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Concerns with Priority Assertion Signal Based DTBS

Presented by
Rick White
Motorola
Wireless Data Group

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Concerns with Priority Assertion Signal

- Priority Assertion Signal (PAS) has impacts on Clear Channel Assessment.
- Interference could be detected as a PAS.
- Unreliable detection of the PAS could degrade the performance of the protocol.

Priority Assertion Signal Impacts on CCA

- Priority Assertion Signal (PAS) is not a complete frame. May be some or all of the radio preamble.
- Detection of PAS could be different than detection of normal frame (Radio Preamble).
- Detection of PAS should be reliable in presences of collision.
- Probability of collision is higher for PAS than a normal frame.
- CCA is required to detect both PAS and Radio Preamble at any point in time.
- A PAS could collide with a frame.

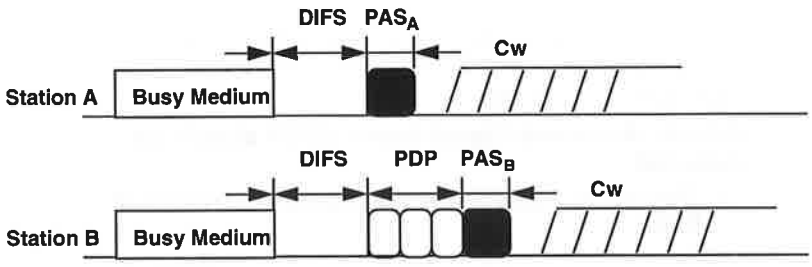
Effects of Unreliable Detection of PAS

- False Detection of PAS
  - Causes• station to unnecessarily• defer until next contention window of given priority
  - Interference could cause station to defer indefinitely
- Undetected PAS
  - Could preempt or collide with higher priority traffic

Priority Assertion Signal and Hidden Station

- A hidden station will not detect the PAS.
- The PAS from the hidden station may collided with a frame or may cause the media to appear busy to a higher priority station.

Priority Assertion Signal Detection



- Station A transmits PAS_A
- Station B does not detect PAS_A
- Station B transmits PAS_B in a later Priority Resolution Slot.
- PAS_B could collide with a frame from Station A or preempt Station A if it detects PAS_B

Conclusion

- Unreliable detection of PAS decreases performance of the MAC.
- Current Clear Channel Assessment algorithms have not been concerned with detecting a PAS. Reliability of CCA decreases in the presence of collision. Timing is very critical.
- Probability of collision of the PAS is much higher than that of a normal frame.
- ISM Band is a high interference environment.
- Detect of the Priority Assertion Signal should be reliable in the presence of collision or interference.
- Content of the Priority Assertion Signal must be defined in order to maximize reliable detection of the signal.

Conclusion (con't)

- Priority Assertion Signal based DTBS is more appropriate for low interference environments (licensed spectrum).
- Priority Assertion Signal based DTBS should be optional.
  - This means that a STA is not required to implement DTBS.
  - It also means that a STA is not required to detect a Priority Assertion Signal PAS if it does not implement DTBS.