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Introduction to Middleware

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In this segment

Introduction to Middleware

- What is a Distributed Transaction ?
- What is Middleware ?
- Middleware in Distributed computing
- Different forms of Middleware

What is a Transaction ?

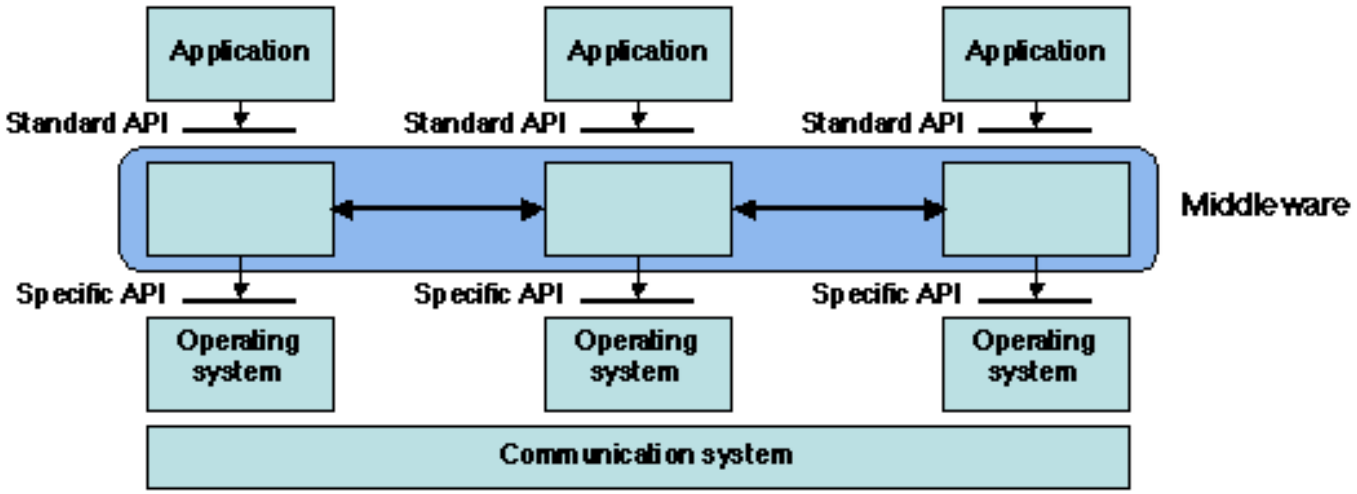
Transaction

- “A transaction symbolizes a unit of work performed (comprising of multiple operations if needed) within a system (distributed or monolith) and treated in a coherent and reliable way independent of other operations.”
- Properties of a Transaction:
  - Atomic
  - Consistent
  - Isolated
  - Durable
- All or Nothing mode of operation
- Ex: Funds transfer (debit remittance account and credit beneficiary account)

What is Middleware ?

What is it ?

- “Middleware is the software that connects software components or enterprise applications in a distributed system”.
- Examples: Enterprise Application Integration software, telecommunications software, transaction monitors, and messaging-and-queueing software.



Middleware in Distributed computing

What does it do ?

- Lies between the operating system and the applications on each side of a distributed computer network
- Hides the intricacies of distributed applications
- Hides the heterogeneity of hardware, operating systems, and protocols
- Provides uniform and high-level interfaces used to make interoperable, reusable and portable applications
- Provides a set of common services that minimizes duplication of efforts and enhances collaboration between applications

Middleware – common forms

Commonly used Architectures of Middleware

- Sockets
- Remote Procedure Calls
- Distributed Object Oriented Components (Ex: ORB)
- Message Oriented Middleware (Message Queues/ Enterprise Message Bus etc.)
- Service Oriented Architectures
- Web services (Arbitrary / RESTful)
- SQL-oriented data access
- Embedded middleware
- Cloud Computing

Thank You!

In our next session:

Socket Data structures