CLAIMS

1. An Access Point multi-link device (AP MLD) including a plurality of affiliated APs, the AP MLD comprising:

a receiver, which in operation, receives, from a requesting communication apparatus, an Address Resolution Protocol (ARP) request with a target internet protocol (IP) address to be resolved;

circuitry, which in operation, if the target IP address corresponds to a non-AP MLD, determines to generate an ARP response and inserts an MLD media access control (MAC) address of the non-AP MLD as a Sender's MAC address in the ARP response.

2. The AP MLD according to claim 1, wherein if the target IP address corresponds to a station (STA), the circuitry inserts a MAC address of the STA as the Sender's MAC address in the ARP response.

3. The AP MLD according claim 1, wherein the requesting communication apparatus is a STA associated with one of the plurality of affiliated APs, another non-AP MLD that is different from the non-AP MLD corresponding to the target IP address, or a Distribution System (DS).

4. The AP MLD according to claim 1, wherein the circuitry maintains an MLD MAC address to IP address mapping for each associated non-AP MLD and for each

IP address of the non-AP MLD, and updates the MLD MAC address to IP address mapping when one of the IP addresses of the non-AP MLD changes.

5. The AP MLD according to claim 1, the circuitry, in operation, responds to the ARP request on behalf of the non-AP MLD.

6. The AP MLD according to claim 1, comprising a transmitter, which, in operation, transmits the generated ARP response to the requesting communication apparatus.

7. The AP MLD according to claim 1, wherein the ARP request includes an MLD indication that is carried in a least significant bit of a MAC address of the requesting communication apparatus.

8. The AP MLD according to claim 7, wherein the ARP request is for finding a MAC address of a device having the target IP address.

9. The AP MLD according to claim 1, wherein, the circuitry responds to the ARP request on behalf of the non-AP MLD.

10. A communication method for an Access Point multi-link device (AP MLD), the communication method comprising:

receiving, from a requesting communication apparatus, an Address Resolution Protocol (ARP) request with a target internet protocol (IP) address to be resolved;

if the target IP address corresponds to a non-AP MLD, determining to generate an ARP response and inserting an MLD media access control (MAC) address of the non-AP MLD as a Sender's MAC address in the ARP response.

11. The communication method according to claim 10, wherein if the target IP address corresponds to a station (STA), the communication method comprises:

inserting a MAC address of the STA as the Sender's MAC address in the ARP response.

12. The communication method according claim 10, wherein the requesting communication apparatus is a STA associated with one of the plurality of affiliated APs, another non-AP MLD that is different from the non-AP MLD corresponding to the target IP address, or a Distribution System (DS).

13. The communication method according to claim 10, wherein the communication method comprises:

maintaining an MLD MAC address to IP address mapping for each associated non-AP MLD and for each IP address of the non-AP MLD; and

updating the MLD MAC address to IP address mapping when one of the IP addresses of the non-AP MLD changes.

14. The communication method according to claim 10, wherein the communication method comprises responding to the ARP request on behalf of the non-AP MLD.

15. The communication method according to claim 10, wherein the communication method comprising transmitting the generated ARP response to the requesting communication apparatus.

16. The communication method according to claim 10, wherein the ARP request includes an MLD indication that is carried in a least significant bit of a MAC address of the requesting communication apparatus.

17. The communication method according to claim 16, wherein the ARP request is for finding a MAC address of a device having the target IP address.

18. The communication method according to claim 10, wherein the communication method comprises responding to the ARP request on behalf of the non-AP MLD.