802.11s mesh powersaving for linux

Scope

- Implement non-realtime powersaving features of 802.11s draft:
  - powersaving level indication;
  - traffic buffering for sleeping peers;
  - TIM/DTIM in beacons;
  - peer service period;
- Provide powersaving level control on MSTA/peer link basis;
- Provide peer link control;

Approach

Enhance current in-kernel 802.11s implementation:

- powersaving scheme proposed by 802.11s draft closely resemble AP-based scheme (traffic buffering/TIM/DTIM), so this code may be reused;
- powersaving level indication (both peer and non-peer)/mesh awake window attributes need to be added;
- wakeup for peer beacon reception may be implemented later, now it's enough to stay awake continuously and just calculate whether station would actually hear the frames that it receives;
- peer service period logic need to be added, it's a simple state machine;

Testing may be carried out with mac80211_hwsim driver.

What's to be done

- MSTA power mode tracking (11C.13.3);
- each peering power mode tracking (11C.13.4);
- TIM/DTIM in beacons (11C.13.5-6) – ieee80211_beacon_get_tim;
- mesh awake window (11C.13.7);
- wake-up scheduling for peer beacons (optional);
- ps-poll requests and responses (?);
- service period tracking (11C.13.10);
- frame buffering for doze peers – ieee80211_tx_h_multicast_ps_buf, ieee80211_tx_h_unicast_ps_buf;
- user interface controls – like nl80211_set_power_save;

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http://wiki.osll.ru/doku.php/etc:users:jcmvbkbc:mesh-power

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