MAC-PHY INTERFACE CHOICES

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This is summary of an ad-hoc presentation made at the May 1992 PHY group meeting, discussing the choices for MAC-PHY interface with added considerations involved with the choices.

1. Introduction

Various aspects of designing the PHY-MAC interface are presented briefly. Further information will be provided in an upcoming presentation.

2. Philosophy

The PHY-MAC interface design should be made as simple as possible, to minimize the number of interface lines between the two while allowing for multiple different PHYs to operate with the same MAC design.

3. Functional requirements

The following presents a summary of the 802.11 functional requirements relevant to the MAC PHY interface.

SERVICE DEFINITION:

1. The MAC should be able to support multiple different PHYs (not at the same time).

2. The MAC should support the access to the wireless channel.

3. Same PHY to be utilized in nodes as well as in Access Points (AP).

4. Data Rates: as defined in order to support graceful service degradation and provide connectivity for critical situations.

4. Classes of options / signals

Control functions

- RX-on/off
- TX on/off
- Send data to PHY
- Send Data to MAC
- Frequency (channel) Information (FH or DS)
- Next hop
- Power level
- Data Rate (fallback?)
- Jabber
- Sleep mode (?)

Status Information:

- TX signal OK
- RX signal quality (?BER)
- Lock
- Signal level (RX)
- Channel signal present (CD)
- Signal quality
- PHY type/configuration
- Tx. signal level (?)
- Synthesizer Lock
- Synchronization info
- Self test OK.

Management Info:

- Standard SNMP agents (?)
- Channel availability
- PHY type/configuration

Other factors for further consideration:

- Routing decisions (dir. ant or node to node path)
- Relaying decisions
- Modulation parameters
- Diversity

5. How much intelligence to put in PHY ?

The extremes are lying between basic and primitive functionality to sophisticated and complex functionality. The trade offs are to be made based on cost complexity and commonality required by one MAC in order to operate with different PHYs. Functions that are specific to a particular type of PHY or functions performed independent of MAC have to be handled by the PHY only. Functions in which the MAC is the decision maker have to be handled by MAC. Optional functions in the PHY have to be controlled in the PHY. Functions that are joint to the PHY and MAC can be placed in either place and are to be decided based upon optimization criterias.

6. Models of PHY-MAC Interfaces

To be presented at a future meeting.

7. Net Management Interface:

Could be made directly to an 802 type management layer or handled through the MAC.

8. Issues that require resolution:

Handling of dynamic changes (roaming, hand-off).

Handling of Diversity switching

Handling of Intelligent options.