IEEE P802.19
Wireless Coexistence

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| Proposed update to procedures |
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Abstract

This document is a submission to IEEE 802.19 TG1 proposing update to procedures.

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# Proposed update

*It is proposed to update Section 6.3 Procedures using the text below.*

# Coexistence service subscription procedures

# WSO subscription procedure

A CE shall perform the WSO subscription procedure when it has received a request to start operation. The WSO/RLSS shall subscribe to either information service or management service. An illustrative example of this procedure is shown in Figure 10. ***SubscriptionRequest*** and ***SubscriptionResponse*** messages are defined in (reference).



Figure 10. WSO subscription procedure

After the CE has received a request to start operation, it shall obtain WSO/RLSS subscription information. After the WSO/RLSS subscription information has been obtained, the CE shall generate a ***SubscriptionRequest*** message and shall send this ***SubscriptionRequest*** message to the CM that serves this CE. CE operation related to generating and sending a ***SubscriptionRequest*** message is specified in (reference).

After the CM has received the ***SubscriptionRequest*** message from the CE, the CM shall perform WSO/RLSS subscription, shall generate a ***SubscriptionResponse*** message and shall send this ***SubscriptionResponse*** message to the CE. CM operation related to WSO/RLSS subscription, generating and sending a ***SubscriptionResponse*** message is specified in (reference).

After the CE has received the ***SubscriptionResponse*** message from the CM, the CE shall process the ***SubscriptionResponse*** message. CE operation related to processing the ***SubscriptionResponse*** message is specified in (reference).

# WSO subscription update procedure

A CE shall perform the WSO subscription update procedure when it has received new WSO/RLSS subscription information indicating that the WSO/RLSS has changed the type of coexistence service provided by the coexistence system or the RLSS is stopping operation. An illustrative example of this procedure is shown in Figure 11. ***SubscriptionRequest*** and ***SubscriptionResponse*** messages are defined in (reference).



Figure 11. WSO subscription update procedure

After a CE has received new WSO/RLSS subscription information, the CE shall generate a ***SubscriptionRequest*** message and shall send this ***SubscriptionRequest*** message to the CM that serves this CE. CE operation related to generating and sending a ***SubscriptionRequest*** message is specified in (reference).

After the CM has received the ***SubscriptionRequest*** message from the CE, the CM shall perform WSO/RLSS subscription, shall generate a ***SubscriptionResponse*** message and shall send this ***SubscriptionResponse*** message to the CE. CM operation related to WSO/RLSS subscription, generating and sending a ***SubscriptionResponse*** message is specified in (reference).

After the CE has received the ***SubscriptionResponse*** message from the CM, the CE shall process the SubscriptionResponse message. CE operation related to processing the ***SubscriptionResponse*** message is specified in (reference).

# Providing registration information procedures

# WSO registration procedure

A CE shall perform the WSO registration procedure when it has successfully finished the WSO/RLSS subscription procedure. An illustrative example of this procedure is shown in Figure 12. ***CERegistrationRequest***, ***RegistrationResponse***, and ***CMRegistrationResponse*** messages are defined in (reference).



Figure 12. WSO registration procedure

After a CE has successfully finished a WSO/RLSS subscription procedure, it shall obtain WSO registration information. After the WSO registration information has been obtained, the CE shall generate a ***CERegistrationRequest*** message and shall send this ***CERegistrationRequest*** message to the CM that serves this CE. CE operation related to generating and sending a ***CERegistrationRequest*** message is specified in (reference).

After the CM has received the ***CERegistrationRequest*** message from the CE, the CM shall perform WSO registration, shall generate a ***RegistrationResponse*** message, and shall send this ***RegistrationResponse*** message to the CE. CM operation related to WSO registration, generating and sending a ***RegistrationResponse*** message is specified in (reference).

After the CE has received the ***RegistrationResponse*** message from the CM, the CE shall process the ***RegistrationResponse*** message. CE operation related to processing the ***RegistrationResponse*** message is specified in (reference).

After the CE has processed the ***RegistrationResponse*** message, the CE shall confirm registration status to WSO/RLSS. CE operation related to confirming registration status to WSO/RLSS is specified in (reference).

After the CM has sent the ***RegistrationResponse*** message to the CE, the CM shall generate a ***CMRegistrationRequest*** message and shall send this ***CMRegistrationRequest*** message to the CDIS that serves this CM. CM operation related to generating and sending a ***CMRegistrationRequest*** message is specified in (reference).

After the CDIS has received the ***CMRegistrationRequest*** message from the CM, the CDIS shall perform CM registration, shall generate a ***RegistrationResponse*** message, and shall send this ***RegistrationResponse*** message to the CM. CDIS operation related to CM registration, generating and sending a ***RegistrationResponse*** message is specified in (reference).

After the CM has received the ***RegistrationResponse*** message from the CDIS, the CM shall process the ***RegistrationResponse*** message. CM operation related to processing the ***RegistrationResponse*** message is specified in (reference).

# WSO registration update procedure

A CE shall perform the WSO registration update procedure when it has received new WSO registration information or the WSO is stopping operation. An illustrative example of this procedure is shown in Figure 13. ***CERegistrationRequest***, ***RegistrationResponse***, and ***CMRegistrationRequest*** messages are defined in (reference).



Figure 13. WSO registration update procedure

After a CE has received new WSO registration information, the CE shall generate a ***CERegistrationRequest*** message and shall send this ***CERegistrationRequest*** message to the CM that serves this CE. CE operation related to generating and sending a ***CERegistrationRequest*** message is specified in (reference).

After the CM has received the ***CERegistrationRequest*** message from the CE, the CM shall perform WSO registration, shall generate a ***RegistrationResponse*** message, and shall send this ***RegistrationResponse*** message to the CE. CM operation related to WSO registration, generating and sending a ***RegistrationResponse*** message is specified in (reference).

After the CE has received the ***RegistrationResponse*** message from the CM, the CE shall process the ***RegistrationResponse*** message. CE operation related to processing the ***RegistrationResponse*** message is specified in (reference).

After the CM has sent the ***RegistrationResponse*** message to the CE, the CM shall generate a ***CMRegistrationRequest*** message and shall send this ***CMRegistrationRequest*** message to the CDIS that serves this CM. CM operation related to generating and sending a ***CMRegistrationRequest*** message is specified in (reference).

After the CDIS has received the ***CMRegistrationRequest*** message from the CM, the CDIS shall perform CM registration, shall generate a ***RegistrationResponse*** message, and shall send this ***RegistrationResponse*** message to the CM. CDIS operation related to CM registration, generating and sending a ***RegistrationResponse*** message is specified in (reference).

After the CM has received the ***RegistrationResponse*** message from the CDIS, the CM shall process the ***RegistrationResponse*** message. CM operation related to processing the ***RegistrationResponse*** message is specified in (reference).

# Coexistence set information procedures

# Providing coexistence set information procedure

A CDIS shall perform the providing coexistence set information procedure when coexistence set information has been changed for one or several WSOs served by one or several CMs. The CDIS shall provide coexistence set information based on the type of the discovery service to which a particular CM is subscribed. An illustrative example of this procedure is shown in Figure 14. ***CoexistenceSetInformationAnnouncement*** and ***CoexistenceSetInformationConfirm*** messages are defined in (reference).



Figure 14. Providing coexistence set information procedure

After coexistence set information has been changed for one or several WSOs served by one or several CMs, the CDIS shall generate one or several ***CoexistenceSetInformationAnnoucement*** messages. Number of the generated ***CoexistenceSetInformationAnnoucement*** messages is equal to the number of the CMs serving WSOs which coexistence set information has been changed. After the ***CoexistenceSetInformationAnnoucement*** messages has been generated, the CDIS shall send these ***CoexistenceSetInformationAnnoucement*** messages to the CMs serving WSOs which coexistence set information has been changed. CDIS operation related to generating and sending a ***CoexistenceSetInformationAnnoucement*** message is specified in (reference).

After a CM has received the ***CoexistenceSetInformationAnnoucement*** message from the CDIS, the CM shall process the ***CoexistenceSetInformationAnnoucement*** message and generate and send the ***CoexistenceSetInformationConfirm*** message to the CDIS. CM operation related to processing the ***CoexistenceSetInformationAnnoucement*** message, generating and sending ***CoexistenceSetInformationConfirm*** message is specified in (reference).

After the CDIS has received the ***CoexistenceSetInformationConfirm*** message from the CM, the CDIS shall process the ***CoexistenceSetInformationConfirm*** message. CDIS operation related to processing the ***CoexistenceSetInformationConfirm*** message is specified in (reference).

# Providing coexistence report procedure

A CM shall perform the providing coexistence report procedure when coexistence report information has been changed for one or several WSOs subscribed to information service and served by this CM. An illustrative example of this procedure is shown in Figure 15. ***CoexistenceReportAnnouncement*** message is defined in (reference).



Figure 15. Providing coexistence report procedure

After coexistence report information has been changed for one or several WSOs subscribed by information service and served by a CM, the CM shall generate one or several ***CoexistenceReportAnnoucement*** messages. Number of the generated ***CoexistenceReportAnnoucement*** messages is equal to the number of the WSOs which coexistence report information has been changed. If several WSOs are managed by the same RLSS, only one ***CoexistenceReportAnnoucement*** message is sent to RLSS. After the ***CoexistenceReportAnnoucement*** messages has been generated, the CM shall send these ***CoexistenceReportAnnoucement*** messages to the WSOs/RLSSs which coexistence report information has been changed. CM operation related to generating and sending a ***CoexistenceReportAnnoucement*** message is specified in (reference).

After a CE has received the ***CoexistenceReportAnnoucement*** message from the CM, the CE shall process the ***CoexistenceReportAnnoucement*** message and generate and send the ***CoexistenceReportConfirm*** message to the CM. CE operation related to processing the ***CoexistenceReportAnnoucement*** message, generating and sending ***CoexistenceReportConfirm*** message is specified in (reference).

After the CM has received the ***CoexistenceReportConfirm*** message from the CE, the CM shall process the ***CoexistenceReportConfirm*** message. CM operation related to processing the ***CoexistenceReportConfirm*** message is specified in (reference).

# Sharing coexistence set element information procedure

A CM shall perform the sharing coexistence set information procedure when coexistence set information has been changed for one or several WSOs served by this CM that has in their coexistence set WSOs served by one or several other CMs. An illustrative example of this procedure is shown in Figure 16. ***CoexistenceSetElementInformationAnnouncement*** and ***CoexistenceSetElementInformationConfirm*** messages are defined in (reference).



Figure 16. Sharing coexistence set element information procedure

After coexistence set information has been changed for one or several WSOs served by this CM that has in their coexistence set WSOs served by one or several other CMs, the CM shall generate one or several ***CoexistenceSetElementInformationAnnoucement*** messages. Number of the generated ***CoexistenceSetElementInformationAnnoucement*** messages is equal to the number of the CMs serving WSOs that are in the coexistence set of the WSOs which coexistence set information has been changed. After the ***CoexistenceSetElementInformationAnnoucement*** messages has been generated, the CM shall send these ***CoexistenceSetElementInformationAnnoucement*** messages to the CMs serving WSOs that are in the coexistence set of the WSOs which coexistence set information has been changed. CM operation related to generating and sending a ***CoexistenceSetElementInformationAnnoucement*** message is specified in (reference).

After the other CM has received the ***CoexistenceSetElementInformationAnnoucement*** message from the CM, the other CM shall process the ***CoexistenceSetElementInformationAnnoucement*** message, shall generate a ***CoexistenceSetElementInformationConfirm*** message, and shall send this ***CoexistenceSetElementInformationConfirm*** message to the CM that has sent the ***CoexistenceSetElementInformationAnnoucement*** message. CM operation related to processing the ***CoexistenceSetElementInformationAnnoucement*** message, generating and sending the ***CoexistenceSetElementInformationConfirm*** message is specified in (reference).

# Obtaining coexistence set element information procedure

A CM shall perform the obtaining coexistence set information procedure to obtain coexistence set element information form a neighbor CM. An illustrative example of this procedure is shown in Figure 17. ***CoexistenceSetElementInformationRequest*** and ***CoexistenceSetElementInformationResponse*** messages are defined in (reference).



Figure 17. Obtaining coexistence set element information procedure

When a CM needs to obtain coexistence set element information form a neighbor CM, the CM shall generate ***CoexistenceSetElementInformationRequest*** message and shall send it to the neighbor CM. CM operation related to generating and sending a ***CoexistenceSetElementInformationRequest*** message is specified in (reference).

After the neighbor CM has received the ***CoexistenceSetElementInformationRequest*** message from the Cm, the neighbor CM shall generate ***CoexistenceSetElementInformationRequest*** message and shall send this ***CoexistenceSetElementInformationRequest*** message to the CM. CM operation related to generating and sending a ***CoexistenceSetElementInformationResponse*** message is specified in (reference).

# Reconfiguration procedures

# WSO reconfiguration procedure

A CM shall perform the WSO reconfiguration procedure when it has generated new coexistence decision that requires reconfiguration of one or several WSOs subscribed to management service and served by this CM. An illustrative example of this procedure is shown in Figure 17. ***ReconfigurationRequest*** and ***ReconfigurationResponse*** messages are defined in (reference).



Figure 17. WSO reconfiguration procedure

After a CM has generated new coexistence decision that requires reconfiguration of one or several WSOs subscribed to management service and served by this CM, the CM shall generate one or several ***ReconfigurationRequest*** messages. The number of the ***ReconfigurationRequest*** messages is equal to the number of the WSOs that require reconfiguration. If several WSOs are managed by the same RLSS, only one ***ReconfigurationRequest*** message is sent to RLSS. After the CM has generated the ***ReconfigurationRequest*** messages, the CM shall send these ***ReconfigurationRequest*** messages to the CEs serving WSOs that require reconfiguration. CM operation related to generating and sending a ***ReconfigurationRequest*** message is specified in (reference).

After a CE has received the ***ReconfigurationRequest*** message from the CM, the CE shall perform requested reconfiguration of the WSO it serves, shall generate a ***ReconfigurationResponse*** message, and shall send this ***ReconfigurationResponse*** message to the CM. CE operation related to performing WSO reconfiguration, generating and sending ***ReconfigurationResponse*** message is specified in (reference).

After the CM has received the ***ReconfigurationResponse*** message from the CE, the CM shall process the ***ReconfigurationResponse*** message. CM operation related to processing the ***ReconfigurationResponse*** message is specified in (reference).

# Coexistence set element reconfiguration procedure

A CM shall perform the coexistence set element reconfiguration procedure when it has generated new coexistence decision that requires reconfiguration of one or several WSOs subscribed to management service and served by another CM. An illustrative example of this procedure is shown in Figure 18. ***CoexistenceSetElementReconfigurationRequest*** and ***CoexistenceSetElementReconfigurationResponse*** messages are defined in (reference).



Figure 18. Coexistence set element reconfiguration procedure

After a CM has generated new coexistence decision that requires reconfiguration of one or several WSOs subscribed to management service and served by another CM, the CM shall generate one or several ***CoexistenceSetElementReconfigurationRequest*** messages. The number of the ***CoexistenceSetElementReconfigurationRequest*** messages is equal to the number of the CMs that are serving WSOs that require reconfiguration. After the CM has generated the ***CoexistenceSetElementReconfigurationRequest*** messages, the CM shall send these ***CoexistenceSetElementReconfigurationRequest*** messages to the CMs serving WSOs that require reconfiguration. CM operation related to generating and sending a ***CoexistenceSetElementReconfigurationRequest*** message is specified in (reference).

After other CM has received the ***CoexistenceSetElementReconfigurationRequest*** message from the CM, the other CM shall process this ***CoexistenceSetElementReconfigurationRequest*** message, shall generate a ***CoexistenceSetElementReconfigurationResponse*** message, and shall send this ***CoexistenceSetElementReconfigurationResponse*** message to the CM that has sent the ***CoexistenceSetElementReconfigurationRequest*** message. CM operation related to processing a ***CoexistenceSetElementReconfigurationRequest*** message, generating and sending a ***CoexistenceSetElementReconfigurationResponse*** message is specified in (reference).

# Stop operation procedures

# CE stop operation procedure

A CE shall perform the CE stop operation procedure when it has received a request to stop operation. An illustrative example of this procedure is shown in Figure 19. ***StopOperationAnnouncement*** and ***StopOperationConfirm*** messages are defined in (reference).



Figure 19. CE stop operation procedure

After a CE has received a request to stop operation, the CE shall indicate this to the WSO/RLSS it serves, shall generate ***StopOperationAnnouncement*** message, and shall send this ***StopOperationAnnouncement*** message to the CM that serves this CE. CE operation related to generating and sending a ***StopOperationAnnouncement*** message is specified in (reference).

After the CM has received the ***StopOperationAnnouncement*** message from the CE, the CM shall process this message, shall generate a ***StopOperationConfirm*** message, and shall send this ***StopOperationConfirm*** message to the CE. CM operation related to processing the ***StopOperationAnnouncement*** message, generating and sending ***StopOperationConfirm*** message is specified in (reference).

After the CE has received the ***StopOperationConfirm*** message from the CM, the CE shall process this message. CE operation related to processing the ***StopOperationConfirm*** message is specified in (reference).

After the CM has sent the ***StopOperationConfirm*** message to the CE, the CM shall generate a ***CMRegistrationRequest*** message and shall send this ***CMRegistrationRequest*** message to the CDIS that serves this CM. CM operation related to generating and sending ***CMRegistrationRequest*** message is specified in (reference).

After the CDIS has received the ***CMRegistrationRequest*** message to the CM, the CDIS shall generate a ***CMRegistrationResponse*** message and shall send this ***CMRegistrationResponse*** message to the CM. CDIS operation related to generating and sending ***CMRegistrationResponse*** message is specified in (reference).

After the CM has received the ***CMRegistrationResponse*** message from the CDIS, the CM shall process this message. CM operation related to processing the ***CMRegistrationResponse*** message is specified in (reference).

# CM stop operation procedure

A CM shall perform the CM stop operation procedure when it received a request to stop operation. An illustrative example of this procedure is shown in Figure 19. ***StopOperationAnnouncement*** message is defined in (reference).



Figure 19. CM stop operation procedure

After a CM has received a request to stop operation, the CM shall generate several ***StopOperationAnnouncement*** messages. The number of the ***StopOperationAnnouncement*** messages is equal to the number of the CEs served by this CM plus one (for CDIS that serves this CM). After the CM has generated the ***StopOperationAnnouncement*** messages, the CM shall send these ***StopOperationAnnouncement*** messages to the CDIS that serves this CM and to the CEs that are served by this CM. CM operation related to generating and sending a ***StopOperationAnnouncement*** message is specified in (reference).

After a CDIS has received the ***StopOperationAnnouncement*** message from the CM, the CDIS shall process this message, shall generate a ***StopOperationConfirm*** message, and shall send this ***StopOperationConfirm*** message to the CM. CDIS operation related to processing the ***StopOperationAnnouncement*** message, generating and sending ***StopOperationConfirm*** message is specified in (reference).

After the CM has received the ***StopOperationConfirm*** message from the CDIS, the CM shall process the ***StopOperationConfirm*** message. CM operation related to processing the ***StopOperationConfirm*** message is specified in (reference).

After a CE has received the ***StopOperationAnnouncement*** message from the CM, the CE shall process this message, shall generate a ***StopOperationConfirm*** message, and shall send this ***StopOperationConfirm*** message to the CM. After the CE has sent the ***StopOperationConfirm*** message to the CM, the CE shall check whether this has been the last available CM. If there is any available CM, the CE shall select one of the available CMs and try to establish connection with the selected CM. If the CM has been the last available CM, the CE shall indicate this to the WSO/RLSS it serves. CE operation related to processing the ***StopOperationAnnouncement*** message, generating and sending ***StopOperationConfirm*** message is specified in (reference).

After the CM has received the ***StopOperationConfirm*** message from the CE, the CM shall process the ***StopOperationConfirm*** message. CM operation related to processing the StopOperationConfirm message is specified in (reference).

# CDIS stop operation procedure

A CDIS shall perform the CDIS stop operation procedure when it received a request to stop operation. An illustrative example of this procedure is shown in Figure 20. ***StopOperationAnnouncement*** message is defined in (reference).



Figure 20. CDIS stop operation procedure

After a CDIS has received a request to stop operation, the CDIS shall generate one or several ***StopOperationAnnouncement*** messages. The number of the ***StopOperationAnnouncement*** messages is equal to the number of the CMs served by this CDIS. After the CDIS has generated the ***StopOperationAnnouncement*** messages, the CDIS shall send these ***StopOperationAnnouncement*** messages to the CMs that are served by this CDIS. CDIS operation related to generating and sending a ***StopOperationAnnouncement*** message is specified in (reference).

After a CM has received the ***StopOperationAnnouncement*** message from the CDIS, the CM shall process this message, shall generate a ***StopOperationConfirm*** message, and shall send this ***StopOperationConfirm*** message to the CDIS. CM operation related to processing the ***StopOperationAnnouncement*** message, generating and sending ***StopOperationConfirm*** message is specified in (reference).

After the CDIS has received the ***StopOperationConfirm*** message from the CM, the CDIS shall process the ***StopOperationConfirm*** message. CDIS operation related to processing the ***StopOperationConfirm*** message is specified in (reference).