CLAIMS

1. A data processing unit, DPU-based remote procedure call method, applied to a DPU, wherein the method comprises:

receiving a data write request sent by a server side to a remote storage side, wherein the data write request comprises data to be written and first metadata; wherein the first metadata comprises a target write address of the data to be written; wherein the target write address indicates a remote storage side where the data to be written is to be written and a specific location in the remote storage side where the data to be written is to be written;

caching the first metadata and the data to be written in a memory of the DPU, and obtaining memory pointer information of the first metadata and the data to be written in the memory; and

transmitting, according to the memory pointer information, the first metadata and the data to be written to a network port in the DPU in a user mode, and transmitting the first metadata and the data to be written to the remote storage side through the network port, to write to the remote storage side;

wherein the memory of the DPU is a huge-page memory, and the obtaining the memory pointer information of the first metadata and the data to be written in the memory comprises:

obtaining, through a page table of the huge-page memory, a physical address of the first metadata and the data to be written in the huge-page memory, and determining the physical address in the huge-page memory as the memory pointer information.

2. The method according to claim 1, wherein the transmitting, according to the memory pointer information, the first metadata and the data to be written to the network port in the DPU in the user mode comprises:

transmitting the memory pointer information to a user-mode network protocol stack in the DPU; and

transmitting, according to the memory pointer information, the first metadata and the data to be written to the network port in the DPU in the user mode based on the user-mode network protocol stack.

3. The method according to claim 1 or 2, wherein after the transmitting the first metadata and the data to be written to the remote storage side through the network port, the method further comprises:

receiving a write success notification message from the remote storage side, and clearing the first metadata and the data to be written from the memory.

4. A data processing unit, DPU-based remote procedure call method, applied to a DPU, wherein the method comprises:

receiving a data read request sent by a server side to a remote storage side, and sending the data read request to the remote storage side through a network port in the DPU, wherein the data read request comprises information about data to be read, wherein the information about data to be read comprises an identifier of the data to be read, the remote storage side where the data to be read is located, and a specific location in the remote storage side where the data to be read is to be read;

receiving, through the network port, a data packet sent by the remote storage side, and caching the data packet in a memory of the DPU, wherein the data packet comprises second metadata and the data to be read, and the second metadata comprises information about the server side; wherein the information about the server side identifies the server side;

obtaining, in a user mode, memory pointer information of the second metadata and the data to be read in the memory; and

transmitting, according to the memory pointer information, the second metadata and the data to be read to the server side;

wherein the memory of the DPU is a huge-page memory, and the obtaining, in the user mode, the memory pointer information of the second metadata and the data to be read in the memory comprises:

obtaining, through a page table of the huge-page memory, a physical address of the second metadata and the data to be read in the huge-page memory, and determining the physical address in the huge-page memory as the memory pointer information.

5. The method according to claim 4, wherein the transmitting, according to the memory pointer information, the second metadata and the data to be read to the server side comprises:

parsing the second metadata according to the memory pointer information, to obtain the information about the server side; and

performing verification according to the information about the server side, and transmitting, according to the memory pointer information, the second metadata and the data to be read to the server side after the verification is passed.

6. The method according to claim 4 or 5, wherein after the transmitting, according to the memory pointer information, the second metadata and the data to be read to the server side, the method further comprises:

receiving a read success notification message from the server side, and clearing the data packet from the memory.

7. A DPU-based remote procedure call device, comprising:

a first communication unit, configured to receive a data write request sent by a server side to a remote storage side, wherein the data write request comprises data to be written and first metadata; wherein the first metadata comprises a target write address of the data to be written; wherein the target write address indicates a remote storage side where the data to be written is to be written and a specific location in the remote storage side where the data to be written is to be written;

a processing unit, configured to cache the first metadata and the data to be written in a memory of the DPU, and obtain memory pointer information of the first metadata and the data to be written in the memory; and transmit, according to the memory pointer information, the first metadata and the data to be written to a network port in the DPU in a user mode; and

a second communication unit, configured to transmit the first metadata and the data to be written to the remote storage side through the network port, to write to the remote storage side;

wherein the memory of the DPU is a huge-page memory, and the processing unit is further configured to obtain, through a page table of the huge-page memory, a physical address of the first metadata and the data to be written in the huge-page memory, and determine the physical address in the huge-page memory as the memory pointer information.

8. A DPU-based remote procedure call device, comprising:

a first communication unit, configured to receive a data read request sent by a server side to a remote storage side, wherein the data read request comprises information about data to be read, wherein the information about data to be read comprises an identifier of the data to be read, the remote storage side where the data to be read is located, and a specific location in the remote storage side where the data to be read is to be read;;

a second communication unit, configured to send the data read request to the remote storage side through a network port in the DPU, and receive, through the network port, a data packet sent by the remote storage side, wherein the data packet comprises second metadata and the data to be read, and the second metadata comprises information about the server side; wherein the information about the server side identifies the server side;

a processing unit, configured to cache the data packet in a memory of the DPU, and obtain, in a user

mode, memory pointer information of the second metadata and the data to be read in the memory; and

the first communication unit is further configured to transmit, according to the memory pointer information, the second metadata and the data to be read to the server side;

wherein the memory of the DPU is a huge-page memory, and the processing unit is further configured to obtain, through a page table of the huge-page memory, a physical address of the second metadata and the data to be read in the huge-page memory, and determine the physical address in the huge-page memory as the memory pointer information.

9. An electronic device, comprising: at least one processor and a memory;

wherein the memory stores a computer-executable instruction; and

the at least one processor executes the computer-executable instruction stored in the memory, such that the at least one processor executes the method according to any one of claims 1 to 6.

10. A computer-readable storage medium, wherein a computer-executable instruction is stored in the computer-readable storage medium, and when a processor executes the computer-executable instruction, the method according to any one of claims 1 to 6 is implemented.