

CLAIMS

1. A first station (STA) included in a first plurality of STAs affiliated with a first Multi-link Device (MLD), the first STA comprising:
- 5 circuitry, which in operation, generates a request frame, the request frame comprising request information; and
- a transmitter, which in operation, transmits the request frame to a second STA to request a multi-link setup, wherein the second STA is included in a second plurality of STAs affiliated with a second MLD, and wherein the multi-link setup establishes one or more links between one or more STAs of the first plurality of
- 10 STAs and corresponding one or more STAs of the second plurality of STAs based on the request information.
2. The first STA according to claim 1, wherein the request information identifies the one or more STAs of the first plurality of STAs.
- 15 3. The first STA according to claim 1, wherein the request frame further comprises information about quality of wireless channels for each of the one or more links.
4. The first STA according to claim 1, wherein the first plurality of STAs is
- 20 configured to collect information about quality of wireless channels for each of the one or more links prior to transmitting the request frame, and wherein the quality of wireless channel comprises one or more of link margin, path loss, receive signal strength indication (RSSI) and receive channel power indication (RCPI).

5. The first STA according to claim 1, wherein the circuitry is further configured to generate a frame comprising a common MAC address that identifies the first MLD; and wherein the transmitter is further configured to transmit the generated frame to the second STA for authentication.

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6. The first STA according to claim 1, wherein an STA of the first plurality of STAs is configured to transmit another request frame to an STA of the second plurality of STAs to request a new link to be established between a third STA of the first plurality of STAs and a fourth STA of the second plurality of STAs, wherein no link has yet been established between the third and the fourth STA prior to transmission of the another request frame.

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7. The first STA according to claim 1, wherein the request information comprises information about traffic characteristics that is expected for each of the one or more links, the traffic characteristics being one of Traffic identifier (TID), payload size, delay bound, data rate, minimum PHY rate.

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8. The first STA according to claim 1, wherein the request information indicates capability information and MAC addresses of only the one or more STAs of the first plurality of STAs for which links are to be set up.

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9. The first STA according to claim 3, wherein the request information comprises information about quality of wireless channels for a plurality of links that can be set up between the first plurality and second plurality of STAs, and wherein the quality of wireless channels are set to implicitly indicate the one or more links to be set up.

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10. The first STA according to claim 1, wherein the first MLD is a non-AP MLD and the second MLD is an AP MLD.

11. A communication method comprising:

- 5 generating a request frame at a first STA included in a first plurality of STAs affiliated with a first MLD, the request frame comprising request information; and
- transmitting the request frame to a second STA to request a multi-link setup, wherein the second STA is included in a second plurality of STAs affiliated with a second MLD, and wherein the multi-link setup establishes one or more links
- 10 between one or more STAs of the first plurality of STAs and corresponding one or more STAs of the second plurality of STAs based on the request information.