Claims

1. A method for transmitting data, characterized in comprising:

receiving N first data packets which are transmitted from M terminals to a same first destination address by an access network element, wherein the first data packet comprises a first data packet header and a first data payload, and N is an integer and ~~equal to or~~ greater than 1;

combining first data payloads in the N first data packets to a single second data payload by the access network; and

adding a second data packet header into a front part of the second data payload to form a single second data packet, wherein the second data packet comprises the second data packet header and the second data payload; a source address and a second destination address in the second data packet header are the same as those in at least one of the first data packet headers;

sending the second data packet to a server corresponding to the first destination address,

wherein the procedure of combining the first data payloads in the N first data packets to the single second data payload comprises:

concatenating the first data payloads in the N first data packets to form a single second data payload by

concatenating the first data payloads in the N first data packets according to a sequence and an amount negotiated with the server,

wherein the negotiated sequence is based on a source IP addresses or source port numbers or terminal identifications in the N first data packet headers of the N first data packets, and the negotiated amount is an amount of first data packets sent from each of the M terminals.

2. The method for transmitting data according to claim 1, wherein each first data payload has a same length, and before the combining the first data payloads in the N first data packets to the single second data payload, the method further comprises:

sending, by the access network element, a negotiation request message for negotiating a amount of first data packets to be combined to the server; or

receiving, by the access network element, a negotiation request message, which is sent from the server, for negotiating a amount of first data packets to be combined.

3. The method for transmitting data according to claim 1, wherein each first data payload has a same length, and a procedure of ~~combining the first data payloads in the N first data packets to the single second data payload, and~~ adding the second data packet header into the front part of the second data payload comprises:

~~concatenating the first data payloads in the N first data packets to form a single second data payload;~~

adding the second data packet header into the front part of the second data payload, wherein the second data packet header further comprises an amount identifier indicating an amount of the concatenated first data packets.

4. The method for transmitting data according to claim 1, wherein a procedure of ~~combining the first data payloads in the N first data packets to the single second data payload, and~~ adding the second data packet header into the front part of the second data payload comprises:

~~concatenating the first data payloads in the N first data packets to form the second data payload;~~

adding the second data packet header into the front part of the second data payload, wherein the second data packet header further comprises an amount identifier for indicating an amount of the concatenated first data packets and length identifiers for indicating length of each first data payload.

~~5. The method for transmitting data according to any of claims 3 to 4, wherein a procedure of concatenating the first data payloads in the N first data packets to form the second data payload comprises:~~

~~concatenating the first data payloads in the N first data packets~~

~~according to a sequence and an amount negotiated with the server;~~

~~wherein the negotiated sequence is based on a source IP addresses or source port numbers or terminal identifications in the N first data packet headers of the N first data packets; and the negotiated amount is an amount of first data packets sent from each of the M terminals.~~

~~6~~5. The method for transmitting data according to any of claims 1 to 4, wherein at least two of the first data packet headers have different source addresses, and the method further comprises:

retransmitting, by the access network element, the second data packet corresponding to the second data packet header to the server, according to a retransmission instruction message containing the second data packet header sent from the server.

~~7~~6. An access network element, characterized in comprising:

a receiving module configured to receive N first data packets which are transmitted from M terminals to a same first destination address, wherein the first data packet comprises a first data packet header and a first data payload, and N is an integer and ~~equal to or~~ greater than 1;

a creating module configured to combine first data payloads in the N first data packets which are received by the receiving module to a single second data payload, and add a second data packet header into a front part of the second data payload to form a second data packet, wherein the second data packet comprises the second data packet header and the second data payload; a source address and a destination address in the second data packet are the same as those in at least one of the first data packet headers;

a sending module configured to send the second data packet which is created by the creating module to a server corresponding to the first destination address,

wherein the creating module comprises:

a first concatenating unit configured to concatenate the first data

payloads in the N first data packets to form the single second data payload,

wherein the first concatenating unit is specially configured to concatenate the first data payloads in the N first data packets according to a sequence and an amount negotiated with the server, and the negotiated sequence is based on a source IP addresses or source port numbers or terminal identifications in the N first data packet headers of the N first data packets; the negotiated amount is an amount of first data packets sent from each of the M terminals.

~~8~~7. The access network element according to claim ~~7~~6, wherein the access network element further comprises:

a first negotiation module configured to send a negotiation request message for negotiating an amount of first data packets to be combined to the server, when each first data payload has a same length; and/or

a second negotiation module configured to receive a negotiation request message from the server for negotiating an amount of first data packets to be combined, when each first data payload has a same length.

~~9~~8. The access network element according to claim ~~7~~6, wherein the creating module comprises:

~~a first concatenating unit configured to concatenate the first data payloads in the N first data packets to form the single second data payload;~~

a first adding unit configured to add the second data packet header into the front part of the second data payload formed by the first concatenating unit, when each first data payload has a same length, wherein the second data packet header further comprises an amount identifier indicating an amount of the concatenated first data packets.

~~10~~9. The access network element according to claim ~~7~~6, wherein the creating module comprises:

~~a first concatenating unit configured to concatenate the first data payloads in the N first data packets to form the second data payload;~~

a second adding unit configured to add the second data packet

header into the front part of the second data payload formed by the first concatenating unit, wherein the second data packet header further comprises an amount identifier for indicating an amount of the concatenated first data packets and length identifiers for indicating length of each first data payload.

~~11. The access network element according to any of claims 9-10, wherein the first concatenating unit is specially configured to concatenate the first data payloads in the N first data packets according to a sequence and an amount negotiated with the server, and the negotiated sequence is based on a source IP addresses or source port numbers or terminal identifications in the N first data packet headers of the N first data packets; the negotiated amount is an amount of first data packets sent from each of the M terminals.~~

~~12~~10. The access network element according to any of claims ~~7~~6-~~10~~9, wherein the access network element further comprises:

a retransmission module configured to retransmit the second data packet corresponding to the second data packet header to the server, according to a retransmission instruction message containing the second data packet header sent from the server, when at least two of the first data packet headers have different source addresses.

~~13~~11. A data transmission processing system, characterized in that the data transmission processing system comprises an access network element according to any of claims ~~7~~6-~~12~~10.

~~14~~12. The data transmission process system according to claim ~~13~~11, further comprising a data receiving processing device which comprises:

a receiving module configured to receive the second data packet sent from the access network element;

an acquisition module configured to acquire the N first data payloads from the second data payload of the second data packet.

~~15~~13. A method for transmitting data, characterized in comprising:

a terminal and other M-1 terminals sending N first data packets with

a first same destination address to an access network element, wherein the first data packet comprises a first data packet header and a first data payload, and N and M are an integer and greater than ~~or equal to~~ 1, so that the access network element combines the first data payloads in the N first data packets to a single second data payload, adds a second data packet header into a front part of the second data payload to form a second data packet, and sends the second data packet to a server corresponding to the first destination address, wherein the second data packet comprises the second data packet header and the second data payload; a source address and a destination address in the second data packet header are the same as those in at least one of the first data packet headers,

wherein a procedure of combining the first data payloads in the N first data packets to the single second data payload comprises:

concatenating the first data payloads in the N first data packets to form the single second data payload by

concatenating the first data payloads in the N first data packets according to a sequence and an amount negotiated with the server,

wherein the negotiated sequence is based on a source IP addresses or source port numbers or terminal identifications in the N first data packet headers of the N first data packets, and the negotiated amount is an amount of first data packets sent from each of the M terminals.

~~16~~14. The method according to claim ~~15~~13, wherein each first data payload has a same length, and before a procedure of combining the first data payloads in the N first data packets to the single second data payload, the method further comprises:

sending, by the access network element, a negotiation request message for negotiating an amount of first data packets to be combined to the server; or

receiving, by the access network element, a negotiation request message, which is sent from the server, for negotiating an amount of first data packets to be combined.

~~17~~15. The method according to claim ~~15~~13, wherein each first data payload has a same length, and a procedure of ~~combining the first data payloads in the N first data packets to the single second data payload, and~~ adding the second data packet header into the front part of the second data payload comprises:

~~concatenating the first data payloads in the N first data packets to form the single second data payload;~~

adding the second data packet header into the front part of the second data payload, wherein the second data packet header further comprises an amount identifier indicating an amount of the concatenated first data packets.

~~18~~16. The method according to claim ~~15~~13, wherein a procedure of ~~combining the first data payloads in the N first data packets to the single second data payload, and~~ adding the second data packet header into the front part of the second data payload comprises:

~~concatenating the first data payloads in the N first data packets to form the second data payload;~~

adding the second data packet header into the front part of the second data payload, wherein the second data packet header further comprises an amount identifier for indicating an amount of the concatenated first data packets and length identifiers for indicating length of each first data payload.

~~19~~17. A data transmission process method, characterized in comprising:

receiving, by a server, a second data packet which is sent from an access network element after the access network element receives N first data packets transmitted to a same first destination address from M terminals, wherein the server corresponds to the first destination address;

wherein the first data packet comprises a first data packet header and a first data payload, and N is an integer and greater than ~~or equal to~~ 1; the second data packet is formed by the access network element through combining the first data payloads in the N first data packets to a single

second data payload and adding a second data packet header into a front part of the second data payload; the second data packet comprises the second data packet header and the second data payload; a source address and a destination address in the second data packet header are the same as those in at least one of the first data packet headers,

the first data payloads in the N first data packets are concatenated to form the single second data payload,

the first data payloads in the N first data packets are concatenated according to a sequence and an amount negotiated with the server;

wherein the negotiated sequence is based on a source IP addresses or source port numbers or terminal identifications in the N first data packet headers of the N first data packets;

the negotiated amount is an amount of first data packets sent from each of the M terminals.

~~20~~18. The data transmission process method according to claim ~~19~~17, wherein each first data payload has a same length, and the method further comprises:

receiving by the server a negotiation request message for negotiating an amount of first data packets to be combined sent from the access network element; or

sending a negotiation request message for negotiating an amount of first data packets to be combined to the access network element.

~~21~~19. The data transmission process method according to claim ~~19~~17, wherein each first data payload has a same length~~, the first data payloads in the N first data packets are concatenated to form the single second data payload~~; and

the second data packet header is added into the front part of the second data payload, wherein the second data packet header further comprises an amount identifier indicating an amount of the concatenated first data packets.

~~22~~20. The data transmission process method according to claim ~~19~~17, wherein:

~~the first data payloads in the N first data packets are concatenated to form the second data payload; and~~

the second data packet header is added into the front part of the second data payload, wherein the second data packet header further comprises an amount identifier for indicating an amount of the concatenated the first data packets and length identifiers for indicating length of each first data payload.

~~23. The data transmission process method according to claim 21 or 22, wherein:~~

~~the first data payloads in the N first data packets are concatenated according to a sequence and an amount negotiated with the server;~~

~~wherein the negotiated sequence is based on a source IP addresses or source port numbers or terminal identifications in the N first data packet headers of the N first data packets;~~

~~the negotiated amount is an amount of first data packets sent from each of the M terminals.~~

~~24~~21. The data transmission process method according to any of claims ~~19~~17-~~23~~20, wherein at least two of the first data packet headers have different source addresses, and the method further comprises:

sending a retransmission instruction message containing the second data packet header from the server to the access network element; and

receiving by the server the second data packet corresponding to the second data packet header retransmitted from the access network element.