IEEE P802.11
Wireless LANs

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| Clause 6 – Is it serving any real purpose?  |
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Abstract

Look at Clause 6 -

Rev 1 – After first presentation

Rev 2 - A proposal

**Background:**

In writing some proposed new text, I realized I needed to add text to Clause 6. I then went through the “boiler plate” routine of writing 3 descriptions for each Request, plus the Response.

I then noticed that Clause 6 consumes 434 pages MORE THAN Clause 11 (398 pages) !!!

Boy, this must be good stuff, thinks I… then I realized that what I am adding, in fact, has no real value that I can see.

Hence, I gave myself the task of looking into this Clause further.

I am informed that it all comes from ITU-T X,210 dated 11/1993, in particular Clauses 6 and 7.

Anyhow, let’s look at what Clause 6 itself says.

6.1. Overview

First some acronyms:

SME – Station management entity

MLME – MAC sublayer management entity

PLME – PHY layer management entity

SAP – Service Access Point

The SME “talks” via SME-MLME SAP

**6.2 Generic management primitives**

This deals with MIBs and is

XX-GET to request the value of a MIBattribute

XX-SET to to request a MIB attribute is set to a given value.

Sequence is

XX-GET.request

XX-GET.confirm (success?)

XX-SET.request

XX-SET.confirm

**6.3 MLME SAP interface**

“These services are described in an abstract way…and do not imply any particular implementation….

MLME SAP primitives are of the general form

* ACTION.request primitive,
	+ Initiates request for a procedure
* ACTION.confirm primitive (for an exchange initiated by the SAP client)
	+ Reports result of request (success?)
* ACTION.indication primitive
	+ Result of receipt of request for procedure
* ACTION.response primitive (for an exchange initiated by the MLME)
	+ Initiate transmission of the requested procedure

Let’s look at “Associate”6.3.7. as example:

MLME-ASSOCIATE.request

**The primitive parameters number 27**. All described in detail, but (hopefully) the same as in table in the Association Request frame format. What’s new?

Now let’s look at the frame Association Request frame 9.3.3.5 **I see 45 fields in the framebody**

This is explained as follows:

*Additional parameters needed to perform the association procedure are not included in the primitive parameter list since the MLME already has that data (maintained as internal state)*

OK, but is this list checked and confirmed? I guess it is. But who makes that decision? For example, “Supported Channels” is present, but “Capabilities” and “Extended Capabilites” are not. What does it mean that the MLME already knows? The services *do not imply any particular implementation* so is this independent on implementation as to where certain parameters reside?

Then we have next the:

MLME-ASSOCIATE.confirm

Repeat the same 27 parameters as a list and then in detail in a Table, with STATUS.

Then we have next the:

MLME-ASSOCIATE.indication

Repeat the same 27 parameters as a list and then in detail in a Table.

Then we have the

MLME-ASSOCIATE.response

This is **not the Association Response**, it is the response to the MAC entity that ordered it. Again the list of parameters plus a “Result Code”.

**So I now ask, “where is the Association Request? Does the MAC see to that all on its own?**

Look at all the information in the tables (all 4 of them). Anything new?

**18 pages in all for Association Request !!!**

**Repeat this for Reassociation Request.**

**What about “responses” that provide information? Why does “Measurement Report” only have request and confirm?**

Am informed that MLME-SCAN is useful, but we have 11.1.4.3.2 Active Scanning procedure for a mon-DMG STA and 11.1.4.3.3 for DMG. Is this not good enough?

I am struggling to see why we have both Clause 6 and Clause 11. Clause 11 is readable.

**ARE OTHERS CONCERNED**

I would like to see if there is any support for the direction I am moving in.

I am not an expert in this ISO primitive stuff, so if it is essential for an 802.11 programmer, then OK, but I would then say that the “rules” need to be much better explained such that ordinary folk, such as myself, have a good idea of what to write in this Clause – because I am struggling and all I am proposing is pretty standard Action frame exchanges.

STRAW POLL

Would you agree that Clause 6.3 needs to be investigated as to:

1. Usefullness
2. Better clarification on how it is used (i.e., clear rules)
3. Accuracy
4. Possible obsolesence

Meeting Dec 2, 2021:

Nowhere else do we refer to users of the protocol, or interact with .11

What do we really need to say, clearly, so it can serve its intended purpose (are we clear what the intention is?)

Is there some basic requirement as to an 802 spec rules as to what is included – what follows what? Do other standards do this? Is it ISO requirement?

Condense approach? Boiler plate macro?

Does anyone actually refer to it or use it? Ask?

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**I looked 802.15.4 Low Rate Wireless Networks (Zigbee )**

5.6.3 MAC Layer sublayer

The MAC sublayer provides two services: the MAC data service and the MAC management service interfacing to the MAC sublayer management entity (MLME) service access point (SAP) (known as MLME-SAP). The MAC data service enables the transmission and reception of MAC protocol data units (MPDUs) across the PHY data service.

The features of the MAC sublayer are beacon management, channel access, guaranteed timeslot (GTS) management, frame validation, acknowledged frame delivery, association, and disassociation. In addition, the MAC sublayer provides hooks for implementing application-appropriate security mechanisms.

Not easy but tried to search for references to Clause 6 in the main text. Not that many, I think about 30, but looking at the cites I suggest that we discuss these and see how essential they are. The big point is that the references to Clause 6 are minute compared to the amount of text therein.

**D1.0**

**6.3 MLME SAP interface**

**6.3.1 Introduction**

The services provided by the MLME to the SME are specified in this subclause. These services are described in an abstract way (following the model described in ITU-T Recommendation X.210 [B55]) and do not imply any particular implementation or exposed interface.

**MLME SAP primitives are of the general form ACTION.request primitive followed by ACTION.confirm primitive (for an exchange initiated by the SAP client) and ACTION.indication primitive followed by ACTION.response primitive (for an exchange initiated by the MLME). The SME uses the services provided by the MLME through the MLME SAP**.

PROPOSAL

ONLY LIST MLMEs THAT ARE “BASIC ACTIONS”. I.E. DO NOT LIST ‘SIMPLE’ REQUEST//RESPONSE EXCHANGES WHERE THE CONTENTS ARE IDENTIICAL TO THE FRAME CONTENTS.

Then we need a statement to cover all the rest along the lines of existing, but explaining why the above are detailed.

**“MLME SAP primitives are of the general form ACTION.request primitive followed by ACTION.confirm primitive (for an exchange initiated by the SAP client) and ACTION.indication primitive followed by ACTION.response primitive (for an exchange initiated by the MLME). The SME uses the services provided by the MLME through the MLME SAP.**

**ACTION.request primitives are detailed in this clause when they do not directly correspond to frame described in Clause 9, or where the primitive parameters significantly differ.**

**Hence, first short list might be:**

6.3.2 MLME-POWERMGT

6.3.3 MLME SCAN

6.3.4 MLME JOIN (synchromization)

6.3.5 MLME AUTHENTICATE

6.3.6 MLME DEAUTHENICATE

6.3.7 MLME ASSOCIATE

6.3.8 MLME REASSOCIATE

6.3.9 MLME DISASSOCIATE

6.3.10 MLME RESET

6.3.11 MLME START

6.3.12 MLME STOP

QUESTION? IS 6.3.13 Protocol layer model in the right place?

6.3.19 MLME-SETKEYS

**Then, that’s it.**

**D10.3.1 DCF General P2085.42**

All non-DMG STAs that are members of a BSS are able to receive and transmit at all of the data rates in the BSSBasicRateSet parameter of the MLME-START.request primitive or BSSBasicRateSet parameter of the SelectedBSS parameter of the MLME-JOIN.request primitive; see 6.3.4.2.4 (Effect of receipt) and 6.3.11.2.4 (Effect of receipt).

*Comment – OK*

P2086.4

All DMG STAs that are members of a BSS are able to receive and transmit using all of the MCSs in the OperationalRateSet parameter of the MLME-START.request primitive or OperationalRateSet parameter of the SelectedBSS parameter of the MLME-JOIN.request primitive; see 6.3.4.2.4 (Effect of receipt) and

6.3.11.2.4 (Effect of receipt).

*Comment: OK.*

**11.1.4.3.4 - Critreria for sending a response P2673.51**

A FILS STA shall not respond to a Probe Request frame if….

7) If the OUI Response Criteria field is present in the FILS Request Parameters element and if any of the OUIs specified by the OUI Response Criteria field are not in the list of known OUIs configured in the AP (see Known OUIs, 6.3.5.2.2 (Semantics of the service primitive)).

*Comment – I can’t find Known OUIs in 6.3.5.2.2. But I do find it in 6.3.11.2.2 START. The list of “Known OUIs” only appears at the cited place and in START (where it refers to “defined in 9.4.1.31 (Organization Identifier field)”).*

*But OK if corrected.*

**11.1.4.5. Synchronizing with a BSS P2683.63**

In addition to adopting the synchronization parameters as described in the first paragraph of this subclause, a STA joining an IBSS shall adopt each of the parameters found in the SelectedBSS parameter of the MLMEJOIN.request primitive according to the rule found for that parameter in the “IBSS adoption” column of the matching row of the BSSDescription table found in 6.3.3.3.2 (Semantics of the service primitive) when those parameters exist at the STA.

*Comment - OK*

P2684.7

In addition to the table entries in 6.3.3.3.2 (Semantics of the service primitive), if dot11MultiDomainCapabilityActivated is true, a STA that is joining an IBSS and receives a Beacon or Probe Response frame containing a Country element shall adopt the applicable parameters included in that Country element, and the dot11RegDomainsSupportedEntry shall be set to Other.

*Comment - OK*

2713.12

To prevent key reinstallation attacks, a non-AP STA in which dot11WNMSleepModeActivated is true shall maintain a copy of the most recent GTK, most recent IGTK and most recent BIGTK installed when exiting WNM sleep mode and shall not install a GTK, IGTK or BIGTK when the key to be set upon exiting WNM sleep mode matches either of the two maintained keys (see 6.3.19 (SetKeys)).

*Comment – OK*

2767.13

The contents of the TSPEC or DMG TSPEC field, TCLAS element(s) (if present), TCLAS Processing element (if present), and ResultCode field contain values specified in 6.3.25.5.2 (Semantics of the service primitive).

*Comment – Need to look at “TS Management interface” Does it need to be detailed in 6.3? ADDTS,, DELTS, ADDTRESERVE – Did this,all the same.*

MLME-ADDTS.request (

DialogToken,

TSPEC,

TCLAS,

TCLASProcessing,

U-APSD Coexistence,

EBR,

IntraAccessCategoryPriority,

HigherLayerStreamID,

STAAddress,

DMG TSPEC,

CMMG TSPEC,

Multi-band,

U-PID,

MMS,

VendorSpecificInfo

**This is same as ADDTS Request frame 9.6.3.2.1**

**P2767.13 – Proposed change**

The contents of the TSPEC or DMG TSPEC field, TCLAS element(s) (if present), TCLAS Processing element (if present), and ResultCode field contain values specified in ADDTS, DELTS and Request frames.

**11.21.5 Timing Measurement procedure P2889/1**

See Figure 6-16 (Timing measurement primitives and timestamps capture) in 6.3.55 (Timing measurement).

*Comment – Pretty sure the promitves are common, but should the Figure be here? Is it any different to FIG 11-37? Suggest this can be sorted out.*

Replace with “See FIG 11-37.”

2889.11

The offset of the clock at the receiving STA with respect to the clock at the sending STA is calculated usingEquation (11-4) (assuming a symmetric wireless channel). See Figure 6-16 (Timing measurement primitives and timestamps capture) in 6.3.55 (Timing measurement).

*Comment – Same as previous*

**11.24.2.2 QMF policy change in an infrastructure BSS or in an MBSS P2965.14**

The SME of a peer QMF STA uses the MLME-QMFPOLICY primitives (see 6.3.81.2 (MLMEQMFPOLICY.request) to 6.3.81.3 (MLME-QMFPOLICY.indication)) to transmit a QMF Policy frame to a peer STA.

Comment – QMF Policy frame 9.6.7.18, same primitives.

Could leave it, without any references OR simply replace references with Clauise 9.

2965.21

The SME of a peer QMF STA uses the MLME-QMFPOLICYCHANGE primitives (see 6.3.81.4 (MLMEQMFPOLICYCHANGE. request) to 6.3.81.7 (MLME-QMFPOLICYCHANGE.response)) to exchange the QMF Policy Change and QMF Policy frames.

*Comment – Same as previous*

2965.21

The SME of a peer QMF STA uses the MLME-QMFPOLICYCHANGE primitives (see 6.3.81.4 (MLMEQMFPOLICYCHANGE. request) to 6.3.81.7 (MLME-QMFPOLICYCHANGE.response)) to exchange the QMF Policy Change and QMF Policy frames.

*Comment – Same as previous*

**11.31.5 On-channel Tunneling (OCT) operation P3009.9**

Figure 11-57 (On-channel tunneling procedure) depicts the overall OCT procedure. In this figure, <primitive> refers to the name of any of the MLME primitives defined in 6.3 (MLME SAP interface) that meets all of the following conditions:

*Comment – I think this is OK. Maybe we use the same wordage elsewhere?*

**12.7.1.4 Group key hierarchy P3196.60**

The IGTK is configured via the MLME-SETKEYS.request primitive; see 6.3.19 (SetKeys). IGTK configuration is described in the EAPOL-Key state machines; see 12.7.9 (RSNA Supplicant key management state machine) and 12.7.10 (RSNA Authenticator key management state machine).

*Comment - OK*

**12.7.1.7 Beacon protection key hierarchy P3203.56**

The BIGTK is configured via the MLME-SETKEYS.request primitive; see 6.3.19 (SetKeys). The BIGTK configuration is described in the EAPOL-Key state machines; see 12.7.9 (RSNA Supplicant key management state machine) and 12.7.10 (RSNA Authenticator key management state machine).

*Comment - OK*

3204.11

The WIGTK is configured via the MLME-SETKEYS.request primitive; see 6.3.19 (SetKeys). The WIGTK configuration is described in the EAPOL-Key state machines;

*Comment - OK*