

# ORACLE®



## A Scalable and Highly Available Networked Database Architecture

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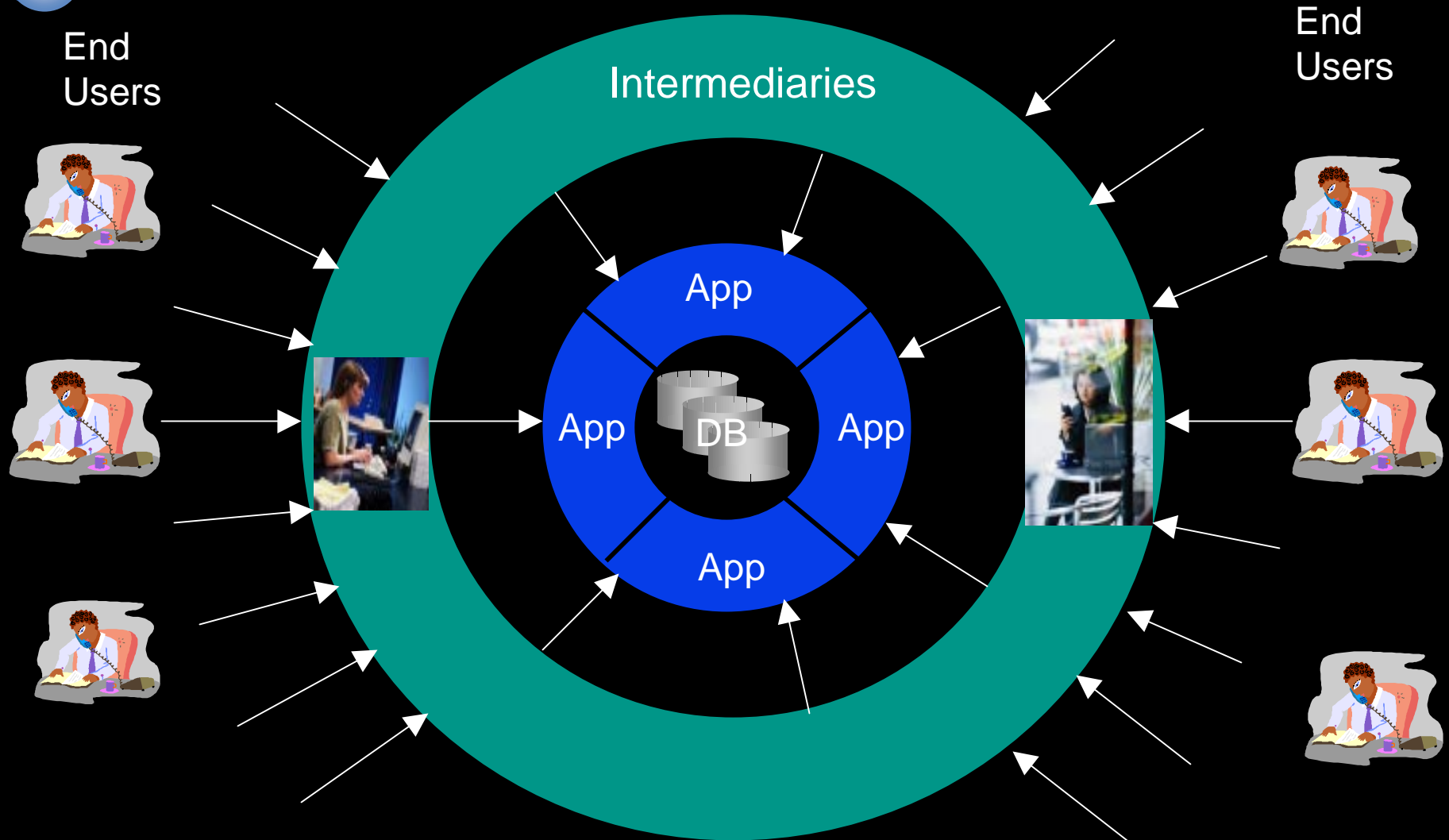
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# Outline



- **Scalability, Availability, Mobility Challenges**
- **Client Technologies**
- **Server Technologies**
- **Open Issues**

# Pre-Internet Era Database Usage



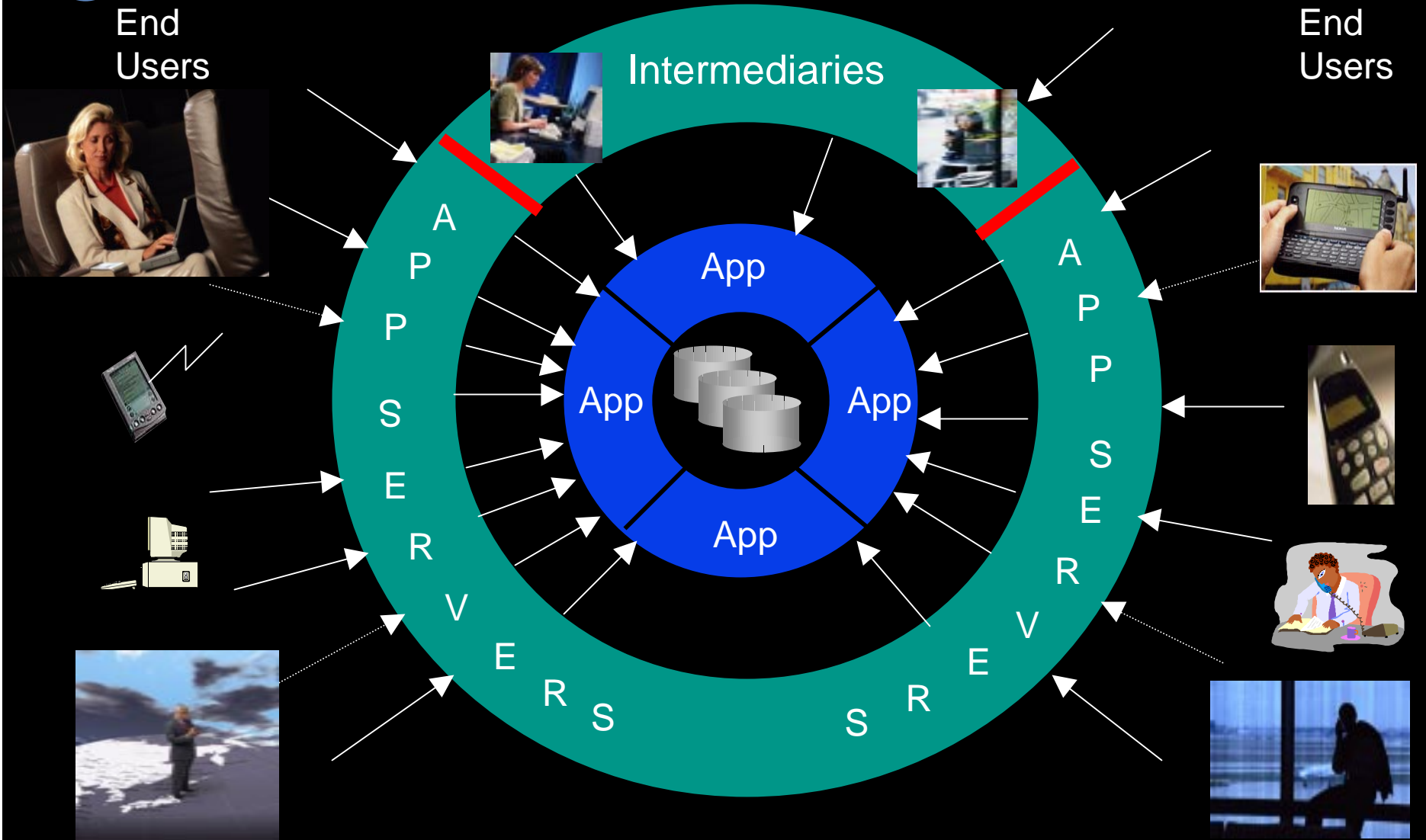
# Internet-Era Database Usage



End Users

End Users

Intermediaries

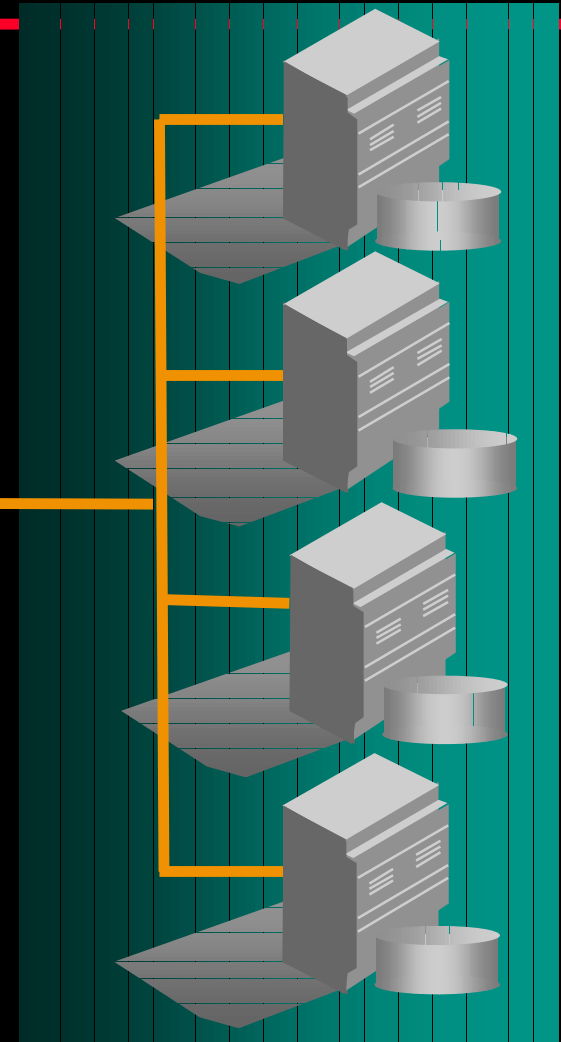
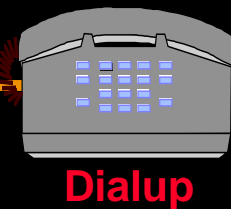
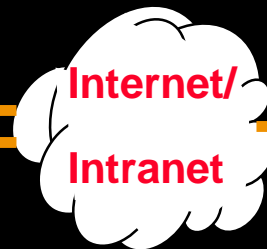
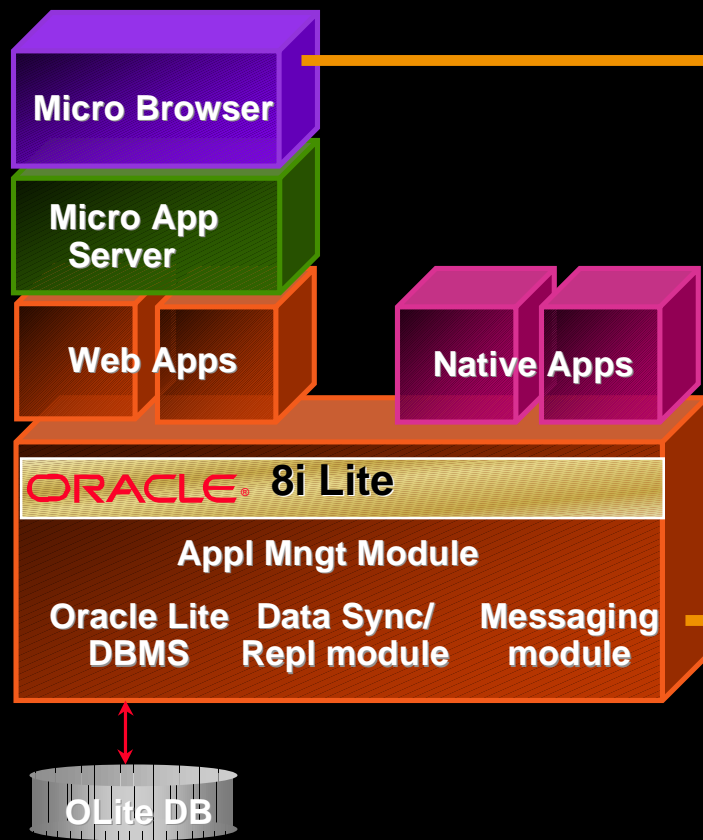


# Challenges



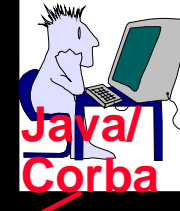
- **Client Technologies**
  - Supporting disconnected-mode/slow connections
  - Transparent install/management of SW on client
  - Catering diverse device capabilities and preferences
- **Server Technologies**
  - Scalability
  - High availability
  - Manageability => lows cost of operation/ownership

# Client Technologies



**Oracle Parallel Server**

# Server Technologies

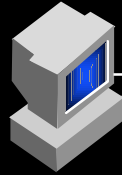


Internet/  
Intranet

Net8

IIOP or RMI

Centralized  
Management  
Console



High Speed  
Switch or  
Interconnect



NT/Unix/mainframe

Clustered  
Database  
Servers

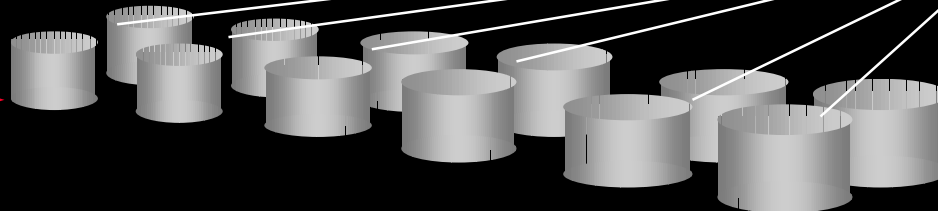


Hub or  
Switch  
Fabric



SAN

Mirrored  
Disk  
Subsystem



# Open Issues



- **Effective Load Balancing across nodes**
  - Use CPU and memory and I/O and health of node (is node running out of resources)
- **HA for long running Transaction**
  - How do we save app state for LRT and restart transaction on another node (checkpoint of application state)
- **Affinity processing in cluster environment to Optimize Locking and cache coherency (dynamically route like-work)**
- **Effective support for unlike speed node**
- **Scalable replication**