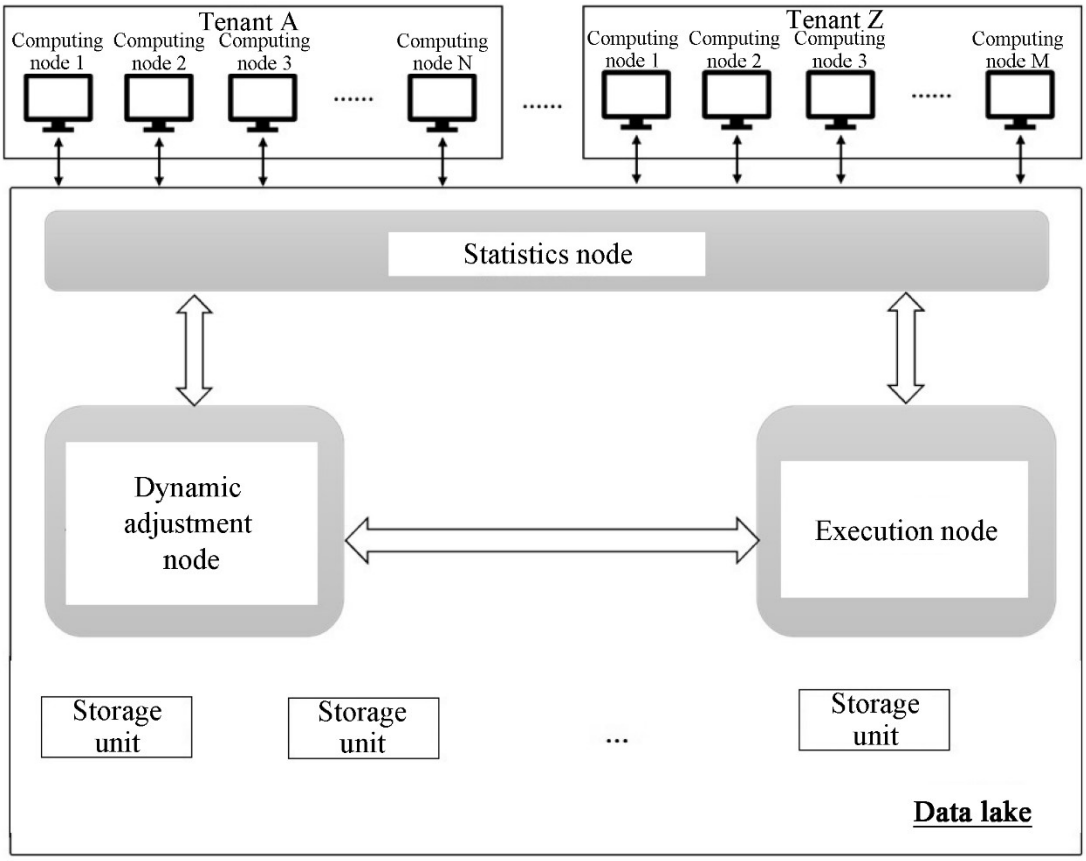

Tenant A
Computing node 1
Computing node 2
Computing node 3
Computing node N
Tenant Z
Computing node 1
Computing node 2
Computing node 3
Computing node M
Statistics node
Dynamic adjustment node
Execution node
Storage unit
Storage unit
Storage unit
Data lake

FIG. 1

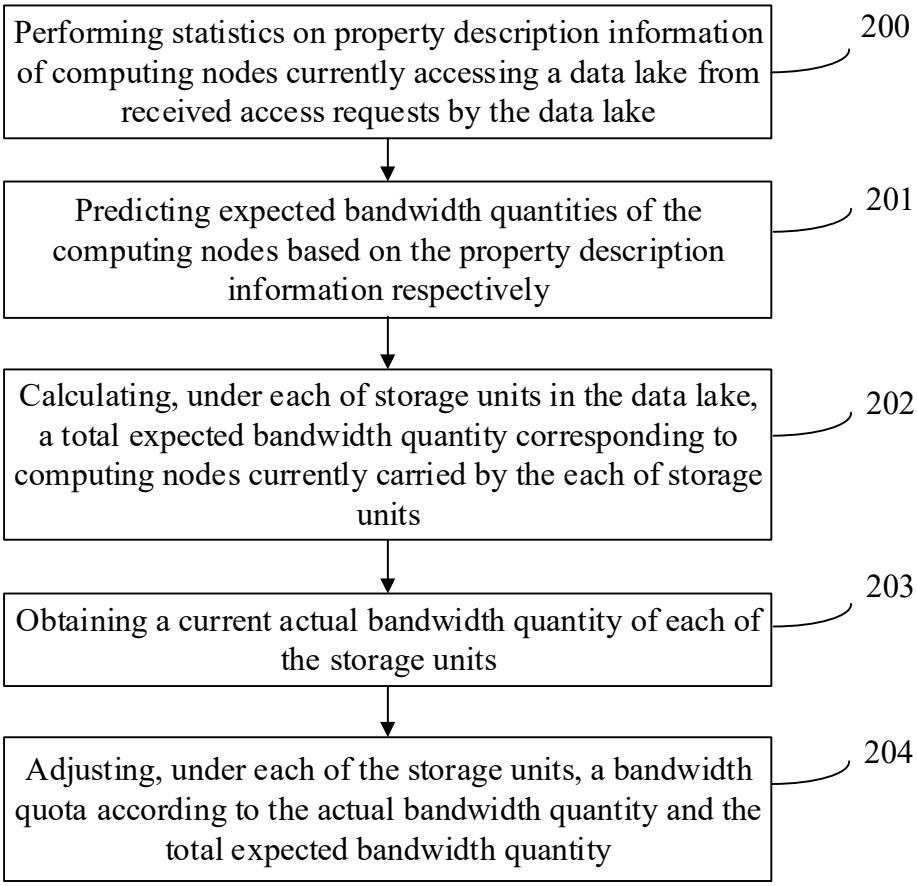

Performing statistics on property description information of computing nodes currently accessing a data lake from received access requests by the data lake
200
Predicting expected bandwidth quantities of the computing nodes based on the property description information respectively
201
Calculating, under each of storage units in the data lake, a total expected bandwidth quantity corresponding to computing nodes currently carried by the each of storage units
202
Obtaining a current actual bandwidth quantity of each of the storage units
203
Adjusting, under each of the storage units, a bandwidth quota according to the actual bandwidth quantity and the total expected bandwidth quantity
204

FIG. 2

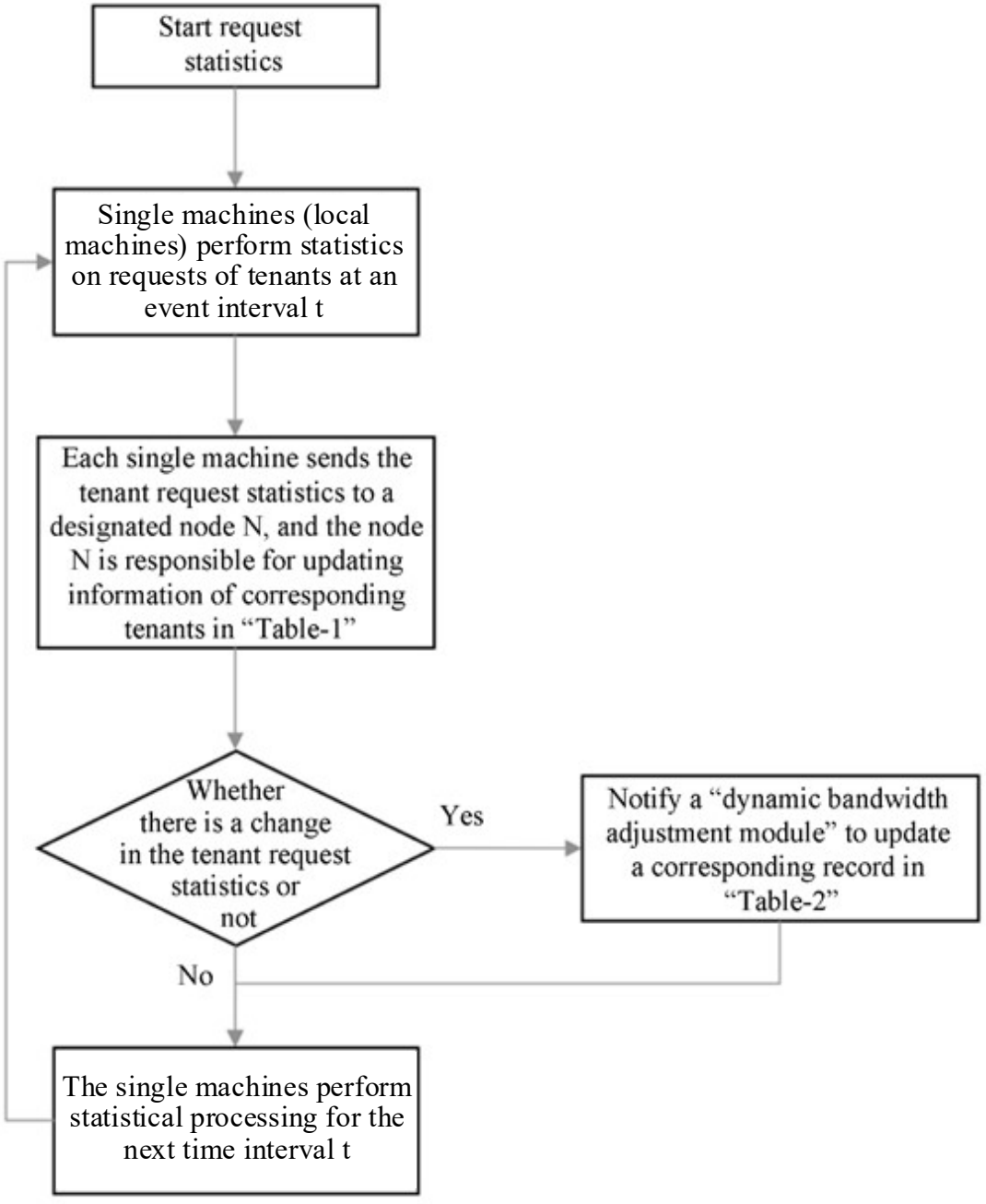

Start request statistics
Single machines (local machines) perform statistics on requests of tenants at an event interval t
Each single machine sends the tenant request statistics to a designated node N, and the node N is responsible for updating information of corresponding tenants in "Table-1"
Whether there is a change in the tenant request statistics or not
Yes
Notify a "dynamic bandwidth adjustment module" to update a corresponding record in "Table-2"
No
The single machines perform statistical processing for the next time interval t

FIG. 3

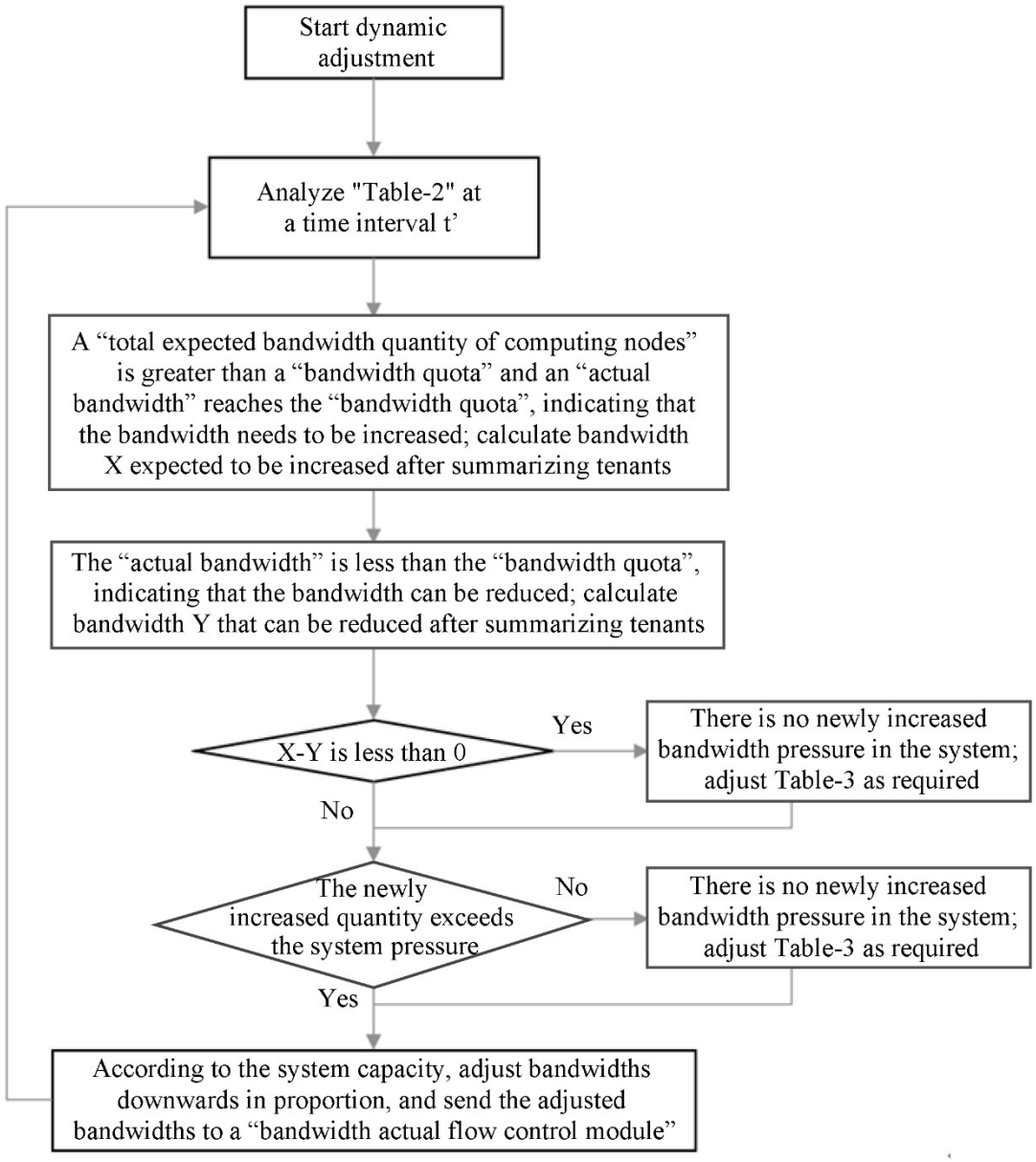

Start dynamic adjustment
Analyze "Table-2" at a time interval t'
A "total expected bandwidth quantity of computing nodes" is greater than a "bandwidth quota" and an "actual bandwidth" reaches the "bandwidth quota", indicating that the bandwidth needs to be increased; calculate bandwidth X expected to be increased after summarizing tenants
The "actual bandwidth" is less than the "bandwidth quota", indicating that the bandwidth can be reduced; calculate bandwidth Y that can be reduced after summarizing tenants
X-Y is less than 0
Yes
There is no newly increased bandwidth pressure in the system; adjust Table-3 as required
No
The newly increased quantity exceeds the system pressure
No
There is no newly increased bandwidth pressure in the system; adjust Table-3 as required
Yes
According to the system capacity, adjust bandwidths downwards in proportion, and send the adjusted bandwidths to a "bandwidth actual flow control module"

FIG. 4

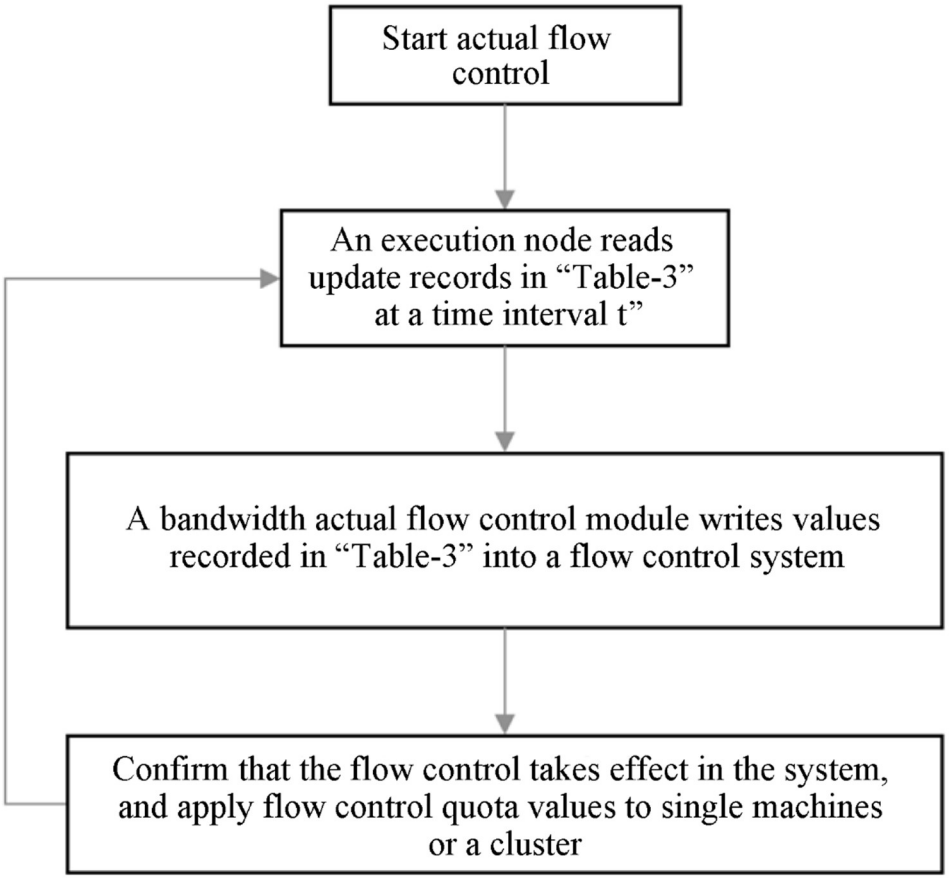

Start actual flow control
An execution node reads update records in “Table-3” at a time interval t”
A bandwidth actual flow control module writes values recorded in “Table-3” into a flow control system
Confirm that the flow control takes effect in the system, and apply flow control quota values to single machines or a cluster

FIG. 5

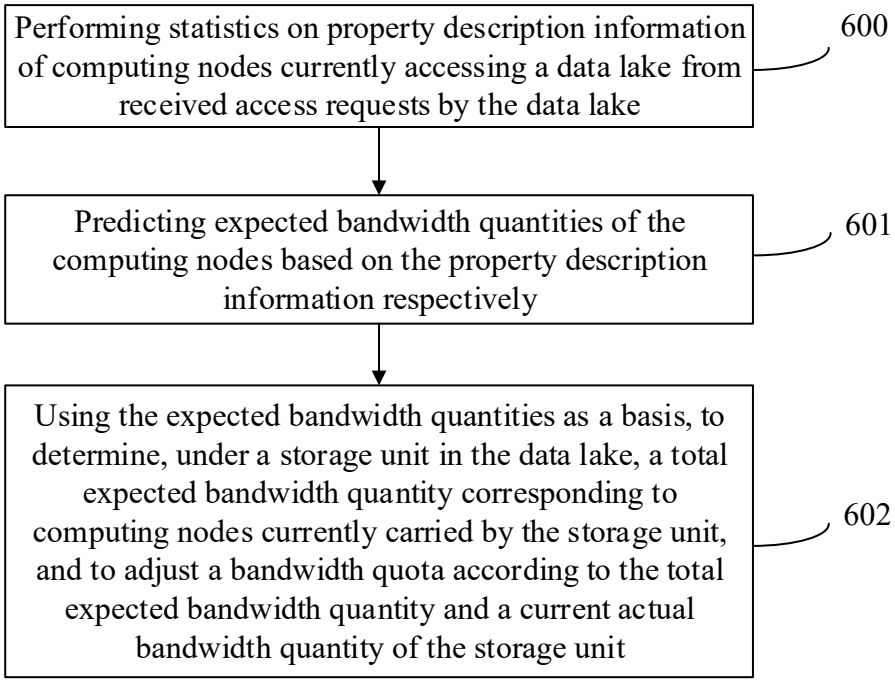

Performing statistics on property description information of computing nodes currently accessing a data lake from received access requests by the data lake
600
Predicting expected bandwidth quantities of the computing nodes based on the property description information respectively
601
Using the expected bandwidth quantities as a basis, to determine, under a storage unit in the data lake, a total expected bandwidth quantity corresponding to computing nodes currently carried by the storage unit, and to adjust a bandwidth quota according to the total expected bandwidth quantity and a current actual bandwidth quantity of the storage unit
602

FIG. 6

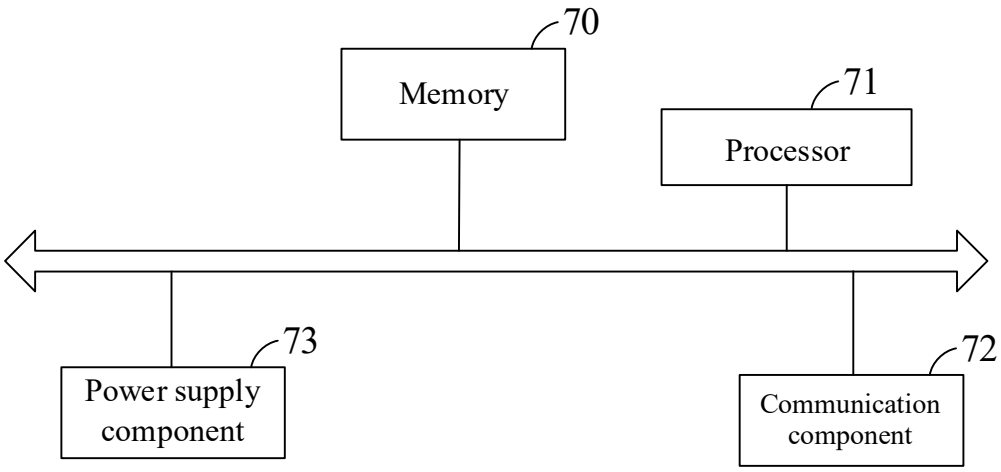

70
Memory
71
Processor
73
Power supply component
72
Communication component

FIG. 7

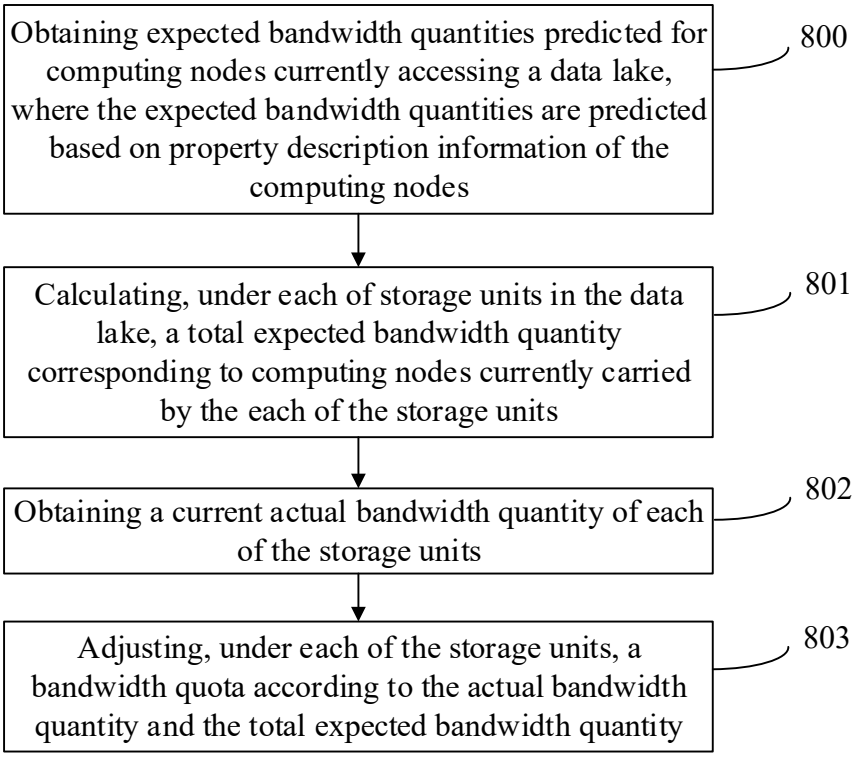

Obtaining expected bandwidth quantities predicted for computing nodes currently accessing a data lake, where the expected bandwidth quantities are predicted based on property description information of the computing nodes
800
Calculating, under each of storage units in the data lake, a total expected bandwidth quantity corresponding to computing nodes currently carried by the each of the storage units
801
Obtaining a current actual bandwidth quantity of each of the storage units
802
Adjusting, under each of the storage units, a bandwidth quota according to the actual bandwidth quantity and the total expected bandwidth quantity
803

FIG. 8