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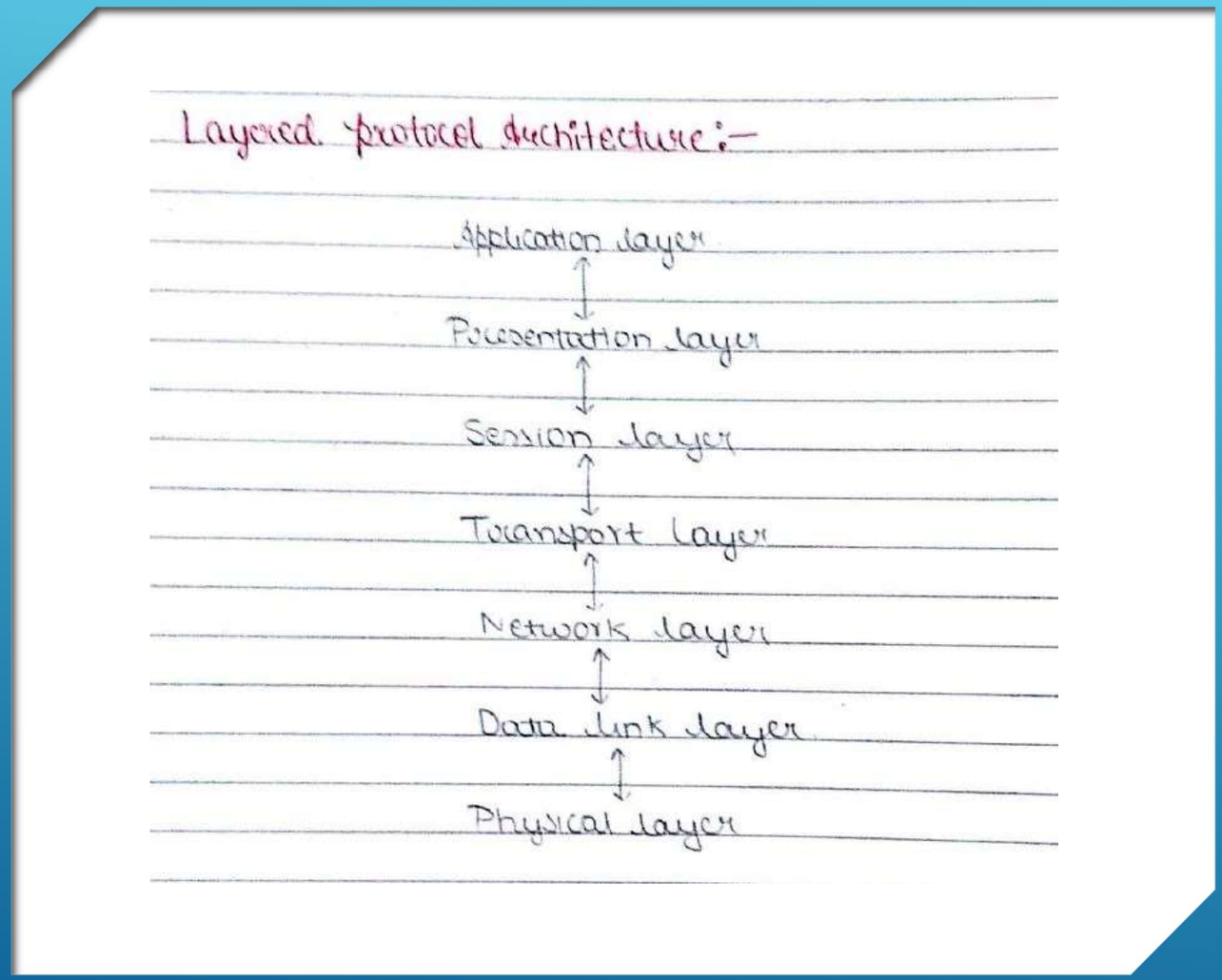
DISTRIBUTED COMPUTING

(

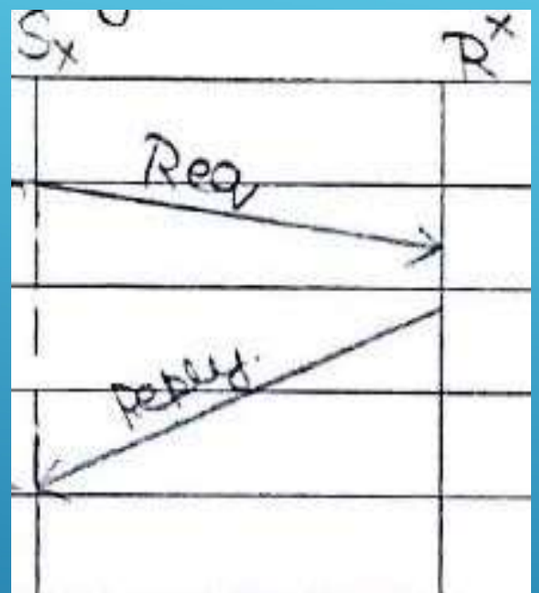
Chapter 2: Communication

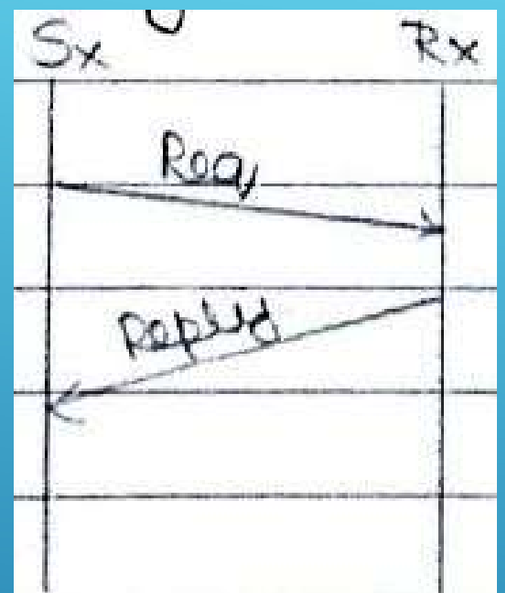


LAYERED PROTOCOL

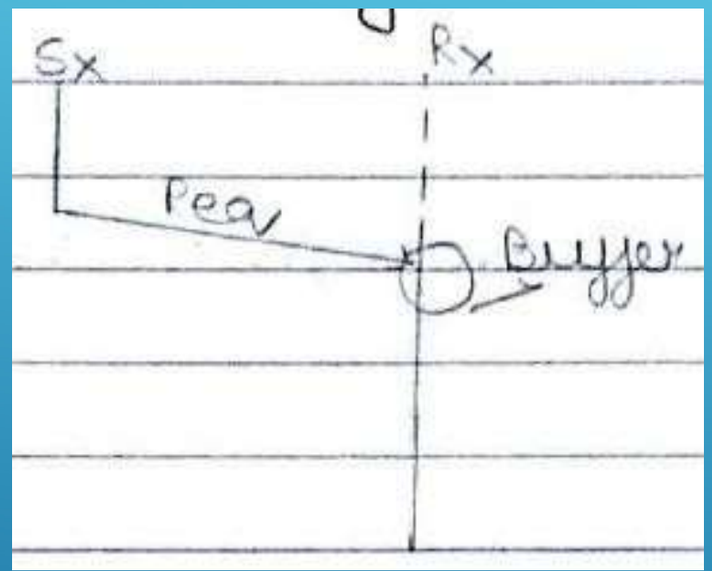
TYPES OF COMMUNICATION

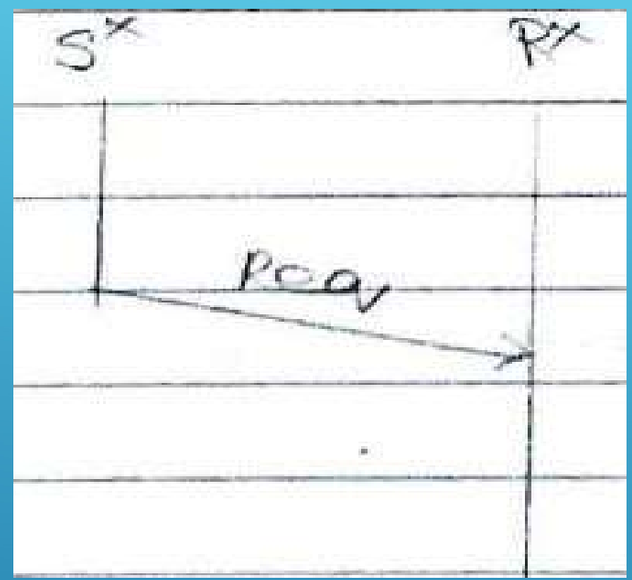
- Blocking (Synchronous)
- Non-Blocking (Asynchronous)
- Persistent
- Transient



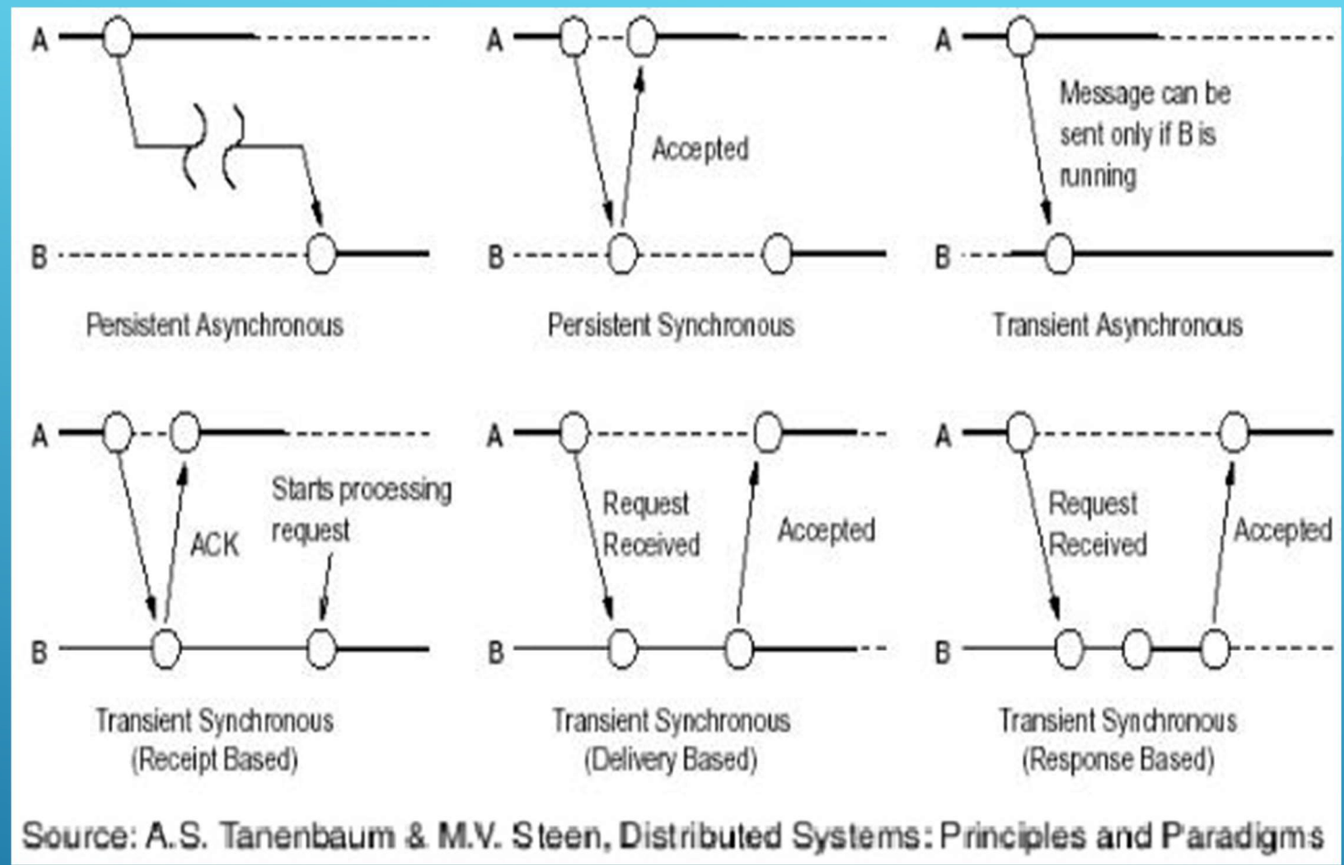


BLOCKING AND NON BLOCKING





PERSISTENT vs TRANSIENT



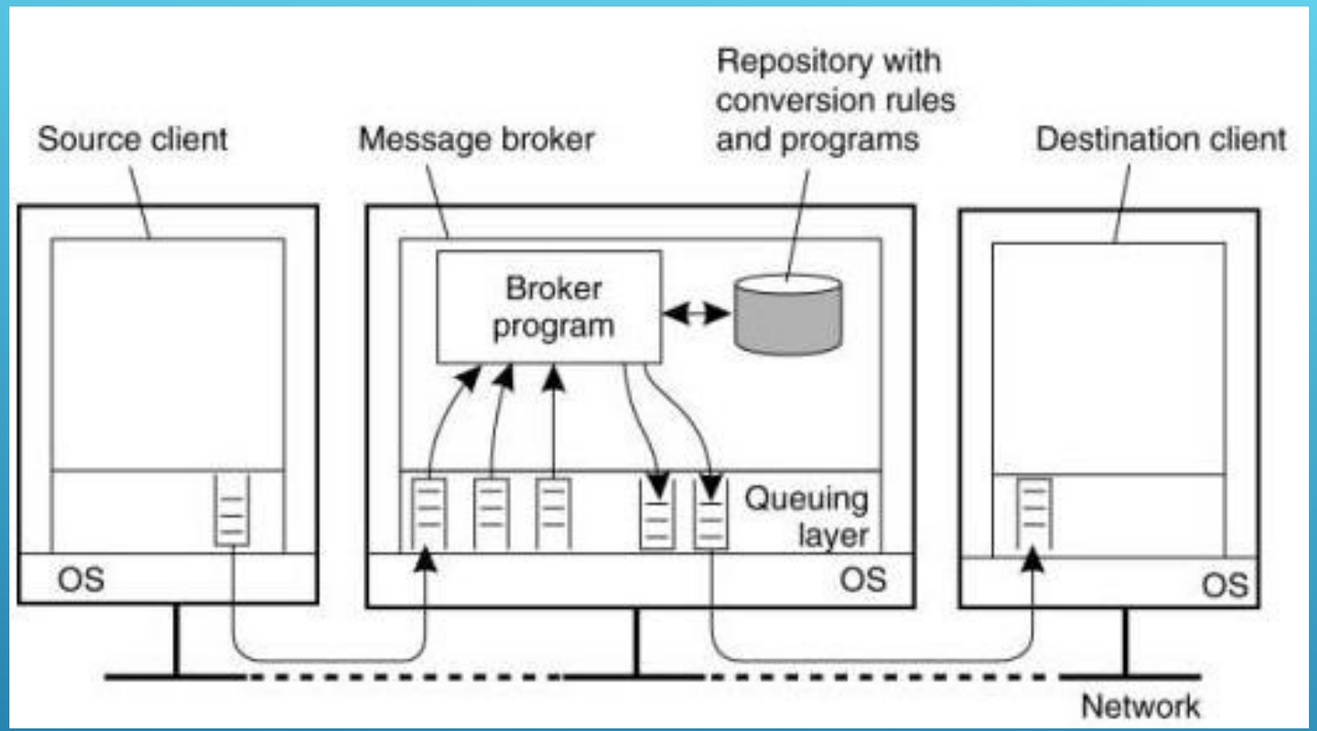
PERSISTENT AND TRANSIENT COMMUNICATION

GROUP COMMUNICATION

- 1-M
- M-M
- M-1

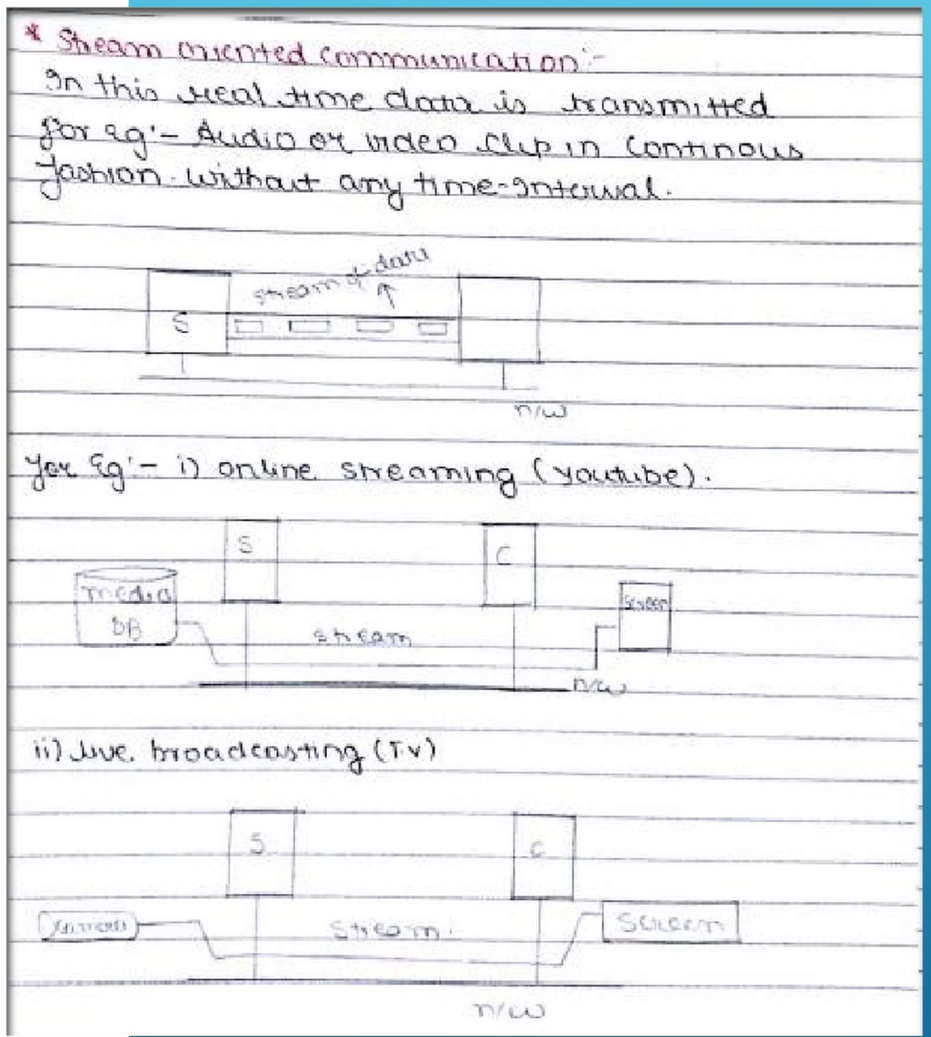
ABSOLUTE **CONSISTENT** **CAUSAL**

ORDERING

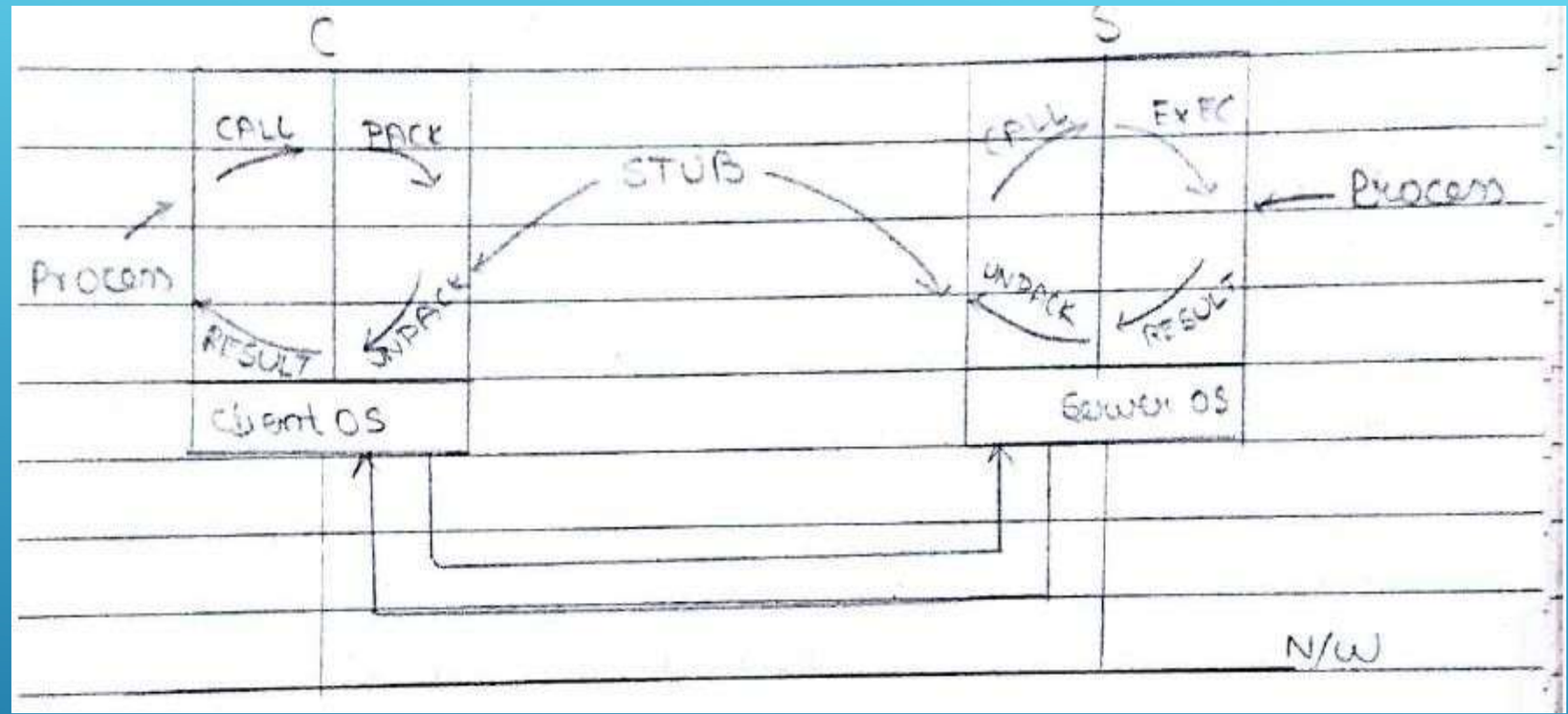


Source: A.S. Tanenbaum & M.V. Steen, Distributed Systems: Principles and Paradigms

MESSAGE BROKER ARCHITECTURE



STREAM ORIENTED COMMUNICATION


C
S
CALL
PACK
STUB
EXEC
Process
Process
UNPACK
RESULT
UNPACK
RESULT
Client OS
Server OS
N/W

RPC

RPC

RPC Failures	Solution
Lost Request	Timeout and Retransmission
Lost Reply	Timeout and Retransmission
Server Crash	Timeout and Retransmission
Client Crash (Orphans and Grand Orphans)	Extermination, Re-incarnation, Gentle Re-incarnation, Expiration

RMI

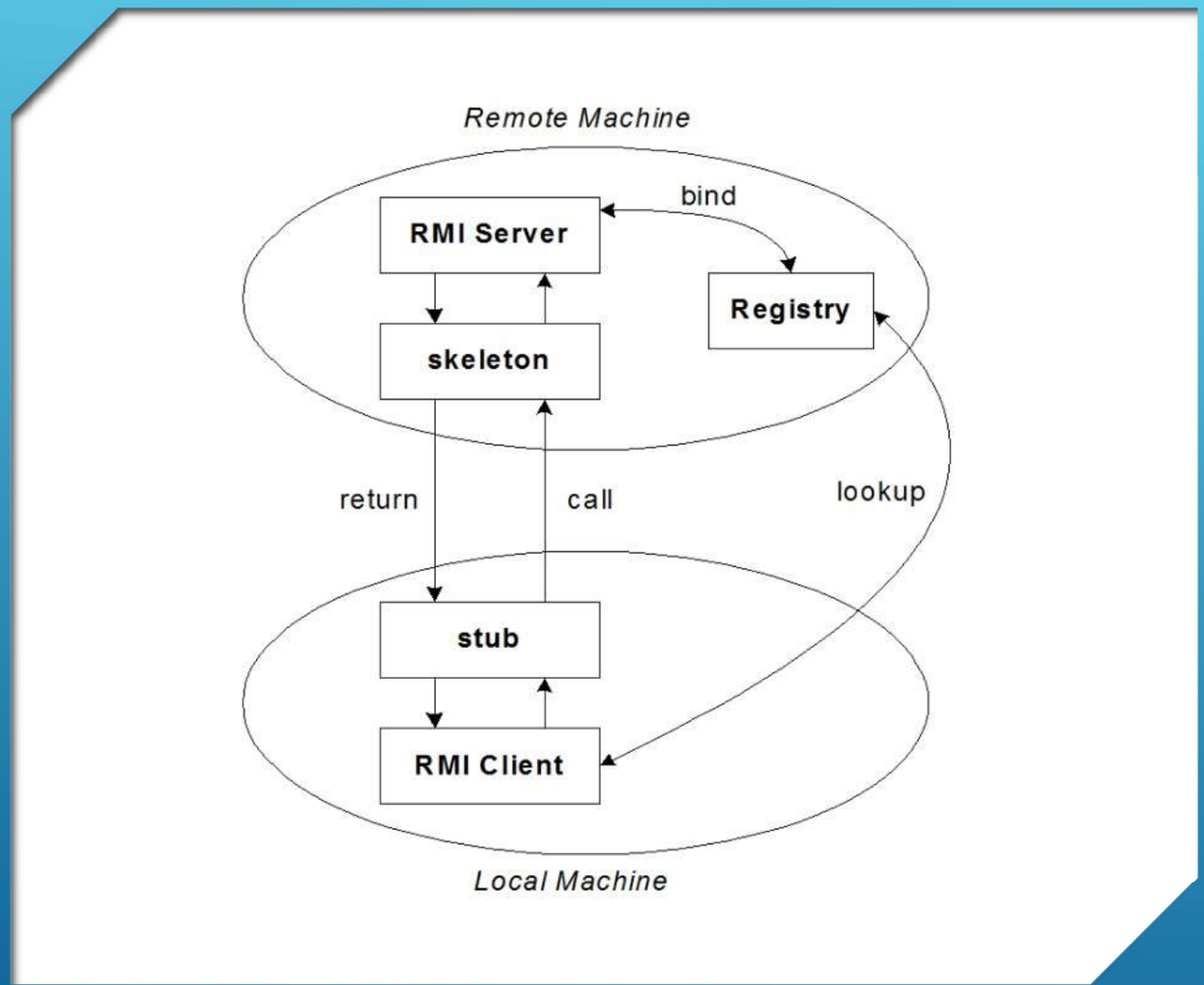


Image Source: https://www.ejbtutorial.com/wp-content/uploads/2013/10/rmi-steps.png

COMMUNICATION

- **Types of Communication**
  - Synchronous
  - Asynchronous
  - Persistent
  - Transient

- Group Communication
  - Types
    - 1-M
    - M-1
    - M-m
  - Ordering
    - Absolute
    - Consistent
    - Causal

- Message Oriented Communication
  - Message Queuing
  - Message Broker
- Stream oriented Communication
  - Live
  - Stored
- **RPC**
  - **Model**
  - Failures
- RMI
  - Model