SPM:
A Simple Power Management Proposal

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What's Broken in the current Proposal?

Frame Misordering:
Multicast Messages and Unicast Message (to non-power saving stations) may arrive in reverse order.

From 802.1D (MAC Bridges):
"The service provided by the MAC Sublayer does not permit the reordering of frames transmitted with a given user priority"

From 802.11-93/20b2, Paragraph 7.2.1.5. :
"All Broadcast/Multicast frames shall be buffered", and
"Frames destined to stations in the CAM or TAM mode shall be directly transmitted"
Example of problem

- Event Report (Mcast)
- Event Report (Mcast)
- Event Handling
- Handling Ack (ucast)
- ????????
What's out of the Scope of 802.11?

Extreme Low Power Stations

Not Necessarily Wireless LAN Problem.
Real solution is Application Specific ("proxy approach")
What Could be done better?

Not Power Management Algorithm for non Power efficient Protocol, but Power efficient Protocol!

SPM Proposal

Use NAV for Turning off receiver.

Paradoxically: Efficient for high traffic, inefficient when low traffic.

Rough Numbers:

Fully loaded (400 byte long packets), receiver off for 500 out of 3500 microsec. (87.5 %)

For (1500 byte long): 96%
Trivial Solution

Let one station (Probably the AP on infrastructure mode) "sacrifice" and transmit "dummy RTS", when no traffic (no pending tx, larger IFS).
SPM Solution

New Control Packet: PSS - Power Saving Start.

- Contains "Duration" field.
- Indicates No traffic will be sent to PS stations during the "duration" period.
- Any node willing to transmit to non-power-saving stations is allowed to transmit.
- Stations are allowed to transmit packets with To_AP bit set.

This mechanism allows Power Saving Stations to turn off the receiver up to 80% of the time.
Motion 1:

Accept the SPM proposal, and add it to the Draft Standard.
Motion:

Remove existing Power Saving Mechanism from the Draft Standard.