



SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution



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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

19EC402- WIRELESS ADHOC AND SENSOR NETWORKS

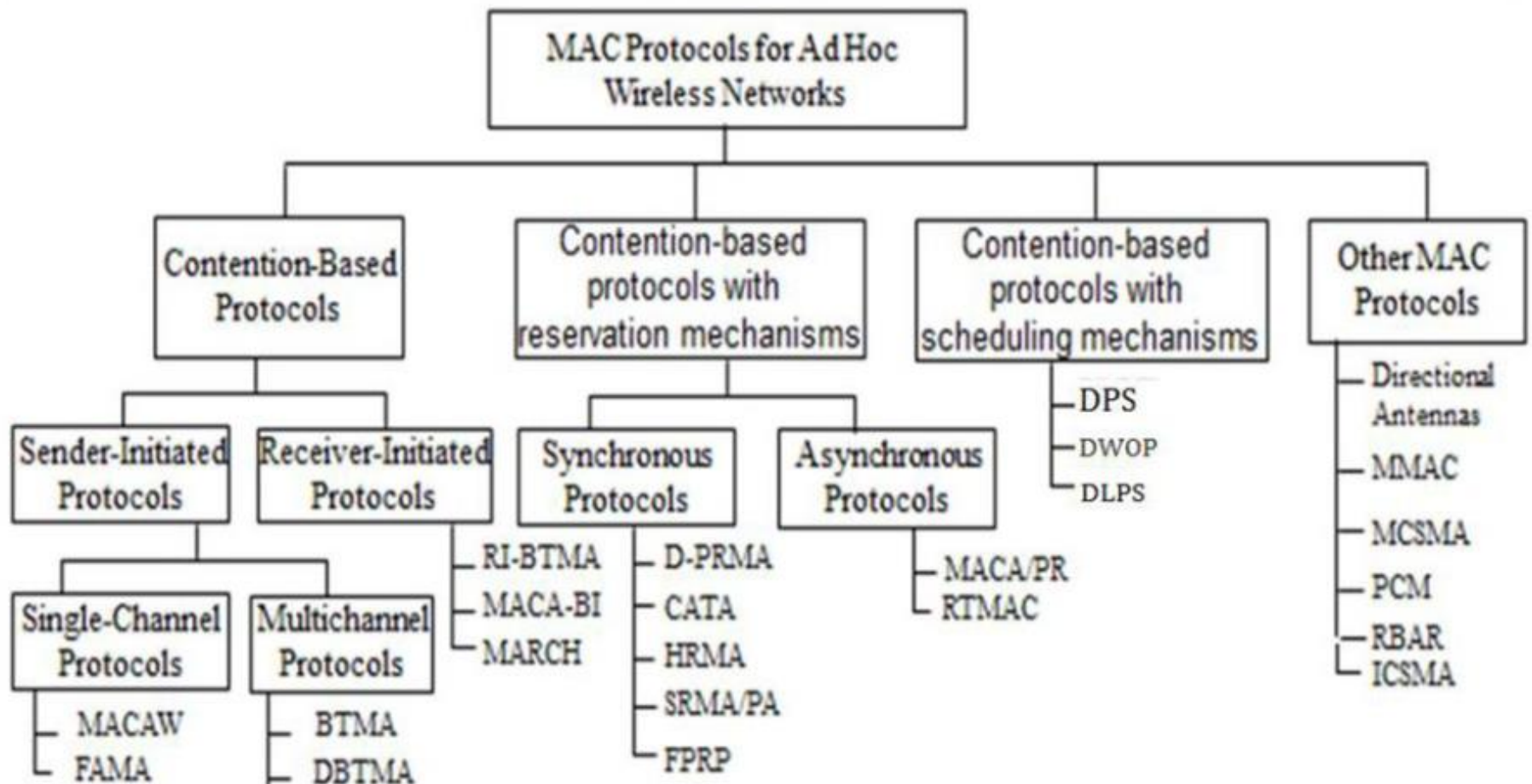
IV ECE / VII SEMESTER

UNIT 2 – MEDIA ACCESS CONTROL (MAC) PROTOCOLS

TOPIC 2 –Media access protocol for wireless LAN

Classifications of MAC Protocols:

- ✓ Ad hoc network MAC protocols can be classified into three types:
 - ❖ Contention-based protocols
 - ❖ Contention-based protocols with reservation mechanisms
 - ❖ Contention-based protocols with scheduling mechanisms
 - ❖ Other MAC protocols



Classifications of MAC Protocols:

➤ Contention-based protocols:

- ❖ *Sender-initiated protocols:* Packet transmissions are initiated by the sender node.
 - *Single-channel sender-initiated protocols:* A node that wins the contention to the channel can make use of the entire bandwidth.
 - *Multichannel sender-initiated protocols:* The available bandwidth is divided into multiple channels.
- ❖ *Receiver-initiated protocols:* The receiver node initiates the contention resolution protocol.

➤ Contention-based protocols with reservation mechanisms

- ❖ *Synchronous protocols:* All nodes need to be synchronized. Global time synchronization is difficult to achieve.
- ❖ *Asynchronous protocols:* These protocols use relative time information for effecting reservations.

Classifications of MAC Protocols:

- **Contention-based protocols with scheduling mechanisms:**
 - Node scheduling is done in a manner so that all nodes are treated fairly and no node is starved of bandwidth.
 - Scheduling-based schemes are also used for enforcing priorities among flows whose packets are queued at nodes.
 - Some scheduling schemes also consider battery characteristics.

- **Other protocols are those MAC protocols :** These are not strictly fall under the above categories.

Classifications of MAC Protocols:

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➤ Other MAC Protocols:

✓ **Multi-channel MAC Protocol (MMAC)**

- Multiple channels for data transmission
- There is no dedicated control channel.
- Based on channel usage channels can be classified into three types: high, medium and low preference channels.

✓ **Multi-channel Carrier Sense Multiple Access(MCSMA) MAC Protocol :**

- The available bandwidth is divided into several channels

✓ **Power Control MAC Protocol (PCM) for Ad Hoc Networks**

- Allows nodes to vary their transmission power levels on a per-packet basis

✓ **Receiver-based Autorate Protocol (RBAR)**

- Use a rate adaptation approach

✓ **Interleaved Carrier-Sense Multiple Access Protocol (ICSMA)**

- The available bandwidth is split into two equal channels
- The handshaking process is interleaved between the two channels.