Project	IEEE 802.16 Broadband Wireless Access Working Group <**http://ieee802.org/16**>
Title	clarification on the CX-Frame backward compatibility
Date Submitted	2008-01-15
Source(s)	Shulan Feng Hisilicon Tech. Co., LTD Bld.17, No.8, Dongbeiwang West Road, Hai-Dian District, Beijing, P. R. China Voice: +86-10-82829151 Fax: +86-10-82829075 e-mail to : fengsl@hisilicon.com , fengsl@huawei.com
Re:	IEEE 802.16 Working Group Letter Ballot #29
Abstract	This contribution clarified the backward compatibility issue of CX-Frame and gives an example.
Purpose	Accept.
Notice	This document has been prepared to assist IEEE 802.16. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.
Release	The contributor grants a free, irrevocable license to the IEEE to incorporate material contained in this contribution, and any modifications thereof, in the creation of an IEEE Standards publication; to copyright in the IEEE's name any IEEE Standards publication even though it may include portions of this contribution; and at the IEEE's sole discretion to permit others to reproduce in whole or in part the resulting IEEE Standards publication. The contributor also acknowledges and accepts that this contribution may be made public by IEEE 802.16.
Patent Policy and Procedures	The contributor is familiar with the IEEE 802.16 Patent Policy and Procedures <http://ieee802.org/16/ipr/patents/policy.html>, including the statement "IEEE standards may include the known use of patent(s), including patent applications, provided the IEEE receives assurance from the patent holder or applicant with respect to patents essential for compliance with both mandatory and optional portions of the standard." Early disclosure to the Working Group of patent information that might be relevant to the standard is essential to reduce the possibility for delays in the development process and increase the likelihood that the draft publication will be approved for publication. Please notify the Chair <mailto:chair@wirelessman.org> as early as possible, in written or electronic form, if patented technology (or technology under patent application) might be incorporated into a draft standard being developed within the IEEE 802.16 Working Group. The Chair will disclose this notification via the IEEE 802.16 web site <http://ieee802.org/16/ipr/patents/notices>.

Clarification on the CX-Frame backward compatibility

Shulan Feng

HiSilicon Technologies Co., LTD

Introduction

Comment 244 in comment database 80216h-07/053r2 questions that how the backward compatibility of CX-frame is supported is not clear.

Comment 244 by David.

It is stated "To enable SSs which do not support CX-Frame usage the resource allocation should be scheduled within each CX-frame in WirelessMAN-CX systems." It is not clear how the backward compatibility is supported.

Reply comment by Xuyong

Add the following description at the end of paragraph:

In DL_MAP message, allocate all the DL subframes and GAPs in all the CX-Frame time duration within one message, which use multiple DL_MAP IE with GAP DIUC(13) to reserve all the time duration for GAP and UL subframe duration.

In UL_MAP messgae, allocate all the UL subframes within the next CX-Frame time duration starting from the frame following the master allocation in one message, which use multiple UL_MAP IE to indicate all the UL scheduling information within the CX-Frame.

This contribution clarifies the backward compatibility issue and UL-MAP visibility issue.

Proposed Text

15.4.1.2 Scheduling of interference free intervals in the context of IEEE 802.16 MAC

A CX-Frame is created by a sequence of four 802.16 MAC frames and it is subdivided into specific subframes (see *Figure h 49*).

The sub-frames are generally used for DL and UL activity. However, in some cases the spectral efficiency may be increased if the BS or a forwarder will synchronize their transmissions with an already installed and co-located SS.

The CX-Frame is composed of Master, Slave Shared sub-frames, which can be used for DL or for UL (see *Figure h 48*) and the optional Common sub-frame which may be used in DL only (see *Figure h 49*).

During the Common and the Shared sub-frames may be scheduled the communication not affected by interference.

To enable SSs which do not support CX-Frame usage, the resource allocation should be scheduled within each CX-frame in WirelessMAN-CX systems. The Preambles and MAPs should only be transmitted in the DL master sub-frames. The MAPs in master sub-frames shall be used to indicate the resource allocation of this system in a CX-Frame, possibly including the resource schedule in the master sub-frame, shared subframe, slave sub-frame, borrowed sub-frame, CXCBP sub-frame and optional common sub-frame. In DL_MAP message, allocate all the DL subframes and GAPs in all the CX-Frame time duration within one message, which use multiple DL_MAP IE with GAP DIUC(13) to reserve all the time duration for GAP and UL subframe duration. In UL_MAP messgae, allocate all the UL subframes within the next CX-Frame time duration starting from the frame following the master allocation in one message, which use multiple UL_MAP IE to indicate all the UL scheduling information within the CX-Frame. See figure hxx as an example.

SSs with harmful interference within their neighborhood shall be scheduled to use master subframes. SSs without harmful interference may be scheduled to use any of sub-frames within the CX-Frame.

The frame duration IE in DL-MAP message should be assigned to the duration of the CX-Frame.

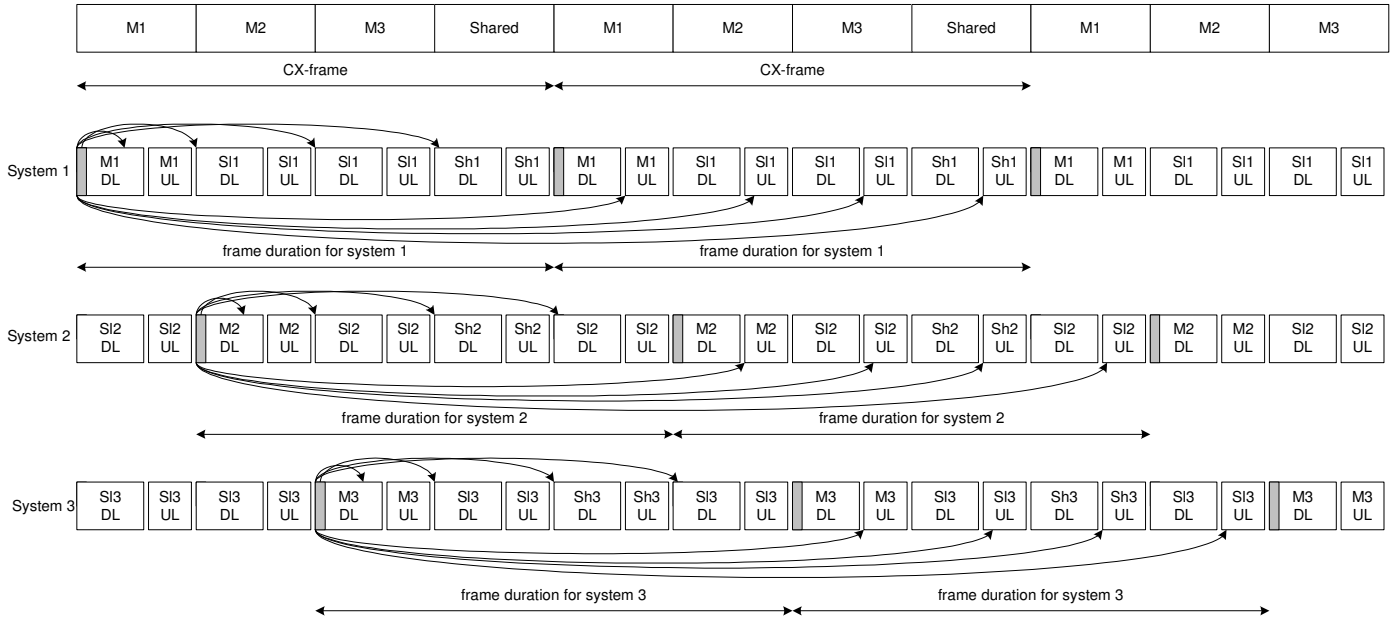

Figure hxx Map allocation for CX-frame

Reference

[1] IEEE 802.16h-D3: Air Interface for Fixed Broadband Wireless Access Systems: Amendment for Improved Coexistence Mechanisms for License-Exempt Operation

[2] IEEE 802.16-2004: Air Interface for Fixed Broadband Wireless Access Systems

[3] IEEE 802.16-2005: Air Interface for Fixed Broadband Wireless Access Systems: Amendment 2: Physical Media Access Control Layers for combined fixed and mobile operation in license band

[4] 80216h-07/053r2, Comment database on 16h draft D3