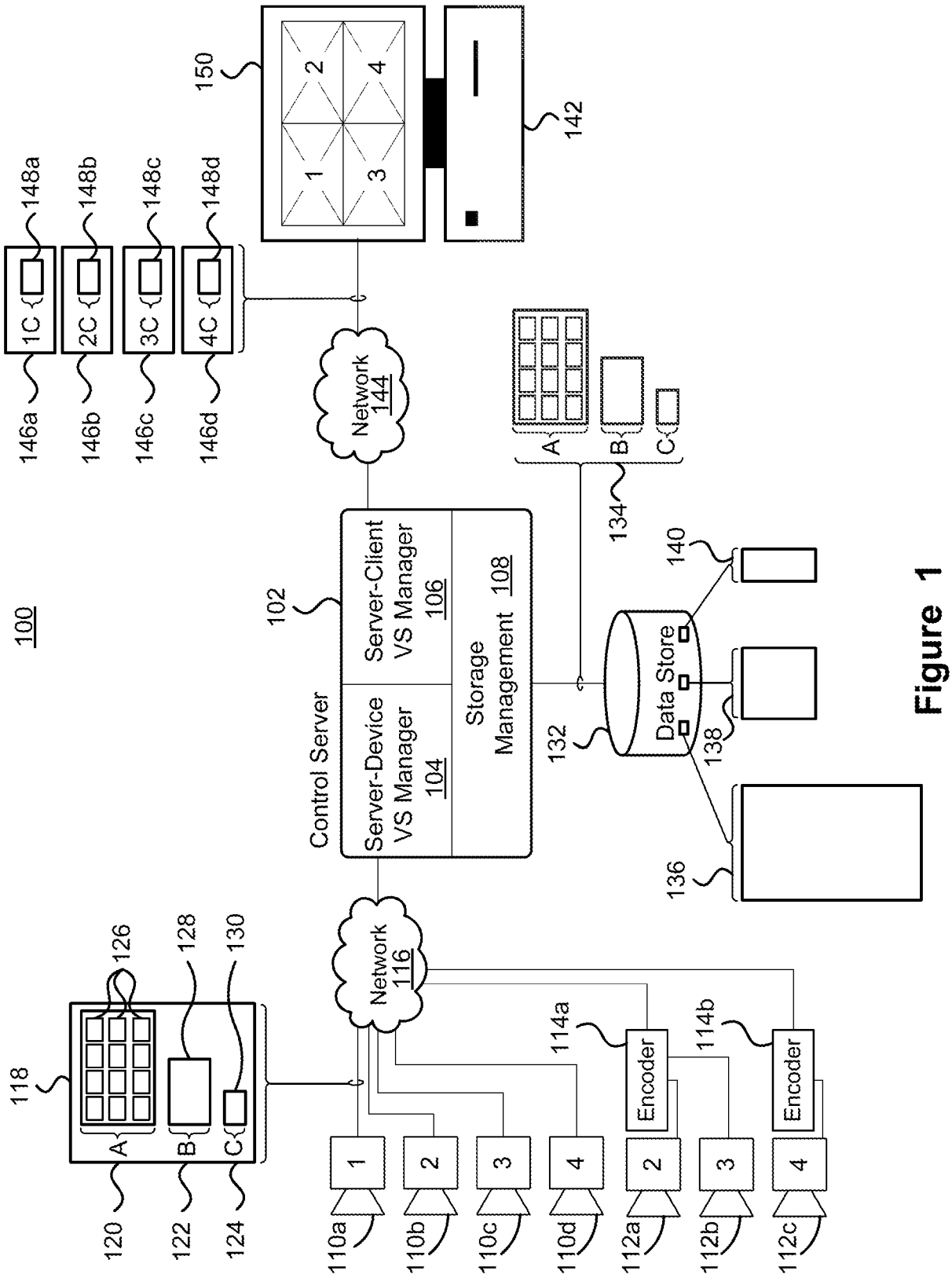

100
102
Control Server
Server-Client VS Manager 106
Server-Device VS Manager 104
Storage Management 108
Network 144
Network 116
Data Store
Encoder
Encoder
150
142
148a
148b
148c
148d
146a
146b
146c
146d
1C
2C
3C
4C
134
132
138
140
136
118
120
122
124
126
128
130
110a
110b
110c
110d
112a
112b
112c
114a
114b

Figure 1

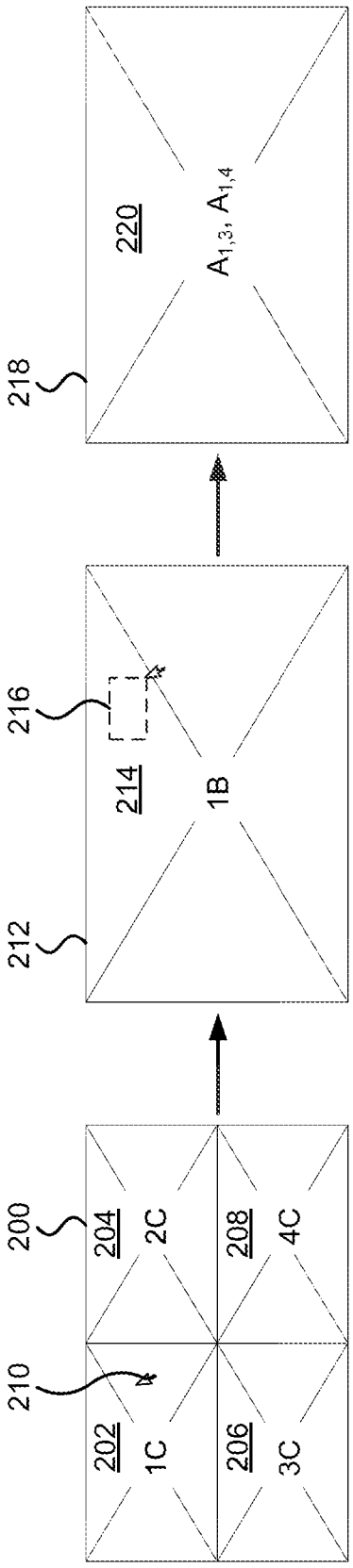


Figure 2

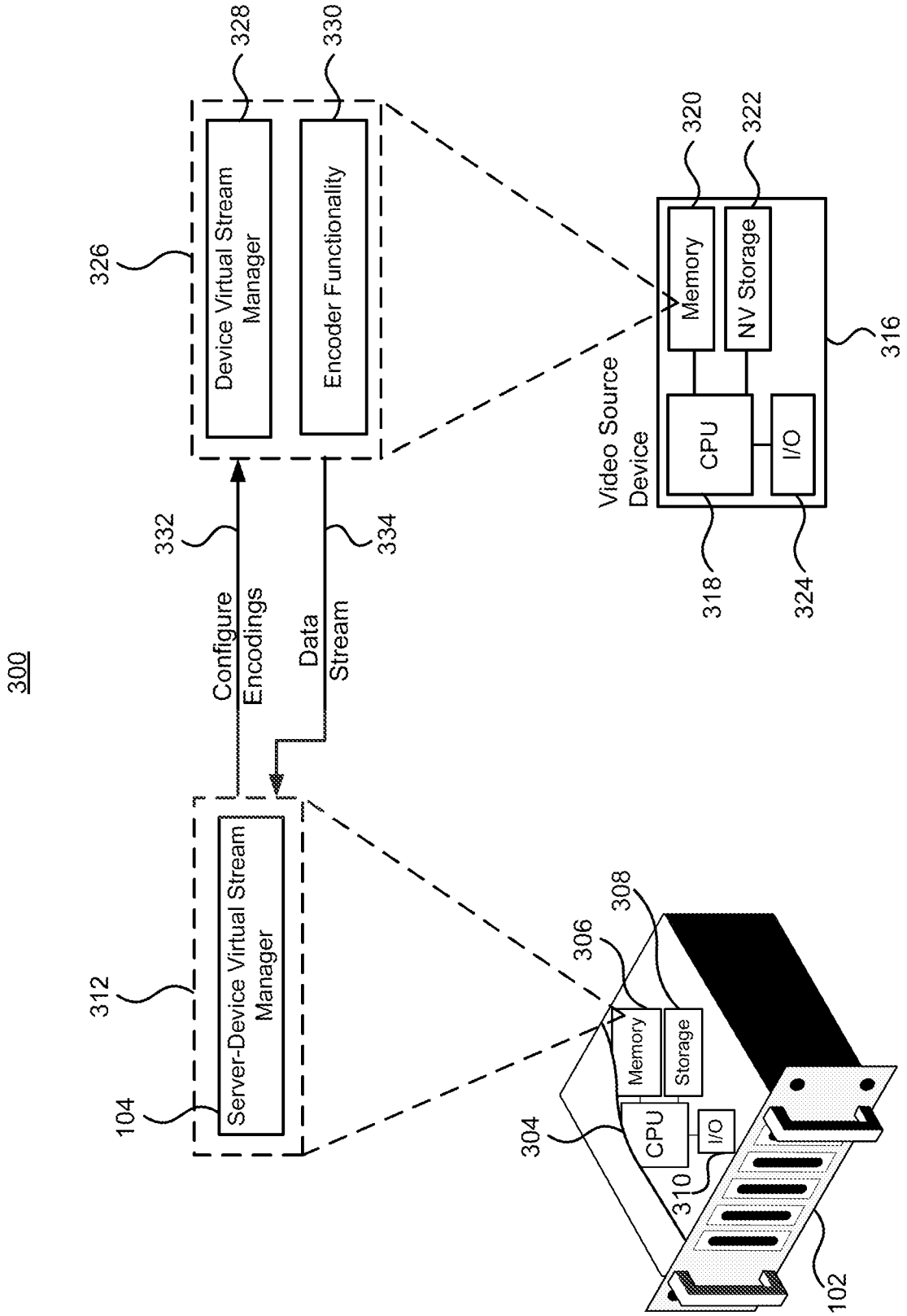

300
Server-Device Virtual Stream Manager
312
104
Configure Encodings
332
Data Stream
334
Device Virtual Stream Manager
328
Encoder Functionality
330
326
Video Source Device
CPU
I/O
Memory
NV Storage
320
322
316
318
324
Control Server
Memory
Storage
CPU
I/O
304
306
308
310
102

Figure 3

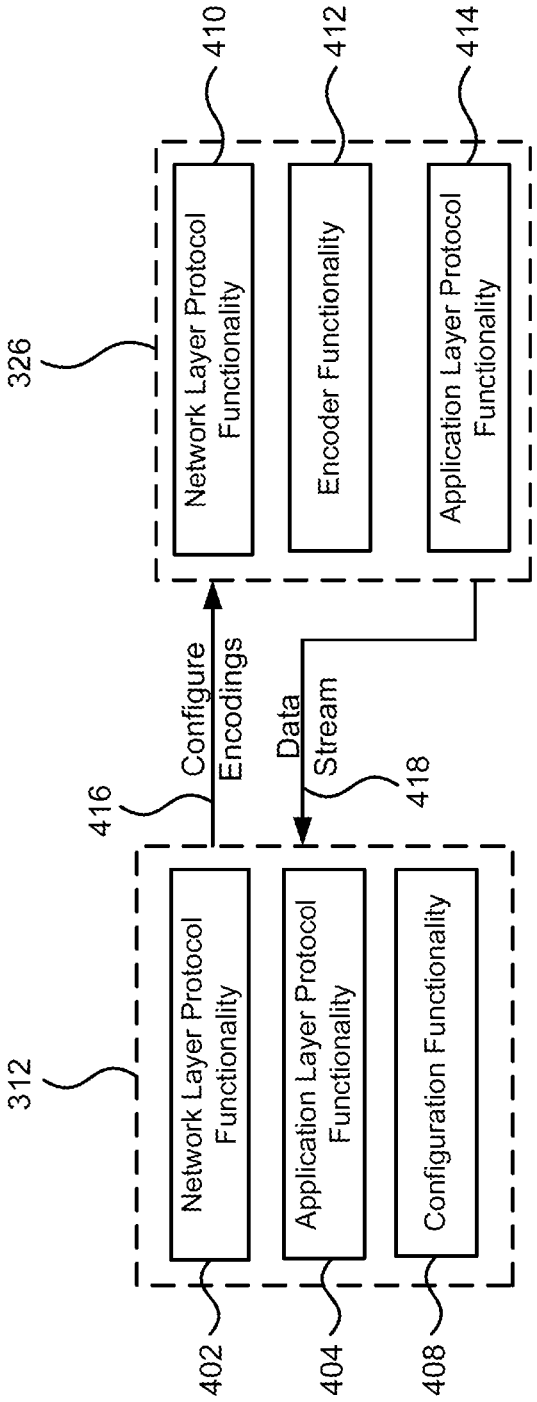

326
410
412
414
Network Layer Protocol Functionality
Encoder Functionality
Application Layer Protocol Functionality
Configure Encodings
Data Stream
416
418
312
Network Layer Protocol Functionality
Application Layer Protocol Functionality
Configuration Functionality
402
404
408

Figure 4

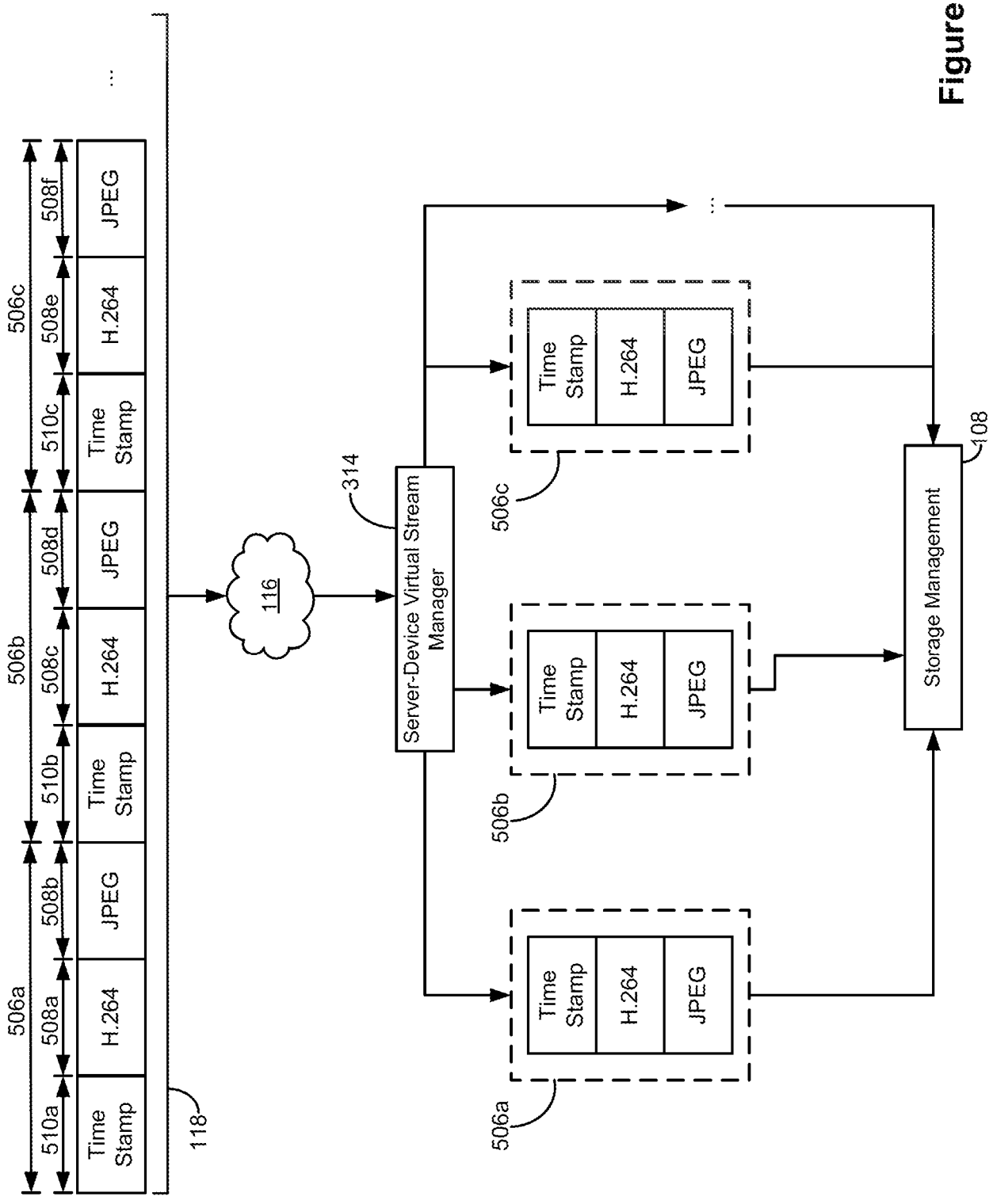

506a
506b
506c
508a
508b
508c
508d
508e
508f
510a
510b
510c
Time Stamp
H.264
JPEG
118
116
314
Server-Device Virtual Stream Manager
Storage Management
108

Figure 5

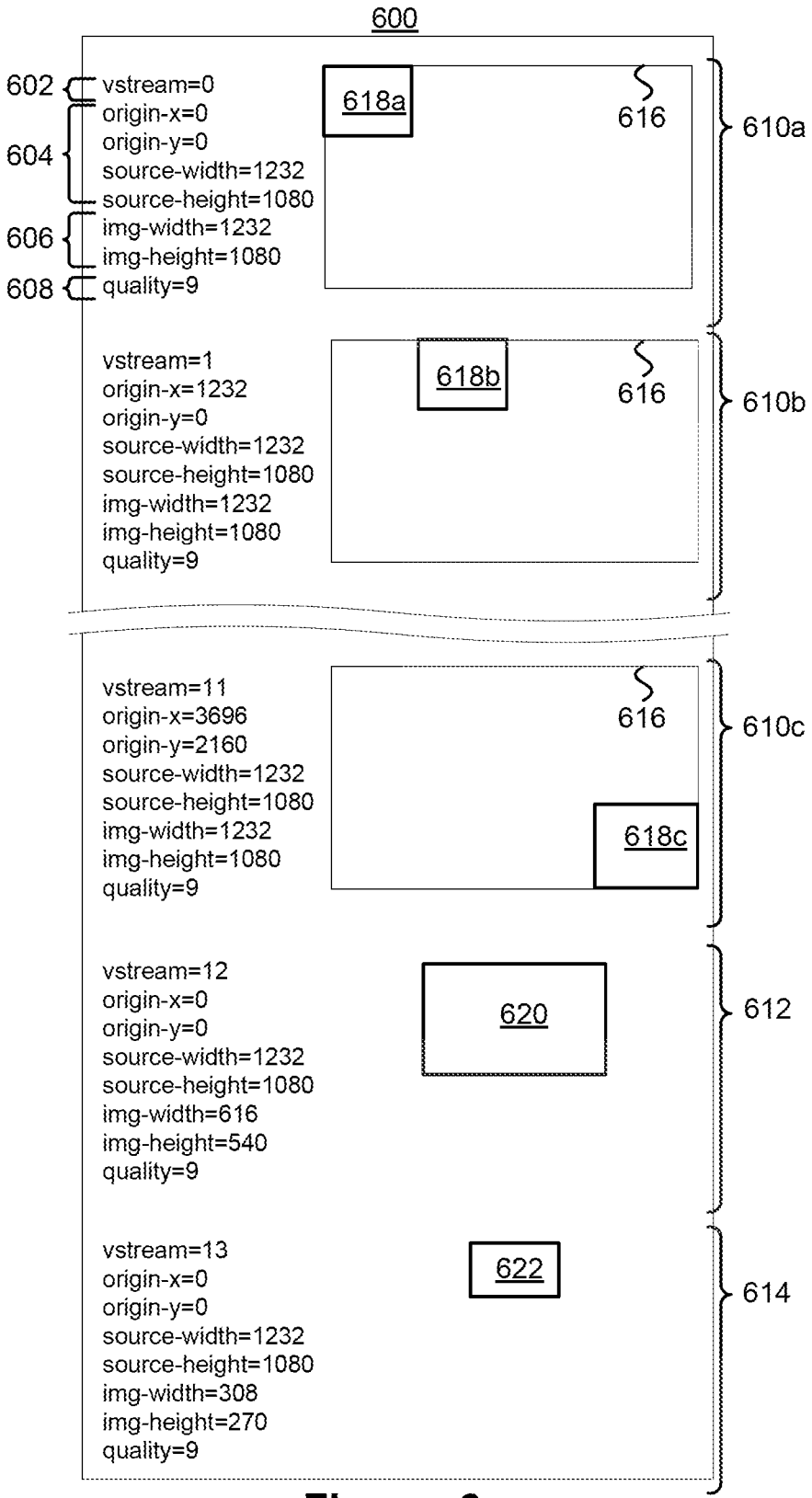

600
602
604
606
608
vstream=0
origin-x=0
origin-y=0
source-width=1232
source-height=1080
img-width=1232
img-height=1080
quality=9
618a
616
610a
vstream=1
origin-x=1232
origin-y=0
source-width=1232
source-height=1080
img-width=1232
img-height=1080
quality=9
618b
616
610b
vstream=11
origin-x=3696
origin-y=2160
source-width=1232
source-height=1080
img-width=1232
img-height=1080
quality=9
616
618c
610c
vstream=12
origin-x=0
origin-y=0
source-width=1232
source-height=1080
img-width=616
img-height=540
quality=9
620
612
vstream=13
origin-x=0
origin-y=0
source-width=1232
source-height=1080
img-width=308
img-height=270
quality=9
622
614

Figure 6

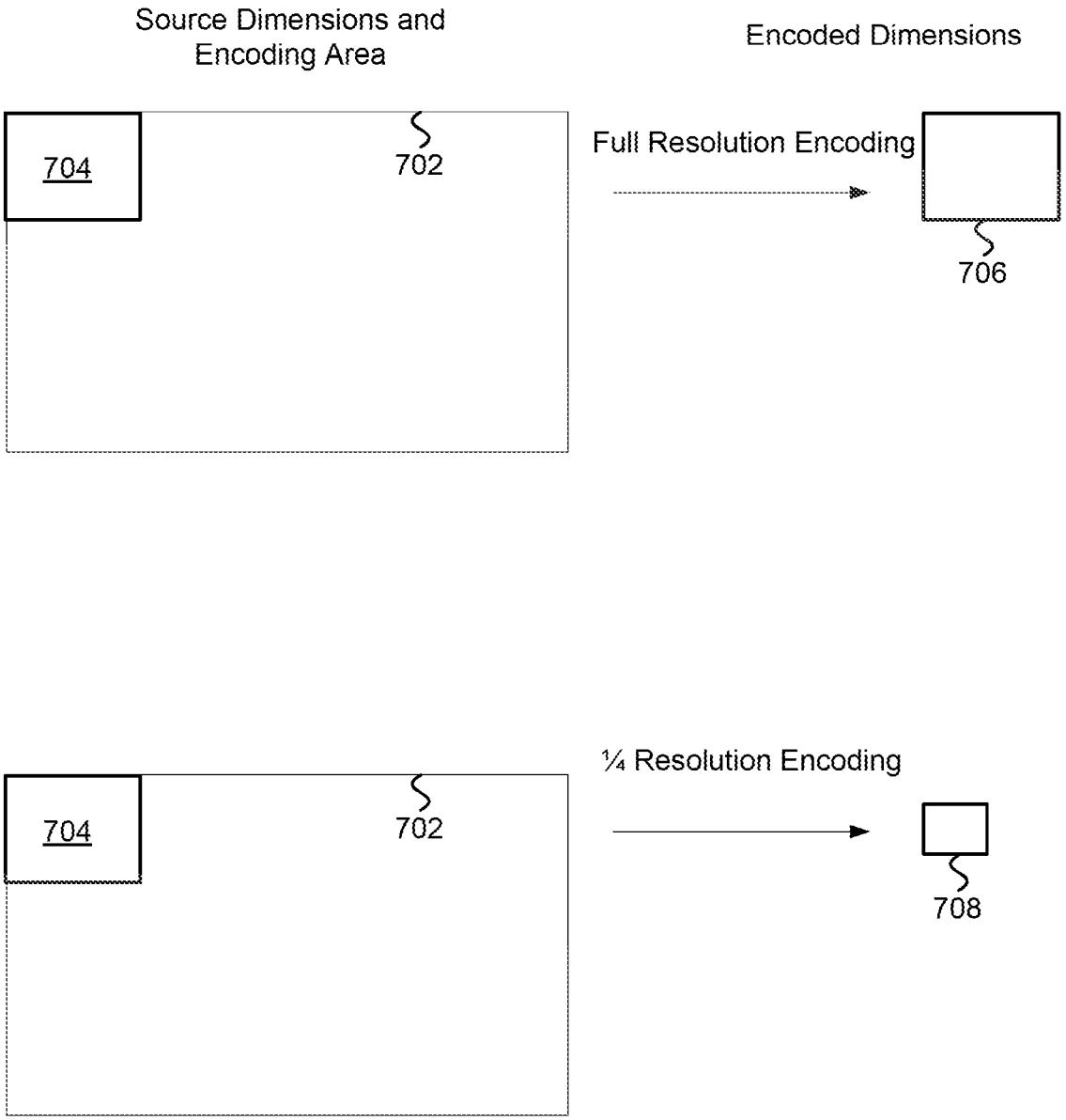

Source Dimensions and Encoding Area
Encoded Dimensions
704
702
Full Resolution Encoding
706
704
702
¼ Resolution Encoding
708

Figure 7

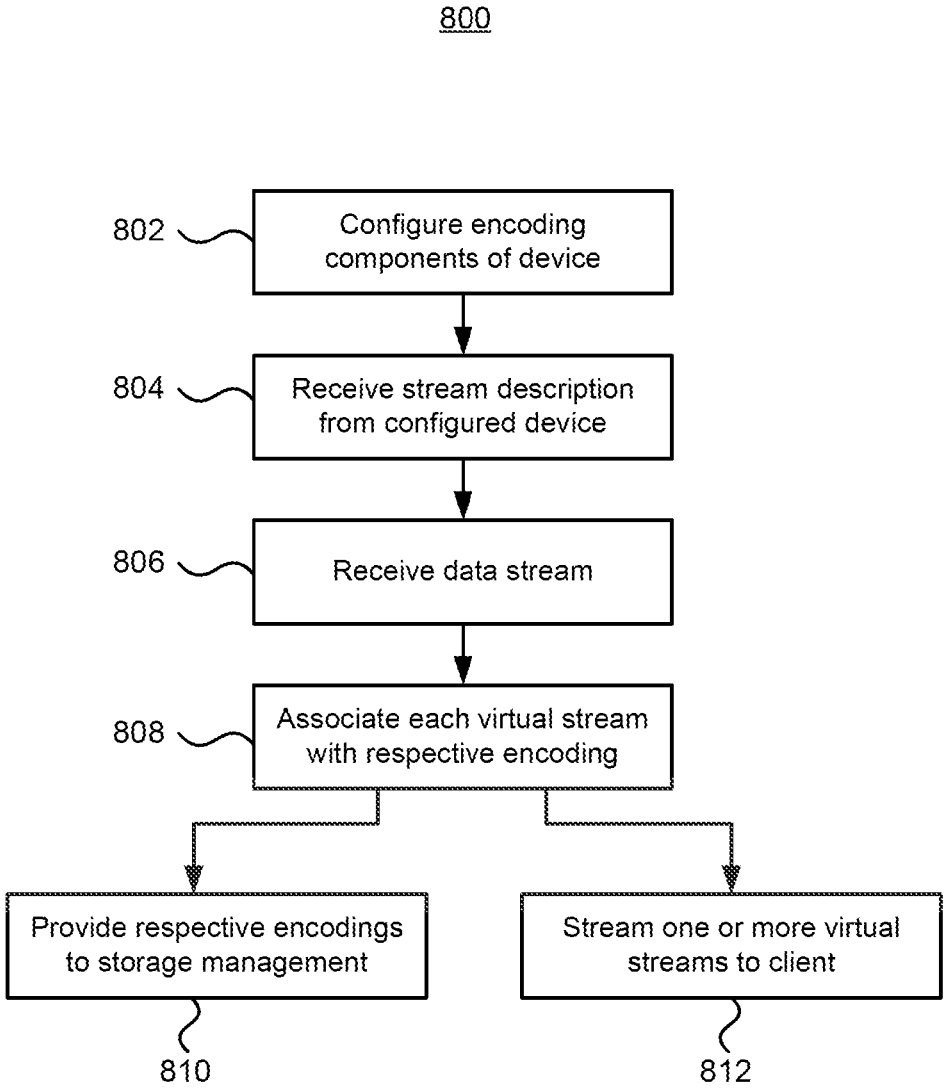

800
802
Configure encoding components of device
804
Receive stream description from configured device
806
Receive data stream
808
Associate each virtual stream with respective encoding
Provide respective encodings to storage management
Stream one or more virtual streams to client
810
812

Figure 8

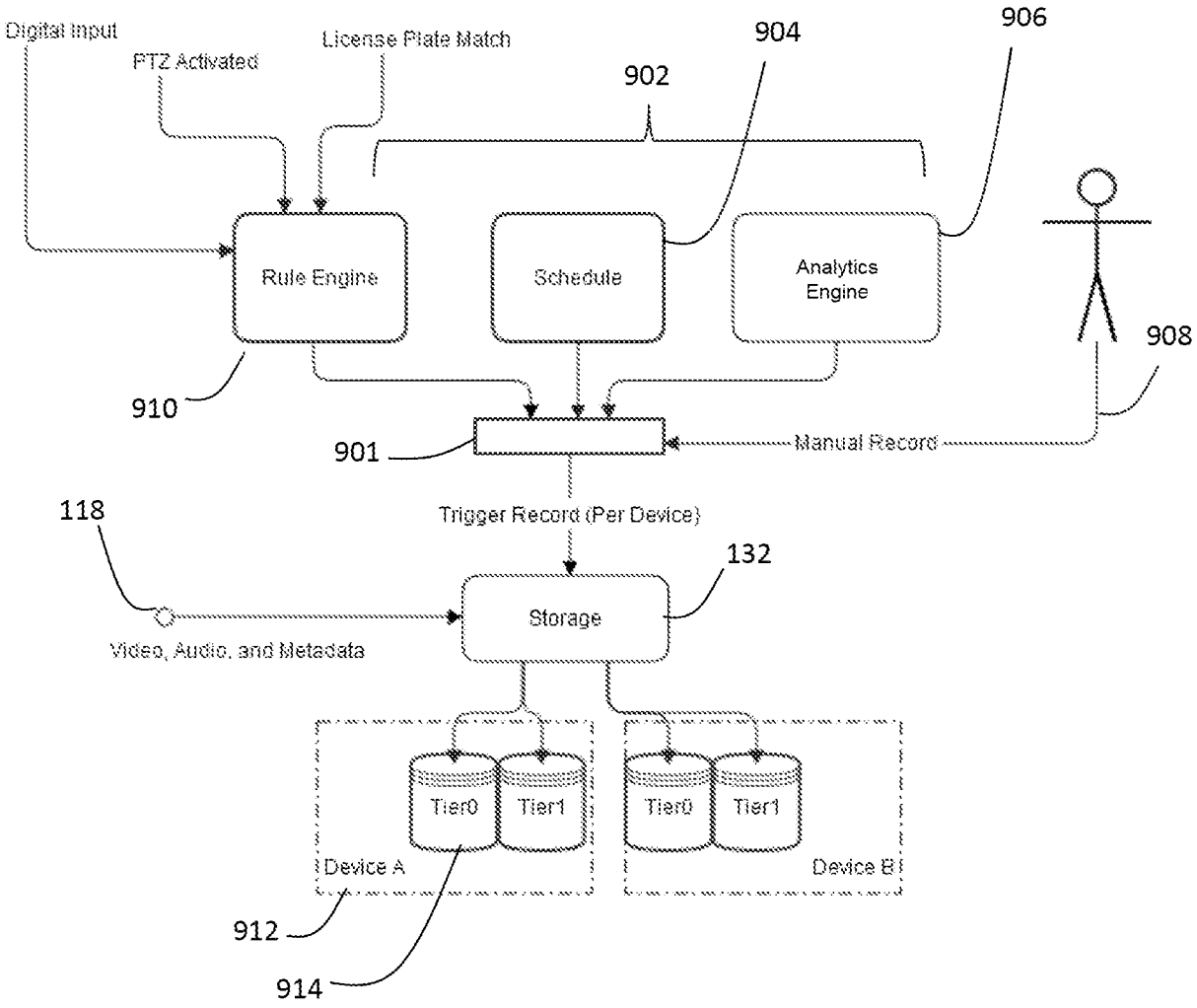

900
Digital Input
PTZ Activated
License Plate Match
902
904
906
Rule Engine
Schedule
Analytics Engine
908
910
901
Manual Record
Trigger Record (Per Device)
118
132
Storage
Video, Audio, and Metadata
Tier0
Tier1
Tier0
Tier1
Device A
Device B
912
914

Figure 9

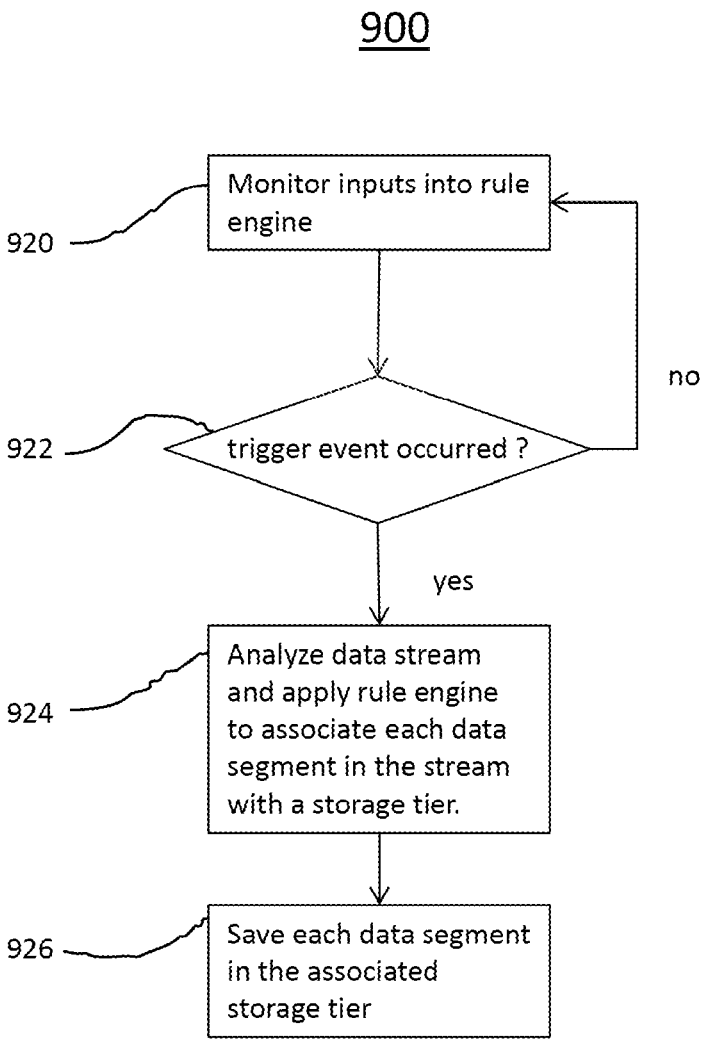

900
Monitor inputs into rule engine
920
trigger event occurred ?
922
no
yes
Analyze data stream and apply rule engine to associate each data segment in the stream with a storage tier.
924
Save each data segment in the associated storage tier
926

Figure 10

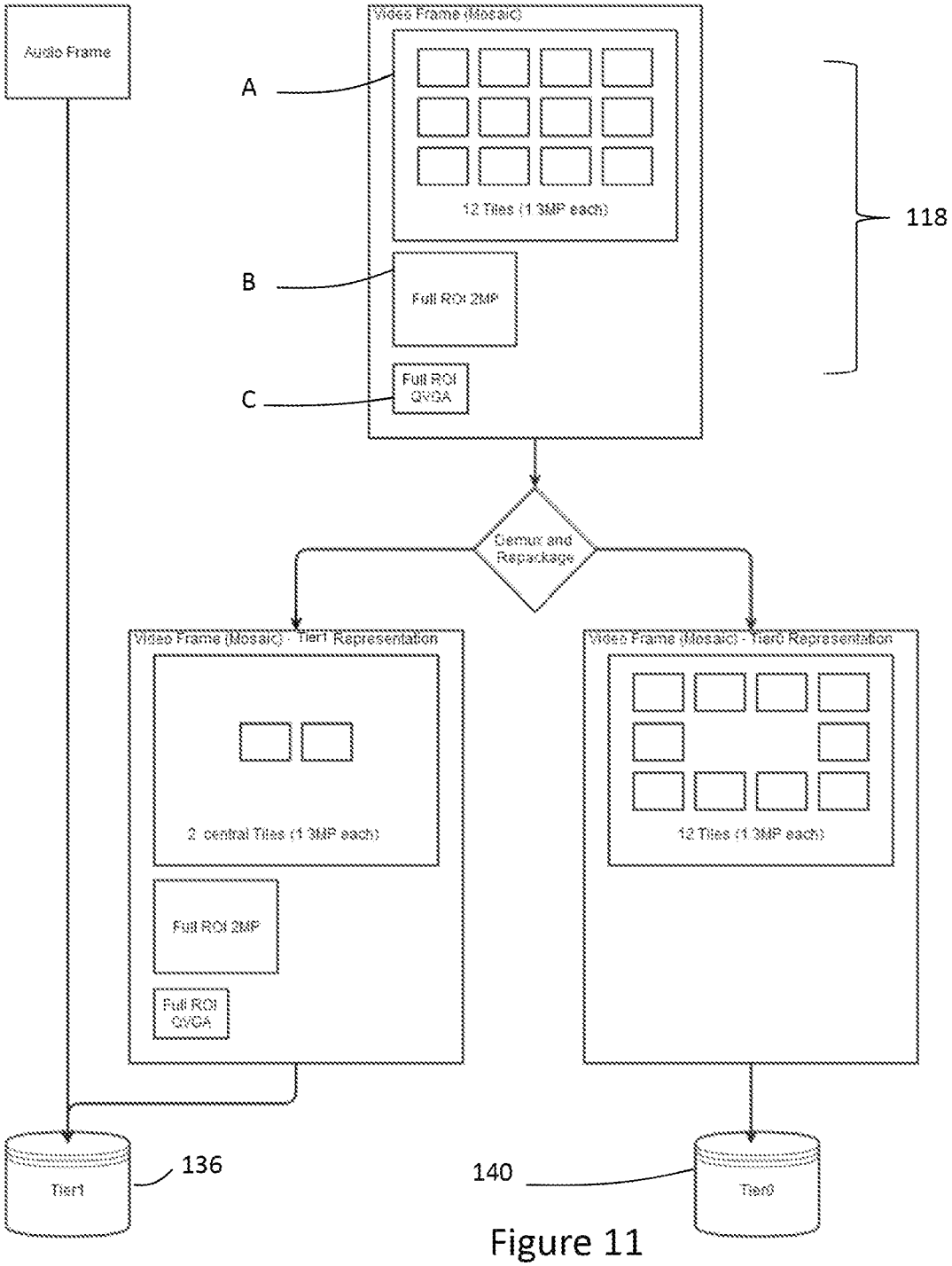

Audio Frame
Video Frame (Mosaic)
A
12 Tiles (1 3MP each)
B
Full ROI 2MP
C
Full ROI QVGA
118
Demux and Repackage
Video Frame (Mosaic) - Tier1 Representation
2 central Tiles (1 3MP each)
Full ROI 2MP
Full ROI QVGA
Video Frame (Mosaic) - Tier0 Representation
12 Tiles (1 3MP each)
Tier1
136
140
Tier0

Figure 11

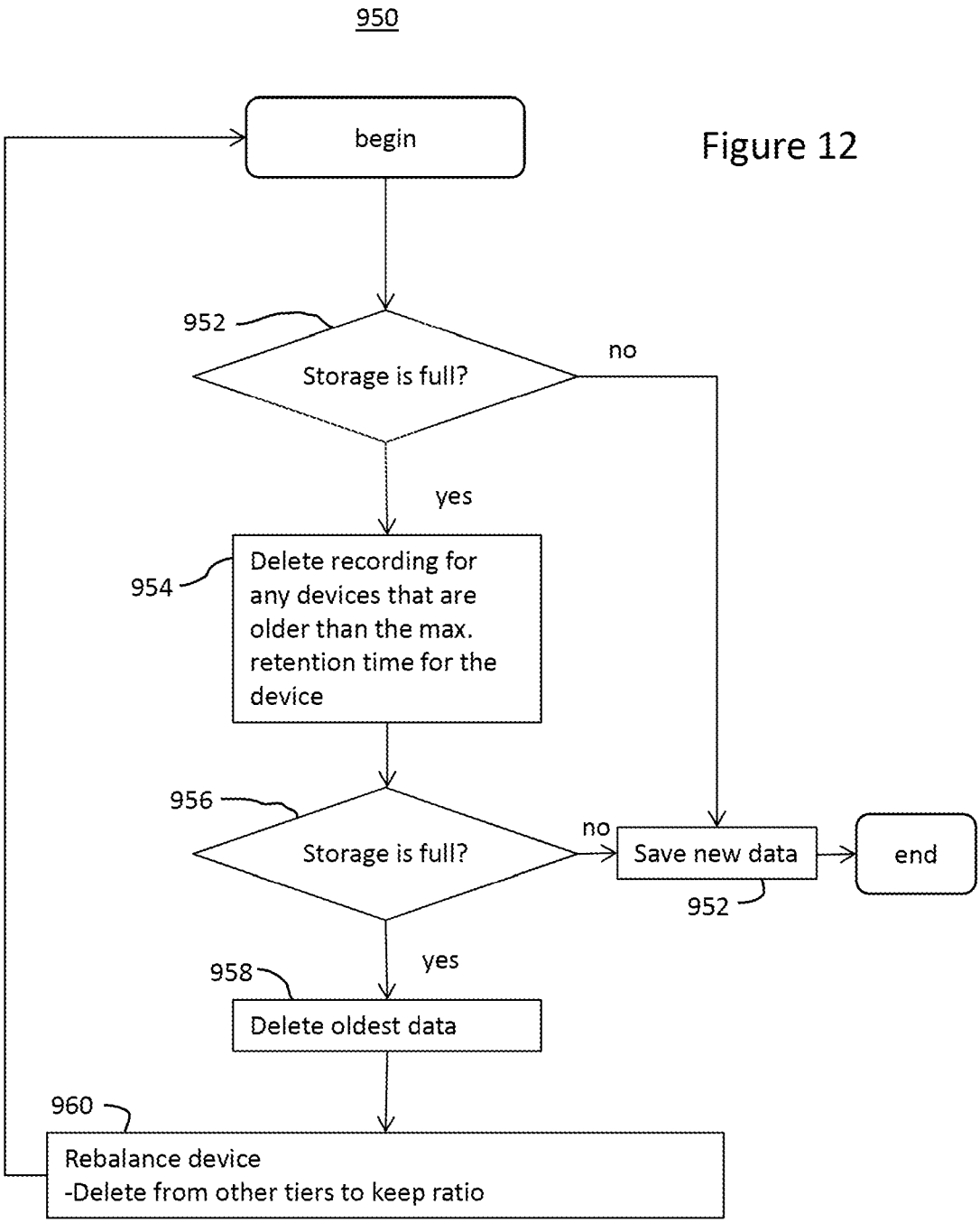

950
begin
952
Storage is full?
no
yes
954
Delete recording for any devices that are older than the max. retention time for the device
956
Storage is full?
no
Save new data
952
end
yes
958
Delete oldest data
960
Rebalance device
-Delete from other tiers to keep ratio

Figure 12