Lightweight Mesh Point – A confusing term

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Please see http://802wirelessworld.com for the original version in PowerPoint format.

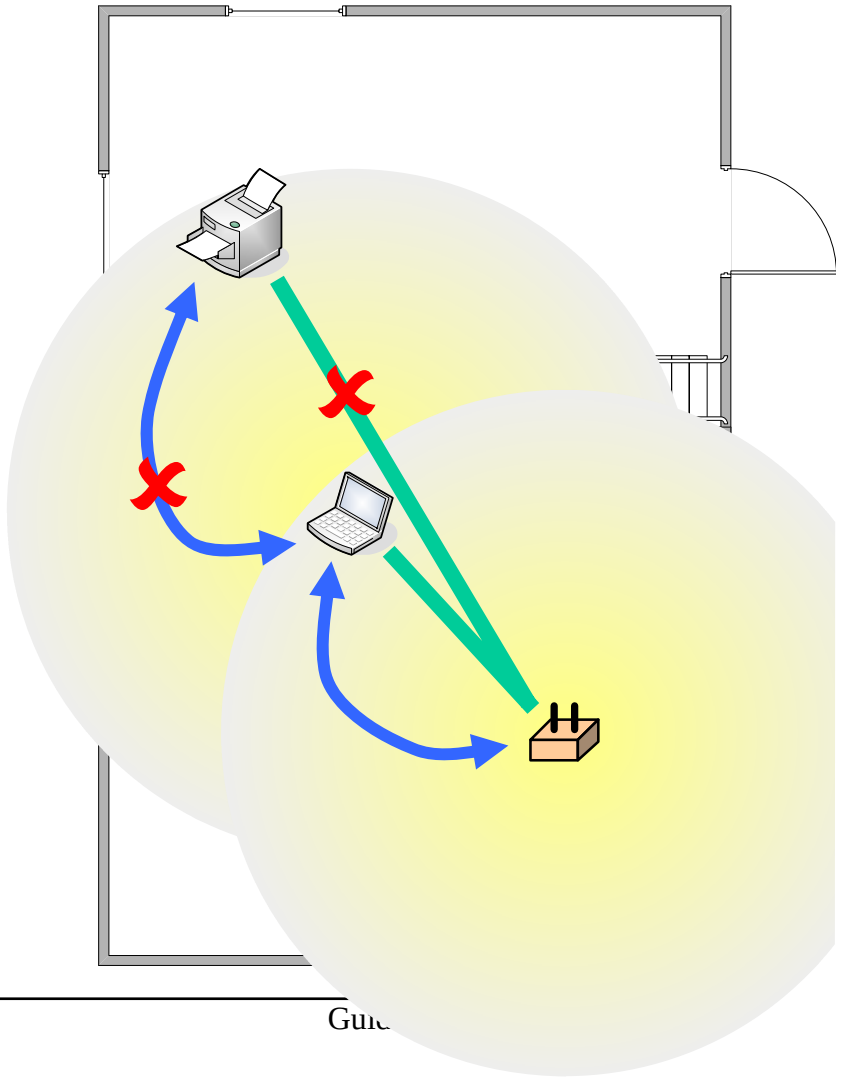
Abstract

The term “Lightweight Mesh Point” is defined in draft 0.02 of IEEE 802.11s. It describes an entity that neither forwards traffic nor participates in the formation of the Mesh WLAN. In the recent months, the term has been confusing to people that are not familiar with the concept. This presentation describes the differences between an 802.11 STA, an 802.11s MP and an 802.11s LW-MP.

The presentation concludes with the request to clarify the functionality of the entity “Lightweight Mesh Point.”

What is the idea of a Lightweight Mesh Point (LW-MP)?

- Without “LW-MP” capability no communication even if in range
- “LW-MP” capability enables communication to any device in range
- Convenient for customers
- Meet expectations
- No forwarding capabilities at LW-MP needed



How is a Lightweight Mesh Point (LW-MP) defined?

5.4.7.2.1 Lightweight mesh point operation

These are the minimal functionality mesh points. They do not use or provide distribution system (DS) and congestion control services, [...] Thus, they are able to communicate only with their neighbors [...] This indicates to neighbors that these MPs are unable to provide DS services. The choice of not using the DS service does not require any modification to mesh services specification.

5.4.7.2.2 Support for Power Saving Devices in a WLAN Mesh

[...] Lightweight MPs communicate with neighbors without association. [...]

11A.13 Power Management in a Mesh (Optional) [...]

11A.13.1 Basic approach

[...] Alternatively, a lightweight MP may associate with a MAP as a simple STA if it intends to enter PS mode.

11A.12.2.1 Beaconing by unsynchronizing MPs

[...] Unsynchronizing MAPs shall treat any [...] neighboring LW-MPs operating in PS mode identical to STA [...]

11A.12.2.2 Beaconing by synchronizing MPs

[...] A LW-MP [...] may opt not to beacon [...]

What is a 802.11 Station (STA)?

- **Source or Destination of traffic**
- **Never forwards traffic**
- **Never uses 4-address scheme**
- **Never uses "11_2" as "To/From DS" bits**
- **Does not send beacon frames in infrastructure mode**
- **Sends beacon frames in IBSS mode**
- **Does not provide association service**
- **Does not authenticate other devices**

What is a 802.11s Mesh Point (MP)?

- **Forwards traffic**
- **Uses 4-address scheme**
- **Uses all combinations of "To/From DS" bits**
- **MP can be co-located with STA**
  - (Then also) MP can be Source or Destination of traffic
- **Sends beacon frames**
- **May provide association service when MP and AP co-located**
- **Works as 802.11i authenticator for joining MPs**

What is a 802.11s Lightweight Mesh Point (LW-MP)?

- **Source or Destination of traffic**
- **Never forwards traffic**
- **Never uses 4-address scheme**
- **Uses "11_2" as "To/From DS" bits**
- **May choose not to send beacon frames**

LW-MPs do not forward but are MPs?

- **In its current form, the entity termed as "Lightweight Mesh Point (LW-MP)" is not clearly differentiated from normal "Mesh Point (MP)" capability**
  - No Path Selection & Frame Forwarding
  - No Participation in WLAN Mesh formation
  - No Route set-up, maintenance & discovery
- **Thus, the term LW-MP is confusing**

→ Different WLAN Mesh related entities such as MP and LW-MP should be more clearly differentiated with respect to functionality

Motion

- **Move to instruct the IEEE 802.11s editor to adopt the changes to P802.11s/D0.02 provided in submission "11-06-1103-02-000s-clarification-ieee-802-11s-entity-classes.doc".**
- **Moved by:**
- **Second by:**
- **Result (Yes/No/Abstain):**

References

- IEEE 802.11s Draft 0.02
- IEEE 802.11 Standard
- D. Engwer, “"WDS" Clarifications,” IEEE, Submission 802.11-05/0710r0, July 2005