CLAIMS

1. A data processing method, being applied to an edge device in Internet of Things, the Internet of Things comprises a data source, the edge device, and a cloud device, wherein the method comprises:

receiving messages from the data source, wherein the messages are to be sent to the cloud device;

numbering each of the received messages in chronological order for uniquely identifying each received message, wherein the numbering is continuous;

writing a currently received and numbered message to a first area of a local disk;

after writing the currently received and numbered message to the first area of the local disk, buffering the currently received and numbered message to a cache;

reading data of a message numbered k+1 from the cache, wherein k is the number of the last message successfully sent to the cloud device, the number of a message is determined according to the order in which the message is received, and k is a positive integer;

sending the read data to the cloud device;

upon successfully sending the read data to the cloud device, recording the number of the message whose data is successfully sent to the cloud device; and

after the edge device comprising the local disk and the cache is restarted, restoring data in the cache according to data stored in the first area of the local disk.

2. The method according to claim 1, wherein writing the currently received and numbered message to the first area of a local disk comprises:

writing the currently received and numbered message to a WAL log.

3. The method according to claim 1 or 2, wherein the method further comprises:

when a preset condition is satisfied, saving the data in the cache to a second area of the local disk and emptying the cache.

4. The method according to claim 3, wherein the saving the data in the cache to a second area

of the local disk comprises:

compressing the data in the cache, and saving the compressed data to the second area of the local disk.

5. The method according to claim 3 or 4, wherein the preset condition comprises at least one of the following conditions:

occupied space of the cache reaches a set value of cache space; or

a time interval between current time and time when the cache was emptied last time reaches a preset time threshold.

6. The method according to claim 3 or 4, wherein after emptying the cache, the method further comprises:

writing a numbered message received after emptying the cache this time to the first area of the local disk to overwrite the data stored in the first area of the local disk before emptying the cache this time; and

after writing the numbered message received after emptying the cache this time to the first area of the local disk, buffering the numbered message received after emptying the cache this time to the cache.

7. The method according to claim 6, wherein after saving the data in the cache to a second area of the local disk and emptying the cache, the method further comprises:

when a message numbered m+1 is stored in the cache, reading data of the message numbered m+1 from the cache, wherein m is the number of the last message successfully sent to the cloud device, the number of a message is determined according to the order in which the message is received, and m is a positive integer; and

sending the read data to the cloud device;

upon successfully sending the read data to the cloud device, recording the number of the message whose data is successfully sent to the cloud device.

8. The method according to claim 7, wherein the method further comprises:

when no message numbered m+1 is stored in the cache, reading the data of the message numbered m+1 from the second area of the local disk; and

sending the read data to the cloud device;

upon successfully sending the read data to the cloud device, recording the number of the message whose data is successfully sent to the cloud device.

9. A data processing apparatus, being applied to an edge device in Internet of Things, the Internet of Things comprises a data source, the edge device, and a cloud device, wherein the apparatus comprises:

a first writing module, configured to receive messages from the data source, wherein the messages are to be sent to the cloud device, number each of the received messages in chronological order for uniquely identifying each received message, and write a currently received and numbered message to a first area of a local disk, wherein the numbering is continuous;

a first buffering module, configured to, after writing the currently received and numbered message to the first area of the local disk, buffer the currently received and numbered message to a cache;

a first reading module, configured to read data of a message numbered k+1 from the cache, wherein k is the number of the last message successfully sent to the cloud device, the number of a message is determined according to the order in which the message is received, and k is a positive integer;

a first sending module, configured to send the read data to the cloud device, and upon successfully sending the read data to the cloud device, record the number of the message whose data is successfully sent to the cloud device; and

a data restoring module, configured to, after the edge device comprising the local disk and the cache is restarted, restore data in the cache according to data stored in the first area of the local disk.

10. The apparatus according to claim 9, wherein the first writing module is configured to:

write the currently received and numbered message to a WAL log.

11. The apparatus according to claim 9 or 10, wherein the apparatus further comprises:

a saving module, configured to, when a preset condition is satisfied, save the data in the cache to a second area of the local disk and empty the cache.

12. The apparatus according to claim 11, wherein the saving module is configured to:

compress the data in the cache, and save the compressed data to the second area of the local disk.

13. The apparatus according to claim 11 or 12, wherein the preset condition comprises at least one of the following conditions:

occupied space of the cache reaches a set value of cache space; or

a time interval between current time and time when the cache was emptied last time reaches a preset time threshold.

14. The apparatus according to claim 11 or 12, wherein the apparatus further comprises:

a second writing module, configured to write a numbered message received after emptying the cache this time to the first area of the local disk to overwrite the data stored in the first area of the local disk before emptying the cache this time; and

a second buffering module, configured to, after writing the numbered message received after emptying the cache this time to the first area of the local disk, buffer the numbered message received after emptying the cache this time to the cache.

15. The apparatus according to claim 14, wherein the apparatus further comprises:

a second reading module, configured to, when a message numbered m+1 is stored in the cache, read data of the message numbered m+1 from the cache, wherein m is the number of the last message successfully sent to the cloud device, the number of a message is determined

according to the order in which the message is received, and m is a positive integer; and

a second sending module, configured to send the read data to the cloud device and upon successfully sending the read data to the cloud device, record the number of the message whose data is successfully sent to the cloud device.

16. The apparatus according to claim 15, wherein the apparatus further comprises:

a third reading module, configured to, when no message numbered m+1 is stored in the cache, read the data of the message numbered m+1 from the second area of the local disk; and

a third sending module, configured to send the read data to the cloud device and upon successfully sending the read data to the cloud device, record the number of the message whose data is successfully sent to the cloud device.

17. A computer readable storage medium, having a computer program stored thereon, wherein when the program is executed by a processor, the method according to any one of claims 1 to 8 is implemented.

18. An edge device, comprising a memory, a processor, and a computer program stored on the memory and runnable on the processor, wherein when the processor executes the program, the method according to any one of claims 1 to 8 is implemented.