IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| LB168\_MAC\_Handover\_SFS\_CID\_Resolution | | | | |
| Date: 2010-11-07 | | | | |
| Author(s): | | | | |
| Name | Company | Address | Phone | email |
| James Yee | MediaTek |  |  | james.yee@mediatek.com |
| ChaoChun Wang | MediaTek |  |  | chaochunwang@mediatek.com |

Abstract

This document proposes resoltions to comments on Draft 1.0 of TGad classified as MAC commnets.

# PHY related Comments

All resolution are based on D1.0

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 341 | 282 | 4 | T | Lets say that there is temporary human blockage between the PCP and implicit candidate PCP. After i blocked beacons the i/c PCP sends a beacon. More especially for devices with a few sectors only, this transmission could collide with the original PCP's beacon at third parties. Two PBSSs (using the same BSSID?) (both optionally offering forwarding service) are colocated - troubling. Over time, the chance of a collision accumulates. Further, when the blockage disappears, the collisions are worse and there seems to be no protocol mechanism for the second PCP to recognise the problem, transfer all its members to the old PCP, and quit operation. Basically, I have grave concerns about the robustness of this procedure. Wireless is erratic: although there can be hard loss of link (device is powered off), and persistent loss of link (device leaves the house), there can also be marginal/time-varying loss-of-link (depending on the instantaneous angle of the smartphone that is changing continuously, 2 devices may be in range, or not.) The protocol needs to behave gracefully in all circumstances | a) Before replacing the PCP, need a higher bar to prove that the PCP has actually disappeared, especially if there are more than 2 devices in the PBSS. Perhaps add a request/response exchange to other PBSS members, and/or a "bugger off" message by the PCP (or another PBSS member); b) transmtting a "BTT" directly on top of a maybe-not-disappeared "BTT" is too unsafe - e.g. introduce a clustering-like offset to use |

Proposed Resolution: **Reject**.

**Discussion:**

The implicit handover is never meant to be fool proof. It is a best effort attempt to maintain the operation of a BSS when the PCP has been deemed AWOL.

While the possibility of an accidental temporary disappearance of the PCP exists, and indeed one can construct a scenario to false-trigger an implicit handover, that will remain true no matter how many additional ‘checks’ and ‘proofs’ are added. An additional req/rsp with another member may also fail due to a temporary blockage. There are situations where the cost of a flase implicit handover is too high that it should not be used.

But, if the current PCP decides that it may go AWOL (e.g., portable device running out of battery), then we believe the current threshold for determining the AWOL-ness of a PCP (i.e., based on dot11ImplicitHandoverLostBeacons) is a sufficiently high threshold.

If the PCP goes down before explicit handover, the failure of implicit handover does not make the situation worse. Also, the next candidate must wait (i \* 2 dot11ImplicitHandoverLostBeacons) beacon intervals before taking over. The "ranking + waiting time" provide a mechanism for collision avoidance. The algorithm will work as long as the transient interference is shorter than (i \* 2 dot11ImplicitHandoverLostBeacons) beacon intervals.

As for the suggestion of moving the BTT, since all mSTAs will continue to operate according to the same SP allocation as received from the last good beacon, sending beacon at TBTT + offset may cause problems for other mSTAs.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 342 | 282 | 4 | T | AFAIK, the BSSID of the PBSS after handover is unspecified: a) Define this explicitly; b) If the BSSID is unchanged, if the PCP hasn't gone / has been blocked, we have two PBSSs with the same BSSID in the same region - very unsafe | Carefully define the BSSID behavior after handover |

Proposed Resolution: **Reject**.

**Discussion:**

The beacon sent by the candidate PCP shall carry the same BSSID of the PBSS.

Let’s assume the following worst case occurs.

A candidate PCP fails to receive (i \* 2 dot11ImplicitHandoverLostBeacons) beacon sends a beacon at TBTT and the beacon collides with the beacon sent by the current PCP.

The candidate PCP should be aware of the collision by noticing that there are no responses to any of the polling/request frames. By inferring that collision occurs, the candidate PCP shall bakoff from implicit handover.

For current PCP, the effect of beacon collision is the same as noise interfering with the beacon transmission.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1064 | 286 | 9 | T | "STA is spatial sharing capable." - this condition is not unambiguously defined. | Reference OTA signalling or mib variables for this condition. |

Proposed Resolution: **Reject**.

The statement just before this paragraph on P286L5 “The SSH and Interference Mitigation field in the mmWave Capabilities element indicates whether a STA supports spatial sharing” seems sufficiently clear.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ~~1065~~ | ~~286~~ | ~~29~~ | ~~T~~ | ~~"only after the STAs have beamformed with each other." - how does it know?~~ | ~~Indicate how the PCP/AP knows this, i.e. that two of its STA have completed beamforming together.~~ |

~~Proposed Resolution:~~ **~~Agree in Principle~~**~~.~~

~~TBD.~~

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1066 | 288 | 25 | T | "The PCP/AP shall transmit a Directional Channel Quality Request to each spatial sharing capable STA involved in a Time-Overlapped and existing SP scheduled under spatial sharing" - when should it do this? | Either specify when this should happen (making it testable), or weaken the normative statement. |

Proposed Resolution: **Agree in Principle**.

A mib variable will be defined to indicate the minimum time before the overlapping SPs by which the Directional Channel Quality Request shall be transmitted.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 376 | 289 | 13 | T | Nothing wrong with "Should minimize schedule changes" but it is uselessly weak | Sigh. Add extra hardening mechanisms - design for success |

Proposed Resolution: **Reject**.

This is implementation specific regarding the scheduling algorithm. Agree that it is weak, but it is a worthy reminder.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 378 | 289 | 16 | T | Nothing wrong with this, but then you have interference changes when the angle of a handheld device, traffic variability leading to schedule variability etc, so this is not a strong technique | Sigh. Add extra hardening mechanisms - design for success |

Proposed Resolution: **Reject**.

This is implementation specific regarding the scheduling algorithm. Agree that it is weak, but it is a worthy reminder.