Tx-Rx Switching Time Overhead

**Slides for Documents IEEE P802.11-93/109 and
IEEE P802.11-93/110**

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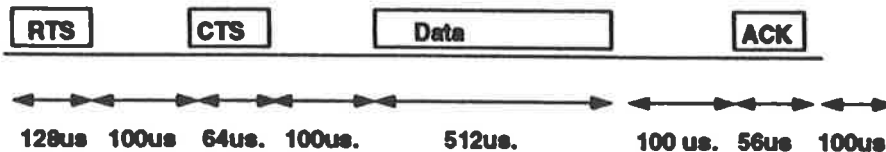
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Tx-Rx Switching Time

- Caused by

- In FH Radios in the range of 100 microseconds

- In DS Radios in the range of 10 microseconds

- On some MAC protocols using FH adds up to 400 microseconds for each Data Transfer (independently of the Data Length)

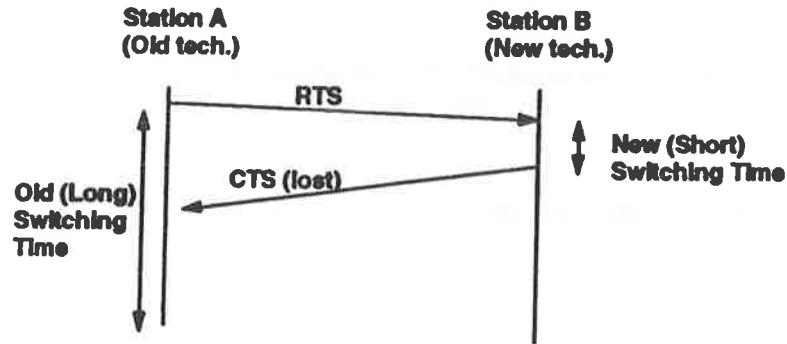- Example: XIRCOM's Protocol @ 1MBit/sec, 64 Byte packet:

RTS		CTS		Data		ACK

128us   100us   64us.   100us.   512us.   100 us.   56us   100us

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Newer Technology won't help !

Unless we change the MAC Protocol for each new Radio technology

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Solution: Design the MAC protocol such that it's performance will be independent from the tx-rx switching time.

One possible way: Interleaving

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Interleaving Concept

* The idea: When one transaction is idle (waiting for the tx-rx switching time) let other stations make use of the bandwidth.

* Interleaving can be used to improve performance on any of the proposed protocols.

* On IBM's Proposal: Interleave the Reservation MiniSlots on the B period:

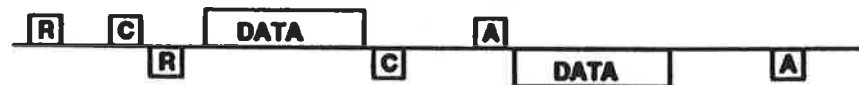| AH	A Period	BH	Data	RR	A	RRR	Data	RR	A	RR	RRR

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- On XIRCOM's Proposal: Interleave new RTS/CTS with previous data transfer:

On NCR's: Interleave DATA and ACKs

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Limitations:

- A single transaction cannot take advantage of the interleaving

- Traffic to/from single server does not take advantage neither.

- Unfair to Multicast/Broadcast Traffic ?

    May be solved by "Multicast RTS"

- Fairness based on receiver instead of transmitter

    is this still fair?

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