Medium Access Packet Wireless - Broadcast Medium
- Synchronized (Structured)
- Random Access - Distributed - ad hoc.

M M M
\[ S_1 S_2 S_3 \]

Leader Coordinator
Access point
M A
Master
Slave

1) Round robin
2) Polling
E.g. Bluetooth
MAC protocols coordinate multiple communicating elements for:
1) maximizing the utilization of bandwidth
2) fairness

A better polling master-slave MAC protocol based on scheduling

Schedule by minimizer
Schedule is randomized
Random Access Protocol

Collision Avoidance

**ALOHA**

1) sense the channel if it is free (idle) start transmitting

\[ 18\% \] throughputs

Still collision can occur at C since it is in hearing range of B
Slotted Aloha

Aloha + restriction that every packet's transmission begins only at slot boundary

MACA

1. A
2. RTS
3. CTS
4. DATA
5. ACK
6. Request to send.
Hidden terminal problem

A & B are "hidden" from each other out of communication range or cannot hear each other due to some obstruction.

D

RTS

D KEEPS QUITE FOR DURATION OF TRANSMISSION

CTS

DATA

ACK

B KEEPS QUIET FOR DURATION OF TRANSMISSION
Does MACA solve the problem due to mobile terminal coming and disrupting an ongoing transmission?

Static case: Tight synchronization is broken by randomization (backoff)
IEEE 802.11 - enhancement of MACA

SIFS (DIFS & PILOT)

IFS - Interframe spacing

RTS

SIFS

DATA

2nd Random Backoff

If collision

Use binary exponential backoff mechanism
Data Caching

How can it help in the context of mobile computing?

 közöln

Avg. data access latency $A-B = \frac{1}{n} (\text{Lab} + \frac{m}{n} \text{La})$

(assume the data item is accessed $n$ times)

Distributed System

Local memory

Get it first

Keep it in

Local memory

 till needed

$O(\text{ms})$
Distributed Cache Consistency Protocols.

- Lock bound protocol:
  - to write - acquire exclusive write lock

- Lower - what if mobile is disconnected?
  - cannot renew lease