Knobs, Dials and Sliders

- or -

the Management Information Base

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Abstract: A description of the structure and definition of the Management Information Base is presented in the format defined in ISO 10165-4, Guideline for the Definition of Managed Objects.

Action: Adopt motion the contents of this submission as partial definition of the MIB and place it in the draft standard.
1. Management Information Definitions

1.1. MIB Summary

The following sections summarize the 802.11 Management Information Base (MIB). Each group, attribute, action and notification is listed. This summary is for information purposes only. If any errors exist, the formal definitions have precedence.

1.1.1. Station Management Attributes

1.1.1.1. agStation_Config_grp

- aActing_as_AP_Status,
- aAssociated_State,
- aBeacon_Period,
- aPower_Mgt_State,
- aPower_Mgt_Capability;

1.1.1.2. agAuthentication_grp

- aAuthentication_Algorithms,
- aSelected_Authentication_Algorithm,
- aAuthentication_Handshake_State,
- aAuthentication_State,
- aMin_Authentication_Required;

1.1.1.3. agPrivacy_grp

- aPrivacy_Algorithms,
- aSelected_Privacy_Algorithm,
- aPrivacy_Handshake_State,
- aPrivacy_State,
- aMin_Privacy_Required;

1.1.1.4. Not Grouped

- aStation_ID
- aCurrent_BSS_ID
- aCurrent_ESS_ID
- aKnown_APs

1.1.2. MAC Attributes

1.1.2.1. agAddress_grp

- aMAC_Address,
- aGroup_Addresses;

1.1.2.2. agOperation_grp

- aNAV,
aNAV_max,
Rate_Factor,
Handshake_Overhead,
SIFS,
PIFS,
DIFS,
RTS_Threshold,
Slot_Time,
CW_max,
CW_min,
CTS_Time,
ACK_Time,
Retry_max,
Max_Frame_Length;

1.1.2.3. agCounters_grp

Transmitted_Frame_Count,
Octets_Transmitted_Count,
Multicast_Transmitted_Frame_Count,
Broadcast_Transmitted_Frame_Count,
Failed_Count,
Collision_Count,
Single_Collision_Count,
Multiple_Collision_Count,
Received_Frame_Count,
Octets_Received_Count,
Multicast_Received_Count,
Broadcast_Received_Count,
Error_Count,
FCS_Error_Count,
Length_Mismatch_Count,
Frame_Too_Long_Count,
Total_Backoff_Time;

1.1.2.4. agStatus_grp

MAC_Enable_Status,
Transmit_Enable_Status,
Promiscuous_Status;

1.1.2.5. Not Grouped

Manufacturer_ID
Product_ID
1.1.3. PHY Attributes
1.1.3.1. agConfig_grp
1.1.3.2. agOperation_grp
1.1.3.3. agError_Counters_grp
1.1.3.4. agBER_grp
1.1.3.5. agstatus_grp

1.1.4. ResourceTypeID Attributes
1.1.4.1. Not Grouped
   aResourceTypeIDName
   aResourceInfo

1.1.5. Actions
1.1.5.1. SMT Actions
   acStation_init
   acStation_reset

1.1.5.2. MAC Actions
   acMAC_init
   acMAC_reset

1.1.5.3. PHY Actions
   acPHY_init
   acPHY_reset

1.1.6. Notifications
1.1.6.1. SMT Notifications
   nAssociate
   nDissociate

1.1.6.2. MAC Notifications
   nFrame_Error_Rate_Exceeded

1.1.6.3. PHY Notifications
   nBER_Exceeded
1.2. Managed Object Class Templates

1.2.1. SMT Object Class

1.2.1.1. oSMT

SMT MANAGED OBJECT CLASS
DERIVED FROM "ISO/IEC 10165-2":top;
CHARACTERIZED BY
pSMT_base

PACKAGE

BEHAVIOUR

Defined as "The SMT object class provides the necessary support at the station to manage the processes in the station such that the station may work cooperatively as a part of an 802.11 network."

ATTRIBUTES

aStation_ID
aActing_as_AP_Status
aCurrent_AP_MAC_Address
aCurrent_BSS_ID
aCurrent_ESS_ID
aKnown_APs
aAuthentication_Algorithms
aPrivacy_Algorithms
aSelected_Authentication_Algorithm
aSelected_Privacy_Algorithm
aAuthentication_Handshake_State
aPrivacy_Handshake_State
aAuthentication_State
aPrivacy_State
aMin_Authentication_Required
aMin_Privacy_Required
aAssociated_State
aBeacon_Period
aPower_Mgt_State
aPower_Mgt_Capability

ATTRIBUTE GROUPS

agStation_Config_grp,
agAuthentication_grp,
agPrivacy_grp;

ACTIONS

acSMT_init,
acSMT_reset;

NOTIFICATIONS

nAssociate,
nDissociate;

REGISTERED AS { iso(1) member-body(2) us(840) ieee802dot11(xxxx) smt(0) };

1.2.2. MAC Object Class

1.2.2.1. oMAC

MAC MANAGED OBJECT CLASS
DERIVED FROM "ISO/IEC 10165-2":top;
CHARACTERIZED BY
   pMAC_base

BEHAVIOUR

bMAC_base BEHAVIOUR

DEFINED AS "The MAC object class provides the necessary support for the access
control, generation and verification of frame check sequences, and proper delivery of
valid data to upper layers."

ATTRIBUTES

aMAC_Address       GET,
aGroup_Addresses   GET-REPLACE,
aPromiscuous_Status     GET,
aTransmitted_Frame_Count GET-REPLACE,
aOctets_Transmitted_Count GET-REPLACE,
aMulticast_Transmitted_Frame_Count GET-REPLACE,
aBroadcast_Frame_Count   GET-REPLACE,
aFailed_Count          GET-REPLACE,
aCollision_Count       GET-REPLACE,
aSingle_Collision_Count GET-REPLACE,
aMultiple_Collision_Count GET-REPLACE,
aReceived_Frame_Count   GET-REPLACE,
aOctets_Received_Count  GET-REPLACE,
aMulticast_Received_Frame_Count GET-REPLACE,
aBroadcast_Received_Frame_Count GET-REPLACE,
aError_Count           GET-REPLACE,
aFCS_Error_Count       GET-REPLACE,
aLength_Mismatch_Count  GET-REPLACE,
aFrame_Too_Long_Count   GET-REPLACE,
aMAC_Enable_Status     GET,
aTransmit_Enable_Status GET,
NAV                   GET,
aNAV_max               GET,
aRate_Factor           GET,
aHandshake_Overhead    GET,
aSIFS                  GET,
aPIFS                  GET,
aDIFS                  GET,
aRTS_Threshold         GET-REPLACE,
aTotal_Backoff_Time    GET-REPLACE,
aSlot_Time             GET,
CW_max                 GET-REPLACE,
aCW_min                GET-REPLACE,
aCTS_Time              GET,
aACK_Time              GET,
aRetry_max             GET-REPLACE,
aMax_Frame_Length      GET,
aManufacturer_ID       GET,
aProduct_ID            GET;

ATTRIBUTE GROUPS

agCapabilities_grp,
agConfig_grp,
agAddress_grp,
agOperation_grp,
agCounters_grp,
1.2.3.PHY Object Class

1.2.3.1. oPHY

PHY MANAGED OBJECT CLASS
DERIVED FROM "ISO/IEC 10165-2":top;
CHARACTERIZED BY

ATTRIBUTES
aPHY_Type
aPHY_Data_Rate
aChannel_Capability
aCurrent_Channel
aChannel_List
aDiversity_Capability
aBER_Estimate
aPHY_Turnaround_Time
aManufacturer_ID
aProduct_ID

ATTRIBUTE GROUPS
agConfig_grp,
tagOperation_grp,
tagBER_grp,
tagStatus_grp;

ACTIONS
acPHY_init,
acPHY_reset;

NOTIFICATIONS
nBER_Exceeded;

REGISTERED AS { iso(1) member-body(2) us(840) ieee802dot11(xxxx) phy(2) ];

1.2.4.Resource Type Object Class

1.2.4.1. oResourceTypeID

ResourceTypeID MANAGED OBJECT CLASS
DERIVED FROM IEEE802CommonDefinitions.oResourceTypeID;
CHARACTERIZED BY

ATTRIBUTES
aResourceTypeIDName

ATTRIBUTE GROUPS

ACTIONS

NOTIFICATIONS
nBER_Exceeded;

REGISTERED AS { iso(1) member-body(2) us(840) ieee802dot11(xxxx) phy(2) ];
aResourceInfo
GET;
REGISTERED AS { iso(1) member-body(2) us(840) ieee802dot11(xxx) resourcetypeid(3) };
1.3. Attribute Group Templates

1.3.1. Station Management Attribute Group Templates

1.3.1.1. agStation_Config_grp

Station_Config_grp ATTRIBUTE GROUP
GROUP ELEMENTS
    aActing_as_AP_Status,
    aAssociated_State,
    aBeacon_Period,
    aPower_Mgt_State,
    aPower_Mgt_Capability;
REGISTERED AS { iso(1) member-body(2) us(840) ieee802dot11(xxxx) smt(0) station_config_grp(0) };

1.3.1.2. agAuthentication_grp

Authentication_grp ATTRIBUTE GROUP
GROUP ELEMENTS
    aAuthentication_Algortihms,
    aSelected_Authentication_Algorithm,
    aAuthentication_Handshake_State,
    aAuthentication_State,
    aMin_Authentication_Required;
REGISTERED AS { iso(1) member-body(2) us(840) ieee802dot11(xxxx) smt(0) authentication_grp(1) };

1.3.1.3. agPrivacy_grp

Privacy_grp ATTRIBUTE GROUP
GROUP ELEMENTS
    aPrivacy_Algortihms,
    aSelected_Privacy_Algorithm,
    aPrivacy_Handshake_State,
    aPrivacy_State,
    aMin_Privacy_Required;
REGISTERED AS { iso(1) member-body(2) us(840) ieee802dot11(xxxx) smt(0) privacy_grp(2) };

1.3.2. MAC Attribute Group Templates

1.3.2.1. agAddress_grp

Address_grp ATTRIBUTE GROUP
GROUP ELEMENTS
    aMAC_Address,
    aGroup_Addresses;
REGISTERED AS { iso(1) member-body(2) us(840) ieee802dot11(xxxx) smt(0) address_grp(0) };

1.3.2.2. agOperation_grp

Operation_grp ATTRIBUTE GROUP
GROUP ELEMENTS
    aNAV,
    aNAV_max,
    aRate_Factor,
aHandshake_Overhead,
aSIFS,
aPIFS,
aDIFS,
aRTS_Threshold,
aSlot_Time,
aCW_max,
aCW_min,
aCTS_Time,
aACK_Time,
aRetry_max,
aMax_Frame_Length;

REGISTERED AS { iso(1) member-body(2) us(840) ieee802dot11(xxxx) mac(0) operation_grp(1) };

1.3.2.3. agCounters_grp

Counters_grp ATTRIBUTE GROUP
GROUP ELEMENTS
aTransmitted_Frame_Count,
aOctets_Transmitted_Count,
aMulticast_Transmitted_Frame_Count,
aBroadcast_Transmitted_Frame_Count,
failed_Count,
Collision_Count,
Single_Collision_Count,
Multiple_Collision_Count,
Received_Frame_Count,
Octets_Received_Count,
Multicast_Received_Count,
Broadcast_Received_Count,
Error_Count,
FCS_Error_Count,
Length_Mismatch_Count,
Frame_Too_Long_Count,
Total_Backoff_Time;

REGISTERED AS { iso(1) member-body(2) us(840) ieee802dot11(xxxx) mac(0) counters_grp(2) };

1.3.2.4. agStatus_grp

Status_grp ATTRIBUTE GROUP
GROUP ELEMENTS
MAC_Enable_Status,
Transmit_Enable_Status,
Promiscuous_Status;

REGISTERED AS { iso(1) member-body(2) us(840) ieee802dot11(xxxx) mac(0) status_grp(3) };

1.3.3. PHY Attribute Group Templates

1.3.3.1. agConfig_grp

Config_grp ATTRIBUTE GROUP
GROUP ELEMENTS
a;

REGISTERED AS { iso(1) member-body(2) us(840) ieee802dot11(xxxx) phy(0) config_grp(0) };
1.3.3.2. agOperation_grp
Operation_grp ATTRIBUTE GROUP
   GROUP ELEMENTS
   a;
   REGISTERED AS { iso(1) member-body(2) us(840) ieee802dot11(xxxx) phy(0) operation grp(1) };

1.3.3.3. agError_Counters_grp
Error_Counters_grp ATTRIBUTE GROUP
   GROUP ELEMENTS
   a;
   REGISTERED AS { iso(1) member-body(2) us(840) ieee802dot11(xxxx) phy(0) error_counters_grp(2) };

1.3.3.4. agBER_grp
BER_grp ATTRIBUTE GROUP
   GROUP ELEMENTS
   a;
   REGISTERED AS { iso(1) member-body(2) us(840) ieee802dot11(xxxx) phy(0) BER_grp(3) };

1.3.3.5. agStatus_grp
Status_grp ATTRIBUTE GROUP
   GROUP ELEMENTS
   a;
   REGISTERED AS { iso(1) member-body(2) us(840) ieee802dot11(xxxx) phy(0) status_grp(4) };
1.4. Attribute Templates

1.4.1. SMT Attribute Templates

1.4.1.1. aStation_ID

Station_ID ATTRIBUTE
DERIVED FROM
IEEE802CommonDefinitions.MACAddress;
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) SMT(0) attribute(7) station_id(0) };

1.4.1.2. aActing_as_AP_Status

Acting_as_AP_Status ATTRIBUTE
WITH APPROPRIATE SYNTAX
boolean;
BEHAVIOUR DEFINED AS
"True if this station is acting as an access point, false otherwise.";
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) SMT(0) attribute(7) acting_as_ap_status(4) };

1.4.1.3. aCurrent_AP_MAC_Address

Current_AP_MAC_Address ATTRIBUTE
DERIVED FROM
IEEE802CommonDefinitions.MACAddress;
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) SMT(0) attribute(7) ap_address(5) };

1.4.1.4. aCurrent_BSS_ID

Current_BSS_ID ATTRIBUTE
WITH APPROPRIATE SYNTAX
integer;
BEHAVIOUR DEFINED AS
"This attribute shall identify the basic service set (BSS) with which the station is currently associated."
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) SMT(0) attribute(7) current_bss_id(6) };

1.4.1.5. aCurrent_ESS_ID

Current_ESS_ID ATTRIBUTE
WITH APPROPRIATE SYNTAX
integer;
BEHAVIOUR DEFINED AS
"This attribute shall identify the extended service set (ESS) with which the station is associated, if any."
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) SMT(0) attribute(7) current_ess_id(7) };

1.4.1.6. aKnown_APs

Known_APs ATTRIBUTE
WITH APPROPRIATE SYNTAX
set-of AP_ID.type;
[ BOB- A sequence of 32 data structures that including the MAC address, BSS_ID, ESS_ID, signal strength, age, detach reason, BER + history, FER + history, Missed beacons, "cost" ]
and PHY specific information required to identify the most recent 32 access points encountered. This data type needs to be defined in the ASN.1]

BEHAVIOUR DEFINED AS
"This attribute shall be a set of the identities of the most recently known Access Points. The Access Point with which the station is currently associated, if any, shall always be the first element of the set. Access Points may be included in this list even if the station did not associate with them.";
REGISTERED AS
{ iso(1) member-body(2) us(S40) ieee802dot11(xxxx) SMT(0) attribute(7) known_aps(8) };

1.4.1.7. aAuthentication_Algorithms

Authentication_Algorithms ATTRIBUTE
WITH APPROPRIATE SYNTAX
set-of integer;
BEHAVIOUR DEFINED AS
"This attribute shall be a set of all the authentication algorithms supported by the stations. The values of the numbers in the list are as defined in IEEE Standard 802.10.");
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) SMT(0) attribute(7) authentication_algorithms(9) };

1.4.1.8. aPrivacy_Algorithms

Privacy_Algorithms ATTRIBUTE
WITH APPROPRIATE SYNTAX
set-of integer;
BEHAVIOUR DEFINED AS
"This attribute shall be a set all of the privacy algorithms supported by the stations. The values of the numbers in the list are as defined in IEEE Standard 802.10.");
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) SMT(0) attribute(7) privacy_algorithms(10) };

1.4.1.9. aSelected_Authentication_Algorithm

Selected_Authentication_Algorithm ATTRIBUTE
WITH APPROPRIATE SYNTAX
integer;
BEHAVIOUR DEFINED AS
"This attribute shall indicate the authentication algorithm identifier selected during the authentication negotiation. The value of this attribute shall be selected from the set in the aAuthentication_Algorithms attribute. The value of this attribute shall reference one of the authentication algorithm identifiers defined in IEEE Standard 802.10.");
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) SMT(0) attribute(7) selected_authentication_algorithm(11) };

1.4.1.10. aSelected_Privacy_Algorithm

Selected_Privacy_Algorithm ATTRIBUTE
WITH APPROPRIATE SYNTAX
integer;
BEHAVIOUR DEFINED AS
"This attribute shall indicate the privacy algorithm identifier selected during the privacy negotiation. The value of this attribute shall be selected from the set in the aPrivacy_Algorithms attribute. The value of this attribute shall reference one of the privacy algorithm identifiers defined in IEEE Standard 802.10.");
REGISTERED AS
1.4.1.11. aAuthentication_Handshake_State

Authentication_Handshake_State ATTRIBUTE
WITH APPROPRIATE SYNTAX
   authentication_handshake.type;

[BOB: this data type needs to be defined in the ASN.1 to enumerate the handshake states in the authentication process.]

BEHAVIOUR DEFINED AS
   "This attribute shall identify the current state of the station in the authentication process."
REGISTERED AS
   { iso(1) member-body(2) us(840) ieee802dot11(xxxx) SMT(0) attribute(7)
     authentication_handshake_state(13) };

1.4.1.12. aPrivacy_Handshake_State

Privacy_Handshake_State ATTRIBUTE
WITH APPROPRIATE SYNTAX
   privacy_handshake.type;

[BOB: this data type needs to be defined in the ASN.1 to enumerate the handshake states in the privacy process.]

BEHAVIOUR DEFINED AS
   "This attribute shall identify the current state of the station in the privacy negotiation process."
REGISTERED AS
   { iso(1) member-body(2) us(840) ieee802dot11(xxxx) SMT(0) attribute(7)
     privacy_handshake_state(14) };

1.4.1.13. aAuthentication_State

Authentication_State ATTRIBUTE
WITH APPROPRIATE SYNTAX
   authentication_state.type;

[BOB: this data type needs to be defined in the ASN.1]

BEHAVIOUR DEFINED AS
   "This attribute shall indicate the authentication state."
[BOB: between what?]
REGISTERED AS
   { iso(1) member-body(2) us(840) ieee802dot11(xxxx) SMT(0) attribute(7)
     authentication_state(15) };

1.4.1.14. aPrivacy_State

Privacy_State ATTRIBUTE
WITH APPROPRIATE SYNTAX
   privacy_state.type;

[BOB: this one needs to be defined as well.]

BEHAVIOUR DEFINED AS
   "This attribute shall indicate the current privacy state."
REGISTERED AS
   { iso(1) member-body(2) us(840) ieee802dot11(xxxx) SMT(0) attribute(7)
     privacy_state(16) };
1.4.1.15. aMin_Authentication_Required

Min_Authentication_Required ATTRIBUTE
WITH APPROPRIATE SYNTAX
  Authentication_Required.type;

[BOB: this type needs to be defined in the ASN.1. Should be an enumerated type with none, me, you, both]

BEHAVIOUR DEFINED AS

; REGISTERED AS
  { iso(1) member-body(2) us(480) ieee802dot11(xxxx) SMT(0) attribute(7) min_authentication_required(17) };

1.4.1.16. aMin_Privacy_Required

Min_Privacy_Required ATTRIBUTE
WITH APPROPRIATE SYNTAX
  Privacy_Required.type;

[BOB: this data type needs to be defined in the ASN.1. Should be an enumerated type with none, me, you, both]

BEHAVIOUR DEFINED AS

; REGISTERED AS
  { iso(1) member-body(2) us(480) ieee802dot11(xxxx) SMT(0) attribute(7) min_privacy_required(18) };

1.4.1.17. aAssociated_State

Associated_State ATTRIBUTE
WITH APPROPRIATE SYNTAX
  Associated_State.type;

[BOB: this data type needs to be defined in the ASN.1.]

BEHAVIOUR DEFINED AS

; REGISTERED AS
  { iso(1) member-body(2) us(480) ieee802dot11(xxxx) SMT(0) attribute(7) associated_state(19) };

1.4.1.18. aBeacon_Period

Beacon_Period ATTRIBUTE
WITH APPROPRIATE SYNTAX
  integer;
BEHAVIOUR
  "The beacon period shall indicate the time, in nanoseconds, between the transmission of beacon frames if the station is acting as an Access Point. If the station is not an Access Point but is associated with one, the beacon period shall indicate the time, in nanoseconds, between the expected arrival of beacon frames. If the station is not an Access Point and is not associated with one, the beacon period shall indicate the time, in nanoseconds, between the transmission of beacon frames."

REGISTERED AS
  { iso(1) member-body(2) us(480) ieee802dot11(xxxx) SMT(0) attribute(7) beacon_period(20) };

1.4.1.19. aPower_Mgt_State

Power_Mgt_State ATTRIBUTE
WITH APPROPRIATE SYNTAX
Power_Mgt_State.type;

[This attribute needs an enumerated data type that includes all possible power management states. It must be defined in the ASN.1 - Bob]

BEHAVIOUR DEFINED AS
"An enumerated type that describes the current power management state of the station."
REGISTERED AS
{ iso(1) member-body(2) us(840) iee802dot11(xxxx) SMT(0) attribute(7) power_mgt_state(21) }

1.4.20. aPower_Mgt_Capability

Power_Mgt_Capability ATTRIBUTE
WITH APPROPRIATE SYNTAX
set of Power_Mgt_State.type;
BEHAVIOUR DEFINED AS
"An enumerated type that describes all the possible power management states of which the station is capable."
REGISTERED AS
{ iso(1) member-body(2) us(840) iee802dot11(xxxx) SMT(0) attribute(7) power_mgt_capability(22) }

1.4.2. MAC Attribute Templates

1.4.2.1. aMAC_Address

MAC_Address ATTRIBUTE
DERIVED FROM
IEEE802CommonDefinitions.MACAddress;
REGISTERED AS
{ iso(1) member-body(2) us(840) iee802dot11(xxxx) MAC(1) attribute(7) mac_address(0) }

1.4.2.2. aGroup_Addresses

Group_Addresses ATTRIBUTE
WITH APPROPRIATE SYNTAX
set of IEEE802CommonDefinitions.MACAddress;
BEHAVIOUR DEFINED AS
"A set of xxx MAC_Addresses identifying the multicast addresses for which this station will receive frames."
REGISTERED AS
{ iso(1) member-body(2) us(840) iee802dot11(xxxx) MAC(1) attribute(7) group_addresses(1) }

1.4.2.3. aPromiscuous_Status

Promiscuous_Status ATTRIBUTE
WITH APPROPRIATE SYNTAX
boolean;
BEHAVIOUR DEFINED AS
"This attribute is true when the station is enabled to receive all frames promiscuously. It is false otherwise."
REGISTERED AS
{ iso(1) member-body(2) us(840) iee802dot11(xxxx) MAC(1) attribute(7) promiscuous_status(2) }

1.4.2.4. aTransmitted_Frame_Count

Transmitted_Frame_Count ATTRIBUTE
DERIVED FROM
"ISO/IEC 10165-2":pdusSentCounter;
REGISTERED AS
{ iso(1) member-body(2) us(840) iee802dot11(xxxx) MAC(1) attribute(7)
  transmitted_frame_count(3) }

1.4.2.5. aOctets_Transmitted_Count

Octets_Transmitted_Count ATTRIBUTE
DERIVED FROM
"ISO/IEC 10165-2":octetsSentCounter;
REGISTERED AS
{ iso(1) member-body(2) us(840) iee802dot11(xxxx) MAC(1) attribute(7)
  octets_transmitted_count(4) }

1.4.2.6. aMulticast_Transmitted_Frame_Count

Multicast_Transmitted_Frame_Count ATTRIBUTE
DERIVED FROM
"ISO/IEC 10165-2":pdusSentCounter;
BEHAVIOUR DEFINED AS
"This counter shall increment only when the multicast/broadcast bit is set in the destination MAC
address and the destination MAC address is not the broadcast address."
REGISTERED AS
{ iso(1) member-body(2) us(840) iee802dot11(xxxx) MAC(1) attribute(7)
  multicast_transmitted_frame_count(5) }

1.4.2.7. aBroadcast_Transmitted_Frame_Count

Broadcast_Transmitted_Frame_Count ATTRIBUTE
DERIVED FROM
"ISO/IEC 10165-2":pdusSentCounter;
BEHAVIOUR DEFINED AS
"This counter shall increment only when the destination MAC address is the broadcast address."
REGISTERED AS
{ iso(1) member-body(2) us(840) iee802dot11(xxxx) MAC(1) attribute(7)
  broadcast_transmitted_frame_count(6) }

1.4.2.8. aFailed_Count

Failed_Count ATTRIBUTE
DERIVED FROM
"ISO/IEC 10165-2":counter;
BEHAVIOUR DEFINED AS
"This counter shall increment when a frame is not transmitted due to the number of transmit attempts
exceeding the retry_max value."
REGISTERED AS
{ iso(1) member-body(2) us(840) iee802dot11(xxxx) MAC(1) attribute(7)
  failed_count(7) }

1.4.2.9. aCollision_count

Collision_count ATTRIBUTE
DERIVED FROM;
"ISO/IEC 10165-2":counter
BEHAVIOUR DEFINED AS
"This counter shall increment when a collision is detected."
REGISTERED AS
{ iso(1) member-body(2) us(840) iee802dot11(xxxx) MAC(1) attribute(7) collision_count(8) }

1.4.2.10. aSingle_Collision_Count

Single_Collision_Count ATTRIBUTE
DERIVED FROM
"ISO/IEC 10165-2":counter;

BEHAVIOUR DEFINED AS
"This counter shall increment when a frame is successfully transmitted after a single collision."

REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) single_collision_count(9) }

1.4.2.11. aMultiple_Collision_Count

Multiple_Collision_Count ATTRIBUTE
DERIVED FROM
"ISO/IEC 10165-2":counter;

BEHAVIOUR DEFINED AS
"This counter shall increment when a frame is successfully transmitted after more than one collision."

REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) multiple_collision_count(10) }

1.4.2.12. aReceived_Frame_Count

Received_Frame_Count ATTRIBUTE
DERIVED FROM
"ISO/IEC 10165-2":pdusReceivedCounter;

REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) received_frame_count(11) }

1.4.2.13. aOctets_Received_Count

Octets_Received_Count ATTRIBUTE
DERIVED FROM
"ISO/IEC 10165-2":octetsReceivedCounter;

REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) octets_received_count(12) }

1.4.2.14. aMulticast_Received_Frame_Count

Multicast_Received_Frame_Count ATTRIBUTE
DERIVED FROM
"ISO/IEC 10165-2":pdusReceivedCounter;

BEHAVIOUR DEFINED AS
"This counter shall increment when a frame is received with the multicast/broadcast bit set in the
destination MAC address, the destination MAC address is not the broadcast address and the destination
address is in the set of Group_Addresses."

REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) multicast_received_frame_count(13) }

1.4.2.15. aBroadcast_Received_Frame_Count

Broadcast_Received_Frame_Count ATTRIBUTE
DERIVED FROM
"ISO/IEC 10165-2":pdusReceivedCounter;

BEHAVIOUR DEFINED AS
"This counter shall increment when a frame is received with the destination MAC address equal to the
broadcast address."

REGISTERED AS
1.4.2.16. **aError_Count**

Error_Count ATTRIBUTE
DERIVED FROM
"ISO/IEC 10165-2":corruptedPDUsReceivedCounter;
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) error_count(15) };

1.4.2.17. **aFCS_Error_Count**

FCS_Error_Count ATTRIBUTE
DERIVED FROM
"ISO/IEC 10165-2":counter;
BEHAVIOUR DEFINED AS
"This counter shall increment when an FCS error is detected in a received frame.";
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) fcs_error_count(16) };

1.4.2.18. **aLength_Mismatch_Count**

Length_Mismatch_Count ATTRIBUTE
DERIVED FROM
"ISO/IEC 10165-2":counter;
BEHAVIOUR DEFINED AS
"This counter shall increment when a frame is received and the number of bytes in the frame does not equal the value in the length field of the frame.";
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) length_mismatch_count(17) };

1.4.2.19. **aFrame_Too_Long_Count**

Frame_Too_Long_Count ATTRIBUTE
DERIVED FROM
"ISO/IEC 10165-2":counter;
BEHAVIOUR DEFINED AS
"This counter shall increment when a received frame that exceeds Max_Frame_Length is detected.";
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) frame_too_long_count(18) };

1.4.2.20. **aMAC_Enable_Status**

MAC_Enable_Status ATTRIBUTE
WITH APPROPRIATE SYNTAX
boolean;
BEHAVIOUR DEFINED AS
"This attribute is true when the MAC sublayer is enabled. It is false otherwise. Setting this attribute true causes the MAC to become operational in the idle state.";
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) mac_enable_status(19) };

1.4.2.21. **aTransmit_Enable_Status**

Transmit_Enable_Status ATTRIBUTE
WITH APPROPRIATE SYNTAX
boolean;
BEHAVIOUR DEFINED AS
"This attribute is true when transmission is enabled. It is false otherwise. Setting this attribute to true allows the MAC to transmit frames."

REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) transmit_enable_status(20) }

1.4.2.22. aNAV
NAV ATTRIBUTE
WITH APPROPRIATE SYNTAX
integer;
BEHAVIOUR DEFINED AS
"This attribute indicates the amount of time remaining that the station will consider the medium to be in use by another station. This attribute is updated whenever there is a change in the MAC network allocation vector."
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) nav(21) }

1.4.2.23. aNAV_max
NAV_max ATTRIBUTE
WITH APPROPRIATE SYNTAX
integer;
BEHAVIOUR DEFINED AS
"This is the maximum allowable value for the NAV."
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) nav_max(22) }

1.4.2.24. aRate_Factor
Rate_Factor ATTRIBUTE
WITH APPROPRIATE SYNTAX
integer;
BEHAVIOUR DEFINED AS
"This attribute indicates the current rate (in bytes per second) at which data is transferred across the medium."
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) rate_factor(23) }

1.4.2.25. aHandshake_overhead
Handshake_overhead ATTRIBUTE
WITH APPROPRIATE SYNTAX
integer;
BEHAVIOUR DEFINED AS
"This attribute is the amount of time required to complete an RTS/CTS handshake. This value, along with the Rate_Factor, may be used to determine the desirable setting of the RTS_Threshold to maximize data throughput."
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) handshake_overhead(24) }

1.4.2.26. aSIFS
SIFS ATTRIBUTE
WITH APPROPRIATE SYNTAX
integer;
BEHAVIOUR DEFINED AS
"This attribute indicates the length of the short interframe space."
1.4.2.27. aPIFS

PIFS ATTRIBUTE
WITH APPROPRIATE SYNTAX
type integer;
BEHAVIOUR DEFINED AS
"This attribute indicates the length of the priority interframe space."
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) pifs(26) };

1.4.2.28. aDIFS

DIFS ATTRIBUTE
WITH APPROPRIATE SYNTAX
type integer;
BEHAVIOUR DEFINED AS
"This attribute indicates the length of the distributed interframe space."
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) difs(27) };

1.4.2.29. aRTS_Threshold

RTS_Threshold ATTRIBUTE
WITH APPROPRIATE SYNTAX
type integer;
BEHAVIOUR DEFINED AS
"This attribute indicates the number of bytes in an MSDU, below which an RTS/CTS handshake will not be performed. An RTS/CTS handshake shall be performed for all frames where the length of the MSDU is larger than this threshold."
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) rts_threshold(28) };

1.4.2.30. aTotal_Backoff_Time

Total_Backoff_Time ATTRIBUTE
WITH APPROPRIATE SYNTAX
type integer;
BEHAVIOUR DEFINED AS
"This attribute indicates the length of time, in number of slots, the MAC has spent in a backoff condition."
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) total_backoff_time(29) };

1.4.2.31. aSlot_time

Slot_time ATTRIBUTE
WITH APPROPRIATE SYNTAX
type integer;
BEHAVIOUR DEFINED AS
"This attribute is the length of a single slot, in nanoseconds."
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) slot_time(30) };

1.4.2.32. aCW_max

CW_max ATTRIBUTE
WITH APPROPRIATE SYNTAX
integer;
BEHAVIOUR DEFINED AS
"This attribute indicates the maximum size of the contention window, in slots."
REGISTERED AS
    { iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) cw_max(31) };

1.4.2.33.  aCW_min

CW_min ATTRIBUTE
WITH APPROPRIATE SYNTAX
integer;
BEHAVIOUR DEFINED AS
"This attribute indicates the minimum size of the contention window, in slots."
REGISTERED AS
    { iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) cw_min(32) };

1.4.2.34.  aCTS_Time

CTS_Time ATTRIBUTE
WITH APPROPRIATE SYNTAX
integer;
BEHAVIOUR DEFINED AS
"This attribute indicates the length of time it takes to transmit a CTS frame."
REGISTERED AS
    { iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) cts_time(33) };

1.4.2.35.  aACK_Time

ACK_Time ATTRIBUTE
WITH APPROPRIATE SYNTAX
integer;
BEHAVIOUR DEFINED AS
"This attribute indicates the length of time it takes to transmit an ACK frame."
REGISTERED AS
    { iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) rts_time(34) };

1.4.2.36.  aRetry_max

Retry_max ATTRIBUTE
WITH APPROPRIATE SYNTAX
integer;
BEHAVIOUR DEFINED AS
"This attribute indicates the maximum number of transmission attempts that will be made before a
failure condition is indicated."
REGISTERED AS
    { iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) retry_max(35) };

1.4.2.37.  aMax_Frame_Length

Max_Frame_Length ATTRIBUTE
WITH APPROPRIATE SYNTAX
integer;
BEHAVIOUR DEFINED AS
"This attribute specifies the maximum MSDU length that will be accepted for transmission. If a frame
is received with a length that exceeds this value, a Frame_Too_Long error will be reported."
REGISTERED AS
    { iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) max_frame_length(36) };

submission  Page 22  Bob O'Hara, Advanced Micro Devices
1.4.2.38. **aManufacturer_ID**

Manufacturer_ID ATTRIBUTE
WITH APPROPRIATE SYNTAX
octet string;
BEHAVIOUR DEFINED AS
"The Manufacturer_ID shall include, at a minimum, the name of the manufacturer. It may include additional information at the manufacturer's discretion."
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) manufacturer_id(37) };

1.4.2.39. **aProduct_ID**

Product_ID ATTRIBUTE
WITH APPROPRIATE SYNTAX
octet string;
BEHAVIOUR DEFINED AS
"The Product_ID shall include, at a minimum, an identifier that is unique to the manufacturer. It may include additional information at the manufacturer's discretion."
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) MAC(1) attribute(7) product_id(38) };

1.4.3. **PHY Attribute Templates**

1.4.3.1. **aPHY_Type**

PHY_Type ATTRIBUTE
WITH APPROPRIATE SYNTAX
integer;
BEHAVIOUR DEFINED AS
"The PHY_Type shall be uniquely assigne to each different PHY."
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) PHY(1) attribute(7) phy_type(0) };

1.4.3.2. **aPHY_Data_Rate**

PHY_Data_Rate ATTRIBUTE
WITH APPROPRIATE SYNTAX
integer;
BEHAVIOUR DEFINED AS
"This attribute indicates the physical rate at which bits are transmitted by the PHY. The rate is given in bits per second."
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) PHY(1) attribute(7) phy_data_rate(1) };

1.4.3.3. **aChannel_Capability**

Channel_Capability ATTRIBUTE
WITH APPROPRIATE SYNTAX
;
BEHAVIOUR DEFINED AS
;
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) PHY(1) attribute(7) channel_capability(2) };

1.4.3.4. **aCurrent_Channel**

Current_Channel ATTRIBUTE
WITH APPROPRIATE SYNTAX
;
BEHAVIOUR DEFINED AS
;
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) PHY(1) attribute(7) current_channel(3) };

1.4.3.5. aChannel_List
Channel_List ATTRIBUTE
WITH APPROPRIATE SYNTAX
;
BEHAVIOUR DEFINED AS
;
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) PHY(1) attribute(7) channel_list(4) };

1.4.3.6. aDiversity_Capability
Diversity_Capability ATTRIBUTE
WITH APPROPRIATE SYNTAX
;
BEHAVIOUR DEFINED AS
;
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) PHY(1) attribute(7) diversity_capability(5) };

1.4.3.7. aBER_Estimate
BER_Estimate ATTRIBUTE
WITH APPROPRIATE SYNTAX
;
BEHAVIOUR DEFINED AS
;
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) PHY(1) attribute(7) ber_estimate(7) };

1.4.3.8. aPHY_Turnaround_Time
PHY_Turnaround_Time ATTRIBUTE
WITH APPROPRIATE SYNTAX
;
BEHAVIOUR DEFINED AS
;
REGISTERED AS
{ iso(1) member-body(2) us(840) ieee802dot11(xxxx) PHY(1) attribute(7) phy_turnaround_time(8) };

1.4.3.9. a(other stuff from Michael)
(other stuff from Michael) ATTRIBUTE
WITH APPROPRIATE SYNTAX
;
BEHAVIOUR DEFINED AS
;
REGISTERED AS
{ };

1.4.3.10. aManufacturer_ID
Manufacturer_ID ATTRIBUTE
WITH APPROPRIATE SYNTAX
  octet string;
BEHAVIOUR DEFINED AS
"The Manufacturer_ID shall include, at a minimum, the name of the manufacturer. It may include additional information at the manufacturer's discretion."

REGISTERED AS
{ iso(1) member-body(2) us(840) iee802dot11(xxxx) PHY(1) attribute(7) manufacturer_id(10) }

1.4.3.11. aProduct_ID

Product_ID ATTRIBUTE
WITH APPROPRIATE SYNTAX
octet string;

BEHAVIOUR DEFINED AS
"The Product_ID shall include, at a minimum, an identifier that is unique to the manufacturer and appropriate regulatory body registration information. It may include additional information at the manufacturer's discretion."

REGISTERED AS
{ iso(1) member-body(2) us(840) iee802dot11(xxxx) PHY(1) attribute(7) product_id(11) }

1.4.4. Resource Type Attribute Templates

1.4.4.1. aResourceTypeIDName

ResourceTypeIDName ATTRIBUTE
DERIVED FROM
IEEE802CommonDefinitions.ResourceTypeIDName;

REGISTERED AS
{ iso(1) member-body(2) us(840) iee802dot11(xxxx) ResourceTypeID(3) attribute(7) resourcetypeidname(0) }

1.4.4.2. aResourceInfo

ResourceInfo ATTRIBUTE
DERIVED FROM
IEEE802CommonDefinitions.ResourceInfo;

REGISTERED AS
{ iso(1) member-body(2) us(840) iee802dot11(xxxx) ResourceTypeID(3) attribute(7) resourceinfo(1) }
1.5. Action Templates

1.5.1. SMT Action Templates

1.5.1.1. aclnitialize_SMT

Initialize_SMT ACTION

1.5.2. MAC Action Templates

1.5.2.1. aclnitialize_MAC

1.5.2.2. acAdd_Group_Address

1.5.2.3. acDelete_Group_Address

1.5.2.4. acExecute_Self_Test

1.5.3. PHY Action Templates

1.5.3.1. aclnitialize_PHY

1.5.3.2. acExecute_Self_Test
1.6. Notification Templates

1.6.1. SMT Notification Templates

1.6.1.1. nAssociate

1.6.1.2. nDisassociate

1.6.2. MAC Notification Templates

1.6.2.1. nFrame_Error_Rate_Exceeded

1.6.3. PHY Notification Templates

1.6.3.1. nBER_Exceeded
1.7. ASN.1 Definitions

1.7.1. Common Definitions

1.7.2. SMT Definitions

1.7.3. MAC Definitions

1.7.4. PHY Definitions
1.8. Name Binding

1.8.1. MAC Naming

1.8.2. PHY Naming
Motion: I move that the definition of the MIB as described in this submission be adopted and placed in the draft standard.