SUMMARY

[0004] Embodiments of this application provide a data transmission method and a related apparatus, so that a signaling field in a PPDU can carry more information.

[0005] According to a first aspect, an implementation of this application provides a data transmission method. The method includes:

[0006] A network device generates a first physical layer protocol data unit PPDU, where the first PPDU includes a first universal-Signaling field U-SIG field and a first extremely high throughput-Signaling field EHT-SIG field, and a sum of a quantity of information bits of the first U-SIG field and a quantity of information bits of the first EHT-SIG field is less than or equal to 78 information bits.

[0007] The network device sends an encoded first PPDU to a station.

[0008] The first U-SIG field and the first EHT-SIG field meet at least one of the following:

[0009] At least one of the first U-SIG field and the first EHT-SIG field includes an identifier indication field, where the identifier indication field is used to uniquely identify one station, for example, the identifier indication field is used to uniquely identify one station in a basic service set (Basic Service Set, BSS) including the network device;

the first U-SIG field or the first EHT-SIG field includes a PPDU format indication field, and the PPDU format indication field occupies more than 1 information bit; or

the first demodulation indication field includes a spatial reuse indication field.

[0010] In this way, the technical solution of this implementation of this application can ensure that the sum of the quantity of information bits of the first U-SIG field and the quantity of information bits of the first EHT-SIG field is less than or equal to 78 information bits. This reduces indication overheads. In addition, the first U-SIG field and the first EHT-SIG field can carry more information without increasing indication overheads.

[0011] It should be noted that names of the first EHT-SIG field and the second EHT-SIG field in this implementation of this application are determined according to the 802.11be standard. The names of the first EHT-SIG field and the second EHT-SIG field in this implementation of this application may alternatively be names of related SIG fields in other standard versions. The first EHT-SIG field and the second EHT-SIG field in this implementation of this application are not limited to SIG fields related to the 802.11be standard. The first EHT-SIG field and the second

transmission method. The method includes:

[0033] A station receives a first PPDU sent by a network device, and

the station decodes the first PPDU to obtain a decoded first PPDU. The decoded first PPDU includes a first U-SIG field and a first EHT-SIG field, and a sum of a quantity of information bits of the first U-SIG field and a quantity of information bits of the first EHT-SIG field is less than or equal to 78 information bits.

[0034] The first U-SIG field and the first EHT-SIG field meet at least one of the following:

[0035] At least one of the first U-SIG field and the first EHT-SIG field includes an identifier indication field, where the identifier indication field is used to uniquely identify one station, for example, the identifier indication field is used to uniquely identify one station in a basic service set (Basic Service Set, BSS) including the network device;

the first U-SIG field or the first EHT-SIG field includes a PPDU format indication field, and the PPDU format indication field occupies more than 1 information bit; or

the first demodulation indication field includes a spatial reuse indication field.

[0036] In this way, the technical solution of this implementation of this application can ensure that the sum of the quantity of information bits of the first U-SIG field and the quantity of information bits of the first EHT-SIG field is less than or equal to 78 information bits. This reduces indication overheads. In addition, the first U-SIG field and the first EHT-SIG field can carry more information without increasing indication overheads, so that the station can obtain more information from the first U-SIG field and the first EHT-SIG field.

[0037] Specifically, in a possible implementation, at least one of the first U-SIG field and the first EHT-SIG field includes an identifier indication field. The identifier indication field is an association identifier (Association Identifier, AID) for uniquely identifying one station in the basic service set including the network device. In this way, an identifier indication field included in the encoded first PPDU can uniquely indicate one STA. The STA may learn, from the first U-SIG field and the first EHT-SIG field, whether the encoded first PPDU is sent to the STA, without continuing to receive a subsequent preamble data field. This reduces power consumption of the station. In addition, even if a data field following the first U-SIG field and a data field following the first EHT-SIG field are not correctly received, because the station can determine, based on the first U-SIG field and the first EHT-SIG field, that the first PPDU is sent to the station, the station may perform hybrid automatic repeat requests (Hybrid Automatic Repeat Request, HARQ) combined

the first U-SIG field or the first EHT-SIG field includes a PPDU format indication field, and the PPDU format indication field occupies more than 1 information bit; or

the first demodulation indication field includes a spatial reuse indication field.

[0063] In this way, the technical solution of this implementation of this application can ensure that the sum of the quantity of information bits of the first U-SIG field and the quantity of information bits of the first EHT-SIG field is less than or equal to 78 information bits. This reduces indication overheads. In addition, the first U-SIG field and the first EHT-SIG field can carry more information without increasing indication overheads.

[0064] In a possible implementation, at least one of the first U-SIG field and the first EHT-SIG field includes an identifier indication field. The identifier indication field is an association identifier (Association Identifier, AID) for uniquely identifying one station in the basic service set including the network device. In this way, an identifier indication field included in the encoded first PPDU can uniquely indicate one STA. The STA may learn, from the first U-SIG field and the first EHT-SIG field, whether the encoded first PPDU is sent to the STA, without continuing to receive a subsequent preamble data field. This reduces power consumption of the station. In addition, even if a data field following the first U-SIG field and a data field following the first EHT-SIG field are not correctly received, because the station can determine, based on the first U-SIG field and the first EHT-SIG field, that the first PPDU is sent to the station, the station may perform hybrid automatic repeat requests (Hybrid Automatic Repeat Request, HARQ) combined reception based on subsequent retransmission. Moreover, a third-party device can learn of a sender and a receiver of the first PPDU without causing interference to a device that is performing transmission. This helps the third-party device perform scheduling.

[0065] In another possible implementation, a field that indicates a PPDU format and that is included in the first U-SIG field or the first EHT-SIG field occupies more than 1 information bit. In this case, compared with a solution in which only one information bit is occupied for indicating the PPDU format, in this implementation of this application, the PPDU format indication field occupies more than 1 information bit. In this way, the PPDU format indication field can carry more information, so that more functions can be supported.

[0066] The PPDU format indication field may indicate the PPDU format and indicate that a transmission mode is SU or MU transmission. In this way, when receiving a U-SIG field of first (N–1) information bits, the station can determine whether SU transmission or MU transmission is

[0094] In this way, the technical solution of this implementation of this application can ensure that the sum of the quantity of information bits of the first U-SIG field and the quantity of information bits of the first EHT-SIG field is less than or equal to 78 information bits. This reduces indication overheads. In addition, the first U-SIG field and the first EHT-SIG field can carry more information without increasing indication overheads, so that the station can obtain more information from the first U-SIG field and the first EHT-SIG field.

[0095] Specifically, in a possible implementation, at least one of the first U-SIG field and the first EHT-SIG field includes an identifier indication field. The identifier indication field is an association identifier (Association Identifier, AID) for uniquely identifying one station. In this way, an identifier indication field included in the encoded first PPDU can uniquely indicate one STA. The STA may learn, from the first U-SIG field and the first EHT-SIG field, whether the encoded first PPDU is sent to the STA, without continuing to receive a subsequent preamble data field. This reduces power consumption of the station. In addition, even if a data field following the first U-SIG field and a data field following the first EHT-SIG field are not correctly received, because the station can determine, based on the first U-SIG field and the first EHT-SIG field, that the first PPDU is sent to the station, the station may perform hybrid automatic repeat requests (Hybrid Automatic Repeat Request, HARQ) combined reception based on subsequent retransmission. Moreover, a third-party device can learn of a sender and a receiver of the first PPDU without causing interference to a device that is performing transmission. This helps the third-party device perform scheduling.

[0096] In another possible implementation, a field that indicates a PPDU format and that is included in the first U-SIG field or the first EHT-SIG field occupies more than 1 information bit. In this case, compared with a solution in which only one information bit is occupied for indicating the PPDU format, in this implementation of this application, the PPDU format indication field occupies more than 1 information bit. In this way, the PPDU format indication field can carry more information, so that more functions can be supported.

[0097] The PPDU format indication field may indicate the PPDU format and indicate that a transmission mode is SU or MU transmission. In this way, when receiving a U-SIG field of first (N–1) information bits, the station can determine whether SU transmission or MU transmission is performed, and use a corresponding reception policy.

[0098] For example, the PPDU format indication field may further include information

following: a field indicating a number of space-time streams, a midamble periodicity, and Doppler, a beamforming indication field, a beam change indication field, a field indicating a modulation and coding scheme and whether dual carrier modulation is used, and a coding indication field.

[00107] In some implementations, the start information bit of the first indication subfield is the N^{th} information bit of the first U-SIG field, and a field type of a field that follows an N^{th} information bit and that is of the second U-SIG field and a field type of a field that is before the station identifier indication field and that is of the second EHT-SIG field include one or more of the following: a field indicating a number of EHT-SIG field symbols or a number of multi-user multiple-input multiple-output users, a field indicating an EHT-SIG field modulation and coding scheme and whether dual carrier modulation is used, a field indicating a number of extremely high throughput-long training field EHT-LTF symbols, a midamble periodicity, and Doppler, a resource unit allocation indication field, a preamble puncturing indication field, and a center 26-tone resource unit (Center 26-tone Resource Allocation, Center 26-tone RU) indication field.

[00108] In some implementations, the field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a first string, where a first string group including the first string indicates that Doppler does not exist, the first string indicates the number of EHT-LTF symbols, and each string in the first string group corresponds to one number of EHT-LTF symbols; the field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a second string, where a second string group including the second string indicates that Doppler exists and that the midamble periodicity is a first periodicity, the second string indicates the number of EHT-LTF symbols, and each string in the second string group corresponds to one number of EHT-LTF symbols; or the field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a third string, where a third string group including the third string indicates that Doppler exists and that the midamble periodicity is a second periodicity, the third string indicates the number of EHT-LTF symbols, and each string in the third string group corresponds to one number of EHT-LTF symbols.

[00109] In this way, information bits are saved in the foregoing manner, so that the first EHT-SIG field and the second EHT-SIG field can carry more information, and the station obtains more information.

[00110] According to a twentieth aspect, an implementation of this application further provides a station, including a processing unit and a transceiver~~receiving~~ unit.

[00111] ~~A~~ The transceiver unit is configured to receive a PPDU sent by a network device.

[00112] The PPDU includes an EHT-SIG field, and the EHT-SIG field includes a field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler. The field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a first string, where a first string group including the first string indicates that Doppler does not exist, the first string indicates the number of EHT-LTF symbols, and each string in the first string group corresponds to one number of EHT-LTF symbols; the field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a second string, where a second string group including the second string indicates that Doppler exists and that the midamble periodicity is a first periodicity, the second string indicates the number of EHT-LTF symbols, and each string in the second string group corresponds to one number of EHT-LTF symbols; or the field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a third string, where a third string group including the third string indicates that Doppler exists and that the midamble periodicity is a second periodicity, the third string indicates the number of EHT-LTF symbols, and each string in the third string group corresponds to one number of EHT-LTF symbols.

[00113] In this way, the station determines Doppler and a midamble periodicity based on a string group including a string, and indicates a number of EHT-LTF symbols based on a value of the string. In this case, a quantity of information bits of a field indicating a number of EHT-LTF symbols, Doppler, and a midamble periodicity is reduced. In this way, the PPDU can carry more other information, so that the station can obtain more information from the PPDU.

[00114] According to a twenty-first aspect, an implementation of this application further provides a station, including a processing unit and a transceiver is~~receiving~~ unit.

[00115] ~~A~~ The transceiver unit is configured to receive a PPDU sent by a network device. A bandwidth for receiving the PPDU is greater than 20 MHz, and the bandwidth includes a first sub-bandwidth and a second sub-bandwidth. The first sub-bandwidth carries a first content channel of an EHT-SIG field of the PPDU, and the second sub-bandwidth carries a second content channel of the EHT-SIG field.

[00116] An i^{th} information bit to a j^{th} information bit of the first content channel carry a user field, and a field of first (i–1) information bits of the first content channel is the same as a field of first (i–1) information bits of the second content channel, where both i and j are positive integers, and $i < j$; or an i^{th} information bit to a j^{th} information bit of the first content channel carry a resource

unit allocation indication field and a user field, and a field of first (i–1) information bits of the first content channel is the same as a field of first (i–1) information bits of the second content channel, where both i and j are positive integers, and i < j.

[00117] According to a twenty-second aspect, an implementation of this application further provides a station, including a processing unit and a transceiver~~receiving~~ unit.

[00118] ~~A~~ The transceiver unit is configured to receive a PPDU sent by a network device. A bandwidth for receiving the PPDU is greater than 20 MHz, and the bandwidth includes a first sub-bandwidth and a second sub-bandwidth. The first sub-bandwidth carries a first content channel of an EHT-SIG field of the PPDU, and the second sub-bandwidth carries a second content channel of the EHT-SIG field.

[00119] An i^{th} information bit to a j^{th} information bit of the first content channel carry a user field, and an i^{th} information bit to a j^{th} information bit of the second content channel carry a padding field, where both i and j are positive integers, and i < j.

[00120] According to a twenty-third aspect, an implementation of this application further provides a station, including a processing unit and a transceiver~~receiving~~ unit.

[00121] ~~A~~ The transceiver unit is configured to receive a PPDU sent by a network device. A bandwidth for receiving the PPDU is greater than 20 MHz, and the bandwidth includes a first sub-bandwidth and a second sub-bandwidth. The first sub-bandwidth carries a first content channel of an EHT-SIG field of the PPDU, and the second sub-bandwidth carries a second content channel of the EHT-SIG field.

[00122] The first content channel includes a first sub user field, the second content channel includes the second sub user field, and a user field of a first user includes the first sub user field and the second sub user field.

[00123] According to a twenty-fourth aspect, an implementation of this application further provides a station, including a processing unit and a transceiver~~receiving~~ unit.

[00124] ~~A~~ The transceiver unit is configured to receive a PPDU sent by a network device. A bandwidth for receiving the PPDU is greater than 20 MHz, and the bandwidth includes a first sub-bandwidth and a second sub-bandwidth. The first sub-bandwidth carries a first content channel of an EHT-SIG field of the PPDU, and the second sub-bandwidth carries a second content channel of the EHT-SIG field.

[00125] A user field of the first content channel is the same as a user field of the second content

a quantity of information bits of each field. Table 2 shows a field included in an EHT-SIG field in a conventional implementation and a quantity of information bits of each field.

Table 1

Information bit	Field
B0–B2 (U-SIG-1)	Physical layer version indication
B3	Uplink/downlink indication
B4–B9	Basic service set color indication
B10–B16	Transmission opportunity
B17–B22	Bandwidth
B23	PPDU format
B24–B25	Guard interval and EHT-LTF size
B0–B3 (U-SIG-2)	Number of EHT-LTFs symbols and midamble periodicity
B4–B6	Modulation and coding scheme used for an EHT-SIG field and whether dual carrier modulation is used
B7–B10	Number of MU-MIMO users or number of EHT-SIG field symbols
B11	Low-density parity-check extra symbol segment
B12	Space-time block coding
B13–B14	Pre-forward error correction padding factor
B15	Packet extension disambiguity?
B16–B19	Cyclic redundancy code
B20–B25	Tail bits

Table 2

Information bit	Field
B0–B5	Partial station identifiers

PPDU changes. For example, encoding is performed by using an MCS 0, and the MCS 0 is binary phase shift keying (Binary Phase Shift Keying, BPSK) modulation with a coding rate of 1/2. In this case, a sum of quantities of bits of the first U-SIG field and the first EHT-SIG field in the encoded first PPDU is 156 bits, that is, a total of three orthogonal frequency division multiplexing (Orthogonal Frequency Division Multiplexing, OFDM) symbols. When another modulation scheme and another coding rate are used, the 156 bits may also be described as an equivalent symbol quantity.

[00173] S303: The STA decodes the first PPDU to obtain a decoded first PPDU, where the decoded first PPDU includes a first U-SIG field and a first EHT-SIG field.

[00174] The first U-SIG field and the first EHT-SIG field meet at least one of the following: At least one of the first U-SIG field and the first EHT-SIG field includes an identifier indication field, where the identifier indication field is used to uniquely identify one STA; a field that indicates a PPDU format and that is included in the first U-SIG field or the first EHT-SIG field occupies more than 1 information bit; or the first U-SIG field or the first EHT-SIG field includes a spatial reuse indication field.

[00175] In the conventional technical solution corresponding to FIG. 2, fields included in a U-SIG field and a quantity of information bits of each field in the SU transmission are the same as those in the MU transmission scenario, and some fields required during MU transmission are not required in the SU scenario. Consequently, an overhead waste is caused and transmission resources cannot be fully used. In this way, compared with the conventional technical solution, the technical solution of this embodiment of this application can ensure that the sum of the quantity of information bits of the first U-SIG field and the quantity of information bits of the first EHT-SIG field is less than or equal to 78 information bits. This can reduce indication overheads. In addition, the first U-SIG field and the first EHT-SIG field can carry more information without increasing indication overheads.

[00176] Specifically, in an example, at least one of the first U-SIG field and the first EHT-SIG field includes an identifier indication field. The identifier indication field is used to uniquely identify one STA. Specifically, the identifier indication field is specifically an association identifier (Association Identifier, AID), and the AID may uniquely identify or indicate one station. The station is a station in a basic service set (Basic Service Set, BSS) including the network device. In this way, the encoded first PPDU includes an identifier indication field used to indicate a unique

~~AID~~STA. The STA may learn, from the first U-SIG field and the first EHT-SIG field, whether the encoded first PPDU is sent to the STA, without continuing to receive a subsequent preamble data field. This reduces power consumption of the STA. In addition, even if a data field following the first U-SIG field and a data field following the first EHT-SIG field are not correctly received, because the STA can determine, based on the first U-SIG field and the first EHT-SIG field, that the first PPDU is sent to the STA, the STA may perform HARQ combined reception based on subsequent retransmission. Moreover, a third-party device can learn of a sender and a receiver of the first PPDU without causing interference to a device that is performing transmission. This helps the third-party device perform scheduling.

[00177] Specifically, that at least one of the first U-SIG field and the first EHT-SIG field includes an identifier indication field may be understood as: The first U-SIG field includes the identifier indication field; the first EHT-SIG field includes the identifier indication field; or the first U-SIG field and the first EHT-SIG field include the identifier indication field, where the first U-SIG field includes a part of the identifier indication field, and the first EHT-SIG field includes another part of the identifier indication field.

[00178] The identifier indication field may indicate a unique ~~AID~~STA. For example, when the network device sends the first PPDU to one STA in an SU transmission scenario, the identifier indication field can uniquely indicate the one STA.

[00179] Specifically, the identifier indication field has 11 information bits. In this way, the information bits in the identifier indication field can meet a requirement on an information bit for uniquely identifying one STA.

[00180] In another example, a field that indicates a PPDU format and that is included in the first U-SIG field or the first EHT-SIG field occupies more than 1 information bit. In this case, compared with a solution in which only one information bit is occupied for indicating the PPDU format, in this embodiment of this application, the PPDU format indication field occupies more than 1 information bit. In this way, the PPDU format indication field can carry more information, so that more functions can be supported.

[00181] For example, the PPDU format indication field may further include information indicating that a transmission scenario is SU, MU non-orthogonal frequency division multiple access (MU non-orthogonal frequency division multiple, MU non-OFDMA), or MU OFDMA; may further include information indicating a trigger based (trigger based, TB) frame; and may

MU scenario. This can help reduce a difference between a reception policy for receiving the first U-SIG field by the STA in the SU scenario and a reception policy for receiving the second U-SIG field by the STA in the MU scenario, and help the STA receive a U-SIG field in different scenarios.

[00188] In addition, in this embodiment of this application, both the quantity of information bits of the first U-SIG field and the quantity of information bits of the second U-SIG field are less than or equal to 52 information bits. One OFDM symbol includes 52 information bits. A smaller quantity of information bits of the first U-SIG field and the second U-SIG field indicates a smaller quantity of information bits of the encoded first U-SIG field and the encoded second U-SIG field. In this case, in the encoded first PPDU, OFDM symbols occupied by the U-SIG fields are also reduced, so that a wireless transmission resource can be saved.

[00189] In some embodiments, the first U-SIG field and the first EHT-SIG field include an identifier indication field. The identifier indication field includes a first indication subfield and a second indication subfield. The first U-SIG field includes the first indication subfield, and the first EHT-SIG field includes the second indication subfield. In this case, the identifier indication field is divided into two parts. The first U-SIG field includes one part, and the first EHT-SIG field includes the other part. In this way, idle bits in the first U-SIG field and the first EHT-SIG field are fully used, thereby avoiding a case in which the quantity of information bits in the first U-SIG field or the first EHT-SIG field is increased because a unique ~~AID~~ STA needs to be indicated.

[00190] In some optional embodiments, a start information bit of the first indication subfield is an N^{th} information bit of the first U-SIG field, and a field type of first (N–1) information bits of the first U-SIG field is correspondingly the same as a field type of first (N–1) information bits of the second U-SIG field, where N is a positive integer greater than 1 and less than 35. In other words, a field type of a field that is before the first indication subfield and that is of the first U-SIG field is the same as a field type of first (N–1) information bits at a corresponding location of the second U-SIG field. In this way, when the STA receives the first U-SIG field in the SU scenario and receives the second U-SIG field in the MU scenario, a same policy is used for receiving first parts of information bits. This helps reduce a difference between reception policies for receiving a U-SIG field by the STA in different scenarios, and helps the STA receive a PPDU.

[00191] In some other optional embodiments, a second EHT-SIG field of the unencoded second PPDU includes an AID indication field, where a field type of a field that follows the second indication subfield and that is of the first EHT-SIG field is the same as a field type of a field that

follows the AID indication field and that is of the second EHT-SIG field. In this way, when the STA receives the first U-SIG field in the SU scenario and receives the second U-SIG field in the MU scenario, a same policy is used for receiving information bits of the field that follows the second indication subfield and information bits that follow the AID indication field. This helps reduce a difference between reception policies for receiving a U-SIG field by the STA in different scenarios, and helps the STA receive the PPDU.

[00192] It should be noted that the foregoing two optional embodiments may be combined. For example, a start information bit of the first indication subfield is an N^{th} information bit of the first U-SIG field, and a field type of first (N–1) information bits of the first U-SIG field is correspondingly the same as a field type of first (N–1) information bits of the second U-SIG field, where N is a positive integer greater than 1 and less than 35. A second EHT-SIG field of the unencoded second PPDU includes a STA indication field. A field type of a field that follows the second indication subfield and that is of the first EHT-SIG field is the same as a field type of a field that follows the STA indication field and that is of the second EHT-SIG field. In this way, when the STA receives the first U-SIG field in the SU scenario and receives the second U-SIG field in the MU scenario, a same policy is used for receiving information bits of the field that follows the second indication subfield~~a first part of information bits~~ and information bits that follow the STA indication field. This helps reduce a difference between reception policies for receiving a U-SIG field by the STA in different scenarios, and helps the STA receive a PPDU. The STA indication field may be, for example, an AID used to uniquely identify one STA.

[00193] In this embodiment of this application, both the first PPDU and the second PPDU that are sent by the network device are an encoded PPDU. Each of the first U-SIG field, the second U-SIG field, the first EHT-SIG field, and the second EHT-SIG field mentioned in this embodiment of this application is a field of an unencoded PPDU.

[00194] Specifically, the field type of the first (N–1) information bits of the first U-SIG field and the field type of the first (N–1) information bits of the second U-SIG field include one or more of the following: a physical layer version (version identifier) indication field, an uplink/downlink (uplink/downlink, UL/DL) indication field, a basic service set color indication field (basic service set color, BSS color) indication field, a transmission opportunity (transmi~~t~~ssion opportunity, TXOP) indication field, a bandwidth (bandwidth) indication field, a PPDU format (PPDU format) indication field, a space-time block coding (space time block code, STBC) indication field, a spatial reuse (spatial reuse) indication field, a guard interval (guard interval, GI) and extremely

high throughput-long training field size (EHT-LTF Size) indication field, a field indicating a low-density parity-check extra symbol segment (LDPC extra symbol segment), a pre-forward error correction padding factor (Pre-FEC Padding Factor) indication field, a packet extension disambiguity (packet extension disambiguity, PE disambiguity) indication field, or a preamble puncturing (preamble puncture) indication field.

[00195] Specifically, the UL/DL indication field indicates UL or DL. The version identifier indication field specifically indicates a specific PPDU version of the first PPDU. The BSS color indication field specifically indicates a color identifier of a BSS including a network device. The bandwidth indication field specifically indicates a bandwidth of a packet and preamble puncturing information. The PPDU format indication field specifically indicates a PPDU format. The STBC indication field specifically indicates whether space-time block coding (space-time block code) is used for a data part. The PE disambiguity indication field specifically indicates whether packet extension disambiguity exists.

[00196] When the PPDU format indication field has more than 1 information bit, the PPDU format indication field may further include information indicating that a transmission scenario is SU, MU non-OFDMA, or MU OFDMA; may further include information indicating a trigger based (trigger based, TB) frame; and may further include information indicating whether to perform puncturing (puncture~~d~~ing).

[00197] The PPDU format indication field may perform indication in combination with the UL/DL indication field. If the UL/DL indication field indicates ~~UL~~DL, the PPDU format indication field may indicate SU, MU non-OFDMA, or MU OFDMA; or if the UL/DL indication field indicates UL, the PPDU format indication field may indicate a TB or null.

[00198] Alternatively, if the UL/DL indication field indicates UL, the PPDU format indication field indicates that a transmission scenario is SU nonpunctured (SU non-punctured), SU punctured (SU punctured), MU non-OFDMA, or MU OFDMA; or if the UL/DL indication field indicates UL, the PPDU format indication field may indicate that a transmission scenario is an SU non-punctured string or an SU punctured string, or indicate a TB.

[00199] For example, there are 2 information bits in the PPDU format indication field. The PPDU format indication field may include any one of binary values corresponding to ~~1~~0 to ~~4~~3. If the UL/DL indication field indicates DL, 00 indicates that a transmission scenario is SU, 01 indicates that the transmission scenario is MU non-OFDMA, 10 indicates that the transmission scenario is

allocation subfield, RU allocation subfield), a preamble puncture~~e~~ing indication field, and a center 26-tone resource unit (Center 26-tone RU) indication field.

[00204] The field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler may include a subfield indicating a number of EHT-LTF symbols, a subfield indicating a midamble periodicity, and a subfield indicating Doppler; or may indicate a number of EHT-LTF symbols, a midamble periodicity, and Doppler by using one field.

[00205] Specifically, the field indicating a number of EHT-LTF symbols or MU-MIMO users specifically indicates a number of MU-MIMO users when an EHT-SIG field is in a compressed mode, or indicate a number of EHT-SIG field symbols when an EHT-SIG field is in a non-compressed mode. The EHT-SIG MCS and DCM indication field specifically indicates a modulation and coding scheme of a second EHT-SIG field and whether dual carrier modulation is used for the second EHT-SIG field. The field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler specifically indicates a number of EHT-LTF symbols, a midamble periodicity, and whether Doppler exists.

[00206] Refer to FIG. 4A. FIG. 4A is a schematic diagram of a structure of a first U-SIG field and a first EHT-SIG field according to an embodiment of this application. The first U-SIG field and the first EHT-SIG field include a common field and a user field. Refer to FIG. 4B. FIG. 4B is a schematic diagram of a structure of a second U-SIG field and a second EHT-SIG field according to an embodiment of this application. The second U-SIG field and the second EHT-SIG field include a common field, an EHT MU transmission specific field, and a plurality of user fields. The EHT MU transmission specific field may include but is not limited to a field indicating a number of EHT-SIG field symbols, an EHT-SIG MCS, and EHT-SIG field DCM, and an RU allocation subfield ~~indication field~~. The field indicating a number of EHT-SIG field symbols, an EHT-SIG MCS, and EHT-SIG field DCM may be a field indicating a number of EHT-SIG field symbols, an EHT-SIG MCS indication field, and an EHT-SIG field DCM indication field. The RU allocation subfield ~~indication field~~ is optional. In an OFDMA transmission scenario, the second U-SIG field and the second EHT-SIG field include the RU allocation subfield ~~indication field~~.

[00207] A field type and a quantity of information bits of the common field included in the first U-SIG field and the first EHT-SIG field in FIG. 4A are correspondingly the same as those included in the common field included in the second U-SIG field and the second EHT-SIG field in FIG. 4B. The common field may be a field of first (N–1) information bits of the first U-SIG field or a field

controlled.

[00215] In a specific example, for fields included in the first U-SIG field and fields included in the second U-SIG field, refer to Table 3 and Table 4. Table 3 shows fields of first 26 information bits of the first U-SIG field and the second U-SIG field, and a quantity of information bits occupied by each field. Table 4 shows fields of a 27th information bit to a 52nd information bit of the first U-SIG field and the second U-SIG field, and a quantity of information bits occupied by each field.

Table 3

First U-SIG field		Second U-SIG field	
Information bit (Bit)	Field (Field)	Information bit (Bit)	Field (Field)
B0–B2	Physical layer version (version identifier)	B0–B2	Physical layer version (version identifier)
B3	Uplink/downlink (UL/DL)	B3	Uplink/downlink (UL/DL)
B4–B9	Basic service set color (BSS color)	B4–9	Basic service set color (BSS color)
B10–B16	Transmission opportunity (TXOP)	B10–16	Transmission opportunity (TXOP)
B17–B22	Bandwidth (bandwidth)	B17–22	Bandwidth (bandwidth)
B23–B24	PPDU format (PPDU format)	B23–24	PPDU format (PPDU format)
B25	Space-time block coding (STBC)	B25	Space-time block coding (STBC)

Information bit (Bit)	Field (Field)	Number (number of information bits)
B12	Dual carrier modulation (DCM)	1
B13	Beam change (beam change)	1
B14	Coding (coding)	1
B15	Beamforming (beamformed)	1
B16–B19	Cyclic redundancy code (CRC)	4
B20–B25	Tail information bits (tail)	6

[00225] As shown in Table 5, the first EHT-SIG field includes a partial AID field, a field indicating an NSTS and Doppler, an MCS indication field, a DCM indication field, a beam change indication field, a coding indication field, a beamformed indication field, a CRC indication field, and a tail indication field. The partial AID field has 3 information bits, the field indicating an NSTS and Doppler has 5 information bits, the MCS indication field has 4 information bits, the DCM indication field has 1 information bit, the beam change indication field has 1 information bit, the coding indication field has 1 information bit, the beamformed indication field has 1 information bit, the CRC indication field has 1 information bit, and the tail indication field has 6 information bits. The partial AID field in the first EHT-SIG field may be understood as the second indication subfield in the foregoing embodiment.

[00226] The partial AID field, the field indicating an NSTS and Doppler, the MCS indication field, the DCM indication field, the beam change indication field, the coding indication field, and the beamformed indication field in the first EHT-SIG field may be collectively referred to as a user field (user ~~specific~~ field).

[00227] It can be learned that, in the SU transmission scenario, one part of an AID field is in the first U-SIG field, and the other part of the AID field is in the first EHT-SIG field. A sum of a quantity of information bits of the one part of the AID field and a quantity of information bits of the other part of the AID field is 11 information bits. The STA can receive the first U-SIG field to obtain the one part of the AID field and receive the first EHT-SIG field to obtain the other part of the AID, and obtain the AID with the 11 information bits based on the one part of the AID field and the other part of the AID, to determine a STA uniquely identified by the AID.

[00228] Table 6 shows fields included in the second EHT-SIG field and a quantity of

EHT-LTF symbols, a midamble periodicity, and Doppler, a plurality of user ~~specific~~ fields, a CRC indication field, and a tail indication field. Each user ~~specific~~ field includes an AID, a field indicating an NSTS and Doppler, an MCS indication field, a DCM indication field, a beam change indication field, a coding indication field, a beamformed indication field, a CRC indication field, and a tail indication field. Every two user ~~specific~~ fields correspond to one CRC indication field and one tail indication field. The field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler has 4 information bits, and the AID has 11 information bits. A quantity of information bits of each of the field indicating an NSTS and Doppler, the MCS indication field, the DCM indication field, the beam change indication field, the coding indication field, the beamformed indication field, the CRC indication field, and the tail indication field is correspondingly the same as a quantity of information bits of each field of the first EHT-SIG field. The AID of the second EHT-SIG field may be understood as the STA indication field in the foregoing embodiment.

[00230] It can be learned that, in the SU transmission scenario and the MU transmission scenario, a format of a U-SIG field is partially the same as that of an EHT-SIG field. This can help the STA receive the U-SIG field and the EHT-SIG field. In addition, some important fields are also included, for example, a spatial reuse field. In addition, a PPDU format indication field has 2 information bits, so that the field can carry more information. An AID field has 11 information bits. In this way, a STA in a BSS including the network device can be uniquely identified.

[00231] For example, in the SU transmission scenario, one part of an AID is in the first U-SIG field, and the other part of the AID field is in the first EHT-SIG field. A sum of a quantity of information bits of the one part of the AID field and a quantity of information bits of the one part of the AID field is 11 information bits. The STA can receive the first U-SIG field to obtain the one part of the AID field and receive the first EHT-SIG field to obtain the other part of the AID, and obtain the AID with the 11 information bits based on the one part of the AID field and the other part of the AID, to determine a STA uniquely identified by the AID.

[00232] In the MU transmission scenario, if the second EHT-SIG field includes an AID with 11 information bits, the STA may receive the second EHT-SIG field to obtain the AID, to determine a STA uniquely identified by the AID.

[00233] In an orthogonal frequency division multiplexing (Orthogonal Frequency Division Multiplexing, OFDMA) transmission scenario, the second EHT-SIG field may include a resource

unit allocation subfield (RU allocation subfield) indication field. In a non-OFDMA transmission scenario, the second EHT-SIG field may include a preamble puncture~~e~~ing indication field.

[00234] The resource unit allocation indication field includes one or more resource unit allocation indication subfields. Specifically, each STA corresponds to one resource unit allocation indication subfield, and each resource unit allocation indication subfield indicates resource unit allocation information of a corresponding STA. A quantity of information bits of the resource unit allocation indication field is related to a quantity n of STAs to which the network device sends the second PPDU. For example, if a quantity of information bits of each resource unit allocation indication subfield is m, a quantity of information bits of the resource unit allocation indication field is n*m. For example, m may be, but not limited to, 8.

[00235] In a scenario in which a bandwidth for transmitting a PPDU is greater than 20 MHz, the second EHT-SIG field may further include a center 26-tone RU indication field, where the field has 1–2 information bits.

[00236] The RU allocation subfield ~~indication field~~ or the preamble puncture~~e~~ing indication field, and the center 26-tone RU indication field may be before the user field.

[00237] It should be noted that, in this application, fields that are before the identifier indication field and that are in the first U-SIG field include, but are not limited to, all fields of first eight information bits of a 1st symbol of the first U-SIG field in Table 3 and all fields of first eight information bits of a 2nd symbol in Table 4, or a part of fields may be omitted. Similarly, the second U-SIG field includes, but is not limited to, all fields of first eight information bits of a 1st symbol in the first U-SIG field in Table 3 and all fields of first eight information bits of the second symbol in Table 4. A quantity of information bits of each field is not limited to the quantities of information bits shown in Table 3 and Table 4.

[00238] An order of fields before the identifier indication field (first (N–1) fields) of the first U-SIG field and an order of first (N–1) fields of the second U-SIG field are not limited in this application, provided that a field type of the first (N–1) fields of the first U-SIG field is correspondingly to the same as a field type of the first (N–1) fields of the second U-SIG field.

[00239] In this application, fields of the first EHT-SIG field following the identifier indication field include, but are not limited to, all fields following the partial AID of the first EHT-SIG field in Table 4, or a part of fields may be omitted. Similarly, the second EHT-SIG field includes, but is not limited to, all user fields in Table 5, or a part of fields in each user field may be omitted.

[00240] An arrangement order of the user fields of the first EHT-SIG field and an arrangement order of the user fields of the second EHT-SIG field are also not limited in this application. The user field is not limited to being carried only in the first EHT-SIG field and the second EHT-SIG field, or a part of user fields may be carried in the first U-SIG field and the second U-SIG field.

[00241] In some embodiments, a part of fields may be removed from the first U-SIG field, the first EHT-SIG field, the second U-SIG field, and the second EHT-SIG field. For example, none of the first U-SIG field, the first EHT-SIG field, the second U-SIG field, and the second EHT-SIG field may include one or more of a beamforming indication field, a DCM indication field, or a coding indication field. Alternatively, a quantity of information bits of an AID indication field may be reduced. The information bits saved in this way are used to carry other information. For example, a quantity of information bits of the spatial reuse indication field may be increased, or a quantity of information bits of the preamble puncturing indication field may be increased.

[00242] In some other embodiments, a part of fields of the first EHT-SIG field is placed in the first U-SIG field, so that the first EHT-SIG field includes a complete identifier indication field, the quantity of information bits of the first U-SIG field is kept to be less than or equal to 52 information bits, and the quantity of information bits of the first EHT-SIG field is kept to be less than or equal to 26 information bits. In this case, the first EHT-SIG field includes the complete identifier indication field, so that the STA can better receive the identifier indication field.

[00243] In still another implementation, the first PPDU applicable to SU transmission in this embodiment of this application may alternatively be used only in SU transmission in a case of non-preamble puncturing. The second PPDU applicable to MU transmission in this embodiment of this application may be used in SU transmission in a preamble puncturing case.

[00244] Refer to FIG. 5. FIG. 5 is a schematic flowchart of a data transmission method according to an embodiment of this application. The data transmission method includes the following steps.

[00245] S501: A network device generates a PPDU.

[00246] The PPDU includes an EHT-SIG field, and the EHT-SIG field includes a field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler.

[00247] Specifically, the field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler has 4 information bits.

[00248] The field indicating a number of EHT-LTF symbols, a midamble periodicity, and

periodicity And Doppler)			
0000–1000	0	1/2/4/6/8/10/12/14/16	N/A
1001–1011	1	1/2/4	10
1100–1110	1	1/2/4	20
1111	Reserved		

[00253] As shown in Table 6, the first string group may include binary values corresponding to 0 to 8, and each binary value correspondingly indicates one number of EHT-LTF symbols. Specifically, the nine binary values 0000, 0001, 0010, 0011, 0100, 0101, 0110, 0111, and 1000 sequentially indicate that the numbers of EHT-LTF symbols are 1, 2, 4, 6, 8, 10, 12, 14, or 16. The first string group indicates that Doppler does not exist. In this case, any string in the first string group can indicate, based on a first string group including the string, that Doppler does not exist. That is, each of the nine binary values 0000, 0001, 0010, 0011, 0100, 0101, 0110, 0111, and 1000 can indicate that Doppler does not exist.

[00254] The second string group may include binary values corresponding to 9 to 11, and each binary value corresponds to one number of EHT-LTF symbols. Specifically, the three binary values 1001, 1010, and 1011 respectively indicate that the numbers of EHT-LTF symbols are 1, 2, and 4. The second string group indicates that Doppler exists and that the midamble periodcity is a periodcity 1. In this case, each string in the second string group can indicate, based on a second string group including the string, that Doppler exists and that the midamble periodcity is the first periodicity. That is, each of the three binary values 1001, 1010, and 1011 can indicate that Doppler exists and that the midamble periodcity is the first periodicity.

[00255] The third string group may include binary values corresponding to 12 to 14, and each binary value corresponds to one number of EHT-LTF symbols. Specifically, the three binary values 1100, 1101, and 1110 respectively indicate that the numbers of EHT-LTF symbols are 1, 2, and 4. The third string group indicates that Doppler exists and that the midamble periodcity is a periodcity 2. In this case, each string in the third string group can indicate, based on a third string group including the string, that Doppler exists and that the midamble periodcity is the second periodicity. That is, each of the three binary values 1100, 1101, and 1110 can indicate that Doppler exists and that the midamble periodcity is the ~~first~~ second periodicity.

[00256] The periodcity 1 and the periodcity 2 are different periodicities. In a possible

and the PPDU format indication field occupies more than 1 information bit; or

the first demodulation indication field includes a spatial reuse indication field.

[00291] In this way, the technical solution of this embodiment of this application can ensure that the sum of the quantity of information bits of the first U-SIG field and the quantity of information bits of the first EHT-SIG field is less than or equal to 78 information bits. This reduces indication overheads. In addition, the first U-SIG field and the first EHT-SIG field can carry more information without increasing indication overheads.

[00292] In a possible implementation, at least one of the first U-SIG field and the first EHT-SIG field includes an identifier indication field. The identifier indication field is an association identifier (Association Identifier, AID) for uniquely identifying one station. The station is a station in a basic service set (Basic Service Set, BSS) including the network device. In this way, an identifier indication field included in the encoded first PPDU can uniquely indicate one STA. The STA may learn, from the first U-SIG field and the first EHT-SIG field, whether the encoded first PPDU is sent to the STA, without continuing to receive a subsequent preamble data field. This reduces power consumption of the station. In addition, even if a data field following the first U-SIG field and a data field following the first EHT-SIG field are not correctly received, because the station can determine, based on the first U-SIG field and the first EHT-SIG field, that the first PPDU is sent to the station, the station may perform hybrid automatic repeat requests (Hybrid Automatic Repeat Request, HARQ) combined reception based on subsequent retransmission. Moreover, a third-party device can learn of a sender and a receiver of the first PPDU without causing interference to a device that is performing transmission. This helps the third-party device perform scheduling.

[00293] In another possible implementation, a field that indicates a PPDU format and that is included in the first U-SIG field or the first EHT-SIG field occupies more than 1 information bit. In this case, compared with a solution in which only one information bit is occupied for indicating the PPDU format, in this embodiment of this application, the PPDU format indication field occupies more than 1 information bit. In this way, the PPDU format indication field can carry more information, so that more functions can be supported.

[00294] The PPDU format indication field may indicate the PPDU format and indicate that a transmission mode is SU or MU transmission. In this way, when receiving a U-SIG field of first (N–1) information bits, the station can determine whether SU transmission or MU transmission is

performed, and use a corresponding reception policy.

[00295] In still another possible implementation, the first U-SIG field or the first EHT-SIG field includes a spatial reuse indication field. This can support a spatial reuse function.

[00296] Optionally, a length of the spatial reuse indication field is 2 information bits. The spatial reuse indication field may indicate any one of the following four items: an item for prohibiting parameterized spatial reuse (Parameterized Spatial reuse DISALLOW, PSR_DISALLOW), an item for prohibiting spatial reuse transmission (SR_RESTRICTED), an item for delaying spatial reuse transmission (SR_DELAY), and an item for prohibiting both PSR based spatial reuse and non-SR group (Group) overlapping basic service set (Overlapping Basic Service Set, OBSS)-packet detection (Packet Detection) based spatial reuse. The spatial reuse indication field is used by the station to implement a corresponding spatial reuse function.

[00297] For function implementation details and technical effects of the functional units of the network device 1100 provided in this embodiment, refer to descriptions about related details of the method provided in the foregoing method embodiments. Details are not described herein again.

[00298] Refer to FIG. 12. FIG. 12 is a schematic diagram of modules of a network device according to another embodiment of this application. An embodiment of this application further provides a network device 1200, including:

a processing unit 1201, configured to generate a PPDU; and

a transceiver unit 120~~2~~1, configured to send a PPDU to a station. The PPDU includes an EHT-SIG field, and the EHT-SIG field includes a field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler. The field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a first string, where a first string group including the first string indicates that Doppler does not exist, the first string indicates the number of EHT-LTF symbols, and each string in the first string group corresponds to one number of EHT-LTF symbols; the field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a second string, where a second string group including the second string indicates that Doppler exists and that the midamble periodicity is a first periodicity, the second string indicates the number of EHT-LTF symbols, and each string in the second string group corresponds to one number of EHT-LTF symbols; or the field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a third string, where a third string group including the third string indicates that Doppler exists and that the midamble periodicity is a second periodicity, the third string indicates the

of a quantity of information bits of the first U-SIG field and a quantity of information bits of the first EHT-SIG field is less than or equal to 78 information bits. The first U-SIG field and the first EHT-SIG field meet at least one of the following:

[00317] At least one of the first U-SIG field and the first EHT-SIG field includes an identifier indication field, where the identifier indication field is used to uniquely identify one station;

the first U-SIG field or the first EHT-SIG field includes a PPDU format indication field, and the PPDU format indication field occupies more than 1 information bit; or

the first demodulation indication field includes a spatial reuse indication field.

[00318] In this way, the technical solution of this embodiment of this application can ensure that the sum of the quantity of information bits of the first U-SIG field and the quantity of information bits of the first EHT-SIG field is less than or equal to 78 information bits. This reduces indication overheads. In addition, the first U-SIG field and the first EHT-SIG field can carry more information without increasing indication overheads, so that the station can obtain more information from the first U-SIG field and the first EHT-SIG field.

[00319] Specifically, in a possible implementation, at least one of the first U-SIG field and the first EHT-SIG field includes an identifier indication field. The identifier indication field is an association identifier (Association Identifier, AID) for uniquely identifying one station. The station is a station in a basic service set (Basic Service Set, BSS) including the network device. In this way, an identifier indication field included in the encoded first PPDU can uniquely indicate one STA. The STA may learn, from the first U-SIG field and the first EHT-SIG field, whether the encoded first PPDU is sent to the STA, without continuing to receive a subsequent preamble data field. This reduces power consumption of the station. In addition, even if a data field following the first U-SIG field and a data field following the first EHT-SIG field are not correctly received, because the station can determine, based on the first U-SIG field and the first EHT-SIG field, that the first PPDU is sent to the station, the station may perform hybrid automatic repeat requests (Hybrid Automatic Repeat Request, HARQ) combined reception based on subsequent retransmission. Moreover, a third-party device can learn of a sender and a receiver of the first PPDU without causing interference to a device that is performing transmission. This helps the third-party device perform scheduling.

[00320] In another possible implementation, a field that indicates a PPDU format and that is included in the first U-SIG field or the first EHT-SIG field occupies more than 1 information bit.

standards of the 802.11 family such as the 802.11be standard, the 802.11ax standard, the 802.11ac standard, the 802.11n standard, the 802.11g standard, the 802.11b standard, and the 802.11a standard. The access point in this application may be a high efficient (high efficient, HE) AP or an extremely high throughput (extremely high throughput, EHT) AP, or may be an access point applicable to a future Wi-Fi standard.

[00379] In still another embodiment, the network device in FIG. 1 or FIG. 2 is a non-access point station (none-access point station, non-AP STA). The station may be a wireless communication chip, a wireless sensor, a wireless communication terminal, or the like, and may also be referred to as a user. For example, the station may be a mobile phone supporting a Wi-Fi communication function, a tablet computer supporting a Wi-Fi communication function, a set-top box supporting a Wi-Fi communication function, a smart television supporting a Wi-Fi communication function, an intelligent wearable device supporting a Wi-Fi communication function, a vehicle-mounted communication device supporting a Wi-Fi communication function, or a computer supporting a Wi-Fi communication function. Optionally, the station may support the 802.11be standard. The station may also support a plurality of wireless local area network (wireless local area networks, WLAN) standards of the 802.11 family such as the 802.11be standard, the 802.11ax standard, the 802.11ac standard, the 802.11n standard, the 802.11g standard, the 802.11b standard, and the 802.11a standard. The station in this application may be a high efficient (high efficient, HE) STA or an extremely high throughput (extramely high throughput, EHT) STA, or may be a STA applicable to a future Wi-Fi standard.

[00380] For example, the access point and the station may alternatively be devices applied to the Internet of vehicles, Internet of things nodes or sensors in the Internet of things (Internet of things, IoT), sensors in smart city, or smart cameras, smart remote controls, or smart water meters in smart home.

[00381] The access point and the station may alternatively be communication servers, switches, bridges, or computers.

[00382] The technical solutions provided in this application are applicable to data communication between an AP and one or more STAs, and are also applicable to communication between APs and communication between STAs.

[00383] Although embodiments of this application are mainly described by using a network deployed based on IEEE 802.11 as an example, a person skilled in the art easily understands that

CLAIMS

What is claimed is:

1. A data transmission method, comprising:

generating, by a network device, a single user physical layer protocol data unit (SU PPDU) ; and

sending, by the network device, the SU PPDU to a station, wherein a bandwidth for sending the SU PPDU is greater than 20 MHz, and the bandwidth comprises a first sub-bandwidth and a second sub-bandwidth, wherein the first sub-bandwidth carries a first content channel of an extremely high throughput-signaling (EHT-SIG) field of the SU PPDU, and the second sub-bandwidth carries a second content channel of the EHT-SIG field; and

an universal signal (U-SIG) overflew field of the first content channel is the same as an U-SIG overflew field of the second content channel, and an i^{th} information bit to a j^{th} information bit of the first content channel carry a user field , wherein both i and j are positive integers, and $i < j$.

2. A data transmission method, comprising:

receiving, by a station, a single user physical layer protocol data unit (SU PPDU), wherein a bandwidth for receiving the SU PPDU is greater than 20 MHz, and the bandwidth comprises a first sub-bandwidth and a second sub-bandwidth, wherein the first sub-bandwidth carries a first content channel of an extremely high throughput-signaling (EHT-SIG) field of the SU PPDU, and the second sub-bandwidth carries a second content channel of the EHT-SIG field; and

an universal signal (U-SIG) overflew field of the first content channel is the same as an U-SIG overflew field of the second content channel, and an i^{th} information bit to a j^{th} information bit of the first content channel carry a user field, wherein both i and j are positive integers, and $i < j$.

3. The data transmission method according to claim 1 or 2 , wherein an i^{th} information bit to a j^{th} information bit of the second content channel carry a padding field.

4. The data transmission method according to claim 1 or 2, wherein an i^{th} information bit to a j^{th} information bit of the second content channel carry a user field, and the user field of the first content channel is the same as the user field of the second content channel.

5. The method according to claim 3 or 4, wherein the user field of the EHT-SIG field comprises an association identifier (AID) field, which is used to uniquely identify a station.

6. The method according to claim 5, wherein the SU PPDU comprises an universal signal (U-SIG) field, the U-SIG field comprises a PPDU format indication field, and the PPDU format indication field occupies more than 1 information bit.

7. The method according to claim 6, wherein the EHT-SIG field comprises a spatial reuse indication field.

8. The method according to claim 7, wherein the PPDU format indication field comprises information indicating that a transmission scenario is SU, MU non-orthogonal frequency division multiple access (MU non-OFDMA), or MU orthogonal frequency division multiple access (MU OFDMA); or comprises information indicating a trigger based (TB) frame.

9. The method according to claim 8, wherein the U-SIG field comprises one or more of the following:

a physical layer version identifier field, an uplink/downlink (UL/DL) indication field, a basic service set color(BSS color) indication field, a transmission opportunity (TXOP) indication field, a bandwidth indication field, the PPDU format indication field.

10. A data transmission method, comprising:

generating, by a network device, a multiple user physical layer protocol data unit (MU PPDU); and

sending, by the network device, the MU PPDU to a station, wherein a bandwidth for sending the PPDU is greater than 20 MHz, and the bandwidth comprises a first sub-bandwidth and a second sub-bandwidth, wherein the first sub-bandwidth carries a first content channel of an extremely high throughput-signaling (EHT-SIG) field of the MU PPDU, and the second sub-bandwidth carries a second content channel of the EHT-SIG field; and

an universal signal (U-SIG) overflew field of the first content channel is the same as an U-SIG overflew field of the second content channel, and an i^{th} information bit to a j^{th} information bit of the first content channel carry a resource unit allocation indication field and a user field, wherein both i and j are positive integers, and $i < j$.

11. A data transmission method, comprising:

receiving, by a station, a multiple user physical layer protocol data unit (MU PPDU), wherein

a bandwidth for receiving the MU PPDU is greater than 20 MHz, and the bandwidth comprises a first sub-bandwidth and a second sub-bandwidth, wherein the first sub-bandwidth carries a first content channel of an extremely high throughput-signaling (EHT-SIG) field of the MU PPDU, and the second sub-bandwidth carries a second content channel of the EHT-SIG field; and

an universal signal (U-SIG) overflew field of the first content channel is the same as an U-SIG overflew field of the second content channel, and an i^{th} information bit to a j^{th} information bit of the first content channel carry a resource unit allocation indication field and a user field, wherein both i and j are positive integers, and $i < j$.

12. The data transmission method according to claim 10 or 11, wherein an i^{th} information bit to a j^{th} information bit of the second content channel carry a resource unit allocation indication field and a user field, wherein both i and j are positive integers, and $i < j$.

13. The data transmission method according to claim 12 , wherein an i^{th} information bit to a j^{th} information bit of the second content channel carry a padding field.

14. The data transmission method according to claim 12, wherein the EHT-SIG field comprises one or more of the following fields:

a number of extremely high throughput-long training (EHT-LTF) field symbols, a field indicating a number of space streams, a field indicating a modulation and coding scheme, a coding indication field, a beamforming indication field.

15. The method according to claim 14, wherein the user field of the EHT-SIG field comprises an association identifier (AID) field, which is used to uniquely identify a station.

16. The method according to claim 15, wherein the SU PPDU comprises an universal signal (U-SIG) field, the U-SIG field comprises a PPDU format indication field, and the PPDU format indication field occupies more than 1 information bit.

17. The method according to claim 16, wherein the EHT-SIG field comprises a spatial reuse indication field.

18. The method according to claim 17, wherein the PPDU format indication field comprises information indicating that a transmission scenario is SU, MU non-orthogonal frequency division multiple access (MU non-OFDMA), or MU orthogonal frequency division multiple access (MU

OFDMA); or comprises information indicating a trigger based (TB) frame.

19. The method according to claim 18, wherein the U-SIG field comprises one or more of the following:

a physical layer version identifier field, an uplink/downlink (UL/DL) indication field, a basic service set color(BSS color) indication field, a transmission opportunity (TXOP) indication field, a bandwidth indication field, the PPDU format indication field.

20. The method according to claim 10 or 11, wherein the MU PPDU is a PPDU transmitted based on non-OFDMA.

21. A network device, comprising:

a processing unit, configured to generate a single user physical layer protocol data unit (SU PPDU); and

a transceiver unit, configured to send the SU PPDU to a station, wherein a bandwidth for sending the SU PPDU is greater than 20 MHz, and the bandwidth comprises a first sub-bandwidth and a second sub-bandwidth, wherein the first sub-bandwidth carries a first content channel of an extremely high throughput-signaling (EHT-SIG) field of the SU PPDU, and the second sub-bandwidth carries a second content channel of the EHT-SIG field; and

an universal signal (U-SIG) overflew field of the first content channel is the same as an U-SIG overflew field of the second content channel, and an ith information bit to a j^{th} information bit of the first content channel carry a user field, wherein both i and j are positive integers, and $i < j$.

22. A station, comprising:

a transceiver unit, configured to receive a single user physical layer protocol data unit (SU PPDU), wherein a bandwidth for receiving the SU PPDU is greater than 20 MHz, and the bandwidth comprises a first sub-bandwidth and a second sub-bandwidth, wherein the first sub-bandwidth carries a first content channel of an extremely high throughput-signaling (EHT-SIG) field of the SU PPDU, and the second sub-bandwidth carries a second content channel of the EHT-SIG field; and

an universal signal (U-SIG) overflew field of the first content channel is the same as an U-SIG overflew field of the second content channel, and an i^{th} information bit to a j^{th} information bit

of the first content channel carry a user field, wherein both i and j are positive integers, and i < j.

23. The network device according to claim 21 or the station according to claim 22, wherein an i^{th} information bit to a j^{th} information bit of the second content channel carry a padding field.

24. The network device according to claim 21 or the station according to claim 22, wherein an i^{th} information bit to a j^{th} information bit of the second content channel carry a user field, and the user field of the first content channel is the same as the user field of the second content channel.

25. The network device or the station according to claim 24, wherein the user field of the EHT-SIG field comprises an association identifier (AID) field, which is used to uniquely identify a station.

26. The network device or the station according to claim 25, wherein the SU PPDU comprises an universal signal (U-SIG) field, the U-SIG field comprises a PPDU format indication field, and the PPDU format indication field occupies more than 1 information bit.

27. The network device or the station according to claim 26, wherein the EHT-SIG field comprises a spatial reuse indication field.

28. The network device or the station according to claim 27, wherein the PPDU format indication field comprises information indicating that a transmission scenario is SU, MU non-orthogonal frequency division multiple access (MU non-OFDMA), or MU orthogonal frequency division multiple access (MU OFDMA); or comprises information indicating a trigger based (TB) frame.

29. The network device or the station according to claim 28, wherein the U-SIG field comprises one or more of the following:

a physical layer version identifier field, an uplink/downlink (UL/DL) indication field, a basic service set color(BSS color) indication field, a transmission opportunity (TXOP) indication field, a bandwidth indication field, the PPDU format indication field.

30. A network device, comprising:

a processing unit, configured to generate a multiple user physical layer protocol data unit

(MU PPDU); and

a transceiver unit, configured to send the MU PPDU, wherein a bandwidth for sending the PPDU is greater than 20 MHz, and the bandwidth comprises a first sub-bandwidth and a second sub-bandwidth, wherein the first sub-bandwidth carries a first content channel of an extremely high throughput-signaling (EHT-SIG) field of the MU PPDU, and the second sub-bandwidth carries a second content channel of the EHT-SIG field; and

an universal signal (U-SIG) overflew field of the first content channel is the same as an U-SIG overflew field of the second content channel, and an i^{th} information bit to a j^{th} information bit of the first content channel carry a resource unit allocation indication field and a user field, wherein both i and j are positive integers, and $i < j$.

31. A station, comprising:

a transceiver unit, configured to receive a multiple user physical layer protocol data unit (MU PPDU), wherein a bandwidth for receiving the MU PPDU is greater than 20 MHz, and the bandwidth comprises a first sub-bandwidth and a second sub-bandwidth, wherein the first sub-bandwidth carries a first content channel of an EHT-SIG field of the MU PPDU, and the second sub-bandwidth carries a second content channel of the EHT-SIG field; and

an universal signal (U-SIG) overflew field of the first content channel is the same as an U-SIG overflew field of the second content channel, and an i^{th} information bit to a j^{th} information bit of the first content channel carry a resource unit allocation indication field and a user field, wherein both i and j are positive integers, and $i < j$.

32. The network device according to claim 30 or the station according to claim 31, wherein an i^{th} information bit to a j^{th} information bit of the second content channel carry a resource unit allocation indication field and a user field, wherein both i and j are positive integers, and $i < j$.

33. The network device or the station according to claim 32, wherein an i^{th} information bit to a j^{th} information bit of the second content channel carry a padding field.

34. The network device or the station according to claim 33, wherein the EHT-SIG field comprises one or more of the following fields:

a number of extremely high throughput-long training (EHT-LTF) field symbols, a field indicating a number of space streams, a field indicating a modulation and coding scheme, a coding

indication field, a beamforming indication field.

35. The network device or the station according to claim 34, wherein the user field of the EHT-SIG field comprises an association identifier (AID) field, which is used to uniquely identify a station.

36. The network device or the station according to claim 35, wherein the SU PPDU comprises an universal signal (U-SIG) field, the U-SIG field comprises a PPDU format indication field, and the PPDU format indication field occupies more than 1 information bit.

37. The network device or the station according to claim 36, wherein the EHT-SIG field comprises a spatial reuse indication field.

38. The network device or the station according to claim 37, wherein the PPDU format indication field comprises information indicating that a transmission scenario is SU, MU non-orthogonal frequency division multiple access (MU non-OFDMA), or MU orthogonal frequency division multiple access (MU OFDMA); or comprises information indicating a trigger based (TB) frame.

39. The network device or the station according to claim 38, wherein the U-SIG field comprises one or more of the following:

a physical layer version identifier field, an uplink/downlink (UL/DL) indication field, a basic service set color(BSS color) indication field, a transmission opportunity (TXOP) indication field, a bandwidth indication field, the PPDU format indication field.

40. The network device according to claim 30 or the station according to claim 31, wherein the MU PPDU is a PPDU transmitted based on non-OFDMA.

41. A network device, comprising a processor, wherein the processor is coupled to a memory; and when the processor executes a computer program or instructions in the memory, the method according to any one of claims 13-9 is performed, or the method according to any one of claims 10，12-20 is performed.

42. A station, comprising a processor, wherein the processor is coupled to a memory; and

when the processor executes a computer program or instructions in the memory, the method according to any one of claims 2-9 is performed, or the method according to any one of claims 11-20 is performed.

43. A computer-readable storage medium, wherein the computer-readable storage medium stores computer instructions; and the computer instructions instruct a network device to perform the method according to any one of claims 1, 3-9, the computer instructions instruct a network device to perform the method according to any one of claims 10,12-20, the computer instructions instruct a station to perform the method according to any one of claims 2 to 9, or the computer instructions instruct a station to perform the method according to any one of claims 11-20.

44. A computer program product, wherein the computer program product comprises a computer program; and when the computer program runs on a computer, the computer is enabled to perform the method according to any one of claims 1, 3 -9, the computer is enabled to perform the method according to any one of claims 10-20, the computer is enabled to perform the method according to any one of claims 2-9, or the computer is enabled to perform the method according to any one of claims 11-20.

45. A chip, wherein the chip comprises a processor, a memory, and an interface circuit, wherein the memory, the interface circuit, and the processor are interconnected through lines; the memory stores instructions; and when the processor executes the instructions in the memory, the method according to any one of claims 1-9, and 10-20 is performed.

46. A program, wherein when the program is executed by a computer, the method according to any one of claims 1-9, and 10-20 is implemented.

47. An apparatus, wherein the apparatus is configured to implement the method according to any one of claims 1-9, and 10-20.

~~1. A data transmission method, comprising:~~

~~generating, by a network device, a first physical layer protocol data unit PPDU, wherein the first PPDU comprises a first universal signaling U-SIG field and a first extremely high throughput signaling EHT SIG field, a sum of a quantity of information bits of the first U-SIG field and a quantity of information bits of the first EHT SIG field is less than or equal to 78 information bits, and at least one of the first U-SIG field and the first EHT SIG field comprises an identifier indication field, wherein the identifier indication field is used to uniquely identify one station; and~~

~~sending, by the network device, an encoded first PPDU to a station.~~

2. The method according to claim 1, wherein a quantity of information bits of a second U-SIG field of an unencoded second PPDU is equal to the quantity of information bits of the first U-SIG field, and both the quantity of information bits of the first U-SIG field and the quantity of information bits of the second U-SIG field are less than or equal to 52 information bits, wherein the first PPDU is sent by the network device to the station when the network device performs single-user transmission, and the second PPDU is sent by the network device to a plurality of stations when the network device performs multi-user transmission.

3. The method according to claim 2, wherein the identifier indication field comprises a first indication subfield and a second indication subfield, wherein the first U-SIG field comprises the first indication subfield, and the first EHT-SIG field comprises the second indication subfield.

4. The method according to claim 3, wherein a start information bit of the first indication subfield is an N^{th} information bit of the first U-SIG field, and a field type of first (N-1) information bits of the first U-SIG field is correspondingly the same as a field type of first (N-1) information bits of the second U-SIG field.

5. The method according to claim 4, wherein the field type of the first (N-1) information bits of the first U-SIG field and the field type of the first (N-1) information bits of the second U-SIG field comprise one or more of the following:

a physical layer version identifier indication field, an uplink/downlink indication field, a basic service set color indication field, a transmission opportunity indication field, a bandwidth indication field, a PPDU format indication field, a space-time block coding indication field, a spatial reuse indication field, a field indicating a guard interval and extremely high throughput-long training field size, a field indicating a low-density parity-check extra symbol segment, a field indicating a pre-forward error correction padding factor, a packet extension disambiguity indication field, and a preamble puncturing indication field.

6. The method according to any one of claims 3 to 5, wherein a second EHT-SIG field of the unencoded second PPDU comprises a station identifier indication field, wherein a field type of a field that follows the second indication subfield and that is of the first EHT-SIG field is the same as a field type of a field that follows the station identifier indication field and that is of the second EHT-SIG field.

7. The method according to claim 6, wherein the field type of the field that follows the second indication subfield and that is of the first EHT-SIG field and the field type of the field that follows

the station identifier indication field and that is of the second EHT-SIG field comprise one or more of the following:

a field indicating a number of space-time streams, a midamble periodicity, and Doppler, a beamforming indication field, a beam change indication field, a field indicating a modulation and coding scheme and dual-carrier modulation, and a coding indication field.

8. The method according to claim 6, wherein the start information bit of the first indication subfield is the N^{th} information bit of the first U-SIG field, and a field type of a field that follows an N^{th} information bit and that is of the second U-SIG field and a field type of a field that is before the station identifier indication field and that is of the second EHT-SIG field comprise one or more of the following:

a field indicating a number of EHT-SIG field symbols or a number of multi-user multiple-input multiple-output users, a field indicating an EHT-SIG field modulation and coding scheme and dual-carrier modulation, a field indicating a number of extremely high throughput long training field EHT-LTF symbols, a midamble periodicity, and Doppler, a resource unit allocation indication field, a preamble puncturing indication field, and a center 26-tone resource unit indication field.

9. The method according to claim 8, wherein

the field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a first string, wherein a first string group comprising the first string indicates that Doppler does not exist, the first string indicates the number of EHT-LTF symbols, and each string in the first string group corresponds to one number of EHT-LTF symbols;

the field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a second string, wherein a second string group comprising the second string indicates that Doppler exists and that the midamble periodicity is a first periodicity, the second string indicates the number of EHT-LTF symbols, and each string in the second string group corresponds to one number of EHT-LTF symbols; or

the field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a third string, wherein a third string group comprising the third string indicates that Doppler exists and that the midamble periodicity is a second periodicity, the third string indicates the number of EHT-LTF symbols, and each string in the third string group corresponds to one number of EHT-LTF symbols.

10. The method according to any one of claims 1 to 9, wherein the first U-SIG field or the first EHT-SIG field comprises a PPDU format indication field, and the PPDU format indication field occupies more than 1 information bit.

11. The method according to claims 1 to 10, wherein the first demodulation indication field comprises a spatial reuse indication field.

12. A data transmission method, comprising:

generating, by a network device, a PPDU; and

sending, by the network device, the PPDU to a station, wherein a bandwidth for sending the PPDU is greater than 20 MHz, and the bandwidth comprises a first sub-bandwidth and a second sub-bandwidth, wherein the first sub-bandwidth carries a first content channel of an EHT-SIG field of the PPDU, and the second sub-bandwidth carries a second content channel of the EHT-SIG field; and

the first content channel and the second content channel meet at least one of the following:

an i^{th} information bit to a j^{th} information bit of the first content channel carry a user field, and a field of first (i−1) information bits of the first content channel is the same as a field of first (i−1) information bits of the second content channel, wherein both i and j are positive integers, and i < j;

an i^{th} information bit to a j^{th} information bit of the first content channel carry a resource unit allocation indication field and a user field, and a field of first (i−1) information bits of the first content channel is the same as a field of first (i−1) information bits of the second content channel, wherein both i and j are positive integers, and i < j;

an i^{th} information bit to a j^{th} information bit of the first content channel carry a user field, and an i^{th} information bit to a j^{th} information bit of the second content channel carry a padding field, wherein both i and j are positive integers, and i < j;

the first content channel comprises a first sub user field, the second content channel comprises a second sub user field, and a user field of a first user comprises the first sub user field and the second sub user field; or

a user field of the first content channel is the same as a user field of the second content channel.

13. A data transmission method, comprising:

receiving, by a station, a first PPDU sent by a network device; and

decoding, by the station, the first PPDU to obtain a decoded first PPDU, wherein the decoded

first PPDU comprises a first U-SIG field and a first EHT-SIG field, a sum of a quantity of information bits of the first U-SIG field and a quantity of information bits of the first EHT-SIG field is less than or equal to 78 information bits, and at least one of the first U-SIG field and the first EHT-SIG field comprises an identifier indication field, wherein the identifier indication field is used to uniquely identify one station.

14. The method according to claim 13, wherein a quantity of information bits of a second U-SIG field of a decoded second PPDU is equal to the quantity of information bits of the first U-SIG field, and both the quantity of information bits of the first U-SIG field and the quantity of information bits of the second U-SIG field are less than or equal to 52 information bits, wherein the first PPDU is received by the station from the network device when the network device performs single-user transmission, and the second PPDU is received by the station from the network device when the network device performs multi-user transmission.

15. The method according to claim 14, wherein the identifier indication field comprises a first indication subfield and a second indication subfield, wherein the first U-SIG field comprises the first indication subfield, and the first EHT-SIG field comprises the second indication subfield.

16. The method according to claim 15, wherein a start information bit of the first indication subfield is an N^{th} information bit of the first U-SIG field, and a field type of first (N-1) information bits of the first U-SIG field is correspondingly the same as a field type of first (N-1) information bits of the second U-SIG field.

17. The method according to claim 16, wherein the field type of the first (N-1) information bits of the first U-SIG field and the field type of the first (N-1) information bits of the second U-SIG field comprise one or more of the following:

a physical layer version identifier indication field, an uplink/downlink indication field, a basic service set color indication field, a transmission opportunity indication field, a bandwidth indication field, a PPDU format indication field, a space-time block coding indication field, a spatial reuse indication field, a field indicating a guard interval and extremely high throughput-long training field size, a field indicating a low-density parity-check extra symbol segment, a field indicating a pre-forward error correction padding factor, a packet extension disambiguity indication field, and a preamble puncturing indication field.

18. The method according to any one of claims 15 to 17, wherein a second EHT-SIG field of the decoded second PPDU comprises a station identifier indication field, wherein a field type of a

field that follows the second indication subfield and that is of the first EHT-SIG field is the same as a field type of a field that follows the station identifier indication field and that is of the second EHT-SIG field.

19. The method according to claim 18, wherein the field type of the field that follows the second indication subfield and that is of the first EHT-SIG field and the field type of the field that follows the station identifier indication field and that is of the second EHT-SIG field comprise one or more of the following:

a field indicating a number of space-time streams, a midamble periodicity, and Doppler, a beamforming indication field, a beam change indication field, a field indicating a modulation and coding scheme and dual-carrier modulation, and a coding indication field.

20. The method according to claim 18, wherein the start information bit of the first indication subfield is the N^{th} information bit of the first U-SIG field, and a field type of a field that follows an N^{th} information bit and that is of the second U-SIG field and a field type of a field that is before the station identifier indication field and that is of the second EHT-SIG field comprise one or more of the following:

a field indicating a number of EHT-SIG field symbols or a number of multi-user multiple-input multiple-output users, a field indicating an EHT-SIG field modulation and coding scheme and dual-carrier modulation, a field indicating a number of extremely high throughput long training field EHT-LTF symbols, a midamble periodicity, and Doppler, a resource unit allocation indication field, a preamble puncturing indication field, and a center 26-tone resource unit indication field.

21. The method according to claim 20, wherein

the field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a first string, wherein a first string group comprising the first string indicates that Doppler does not exist, the first string indicates the number of EHT-LTF symbols, and each string in the first string group corresponds to one number of EHT-LTF symbols;

the field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a second string, wherein a second string group comprising the second string indicates that Doppler exists and that the midamble periodicity is a first periodicity, the second string indicates the number of EHT-LTF symbols, and each string in the second string group corresponds to one number of EHT-LTF symbols; or

the field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a third string, wherein a third string group comprising the third string indicates that Doppler exists and that the midamble periodicity is a second periodicity, the third string indicates the number of EHT-LTF symbols, and each string in the third string group corresponds to one number of EHT-LTF symbols.

22. The method according to any one of claims 13 to 21, wherein the first U-SIG field or the first EHT-SIG field comprises a PPDU format indication field, and the PPDU format indication field occupies more than 1 information bit.

23. The method according to any one of claims 13 to 22, wherein the first demodulation indication field comprises a spatial reuse indication field.

24. A data transmission method, comprising:

receiving, by a station, a PPDU sent by a network device, wherein a bandwidth for receiving the PPDU is greater than 20 MHz, and the bandwidth comprises a first sub-bandwidth and a second sub-bandwidth, wherein the first sub-bandwidth carries a first content channel of an EHT-SIG field of the PPDU, and the second sub-bandwidth carries a second content channel of the EHT-SIG field; and

the first content channel and the second content channel meet at least one of the following:

an i^{th} information bit to a j^{th} information bit of the first content channel carry a user field, and a field of first (i−1) information bits of the first content channel is the same as a field of first (i−1) information bits of the second content channel, wherein both i and j are positive integers, and $i < j$;

an i^{th} information bit to a j^{th} information bit of the first content channel carry a resource unit allocation indication field and a user field, and a field of first (i−1) information bits of the first content channel is the same as a field of first (i−1) information bits of the second content channel, wherein both i and j are positive integers, and $i < j$;

an i^{th} information bit to a j^{th} information bit of the first content channel carry a user field, and an i^{th} information bit to a j^{th} information bit of the second content channel carry a padding field, wherein both i and j are positive integers, and $i < j$;

the first content channel comprises a first sub user field, the second content channel comprises a second sub user field, and a user field of a first user comprises the first sub user field and the second sub user field; or

~~a user field of the first content channel is the same as a user field of the second content channel.~~

~~25. A network device, comprising:~~

~~a processing unit, configured to generate a first physical layer protocol data unit PPDU, wherein the first PPDU comprises a first universal Signaling field U-SIG field and a first extremely high throughput-Signaling field EHT-SIG field, a sum of a quantity of information bits of the first U-SIG field and a quantity of information bits of the first EHT-SIG field is less than or equal to 78 information bits, and at least one of the first U-SIG field and the first EHT-SIG field comprises an identifier indication field, wherein the identifier indication field is used to uniquely identify one station; and~~

~~a transceiver unit, configured to send an encoded first PPDU to a station.~~

~~26. The network device according to claim 25, wherein a quantity of information bits of a second U-SIG field of an unencoded second PPDU is equal to the quantity of information bits of the first U-SIG field, and both the quantity of information bits of the first U-SIG field and the quantity of information bits of the second U-SIG field are less than or equal to 52 information bits, wherein the first PPDU is sent by the network device to the station when the network device performs single-user transmission, and the second PPDU is sent by the network device to a plurality of stations when the network device performs multi-user transmission.~~

~~27. The network device according to claim 26, wherein the identifier indication field comprises a first indication subfield and a second indication subfield, wherein the first U-SIG field comprises the first indication subfield, and the first EHT-SIG field comprises the second indication subfield.~~

~~28. The network device according to claim 27, wherein a start information bit of the first indication subfield is an N^{th} information bit of the first U-SIG field, and a field type of first (N-1) information bits of the first U-SIG field is correspondingly the same as a field type of first (N-1) information bits of the second U-SIG field.~~

~~29. The network device according to claim 28, wherein the field type of the first (N-1) information bits of the first U-SIG field and the field type of the first (N-1) information bits of the second U-SIG field comprise one or more of the following:~~

~~a physical layer version identifier indication field, an uplink/downlink indication field, a basic service set color indication field, a transmission opportunity indication field, a bandwidth indication field, a PPDU format indication field, a space-time block coding indication field, a~~

spatial reuse indication field, a field indicating a guard interval and extremely high throughput long training field size, a field indicating a low-density parity-check extra symbol segment, a field indicating a pre-forward error correction padding factor, a packet extension disambiguity indication field, and a preamble puncturing indication field.

30. The network device according to any one of claims 27 to 29, wherein a second EHT-SIG field of the unencoded second PPDU comprises a station identifier indication field, wherein a field type of a field that follows the second indication subfield and that is of the first EHT-SIG field is the same as a field type of a field that follows the station identifier indication field and that is of the second EHT-SIG field.

31. The network device according to claim 30, wherein the field type of the field that follows the second indication subfield and that is of the first EHT-SIG field and the field type of the field that follows the station identifier indication field and that is of the second EHT-SIG field comprise one or more of the following:

a field indicating a number of space-time streams, a midamble periodicity, and Doppler, a beamforming indication field, a beam change indication field, a field indicating a modulation and coding scheme and dual-carrier modulation, and a coding indication field.

32. The network device according to claim 31, wherein the start information bit of the first indication subfield is the N^{th} information bit of the first U-SIG field, and a field type of a field that follows an N^{th} information bit and that is of the second U-SIG field and a field type of a field that is before the station identifier indication field and that is of the second EHT-SIG field comprise one or more of the following:

a field indicating a number of EHT-SIG field symbols or a number of multi-user multiple-input multiple-output users, a field indicating an EHT-SIG field modulation and coding scheme and dual-carrier modulation, a field indicating a number of extremely high throughput long training field EHT-LTF symbols, a midamble periodicity, and Doppler, a resource unit allocation indication field, a preamble puncturing indication field, and a center-26-tone resource unit indication field.

33. The network device according to claim 32, wherein

the field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a first string, wherein a first string group comprising the first string indicates that Doppler does not exist, the first string indicates the number of EHT-LTF symbols, and each string in the first string

group corresponds to one number of EHT-LTF symbols;

the field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a second string, wherein a second string group comprising the second string indicates that Doppler exists and that the midamble periodicity is a first periodicity, the second string indicates the number of EHT-LTF symbols, and each string in the second string group corresponds to one number of EHT-LTF symbols; or

the field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a third string, wherein a third string group comprising the third string indicates that Doppler exists and that the midamble periodicity is a second periodicity, the third string indicates the number of EHT-LTF symbols, and each string in the third string group corresponds to one number of EHT-LTF symbols.

34. The network device according to any one of claims 25 to 33, wherein the first U-SIG field or the first EHT-SIG field comprises a PPDU format indication field, and the PPDU format indication field occupies more than 1 information bit.

35. The network device according to any one of claims 25 to 34, wherein the first demodulation indication field comprises a spatial reuse indication field.

36. A network device, comprising:

a processing unit, configured to generate a PPDU; and

a transceiver unit, configured to send the PPDU to a station, wherein a bandwidth for sending the PPDU is greater than 20 MHz, and the bandwidth comprises a first sub-bandwidth and a second sub-bandwidth, wherein the first sub-bandwidth carries a first content channel of an EHT-SIG field of the PPDU, and the second sub-bandwidth carries a second content channel of the EHT-SIG field; and

the first content channel and the second content channel meet at least one of the following:

an i^{th} information bit to a j^{th} information bit of the first content channel carry a user field, and a field of first (i-1) information bits of the first content channel is the same as a field of first (i-1) information bits of the second content channel, wherein both i and j are positive integers, and $i < j$;

an i^{th} information bit to a j^{th} information bit of the first content channel carry a resource unit allocation indication field and a user field, and a field of first (i-1) information bits of the first content channel is the same as a field of first (i-1) information bits of the second content channel,

wherein both i and j are positive integers, and i < j;

an i^{th} information bit to a j^{th} information bit of the first content channel carry a user field, and an i^{th} information bit to a j^{th} information bit of the second content channel carry a padding field, wherein both i and j are positive integers, and i < j;

the first content channel comprises a first sub user field, the second content channel comprises a second sub user field, and a user field of a first user comprises the first sub user field and the second sub user field; or

a user field of the first content channel is the same as a user field of the second content channel.

37. A station, comprising:

a transceiver unit, configured to receive a first PPDU sent by a network device; and

a processing unit, configured to decode the first PPDU to obtain a decoded first PPDU, wherein the decoded first PPDU comprises a first U-SIG field and a first EHT-SIG field, a sum of a quantity of information bits of the first U-SIG field and a quantity of information bits of the first EHT-SIG field is less than or equal to 78 information bits, and at least one of the first U-SIG field and the first EHT-SIG field comprises an identifier indication field, wherein the identifier indication field is used to uniquely identify one station.

38. The station according to claim 37, wherein a quantity of information bits of a second U-SIG field of a decoded second PPDU is equal to the quantity of information bits of the first U-SIG field, and both the quantity of information bits of the first U-SIG field and the quantity of information bits of the second U-SIG field are less than or equal to 52 information bits, wherein the first PPDU is received by the station from the network device when the network device performs single-user transmission, and the second PPDU is received by the station from the network device when the network device performs multi-user transmission.

39. The station according to claim 38, wherein the identifier indication field comprises a first indication subfield and a second indication subfield, wherein the first U-SIG field comprises the first indication subfield, and the first EHT-SIG field comprises the second indication subfield.

40. The station according to claim 39, wherein a start information bit of the first indication subfield is an N^{th} information bit of the first U-SIG field, and a field type of first (N-1) information bits of the first U-SIG field is correspondingly the same as a field type of first (N-1) information bits of the second U-SIG field.

41. The station according to claim 40, wherein the field type of the first (N-1) information

bits of the first U-SIG field and the field type of the first (N-1) information bits of the second U-SIG field comprise one or more of the following:

a physical layer version identifier indication field, an uplink/downlink indication field, a basic service set color indication field, a transmission opportunity indication field, a bandwidth indication field, a PPDU format indication field, a space-time block coding indication field, a spatial reuse indication field, a field indicating a guard interval and extremely high throughput long training field size, a field indicating a low-density parity-check extra symbol segment, a field indicating a pre-forward error correction padding factor, a packet extension disambiguity indication field, and a preamble puncturing indication field.

42. The station according to any one of claims 39 to 41, wherein a second EHT-SIG field of the decoded second PPDU comprises a station identifier indication field, wherein a field type of a field that follows the second indication subfield and that is of the first EHT-SIG field is the same as a field type of a field that follows the station identifier indication field and that is of the second EHT-SIG field.

43. The station according to claim 42, wherein the field type of the field that follows the second indication subfield and that is of the first EHT-SIG field and the field type of the field that follows the station identifier indication field and that is of the second EHT-SIG field comprise one or more of the following:

a field indicating a number of space-time streams, a midamble periodicity, and Doppler, a beamforming indication field, a beam change indication field, a field indicating a modulation and coding scheme and dual-carrier modulation, and a coding indication field.

44. The station according to claim 42, wherein the start information bit of the first indication subfield is the N^{th} information bit of the first U-SIG field, and a field type of a field that follows an N^{th} information bit and that is of the second U-SIG field and a field type of a field that is before the station identifier indication field and that is of the second EHT-SIG field comprise one or more of the following:

a field indicating a number of EHT-SIG field symbols or a number of multi-user multiple-input multiple-output users, a field indicating an EHT-SIG field modulation and coding scheme and dual-carrier modulation, a field indicating a number of extremely high throughput long training field EHT-LTF symbols, a midamble periodicity, and Doppler, a resource unit allocation indication field, a preamble puncturing indication field, and a center-26-tone resource unit

indication field.

45. The station according to claim 44, wherein

the field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a first string, wherein a first string group comprising the first string indicates that Doppler does not exist, the first string indicates the number of EHT-LTF symbols, and each string in the first string group corresponds to one number of EHT-LTF symbols;

the field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a second string, wherein a second string group comprising the second string indicates that Doppler exists and that the midamble periodicity is a first periodicity, the second string indicates the number of EHT-LTF symbols, and each string in the second string group corresponds to one number of EHT-LTF symbols; or

the field indicating a number of EHT-LTF symbols, a midamble periodicity, and Doppler is a third string, wherein a third string group comprising the third string indicates that Doppler exists and that the midamble periodicity is a second periodicity, the third string indicates the number of EHT-LTF symbols, and each string in the third string group corresponds to one number of EHT-LTF symbols.

46. The station according to any one of claims 37 to 45, wherein the first U-SIG field or the first EHT-SIG field comprises a PPDU format indication field, and the PPDU format indication field occupies more than 1 information bit.

47. The station according to any one of claims 37 to 46, wherein the first demodulation indication field comprises a spatial reuse indication field.

48. A station, comprising:

a processing unit, configured to control a transceiver unit to receive a PPDU sent by a network device, wherein a bandwidth for receiving the PPDU is greater than 20 MHz, and the bandwidth comprises a first sub-bandwidth and a second sub-bandwidth, wherein the first sub-bandwidth carries a first content channel of an EHT-SIG field of the PPDU, and the second sub-bandwidth carries a second content channel of the EHT-SIG field; and

the first content channel and the second content channel meet at least one of the following:

an i^{th} information bit to a j^{th} information bit of the first content channel carry a user field, and a field of first (i−1) information bits of the first content channel is the same as a field of first (i−1) information bits of the second content channel, wherein both i and j are positive integers, and i <

j;

an i^{th} information bit to a j^{th} information bit of the first content channel carry a resource unit allocation indication field and a user field, and a field of first (i−1) information bits of the first content channel is the same as a field of first (i−1) information bits of the second content channel, wherein both i and j are positive integers, and i < j;

an i^{th} information bit to a j^{th} information bit of the first content channel carry a user field, and an i^{th} information bit to a j^{th} information bit of the second content channel carry a padding field, wherein both i and j are positive integers, and i < j;

the first content channel comprises a first sub user field, the second content channel comprises a second sub user field, and a user field of a first user comprises the first sub user field and the second sub user field; or

a user field of the first content channel is the same as a user field of the second content channel.

49. A network device, comprising a processor, wherein the processor is coupled to a memory; and when the processor executes a computer program or instructions in the memory, the method according to any one of claims 1 to 11 is performed, or the method according to claim 12 is performed.

50. A station, comprising a processor, wherein the processor is coupled to a memory; and when the processor executes a computer program or instructions in the memory, the method according to any one of claims 13 to 23 is performed, or the method according to claim 24 is performed.

51. A computer-readable storage medium, wherein the computer-readable storage medium stores computer instructions; and the computer instructions instruct a network device to perform the method according to any one of claims 1 to 11, the computer instructions instruct a network device to perform the method according to claim 12, the computer instructions instruct a station to perform the method according to any one of claims 13 to 23, or the computer instructions instruct a station to perform the method according to claim 24.

52. A computer program product, wherein the computer program product comprises a computer program; and when the computer program runs on a computer, the computer is enabled to perform the method according to any one of claims 1 to 11, the computer is enabled to perform the method according to claim 12, the computer is enabled to perform the method according to any one of claims 13 to 23, or the computer is enabled to perform the method according to claim

~~24.~~

~~53. A chip, wherein the chip comprises a processor, a memory, and an interface circuit, wherein the memory, the interface circuit, and the processor are interconnected through lines; the memory stores instructions; and when the processor executes the instructions in the memory, the method according to any one of claims 1 to 24 is performed.~~

~~54. A program, wherein when the program is executed by a computer, the method according to any one of claims 1 to 24 is implemented.~~

~~55. An apparatus, wherein the apparatus is configured to implement the method according to any one of claims 1 to 24.~~