

**CLAIMS**

1. An Access Point (AP) of a plurality of APs affiliated with an AP multi-link device (MLD), each of the plurality of APs operating in a corresponding link of the AP MLD, the AP comprising:

    circuitry, which in operation, generates a frame comprising a traffic indication map (TIM) element and a presence bitmap, the element comprising a partial virtual bitmap (PVM) indicating presence of one or more buffered units for one of a non-AP STA or a non-AP MLD associated with the AP or the AP MLD, the presence bitmap indicating whether additional information relating to the one or more BUs is present in the frame for the one of the non-AP STA or the non-AP MLD; and

    a transmitter, which in operation, transmits the frame in a link.

2. The AP according to claim 1, wherein the additional information comprises at least one of a Link Mapping Bitmap (LMB), a Link Recommendation (LR), a Link-set Bitmap (LSB), a Traffic Identifier (TID) Bitmap, an Access Category (AC) Bitmap, a TID and an AC.

3. The AP according to claim 1, wherein, the frame further comprises a starting Associate Identifier (AID) indicating a smallest AID for which additional information relating to one or more BUs is present in the frame.

4. The AP according to claim 1, wherein a first portion of the PVM in the TIM element is associated with AIDs assigned to legacy STAs and non-MLD Extremely High Throughput (EHT) STAs and a second portion of the PVM in the TIM element is associated with AIDs assigned to non-AP MLDs, wherein the first portion and the second portion of the TIM element do not overlap.

5. The AP according to claim 4, wherein the second portion of the PVM in the TIM element associated with AIDs assigned to non-AP MLDs starts immediately after a third portion of the PVM in the TIM element associated with AIDs assigned to APs and the first portion.

6. The AP according to claim 1, wherein the frame is one of a Beacon frame, a TIM frame, a Fast Initial Link Setup (FILS) Discovery frame and Operation (OPS) frame.

7. The AP according to claim 1, wherein a PVM for non-AP MLDs and a PVM for non-AP STAs that are affiliated with MLDs are carried in different TIM elements.

8. A Station (STA) of a plurality of STAs affiliated with a non-Access-Point (non-AP) multi-link device (MLD) associated with an AP MLD, each of the plurality of STAs operating in a corresponding link of the non-AP MLD, the STA comprising:

a receiver, which in operation, receives a frame in a link, the frame comprising a traffic indication map (TIM) element and a presence bitmap, the element comprising a partial virtual bitmap (PVM) indicating presence of one or more buffered units for the non-AP

MLD, the presence bitmap indicating whether additional information relating to the one or more BUs is present in the frame for the non-AP MLD; and

circuitry, which in operation, processes the frame.

9. The STA according to claim 8, wherein the additional information comprises at least one of a Link Mapping Bitmap (LMB), a Link Recommendation (LR), a Link-set Bitmap (LSB), a Traffic Identifier (TID) Bitmap, an Access Category (AC) Bitmap, a TID and an AC.

10. The STA according to claim 8, wherein the presence bitmap indicates no additional information relating to the one or more BUs for the non-AP MLD and the STA retrieves the one or more BUs in the link in which the frame was received.

11. The STA according to claim 8, wherein the frame is one of a Beacon frame, a TIM frame, a Fast Initial Link Setup (FILS) Discovery frame and Operation (OPS) frame.

12. The STA according to claim 8, wherein the frame further comprises a starting Associate Identifier (AID) indicating a smallest AID for which additional information relating to one or more BUs is present first in the frame.

13. The STA according to claim 8, wherein a first portion of the PVM in the TIM element is associated with AIDs assigned to legacy STAs and non-MLD Extremely High Throughput

(EHT) STAs and a second portion of the PVM in the TIM element is associated with AIDs assigned to non-AP MLDs, wherein the first portion and the second portion of the TIM element do not overlap.

14. The AP according to claim 13, wherein the second portion of the PVM in the TIM element associated with AIDs assigned to non-AP MLDs starts immediately after a third portion of the PVM in the TIM element associated with AIDs assigned to APs and the first portion.

15. The AP according to claim 8, wherein a PVM for non-AP MLDs and a PVM for non-AP STAs that are not affiliated with MLDs are carried in different TIM elements.

16. A communication method, comprising:

generating a frame comprising a traffic indication map (TIM) element and a presence bitmap, the element comprising a partial virtual bitmap (PVM) indicating presence of one or more buffered units for one of a non-AP STA or a non-AP MLD associated with a AP or an AP MLD, the presence bitmap indicating whether additional information relating to the one or more BUs is present in the frame for the one of the non-AP STA or the non-AP MLD; and

transmitting the frame in a link.