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Slide 1

Why DTBS?

- **Foundation protocol proposal defined the optional PCF to support Time Bounded.**
  - **Limitation due to PCF overlap problems.**
  - **Roaming problems for TBS.**
  - **This limits larger installations.**
  - **Relevant for current and future frequency bands.**
    - » **high speed in 1.9 GHz PCS band.**
    - » **high speed in potential 5.2 GHz band (HIPERLAN).**
- **Adhoc + Infrastructure**
- **Alternative for reservation based "Time Bounded" Service needed.**
- **Solution: Distributed Time Bounded Service (DTBS) using priority access mechanism.**

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Required characteristics:

- **"Best effort delivery service".**
- **No overlap limitations between the *Asynchronous* and *DTBS* service.**
- **Low transfer delay for all priority levels to support "Bursty" traffic.**
- **Low transfer delay probability distribution for High Priority traffic.**
- **Maximum delay limit for DTBS acceptable to support Voice applications.(for 1-2 Mbps)**
  - **20-30 msec frame times seem feasible.**
  - **longer delays acceptable for local connections.**
- **Low impact on *"Low Priority only"* delay and throughput characteristics.**

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DTBS History:

Motion adopted in March:

To add a "*Distributed Time Bounded*" service functionality to the Foundation MAC and to determine by the end of the May meeting whether one or both of the TBS's will remain in the standard.

- **Result of May meeting (ratified on monday)**
  - DTBS is selected to support Time Bounded Services, and decided to delete the original Contention Free TBS from the draft.

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Questions addressed in May meeting:

- **Should we support one or both TBS methods in the draft standard.**
  - **Position:**   Only DTBS

- **Should the priority mechanism be optional?**
  - **Position:**   No, the priority should be considered a fixed part of the non-optional DCF.

- **Should DTBS be an optional or standard service?**
  - **Position:**   Optional (no change)

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Basic Medium Access Mechanism:
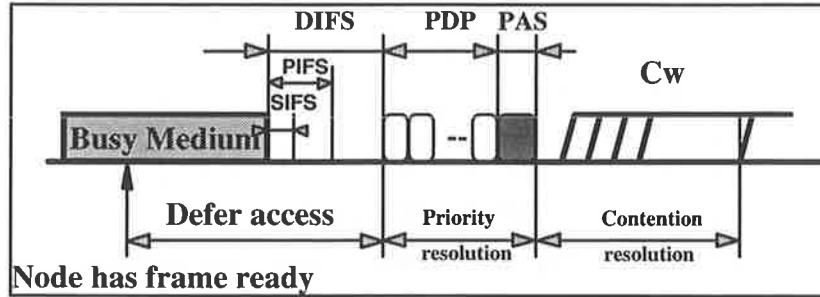
- **Channel Access Mechansm is split into two parts**
  - **Priority resolution** (using active signalling)
  - **Contention resolution** (not changed)

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Physical Requirements:
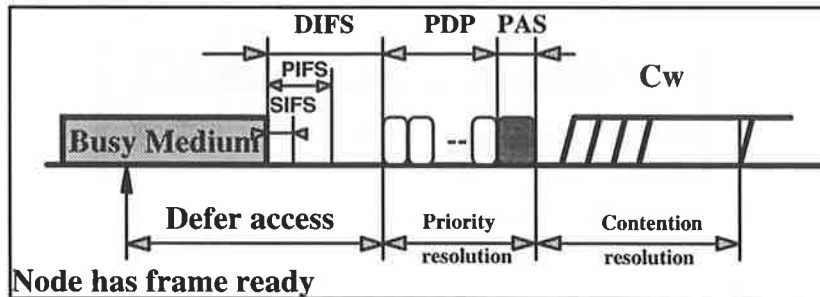
- **Active signalling is one pulse**
  - **Lowest priority does not need to send the PaS.**
  - **All stations need to be able to detect the PaS.**
  - **PaS detection of multiple overlapping sources, so may impact CCA detection strategy.**
- **PaS duration depends on synchronization tolerance**

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Minimum comformance level:
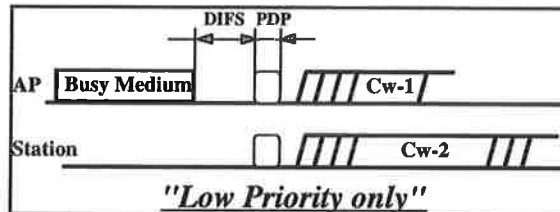
- "Low Priority only" implementations are possible.
  - They do not need PaS generation capability.
  - But they do need PaS detection capability.
- "Low Priority only" is very similar to current Foundation behaviour.
  - No PaS generation required but detection facility is mandatory.

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PaS and PDP duration:
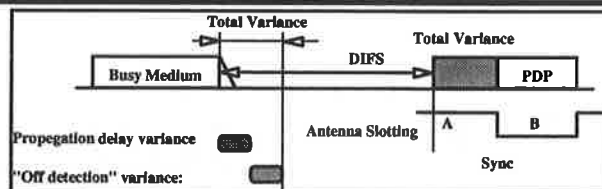
- Duration depends on:
  - "Busy Medium " -off detection tolerance.
  - Medium propagation delay.
  - Energy/signal detect time.
    » Only single antenna measurement may be acceptable.
- Antenna slotting synchronization will help decrease tolerances.
- PaS detection may effect CCA method.
  - Multiple PaS signals will overlap

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PHY and Interface aspects:

- **What is needed to Xmit a PaS?**
  - – PaS can use the normal modulation and signal level.
  - – Suggest it to be the first part of the PHY-preamble.
  - – MAC Controls the duration of this signal by turning PHY TX on and off using the normal TX interface.
- **Receiver requirements.**
  - – CCA indication can be used to signal PaS detection.
  - – Detection timing can be the same.
- **Detection reliability.**
  - – Lower Reliability of detection of multiple overlapping PaS signals from different sources is not catastrophic and can be acceptable (degradation is gracefull).
  - – MAC can contain provisions to reduce "False Alarm" impact.

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Motion adopted by the MAC:

- **Move:**

That 802.11 should adopt the "Priority based DCF" proposal as documented in 94/150.

Vote in MAC subgroup: 16/11/8

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Questions to the PHY subgroup:

- Can the PHY's support the "Active Priority Signalling" accepted in the MAC subgroup.

- What is the expected timing (per PHY) for:
  - CCA detection
  - PaS detection (if difference)
  - Expected "Medium Busy-off" detection tolerance.