IEEE P802.19
Wireless Coexistence

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| Comment resolution proposal for comments with CID numbers 138 and 139 |
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Abstract

This document provides proposed resolutions to comments 138 and 139 received in the 802.19.1 LB for DF3.02.

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CID number 138 comment: Message definitions are very unclear and hard to read. There are also some amount of errors and missing messages. The order of messages needs some changes.

CID number 139 comment: Data type definitions are very unclear and hard to read. The order of data types does not follow the order of messages. Some data types are missing, some do not belong to certain messages.

These comments are separated to several topics shown below. It has been agreed that the data type and message definitions are only in one place. Therefore editor can locate them to a suitable Clause. This document does not include all CID 138 or 139 related items. Those are presented in other documents.

**Topic 1:**

Geolocation data type has been defined in DF3.02 in Clause 5.3.2. Replace those parts in Clause 6.4 by Geolocation, which are related to that and remove similar type of definitions in Clause 6.5. Geo-location type information is currently defined in several ways and the purpose is to unify the expression.

Geolocation information is used in

* CMMasterSlaveCMConfigurationRequest (interface B3)
* CMMasterSlaveCMConfigurationResponse (interface B3)
* ResourceReconfigurationRequest (interface B1)
* CMAvailableChannelsRequest (interface C)
* CERegistrationRequest (interface B1)
* CMRegistrationRequest (interface B2)

**Proposed resolution:**

Use the following definition for Geolocation.

AltitudeType ::= ENUMERATED {

 meters,

 floors,

 haat

}

Coordinate ::= SEQUENCE {

 uncertainty REAL,

 coordinate REAL

}

Altitude ::= SEQUENCE {

 uncertainty REAL,

 coordinate REAL,

 type AltitudeType

}

AntennaLocationType ::= ENUMERATED {

 indoors,

 outdoors

}

Geolocation ::= SEQUENCE {

 latitude Coordinate,

 longitude Coordinate,

 altitude Altitude,

 antloc AntennaLocationType

}

**Editing instructions:**

Correct in Clause 5.3.2 parameter hagm to haat (editorial) in AltitudeType.

Replace the following parts in Clauses 6.4 and 6.5 by Geolocation: GEO\_LOC in CMMasterSlaveCMConfigurationRequest (p. 88), CMMasterSlaveCMConfigurationResponse (p. 89), ResourceReconfigurationRequest (p. 90), ReferencePointGeolocation in AggregatedInterferferenceControlParameters (p.100).

Remove data type ReferencePointGeolocation (p.100, already defined in Geolocation data type).

Replace in DiscoveryInformation “coordinate REAL, coordinateY REAL, coordinateZ REAL” by geoInfo Geolocation. (p. 93)

Remove Devicelocation in p.94 and replace DeviceLocation data type by Geolocation data type in CMAvailableChannelsRequest (p.84). Remove in CMAvailableChannelsRequest, AggrIntCntrParams (p.40 and p.95), AggregatedInterferferenceControlParameters (p.100) and in DiscoveryInformation “antennaHeight REAL” because it is included already in Geolocation.

**Topic 2:**

Antenna gain in some cases may need to give more accurate gain values in azimuth and elevation angles. Therefore the following modification is suggested.

**Proposed resolution:**

Replace in page 37

AntennaGain ::= SEQUENCE OF SEQUENCE {

 theta INTEGER,

 phi INTEGER,

 gain REAL

}

by

AntennaGain ::= SEQUENCE OF SEQUENCE {

 --Azimuth angle: N (0), E (90), S (180), W (270)

 --Elevation angle: Zenith (0), horizon (90), earth center (180)

 --azimuth angle in radians towards the (max) antenna gain

 --either in main or side lobe

 theta REAL (INTEGER for angles?),

 --elevation angle in radians towards the (max) antenna gain

 --either in main or side lobe

 phi REAL,

 --(max) antenna gain (absolute value)

 maxGain REAL,

 --3 dB beam width in radians of antenna around the azimuth angle

 -- in horizontal plane

 hBeamWidth3dB REAL

 --3 dB beam width in radians of antenna around the elevation

 -- angle in vertical plane

 vBeamWidth3dB REAL

}

**Editing instructions:**

Replace antenna gain definition in Clause 5.3.2 by a new definition

Modify in DiscoveryInformation (p.93), in AggrIntCntrParams (p.40 and p.95) and in AggregatedInterferferenceControlParameters (p.100) “antennaGain REAL” by “aGain AntennaGain”

**Topic 3:**

AggrIntCntrParams and AggregatedInterferferenceControlParameters are the same data type.

**Proposed resolution:**

Remove AggregatedInterferferenceControlParameters.

**Editing instructions:**

Remove data type AggregatedInterferferenceControlParameters in page 100 (by this name not used in any message).

**Topic 4:**

When CERegistrationRequest is sent, a WSO may either already has resources or it may just be a new one. Both of these aspects are taken into account in the message. However there is item like RadioEnvironmentInformation, which a CE is not able to generate. Therefore this has to be removed. ~~On the other hand WSO capabilities is missing~~. It would be clearer if WSO capabilities are under the one data type (NetworkCapabilities are already as a data type in CoexistenceSetElementInformationAnnouncement). See also topic 8.

Change MeasurementCapability to SEQUENCE OF MeasurementCapability

Also some algorithm related parameters like coexistenceValue is missing.

**Proposed resolution:**

Remove RadioEnvironmentInformation.

Add NetworkCapabilities data type from available parameters, correct MeasurementCapability to SEQUENCE OF MeasurementCapability and add parameter coexistence value (coexistenceValue REAL OPTIONAL).

**Editing instructions:**

Make modifications according to proposed resolution.

**Topic 5:**

CDIS does not use MeasurementCapability to anything.

**Proposed resolution:**

Remove MeasurementCapability from CMRegistrationRequest (p.81)

**Editing instructions:**

See proposed resolution.

**Topic 6:**

Within 802.19.1 coexistence system CE is the main identifier for WSO. Therefore at least it has to be included in a message when referring to WSO.

**Proposed resolution:**

Add “ceID CxID”

to CoexistenceSetInformationAnnouncement under listof~~WSO~~CE (p.81)

to CoexistenceSetInformationRequest under listof~~WSO~~CE (p.82)

to CoexistenceSetInformationResponse under listof~~WSO~~CE (p.82)

to CoexistenceReportAnnouncement under listofCoexistenceSetElement (p.83)

to CoexistenceReportResponse under listofCoexistenceSetElement (p.83)

**Editing instructions:**

See proposed resolution.

**Topic 7:**

One decision making algorithm requires parameter, which gives coexistence value, in its operation. This value has not yet been added to draft.

**Proposed resolution:**

Add “coexistenceValue REAL” to

CERegistrationRequest (p.80)

and to following parts in Clause which defines data types

ReqInfoDescr (p.96): coexistenceValue

Under ReqInfoValue in reqInfoValue (p.96): coexistenceValue REAL

EventDescr (p.99): coexistenceValue

AddInfo (p.99): coexistenceValue REAL

**Editing instructions:**

Make additions according to proposed resolution.

**Topic 8:**

Network capabilities are within some messages, but it has not been defined.

**Proposed resolution:**

NetworkCapabilities ::= SEQUENCE {

 listOfSupportedResources CHOICE {

 -- List of supported channel numbers

 listOfSuppChNumber ListOfSupportedChNumber,

 -- List of supported frequencies

 listOfSuppFrequencies ListOfSupportedFrequencies },

 *-- Minimum transmission power*

 minTxPower REAL,

 *-- Additional supported network technologies*

 addNetworkTechnology SEQUENCE OF Network Technology,

 -- Indicates whether scheduled transmission is supported

 txScheduleSupported BOOLEAN,

 -- Indicates whether network technology reconfiguration can be

 -- requested by CM

 reconfigurationSupported BOOLEAN

}

**Editing instructions:**

Add proposed resolution to Clause, which defines data types.

**Topic 9:**

Content related to Events is incomplete. Also remove those parameters to which there are no reference in the text.

**Proposed resolution:**

EventDescr ::= ENUMERATED {

 ~~sinrThresholdReached~~,

 ~~qosDegradation,~~

 misLocatedWSODetected,

 temporaryResourceRelease,

 temporaryResourceReclaim,

 measValue,

 coexistenceValue,

 …

}

AddInfo ::= CHOICE {

 misLocatedWSODetected MisLocatedWSODetectedInfo,

 temporaryResourceRelease BOOLEAN,

 operatingParameters OperatingParameters,

 measValue MeasurementReport,

 coexistenceValue REAL,

 …

}

**Editing instructions:**

Modify data types related to event indication procedure according to proposed resolution.

**Topic 10:**

In CoexistenceSetInformationResponse (p.82) and in CoexistenceSetInformationAnnouncement (p.81) there are too many “loops”: 1) listOfWSO, 2) listOfNeighborCM and 3) listOfCoexSetElement. This can be simplified by including CM information to listOfCoexSetElement.

Also CM contact information is missing in messages.

**Proposed resolution:**

CoexistenceSetInformationResponse ::= SEQUENCE {

 -- List of CEs for which coexistence set information is reported

 listOfCE SEQUENCE OF SEQUENCE {

 -- Indication of a particular CE~~WSO~~ for which coexistence set

 -- information is reported in this response

 ceID CxID,

 -- List of coexistence set elements served by this CM

 listOfCoexSetElement SEQUENCE OF SEQUENCE {

 -- CE identifier of the related WSO

 ceID CxID

 -- Network identifier, e.g., BSS ID

 networkID OCTET STRING,

 -- CM identifier serving CE

 cMID CxID,

-- CM IP address

cMIPAddress OCTET STRING,

-- CM port number

cMPortNum OCTET STRING,

 -- Network technology, e.g., 802.11af, 802.22

 networkTechnology NetworkTechnology,

 -- Interference direction: mutual, source or victim

 interfDirection InterferenceDirection,

 -- Estimated interference level caused by the

 -- coexistence set element

 interfLevelFromCoexSetElem REAL,

 -- Estimated interference level caused to the

 -- coexistence set element

 interfLevelToCoexSetElem REAL,

 -- Network geometry class between this WSO and this

 -- coexistence set element

 networkGeometryClass NetworkGeometryClass

 }

 }

}

CoexistenceSetInformationAnnouncement ::= SEQUENCE {

 listOfCE SEQUENCE OF SEQUENCE {

 -- Indication of a particular CE for which coexistence set

 -- information is reported in this response

 -- List of coexistence set elements served by this CM

 listOfCoexSetElement SEQUENCE OF SEQUENCE {

 -- CE identifier of the related WSO

 ceID CxID

 -- Network identifier, e.g., BSS ID

 networkID OCTET STRING,

 -- CM identifier serving CE

 cMID CxID,

-- CM IP address

cMIPAddress OCTET STRING,

-- CM port number

cMPortNum OCTET STRING,

 -- Network technology, e.g., 802.11af, 802.22

 networkTechnology NetworkTechnology,

 -- Interference direction: mutual, source or victim

 interfDirection InterferenceDirection,

 -- Estimated interference level caused by the

 -- coexistence set element

 interfLevelFromCoexSetElem REAL,

 -- Estimated interference level caused to the

 -- coexistence set element

 interfLevelToCoexSetElem REAL,

 -- Network geometry class between this WSO and this

 -- coexistence set element

 networkGeometryClass NetworkGeometryClass

 }

 }

}

**Editing instructions:**

Change CoexistenceSetInformationResponse and CoexistenceSetInformationAnnouncement according to proposed resolution.

**Topic 11:**

Reconfiguration is missing at least occupancy. Not all technologies have clear slot structure (802.11). Also frequency mode is giving one range, but channel mode is giving a sequence. However ReconfigurationParameters is SEQUENCE OF SEQUENCE (p.98). Therefore channel mode is modified according to that.

Finally frequency mode description is suggested to be modified in such a way that it is defined in Clause Data types and not written open in all places.

**Proposed resolution:**

FrequencyRange ::= SEQUENCE {

 startFreq INTEGER,

 stopFreq INTEGER

}

ReconfigurationParameters ::= SEQUENCE OF SEQUENCE {

 operatingResource CHOICE {

 operatingFrequency FrequencyRange,

 operatingChNumber INTEGER },

 txPowerLimit REAL OPTIONAL,

 channelIsShared BOOLEAN OPTIONAL,

 txSchedule TxSchedule OPTIONAL,

 networkTechnology NetworkTechnology OPTIONAL,

 occupancy REAL OPTIONAL

}

FailedParameterID ::= ENUMERATED {

 operatingFrequency,

 operatingChNumber,

 txPowerLimit,

 channelIsShared,

 txSchedule,

 networkTechnology,

 occupancy

}

FailedParameterValue ::= CHOICE {

 operatingFrequency FrequencyRange,

 operatingChNumber INTEGER,

 txPowerLimit REAL,

 channelIsShared BOOLEAN,

 txSchedule TxSchedule,

 networkTechnology NetworkTechnology,

 occupancy REAL

}

**Editing instructions:**

Modify suggested data types according to proposed resolution.