CLAIMS

What is claimed is:

1. A method for maintaining routing information, wherein the method is applied to a first network device which comprises a multipath group forwarding table, a first multipath group corresponding to the multipath group forwarding table comprises a shortest path and a non-shortest path, each path being used to indicate a path between the first network device and a second network device; and wherein a forwarding table entry of the shortest path comprises a first outbound interface of the first network device; the method comprises:

acquiring, in response to determining that a traffic carried by the shortest path causes congestion on the first outbound interface, a preset routing strategy corresponding to the multipath group forwarding table;

adjusting a forwarding weight value of each path in the first multipath group based on the preset routing strategy, wherein the forwarding weight value of each path is used to indicate, when selecting the path from the first multipath group for packet forwarding, a traffic ratio carried by the path.

2. The method of claim 1, wherein the multipath group forwarding table comprises a software forwarding table and a hardware forwarding table; the method further comprises:

calculating a shortest path and a non-shortest path to the second network device;

generating a software forwarding table entry for each shortest path and each non-shortest path respectively to obtain the software forwarding table, wherein each software forwarding table entry comprises a forwarding weight value of a path, and an initial forwarding weight value of the non-shortest path is 0;

for each software forwarding table entry with a forwarding weight value other than 0, making N copies of information in the software forwarding table entry other than the forwarding weight value to obtain N hardware forwarding table entries, and issuing the N hardware forwarding table entries to a hardware resource to obtain the hardware forwarding table;

wherein N=the forwarding weight value of the software forwarding table entry * a preset number of table entries of the hardware forwarding table /a sum value of forwarding weight values included in the software forwarding table entries.

3. The method of claim 2, wherein the multipath group forwarding table comprises a routing type marker; acquiring a preset routing strategy corresponding to the multipath group forwarding table comprises:

acquiring a preset routing strategy corresponding to the routing type marker;

wherein the preset routing strategy at least comprises one of following strategies: adjusting a forwarding load of a congested outbound interface to 0, reducing a forwarding load of a congested outbound interface without increasing a forwarding load of the non-shortest path, reducing a forwarding load of a congested outbound interface with increasing a forwarding load of the non-shortest path.

4. The method of claim 1, wherein the first network device stores a first interface state table and a second interface state table corresponding to the multipath group forwarding table, the first interface state table comprises an interface state of each outbound interface of the first network device, and the second interface state table comprises a bandwidth usage of a traffic carried by each path in the first multipath group for the outbound interface;

before acquiring, in response to determining that a traffic carried by the shortest path causes congestion on the first outbound interface, a preset routing strategy corresponding to the multipath group forwarding table, the method further comprises:

in response to determining that the interface state of the first interface in the first interface state table changes to a congested state, acquiring a first bandwidth usage of the traffic carried by the shortest path for the first outbound interface from the second interface state table;

in response to determining that the first bandwidth usage meets a preset congestion condition, determining that the traffic carried by the shortest path causes congestion on the first outbound interface.

5. The method of claim 4, wherein the first interface state table further comprises a bandwidth usage and a buffer usage of each outbound interface; the method further comprises:

for each outbound interface in the first interface state table, updating the bandwidth usage and the buffer usage of the outbound interface every preset duration;

in response to determining that an updated bandwidth usage of the outbound interface reaches a preset bandwidth threshold, or in response to determining that an updated buffer usage of the outbound interface reaches a preset buffer threshold, setting the interface state of the outbound

interface to the congested state.

6. The method of claim 4, wherein adjusting a forwarding weight value of each path in the first multipath group based on the preset routing strategy, comprises:

adjusting the forwarding weight value of each path in the first multipath group based on the preset routing strategy and a bandwidth usage of each outbound interface comprised in the second interface state table.

7. The method of claim 1, wherein multiple paths between the first network device and a third network device form a second multipath group, and in a case where the first multipath group is the same as the second multipath group, the first multipath group and the second multipath group share the multipath group forwarding table.

8. An apparatus for maintaining routing information, wherein the apparatus is applied to a first network device which comprises a multipath group forwarding table, a first multipath group corresponding to the multipath group forwarding table comprises a shortest path and a non-shortest path, each path being used to indicate a path between the first network device and a second network device; and wherein a forwarding table entry of the shortest path comprises a first outbound interface of the first network device; the apparatus comprises:

an acquiring module, to acquire, in response to determining that a traffic carried by the shortest path causes congestion on the first outbound interface, a preset routing strategy corresponding to the multipath group forwarding table;

an adjusting module, to adjust a forwarding weight value of each path in the first multipath group based on the preset routing strategy, wherein the forwarding weight value of each path is used to indicate, when selecting the path from the first multipath group for packet forwarding, a traffic ratio carried by the path.

9. The apparatus of claim 8, wherein the multipath group forwarding table comprises a software forwarding table and a hardware forwarding table; the apparatus further comprises a generating module,

wherein the generating module is to:

calculate a shortest path and a non-shortest path to the second network device;

generate a software forwarding table entry for each shortest path and each non-shortest path respectively to obtain the software forwarding table, wherein each software forwarding table entry

comprises a forwarding weight value of a path, and an initial forwarding weight value of the non-shortest path is 0;

for each software forwarding table entry with a forwarding weight value other than 0, make N copies of information in the software forwarding table entry other than the forwarding weight value to obtain N hardware forwarding table entries, and issue the N hardware forwarding table entries to a hardware resource to obtain the hardware forwarding table;

wherein N=the forwarding weight value of the software forwarding table entry * a preset number of table entries of the hardware forwarding table /a sum value of forwarding weight values included in the software forwarding table entries.

10. The apparatus of claim 9, wherein the multipath group forwarding table comprises a routing type marker; the acquiring module is specifically to:

acquire a preset routing strategy corresponding to the routing type marker;

wherein the preset routing strategy at least comprises one of following strategies: adjusting a forwarding load of a congested outbound interface to 0, reducing a forwarding load of a congested outbound interface without increasing a forwarding load of the non-shortest path, reducing a forwarding load of a congested outbound interface with increasing a forwarding load of the non-shortest path.

11. The apparatus of claim 8, wherein the first network device stores a first interface state table and a second interface state table corresponding to the multipath group forwarding table, the first interface state table comprises an interface state of each outbound interface of the first network device, and the second interface state table comprises a bandwidth usage of a traffic carried by each path in the first multipath group for the outbound interface; the apparatus further includes a determining module, wherein

the acquiring module is further to acquire, in response to determining that the interface state of the first interface in the first interface state table changes to a congested state, a first bandwidth usage of the traffic carried by the shortest path for the first outbound interface from the second interface state table;

the determining module is to determine, in response to determining that the first bandwidth usage meets a preset congestion condition, that the traffic carried by the shortest path causes congestion on the first outbound interface.

12. The apparatus of claim 11, wherein the first interface state table further comprises a bandwidth usage and a buffer usage of each outbound interface; the apparatus further comprises an updating module and a setting module, wherein

the updating module is to update, for each outbound interface in the first interface state table, the bandwidth usage and the buffer usage of the outbound interface every preset duration;

the setting module is to set, in response to determining that an updated bandwidth usage of the outbound interface reaches a preset bandwidth threshold, or in response to determining that an updated buffer usage of the outbound interface reaches a preset buffer threshold, the interface state of the outbound interface to the congested state.

13. The apparatus of claim 11, wherein the adjusting module is specifically to:

adjust the forwarding weight value of each path in the first multipath group based on the preset routing strategy and a bandwidth usage of each outbound interface comprised in the second interface state table.

14. The apparatus of claim 8, wherein multiple paths between the first network device and a third network device form a second multipath group, and in a case where the first multipath group is the same as the second multipath group, the first multipath group and the second multipath group share the multipath group forwarding table.

15. A first network device, wherein the first network device comprises a multipath group forwarding table, a first multipath group corresponding to the multipath group forwarding table comprises a shortest path and a non-shortest path, each path being used to indicate a path between the first network device and a second network device; and wherein a forwarding table entry of the shortest path comprises a first outbound interface of the first network device; the first network device comprises:

a processor;

a transceiver;

a machine readable storage medium storing machine executable instructions, which when executed by the processor, cause the processor to perform the method of any one of claims 1-7.

16. A machine readable storage medium storing machine executable instructions which, when called and executed by a processor, cause the processor to implement the method of any of claims 1-7.

17. A computer program product, wherein the computer program product causes a processor to implement the method of any one of claims 1-7.