IEEE P802.19  
Wireless Coexistence

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| --- | --- | --- | --- | --- |
| CM to CM communication | | | | |
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Abstract

This document is a submission to IEEE 802.19 TG1 proposing CM to CM communication to resolve comments CID 3, CID 5, CID 58, and CID 82.

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# Proposed update

*It is proposed to add the text below at the end of the clause 5.2 Procedures.*

* + 1. Inter-CM information exchange procedures

These procedures are used to exchange information between CMs operating according to different profiles.

* + - 1. Providing inter-CM information procedure

A CM shall perform the providing inter-CM information procedure when coexistence set information has been changed for one or several WSOs which the CM serves and which have in their coexistence set WSOs served by one or several other CMs operating according to a different profile. An illustrative example of this procedure is shown in Figure 1. The ***InterCMInformationAnnouncement*** and ***InterCMInformationConfirm*** messages are defined in reference.



Figure 1. Providing inter-CM information

After coexistence set information has changed for one or several WSOs which this CM serves and which have in their coexistence set WSOs served by one or several other CMs operating according to a different profile, the CM shall generate one or several ***InterCMInformationAnnouncement*** messages. Number of the generated ***InterCMInformationAnnouncement*** messages is equal to the number of the CMs operating according to a different profile and serving WSOs that are in the coexistence set of the WSOs which coexistence set information has changed. After the ***InterCMInformationAnnouncement*** messages has been generated, the CM shall send these ***InterCMInformationAnnouncement*** messages to the CMs operating according to a different profile and serving WSOs that are in the coexistence set of the WSOs which coexistence set information has changed. CM operations related to generating and sending a ***InterCMInformationAnnouncement*** message are specified in clause reference.

After the other CM has received the ***InterCMInformationAnnouncement*** message, the other CM shall process the ***InterCMInformationAnnouncement*** message, shall generate a ***InterCMInformationConfirm*** message, and shall send this ***InterCMInformationConfirm*** message to the CM from which it received the ***InterCMInformationAnnouncement*** message. CM operations related to processing a ***InterCMInformationAnnouncement*** message, generating and sending a ***InterCMInformationConfirm*** message are specified in clause reference.

* + - 1. Obtaining inter-CM information procedure

A CM shall perform this procedure to obtain coexistence set information from another CM operating according to a different profile. An illustrative example of this procedure is shown in Figure 2. ***InterCMInformationRequest*** and ***InterCMInformationResponse*** messages are defined in Annex C.



Figure 2. Obtaining inter-CM information

In order to start the procedure a CM shall generate a ***InterCMInformationRequest*** message and send this message to another CM. CM operations related to generating and sending a ***InterCMInformationRequest*** message are specified in clause reference.

After the other CM has received a ***InterCMInformationRequest*** message from the CM, the other CM shall obtain coexistence set element information, shall generate a ***InterCMInformationResponse*** message, and shall send this ***InterCMInformationResponse*** message to the CM. CM operations related to obtaining coexistence set element information and generating and sending a ***InterCMInformationResponse*** message are specified in clause reference.

After the CM has received a ***InterCMInformationResponse*** message from the other CM, the CM shall process the ***InterCMInformationResponse*** message. CM operations related to processing a ***InterCMInformationResponse*** message are specified in clause reference.

*It is proposed to modify Annex C Messages as shown in the text below.*

# (normative) Messages

IEEE802191Message DEFINITIONS AUTOMATIC TAGS ::= BEGIN

**-----------------------------------------------------------**

**--Imported data types**

**-----------------------------------------------------------**

--Imported data types

IMPORTS

--Coexistence protocol entity ID

CxID,

--Status

Status,

--CxMedia status

CxMediaStatus,

--Coexistence service

CoexistenceService,

--Subscribed service

SubscribedService,

--Network technology

NetworkTechnology,

--Network type

NetworkType,

--Location

Geolocation,

--Discovery information

DiscoveryInformation,

--Coverage area

CoverageArea,

--Installation parameters

InstallationParameters,

--List of available frequencies

ListOfAvailableFrequencies,

--List of operating frequencies

ListOfOperatingFrequencies,

--List of available channel numbers

ListOfAvailableChNumbers,

--List of operating channel numbers

ListOfOperatingChNumbers,

--List of supported frequencies

ListOfSupportedFrequencies,

--Required resource

RequiredResource,

--Operation code for registration

OperationCode,

--List of available frequencies of the subject WSO

ListOfSubjectWSOAvailableFrequencies,

--Transmission schedule

TxSchedule,

--Frequency range

FrequencyRange,

--CM registration

CMRegistration,

--CE registration

CERegistration,

--List of subject CEs

ListOfSubjectCEs,

--List of neighbor CMs transport information

ListOfNeighborCMsTransport,

--List of neighbor CM WSOs

ListOfNeighborCMWSOs,

--List of CEs for reconfiguration

ReconfigListOfCEs

--Coexistence report

CoexistenceReport,

--Channel priority

ChannelPriority,

--Measurement capability

MeasurementCapability,

--List of neighbor CM

ListOfNeighborCM,

--Failed parameters

FailedParameters,

--Channel classification information

ChClassInfo,

--Required information description

ReqInfoDescr,

--Requested information value

ReqInfoValue,

--Event parameters

EventParams,

--Negotiation status

NegotiationStatus,

--Negotiation information

NegotiationInformation

--Winner CM ID list

ListOfWinnerCMID,

-- Slot time position list

ListOfSlotTimePosition

--Measurement description

MeasurementDescription,

--Measurement result

MeasurementResult,

--Mobility Information

MobilityInformation,

--Entity profile

EntityProfile

FROM IEEE802191DataType;

**-----------------------------------------------------------**

**--Message structure, header structure, and payload types**

**-----------------------------------------------------------**

--Message structure

CxMessage ::= SEQUENCE {

-- Message header

header CxHeader,

-- Message payload

payload CxPayload}

--Header

CxHeader ::= CHOICE {

--For announcement

none NULL,

--For request or single response

requestID INTEGER (0..2147483647),

--For multiple responses

multipleResponse SEQUENCE {

--Original request ID

requestID INTEGER (0..2147483647),

--Response number

sequenceNumber INTEGER (0..2147483647),

--True is the response is last

isLastResponse BOOLEAN}}

--Payload types

CxPayload ::= CHOICE {

--WSO subscription request

subscriptionRequest SubscriptionRequest,

--WSO subscription response

subscriptionResponse SubscriptionResponse,

--WSO subscription change request

subscriptionChangeRequest SubscriptionChangeRequest,

--WSO subscription change response

subscriptionChangeResponse SubscriptionChangeResponse,

--CE registration request

ceRegistrationRequest CERegistrationRequest,

--Registration response

registrationResponse RegistrationResponse,

--Reconfiguration request

reconfigurationRequest ReconfigurationRequest,

--Reconfiguration response

reconfigurationResponse ReconfigurationResponse,

--Stop operation announcement

stopOperationAnnouncement StopOperationAnnouncement,

--Stop operation confirm

stopOperationConfirm StopOperationConfirm,

--Coexistence report announcement

coexistenceReportAnnouncement CoexistenceReportAnnouncement,

--Coexistence report confirm

coexistenceReportConfirm CoexistenceReportConfirm,

--Coexistence report request

coexistenceReportRequest CoexistenceReportRequest,

--Coexistence report response

coexistenceReportResponse CoexistenceReportResponse,

--CM registration request

cmRegistrationRequest CMRegistrationRequest,

--Coexistence set information announcement

coexistenceSetInformationAnnouncement CoexistenceSetInformationAnnouncement,

--Coexistence set information confirm

coexistenceSetInformationConfirm CoexistenceSetInformationAnnouncement,

--Coexistence set information request

coexistenceSetInformationRequest CoexistenceSetInformationRequest,

--Coexistence set information response

coexistenceSetInformationResponse CoexistenceSetInformationResponse,

--Coexistence set element information announcement

coexistenceSetElementInformationAnnouncement CoexistenceSetElementInformationAnnouncement,

--Coexistence set element information confirm

coexistenceSetElementInformationConfirm CoexistenceSetElementInformationConfirm,

--Coexistence set element information request

coexistenceSetElementInformationRequest CoexistenceSetElementInformationRequest,

--Coexistence set element information response

coexistenceSetElementInformationResponse CoexistenceSetElementInformationResponse,

--Coexistence set element reconfiguration request

coexistenceSetElementReconfigurationRequest CoexistenceSetElementReconfigurationRequest,

--Coexistence set element reconfiguration response

coexistenceSetElementReconfigurationResponse CoexistenceSetElementReconfigurationResponse,

--CM Reconfiguration request

cmReconfigurationRequest CMReconfigurationRequest,

--CM Reconfiguration response

cmReconfigurationResponse CMReconfigurationResponse,

--WSO channel classification request

channelClassificationRequest ChannelClassificationRequest,

-- WSO channel classification response

channelClassificationResponse ChannelClassificationResponse,

--CM channel classification request

cmChannelClassificationRequest CMChannelClassificationRequest,

-- CM channel classification response

cmChannelClassificationResponse CMChannelClassificationResponse,

-- WSO channel classification update

channelClassificationAnnouncement ChannelClassificationAnnouncement,

--Available channel list request from WSO

availableChannelsRequest AvailableChannelsRequest,

-- Available channel list response from WSO

availableChannelsResponse AvailableChannelsResponse,

--Information acquiring request

infoAcquiringRequest InforAcquiringRequest,

--Information acquiring response

infoAcquiringResponse InforAcquiringResponse,

-- Event indication

eventIndication EventIndication,

-- Event confirm

eventConfirm EventConfirm,

--WSO measurement request

measurementRequest MeasurementRequest,

--WSO measurement response

measurementResponse MeasurementResponse,

--WSO measurement confirm

measurementConfirm MeasurementConfirm,

--Master/Slave CM request

masterCMRequest MasterCMRequest,

--Master/Slave CM response

masterCMResponse MasterCMResponse,

--Master/Slave CM configuration request

masterSlaveCMconfigurationRequest MasterSlaveCMconfigurationRequest,

--Master/Slave CM configuration response

masterSlaveCMconfigurationResponse MasterSlaveCMconfigurationResponse,

--Negotiation request

negotiationRequest NegotiationRequest,

--Negotiation announcement

negotiationAnnouncement NegotiationAnnouncement,

--Deregistration request

wsoDeregistrationRequest WsoDeregistrationRequest,

-- Deregistration response

wsoDeregistrationResponse WsoDeregistrationResponse,

--Inter-CM information announcement

interCMInformationAnnouncement InterCMInformationAnnouncement,

--Inter-CM information confirm

interCMInformationCOnfirm InterCMInformationConfirm,

--Inter-CM information request

interCMInformationRequest InterCMInformationRequest,

--Inter-CM information response

interCMInformationResponse InterCMInformationResponse

}

**-----------------------------------------------------------**

**--WSO and CM subscription**

**-----------------------------------------------------------**

--WSO subscription request

SubscriptionRequest ::= SEQUENCE {

--WSO subscription ID

clientID IA5String OPTIONAL,

--WSO subscription password

clientPassword IA5String OPTIONAL,

--Coexistence service to which WSO is subscribed

coexistenceService CoexistenceService OPTIONAL,

--Coexistence service to which WSO is subscribed

subscribedService SubscribedService OPTIONAL}

--WSO subscription response

SubscriptionResponse ::= SEQUENCE {

--CM subscription ID

serverID IA5String OPTIONAL,

--CM subscription password

serverPassword IA5String OPTIONAL,

--Subscription status

--noError means subscription is confirmed

--rejected means subscription is not confirmed

status Status OPTIONAL,

--Status

status CxMediaStatus OPTIONAL}

**-----------------------------------------------------------**

**--WSO subscription change**

**-----------------------------------------------------------**

--Request to change subscription

SubscriptionChangeRequest ::= SEQUENCE {

--Coexistence service to which WSO is subscribed

subscribedService SubscribedService}

--Response for subscription change

SubscriptionChangeResponse :: = SEQUENCE {

--Status

status CxMediaStatus}

**-----------------------------------------------------------**

**--WSO registration**

**-----------------------------------------------------------**

CERegistrationRequest ::= SEQUENCE OF SEQUENCE {

--New registration, registration update or deregistration

operationCode OperationCode,

--WSO ID

wsoID OCTET STRING,

--Network ID

networkID OCTET STRING OPTIONAL,

--Network technology

networkTechnology NetworkTechnology OPTIONAL,

--Network type

networkType NetworkType OPTIONAL,

--Location

geolocation Geolocation OPTIONAL,

--Discovery information

discoveryInformation DiscoveryInformation OPTIONAL,

--Coverage area

coverageArea CoverageArea OPTIONAL,

-- Mobility information

mobilityInformation MobilityInformation OPTIONAL,

--Installation parameters

installationParameters InstallationParameters OPTIONAL,

--List of available frequencies

listOfAvailableFrequencies ListOfAvailableFrequencies OPTIONAL,

--Transmission schedule is supported or not

txScheduleSupported BOOLEAN OPTIONAL,

--List of operating frequencies

listOfOperatingFrequencies ListOfOperatingFrequencies OPTIONAL,

--List of available channel number

listOfAvailableChNumbers ListOfAvailableChNumbers OPTIONAL,

--List of supported channel number

listOfSupportedChNumbers SEQUENCE OF INTEGER OPTIONAL,

-- List of supported frequencies

listOfSuppFrequencies ListOfSupportedFrequencies OPTIONAL,

--List of operating channel number

listOfOperatingChNumbers ListOfOperatingChNumbers OPTIONAL,

--Required resource

requiredResource RequiredResource OPTIONAL,

--Measurement capability

measurementCapability MeasurementCapability OPTIONAL}

--Registration response

RegistrationResponse ::= SEQUENCE {

--Registration status

status Status OPTIONAL}

**-----------------------------------------------------------**

**--WSO reconfiguration**

**-----------------------------------------------------------**

--Reconfiguration request

ReconfigurationRequest ::= SEQUENCE OF SEQUENCE {

--WSO ID

wsoID OCTET STRING OPTIONAL,

--Operating frequency

operatingFrequency FrequencyRange OPTIONAL,

--List of operating channel number

listOfOperatingChNumber SEQUENCE OF INTEGER OPTIONAL,

--Transmission power limit

txPowerLimit REAL OPTIONAL,

--Indication whether the channel is shared

channelIsShared BOOLEAN OPTIONAL,

--Transmission schedule

txSchedule TxSchedule OPTIONAL,

-- Channel classification information

chClassInfo ChClassInfo OPTIONAL,

-- Mobility information

mobilityInformation MobilityInformation OPTIONAL

}

--Reconfiguration response

ReconfigurationResponse ::= SEQUENCE OF SEQUENCE {

--WSO ID

wsoID OCTET STRING OPTIONAL,

--Reconfiguration status

status Status OPTIONAL,

--Status

status BOOLEAN OPTIONAL,

--Failed parameters

failedParameters FailedParameters OPTIONAL}

**-----------------------------------------------------------**

**--Stop operation**

**-----------------------------------------------------------**

--Stop operation announcement

StopOperationAnnouncement ::= SEQUENCE {}

--Stop operation confirm

StopOperationConfirm ::= SEQUENCE {

--Stop operation status

status Status}

**-----------------------------------------------------------**

**--Coexistence report**

**-----------------------------------------------------------**

--Coexistence report announcement

CoexistenceReportAnnouncement ::= SEQUENCE OF SEQUENCE {

--Subject WSO ID

wsoID OCTET STRING,

--List of subject WSO available frequencies

listOfSubjectWSOAvailableFrequencies ListOfSubjectWSOAvailableFrequencies}

--Coexistence report confirm

CoexistenceReportConfirm ::= SEQUENCE {

--Coexistence report status

status Status}

--Request for coexistence report

CoexistenceReportRequest ::= SEQUENCE {}

--Response for coexistence report

CoexistenceReportResponse ::= SEQUENCE {

--Coexistence report information

coexistenceReport CoexistenceReport,

--Channel priority information

channelPriority ChannelPriority}

**-----------------------------------------------------------**

**--CM registration**

**-----------------------------------------------------------**

--CM registration request

CMRegistrationRequest ::= SEQUENCE {

--CM profile

cmProfile EntityProfile OPTIONAL,

--CM registration

cmRegistration CMRegistration OPTIONAL,

--CE registration

ceRegistration CERegistration OPTIONAL,

--Operationg code

operationCode OperationCode OPTIONAL,

--CE ID

ceID CxID OPTIONAL,

--Network ID

networkID OCTET STRING OPTIONAL,

--Network technology

networkTechnology NetworkTechnology OPTIONAL,

--Network type

networkType NetworkType OPTIONAL,

--Discovery information

discoveryInformation DiscoveryInformation OPTIONAL,

--List of supported channel number

listOfSupportedChNumbers SEQUENCE OF INTEGER OPTIONAL,

-- List of supported frequencies

listOfSuppFrequencies ListOfSupportedFrequencies OPTIONAL

}

**-----------------------------------------------------------**

**--Coexistence set information**

**-----------------------------------------------------------**

--Coexistence set information announcement

CoexistenceSetInformationAnnouncement ::= SEQUENCE {

--List of subject CEs

listOfSubjectCEs ListOfSubjectCEs,

--List of neighbor CMs transport information mentioned inside the list of subject CEs

listOfNeighborCMsTransport ListOfNeighborCMsTransport}

--Coexistence set information confirm

CoexistenceSetInformationConfirm ::= SEQUENCE {

--Coexistence set information status

status Status}

--Request for coexistence set information

CoexistenceSetInformationRequest ::= SEQUENCE {

listOfNetworkID SEQUENCE OF OCTET STRING}

--Response for coexistence set information

CoexistenceSetInformationResponse ::= SEQUENCE {

--Network ID

coexistenceReport CoexistenceReport,

--List of neighbor CM

listOfneighborCM ListOfneighborCM}

**-----------------------------------------------------------**

**--Coexistence set element information**

**-----------------------------------------------------------**

--Coexistence set element information announcement

CoexistenceSetElementInformationAnnouncement ::= SEQUENCE OF SEQUENCE{

--CE ID

ceID CxID,

--Coexistence service

coexistenceService CoexistenceService OPTIONAL,

--List of neighbor CM WSOs

listOfNeighborCMWSOs ListOfNeighborCMWSOs OPTIONAL

}

--Coexistence set element information confirm

CoexistenceSetElementInformationConfirm ::= SEQUENCE {

--Coexistence set element information status

status Status}

--Coexistence set element information request

CoexistenceSetElementInformationRequest ::= SEQUENCE OF SEQUENCE{

--CE ID

ceID CxID,

--List of neighbor CM WSOs

listOfNeighborCMWSOs ListOfNeighborCMWSOs

}

--Coexistence set element information response

CoexistenceSetElementInformationResponse ::= SEQUENCE OF SEQUENCE{

--CE ID

ceID CxID,

--Coexistence service

coexistenceService CoexistenceService,

--List of neighbor CM WSOs

listOfNeighborCMWSOs ListOfNeighborCMWSOs

}

**-----------------------------------------------------------**

**--Coexistence set element reconfiguration**

**-----------------------------------------------------------**

--Coexistence set element reconfiguration request

CoexistenceSetElementReconfigurationRequest ::= SEQUENCE{

--List of subject CEs

reconfigListOfSubjectCEs ReconfigListOfCEs,

--List of neighbor CEs

reconfigListOfNeighborCEs ReconfigListOfCEs

}

--Coexistence set element reconfiguration response

CoexistenceSetElementReconfigurationResponse ::= SEQUENCE{

--Indicates whether the suggested reconfiguration is accepted or not

requestIsAccepted BOOLEAN

}

**-----------------------------------------------------------**

**--WSO reconfiguration for another CM**

**-----------------------------------------------------------**

--Reconfiguration request

CMReconfigurationRequest ::= SEQUENCE {

--Indication for CE to be reconfigured

reconfigTarget CxID,

--List of operating channel number

listOfOperatingChNumber SEQUENCE OF INTEGER,

--Transmission power limitation

txPowerLimit REAL,

--Indication whether the channel is shared

channelIsShared BOOLEAN,

--Transmission schedule

txSchedule TxSchedule ,

-- Channel classification information

chClassInfo ChClassInfo}

--Reconfiguration response

ReconfigurationResponse ::= SEQUENCE {

--Indication for CE to be reconfigured

reconfigTarget CxID,

--Status

status BOOLEAN

--Failed parameters

failedParameters FailedParameters}

**-----------------------------------------------------------**

**--Channel classification**

**-----------------------------------------------------------**

--Channel classification request

ChannelClassificationRequest ::= SEQUENCE {

-- List of network ID

listOfNetworkID SEQUENCE OF OCTET STRING}

-- Channel classification response

ChannelClassificationResponse ::= SEQUENCE OF SEQUENCE{

-- Network ID

networkID OCTET STRING

--Channel classification information

chClassInfo ChClassInfo}

--CM Channel classification request

CMChannelClassificationRequest ::= SEQUENCE {

-- List of network ID

listOfNetworkID SEQUENCE OF OCTET STRING}

-- CM Channel classification response

CMChannelClassificationResponse ::= SEQUENCE OF SEQUENCE{

-- Network ID

networkID OCTET STRING

--Channel classification information

chClassInfo ChClassInfo}

**-----------------------------------------------------------**

**--Channel classification update**

**-----------------------------------------------------------**

--Channel classification update

ChannelClassificationAnnouncement ::= SEQUENCE OF SEQUENCE {

-- Network ID

networkID OCTET STRING

--Channel classification information

chClassInfo ChClassInfo}

**-----------------------------------------------------------**

**--Information acquiring from another CM**

**-----------------------------------------------------------**

-- Information acquiring request

InfoAcquringRequest ::= SEQUENCE {

ceID CxID,

listOfReqInfoDescr SEQUENCE OF ReqInfoDescr}

-- Information acquiring response

InfoAcquringResponse ::= SEQUENCE {

ceID CxID,

reqInfoValue ReqInfoValue}

**-----------------------------------------------------------**

**--Available channel list from WSO**

**-----------------------------------------------------------**

-- Available channel request

AvailableChannelsRequest ::= SEQUENCE {}

-- Available channel response

AvailableChannelsResponse ::= SEQUENCE {

--Available channel list information

listOfAvailableChNumbers ListOfAvailableChNumbers}

**-----------------------------------------------------------**

**--Event indication**

**-----------------------------------------------------------**

-- Event indication

EventIndication ::= SEQUENCE {

-- Event indication information

eventParams EventParams}

-- Event confirm

EventConfirm ::= SEQUENCE {}

**-----------------------------------------------------------**

**--Measurement Request**

**-----------------------------------------------------------**

-- Measurement request

MeasurementRequest ::= SEQUENCE {

-- Measurement request information

measurementDescription MeasurementDescription}

**-----------------------------------------------------------**

**-- Measurement results**

**-----------------------------------------------------------**

-- Measurement response

MeasurementResponse ::= SEQUENCE OF SEQUENCE{

-- Measurement results

measurementResult MeasurementResult}

**-----------------------------------------------------------**

**-- Negotiation**

**-----------------------------------------------------------**

-- Negotiation request

NegotiationRequest ::= SEQUENCE {

-- Negotiation status

negotiationStatus NegotiationStatus,

-- Negotiation information

negotiationInformation NegotiationInformation}

-- Negotiation announcement

NegotiationAnnouncement ::= SEQUENCE {

-- Winner CM ID list

listOfWinnerCMID ListOfWinnerCMID,

-- Slot time position list

listOfSlotTimePosition ListOfSlotTimePosition}

**-----------------------------------------------------------**

**--Master/Slave CM selection**

**-----------------------------------------------------------**

--Master/Slave CM selection request

MasterCMRequest ::= SEQUENCE {

--List of CEs managed by CM that intends to become slave CM

listOfCEs SEQUENCE OF CxID}

-- Master/Slave CM selection response

MasterCMResponse ::= SEQUENCE {

--Status

status CxMediaStatus}

**-----------------------------------------------------------**

**--Master/Slave CM configuration**

**-----------------------------------------------------------**

--Master/Slave CM configuration request

MasterSlaveCMconfigurationRequest ::= SEQUENCE {

-- List of CEs managed by CM

listOfCEs SEQUENCE OF CxID}

--Master/Slave CM configuration response

MasterSlaveCMconfigurationResponse ::= SEQUENCE {

--Operationg code

operationCode OperationCode,

--Slave CE ID

slaveCeID CxID,

--Network ID

networkID OCTET STRING,

--Network technology

networkTechnology NetworkTechnology,

--Network type

networkType NetworkType

--Discovery information

discoveryInformation DiscoveryInformation,

--Transmission schedule is supported or not

txScheduleSupported BOOLEAN,

--List of available channel number

listOfAvailableChNumbers ListOfAvailableChNumbers,

--List of supported channel number

listOfSupportedChNumbers SEQUENCE OF INTEGER,

--List of operating channel number

listOfOperatingChNumbers ListOfOperatingChNumbers,

--Required resource

requiredResource RequiredResource

--Measurement capability

measurementCapability MeasurementCapability}

**-----------------------------------------------------------**

**--WSO deregistration**

**-----------------------------------------------------------**

--Deregistration request

WsoDeregistrationRequest ::= SEQUENCE {

--Flag of wso deregistration

wsoDeregistration BOOLEAN}

--Deregistration response

WsoDeregistrationResponse ::= SEQUENCE {

--Status

status CxMediaStatus}

**-----------------------------------------------------------**

**--Inter-CM information**

**-----------------------------------------------------------**

--Inter-CM information announcement

InterCMInformationAnnouncement ::= SEQUENCE OF SEQUENCE {

--CE ID

ceID CxID,

--List of neighbor WSOs

listOfNeighborWSOs SEQUENCE OF SEQUENCE {

wsoID OCTET STRING,

operatingFrequency ListOfOperatingFrequencies OPTIONAL,

operatingChannel ListOfOperatingChNumbers OPTIONAL

}

}

--Inter-CM information confirm

InterCMInformationConfirm ::= SEQUENCE {

--Inter-CM information status

status Status

}

--Inter-CM information request

InterCMInformationRequest ::= SEQUENCE OF SEQUENCE{

--CE ID

ceID CxID,

--List of neighbor WSOs

listOfNeighborWSOs SEQUENCE OF SEQUENCE {

wsoID OCTET STRING

}

}

--Inter-CM information response

InterCMInformationResponse ::= SEQUENCE OF SEQUENCE{

--CE ID

ceID CxID,

--List of neighbor WSOs

listOfNeighborWSOs SEQUENCE OF SEQUENCE {

wsoID OCTET STRING,

operatingFrequency ListOfOperatingFrequencies OPTIONAL,

operatingChannel ListOfOperatingChNumbers OPTIONAL

}

}

END

*It is proposed to* ***ListOfNeighborCMTransport*** *data type as shown in the text below.*

--List of neighbor CMs transport information

ListOfNeighborCMsTransport ::= SEQUENCE OF SEQUENCE {

--Neighbor CM ID

cmID CxID,

--Neighbor CM profile

cmProfile EntityProfile,

-- Neighbor CM IP address

ipAddress OCTET STRING,

-- Neighbor CM port number

portNumber INTEGER}

*It is proposed to* ***ListOfNeighborCM*** *data type as shown in the text below.*

ListOfNeighborCM ::= SEQUENCE OF SEQUENCE {

neighborCMID CxID,

--Neighbor CM profile

cmProfile EntityProfile, listOfCoexSetElement ListOfCoexSetElement

}

*It is proposed to add the text below as 6.3.1 Communication between CMs.*

* + 1. Communication between CMs

When a CM operating according to profile 1 receives a ***CoexistenceSetInformationResponse*** message from the CDIS that serves this CM, it shall check the value of the parameter ***cmProfile*** for each neighbor CM.

If the value of the ***cmProfile*** parameter for a neighbor CM is equal to ***profile1***, the CM shall communicate with this neighbor CM as described in clause CM profile 1.

If the value of the ***cmProfile*** parameter for a neighbor CM is equal to ***profile2***, the CM shall do the following.

If operating channel is changed for a WSO served by the CM operating according to profile 1 and this WSO has neighbor WSOs served by one or several CMs operating according to profile 2, the CM shall perform the **providing inter-CM information procedure**, described in clause reference.

The CM shall generate and send one or several ***InterCMInformationAnnouncement*** messages to one or several neighbor CMs. The number of messages is equal to the number of CMs operating according to profile 2 that serve WSOs that are neighbors to the WSO which operating channel has been changed.

When generating a ***InterCMInformationAnnouncement*** message, the CM shall set the parameters of the ***CxMessage*** as shown in the table below.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***header*** | ***CxHeader*** | ***requestID*** |
| ***payload*** | ***CxPayload*** | ***interCMInformationAnnouncement*** |

The CM shall set the parameters of the each element of the sequence of the ***interCMInformationAnnouncement*** payload as shown in the table below.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***ceID*** | ***CxID*** | CE ID of the CE that serves WSO which operating channel is changed. |
| ***listOfNeighborWSOs*** | ***SEQUENCE OF SEQUENCE*** | See table below. |

The CM shall set the parameters of the each element of the sequence of the ***listOfNeighborWSOs*** payload as shown in the table below.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***wsoID*** | ***OCTET STRING*** | ID of the WSO which operating channel is changed. |
| ***operatingFrequency*** | ***ListOfOperatingFrequencies*** | *This parameter is not used.* |
| ***operatingChannel*** | ***ListOfOperatingChNumbers*** | List of operating channel numbers of the WSO. |

After the CM has generated a ***InterCMInformationAnnouncement*** message, the CM shall send this message to a corresponding CM and shall wait for the ***InterCMInformationConfirm*** message.

Table below shows expected values of the parameters in the ***InterCMInformationConfirm*** message.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***header*** | ***CxHeader*** | ***requestID*** |
| ***payload*** | ***CxPayload*** | ***interCMInformationConfirm*** |

Table below shows expected values of the parameters in the ***interCMInformationConfirm*** payload.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***status*** | ***Status*** | ***noError*** |

If the CM operating according to profile 1 needs to obtain neighbor WSO operating channel information from a CM operating according to profile 2, the CM shall perform the **obtaining inter-CM information procedure**, described in clause reference.

The CM operating according to profile 1 shall generate and send the ***InterCMInformationRequest*** message to the neighbor CM operating according to profile 2.

When generating a ***InterCMInformationRequest*** message, the CM shall set the parameters of the ***CxMessage*** as shown in the table below.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***header*** | ***CxHeader*** | ***requestID*** |
| ***payload*** | ***CxPayload*** | ***interCMInformationRequest*** |

The CM shall set the parameters of the each element of the sequence of the ***interCMInformationRequest*** payload as shown in the table below.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***ceID*** | ***CxID*** | CE ID of the CE that serves WSO which operating channel information is requested. |
| ***listOfNeighborWSOs*** | ***SEQUENCE OF SEQUENCE*** | List of WSO IDs of the WSOs served by this CE which operating channel information is requested. |

After the CM has generated a ***InterCMInformationRequest*** message, the CM shall send this message to a corresponding CM and shall wait for the ***InterCMInformationResponse*** message.

Table below shows expected values of the parameters in the ***InterCMInformationResponse*** message.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***header*** | ***CxHeader*** | ***requestID*** |
| ***payload*** | ***CxPayload*** | ***interCMInformationResponse*** |

Table below shows expected values of the parameters in the ***interCMInformationResponse*** payload.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***wsoID*** | ***OCTET STRING*** | ID of the WSO which operating channel information is requested. |
| ***operatingFrequency*** | ***ListOfOperatingFrequencies*** | Operating frequency of the WSO. |
| ***operatingChannel*** | ***ListOfOperatingChNumbers*** | *This parameter is not used.* |

When a CM operating according to profile 2 receives a ***CoexistenceSetInformationAnnouncement*** message from the CDIS that serves this CM, it shall check the value of the parameter ***cmProfile*** for each neighbor CM.

If the value of the ***cmProfile*** parameter for a neighbor CM is equal to ***profile2***, the CM shall communicate with this neighbor CM as described in clause CM profile 2.

If the value of the ***cmProfile*** parameter for a neighbor CM is equal to ***profile1***, the CM shall do the following.

If operating channel is changed for a WSO served by the CM operating according to profile 2 and this WSO has neighbor WSOs served by one or several CMs operating according to profile 1, the CM shall perform the **providing inter-CM information procedure**, described in clause reference.

The CM shall generate and send one or several ***InterCMInformationAnnouncement*** messages to one or several neighbor CMs. The number of messages is equal to the number of CMs operating according to profile 1 that serve WSOs that are neighbors to the WSO which operating channel has been changed.

When generating a ***InterCMInformationAnnouncement*** message, the CM shall set the parameters of the ***CxMessage*** as shown in the table below.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***header*** | ***CxHeader*** | ***requestID*** |
| ***payload*** | ***CxPayload*** | ***interCMInformationAnnouncement*** |

The CM shall set the parameters of the each element of the sequence of the ***interCMInformationAnnouncement*** payload as shown in the table below.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***ceID*** | ***CxID*** | CE ID of the CE that serves WSO which operating channel is changed. |
| ***listOfNeighborWSOs*** | ***SEQUENCE OF SEQUENCE*** | See table below. |

The CM shall set the parameters of the each element of the sequence of the ***listOfNeighborWSOs*** payload as shown in the table below.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***wsoID*** | ***OCTET STRING*** | ID of the WSO which operating channel is changed. |
| ***operatingFrequency*** | ***ListOfOperatingFrequencies*** | List of operating frequencies of the WSO. |
| ***operatingChannel*** | ***ListOfOperatingChNumbers*** | *This parameter is not used.* |

After the CM has generated a ***InterCMInformationAnnouncement*** message, the CM shall send this message to a corresponding CM and shall wait for the ***InterCMInformationConfirm*** message.

Table below shows expected values of the parameters in the ***InterCMInformationConfirm*** message.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***header*** | ***CxHeader*** | ***requestID*** |
| ***payload*** | ***CxPayload*** | ***interCMInformationConfirm*** |

Table below shows expected values of the parameters in the ***interCMInformationConfirm*** payload.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***status*** | ***Status*** | ***noError*** |

If the CM operating according to profile 2 needs to obtain neighbor WSO operating channel information from a CM operating according to profile 1, the CM shall perform the **obtaining inter-CM information procedure**, described in clause reference.

The CM operating according to profile 2 shall generate and send the ***InterCMInformationRequest*** message to the neighbor CM operating according to profile 1.

When generating a ***InterCMInformationRequest*** message, the CM shall set the parameters of the ***CxMessage*** as shown in the table below.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***header*** | ***CxHeader*** | ***requestID*** |
| ***payload*** | ***CxPayload*** | ***interCMInformationRequest*** |

The CM shall set the parameters of the each element of the sequence of the ***interCMInformationRequest*** payload as shown in the table below.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***ceID*** | ***CxID*** | CE ID of the CE that serves WSO which operating channel information is requested. |
| ***listOfNeighborWSOs*** | ***SEQUENCE OF SEQUENCE*** | List of WSO IDs of the WSOs served by this CE which operating channel information is requested. |

After the CM has generated a ***InterCMInformationRequest*** message, the CM shall send this message to a corresponding CM and shall wait for the ***InterCMInformationResponse*** message.

Table below shows expected values of the parameters in the ***InterCMInformationResponse*** message.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***header*** | ***CxHeader*** | ***requestID*** |
| ***payload*** | ***CxPayload*** | ***interCMInformationResponse*** |

Table below shows expected values of the parameters in the ***interCMInformationResponse*** payload.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***wsoID*** | ***OCTET STRING*** | ID of the WSO which operating channel information is requested. |
| ***operatingFrequency*** | ***ListOfOperatingFrequencies*** | *This parameter is not used.* |
| ***operatingChannel*** | ***ListOfOperatingChNumbers*** | Operating channel of the WSO. |