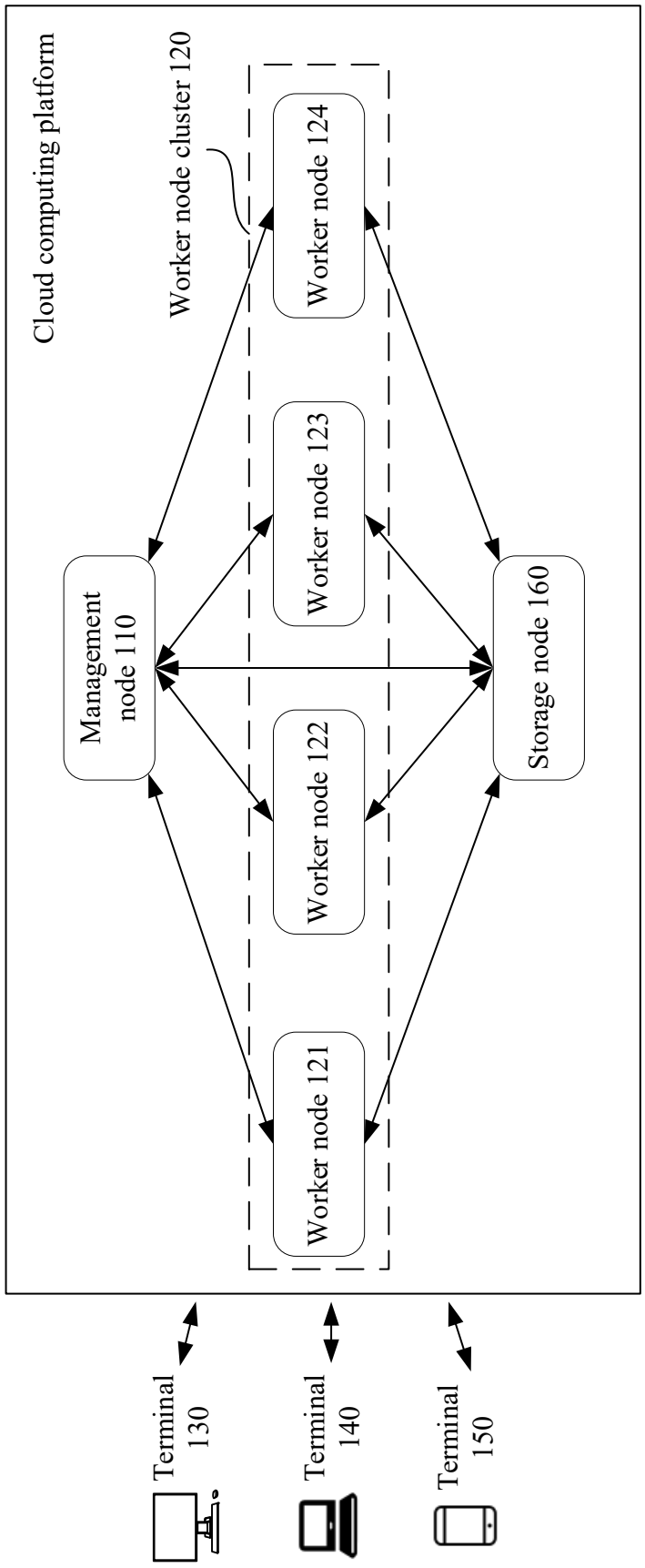
Cloud computing platform
Worker node cluster 120
Management node 110
Worker node 121
Worker node 122
Worker node 123
Worker node 124
Storage node 160
Terminal 130
Terminal 140
Terminal 150

FIG. 1

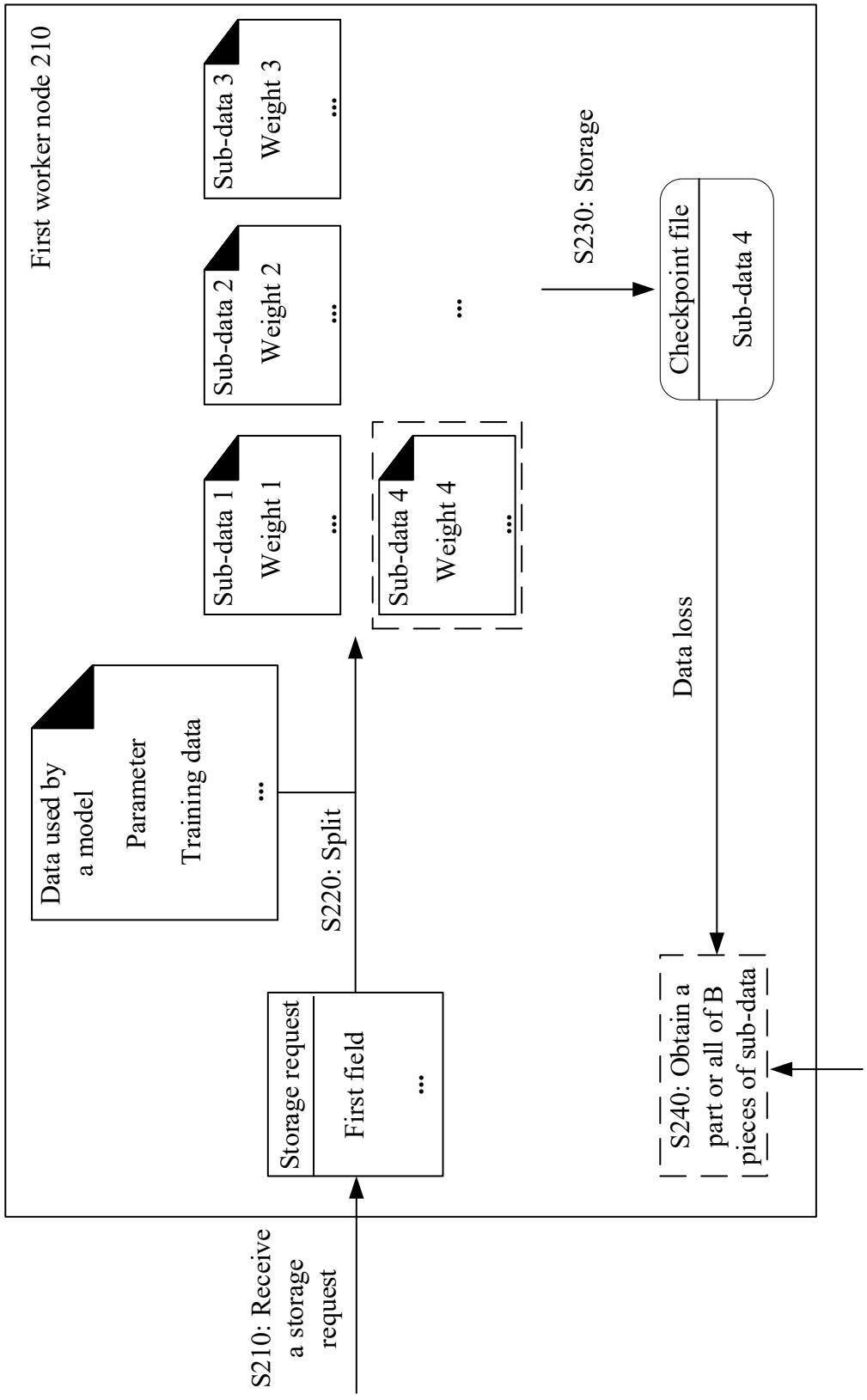
First worker node 210
Data used by a model
Parameter
Training data
...
S220: Split
Storage request
First field
...
Sub-data 1
Weight 1
...
Sub-data 2
Weight 2
...
Sub-data 3
Weight 3
...
Sub-data 4
Weight 4
...
...
S230: Storage
Checkpoint file
Sub-data 4
Data loss
S240: Obtain a part or all of B pieces of sub-data
S210: Receive a storage request

FIG. 2

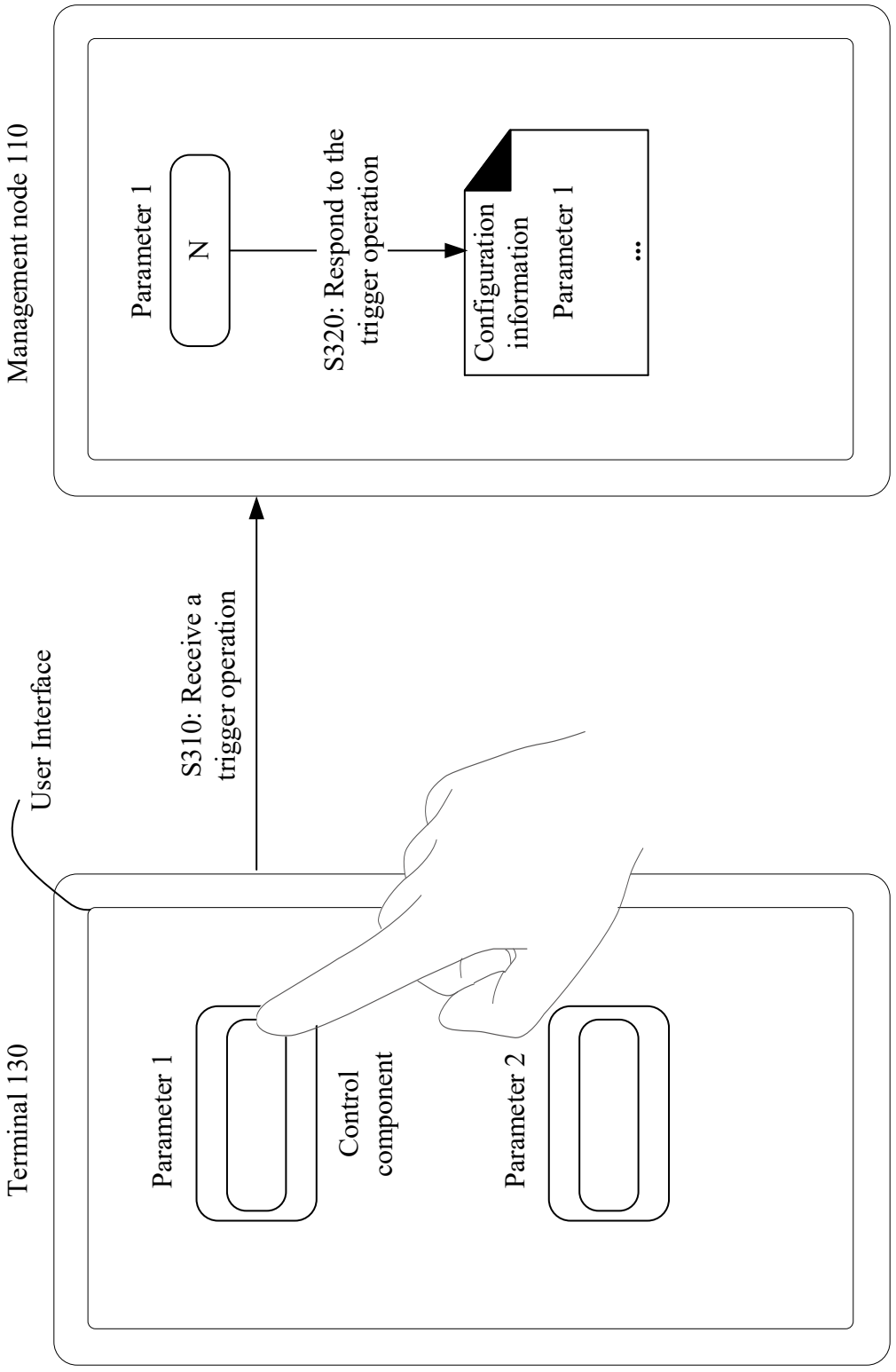
Management node 110
Parameter 1
N
S320: Respond to the trigger operation
Configuration information
Parameter 1
...
User Interface
S310: Receive a trigger operation
Terminal 130
Parameter 1
Control component
Parameter 2

FIG. 3

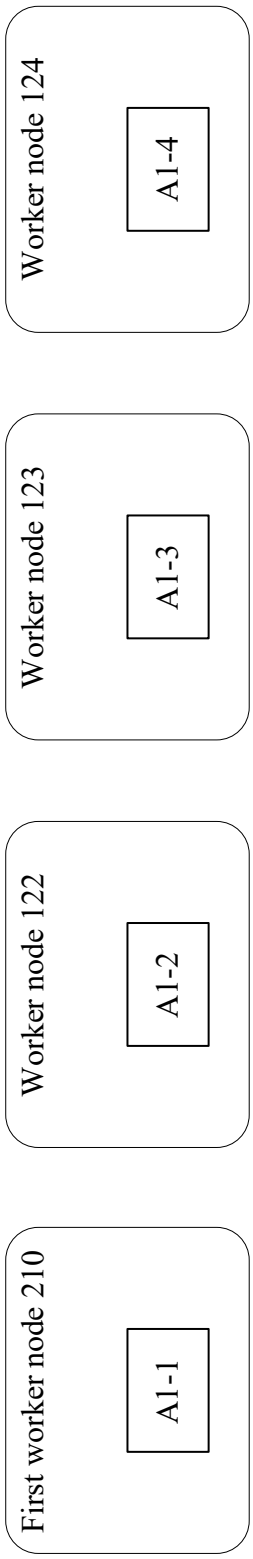
First worker node 210
A1-1
Worker node 122
A1-2
Worker node 123
A1-3
Worker node 124
A1-4

FIG. 4

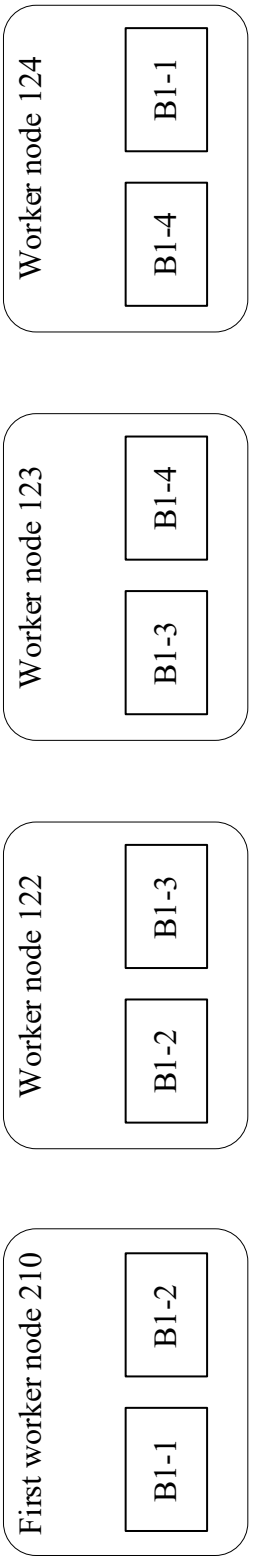
First worker node 210
B1-1
B1-2
Worker node 122
B1-2
B1-3
Worker node 123
B1-3
B1-4
Worker node 124
B1-4
B1-1

FIG. 5

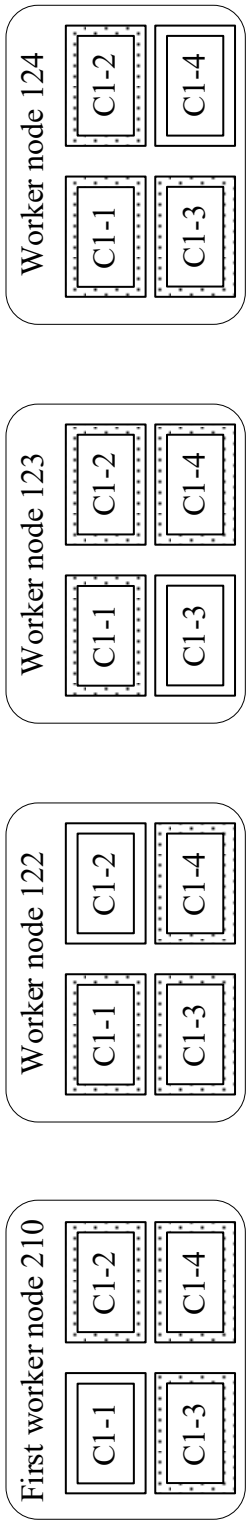
First worker node 210
C1-1
C1-2
C1-3
C1-4
Worker node 122
C1-1
C1-2
C1-3
C1-4
Worker node 123
C1-1
C1-2
C1-3
C1-4
Worker node 124
C1-1
C1-2
C1-3
C1-4
Uncompressed sub-data
Compressed sub-data

FIG. 6

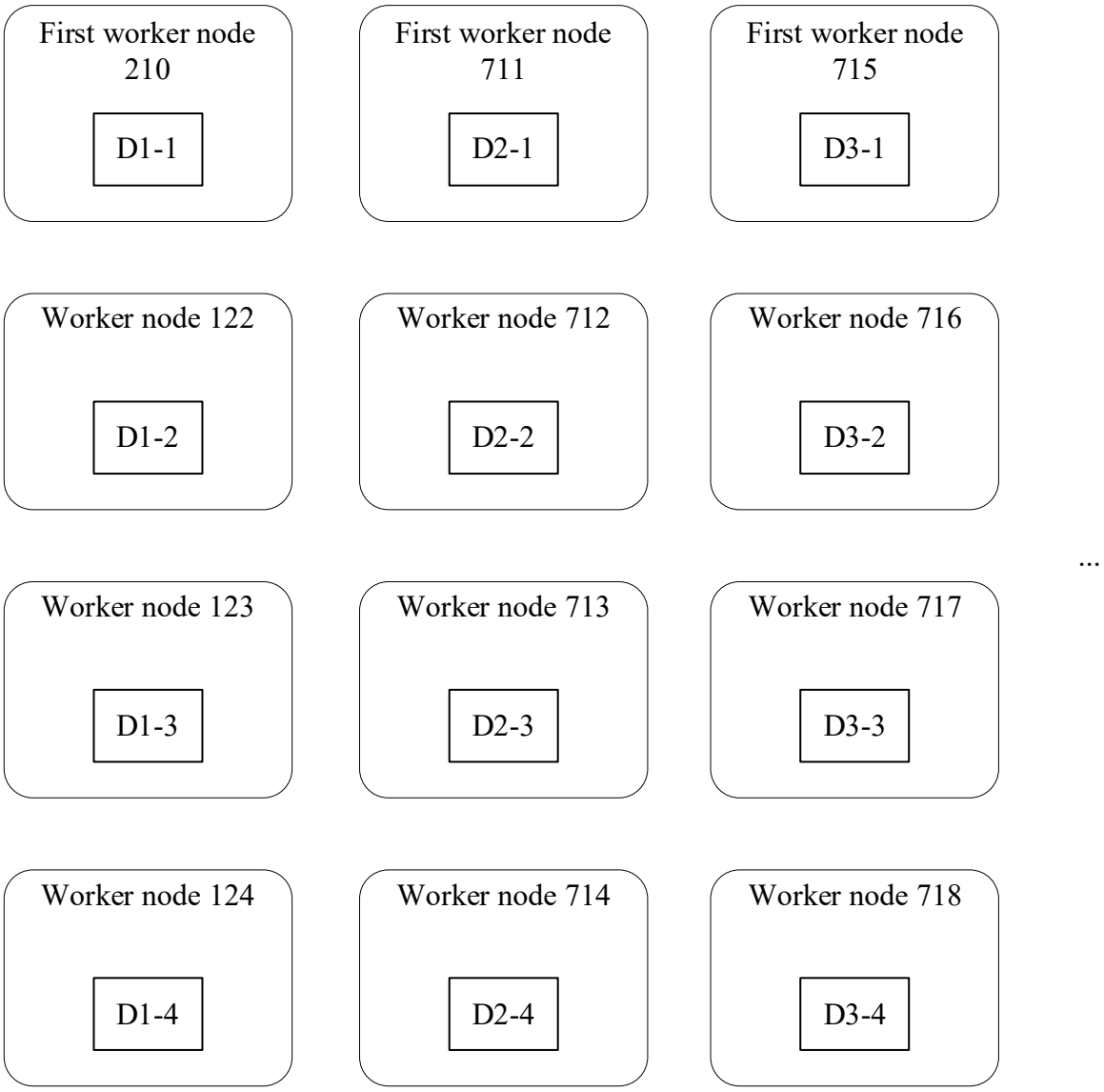
First worker node 210
D1-1
First worker node 711
D2-1
First worker node 715
D3-1
Worker node 122
D1-2
Worker node 712
D2-2
Worker node 716
D3-2
...
Worker node 123
D1-3
Worker node 713
D2-3
Worker node 717
D3-3
Worker node 124
D1-4
Worker node 714
D2-4
Worker node 718
D3-4

FIG. 7

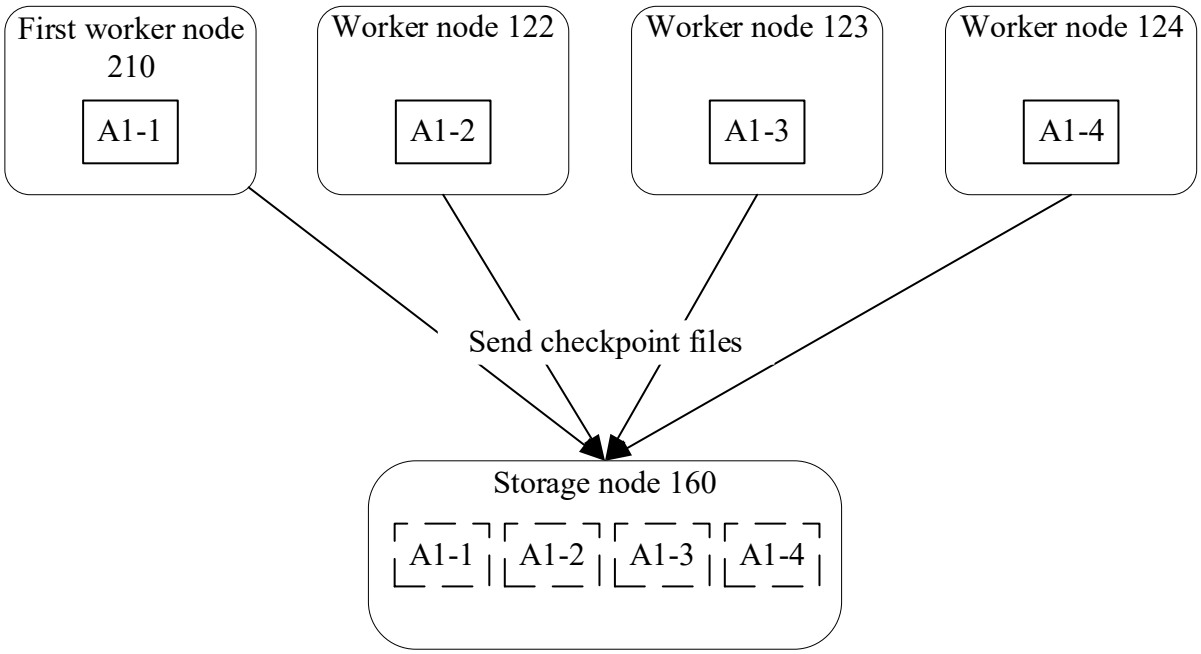
First worker node 210
A1-1
Worker node 122
A1-2
Worker node 123
A1-3
Worker node 124
A1-4
Send checkpoint files
Storage node 160
A1-1
A1-2
A1-3
A1-4

FIG. 8a

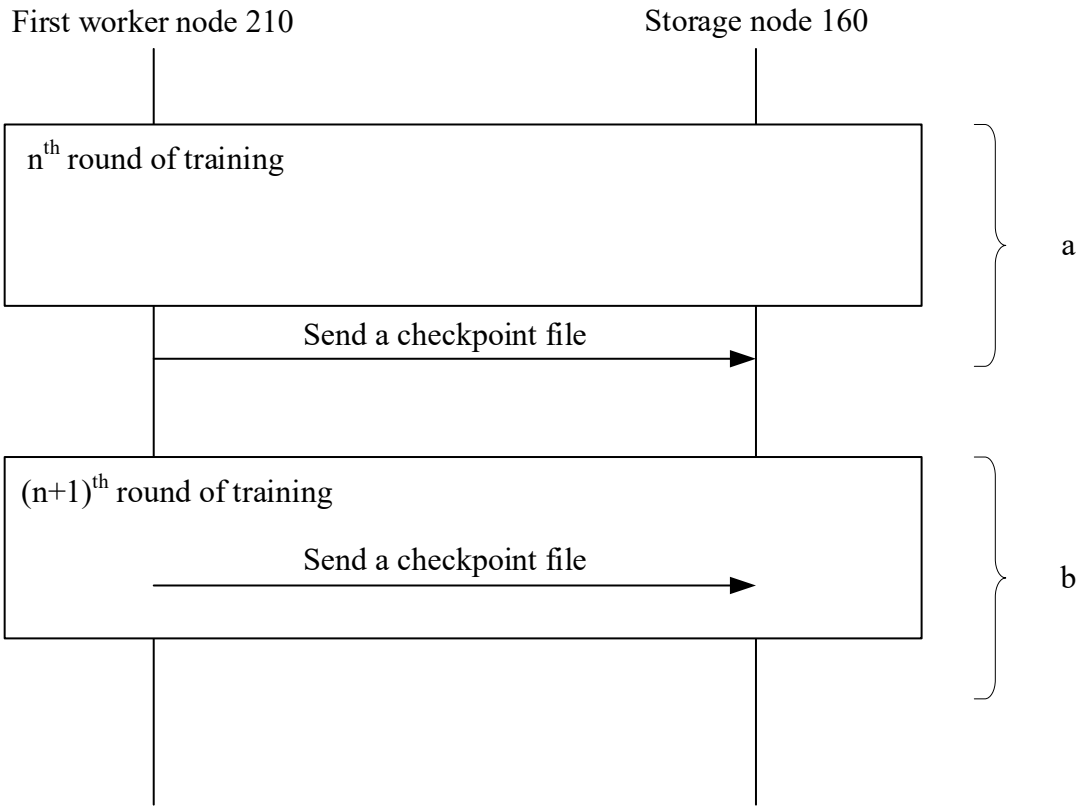
First worker node 210
Storage node 160
nth round of training
Send a checkpoint file
(n+1)th round of training
Send a checkpoint file
a
b

FIG. 8b

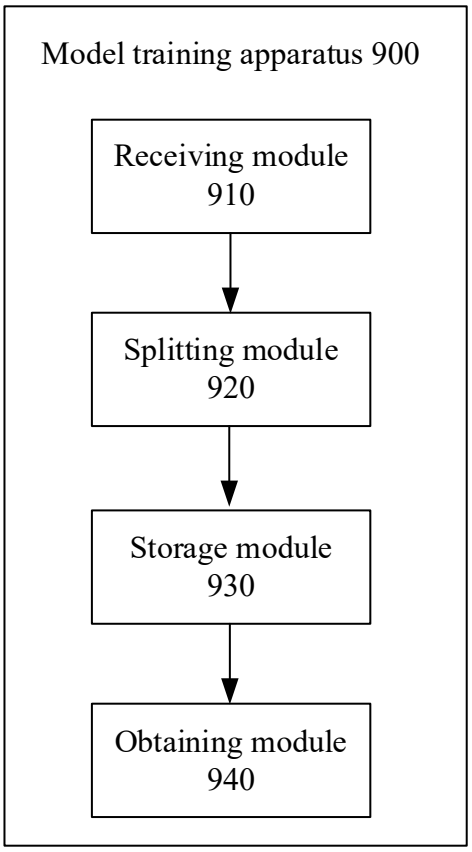
Model training apparatus 900
Receiving module 910
Splitting module 920
Storage module 930
Obtaining module 940

FIG. 9

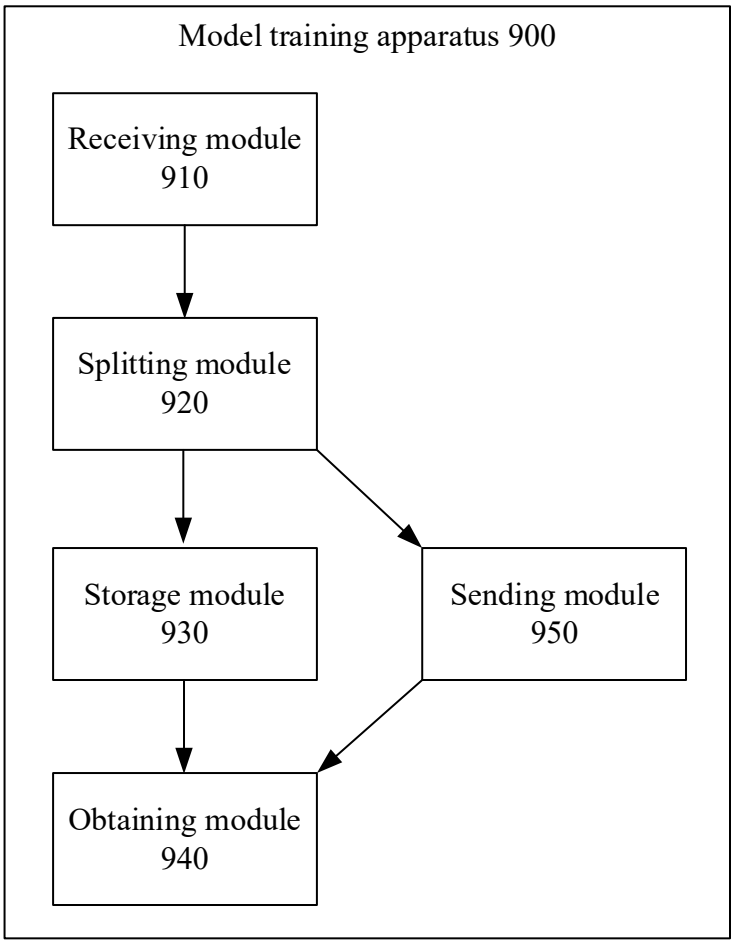
Model training apparatus 900
Receiving module 910
Splitting module 920
Storage module 930
Sending module 950
Obtaining module 940

FIG. 10

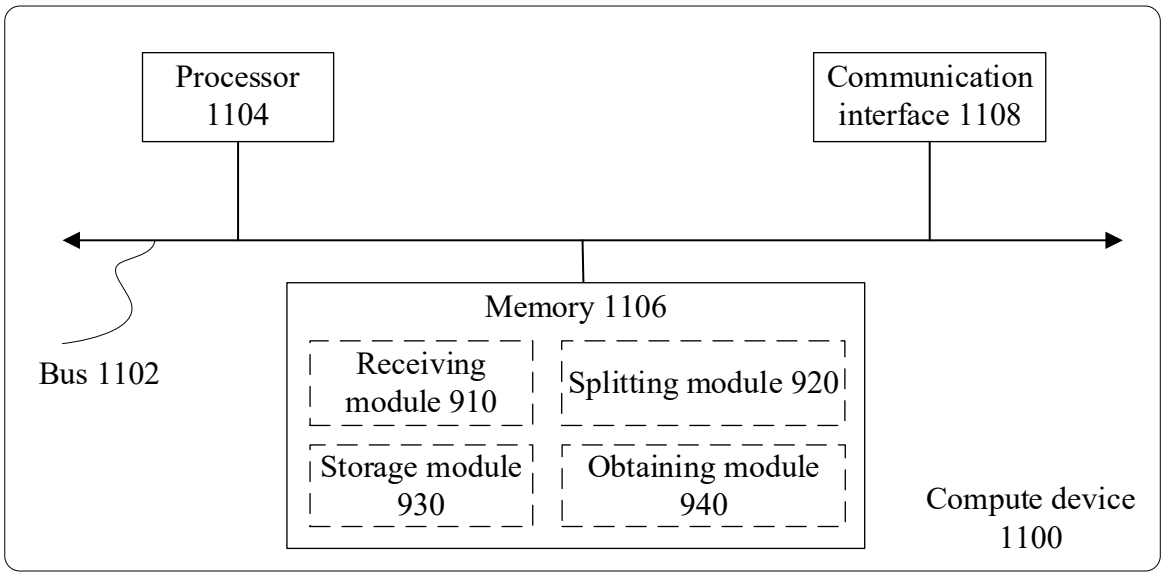
Processor 1104
Communication interface 1108
Bus 1102
Memory 1106
Receiving module 910
Splitting module 920
Storage module 930
Obtaining module 940
Compute device 1100

FIG. 11

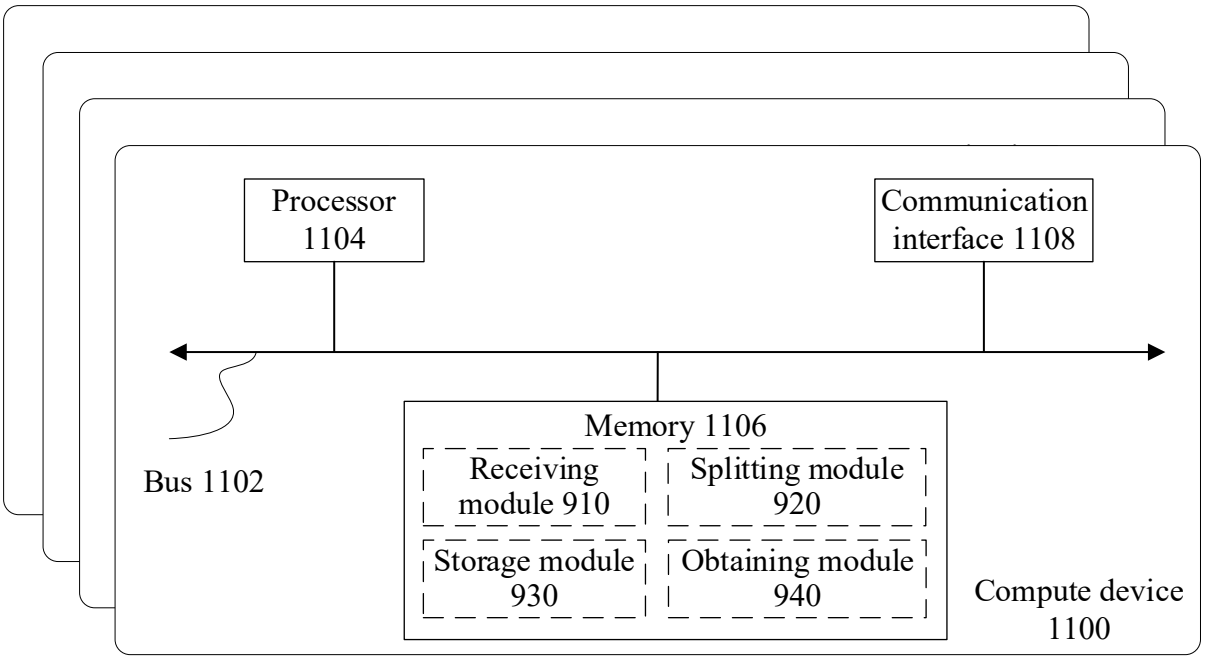
Processor 1104
Communication interface 1108
Bus 1102
Memory 1106
Receiving module 910
Splitting module 920
Storage module 930
Obtaining module 940
Compute device 1100

FIG. 12

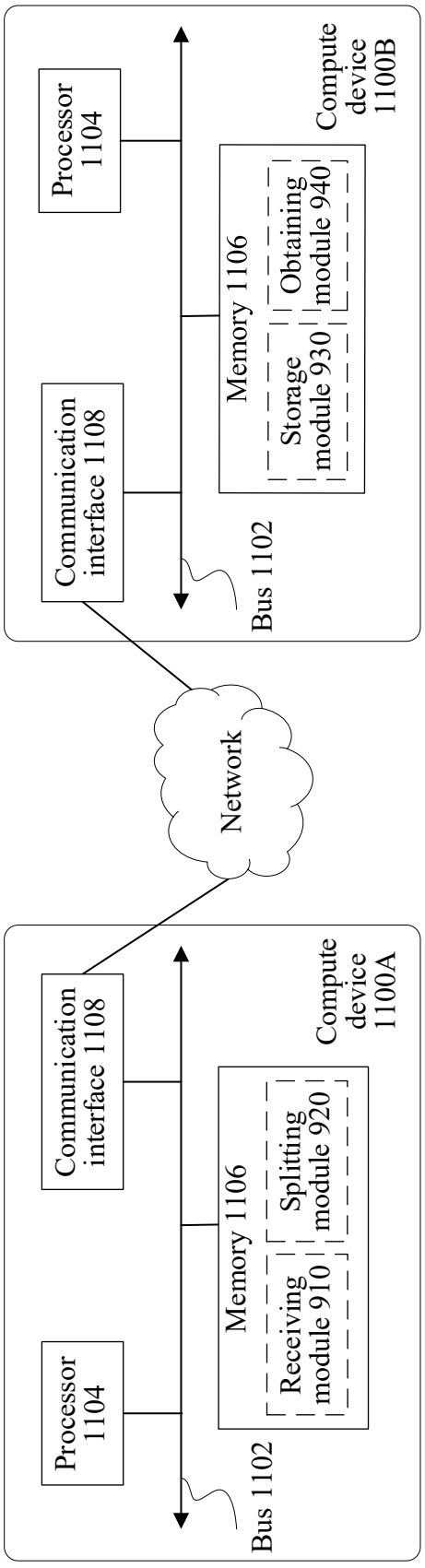
Compute device 1100B
Processor 1104
Communication interface 1108
Memory 1106
Storage module 930
Obtaining module 940
Bus 1102
Network
Compute device 1100A
Processor 1104
Communication interface 1108
Memory 1106
Receiving module 910
Splitting module 920
Bus 1102

FIG. 13