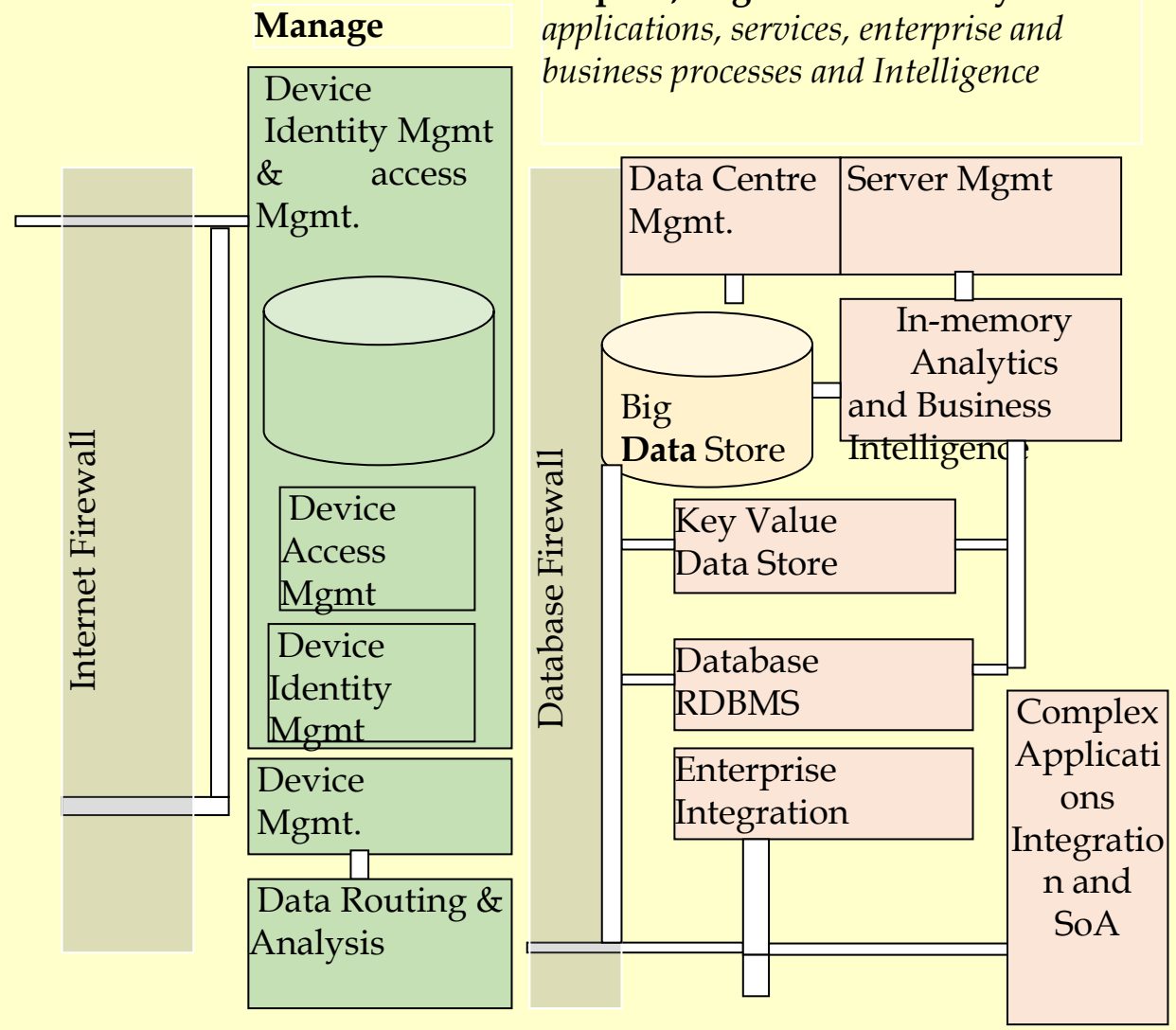
- Multiple schemas Data
- SQL Database
- Not Only SQL or NOSQL
- Relational Time Series service database

(Collect + Assemble + Manage) for analytics and Intelligence)



(a)

Acquire, Organize and Analyse applications, services, enterprise and business processes and Intelligence



SoA: Service Oriented Architecture

(b)

Fig. 5.1 (a) Connect + Collect + Assemble +Manage IBM conceptual framework (b) Manage, Acquire, Organise and Analyse Oracle's framework in the IoT Architecture

Database and Relational Database

- A collection of data
- The collection organised into tables
- Relational database: a collection of data into multiple tables which relates to each other through special fields.
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An Example of Application, service and process common relational database RDB_{AVCM} tables

- Table A for ACVMs information, and pending service requests Num1, Num 2, Num2, Num 3 and Num 4 for the five flavours available at an ACVM.
- Table B is for ACVMs Fill Request Information, and
- C for chocolates Fill service actions

RDB_{AVCM} Table A—ACVMs information

Mach- ine ID	Reg- ion	Add- ress	Install- ation Date	Maint- enance Sch- edule	Fill Ser- vice Addr- ess	Pen- ding Req. Num 1	Pen- ding Req. Num 2	Pen- ding Req. Num 3	Pen- ding Req. Num 4

RDB_{AVCM} Table B—ACVMs fill request information

Service Request Num	Machin e ID	Request Receipt DateTi me	Num. FL1 Req.	Num. FL 2 Req.	Num. FL 3 Req.	Num. FL 4 Req.	Num. FL5 Req.

RDB_{AVCM} Table C—ACVMs fill service actions

Service Request Num.	Service DateTime	Num. FL1 Sent	Num. FL 2 Sent	Num. FL 3 Sent	Num. FL 4 Sent	Num. FL5 Sent

Object oriented database (OODB)

- Object oriented database (OODB) is collection of objects
- Saved objects in objected oriented design

Database Management System

- A software system, which contains a set of programs specially designed for creation and management of Data stored in a DB.

Database transaction

- The execution of a specific set of operations on a DB
- Transactions performed on a DB.

DB Transaction Models

- The transactions must maintain the transaction atomicity
- Consistency,
- Isolation and
- Durability.

Relational Database transaction

- The execution of interrelated instructions using relations
- A sequential execution of a specific set of relational operations on relational DB

Query and Query Processing

- An Application/Service/Process seeking a specific data set from a database/relational database
- Query processing means using a process
- Getting the results of the query made from a DB

Distributed DB

- A collection of logically interrelated, cooperating databases over a computer network.
- Distributed DB system has ability to access remote sites and transmit queries.

Distributed Query Processing

- Query processing operations in distributed databases on same system or networked systems

Structured Query Language (SQL)

- A language for data access control, schema creation and modifications.
- Language for managing the RDBMS.
- Language for data definition, data manipulation and data control instructions

Not Only SQL or NOSQL

- No integration with applications that are based on SQL
- Used in Cloud Data Store
- NOSQL consists of Classes of non-relational data storage systems
- Flexible data models, and
- Multiple schemas.

Time series data

- An array of numbers indexed with time (date-time or a range of date-time)

Decision on Real Time Data

- Fast when query processing in live data (streaming) has low latency
- The decision on historical data is fast when interactive query processing has low latency.

Summary

We learnt

- Flat File
- Spreadsheet
- DBMS, RDBMS and OODB
- SQL or NOSQL
- Time Series Data
- Real Time Data

End of Lesson 3 on Ways of Organising the Data