IEEE P802.11
802 LAN Access Method for Wireless Physical Medium

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TITLE: **ACCESS PROTOCOL FOR IVD WIRELESS LAN--PART II**

AUTHOR: Chandos A. Rypinski,
Chief Technical Officer
LACE, Inc.
921 Transport Way
Petaluma, California 94954 USA

Telephone: 707 765 9627
Facsimile: 707 762 5328

SUMMARY

Work continues on the previous contribution of the same title (P802.11/91-19 last revised 2-21-91) which retroactively becomes Part I of a series. A short summary of the main changes and current Message/Field List is given, and it is intended that a revised and updated document will be prepared for a later meeting.

The main purposes of the changes now reported are provisions for a system identifier and for multiple channel and site operation as might be obtained either by frequency or time division or code set separation with direct sequence spread spectrum modulation.

Table of Contents

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SUMMARY

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DESCRIPTION OF CHANGES

A number of purposes have been served by the changes listed as follows:

1. The new fields used are as follows:

SYS	=	system identifier	1 octet
CHL	=	code/channel identifier	4 bits
PWR	=	station power level set	4 bits
CNN	=	connection/session no.	4 bits
SGN	=	segment counter/circuit status	8 bits

2. The definitions of packet data frames have been adjusted so that Packets or the first segment or a segmented packet use long address in one message type and segments always use short address in another message type for access-point originate. Packet and segment data frames are different types in station-originate messages both using short address.

3. Invitation-to-request has added the channel identifier on which the message will be transferred if a Request is received. This is primarily to reduce the time in which the setup channel is occupied by moving Grant to a data transfer channel, while still allowing an in-range peer station to hear the peer Request message knowing on which channel it will be transferred.

4. The N-channel Power Set message has been created to give the Access-point the capacity to preset a Station to required values to receive a message on a data transfer channel. There are a few other circumstances in which the message is useful.

5. It is assumed that a Station could maintain more than one simultaneous connection which would make the short address ambiguous as a segment label. This is resolved with a CNN field.

6. Nack and Nack Repeat are merged to open a type for the Set message.

7. Poll and Invitation-to-register are merged. The invitation is marked by a null destination address. The Invitation-to-register function is deleted from the Invitation-to-request message.

8. The new fields have been added in the messages where they are appropriate and useful.

9. An effort has been made to regularize the length of messages and the position of fields in the different messages so that in most cases they occur at the same point. Where this condition cannot be met, then they are in the same sequence. To a small degree position regularity and brevity of message cannot be achieved at the same time.

10. The Grant message contains the CHL and PWR fields so that it can be sent on the setup channel to enable Segments to be sent on the allotted data transfer channel.

TABLE I -- ACRONYM DEFINITION

ACRONYM		DEFINITION	LENGTH IN BITS
API	=	access-point identifier	4
CHL	=	assigned channel identifier	4
CNN	=	connection number identifier	4
CRC	=	cyclic redundancy check	4 or 16
DA	=	destination address	either 16 or 64
DIR	=	direction bit and	
		1st digit of message type identifier	1
ED	=	end delimiter using 7-bit Barker	7
LEN	=	length of PDU in octets (see note)	12
NUL	=	null--no assigned meaning	
PDU	=	packet data unit (payload)	from 0 to 288 octets
PRE	=	preamble	15
PWR	=	power set command	4
SA	=	source address	either 16 or 64
SD	=	start delimiter using 7-bit Barker	7
SGN	=	segment counter/circuit status	8
SID	=	service type identifier	4
SYS	=	system identifier	8
TYP	=	2nd and 3rd digits of message type identifier	4

FIELDS AND ACRONYMS

Message frames are divided into fields, one of which may be a variable length data payload. Some of the fields are necessarily passed in and out of the physical layer.

The acronyms for these fields are listed and defined in Table I above. Further detail on some of these is given below.

Preamble and Delimiters

The preamble pattern is chosen to facilitate bit clock acquisition after which the 7-bit Barker or start delimiting can be recognized. The end delimiter is an inverted 7-bit Barker which backs up the primary delimiting by the LEN field.

Address Fields

Long addresses are generally used. The short address is local and internal, and is used for labeling of segments for long packets and virtual circuits. CNN is used to identify multiple simultaneous connections at one Station.

The long address is 8 octets even though the LAN global address is defined as only 6 octets. Telecom global addressing, as defined in the CCITT E.164 is 15 decimal digits coded BCD (60 bits). In the IEEE 802.6 integrated voice data Wide Area Network standard, both of these types of addresses are enclosed in an 8 octet field with 4 bits used for differentiation and detail definition. The allocation for long address in this access protocol exactly emulates this developing standard practice. The added two octets in the long address is a specific accommodation of global addressing in voice data integration.

Identifiers

The source of the signal is given for the access-point in the API field which is repeated back by the Station in setup messages. The API is a location identifier within a pattern.

The SYS field is a further system identifier which is used when independently managed systems have overlapping radio coverage. One system will generally ignore received transmissions that do not have the correct SYS field.

The service type identifier, SID, marks Request messages for connection-type services or datagrams.

MESSAGE FORMATS

Message formats using these fields are shown in Table II following. AO and SO indicate Access-point originate or System-originate.

TABLE II - ME AGE FRAME FORMATS WITH FIELD ASSIGN NTS

PACKET DIRECTION/TYPE AND FUNCTION DESCRIPTION FIELDS USED										Message Length
As noted	1	2	3	4	5	6	7	8	9	
001 AO	**Segment data frame--short address**									10+PDU
PRE(15)	SD(7) DIR(1)	TYP(4)	CNN(4)	DA(16)	SGN(8)					
PDU 0-288 octs	CRC-16(16)			ED(7)						
003 AO	**Packet data frame--long address**									25+PDU
PRE(15)	SD(7) DIR(1)	TYP(4)	API(4)							
DA(64)										
SA(64)	SID(4) LEN(12)									
PDU 0-288 octs	CRC-16 (16)			ED (7)						
005 AO	**Invitation-to-request**									8
PRE (15)	SD(7) DIR(1)	TYP(4)	API(4)	SYS(8)	NUL (8)	CHL(4)	NUL(4)	ED(7)		
007 AO	**Poll or invitation-to-register**									8
PRE(15)	SD(7) DIR(1)	TYP(4)	API(4)	DA(16)	SYS(8)		ED(7)			
009 AO	**Set Channel-N or Code-N or PWR**									8
PRE(15)	SD(7) DIR(1)	TYP(4)	API(4)	DA(16)	CHL(4)	PWR(4)	ED(7)			
011 AO	**Ack**									8
PRE(15)	SD(7) DIR(1)	TYP(4)	API(4)	DA(16)	CHL(4)	PWR(4)	ED(7)			
013 AO	**Nack-repeat**									8
PRE(15)	SD(7) DIR(1)	TYP(4)	API(4)	DA(16)	CHL(4)	PWR(4)	ED(7)			
015 AO	**Grant** (DA=requesting station)									9
PRE(15)	SD(7) DIR(1)	TYP(4)	API(4)	DA(16)	CHL(4)	PWR(4)	CNN(4)	CRC(4)	SGN(8)	ED (7)
100 SO	**Segment data frame--short address**									10+PDU
PRE(15)	SD(7) DIR(1)	TYP(4)	CNN(4)	DA(16)	SGN(8)					
PDU 0-288 octs	CRC-16(16)			ED (7)						
102 SO	**Register**									13
PRE(15)	SD(7) DIR(1)	TYP(4)	API(4)							
SA(64)	ED(7)									
104 SO	**De-register**									13
PRE(15)	SD(7) DIR(1)	TYP(4)	API(4)							
SA(64)	ED (7)									
106 SO	**Request--short address**									11
PRE(15)	SD(7) DIR(1)	TYP(4)	CNN(4)	DA (16)	SA (16)			SID(4)	LEN(12)	ED (7)
108 SO	**Request--long address**									23
PRE(15)	SD(7) DIR(1)	TYP(4)	CNN(4)							
DA(64)										
SA(64)	SID(4) LEN (12)			ED (7)						
110 SO	**Ack**									7
PRE(15)	SD(7) DIR(1)	TYP(4)	API(4)	SA (16)	ED (7)					
112 SO	**Nack**									7
PRE(15)	SD(7) DIR(1)	TYP(4)	API(4)	SA (16)	ED (7)					
114 SO	**Packet data frame**									10+PDU
PRE(15)	SD(7) DIR(1)	TYP(4)	CNN(4)	DA (16)	SGN(8)					
PDU 0-288 octs	CRC-16 (16)			ED (7)						