SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

19EC402- WIRELESS ADHOC AND SENSOR NETWORKS

IV ECE / VII SEMESTER

UNIT 2 – MEDIA ACCESS CONTROL (MAC) PROTOCOLS

TOPIC 5 –Distributed priority-scheduling.

Classifications of MAC Protocols: ...cntd

- ***Contention-based protocols with Scheduling Mechanism:***

  - **Distributed Wireless Ordering Protocol (DWOP)**
    - A media access scheme along with a scheduling mechanism based on the distributed priority scheduling scheme

  - **Distributed Laxity-based Priority Scheduling (DLPS) Scheme**
    - Scheduling decisions are made based on the states of neighboring nodes and feed back from destination nodes regarding packet losses
    - Packets are recorded based on their uniform laxity budgets (ULBs) and the packet delivery ratios of the flows. The laxity of a packet is the time remaining before its deadline.

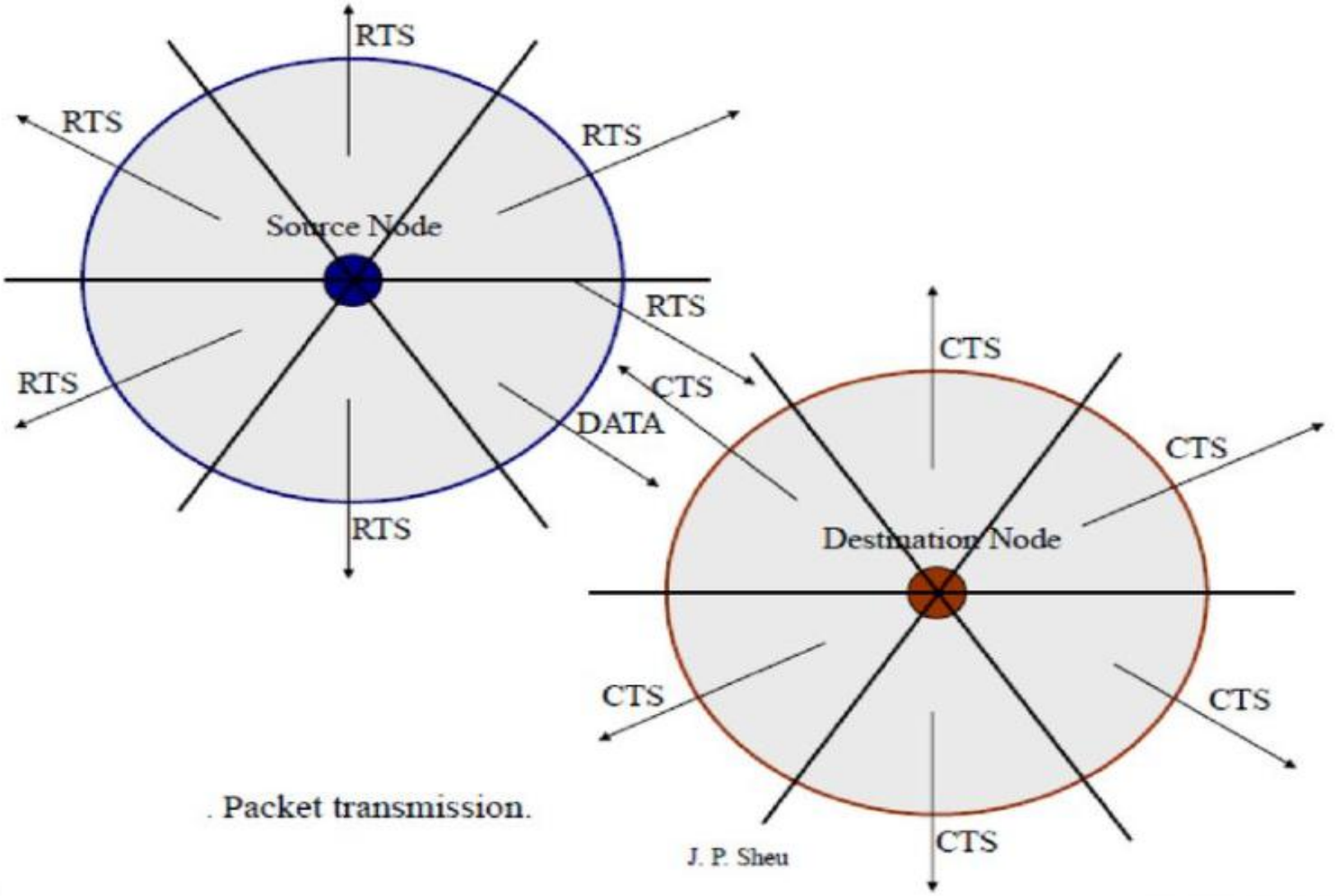
Classifications of MAC Protocols:

- ***MAC Protocols that use directional Antennas:***

  - ✓ MAC protocols that use directional antennas have several advantages:
    - Reduce signal interference
    - Increase in the system throughput
    - Improved channel reuse
  - ✓ **MAC protocol using directional antennas**
    - Make use of an RTS/CTS exchange mechanism
    - Use directional antennas for transmitting and receiving data packets
  - ✓ **Directional Busy Tone-based MAC Protocol (D-BTMA)**
    - It uses directional antennas for transmitting the RTS, CTS, data frames, and the busy tones.
  - ✓ **Directional MAC Protocols for Ad Hoc Wireless Networks**
    - DMAC-1: A directional antenna is used for transmitting RTS packets and Omni-directional antenna for CTS packets.
    - DMAC-1, both directional RTS and omni-directional RTS transmission are used.

Classifications of MAC Protocols: ...cntd

- ***MAC Protocols that use directional Antennas:***



. Packet transmission.

Classifications of MAC Protocols: ...cntd

- ***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 tow equal channels
    - The handshaking process is interleaved between the two channels.

Note: *A directional antenna or beam antenna is an antenna which radiates or receives greater power in specific directions allowing for increased performance and reduced interference from unwanted sources.*

Note: *Omnidirectional refers to the notion(feeling) of existing in every direction. Omnidirectional antenna is that radiates equally in all directions.*

Note: *Handshaking is the exchange of information between two modems and the resulting agreement about which protocol to use that precedes each telephone connection.*