described in this embodiment of this application may be indirect coupling or a communication connection between apparatuses, units, or modules in an electrical form, a mechanical form, or another form. Coupling is used for information exchange between the apparatuses, the units, or the modules. The processor 3020 may collaborate with the memory 3030 together. The processor 3020 may execute the program instructions stored in the memory 3030. At least one of the at least one memory may be included in the processor.

[00216] In this embodiment of this application, a specific connection medium between the communication interface 3010, the processor 3020, and the memory 3030 is not limited. In this embodiment of this application, the memory 3030, the processor~~communication interface~~ 3020, and the communication interface 3010 are connected through a bus 3040 in FIG. 30a, and the bus is represented by a bold line in FIG. 30a. A manner of connection between other components is schematically described, and is not limited thereto. The bus may be classified into an address bus, a data bus, a control bus, and the like. For ease of representation, only one thick line is used to represent the bus in FIG. 30a, but this does not mean that there is only one bus or only one type of bus.

[00217] When the apparatus 300 is specifically an apparatus used in a station or an access point, for example, when the apparatus 300 is specifically a chip or a chip system, the communication interface 3010 may output or receive a baseband signal. When the apparatus 300 is specifically a station or an access point, the communication interface 3010 may output or received a radio frequency signal. In the embodiments of this application, the processor may be a general purpose processor, a digital signal processor, an application-specific integrated circuit, a field programmable gate array or another programmable logic device, a discrete gate or transistor logic device, or a discrete hardware component, and may implement or execute the methods, steps, and logical block diagrams disclosed in the embodiments of this application. The general-purpose processor may be a microprocessor, any conventional processor, or the like. The steps of the method disclosed with reference to the embodiments of this application may be directly performed by a hardware processor, or may be performed by using a combination of hardware in the processor and a software module.

[00218] For example, FIG. 30b is a schematic diagram depicting a structure of another station 3000 according to an embodiment of this application. The station may perform operations performed by the station in FIG. 12.

computer-readable storage medium stores instructions. When the instructions are run on a computer, the instructions are configured to perform the method performed by the station in the foregoing method embodiments.

[00228] An embodiment of this application provides a computer-readable storage medium. The computer-readable storage medium stores instructions. When the instructions are run on a computer, the instructions are configured to perform the method performed by the access point in the foregoing method embodiments.

[00229] An embodiment of this application further provides a computer program product. When the computer program product runs on a processor, the computer program product is configured to perform the method performed by the station in the foregoing method embodiments.

[00230] An embodiment of this application further provides a computer program product. When the computer program product runs on a processor, the computer program product is configured to perform the method performed by the access point in the foregoing method embodiments.

[00231] Based on a same inventive concept, a problem-resolving principle of the apparatus provided in this embodiment of this application is similar to that of the method embodiments of this application. Therefore, for implementation of the apparatus, refer to the implementation of the methods. For brevity of description, details are not described herein again.

[00232] It should be noted that, for brief description, the foregoing method embodiments are represented as a combination of a series of actions. However, persons skilled in the art should appreciate that this application is not limited to the described order of the actions, because according to this application, some steps may be performed in other orders or simultaneously. It should be further appreciated by persons skilled in the art that~~, the embodiments described in this specification all belong to preferred embodiments, and~~ the related actions and modules are not necessarily required in this application.

[00233] Description of the embodiments provided in this application may refer to each other, and description of the embodiments has different focuses. For a part not described in detail in an embodiment, refer to related description in another embodiment. For ease of description and brevity, for functions and performed steps of the apparatuses and devices provided in the embodiments of this application, refer to related description in the method embodiments of this application. Mutual reference, combination, or reference may be made between the method embodiments and between the apparatus embodiments.

CLAIMS

What is claimed is:

1. A communication apparatus, wherein the communication apparatus comprises:

a processing unit, configured to generate a physical layer protocol data unit PPDU, wherein a transmission bandwidth of the PPDU is divided into a plurality of segments, the PPDU comprises a universal signal U-SIG field carried on at least one of the plurality of segments, the U-SIG field comprises a bandwidth field, and the bandwidth field indicates a channel bandwidth of a resource unit allocated to a station parked in the segment; and

a communication unit, configured to send the PPDU to the station.

2. A communication apparatus, wherein the communication apparatus comprises:

a communication unit, configured to receive a physical layer protocol data unit PPDU sent by an access point, wherein a transmission bandwidth of the PPDU is divided into a plurality of segments, the PPDU comprises a universal signal U-SIG field carried on a segment, the U-SIG field comprises a bandwidth field, and the bandwidth field indicates a channel bandwidth of a resource unit allocated to a station parked in the segment; and

a processing unit, configured to determine the channel bandwidth of the allocated resource unit based on the received U-SIG field.

3. The apparatus according to claim 1 or 2, wherein the PPDU further comprises an extremely high throughput signal EHT-SIG field carried on the segment, the EHT-SIG field comprises a resource unit allocation subfield, the bandwidth indicated by the bandwidth field corresponds to a quantity of resource unit allocation subfields comprised in the EHT-SIG field, and the resource unit allocation subfield is used to indicate the resource unit allocated to the station parked in the segment.

4. The apparatus according to claim 3, wherein if the bandwidth indicated by the bandwidth field is 40 MHz, the U-SIG field and the EHT-SIG field are transmitted at the bandwidth of 40 MHz.

5. The apparatus according to claim 3 or 4, wherein there may be one or more of the following correspondences between the bandwidth indicated by the bandwidth field and the quantity of resource unit allocation subfields:

if the bandwidth indicated by the bandwidth field is 20 megahertz MHz, the quantity of

resource unit allocation subfields comprised in the EHT-SIG field is 1;

if the bandwidth indicated by the bandwidth field is 40 MHz, the quantity of resource unit allocation subfields comprised in the EHT-SIG field is 2;

if the bandwidth indicated by the bandwidth field is 80 MHz, the quantity of resource unit allocation subfields comprised in the EHT-SIG field is 4;

if the bandwidth indicated by the bandwidth field is 160 MHz, the quantity of resource unit allocation subfields comprised in the EHT-SIG field is 8;

if the bandwidth indicated by the bandwidth field is 240 MHz, the quantity of resource unit allocation subfields comprised in the EHT-SIG field is 12; or

if the bandwidth indicated by the bandwidth field is 320 MHz, the quantity of resource unit allocation subfields comprised in the EHT-SIG field is 16.

6. The apparatus according to claim 1 or 2, wherein the PPDU further comprises an extremely high throughput-signal EHT-SIG field carried on the segment, the EHT-SIG field comprises a preamble puncturing indication field, and the preamble puncturing indication field is used to indicate a puncturing status of the channel bandwidth indicated by the bandwidth field.

7. The apparatus according to claim 6, wherein the U-SIG field further comprises a compression field, and if the compression field indicates a compression mode, the EHT-SIG field comprises the preamble puncturing indication field.

8. The apparatus according to claim 7, wherein if a resource of the station parked in the segment is used for non-OFDMA transmission, the compression field indicates the compression mode.

9. The apparatus according to any one of claims 6 to 8, wherein the U-SIG field is further used to indicate number of EHT-SIG Symbols, and the preamble puncturing indication field is further used to indicate number of multi-user multiple-input multiple-output MU-MIMO users.

10. The apparatus according to any one of claims 6 to 8, wherein the U-SIG field is further used to indicate number of EHT-SIG Symbols, the PPDU further comprises a first field carried on the segment, the first field is used to indicate number of multi-user multiple-input multiple-output MU-MIMO users, and the first field is different from the preamble puncturing indication field.

11. A bandwidth indication method applied in a wireless local area network, wherein the method comprises:

generating, by an access point, a physical layer protocol data unit PPDU, wherein a

transmission bandwidth of the PPDU is divided into a plurality of segments, the PPDU comprises a universal signal U-SIG field carried on a segment, the U-SIG field comprises a bandwidth field, and the bandwidth field indicates a channel bandwidth of a resource unit allocated to a station parked in the segment; and

sending, by the access point, the PPDU to the station.

12. A bandwidth indication method applied in a wireless local area network, wherein the method comprises:

receiving, by a station, a physical layer protocol data unit PPDU sent by an access point, wherein a transmission bandwidth of the PPDU is divided into a plurality of segments, the PPDU comprises a universal signal U-SIG field carried on a segment, the U-SIG field comprises a bandwidth field, and the bandwidth field indicates a channel bandwidth of a resource unit allocated to a station parked in the segment; and

determining, by the station, the channel bandwidth of the allocated resource unit based on the received U-SIG field.

13. The method according to claim 11 or 12, wherein the PPDU further comprises an extremely high throughput-signal EHT-SIG field carried on the segment, the EHT-SIG field comprises a resource unit allocation subfield, the bandwidth indicated by the bandwidth field corresponds to a quantity of resource unit allocation subfields comprised in the EHT-SIG field, and the resource unit allocation subfield is used to indicate the resource unit allocated to the station parked in the segment.

14. The method according to claim 13, wherein if the bandwidth indicated by the bandwidth field is 40 MHz, the U-SIG field and the EHT-SIG field are transmitted at the bandwidth of 40 MHz.

15. The method according to claim 13 or 14, wherein there may be one or more of the following correspondences between the bandwidth indicated by the bandwidth field and the quantity of resource unit allocation subfields comprised in the EHT-SIG field :

if the bandwidth indicated by the bandwidth field is 20 megahertz MHz, the quantity of resource unit allocation subfields comprised in the EHT-SIG field is 1;

if the bandwidth indicated by the bandwidth field is 40 MHz, the quantity of resource unit allocation subfields comprised in the EHT-SIG field is 2;

if the bandwidth indicated by the bandwidth field is 80 MHz, the quantity of resource unit

allocation subfields comprised in the EHT-SIG field is 4;

if the bandwidth indicated by the bandwidth field is 160 MHz, the quantity of resource unit allocation subfields comprised in the EHT-SIG field is 8;

if the bandwidth indicated by the bandwidth field is 240 MHz, the quantity of resource unit allocation subfields comprised in the EHT-SIG field is 12; or

if the bandwidth indicated by the bandwidth field is 320 MHz, the quantity of resource unit allocation subfields comprised in the EHT-SIG field is 16.

16. The method according to claim 11 or 12, wherein the PPDU further comprises an extremely high throughput-signal EHT-SIG field carried on the segment, the EHT-SIG field comprises a preamble puncturing indication field, and the preamble puncturing indication field is used to indicate a puncturing status of the channel bandwidth indicated by the bandwidth field.

17. The method according to claim 16, wherein the U-SIG field further comprises a compression field, and if the compression field indicates a compression mode, the EHT-SIG field comprises the preamble puncturing indication field.

18. The method according to claim 17, wherein if a resource of the station parked in the segment is used for non-OFDMA transmission, the compression field indicates the compression mode.

19. The method according to any one of claims 16 to 18, wherein if the U-SIG field is further used to indicate number of EHT-SIG-Symbols, and the preamble puncturing indication field is further used to indicate number of multi-user multiple-input multiple-output MU-MIMO users.

20. The method according to any one of claims 16 to 18, wherein the U-SIG field is further used to indicate number of EHT-SIG-Symbols, the PPDU further comprises a first field carried on the segment, and the first field is used to indicate number of multi-user multiple-input multiple-output MU-MIMO users, and the first field is different from the preamble puncturing indication field.

21. A communication apparatus, wherein the communication apparatus comprises:

a processing unit, configured to generate a physical layer protocol data unit PPDU, wherein a transmission bandwidth of the PPDU is divided into a plurality of segments, the PPDU comprises a universal signal U-SIG field and an extremely high throughput-signal EHT-SIG field that are carried on at least one of the plurality of segments, the transmission bandwidth of the PPDU is used for non-OFDMA transmission, the EHT-SIG field does not comprise a resource unit

~~allocation subfield, the U-SIG field indicates number of EHT-SIG Symbols, the PPDU further comprises a first field carried on the at least one segment of the plurality of segments, and the first field indicates number of multi-user multiple-input multiple-output MU-MIMO users; and~~

~~a communication unit, configured to send the PPDU to the station.~~

~~22. A communication apparatus, wherein the communication apparatus comprises:~~

~~a communication unit, configured to receive a physical layer protocol data unit PPDU, wherein a transmission bandwidth of the PPDU is divided into a plurality of segments, the PPDU comprises a universal signal U-SIG field and an extremely high throughput-signal EHT-SIG field that are carried on at least one of the plurality of segments, the transmission bandwidth of the PPDU is used for non-OFDMA transmission, the EHT-SIG field does not comprise a resource unit allocation subfield, the U-SIG field indicates number of EHT-SIG Symbols, the PPDU further comprises a first field carried on the at least one segment of the plurality of segments, and the first field indicates number of multi-user multiple-input multiple-output MU-MIMO users; and~~

~~a processing unit, configured to determine the number of EHT-SIG Symbols and the number of MU-MIMO users based on the U-SIG field and the first field respectively.~~

~~23. The apparatus according to claim 21 or 22, wherein EHT-SIG fields carried on different segments in the PPDU are the same.~~

~~24. The apparatus according to any one of claims 21 to 23, wherein EHT-SIG fields carried on different channels in a same segment in the PPDU are the same.~~

~~25~~1. A communication~~PPDU transmission~~ method applied in a wireless local area network, wherein the method comprises:

generating, by a communication apparatus~~an access point~~, a physical layer protocol data unit (PPDU), wherein a transmission bandwidth of the PPDU is divided into a plurality of segments, the PPDU comprises a universal signal (U-SIG) field and an extremely high throughput-signal (EHT-SIG) field, wherein the U-SIG field and the EHT-SIG field are carried on at least one segment of the plurality of segments, the transmission bandwidth of the PPDU is used for non-OFDMA transmission, ~~the EHT-SIG field does not comprise a resource unit allocation subfield,~~ the U-SIG field indicates number of EHT-SIG Symbols, the PPDU further comprises a first field, wherein the first field is carried on the at least one segment of the plurality of segments, and the first field indicates number of multi-user multiple-input multiple-output (MU-MIMO) users; and

sending, by the communication apparatus~~access point~~, the PPDU to ~~the~~ a station.

2. The method according to claim 1, wherein the EHT-SIG field does not comprise a resource unit allocation subfield.

3. The method according to claim 1 or 2, wherein EHT-SIG fields carried on different segments in the PPDU are the same.

4. The method according to any one of claims 1 to 3, wherein EHT-SIG fields carried on different channels in a same segment in the PPDU are the same.

5. The method according to claim 4, wherein each channel of the different channels is 20MHz.

6. The method according to any one of claims 1 to 5, wherein the at least one segment of the plurality of segments is 80MHz.

~~26~~7. A communication~~PPDU transmission~~ method applied in a wireless local area network, wherein the method comprises:

receiving, by a communication apparatus~~a station~~, a physical layer protocol data unit (PPDU), wherein a transmission bandwidth of the PPDU is divided into a plurality of segments, the PPDU comprises a universal signal (U-SIG) field and an extremely high throughput-signal (EHT-SIG) field, wherein the U-SIG field and the EHT-SIG field are carried on at least one segment of the plurality of segments, the transmission bandwidth of the PPDU is used for non-OFDMA transmission, ~~the EHT-SIG field does not comprise a resource unit allocation subfield,~~ the U-SIG field indicates number of EHT-SIG Symbols, the PPDU further comprises a first field, wherein the first field is carried on the at least one segment of the plurality of segments, and the first field indicates number of multi-user multiple-input multiple-output (MU-MIMO) users~~; and~~.

8. The method according to claim 7, wherein the method further comprises:

determining, by the communication apparatus~~the station~~, the number of EHT-SIG Symbols and the number of MU-MIMO users based on the U-SIG field and the first field respectively.

9. The method according to claim 7 or 8, wherein the EHT-SIG field does not comprise a resource unit allocation subfield.

~~27~~10. The method according to any one of claims 7 to 9~~claim 25 or 26~~, wherein EHT-SIG fields carried on different segments in the PPDU are the same.

~~28~~11. The method according to any one of claims ~~25~~ 7 to ~~27~~10, wherein EHT-SIG fields carried on different channels in a same segment in the PPDU are the same.

12. The method according to claim 11, wherein each channel of the different channels is 20MHz.

13. The method according to any one of claims 7 to 12, wherein the at least one segment of the plurality of segments is 80MHz.

~~29~~14. A communication apparatus, wherein the communication apparatus comprises a processor, and when the processor executes a computer program in a memory, the method according to any one of claims ~~11~~ 1 to ~~20~~ 6 or claims ~~25~~ 7 to ~~28~~ 13 is performed.

~~30. A communication apparatus, comprising a processor and a memory, wherein~~

~~the memory is configured to store computer-executable instructions; and~~

~~the processor is configured to execute the computer-executable instructions stored in the memory, so that the communication apparatus performs the method according to any one of claims 11 to 20 or claims 25 to 28.~~

~~31. A communication apparatus, comprising a processor, a memory, and a transceiver, wherein~~

~~the transceiver is configured to receive a signal or send a signal;~~

~~the memory is configured to store a computer program; and~~

~~the processor is configured to invoke, from the memory, the computer program to perform the method according to any one of claims 11 to 20 or claims 25 to 28.~~

~~32. A communication apparatus, comprising a processor and a communication interface, wherein~~

~~the communication interface is configured to receive a computer program and transmit the computer program to the processor, and the processor runs the computer-executable instructions to perform the method according to any one of claims 11 to 20 or claims 25 to 28.~~

~~33~~15. A computer-readable storage medium, wherein the computer-readable storage medium is configured to store computer-executable instructions, and when the computer-executable instructions are executed, the method according to any one of claims ~~11~~ 1 to ~~20~~ 6 or claims ~~25~~ 7 to ~~28~~ 13 is implemented.

16. A computer program product, wherein the computer program product comprises a computer program, and when the computer program is executed, the method according to any one of claims 1 to 6 or claims 7 to 13 is implemented.

17. A computer program, wherein when the computer program is executed, the method according to any one of claims 1 to 6 or claims 7 to 13 is implemented.

~~34. A computer program product, wherein the computer program product comprises a~~

~~computer program, and when the computer program is executed, the method according to any one of claims 11 to 20 or claims 25 to 28 is implemented.~~

~~35. A communication apparatus, wherein the communication apparatus is configured to perform the method according to any one of claims 11 to 20 or claims 25 to 28.~~