TERMINAL CONTROL METHOD, APPARATUS, AND SYSTEM

TECHNICAL FIELD

[0001] This application relates to the field of communication technologies, and in particular, to a terminal control method, apparatus, and system.

BACKGROUND

[0002] A single basic service set identifier (basic service set identifier, BSSID) system is a communication system. The single BSSID system includes a terminal and a plurality of access points (access points, APs), and these APs have a same BSSID. These APs include a serving AP configured to provide a service for the terminal and a non-serving AP other than the serving AP. The service provided by the serving AP for the terminal is, for example, that the AP sends information to the terminal, and the AP receives information sent by the terminal.

[0003] Currently, each AP in the single BSSID system may broadcast an energy saving indication corresponding to the terminal in the single BSSID system. The energy saving indication corresponding to the terminal indicates whether the terminal enters an energy saving mode. A timestamp of the terminal is aligned with that of the serving AP of the terminal, so that the terminal can receive an energy saving indication that corresponds to the terminal and that is broadcast by the serving AP of the terminal, and enters the energy saving mode or does not enter the energy saving mode based on the energy saving indication. For each AP in the single BSSID system, when the AP buffers a unicast frame to be sent to the terminal, the energy saving indication that corresponds to the terminal and that is broadcast by the AP indicates to forbid the terminal to enter the energy saving mode, so that the AP sends the unicast frame to the terminal; or when the AP does not buffer a unicast frame, the energy saving indication that corresponds to the terminal and that is broadcast by the AP indicates the terminal to enter the energy saving mode.

[0004] However, when the terminal does not enter the energy saving mode, the terminal may receive an energy saving indication that corresponds to the terminal and that is broadcast by the non-serving AP of the terminal. Because the energy saving indication indicates the terminal to enter the energy saving mode, the terminal enters the energy saving mode based on the energy saving indication. After entering the energy saving mode, the terminal no longer receives information. In this case, the terminal possibly cannot receive the energy saving indication that corresponds to the terminal and that is broadcast by the serving AP. Consequently, the terminal

cannot receive a unicast frame sent by the serving AP, and packet loss occurs on the terminal.

SUMMARY

[0005] This application provides a terminal control method, apparatus, and system, to resolve a problem that packet loss occurs on a terminal. The technical solutions are as follows:

[0006] According to a first aspect, a terminal control method is provided. The method is applied to a first AP in a single BSSID system. The single BSSID system includes a terminal and a plurality of APs. The first AP is any one of the plurality of APs. The method includes: The first AP broadcasts a first energy saving indication when the first AP determines that the first AP is not a serving AP configured to provide a service for the terminal, where the first energy saving indication indicates to forbid the terminal to enter an energy saving mode.

[0007] When the terminal does not enter the energy saving mode, if the terminal receives the first energy saving indication that corresponds to the terminal and that is broadcast by the non-serving AP, because the first energy saving indication indicates to forbid the terminal to enter the energy saving mode, the terminal does not enter the energy saving mode under the indication of the non-serving AP of the terminal. When the serving AP of the terminal broadcasts a second energy saving indication next time, the terminal can always receive the second energy saving indication, so that a timestamp of the terminal can always be synchronized with that of the serving AP of the terminal, to avoid a case in which the terminal cannot receive a unicast frame sent by the serving AP, and avoid packet loss of the terminal.

[0008] In addition, when the serving AP of the terminal is switched, it is assumed that the timestamp of the terminal is synchronized with that of a serving AP used before switching, and the timestamp of the terminal is not synchronized with that of a serving AP used after switching. The serving AP used before switching is changed to the non-serving AP used after switching. Therefore, an energy saving indication that corresponds to the terminal and that is broadcast by the non-serving AP used after switching indicates to forbid the terminal to enter the energy saving mode. The terminal may be forbidden to enter the energy saving mode based on the energy saving indication until the terminal receives an energy saving indication that corresponds to the terminal and that is broadcast by the serving AP used after switching, so that the timestamp of the terminal is synchronized with that of the serving AP used after switching, to avoid packet loss of the terminal when the serving AP is switched.

[0009] Optionally, before broadcasting the first energy saving indication, the first AP needs to determine the first energy saving indication. The first AP determines the first energy saving indication in various manners. In an optional manner in which the first AP determines the first

energy saving indication, the first AP may further obtain the second energy saving indication before broadcasting the first energy saving indication. The second energy saving indication is an energy saving indication broadcast by the serving AP. When the first energy saving indication indicates to forbid the terminal to enter the energy saving mode, the second energy saving indication indicates the terminal to enter the energy saving mode; or when the first energy saving indication indicates to forbid the terminal to enter the energy saving mode, the second energy saving indication indicates to forbid the terminal to enter the energy saving mode.

[0010] The first AP obtains the second energy saving indication in various manners. For example, the first AP may receive the second energy saving indication sent by the current serving AP, to obtain the second energy saving indication. Alternatively, the current serving AP may send, to a controller, the second energy saving indication that needs to be broadcast by the current serving AP, and then the controller sends the second energy saving indication to the first AP, so that the first AP obtains the second energy saving indication.

[0011] After receiving the second energy saving indication sent by the serving AP of the terminal, the controller may send the second energy saving indication (for example, a PVB field carrying the second energy saving indication) to an AP (a non-serving AP of the terminal, for example, the first AP) other than an AP 2 in the single BSSID system. Optionally, the controller may further send the second energy saving indication to the serving AP of the terminal. In this case, when sending the second energy saving indication, the controller does not need to distinguish between the serving AP and the non-serving AP of the terminal, but sends the second energy saving indication to all APs in the single BSSID system. This simplifies logic of sending the second energy saving indication by the controller. It may be learned that the controller may send the second energy saving indication to at least some APs in the single BSSID system. The at least some APs include the non-serving AP of the terminal, and further, the at least some APs may further include the serving AP of the terminal.

[0012] The first AP broadcasts the first energy saving indication in various manners.

[0013] In an optional manner in which the first AP broadcasts the first energy saving indication, the first AP may directly broadcast the first energy saving indication.

[0014] In another optional manner in which the first AP broadcasts the first energy saving indication, the first AP may broadcast the first energy saving indication by broadcasting a first beacon frame, where the first beacon frame includes the first energy saving indication.

[0015] Optionally, the first energy saving indication may be carried in a PVB field in the first beacon frame. For example, the PVB field includes a bit corresponding to an AID of the terminal, and the bit may be used to carry the first energy saving indication.

[0016] Optionally, before the first AP determines whether the first AP is the serving AP

configured to provide a service for the terminal, the first AP may receive a service indication sent by the controller, where the service indication indicates whether the first AP is the serving AP; and when determining whether the first AP is the serving AP, the first AP may determine, based on the service indication, whether the first AP is the serving AP. Certainly, the first AP may not determine, based on the service indication, whether the first AP is the serving AP. For example, a worker may configure information about whether the first AP is the serving AP on the first AP, and the first AP may determine, based on the information, whether the first AP is the serving AP.

[0017] Optionally, when the first AP determines that the first AP is the serving AP, the first AP may send an energy saving indication to the controller (similar to the foregoing case in which the serving AP sends the second energy saving indication to the controller). The energy saving indication indicates whether the first AP requires the terminal to enter the energy saving mode.

[0018] According to a second aspect, a terminal control method is provided. The method is applied to a controller in a single BSSID system. The single BSSID system further includes a terminal and a plurality of access points APs. The method includes: After receiving an energy saving indication sent by a serving AP, the controller sends the energy saving indication to at least some of the plurality of APs. The serving AP is an AP configured to provide a service for the terminal in the plurality of APs. The energy saving indication indicates whether the serving AP requires the terminal to enter an energy saving mode. The at least some APs include an AP other than the serving AP in the plurality of APs.

[0019] Optionally, the at least some APs further include the serving AP. In this case, when sending the energy saving indication, the controller does not need to distinguish between the serving AP and a non-serving AP of the terminal, but sends the energy saving indication to all APs in the single BSSID system. This simplifies logic of sending the second energy saving indication by the controller.

[0020] According to a third aspect, a terminal control system is provided. The system includes a terminal and a plurality of access points APs. The system includes: a first AP, where the first AP is any one of the plurality of APs, and the first AP is configured to broadcast a first energy saving indication when determining that the first AP is not a serving AP configured to provide a service for the terminal, where the first energy saving indication indicates to forbid the terminal to enter an energy saving mode; and the terminal, configured to enter the energy saving mode or not enter the energy saving mode based on a received energy saving indication.

[0021] Before broadcasting the first energy saving indication, the first AP needs to determine the first energy saving indication. The first AP determines the first energy saving indication in various manners. In an optional manner in which the first AP determines the first energy saving indication, the serving AP in the plurality of APs is configured to broadcast a second energy saving

indication, and the first AP is further configured to obtain the second energy saving indication before broadcasting the first energy saving indication when the first AP is not the serving AP. When the first energy saving indication indicates to forbid the terminal to enter the energy saving mode, the second energy saving indication indicates the terminal to enter the energy saving mode; or when the first energy saving indication indicates to forbid the terminal to enter the energy saving mode, the second energy saving indication indicates to forbid the terminal to enter the energy saving mode.

[0022] The first AP obtains the second energy saving indication in various manners. For example, the current serving AP is further configured to send the second energy saving indication to the first AP, so that the first AP obtains the second energy saving indication. Alternatively, the current serving AP is further configured to send, to a controller, the second energy saving indication that needs to be broadcast by the current serving AP; and the controller is configured to send the second energy saving indication to the first AP, so that the first AP obtains the second energy saving indication.

[0023] The first AP broadcasts the first energy saving indication in various manners.

[0024] In an optional manner in which the first AP broadcasts the first energy saving indication, the first AP is configured to directly broadcast the first energy saving indication.

[0025] In another optional manner in which the first AP broadcasts the first energy saving indication, the first AP is configured to broadcast the first energy saving indication by broadcasting a first beacon frame, where the first beacon frame includes the first energy saving indication.

[0026] Optionally, the first energy saving indication may be carried in a PVB field in the first beacon frame. For example, the PVB field includes a bit corresponding to an AID of the terminal, and the bit may be used to carry the first energy saving indication.

[0027] Optionally, before the first AP determines whether the first AP is the serving AP configured to provide a service for the terminal, the first AP is further configured to receive a service indication sent by the controller, where the service indication indicates whether the first AP is the serving AP; and the first AP may be configured to determine, based on the service indication, whether the first AP is the serving AP. Certainly, the first AP may not determine, based on the service indication, whether the first AP is the serving AP. For example, a worker may configure information about whether the first AP is the serving AP on the first AP, and the first AP may determine, based on the information, whether the first AP is the serving AP.

[0028] Optionally, the first AP is further configured to send an energy saving indication to the controller when determining that the first AP is the serving AP (similar to the foregoing case in which the serving AP sends the second energy saving indication to the controller). The energy saving indication indicates whether the first AP requires the terminal to enter the energy saving

mode.

[0029] According to a fourth aspect, a first AP is provided. The first AP belongs to a single BSSID system. The single BSSID system includes a terminal and a plurality of APs. The first AP is any one of the plurality of APs. The first AP includes a determining module and a broadcast module. The determining module is configured to determine whether the first AP is a serving AP configured to provide a service for the terminal. The broadcast module is configured to broadcast a first energy saving indication when the first AP is not the serving AP. The first energy saving indication indicates to forbid the terminal to enter an energy saving mode.

[0030] Before broadcasting the first energy saving indication, the first AP needs to determine the first energy saving indication. The first AP determines the first energy saving indication in various manners. In an optional manner in which the first AP determines the first energy saving indication, the first AP further includes an obtaining module, configured to obtain a second energy saving indication before the first AP broadcasts the first energy saving indication when the first AP is not the serving AP. The second energy saving indication is an energy saving indication broadcast by the serving AP, and the second energy saving indication indicates the terminal to enter the energy saving mode, or the second energy saving indication indicates to forbid the terminal to enter the energy saving mode.

[0031] The obtaining module obtains the second energy saving indication in various manners. For example, the first AP may receive the second energy saving indication sent by the current serving AP, so that the obtaining module obtains the second energy saving indication. Alternatively, the current serving AP may send, to a controller, the second energy saving indication that needs to be broadcast by the current serving AP, and then the controller sends the second energy saving indication to the first AP, so that the obtaining module obtains the second energy saving indication.

[0032] The broadcast module broadcasts the first energy saving indication in various manners.

[0033] In an optional manner in which the broadcast module broadcasts the first energy saving indication, the broadcast module may directly broadcast the first energy saving indication.

[0034] In another optional manner in which the broadcast module broadcasts the first energy saving indication, the broadcast module may broadcast the first energy saving indication by broadcasting a first beacon frame, where the first beacon frame includes the first energy saving indication.

[0035] Optionally, the first energy saving indication may be carried in a PVB field in the first beacon frame. For example, the PVB field includes a bit corresponding to an AID of the terminal, and the bit may be used to carry the first energy saving indication.

[0036] Optionally, the single BSSID system further includes the controller, and the first AP further includes a receiving module. The receiving module is configured to: before the first AP

determines whether the first AP is the serving AP configured to provide a service for the terminal, receive a service indication sent by the controller. The service indication indicates whether the first AP is the serving AP. The determining module is configured to determine, based on the service indication, whether the first AP is the serving AP. Certainly, the first AP may not determine, based on the service indication, whether the first AP is the serving AP. For example, a worker may configure information about whether the first AP is the serving AP on the first AP, and the first AP may determine, based on the information, whether the first AP is the serving AP.

[0037] Optionally, the single BSSID system further includes the controller, and the first AP further includes a sending module, configured to send an energy saving indication to the controller when the first AP is the serving AP (similar to the foregoing case in which the serving AP sends the second energy saving indication to the controller). The energy saving indication indicates whether the first AP requires the terminal to enter the energy saving mode.

[0038] According to a fifth aspect, a controller is provided. The controller belongs to a single BSSID system. The single BSSID system further includes a terminal and a plurality of access points APs. The controller includes a receiving module and a sending module. The receiving module is configured to receive an energy saving indication sent by a serving AP. The serving AP is an AP configured to provide a service for the terminal in the plurality of APs, and the energy saving indication indicates whether the serving AP requires the terminal to enter an energy saving mode. The sending module is configured to send the energy saving indication to at least some of the plurality of APs. The at least some APs include an AP other than the serving AP in the plurality of APs.

[0039] Optionally, the at least some APs further include the serving AP.

[0040] According to a sixth aspect, a first AP is provided. The first AP includes a processor and a memory. The processor is configured to execute a program stored in the memory, to implement the terminal control method according to any design of the first aspect.

[0041] According to a seventh aspect, a controller is provided. The controller includes a processor and a memory. The processor is configured to execute a program stored in the memory, to implement the terminal control method according to any design of the second aspect.

[0042] According to an eighth aspect, a computer-readable storage medium is provided. The computer-readable storage medium stores instructions. When the instructions are run on a computer, the computer is enabled to perform the terminal control method according to any design of the first aspect or the second aspect.

[0043] According to a ninth aspect, a computer program product including instructions is provided. When the computer program product runs on a computer, the computer is enabled to perform the terminal control method according to any design of the first aspect or the second aspect.

[0044] For technical effects brought by any design manner of the second aspect to the ninth aspect, refer to the technical effects brought by the corresponding design manner of the first aspect. Details are not described herein.

BRIEF DESCRIPTION OF DRAWINGS

[0045] FIG. 1 is a schematic diagram of a single BSSID system according to an embodiment of this application;

[0046] FIG. 2 is a schematic diagram of another single BSSID system according to an embodiment of this application;

[0047] FIG. 3 is a schematic diagram of a beacon frame according to an embodiment of this application;

[0048] FIG. 4 is a schematic diagram of a bitmap control field and a PVB field according to an embodiment of this application;

[0049] FIG. 5 is a schematic diagram of an energy saving indication according to an embodiment of this application;

[0050] FIG. 6 is a schematic diagram of another energy saving indication according to an embodiment of this application;

[0051] FIG. 7 is a flowchart of a terminal control method according to an embodiment of this application;

[0052] FIG. 8 is a schematic diagram of another energy saving indication according to an embodiment of this application;

[0053] FIG. 9 is a flowchart of another terminal control method according to an embodiment of this application;

[0054] FIG. 10 is a schematic diagram of another energy saving indication according to an embodiment of this application;

[0055] FIG. 11 is a schematic diagram of another energy saving indication according to an embodiment of this application;

[0056] FIG. 12 is a schematic diagram of another energy saving indication according to an embodiment of this application;

[0057] FIG. 13 is a block diagram of a first AP according to an embodiment of this application;

[0058] FIG. 14 is a block diagram of a controller according to an embodiment of this application; and

[0059] FIG. 15 is a schematic diagram of a structure of a terminal control apparatus according to an embodiment of this application.

DESCRIPTION OF EMBODIMENTS

[0060] To make principles and technical solutions of this application clearer, the following further describes implementations of this application in detail with reference to the accompanying drawings.

[0061] A single BSSID system is also referred to as a single BSSID network. The single BSSID system is an important network architecture in the communication standard Wi-Fi 7, and is also a networking architecture used in a Wi-Fi zero-roaming technology. The single BSSID system includes one or more terminals and a plurality of APs, and the APs have a same BSSID. The terminal is also referred to as a station (station, STA). The terminal may be an apparatus such as a mobile phone, a computer, or a tablet computer. The AP may be an apparatus such as a router or a gateway. For example, FIG. 1 and FIG. 2 each are a schematic diagram of a structure of a single BSSID system according to an embodiment of this application. As shown in FIG. 1, the single BSSID system includes a plurality of APs and a plurality of terminals. As shown in FIG. 2, the single BSSID system includes a terminal, an AP 1, and an AP 2.

[0062] The AP can provide a service for a terminal in a service area (as shown in FIG. 1) of the AP. For each terminal in the single BSSID system, the plurality of APs include a serving AP of the terminal and a non-serving AP other than the serving AP. The serving AP is configured to provide a service for the terminal, and the non-serving AP is not configured to provide a service for the terminal. Herein, that the AP provides a service for the terminal means that the terminal accesses the AP, and the AP exchanges data with the terminal. For example, the AP sends information to the terminal, and/or the AP receives information sent by the terminal.

[0063] In addition, for each terminal in the single BSSID system, the serving AP of the terminal may further be switched between the plurality of APs (also referred to as roaming of the terminal), and the terminal is unaware of a process of switching the serving AP, to implement seamless switching of a data stream of the terminal.

[0064] For example, the terminal may communicate with the serving AP by using a same BSSID configured for all APs in the single BSSID system. For example, the terminal sends a data frame including the BSSID, and the serving AP in these APs is configured to receive the data frame, so that the serving AP provides a service for the terminal. When the serving AP of the terminal is switched between the plurality of APs, a serving AP used before switching may not need to receive a data frame sent by the terminal, and does not need to provide a service for the terminal; but a serving AP used after switching needs to receive the data frame sent by the terminal, so that the serving AP used after switching provides a service for the terminal. In this way, in this process, the terminal needs to communicate with the serving AP only by using the BSSID. Therefore, the

terminal is unaware of switching of the serving AP.

[0065] Further, the terminal in the single BSSID system may further enter an energy saving mode based on an indication of the AP, to save energy of the terminal.

[0066] For example, the AP in the single BSSID system may periodically broadcast an energy saving indication, and different APs may broadcast the energy saving indication in a same period or different periods. For an energy saving indication corresponding to a terminal, the energy saving indication indicates the terminal to enter an energy saving mode or to forbid the terminal to enter an energy saving mode. The terminal may enter the energy saving mode or not enter the energy saving mode based on the received energy saving indication corresponding to the terminal. In addition, when the terminal does not enter the energy saving mode, the terminal sends and receives information. After entering the energy saving mode, the terminal no longer sends or receives information.

[0067] Regardless of whether the serving AP of the terminal is switched, there is the serving AP and the non-serving AP for the terminal at any moment.

[0068] For the serving AP of the terminal, when the serving AP buffers a unicast frame that needs to be sent to the terminal, an energy saving indication that corresponds to the terminal and that is broadcast by the serving AP indicates to forbid the terminal to enter the energy saving mode. The terminal does not enter the energy saving mode based on the energy saving indication. After broadcasting the energy saving indication, the serving AP sends the unicast frame to the terminal. In this case, the terminal receives the unicast frame.

[0069] When the serving AP does not buffer a unicast frame that needs to be sent to the terminal, an energy saving indication that corresponds to the terminal and that is broadcast by the serving AP indicates the terminal to enter the energy saving mode. The terminal enters the energy saving mode based on the energy saving indication.

[0070] For the non-serving AP of the terminal, the non-serving AP does not need to communicate with the terminal. Therefore, an energy saving indication that corresponds to the terminal and that is broadcast by the non-serving AP indicates the terminal to enter the energy saving mode. The terminal enters the energy saving mode based on the energy saving indication.

[0071] It may be learned that for each AP, the AP broadcasts an energy saving indication corresponding to the terminal. If the AP is the serving AP of the terminal, the energy saving indication corresponding to the terminal is related to information indicating whether the serving AP buffers a unicast frame that needs to be sent to the terminal. If the AP is the non-serving AP of the terminal, the energy saving indication corresponding to the terminal indicates the terminal to enter the energy saving mode.

[0072] For example, the single BSSID system shown in FIG. 2 is used. It is assumed that the

serving AP of the terminal is the AP 2. In this case, the AP 1 is the non-serving AP of the terminal. When the AP 2 buffers a unicast frame that needs to be sent to the terminal, an energy saving indication that corresponds to the terminal and that is broadcast by the AP 2 indicates to forbid the terminal to enter the energy saving mode. When the AP 2 does not buffer a unicast frame that needs to be sent to the terminal, an energy saving indication that corresponds to the terminal and that is broadcast by the AP 2 indicates the terminal to enter the energy saving mode. An energy saving indication that corresponds to the terminal and that is broadcast by the AP 1 indicates the terminal to enter the energy saving mode.

[0073] Further, the AP may broadcast the energy saving indication corresponding to the terminal by broadcasting a beacon (beacon) frame. The beacon frame carries the energy saving indication corresponding to the terminal.

[0074] For example, a structure of the beacon frame is shown in FIG. 3. The beacon frame includes an element identifier (element ID) field, a length (length) field, a delivery traffic indication message count (delivery traffic indication message count, DTIM count) field, a delivery traffic indication message period (delivery traffic indication message period, DTIM period) field, a bitmap control (bitmap control) field, and a partial virtual bitmap (partial virtual bitmap, PVB) field that are sequentially arranged. Each of the element identifier field, the length field, the delivery traffic indication message count field, the delivery traffic indication message period field, and the bitmap control field includes 1 byte, and the PVB field includes 1–251 bytes.

[0075] With reference to FIG. 4, 1 byte in the bitmap control field may include 8 bits B, and each of the 1–251 bytes in the PVB field also includes 8 bits B. A first bit B in the bitmap control field indicates whether in the single BSSID system, there is an AP that buffers a unicast frame that needs to be sent to the terminal. A second bit to a seventh bit B in the bitmap control field indicate an association identifier (association identifier, AID) corresponding to a first bit B in the PVB field. It should be noted that each bit B in the PVB field corresponds to an AID, and different bits B correspond to different AIDs. The AID is used to identify a terminal in the single BSSID system, and a bit B corresponding to the AID used to identify the terminal in the PVB field is used to carry an energy saving indication corresponding to the terminal. For example, for a terminal, if a bit B corresponding to an AID used to identify the terminal in the PVB field is 0, it indicates that an energy saving indication corresponding to the terminal in the PVB field indicates the terminal to enter an energy saving mode; or if a bit B corresponding to an AID used to identify the terminal in the PVB field is 1, it indicates that an energy saving indication corresponding to the terminal in the PVB field indicates to forbid the terminal to enter an energy saving mode.

[0076] For the terminal in the single BSSID system, a timestamp of the terminal is usually synchronized with that of the serving AP of the terminal, so that the terminal can receive the energy

saving indication that corresponds to the terminal and that is broadcast by the serving AP of the terminal, and then enters the energy saving mode or does not enter the energy saving mode based on the energy saving indication. After the serving AP broadcasts the energy saving indication for a period, the terminal receives again the energy saving indication that corresponds to the terminal and that is broadcast by the serving AP of the terminal, and enters the energy saving mode again or does not enter the energy saving mode based on the energy saving indication. This process is repeated.

[0077] However, currently, the terminal has the following two problems:

[0078] Problem 1: When the terminal does not enter the energy saving mode under an indication of the energy saving indication that corresponds to the terminal and that is broadcast by the serving AP of the terminal, before receiving a next energy saving indication that corresponds to the terminal and that is broadcast by the serving AP of the terminal, the terminal may receive the energy saving indication that corresponds to the terminal and that is broadcast by the non-serving AP of the terminal. Because the energy saving indication that corresponds to the terminal and that is broadcast by the non-serving AP of the terminal indicates the terminal to enter the energy saving mode, the terminal enters the energy saving mode based on the energy saving indication. However, after entering the energy saving mode, the terminal no longer receives information. In this case, the terminal possibly cannot receive the next energy saving indication that corresponds to the terminal and that is broadcast by the serving AP of the terminal. Consequently, the timestamp of the terminal cannot be synchronized with that of the serving AP of the terminal, the terminal cannot receive the unicast frame sent by the serving AP, and packet loss occurs on the terminal.

[0079] For example, with reference to FIG. 5, the single BSSID system shown in FIG. 2 is still used. It is assumed that the serving AP of the terminal is the AP 2. In this case, the AP 1 is the non-serving AP of the terminal.

[0080] In a phase 1 in FIG. 5, the timestamp of the terminal is synchronized with that of the AP 2, the energy saving indication that corresponds to the terminal and that is broadcast by the AP 2 indicates the terminal to enter the energy saving mode, and the terminal enters the energy saving mode.

[0081] However, in a phase 2 in FIG. 5, the energy saving indication that corresponds to the terminal and that is broadcast by the AP 2 indicates to forbid the terminal to enter the energy saving mode, and the terminal does not enter the energy saving mode based on the energy saving indication. In this case, the terminal receives the energy saving indication that corresponds to the terminal and that is broadcast by the AP 1, and the energy saving indication indicates the terminal to enter the energy saving mode. The terminal enters the energy saving mode based on the energy

saving indication.

[0082] In this way, because the terminal enters the energy saving mode in the phase 2 based on the energy saving indication that corresponds to the terminal and that is broadcast by the AP 1, the terminal misses an energy saving indication that corresponds to the terminal and that is broadcast by the AP 2 in a phase 3 in FIG. 5. If the energy saving indication that corresponds to the terminal and that is broadcast by the AP 2 in the phase 3 indicates to forbid the terminal to enter the energy saving mode, the terminal cannot exit the energy saving mode in this case. Therefore, a unicast frame sent to the terminal after the AP 2 broadcasts the energy saving indication in the phase 3 cannot be received by the terminal, and packet loss occurs on the terminal.

[0083] Problem 2: When the serving AP of the terminal is switched between the plurality of APs, if the terminal is in the energy saving mode, after the serving AP is switched, the timestamp of the terminal is still synchronized with that of the serving AP used before switching. In this way, the timestamp of the terminal possibly cannot be synchronized with that of the serving AP used after switching. Consequently, the terminal may miss an energy saving indication that corresponds to the terminal and that is broadcast by the serving AP used after switching, and packet loss occurs on the terminal.

[0084] For example, with reference to FIG. 6, the single BSSID system shown in FIG. 2 is still used. It is assumed that the serving AP of the terminal is the AP 2. In this case, the AP 1 is the non-serving AP of the terminal.

[0085] In a phase 1 in FIG. 6, the timestamp of the terminal is synchronized with that of the AP 2, the energy saving indication that corresponds to the terminal and that is broadcast by the AP 2 indicates the terminal to enter the energy saving mode, and the terminal enters the energy saving mode.

[0086] However, in a phase 2 in FIG. 6, when the terminal forbids the energy saving mode based on the energy saving indication that corresponds to the terminal and that is broadcast by the AP 2, the serving AP of the terminal is switched from the AP 2 to the AP 1. In this case, the timestamp of the terminal is synchronized with that of the AP 2. Therefore, the terminal receives the energy saving indication that corresponds to the terminal and that is broadcast by the AP 2, but does not receive an energy saving indication that corresponds to the terminal and that is broadcast by the serving AP (AP 1) used after switching.

[0087] In a phase 3, in FIG. 6, existing after the serving AP is switched, the terminal enters the energy saving mode based on the energy saving indication that corresponds to the terminal and that is broadcast by the AP 2. If the current serving AP (AP 1) broadcasts an energy saving indication corresponding to the terminal, the terminal cannot receive the energy saving indication. If the energy saving indication that corresponds to the terminal and that is broadcast by the AP 1

in the phase 3 indicates to forbid the terminal to enter the energy saving mode, the terminal cannot exit the energy saving mode in this case. Therefore, a unicast frame sent to the terminal after the AP 1 broadcasts the energy saving indication in the phase 3 is not received by the terminal, and packet loss occurs on the terminal.

[0088] Based on the foregoing problems, the following several solutions are currently provided:

[0089] Method 1: Different BSSIDs are configured for different terminals in the single BSSID system. For each terminal, regardless of whether the serving AP is switched, a beacon frame broadcast by the serving AP of the terminal not only includes the energy saving indication corresponding to the terminal, but also includes a BSSID of the terminal. In this way, the terminal processes only a beacon frame that includes the BSSID of the terminal, and does not process a beacon frame that does not include the BSSID of the terminal, to prevent the terminal from processing a beacon frame broadcast by the non-serving AP, and prevent the terminal from entering the energy saving mode based on the energy saving indication corresponding to the terminal in the beacon frame broadcast by the non-serving AP, so as to resolve the foregoing two problems.

[0090] However, in the method 1, the BSSID needs to be configured for each terminal, and a terminal management manner is complex. In addition, the beacon frame needs to carry the BSSID, resulting in high overheads of the beacon frame. Furthermore, due to a limited quantity of different BSSIDs, a quantity of terminals that can be accommodated in the single BSSID system is limited.

[0091] Method 2: When the serving AP is switched, the serving AP used before switching sends a unicast beacon frame to the terminal, where the beacon frame indicates a moment at which the serving AP used after switching broadcasts a next beacon frame. In this way, the terminal may receive the beacon frame based on the unicast beacon frame at the moment at which the serving AP used after switching broadcasts the beacon frame, to obtain the energy saving indication corresponding to the terminal in the beacon frame, so as to resolve the foregoing problem 2.

[0092] However, the method 2 cannot resolve the foregoing problem 1. In addition, the serving AP used before switching needs to determine a moment at which the serving AP used after switching broadcasts a beacon frame. This requires high precision of the moment determined by the serving AP used before switching. Furthermore, the serving AP used after switching may not broadcast the beacon frame on time due to impact of data transmission. Consequently, the terminal still misses the beacon frame broadcast by the serving AP.

[0093] Based on the foregoing problem 1 and problem 2, an embodiment of this application provides a terminal control method. The method can resolve the foregoing problem 1 and problem 2, and the method does not have problems that exist in the method 1 and the method 2.

[0094] For example, FIG. 7 shows a terminal control method according to an embodiment of

this application. The method may be applied to the single BSSID system shown in FIG. 2. Optionally, the single BSSID system shown in FIG. 2 may further include a controller (not shown in FIG. 2). The controller is communicatively connected to each AP. In the method shown in FIG. 7, an AP 1 is a non-serving AP of a terminal, and an AP 2 is a serving AP of the terminal. As shown in FIG. 7, the method may include the following steps.

[0095] S101: The controller sends a first service indication to the AP 1, where the first service indication indicates that the AP 1 is the non-serving AP of the terminal.

[0096] S102: The controller sends a second service indication to the AP 2, where the second service indication indicates that the AP 2 is the serving AP of the terminal.

[0097] The controller may determine the serving AP configured to provide a service for the terminal and the non-serving AP that is not configured to provide a service for the terminal in the single BSSID system. For example, the controller and each AP may jointly determine the serving AP and the non-serving AP of the terminal. The serving AP and the non-serving AP jointly determined by the controller and each AP are determined based on information such as signal strength, a load, and a channel environment of the terminal.

[0098] The controller may further send a service indication (also referred to as a flag) to each AP in the single BSSID system, to indicate whether the AP is the serving AP of the terminal. For example, the controller sends the first service indication to the non-serving AP (AP 1), to indicate that the AP 1 is the non-serving AP of the terminal; and the controller further sends the second service indication to the serving AP (AP 2), to indicate that the AP 2 is the serving AP of the terminal.

[0099] S103: The AP 1 determines, based on the first service indication, that the AP 1 is the non-serving AP of the terminal.

[00100] S104: The AP 2 determines, based on the second service indication, that the AP 2 is the serving AP of the terminal.

[00101] After receiving the service indication sent by the controller, each AP in the single BSSID system may determine, based on the service indication, whether the AP is the serving AP of the terminal. For example, the AP may store the received service indication in a register, and read the register to determine whether the AP is the serving AP or the non-serving AP of the terminal.

[00102] S105: The AP 2 broadcasts a second energy saving indication, where the second energy saving indication indicates the terminal to enter an energy saving mode or to forbid the terminal to enter an energy saving mode.

[00103] The AP 2 is the serving AP of the terminal, and the AP 2 may detect whether the AP 2 buffers a unicast frame that needs to be sent to the terminal. When the AP 2 buffers the unicast

frame that needs to be sent to the terminal, the AP 2 determines that the terminal needs to enter the energy saving mode in this case. Therefore, the AP 2 may broadcast the second energy saving indication indicating to forbid the terminal to enter the energy saving mode. When the AP 2 does not buffer the unicast frame that needs to be sent to the terminal, the AP 2 determines that the terminal does not need to enter the energy saving mode in this case. Therefore, the AP 2 may broadcast the second energy saving indication indicating the terminal to enter the energy saving mode.

[00104] The AP 2 may periodically broadcast the second energy saving indication, and each time before the second energy saving indication is broadcast, detect whether the AP 2 buffers a unicast frame that needs to be sent to the terminal, and then broadcast the second energy saving indication based on a detection result.

[00105] The AP 2 broadcasts the second energy saving indication in various manners.

[00106] In an optional manner in which the AP 2 broadcasts the second energy saving indication, the AP 2 may directly broadcast the second energy saving indication.

[00107] In another optional manner in which the AP 2 broadcasts the second energy saving indication, the AP 2 may broadcast the second energy saving indication by broadcasting a second beacon frame, where the second beacon frame includes the second energy saving indication.

[00108] Optionally, the second energy saving indication may be carried in a PVB field in the second beacon frame. For example, the PVB field includes a bit corresponding to an AID of the terminal, and the bit may be used to carry the second energy saving indication.

[00109] For example, when a value of the bit is 1, it indicates that the second energy saving indication indicates to forbid the terminal to enter the energy saving mode; and when the value of the bit is 0, it indicates that the second energy saving indication indicates the terminal to enter the energy saving mode.

[00110] Alternatively, when a value of the bit is 0, it indicates that the second energy saving indication indicates to forbid the terminal to enter the energy saving mode; and when the value of the bit is 1, it indicates that the second energy saving indication indicates the terminal to enter the energy saving mode.

[00111] S106: The AP 1 broadcasts a first energy saving indication, where the first energy saving indication indicates to forbid the terminal to enter the energy saving mode.

[00112] Before broadcasting the first energy saving indication, the AP 1 needs to determine the first energy saving indication. The AP 1 determines the first energy saving indication in various manners.

[00113] In an optional manner in which the AP 1 determines the first energy saving indication, the AP 1 may not need to pay attention to whether the second energy saving indication broadcast

by the AP 2 indicates the terminal to enter the energy saving mode, but consider, by default, that the first energy saving indication indicates to forbid the terminal to enter the energy saving mode.

[00114] In another optional manner in which the AP 1 determines the first energy saving indication, the AP 1 may further obtain the second energy saving indication before broadcasting the first energy saving indication, and determine the first energy saving indication based on the second energy saving indication.

[00115] For example, when the second energy saving indication indicates the terminal to enter the energy saving mode, the AP 1 may determine the first energy saving indication indicating to forbid the terminal to enter the energy saving mode; or when the second energy saving indication indicates to forbid the terminal to enter the energy saving mode, the AP 1 may determine the first energy saving indication indicating to forbid the terminal to enter the energy saving mode.

[00116] The AP 1 obtains the second energy saving indication in various manners. For example, the AP 1 may receive the second energy saving indication sent by the AP 2, to obtain the second energy saving indication. Alternatively, the AP 2 may send, to the controller, the second energy saving indication that needs to be broadcast by the AP 2, and then the controller sends the second energy saving indication to the AP 1, so that the AP 1 obtains the second energy saving indication.

[00117] After receiving the second energy saving indication sent by the serving AP (AP 2) of the terminal, the controller may send the second energy saving indication (for example, the PVB field carrying the second energy saving indication) to an AP (a non-serving AP of the terminal, for example, the AP 1) other than the AP 2 in the single BSSID system. Optionally, the controller may further send the second energy saving indication to the serving AP of the terminal. In this case, when sending the second energy saving indication, the controller does not need to distinguish between the serving AP and the non-serving AP of the terminal, but sends the second energy saving indication to all APs in the single BSSID system. This simplifies logic of sending the second energy saving indication by the controller. It may be learned that the controller may send the second energy saving indication to at least some APs in the single BSSID system. The at least some APs include the non-serving AP of the terminal, and further, the at least some APs may further include the serving AP of the terminal.

[00118] Optionally, the AP 1 may broadcast the first energy saving indication, or broadcast the first energy saving indication by broadcasting a first beacon frame, where the first beacon frame includes the first energy saving indication. For example, the first energy saving indication may be carried in a PVB field in the first beacon frame. For example, the PVB field includes a bit corresponding to an AID of the terminal, and the bit may be used to carry the first energy saving indication. The AID of the terminal corresponding to the bit carrying the first energy saving indication may be the same as the AID of the terminal corresponding to the bit carrying the second

energy saving indication.

[00119] S107: The terminal enters the energy saving mode or does not enter the energy saving mode based on a received energy saving indication.

[00120] After receiving the energy saving indication (for example, the second energy saving indication and/or the first energy saving indication), the terminal parses the received energy saving indication, and enters the energy saving mode or does not enter the energy saving mode based on the energy saving indication.

[00121] Optionally, if the AP sends the energy saving indication to the terminal by sending the beacon frame, the terminal may first parse the beacon frame to obtain the energy saving indication, and then parse the energy saving indication. For example, when the energy saving indication is carried in the PVB field in the beacon frame, the terminal may parse the beacon frame to obtain the PVB field, parse the PVB field to obtain the energy saving indication carried in the PVB field, and then parse the energy saving indication.

[00122] The terminal continuously receives the energy saving indication in a running process. Each time the energy saving indication is received, the terminal may enter the energy saving mode or not enter the energy saving mode based on the energy saving indication.

[00123] For example, a timestamp of the terminal is synchronized with that of the serving AP (AP 2) of the terminal, so that the terminal can receive the second energy saving indication that corresponds to the terminal and that is broadcast by the AP 2. When the second energy saving indication indicates the terminal to enter the energy saving mode, the terminal enters the energy saving mode. When the second energy saving indication indicates to forbid the terminal to enter the energy saving mode, the terminal does not enter the energy saving mode.

[00124] In this process, it is assumed that the foregoing problem 1 occurs, that is, when the terminal does not enter the energy saving mode, the terminal receives the first energy saving indication that corresponds to the terminal and that is broadcast by the AP 1. Because the first energy saving indication indicates to forbid the terminal to enter the energy saving mode, the terminal does not enter the energy saving mode under the indication of the non-serving AP (AP 1) of the terminal. When the serving AP (AP 2) of the terminal broadcasts the second energy saving indication next time, the terminal can always receive the second energy saving indication, so that the timestamp of the terminal can always be synchronized with that of the serving AP of the terminal, to avoid packet loss of the terminal.

[00125] For example, with reference to FIG. 8, in a phase 1 in FIG. 8, the timestamp of the terminal is synchronized with that of the AP 2, the second energy saving indication that corresponds to the terminal and that is broadcast by the AP 2 indicates the terminal to enter the energy saving mode, and in this case, the terminal enters the energy saving mode based on the

second energy saving indication.

[00126] If the foregoing problem 1 occurs in a phase 2 in FIG. 8, when the terminal does not enter the energy saving mode under an indication of the second energy saving indication broadcast by the AP 2, the terminal receives the first energy saving indication that corresponds to the terminal and that is broadcast by the AP 1. However, the first energy saving indication indicates to forbid the terminal to enter the energy saving mode. In this case, the terminal keeps not entering the energy saving mode based on the energy saving indication.

[00127] In this way, because the terminal does not enter the energy saving mode in the phase 2 based on the first energy saving indication broadcast by the AP 1, the terminal does not miss an energy saving indication that corresponds to the terminal and that is broadcast by the AP 2 in a phase 3 in FIG. 8. In this case, if the second energy saving indication that corresponds to the terminal and that is broadcast by the AP 2 in the phase 3 indicates to forbid the terminal to enter the energy saving mode, the terminal may be forbidden to enter the energy saving mode based on the second energy saving indication in this case. Therefore, a unicast frame sent to the terminal after the AP 2 broadcasts the second energy saving indication in the phase 3 is received by the terminal. This avoids packet loss of the terminal, and resolves the foregoing problem 1.

[00128] In addition, when the second energy saving indication indicates the terminal to enter the energy saving mode, the terminal enters the energy saving mode based on the second energy saving indication, to save energy of the terminal and ensure energy saving efficiency. Furthermore, after entering the energy saving mode, the terminal does not receive information. Therefore, even if the non-serving AP (AP 1) of the terminal broadcasts the first energy saving indication corresponding to the terminal, and the first energy saving indication indicates to forbid the terminal to enter the energy saving mode, the terminal does not receive the first energy saving indication, and does not exit the energy saving mode under an indication of the first energy saving indication.

[00129] Further, when the serving AP of the terminal is switched, and the serving AP is switched from the AP 2 to the AP 1, as shown in FIG. 9, the terminal control method provided in this embodiment of this application further includes the following steps.

[00130] S201: The controller sends a first service indication to the AP 2, where the first service indication indicates that the AP 2 is the non-serving AP of the terminal.

[00131] For S201, refer to S101. Details are not described in this embodiment of this application.

[00132] S202: The controller sends a second service indication to the AP 1, where the second service indication indicates that the AP 1 is the serving AP of the terminal.

[00133] For S202, refer to S102. Details are not described in this embodiment of this application.

[00134] S203: The AP 2 determines, based on the first service indication, that the AP 2 is the non-serving AP of the terminal.

[00135] For S203, refer to S103. Details are not described in this embodiment of this application.

[00136] S204: The AP 1 determines, based on the second service indication, that the AP 1 is the serving AP of the terminal.

[00137] For S204, refer to S104. Details are not described in this embodiment of this application.

[00138] S205: The AP 1 broadcasts a second energy saving indication, where the second energy saving indication indicates the terminal to enter the energy saving mode or to forbid the terminal to enter the energy saving mode.

[00139] For S205, refer to S105. Details are not described in this embodiment of this application.

[00140] S206: The AP 2 broadcasts a first energy saving indication, where the first energy saving indication indicates to forbid the terminal to enter the energy saving mode.

[00141] For S206, refer to S106. Details are not described in this embodiment of this application.

[00142] S207: The terminal enters the energy saving mode or does not enter the energy saving mode based on a received energy saving indication.

[00143] For S207, refer to S107. Details are not described in this embodiment of this application.

[00144] According to the embodiment shown in FIG. 9, it may be learned that when the serving AP of the terminal is switched from the AP 2 to the AP 1, the AP 1 serves as the serving AP of the terminal, and the AP 2 serves as the non-serving AP of the terminal. In this case, for an operation performed by the AP 1 serving as the serving AP of the terminal, refer to the operation performed by the AP 2 serving as the serving AP of the terminal in FIG. 7; and for an operation performed by the AP 2 serving as the non-serving AP of the terminal, refer to the operation performed by the AP 1 serving as the non-serving AP of the terminal in FIG. 7. In the embodiment shown in FIG. 7, the foregoing problem 1 can be resolved when the serving AP of the terminal is not switched. Therefore, in the embodiment shown in FIG. 9, the foregoing problem 1 can be resolved after the serving AP of the terminal is switched.

[00145] In addition, when the second energy saving indication indicates the terminal to enter the energy saving mode, the terminal enters the energy saving mode based on the second energy saving indication, to save energy of the terminal and ensure energy saving efficiency. Furthermore, after entering the energy saving mode, the terminal does not receive information. Therefore, even if the non-serving AP (AP 2) of the terminal broadcasts the first energy saving indication corresponding to the terminal, and the first energy saving indication indicates to forbid the terminal to enter the energy saving mode, the terminal does not receive the first energy saving indication, and does not exit the energy saving mode under an indication of the first energy saving indication.

[00146] In addition, for the foregoing problem 2, when the serving AP of the terminal is switched, it is assumed that the timestamp of the terminal is synchronized with that of a serving AP used before switching, and the timestamp of the terminal is not synchronized with that of a

serving AP used after switching. The serving AP used before switching is changed to the non-serving AP used after switching. Therefore, an energy saving indication that corresponds to the terminal and that is broadcast by the non-serving AP used after switching indicates to forbid the terminal to enter the energy saving mode. The terminal may be forbidden to enter the energy saving mode based on the energy saving indication until the terminal receives an energy saving indication that corresponds to the terminal and that is broadcast by the serving AP used after switching, so that the timestamp of the terminal is synchronized with that of the serving AP used after switching, to avoid packet loss of the terminal when the serving AP is switched. This resolves the foregoing problem 2.

[00147] For example, with reference to FIG. 10, in a phase 1 in FIG. 10, the timestamp of the terminal is synchronized with that of the AP 2, the second energy saving indication that corresponds to the terminal and that is broadcast by the AP 2 indicates the terminal to enter the energy saving mode, and the terminal enters the energy saving mode based on the second energy saving indication.

[00148] In a phase 2 in FIG. 10, if the terminal does not enter the energy saving mode based on the energy saving indication that corresponds to the terminal and that is broadcast by the AP 2, the serving AP of the terminal is switched from the AP 2 to the AP 1. In this case, if the timestamp of the terminal is synchronized with that of the AP 2, the terminal receives the first energy saving indication broadcast by the AP 2. In this case, the AP 2 is the non-serving AP of the terminal, and the first energy saving indication broadcast by the AP 2 indicates to forbid the terminal to enter the energy saving mode. Therefore, the terminal is forbidden to enter the energy saving mode based on the first energy saving indication until the terminal receives the second energy saving indication broadcast by the AP 1.

[00149] In this case, if the second energy saving indication that corresponds to the terminal and that is broadcast by the AP 1 in a phase 3 indicates to forbid the terminal to enter the energy saving mode, the terminal may be forbidden to enter the energy saving mode based on the second energy saving indication in this case. Therefore, a unicast frame sent to the terminal after the AP 1 broadcasts the second energy saving indication in the phase 3 is received by the terminal. This avoids packet loss of the terminal, and resolves the foregoing problem 2.

[00150] It may be learned that even if the serving AP of the terminal is switched, the terminal can always receive the energy saving indication broadcast by the serving AP of the terminal, so that the timestamp of the terminal is synchronized with that of the serving AP of the terminal, to avoid packet loss of the terminal.

[00151] In the embodiments shown in FIG. 7 and FIG. 9, regardless of whether the second energy saving indication indicates the terminal to enter the energy saving mode or to forbid the

terminal to enter the energy saving mode, an example in which the first energy saving indication indicates to forbid the terminal to enter the energy saving mode is used. Optionally, the first energy saving indication may alternatively be consistent with the second energy saving indication.

[00152] For example, when the second energy saving indication indicates the terminal to enter the energy saving mode, the first energy saving indication indicates the terminal to enter the energy saving mode; or when the second energy saving indication indicates to forbid the terminal to enter the energy saving mode, the first energy saving indication indicates to forbid the terminal to enter the energy saving mode.

[00153] In this case, before broadcasting the first energy saving indication, the non-serving AP (for example, the AP 1 in FIG. 7 or the AP 2 in FIG. 8) needs to obtain the second energy saving indication, and determine the first energy saving indication based on the second energy saving indication. For a manner in which the non-serving AP obtains the second energy saving indication, refer to the manner in which the AP 1 obtains the second energy saving indication in S106. Details are not described in this embodiment of this application.

[00154] When the first energy saving indication is consistent with the second energy saving indication, the foregoing problem 1 and problem 2 can also be resolved. Analysis is as follows:

[00155] For the problem 1:

[00156] It is assumed that the problem 1 occurs, that is, when the terminal does not enter the energy saving mode, the terminal receives the first energy saving indication broadcast by the non-serving AP of the terminal. The first energy saving indication is consistent with the second energy saving indication broadcast by the serving AP. Therefore, the first energy saving indication currently also indicates to forbid the terminal to enter the energy saving mode, and the terminal keeps not entering the energy saving mode under an indication of the first energy saving indication. When the serving AP of the terminal broadcasts the second energy saving indication next time, the terminal can always receive the second energy saving indication, so that the timestamp of the terminal can always be synchronized with that of the serving AP of the terminal, to avoid packet loss of the terminal.

[00157] For example, with reference to FIG. 11, in a phase 1 in FIG. 11, the timestamp of the terminal is synchronized with that of the AP 2 (serving AP of the terminal), the second energy saving indication that corresponds to the terminal and that is broadcast by the AP 2 indicates the terminal to enter the energy saving mode, and the terminal enters the energy saving mode based on the second energy saving indication.

[00158] If the foregoing problem 1 occurs in a phase 2 in FIG. 11, when the terminal does not enter the energy saving mode under an indication of the second energy saving indication broadcast by the AP 2, the terminal receives the first energy saving indication that corresponds to the terminal

and that is broadcast by the AP 1. However, the first energy saving indication also indicates to forbid the terminal to enter the energy saving mode. In this case, the terminal keeps not entering the energy saving mode based on the energy saving indication.

[00159] In this way, because the terminal does not enter the energy saving mode in the phase 2 based on the first energy saving indication broadcast by the AP 1, the terminal does not miss the second energy saving indication broadcast by the AP 2 in a phase 3 in FIG. 11. In this case, if the second energy saving indication broadcast by the AP 2 in the phase 3 indicates to forbid the terminal to enter the energy saving mode, the terminal may be forbidden to enter the energy saving mode based on the second energy saving indication in this case. Therefore, a unicast frame sent to the terminal after the AP 2 broadcasts the second energy saving indication in the phase 3 is received by the terminal. This avoids packet loss of the terminal, and resolves the foregoing problem 1.

[00160] In addition, when the second energy saving indication indicates the terminal to enter the energy saving mode, the terminal enters the energy saving mode based on the second energy saving indication, to save energy of the terminal and ensure energy saving efficiency. After entering the energy saving mode, the terminal does not receive information. Therefore, regardless of whether the first energy saving indication broadcast by the non-serving AP indicates the terminal to enter the energy saving mode, the terminal does not receive the first energy saving indication, and does not enter or enters the energy saving mode under an indication of the first energy saving indication.

[00161] For the problem 2:

[00162] It is assumed that the problem 2 occurs, that is, when the serving AP of the terminal is switched, the timestamp of the terminal is synchronized with that of a serving AP used before switching, and the timestamp of the terminal is not synchronized with that of a serving AP used after switching. The first energy saving indication broadcast by the non-serving AP is consistent with the second energy saving indication broadcast by the serving AP. Therefore, if the second energy saving indication broadcast by the serving AP used after switching indicates to forbid the terminal to enter the energy saving mode, the first energy saving indication broadcast by the non-serving AP used after switching also indicates to forbid the terminal to enter the energy saving mode. In this case, the terminal may be forbidden to enter the energy saving mode based on the first energy saving indication until the terminal receives the second energy saving indication that corresponds to the terminal and that is broadcast by the serving AP used after switching, so that the timestamp of the terminal is synchronized with that of the serving AP used after switching, to avoid packet loss of the terminal when the serving AP is switched. This resolves the foregoing problem 2.

[00163] For example, with reference to FIG. 12, in a phase 1 in FIG. 12, the timestamp of the

terminal is synchronized with that of the AP 2, the second energy saving indication that corresponds to the terminal and that is broadcast by the AP 2 indicates the terminal to enter the energy saving mode, and the terminal enters the energy saving mode based on the second energy saving indication.

[00164] In a phase 2 in FIG. 12, if the terminal does not enter the energy saving mode based on the energy saving indication that corresponds to the terminal and that is broadcast by the AP 2, the serving AP of the terminal is switched from the AP 2 to the AP 1. In this case, if the timestamp of the terminal is synchronized with that of the AP 2, the terminal receives the first energy saving indication broadcast by the AP 2. In this case, the AP 2 is the non-serving AP of the terminal, and the first energy saving indication broadcast by the AP 2 is consistent with the second energy saving indication broadcast by the serving AP (AP 1) of the terminal. When the second energy saving indication broadcast by the AP 1 indicates to forbid the terminal to enter the energy saving mode, the first energy saving indication broadcast by the AP 2 also indicates to forbid the terminal to enter the energy saving mode. Therefore, the terminal is forbidden to enter the energy saving mode based on the first energy saving indication until the terminal receives the second energy saving indication broadcast by the AP 1.

[00165] In this case, if the second energy saving indication that corresponds to the terminal and that is broadcast by the AP 1 in a phase 3 indicates to forbid the terminal to enter the energy saving mode, the terminal may be forbidden to enter the energy saving mode based on the second energy saving indication in this case. Therefore, a unicast frame sent to the terminal after the AP 1 broadcasts the second energy saving indication in the phase 3 is received by the terminal. This avoids packet loss of the terminal, and resolves the foregoing problem 2.

[00166] It may be learned that even if the serving AP of the terminal is switched, the terminal can always receive the energy saving indication broadcast by the serving AP of the terminal, so that the timestamp of the terminal is synchronized with that of the serving AP of the terminal, to avoid packet loss of the terminal.

[00167] In addition, when the second energy saving indication broadcast by the serving AP used after switching indicates the terminal to enter the energy saving mode, the first energy saving indication broadcast by the non-serving AP used after switching also indicates the terminal to enter the energy saving mode. Even if the timestamp of the terminal is synchronized with that of the non-serving AP used after switching, and the terminal receives the first energy saving indication that is broadcast by the non-serving AP and that indicates the terminal to enter the energy saving mode, the terminal may enter the energy saving mode based on the first energy saving indication, to save energy of the terminal and ensure energy saving efficiency.

[00168] It may be learned from the foregoing content that in the terminal control method

provided in this embodiment of this application, for any AP (referred to as a first AP) in the single BSSID system, the first AP may determine whether the first AP is the serving AP configured to provide a service for the terminal; and when the first AP is not the serving AP, the first AP broadcasts a first energy saving indication. When the first AP is the serving AP, the serving AP broadcasts a second energy saving indication.

[00169] In a case, regardless of whether the second energy saving indication indicates the terminal to enter the energy saving mode or to forbid the terminal to enter the energy saving mode, the first energy saving indication indicates to forbid the terminal to enter the energy saving mode.

[00170] In another case, when the second energy saving indication indicates the terminal to enter the energy saving mode, the first energy saving indication also indicates the terminal to enter the energy saving mode; or when the second energy saving indication indicates to forbid the terminal to enter the energy saving mode, the first energy saving indication also indicates to forbid the terminal to enter the energy saving mode.

[00171] It may be learned that the first energy saving indication can indicate to forbid the terminal to enter the energy saving mode, and in this case, the second energy saving indication indicates the terminal to enter the energy saving mode or to forbid the terminal to enter the energy saving mode.

[00172] Optionally, the first AP may further obtain the second energy saving indication before the first AP broadcasts the first energy saving indication when the first AP is not the serving AP. In this case, the first AP may determine the first energy saving indication based on the second energy saving indication, and broadcast the first energy saving indication.

[00173] Optionally, the first AP may directly receive the second energy saving indication sent by the second AP, to obtain the second energy saving indication. Alternatively, the first AP may receive the second energy saving indication sent by the controller, to obtain the second energy saving indication.

[00174] Optionally, when broadcasting the first energy saving indication, the first AP may broadcast only the first energy saving indication, or may broadcast a first beacon frame including the first energy saving indication. For example, in the first beacon frame, the first energy saving indication may be carried in a PVB field in the first beacon frame.

[00175] Optionally, before the first AP determines whether the first AP is the serving AP configured to provide a service for the terminal, the first AP may receive a service indication sent by the controller, where the service indication indicates whether the first AP is the serving AP; and when determining whether the first AP is the serving AP, the first AP may determine, based on the service indication, whether the first AP is the serving AP. Certainly, the first AP may not determine, based on the service indication, whether the first AP is the serving AP. For example, a worker may

configure information about whether the first AP is the serving AP on the first AP, and the first AP may determine, based on the information, whether the first AP is the serving AP. If the first AP does not need to determine, based on the service indication sent by the controller, whether the first AP is the serving AP of the terminal, and the first AP does not need to receive the second energy saving indication sent by the controller, the BSSID system provided in this embodiment of this application may not include the controller.

[00176] Optionally, when the first AP determines that the first AP is the serving AP, the first AP may send an energy saving indication to the controller (similar to the case in which the AP 2 sends the second energy saving indication to the controller in the embodiment shown in FIG. 7). The energy saving indication indicates whether the first AP requires the terminal to enter the energy saving mode.

[00177] It may be learned that the terminal control method provided in this embodiment of this application can not only resolve the foregoing problem 1 and problem 2.

[00178] In addition, compared with the foregoing method 1, in the terminal control method provided in this embodiment of this application, different BSSIDs do not need to be configured for different terminals. Therefore, in this embodiment of this application, a terminal management manner is simple, a beacon frame does not need to carry the BSSID, and overheads of the beacon frame are low. Furthermore, because different BSSIDs do not need to be configured for different terminals, a quantity of terminals that can be accommodated in the single BSSID system is not limited.

[00179] Compared with the method 2, the terminal control method provided in this embodiment of this application can resolve the foregoing problems 1 and 2. In addition, the serving AP used before switching does not need to determine a moment at which the serving AP used after switching broadcasts a beacon frame. Therefore, the terminal control method provided in this embodiment of this application has a low requirement on the AP.

[00180] According to the terminal control method provided in embodiments of this application, it may be learned that an embodiment of this application further provides a terminal control system. The terminal control system is a single BSSID system. The terminal control system includes a terminal and a plurality of access points APs. The terminal control system includes:

a first AP, where the first AP is any one of the plurality of APs, and the first AP is configured to broadcast a first energy saving indication when determining that the first AP is not a serving AP configured to provide a service for the terminal, where the first energy saving indication indicates to forbid the terminal to enter an energy saving mode; and the terminal, configured to enter the energy saving mode or not enter the energy saving mode based on a received energy saving indication.

[00181] Before broadcasting the first energy saving indication, the first AP needs to determine the first energy saving indication. The first AP determines the first energy saving indication in various manners. In an optional manner in which the first AP determines the first energy saving indication, the serving AP in the plurality of APs is configured to broadcast a second energy saving indication, and the first AP is further configured to obtain the second energy saving indication before broadcasting the first energy saving indication when the first AP is not the serving AP. When the first energy saving indication indicates to forbid the terminal to enter the energy saving mode, the second energy saving indication indicates the terminal to enter the energy saving mode; or when the first energy saving indication indicates to forbid the terminal to enter the energy saving mode, the second energy saving indication indicates to forbid the terminal to enter the energy saving mode.

[00182] The first AP obtains the second energy saving indication in various manners. For example, the current serving AP is further configured to send the second energy saving indication to the first AP, so that the first AP obtains the second energy saving indication. Alternatively, the current serving AP is further configured to send, to a controller, the second energy saving indication that needs to be broadcast by the current serving AP; and the controller is configured to send the second energy saving indication to the first AP, so that the first AP obtains the second energy saving indication.

[00183] The first AP broadcasts the first energy saving indication in various manners.

[00184] In an optional manner in which the first AP broadcasts the first energy saving indication, the first AP is configured to directly broadcast the first energy saving indication.

[00185] In another optional manner in which the first AP broadcasts the first energy saving indication, the first AP is configured to broadcast the first energy saving indication by broadcasting a first beacon frame, where the first beacon frame includes the first energy saving indication.

[00186] Optionally, the first energy saving indication may be carried in a PVB field in the first beacon frame. For example, the PVB field includes a bit corresponding to an AID of the terminal, and the bit may be used to carry the first energy saving indication.

[00187] Optionally, before the first AP determines whether the first AP is the serving AP configured to provide a service for the terminal, the first AP is further configured to receive a service indication sent by the controller, where the service indication indicates whether the first AP is the serving AP; and the first AP may be configured to determine, based on the service indication, whether the first AP is the serving AP. Certainly, the first AP may not determine, based on the service indication, whether the first AP is the serving AP. For example, a worker may configure information about whether the first AP is the serving AP on the first AP, and the first AP may determine, based on the information, whether the first AP is the serving AP.

[00188] Optionally, the first AP is further configured to send an energy saving indication to the controller when determining that the first AP is the serving AP (similar to the case in which the AP 2 sends the second energy saving indication to the controller in the embodiment shown in FIG. 7). The energy saving indication indicates whether the first AP requires the terminal to enter the energy saving mode.

[00189] The terminal control method provided in this application is described in detail above with reference to FIG. 1 to FIG. 12. It may be understood that to implement the functions described in the foregoing methods, the first AP and the controller need to include corresponding hardware and/or software modules for performing the functions. The execution processes of the methods described with reference to embodiments disclosed in this specification can be implemented in this application in a form of hardware or a combination of hardware and computer software. Whether a function is performed by hardware or hardware driven by computer software depends on particular applications and design constraints of the technical solutions. A person skilled in the art may use different manners to implement the described functions for each particular application with reference to embodiments, but it should not be considered that this implementation goes beyond the scope of this application.

[00190] In embodiments, the first AP and the controller may be divided into functional modules based on the foregoing method embodiments. For example, each functional module may be obtained through division based on each corresponding function, or two or more functions may be integrated into one processing module. The integrated module may be implemented in a form of hardware.

[00191] When the manner of obtaining a functional module through division is used, a terminal control apparatus (for example, the first AP and the controller) provided in this application is described below with reference to FIG. 13, FIG. 14, and FIG. 15.

[00192] FIG. 13 is a block diagram of a first AP according to an embodiment of this application. As shown in FIG. 13, the first AP includes a determining module 1301 and a broadcast module 1302.

[00193] The determining module 1301 is configured to determine whether the first AP is a serving AP configured to provide a service for a terminal. For an operation performed by the determining module 1301, refer to the content related to the AP 1 in S103, or refer to the content related to the AP 2 in S203.

[00194] The broadcast module 1302 is configured to broadcast a first energy saving indication when the first AP is not the serving AP. The first energy saving indication indicates to forbid the terminal to enter an energy saving mode. For an operation performed by the broadcast module 1302, refer to the content related to the AP 1 in S106, or refer to the content related to the AP 2 in

S206.

[00195] Optionally, before broadcasting the first energy saving indication, the first AP needs to determine the first energy saving indication. The first AP determines the first energy saving indication in various manners. In an optional manner in which the first AP determines the first energy saving indication, the first AP further includes an obtaining module (not shown in FIG. 13), configured to obtain a second energy saving indication before the first AP broadcasts the first energy saving indication when the first AP is not the serving AP. The second energy saving indication is an energy saving indication broadcast by the serving AP, and the second energy saving indication indicates the terminal to enter the energy saving mode, or the second energy saving indication indicates to forbid the terminal to enter the energy saving mode. For an operation performed by the obtaining module, refer to the content related to the case in which the non-serving AP obtains the second energy saving indication broadcast by the serving AP in the embodiments shown in FIG. 7 and FIG. 8.

[00196] The obtaining module obtains the second energy saving indication in various manners. For example, the first AP may receive the second energy saving indication sent by the current serving AP, so that the obtaining module obtains the second energy saving indication. Alternatively, the current serving AP may send, to a controller, the second energy saving indication that needs to be broadcast by the current serving AP, and then the controller sends the second energy saving indication to the first AP, so that the obtaining module obtains the second energy saving indication.

[00197] The broadcast module broadcasts the first energy saving indication in various manners.

[00198] In an optional manner in which the broadcast module broadcasts the first energy saving indication, the broadcast module may directly broadcast the first energy saving indication.

[00199] In another optional manner in which the broadcast module broadcasts the first energy saving indication, the broadcast module may broadcast the first energy saving indication by broadcasting a first beacon frame, where the first beacon frame includes the first energy saving indication.

[00200] Optionally, the first energy saving indication may be carried in a PVB field in the first beacon frame. For example, the PVB field includes a bit corresponding to an AID of the terminal, and the bit may be used to carry the first energy saving indication.

[00201] Optionally, the single BSSID system further includes the controller, and the first AP further includes a receiving module (not shown in FIG. 13). The receiving module is configured to: before the first AP determines whether the first AP is the serving AP configured to provide a service for the terminal, receive a service indication sent by the controller. The service indication indicates whether the first AP is the serving AP. The determining module is configured to determine, based on the service indication, whether the first AP is the serving AP. Certainly, the

first AP may not determine, based on the service indication, whether the first AP is the serving AP. For example, a worker may configure information about whether the first AP is the serving AP on the first AP, and the first AP may determine, based on the information, whether the first AP is the serving AP. For an operation performed by the receiving module, refer to the content related to the AP 1 in S101, or refer to the content related to the AP 2 in S201.

[00202] Optionally, the single BSSID system further includes the controller, and the first AP further includes a sending module (not shown in FIG. 13), configured to send an energy saving indication to the controller when the first AP is the serving AP (similar to the foregoing case in which the serving AP sends the second energy saving indication to the controller). The energy saving indication indicates whether the first AP requires the terminal to enter the energy saving mode. For an operation performed by the sending module, refer to the content related to the case in which the serving AP sends the energy saving indication to the controller in the embodiments shown in FIG. 7 and FIG. 8.

[00203] FIG. 14 is a block diagram of a controller according to an embodiment of this application. As shown in FIG. 14, the controller includes a receiving module 1401 and a sending module 1402.

[00204] The receiving module 1401 is configured to receive an energy saving indication sent by a serving AP. The serving AP is an AP configured to provide a service for a terminal in a plurality of APs, and the energy saving indication indicates whether the serving AP requires the terminal to enter an energy saving mode. For an operation performed by the receiving module 1401, refer to the content related to the case in which the controller receives the energy saving indication sent by the serving AP in the embodiments shown in FIG. 7 and FIG. 8.

[00205] The sending module 1402 is configured to send the energy saving indication to at least some of the plurality of APs. The at least some APs include an AP other than the serving AP in the plurality of APs. For an operation performed by the sending module 1402, refer to the content related to the controller in S101, S102, S201, and S202.

[00206] Optionally, the at least some APs further include the serving AP.

[00207] When an integrated unit is used, each of the controller and the first AP provided in this application may be referred to as a terminal control apparatus. The terminal control apparatus may include a processing module, a storage module, and a communication module. The processing module may be configured to control and manage an action performed by the terminal control apparatus. For example, the processing module may be configured to support the terminal control apparatus in performing the action performed by the controller or the any AP in S101 to S106. The storage module may be configured to support the terminal control apparatus in executing stored program code, data, and the like. The communication module may be used for communication

between the terminal control apparatus and another apparatus.

[00208] The processing module may be a processor or a controller. The processor may implement or execute various example logical blocks, modules, and circuits described with reference to content disclosed in this application. The processor may alternatively be a combination for implementing a computing function, for example, a combination including one or more microprocessors or a combination of a digital signal processor (digital signal processor, DSP) and a microprocessor. The storage module may be a memory. The communication module may be a device that interacts with another apparatus, for example, a radio frequency circuit, a Bluetooth chip, or a Wi-Fi chip.

[00209] In an embodiment, when the processing module is a processor, the storage module is a memory, and the communication module is a communication interface, the terminal control apparatus in this embodiment may include a processor. The processor is configured to: be coupled to the memory, read instructions in the memory, and perform, based on the instructions, the method that is performed by the terminal control apparatus and that is described in embodiments of this application. In an implementation, the modules and the like included in the terminal control apparatus may be a computer program stored in the memory, and the computer program is invoked by the processor to implement corresponding execution functions of the modules.

[00210] In the terminal control apparatus, there may be a plurality of processors, and the memory coupled to the processor may be independent of the processor or the terminal control apparatus, or may be located in the processor or the terminal control apparatus. The memory may be a physically independent unit, or may be storage space, a web disk, or the like on a cloud server. Optionally, there may be one or more memories. When there are a plurality of memories, the plurality of memories may be located at a same location or different locations, and may be used independently or in combination.

[00211] For example, when the memory is located inside the terminal control apparatus, with reference to FIG. 15, the terminal control apparatus 200 includes a processor 202 and a memory 201. The memory 201 is configured to store a program, and the processor 202 is configured to invoke the program stored in the memory 201, so that the terminal control apparatus performs a corresponding method or function. Optionally, as shown in FIG. 15, the terminal control apparatus 200 may further include at least one communication interface 203 and at least one communication bus 204. The memory 201, the processor 202, and the communication interface 203 are communicatively connected through the communication bus 204. The communication interface 203 is configured to communicate with another apparatus under control of the processor 202. The processor 202 may invoke, through the communication bus 204, the program stored in the memory 201.

[00212] An embodiment of this application provides a computer storage medium. The storage medium stores a computer program. When the computer program runs on a computer, the computer is enabled to perform the method performed by the first AP or the controller in any terminal control method provided in embodiments of this application.

[00213] An embodiment of this application further provides a computer program product including instructions. When the computer program product runs on a computer, the computer is enabled to perform the method performed by the first AP or the controller in any terminal control method provided in embodiments of this application.

[00214] All or some of the foregoing embodiments may be implemented by using software, hardware, firmware, or any combination thereof. When the software is used for implementation, all or some of the foregoing embodiments may be implemented in a form of a computer program product. The computer program product includes one or more computer instructions. When the computer program instructions are loaded and executed on a computer, all or some of the procedures or functions according to embodiments of this application are generated. The computer may be a general-purpose computer, a computer network, or another programmable apparatus. The computer instructions may be stored in a computer-readable storage medium, or may be transmitted from a computer-readable storage medium to another computer-readable storage medium. For example, the computer instructions may be transmitted from a website, computer, server, or data center to another website, computer, server, or data center in a wired (for example, a coaxial cable, an optical fiber, or a digital subscriber line) or wireless (for example, infrared, radio, or microwave) manner. The computer-readable storage medium may be any usable medium accessible by the computer, or includes a data storage apparatus, for example, a server or a data center, into which one or more usable media are integrated. The usable medium may be a magnetic medium (for example, a floppy disk, a hard disk, or a magnetic tape), an optical medium, a semiconductor medium (for example, a solid-state drive), or the like.

[00215] In this application, the terms "first", "second", and the like are merely intended for description, but cannot be understood as an indication or implication of relative importance. The term "at least one" means one or more, and the term "a plurality of" means two or more, unless expressly limited otherwise.

[00216] Different types of embodiments, for example, the method embodiments, the apparatus embodiments, and the system embodiments, provided in embodiments of this application may be mutually referenced. This is not limited in embodiments of this application. A sequence of the operations of the method embodiments provided in embodiments of this application can be properly adjusted, and the operations can be correspondingly added or deleted based on a situation. Any method readily figured out by a person skilled in the art within the technical scope disclosed

in this application shall fall within the protection scope of this application. Therefore, details are not described.

[00217] In the corresponding embodiments provided in this application, it should be understood that the disclosed system, apparatus, and the like may be implemented in other composition manners. For example, the described apparatus embodiment is merely an example. For example, division into the modules is merely logical function division and may be other division during actual implementation. For example, a plurality of modules may be combined or integrated into another system, or some features may be ignored or not performed. In addition, the displayed or discussed mutual couplings or direct couplings or communication connections may be implemented through some interfaces. The indirect couplings or communication connections between the apparatuses or modules may be implemented in electronic or other forms.

[00218] The units described as separate parts may or may not be physically separate, and parts described as units may or may not be physical units, may be located at one position, or may be distributed on a plurality of apparatuses. Some or all of the units may be selected based on actual requirements to achieve the objectives of the solutions in embodiments.

[00219] The foregoing descriptions are merely optional implementations of this application, but the protection scope of this application is not limited thereto. Any equivalent modification or replacement readily figured out by a person skilled in the art within the technical scope disclosed in this application shall fall within the protection scope of this application. Therefore, the protection scope of this application shall be subject to the protection scope of the claims.

[00220] The foregoing descriptions are merely optional embodiments of this application, but are not intended to limit this application. Any modification, equivalent replacement, improvement, or the like made without departing from the spirit and principle of this application shall fall within the protection scope of this application.

CLAIMS

1. A terminal control method, wherein the method is applied to a first access point AP in a single basic service set identifier BSSID system, the single BSSID system comprises a terminal and a plurality of APs, the first AP is any one of the plurality of APs, and the method comprises:

determining, by the first AP, whether the first AP is a serving AP configured to provide a service for the terminal; and

broadcasting, by the first AP, a first energy saving indication when the first AP is not the serving AP, wherein the first energy saving indication indicates to forbid the terminal to enter an energy saving mode.

2. The method according to claim 1, wherein before the broadcasting, by the first AP, a first energy saving indication when the first AP is not the serving AP, the method further comprises:

obtaining, by the first AP, a second energy saving indication, wherein the second energy saving indication is an energy saving indication broadcast by the serving AP, and the second energy saving indication indicates the terminal to enter the energy saving mode.

3. The method according to claim 1, wherein before the broadcasting, by the first AP, a first energy saving indication when the first AP is not the serving AP, the method further comprises:

obtaining, by the first AP, a second energy saving indication, wherein the second energy saving indication is an energy saving indication broadcast by the serving AP, and the second energy saving indication indicates to forbid the terminal to enter the energy saving mode.

4. The method according to claim 2 or 3, wherein the single BSSID system further comprises a controller, and the obtaining, by the first AP, a second energy saving indication comprises:

receiving, by the first AP, the second energy saving indication sent by the controller.

5. The method according to any one of claims 1 to 4, wherein the broadcasting, by the first AP, a first energy saving indication comprises:

broadcasting, by the first AP, a first beacon frame, wherein the first beacon frame comprises the first energy saving indication.

6. The method according to claim 5, wherein the first energy saving indication is carried in a partial virtual bitmap PVB field in the first beacon frame.

7. The method according to any one of claims 1 to 6, wherein the single BSSID system further comprises the controller, and before the determining, by the first AP, whether the first AP is a serving AP configured to provide a service for the terminal, the method further comprises:

receiving, by the first AP, a service indication sent by the controller, wherein the service indication indicates whether the first AP is the serving AP; and

the determining, by the first AP, whether the first AP is a serving AP configured to provide a

service for the terminal comprises:

determining, by the first AP based on the service indication, whether the first AP is the serving AP.

8. The method according to any one of claims 1 to 7, wherein the single BSSID system further comprises the controller, and the method further comprises:

sending, by the first AP, an energy saving indication to the controller when the first AP is the serving AP, wherein the energy saving indication indicates whether the first AP requires the terminal to enter the energy saving mode.

9. A terminal control method, wherein the method is applied to a controller in a single basic service set identifier BSSID system, the single BSSID system further comprises a terminal and a plurality of access points APs, and the method comprises:

receiving, by the controller, an energy saving indication sent by a serving AP, wherein the serving AP is an AP configured to provide a service for the terminal in the plurality of APs, and the energy saving indication indicates whether the serving AP requires the terminal to enter an energy saving mode; and

sending, by the controller, the energy saving indication to at least some of the plurality of APs, wherein the at least some APs comprise an AP other than the serving AP in the plurality of APs.

10. The method according to claim 9, wherein the at least some APs further comprise the serving AP.

11. A terminal control system, wherein the system comprises a terminal and a plurality of access points APs, and the system comprises:

a first AP, configured to determine whether the first AP is a serving AP configured to provide a service for the terminal, wherein the first AP is any one of the plurality of APs, wherein

the first AP is further configured to broadcast a first energy saving indication when the first AP is not the serving AP, wherein the first energy saving indication indicates to forbid the terminal to enter an energy saving mode; and

the terminal, configured to enter the energy saving mode or not enter the energy saving mode based on a received energy saving indication.

12. The terminal control system according to claim 11, wherein

the serving AP in the plurality of APs is configured to broadcast a second energy saving indication, wherein the second energy saving indication indicates the terminal to enter the energy saving mode; and

the first AP is further configured to obtain the second energy saving indication before broadcasting the first energy saving indication when the first AP is not the serving AP.

13. The terminal control system according to claim 11, wherein

the serving AP in the plurality of APs is configured to broadcast a second energy saving indication, wherein the second energy saving indication indicates to forbid the terminal to enter the energy saving mode; and

the first AP is further configured to obtain the second energy saving indication before broadcasting the first energy saving indication when the first AP is not the serving AP.

14. The terminal control system according to claim 12 or 13, wherein the terminal control system further comprises a controller;

the serving AP in the plurality of APs is further configured to send the second energy saving indication to the controller; and

the first AP is further configured to receive the second energy saving indication sent by the controller.

15. The terminal control system according to any one of claims 11 to 14, wherein the terminal control system further comprises the controller;

the first AP is further configured to send an energy saving indication to the controller when the first AP is the serving AP, wherein the energy saving indication indicates whether the first AP requires the terminal to enter the energy saving mode; and

the controller is configured to send the energy saving indication to at least some of the plurality of APs, wherein the at least some APs comprise an AP other than the first AP in the plurality of APs.

16. A first access point AP, wherein the first AP belongs to a single basic service set identifier BSSID system, the single BSSID system comprises a terminal and a plurality of APs, the first AP is any one of the plurality of APs, and the first AP comprises:

a determining module, configured to determine whether the first AP is a serving AP configured to provide a service for the terminal; and

a broadcast module, configured to broadcast a first energy saving indication when the first AP is not the serving AP, wherein the first energy saving indication indicates to forbid the terminal to enter an energy saving mode.

17. The first AP according to claim 16, wherein the first AP further comprises:

an obtaining module, configured to obtain a second energy saving indication before the first AP broadcasts the first energy saving indication when the first AP is not the serving AP, wherein the second energy saving indication is an energy saving indication broadcast by the serving AP, and the second energy saving indication indicates the terminal to enter the energy saving mode.

18. The first AP according to claim 16, wherein the first AP further comprises:

an obtaining module, configured to obtain a second energy saving indication before the first AP broadcasts the first energy saving indication when the first AP is not the serving AP, wherein

the second energy saving indication is an energy saving indication broadcast by the serving AP, and the second energy saving indication indicates to forbid the terminal to enter the energy saving mode.

19. The first AP according to claim 17 or 18, wherein the single BSSID system further comprises a controller, and the obtaining module is configured to receive the second energy saving indication sent by the controller.

20. The first AP according to any one of claims 16 to 19, wherein the broadcast module is configured to:

broadcast a first beacon frame, wherein the first beacon frame comprises the first energy saving indication.

21. The first AP according to claim 20, wherein the first energy saving indication is carried in a partial virtual bitmap PVB field in the first beacon frame.

22. The first AP according to any one of claims 16 to 21, wherein the single BSSID system further comprises the controller, and the first AP further comprises:

a receiving module, configured to: before the first AP determines whether the first AP is the serving AP configured to provide a service for the terminal, receive a service indication sent by the controller, wherein the service indication indicates whether the first AP is the serving AP; and

the determining module is configured to determine, based on the service indication, whether the first AP is the serving AP.

23. The first AP according to any one of claims 16 to 22, wherein the single BSSID system further comprises the controller, and the first AP further comprises:

a sending module, configured to send an energy saving indication to the controller when the first AP is the serving AP, wherein the energy saving indication indicates whether the first AP requires the terminal to enter the energy saving mode.

24. A controller, wherein the controller belongs to a single basic service set identifier BSSID system, the single BSSID system further comprises a terminal and a plurality of access points APs, and the controller comprises:

a receiving module, configured to receive an energy saving indication sent by a serving AP, wherein the serving AP is an AP configured to provide a service for the terminal in the plurality of APs, and the energy saving indication indicates whether the serving AP requires the terminal to enter an energy saving mode; and

a sending module, configured to send the energy saving indication to at least some of the plurality of APs, wherein the at least some APs comprise an AP other than the serving AP in the plurality of APs.

25. The controller according to claim 24, wherein the at least some APs further comprise the

serving AP.