IEEE P802.19
Wireless Coexistence

Logical System Overview Section

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Abstract

This is a contribution to IEEE 802.19 TG1 about system description section and the proposal is to have a new sub-section to give an overview of the coexistence system. The document is intended to be updated frequently based upon comments received from the TG and thus the current version is an intermediate version that is targeted to be adopted at the end to the 802.19.1 draft.

The contribution has two main sections from which the first one (Background information) discusses the reasons behind the proposal. The second section (Text proposal for the candidate draft) contains text that is being proposed to be incorporated into the latest candidate draft. The section contains some instructions to the technical editor to facilitate the editing work.

1 Background information

We believe the IEEE 802.19.1 candidate draft misses an overview sub-section in the system description section (section 3) that would serve as an introduction to a reader to the specification. Currently we have just short introductions to the system architecture and its logical elements and interfaces but there is nothing how those elements and the interfaces form a coexistence system and what are the elements' responsibilities and functionality to keep the system working. We believe such description is needed early on in the draft and this submission contains in the next section initial text that is proposed to be adopted as a framework for further revisions of the draft.

2 Text proposal for the candidate draft

Editorial instruction: Have the following new section with a set of sub-sections added to the candidate draft after the section 3.5 Coexistence services and update the subsequent section numbering accordingly.

3.6 Logical coexistence system overview

Core of the IEEE 802.19.1 coexistence system is comprised of interconnected coexistence managers (CMs) and the coexistence discovery and information system (CDIS) to which all the CMs are connected. On the edge of the coexistenc system there are coexistence enablers (CEs) that are interface elements through which different types of white space objects (WSO) can consume services of the coexistence system. Each WSO is represented by a CE and there is one-to-one mapping between a WSO and a CE.

> **Comment [MiKa1]:** This is a terminology change proposal that relates to the design of the CDIS.
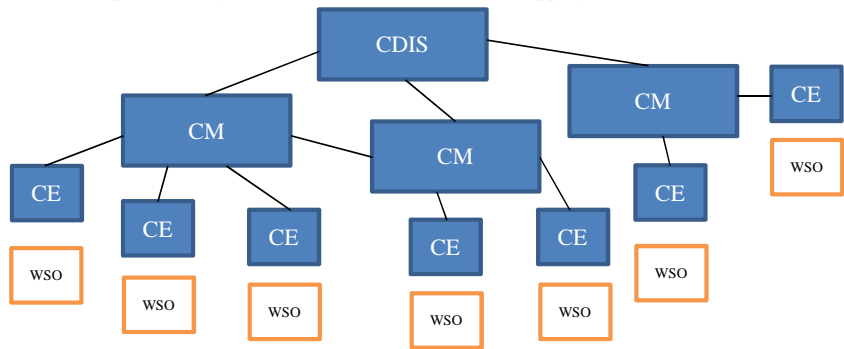

Figure 1: Logical coexistence system overview

3.6.1 CE view of the coexistence system

In order for a WSO to use the coexistence system and its services it needs to be connected to a CE. The CE authenticates to the coexistence system, subscribes to the coexistence system services available for WSOs and registers to the system. The CE does all this on behalf of the WSO connected to it. Thus the WSO is not visible to the coexistence system but the CE represents the WSO connected to it.

3.6.1.1 WSO types and coexistence service availability

The CE has a set of coexistence system services available for service subscription. The set of available services depends on type of the WSO connected to the CE. The following WSO types are defined in this specification:

- WSO transceiver

- WSO transmitter
- WSO receiver
- WSO monitor

A WSO of the WSO transceiver type is a WSO that has both a wireless receiver and a wireless transmitter relevant for the coexistence system. A WSO of the WSO transmitter type is a WSO that has a wireless transmitter relevant for the coexistence system. A WSO of the WSO receiver type is a WSO that has a wireless receiver relevant for the coexistence system. A WSO of the WSO monitor type is a WSO that has no wireless receiver or transmitter relevant for the coexistence system but it is an entity that may be used to issue inquiries to the coexistence system about coexistence environment in a given geo-location.

A CE connected to a WSO of the WSO transceiver or the WSO transmitter type has the coexistence management service and the coexistence information service available. A CE connected to a WSO of the WSO receiver type has the coexistence information service available. A CE connected to a WSO of the WSO monitor type has no coexistence system services available but the CE may issue inquiries to the coexistence system about coexistence environment in a given geo-location.

3.6.1.2 CE authentication
First step a CE needs to take in order to become a part of the coexistence system is authentication. A CE authenticates with a CM and it is valid only with the CM with which the authentication has been done. So, the specification doesn't provide coexistence system level authentication but the authentication is always between a CE and a CM.

3.6.1.3 Service subscription
Once a CE has successfully authenticated to a CM it may subscribe to any of the coexistence system services that are available for the type of the WSO connected to the CE. The CE may change service subscription at any time while it is authenticated to the CM.

3.6.1.4 CE registration
Once a CE has subscribed successfully to at least one of the coexistence services that are available for the type of the WSO connected to the CE the CE uses CE registration to provide information about the WSO to the coexistence system. The CE registration is used also to indicate updates in the WSO information and keep the coexistence system aware of changes in the information.

3.6.2 Coexistence discovery and information system
Note: The intention is to provide a general introduction to the CDIS (the system). This is new material both from architecture and functional perspective and thus different from the most of other text in this section with which the intention is to describe functionality that is already in the draft.

3.5.3 Coexistence managers
Note: This section is expected to cover following issues:
- *Rules for CM interconnections*
- *Basics of CM interactions both in information exchange and coexistence decisions*
- *Different types of CMs and how does that impact on the system, i.e. master and slave CMs and "independent" CMs*

Comment [MiKa2]: If this is something we want to have in the spec, we need to add quite some amount of new functionality and protocol messages to the system to support this. Current draft doesn't have support for this.