



### Course Name: Mobile Computing for Modern App Development

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iPhone 13 mini - 1

Wireless adhoc Network

iPhone 13 mini - 2

Wireless Adhoc Network

Wireless adhoc networks:

- 1.Shared physical medium
- 2.Energy constrained medium
- 3.Limited security
- 4.Less Human intervention

iPhone 13 mini - 3

Challenges in Wireless Ad Hoc Networks

1. Limited Bandwidth
  - Wireless links have lower data rates.
  - Traffic overload can easily cause congestion.
2. Dynamic Topology
  - Nodes move frequently → links break often.
  - Routing becomes unstable and needs constant updates.
3. Energy Constraints
  - Devices run on battery.
  - Continuous communication drains power quickly.
  - Nodes may die unexpectedly → network breaks.

Frame 1

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4. Security Vulnerabilities

- No fixed infrastructure = easier to attack.
- Risks include:
  - Node impersonation
  - Eavesdropping
  - Denial of Service (DoS)
  - Data tampering

5. Routing Challenges

- Many routing protocols may fail when:
  - Nodes move fast
  - Network grows large
  - Links drop suddenly

6. Limited Range

- Each node has a small transmission range.
- Network becomes fragmented when nodes are too far.

8. Scalability Issues

- Difficult to manage when number of nodes increases.
- Routing tables become large.
- More collisions and delays.

9. Quality of Service (QoS) Problems

- Hard to guarantee:
  - Low latency
  - Bandwidth
  - Reliable delivery
- Especially during mobility or congestion.

10. Lack of Centralized Control

- No access point or base station.
- Hard to coordinate:
  - Security
  - Resource allocation
  - Network management