CLAIMS

1. A data query request processing method, applied to a first node device, the first node device being one of at least two node devices in a distributed data storage system based on a graph database, the method comprising:

receiving, by the first node device through a first processing model in the first node device, a data query request transmitted by a second node device, the data query request being configured for querying data related to a first vertex in the graph database, the data query request carrying an identifier of a start vertex, and the first node device storing data of the start vertex; the first processing model being a processing model configured to schedule the data query request in the first node device;

transmitting, by the first node device, the data query request to a second processing model in the first node device through the first processing model, the second processing model being a processing model configured to process the data of the start vertex in the first node device;

determining, by the first node device, a third processing model based on the data query request through the second processing model, the third processing model being configured to process data of the first vertex or an intermediate vertex, and the intermediate vertex being a vertex between the start vertex and the first vertex; wherein the first processing model, the second processing model, and the third processing model are actor models; and

transmitting, by the first node device, the data query request to the third processing model through the second processing model.

2. The method according to claim 1, wherein the determining, by the first node device, the third processing model based on the data query request through the second processing model comprises:

determining, by the first node device, the third processing model according to a storage structure of the start vertex in the graph database and a query condition in the data query request through the second processing model.

3. The method according to claim 2, wherein the storage structure of the start vertex in the graph database comprises an attribute of the start vertex, an identifier of a vertex having a connection relationship with the start vertex, and an attribute of the connection relationship; and

the determining, by the first node device, the third processing model according to the storage structure of the start vertex in the graph database and the query condition in the data query request through the second processing model comprises:

querying a vertex that meets the query condition from vertices having the connection relationship with the start vertex, by the first node device through the second processing model according to one or at least two of the attribute of the start vertex, the vertices having the connection relationship with the start vertex, and the attribute of the connection relationship;

in response to a vertex in the vertices having the connection relationship with the start vertex meeting the query condition, determining, by the first node device through the second processing model, the vertex meeting the query condition as the first vertex; and

determining, by the first node device through the second processing model, the third processing model configured to process the data of the first vertex.

4. The method according to claim 2, wherein the storage structure of the start vertex in the graph database comprises an attribute of the start vertex, an identifier of a vertex having a connection relationship with the start vertex, and an attribute of the connection relationship; and

the determining, by the first node device, the third processing model according to the storage structure of the start vertex in the graph database and the query condition in the data query request through the second processing model comprises:

querying a vertex that meets the query condition from vertices having the connection relationship with the start vertex, by the first node device through the second processing model according to one or at least two of the attribute of the start vertex, the vertices having the connection relationship with the start vertex, and the attribute of the connection relationship;

in response to no vertex meeting the query condition in the vertices having the connection relationship with the start vertex, determining, by the first node device through the second processing model, the vertex having the connection relationship with the start vertex as the intermediate vertex; and

determining, by the first node device through the second processing model, the third processing model configured to process the data of the intermediate vertex.

5. The method according to any one of claims 1 to 4, wherein the first node device stores data slices of at least two vertices in the graph database, and a correspondence between each of the data slices and a processing model in the first node device is established through a local consistence hash ring; the processing model being one of the second processing model and the third processing model; and

the method further comprises:

determining, by the first node device, a first location on the local consistence hash ring according to the identifier of the start vertex through the first processing model; and

determining, by the first node device, the second processing model corresponding to the data query request according to the first location and a location of each processing model in the first node device on the local consistence hash ring through the first processing model.

6. The method according to any one of claims 1 to 4, wherein the transmitting, by the first node device, the data query request to the second processing model in the first node device through the first processing model comprises:

transmitting, by the first node device, the data query request to a message queue of the second processing model through the first processing model, wherein

the message queue of the second processing model is configured to store a task for processing of the second processing model.

7. The method according to any one of claims 1 to 4, wherein the third processing model belongs to the first node device; and

the transmitting, by the first node device, the data query request to the third processing model through the second processing model comprises:

transmitting, by the first node device, the data query request to the third processing model in the first node device through the second processing model.

8. The method according to any one of claims 1 to 4, wherein the third processing model belongs to a third node device; and

the transmitting, by the first node device, the data query request to the third processing model through the second processing model comprises:

transmitting, by the first node device, the data query request to a fourth processing model in the third node device through the second processing model, wherein the fourth processing model is a processing model configured to schedule the data query request in the third node device; and

the third node device is configured to transmit the data query request to the third processing model through the fourth processing model.

9. The method according to claim 8, wherein the transmitting, by the first node device, the data query request to the fourth processing model in the third node device through the second processing model comprises:

transmitting, by the first node device, the data query request to the fourth processing model based on a remote procedure call through the second processing model.

10. The method according to any one of claims 1 to 4, wherein the third processing model determines a processing result of the data query request;

in response to the third processing model belonging to the first node device, the first node device is configured to transmit the processing result of the data query request to the first processing model through the third processing model, the first processing model being a processing model configured to schedule the data query request in the first node device, and the first node device is further configured to transmit the processing result of the data query request to the second node device through the first processing model; and

in response to the third processing model belonging to a third node device, the third node device is configured to transmit the processing result of the data query request to a fourth processing model through the third processing model, the fourth processing model being a processing model configured to schedule the data query request in the third node device, and the third node device is further configured to transmit the processing result of the data query request to the second node device through the fourth processing model.

11. The method according to claim 10, wherein at least two processing models transmit processing results of the data query request to the second node device; and

the second node device is configured to summarize the processing results of the data query request transmitted by the at least two processing models.

12. The method according to any one of claims 1 to 4, wherein at least two threads of a processor core of the first node device are bound to at least two processing models in the first node device one after another.

13. The method according to any one of claims 1 to 4, wherein the first processing model, the second processing model, and the third processing model are actor models.

14. A data query request processing apparatus, being one of at least two node devices in a distributed data storage system based on a graph database, the apparatus comprising:

a receiving module, configured to receive, through a first processing model in the apparatus, a data query request transmitted by a second node device, the data query request being configured for querying data related to a first vertex in the graph database, the data query request carrying an identifier of a start vertex, and the apparatus storing data of the start vertex; the first processing model being a processing model configured to schedule the data query request in a first node device

of the at least two node devices;

a transmitting module, configured to transmit the data query request to a second processing model in the apparatus through the first processing model, the second processing model being a processing model configured to process the data of the start vertex in the apparatus; and

a determining module, configured to determine a third processing model based on the data query request through the second processing model, the third processing model being configured to process data of the first vertex or an intermediate vertex, and the intermediate vertex being a vertex between the start vertex and the first vertex; wherein the first processing model, the second processing model, and the third processing model are actor models; and

the transmitting module, being configured to transmit the data query request to the third processing model through the second processing model.

15. The apparatus according to claim 14, wherein

the determining module is configured to determine the third processing model according to a storage structure of the start vertex in the graph database and a query condition in the data query request through the second processing model.

16. The apparatus according to claim 15, wherein the storage structure of the start vertex in the graph database comprises an attribute of the start vertex, an identifier of a vertex having a connection relationship with the start vertex, and an attribute of the connection relationship; and

the determining module is configured to:

query a vertex that meets the query condition from vertices having the connection relationship with the start vertex, through the second processing model according to one or at least two of the attribute of the start vertex, the vertices having the connection relationship with the start vertex, and the attribute of the connection relationship;

in response to a vertex in the vertices having the connection relationship with the start vertex meeting the query condition, determine, through the second processing model, the vertex meeting the query condition as the first vertex; and

determine, through the second processing model, the third processing model configured to process the data of the first vertex.

17. The apparatus according to claim 15, wherein the storage structure of the start vertex in the graph database comprises an attribute of the start vertex, an identifier of a vertex having a connection relationship with the start vertex, and an attribute of the connection relationship; and

the determining module is configured to:

query a vertex that meets the query condition from vertices having the connection relationship with the start vertex, through the second processing model according to one or at least two of the attribute of the start vertex, the vertices having the connection relationship with the start vertex, and the attribute of the connection relationship;

in response to no vertex meeting the query condition in the vertices having the connection relationship with the start vertex, determine, through the second processing model, the vertex having the connection relationship with the start vertex as the intermediate vertex; and

determine, through the second processing model, the third processing model configured to process the data of the intermediate vertex.

18. A computer device, comprising a processor and a memory, the memory storing at least one program, which when loaded and executed by the processor, causes the processor to perform the data query request processing method according to any one of claims 1 to 13.

19. A computer-readable storage medium, storing at least one program, which when loaded and executed by a processor, causes the processor to perform the data query request processing method according to any one of claims 1 to 13.

20. A computer program product, comprising computer instructions stored in a computer-readable storage medium; and a processor of a computer device reading the computer instructions from the computer-readable storage medium and executing the computer instructions to cause the computer device to perform the data query request processing method according to any one of claims 1 to 13.