Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Ad-Hoc on messages related to the detection of bursty (802.11) systems**
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Re:	IEEE 802.16 Working Group Letter Ballot #29
Abstract	Ad-Hoc on messages related to the detection of bursty (802.11) systems.
Purpose	Discussion and accept.
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Ad-Hoc on messages related to the detection of bursty (802.11) systems

Shulan Feng

HiSilicon

Introduction

Comment 16 and comment 18 in database 80216-07/053r2[2] address the message related to the detection of bursty system.

Comment 16 is proposed by Mariana:

Missing messages announcing the detection of bursty systems (like 802.11) and the suitable Coexistence Protocol

Suggest Remedy:

1. Define a message (or a field in REP message) from SS to BS indicating that a bursty system (coordinated or not) was detected; indicate where was detected (in CXCC or in regular operation); indicate if the 802.11 system is synchronized according to CX-CBP.

2. Define a Message (command) from BS to SS to indicate which protocol for coexistence with Bursty systems will be used in continuation and which CX-Frame sub-frames could be used by the SS for preamble detection
- protocols:

    - CX-CBP

    - CX-Frame in fig. h50 or h51 with no protocol

    - UCP

Two Reply Comments to this comment in 80216h-07_053r2[2].

Reply comments by Kenneth, Accepted-Modified,

Section 11.12 already covers item 1.   The BS already knows what mode we're operating in.

Point 2 - there needs to be a field in the DCD message or the SBC REQ/RSP to tell SSs what mode the BS is operating in.

Reply comments by Xuyong, Reviewed

see 018

Comment 18 is proposed by Xuyong:

According to the comment 023 in database 020r3, we need clarification of better detection of 802.11 beacons for CX-CBP. We may use several approach to address .11 system detection by WirelessMAN-CX system.

e.g.

1) Technically, we may specify the 11 standard to make .11 system to be possibly able to decode 16h air signaling, and .11 system can send CXP message by IP network to address 11/16 coexistence issue.

2) We can get the .11 existence information by multi-mode subscriber device as the SS in WirelessMAN-CX system, however, this need MAC message to report such information and state the usage.

Suggest Remedy:

Use either way to state the case:

a) Specify a MAC message named as "Heterogenuous Neighbor Detected", to be used by multimode subscriber device to report the .11 neighbor

b) State the usage of BS_CCID_RSP to cover the case that the WirelessMAX-CX subscriber can be a multimode device. (There is already statement in this message describtion saying: "The message is also sent when non-WirelessMAN-CX systems are detected, such RLAN signals or radars which have higher regulatory priority to the bandwidth.")

Reply comments by Mariana, Accepted-Modified,

CX-CBP has 2 symbols at the beginning of CXCBI interval in which a sync. 802.11 AP should transmit the beacon, and any energy detected there means that a 802.11 system exists. A message needs to be defined to carry that info.

Shown's suggestion is good, as a SS has a good qnd reliable info about the existence of a 802.11 network. In addition, the SS can indicate if the 802.11 network is sync or not with CXCBI. If it is not, it should request the AP to operate on a different channel, where a 802.16 UCB BS may work.

Problems and proposed solution

[Problem one]

Define a message (or a field in REP message) from SS to BS indicating that a bursty system (coordinated or not) was detected; indicate where was detected (in CXCC or in regular operation); indicate if the 802.11 system is synchronized according to CX-CBP.

[Solution for problem one]

Section 11.12 already covers part of this problem. The bit #6 of basic report in Page 54 Line 47 is used for SS to report if IEEE 802.11 system was detected. The measurement index in Page 54 Line 55 is used for SS to indicate where the bursty system was detected because the measurement index is related to the measurement

period pattern.

So what we need is add an item to indicate if the 802.11 system is synchronized according to CX-CBP. But I don't know how the SS can get this information until the 802.11 system broadcast this information and SS can decode the 802.11 MAC message. And another issue is that there is no indication that 802.11 system shall support CX-CBP. So even if the SS is multi-mode terminal which can work on both 802.16 and 802.11, it can't get this information.

[Conclusion for problem one]

No text is needed.

[Problem two]

Define a Message (command) from BS to SS to indicate which protocol for coexistence with Bursty systems will be used in continuation and which CX-Frame sub-frames could be used by the SS for preamble detection
- protocols:

    - CX-CBP

    - CX-Frame in fig. h50 or h51 with no protocol

    - UCP

[Solution]

I prefer to add a field in the DCD message to tell SSs what mode the BS is operating in.

[Conclusion for problem two]

Add the following row in table 358 in section 11.4.1.

Name	Type	Length	Value	PHY scope
Coexistence Mode with Bursty System	62	1	0: CX-CBP 1: UCP 2: CX-Frame with QP	All

[Problem three]

Specify a MAC message named as "Heterogenuous Neighbor Detected", to be used by multimode subscriber device to report the .11 neighbor

[Solution]

There are many ways to detect heterogeneous neighbor such as .11 system. Ask multi-mode terminal to perform heterogeneous neighbor detection is a good idea but this is not unique feature of mutli-mode terminal. For

example, SS may have the ability to sense .11 system but can not communicate with .11 system.

On the other hand, section 11.12 already covers this problem. So no additional text is needed.

[Conclusion for problem three]

No text is needed.

Proposed Text

[*Add the following row in table 358 in section 11.4.1.*]

Name	Type	Length	Value	PHY scope
Coexistence Mode with Bursty System	62	1	0: CX-CBP 1: UCP 2: CX-Frame with QP	All

Reference

[1] C802.16h-07/106, Action Items from Session #51

[2] 80216h-07/053r2, Comment database