IEEE P802.11
Wireless LANs

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Abstract

This document provides resolution for the comments listed below

Comments are from: 11-11-0907-0x-00ac-lb178-comments-tgac-d1-0.xlsx

Comments refer to: Draft P802.11ac\_D1.0.pdf

**Comments**

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| 3100 | 95.55 | Modify section 10.15.2 (Basic 20/40 MHz BSS functionality) to include the VHT BSS.  | define the basic operation in a VHT BSS based on the BW capabilities declared by AP and STA   | Agree in principle | MAC |
| 3101 | 95.55 | Modify section 10.15.3.3 (Channel management at the AP and in an IBSS) describing the operation for channel switching in VHT | describe the channel switching operation including VHT AP/STA | Agree in principle | MAC |
| 3102 | 95.55 | Modify section 10.15.4.4 (Restrictions on non-AP STAs that are not infrastructure BSS members)to include VHT operation | describe the BW usage limitation including VHT AP/STA, similarly to the 5GHz HT case | Agree in principle | MAC |

**Discussion**

Agree in principle with the comments.

11ac draft has a section 10.40.1 (Basic VHT BSS functionality) where the requested behavior specifications can be defined.

In this document, the relevant concepts from 10.12.2, 10.15.3.3 and 10.15.4.4 are adapted to the corresponding VHT cases

**Instructions to the editor**

***Modify 10.40.1 as follows***

**10.40 VHT BSS operation**

**10.40.1 Basic VHT BSS functionality**

A VHT AP declares its channel width capability (80 MHz only or 80+80 MHz or 160 MHz) in the Supported Channel Width Set subfield of the VHT Capabilities element as described in Table 8-ac13—Subfields of the VHT Capabilities Info field.

A VHT STA shall not indicate support for 80+80 MHz unless it supports reception and transmission of 80+80 MHz PPDUs using all MCSs within the VHTBSSBasicMCSSet and all MCSs that are mandatory for the attached PHY.

An VHT STA shall not indicate support for 160 MHz unless it supports reception and transmission of 160 MHz PPDUs using all MCSs within the VHTBSSBasicMCSSet and all MCSs that are mandatory for the attached PHY.A VHT STA shall set the Supported Channel Width Set in its HT Capabilities element to 1, indicating that both 20 MHz and 40 MHz operation is supported.

A VHT STA sets the Rx MCS Bitmask of the Supported MCS Set field of its HT Capabilities element according

to the setting of the Rx MCS Map subfield of the VHT Supported MCS Set field of its VHT Capabilities

element as follows: for each subfield Max MCS For *n* SS, , of the Rx MCS Map field with(#2098) a value other than 3 (no support for that number of spatial streams), the STA shall indicate support for MCSs 8(*n*-1) through 8(*n*-1)+7 in the Rx MCS Bitmask, where *n*(#2043) is the number of spatial streams.

A VHT AP shall set the STA Channel Width field in the HT Operation element and the Channel Width field

in the VHT Operation element to indicate the BSS operating channel width as shown in Table 10-ac1.



A STA that has a value of true for dot11VHTOptionImplemented shall set dot11HighThroughputOptionImplemented to true.

A VHT STA that is a member of a VHT BSS shall not transmit a 20 MHz VHT PPDU on a channel other than the primary 20 MHz channel of the BSS, except for a 20 MHz VHT PPDU transmission on an offchannel

TDLS direct link.

A VHT STA that is a member of a VHT BSS with a 40 MHz, 80 MHz, 160 MHz or 80+80 MHz operating channel width shall not transmit a 40 MHz VHT PPDU that does not use the primary 40 MHz channel of the BSS, except for a 40 MHz VHT PPDU transmission on an off-channel TDLS direct link.

A VHT STA that is a member of a VHT BSS with an 80 MHz, 160 MHz or 80+80 MHz operating channel width shall not transmit an 80 MHz VHT PPDU that does not use the primary 80 MHz channel of the BSS, except for an 80 MHz VHT PPDU transmission on an off-channel TDLS direct link.

A VHT STA that is a member of 160 or 80+80 MHz BSS shall not transmit an 160 or 80+80 MHz VHT PPDU

that does not use the primary 80 MHz channel and the secondary 80 MHz(#3333) channel(#3327) of the BSS,

except for an 160 or 80+80 MHz VHT PPDU transmission on an off-channel TDLS direct link.

A STA shall not transmit a PPDU with a TXVECTOR parameter CH\_BANDWIDTH indicating a channel bandwidth that is wider than(#3761) the BSS operating channel width.

An VHT STA (STA1) shall not transmit a PPDU containing frames addressed to another STA (STA2) with a bandwidth wider than the one indicated in the Supported Channel Width Set subfield of the VHT Capabilities element of both STAs.

If the above condition is met, STA1 should not transmit PPDU containing one or more frames addressed to STA2 with a bandwidth wider than the one indicated by VHT Operating Mode Notification frame most recently received from STA2

An VHT STA that is a member of an IBSS adopts the value indicated by the Wide Bandwidth Channel Switch element in received frames according to the rules in 10.1.5 (Adjusting STA timers) and shall not transmit a value for the Wide Bandwidth Channel Switch element that differs from the most recently adopted value.

When switching BSS to a lower operational bandwidth mode, the AP may recalculate the TS bandwidth budget and may delete one or more active TSs by invoking the MLME-DELTS.request primitive with a ReasonCode value of SERVICE\_CHANGE\_PRECLUDES\_TS.

An VHT AP switches BSS bandwidth as follows:

— By changing the New STA Channel Width value of Wide Bandwidth Channel Switch Element of the Channel Switch Announcement element

— By sending a VHT Operating Mode Notification frame with the Channel Width subfield of the VHT Operating Mode field set to the new operational bandwidth.

— Through the New Operating Class field of transmitted Extended Channel Switch

Announcement element

When switching to 20 or 20/40 Operation mode, the rules in 10.15.3.3 apply.

Movement of a BSS from one channel to a different channel and changing operation bandwidth should be scheduled so that all STAs in the BSS, including STAs in power save mode, have the opportunity to receive at least one Extended Channel Switch Announcement element or channel Switch Announcement element before the switch.

In order to maintain existing associations and/or minimize disruption to communications with other STAs

while making a channel width change or while performing a channel relocation, an AP shall follow the applicable procedures in 10.9.8.2 (Selecting and advertising a new channel in an infrastructure BSS) or 10.9.8.3 (Selecting and advertising a new channel in an IBSS).

When the Extended Channel Switch Announcement element and Extended Channel Switch Announcement

frames are transmitted in bands where dot11SpectrumManagementRequired is true, the Channel Switch

Announcement element and Channel Switch Announcement frame may also be transmitted.

A STA that announces a channel switch using both the Extended Channel Switch Announcement element and the

Channel Switch Announcement element shall set the New Channel Number field of both elements to the

same value. An HT STA that receives a channel switch announcement through both the Extended Channel

Switch Announcement element and the Channel Switch Announcement element shall ignore the received

Channel Switch Announcement element

NOTE 1—To avoid possible frame loss, a VHT STA that sends an individually addressed VHT Operating Mode Notification

frame to a second VHT STA indicating reduced operating channel bandwidth and/or reduced Rx Nss can continue with its current operating channel bandwidth and Rx Nss until it receives a frame addressed to itself from the second VHT STA in a PPDU with a bandwidth and Nss that are equal to or less than the channel bandwidth and Nss, respectively, indicated in the VHT Operating Mode Notification frame or a time period has elapsed that reasonably accommodates the time the second VHT STA needs to adapt to the new operating mode, whichever occurs first.

NOTE 2—It might take a long time for a STA to change its operating mode following the transmission of the VHT Operating Mode Notification frame and during that time the STA may not be able to receive frames resulting in frame loss. If a non-AP STA cannot tolerate frame loss during that period it can set the Frame Control Power Management subfield of the Operating Mode Notification frame to 1 to indicate that the STA has entered power save. When the non-AP STA has completed its operating mode change, it can send another frame (such as a QoS Null) with the Frame Control Power Management subfield set to 0 to indicate that the STA has exited power save. The use of RIFS in a VHT BSS is deprecated. As such, a VHT AP shall set the RIFS Mode field in the HT Operation element to 0.