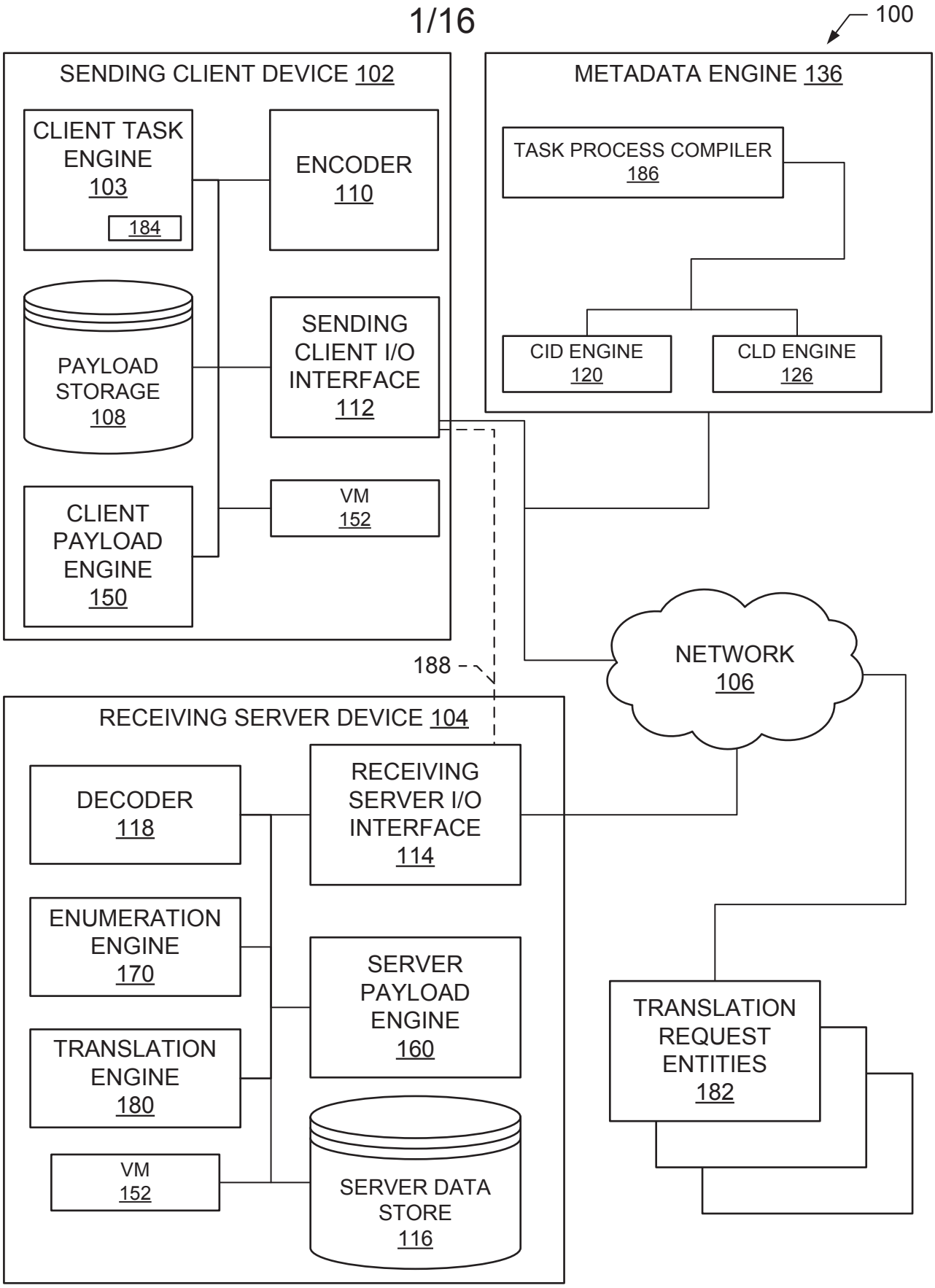
100
SENDING CLIENT DEVICE 102
CLIENT TASK ENGINE 103
184
ENCODER 110
PAYLOAD STORAGE 108
SENDING CLIENT I/O INTERFACE 112
CLIENT PAYLOAD ENGINE 150
VM 152
METADATA ENGINE 136
TASK PROCESS COMPILER 186
CID ENGINE 120
CLD ENGINE 126
NETWORK 106
188
RECEIVING SERVER DEVICE 104
DECODER 118
RECEIVING SERVER I/O INTERFACE 114
ENUMERATION ENGINE 170
SERVER PAYLOAD ENGINE 160
TRANSLATION ENGINE 180
VM 152
SERVER DATA STORE 116
TRANSLATION REQUEST ENTITIES 182

FIG. 1A

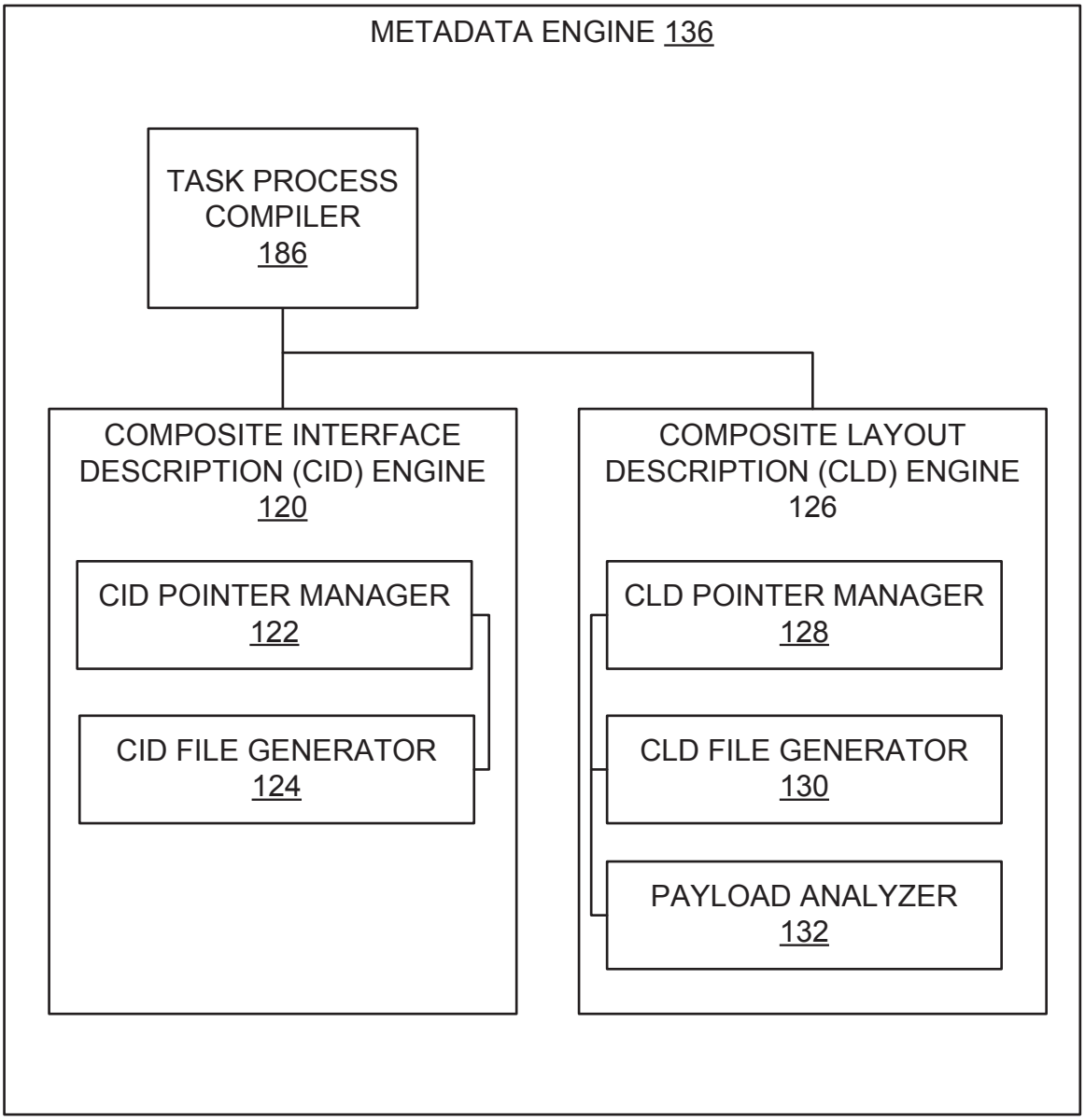
METADATA ENGINE 136
TASK PROCESS COMPILER 186
COMPOSITE INTERFACE DESCRIPTION (CID) ENGINE 120
CID POINTER MANAGER 122
CID FILE GENERATOR 124
COMPOSITE LAYOUT DESCRIPTION (CLD) ENGINE 126
CLD POINTER MANAGER 128
CLD FILE GENERATOR 130
PAYLOAD ANALYZER 132

FIG. 1B

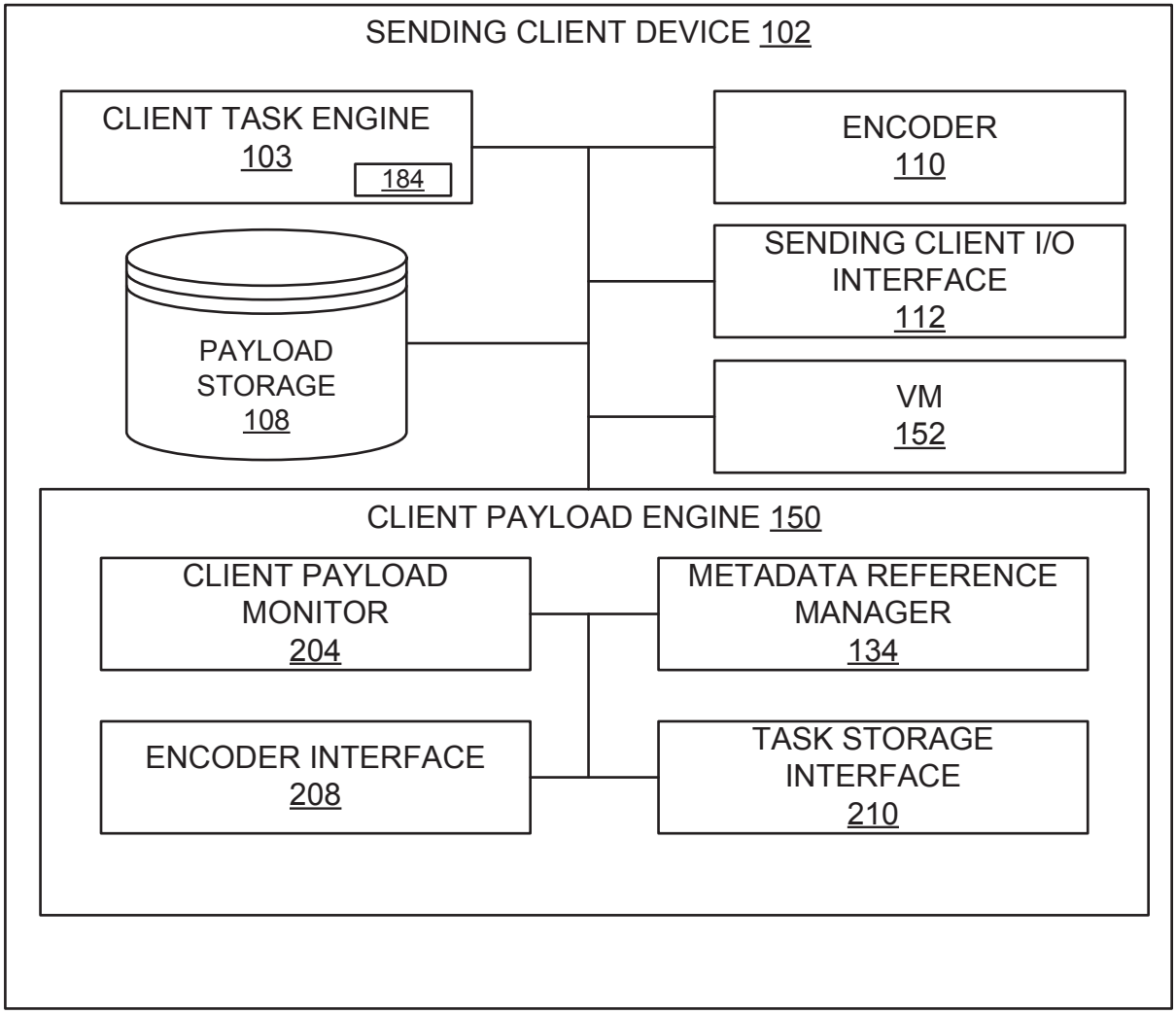
SENDING CLIENT DEVICE 102
CLIENT TASK ENGINE
103
184
ENCODER
110
SENDING CLIENT I/O
INTERFACE
112
PAYLOAD
STORAGE
108
VM
152
CLIENT PAYLOAD ENGINE 150
CLIENT PAYLOAD
MONITOR
204
METADATA REFERENCE
MANAGER
134
ENCODER INTERFACE
208
TASK STORAGE
INTERFACE
210

FIG. 2

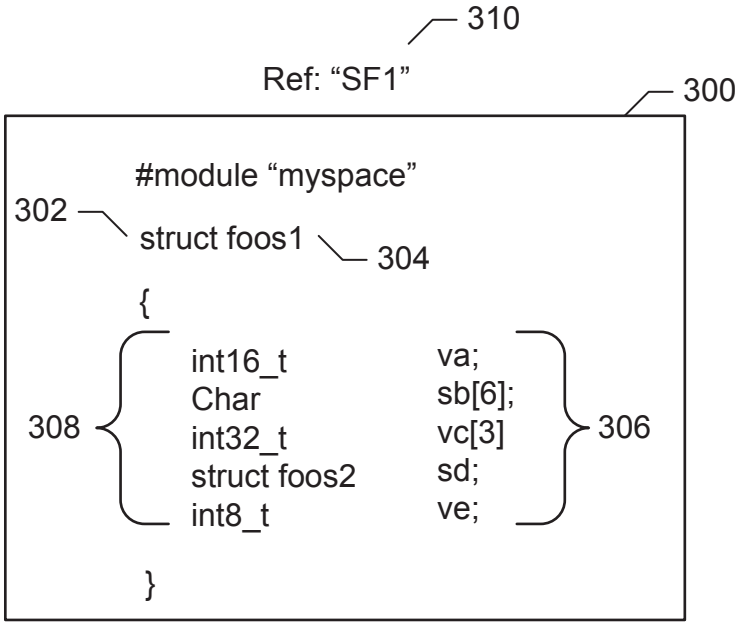
310
Ref: “SF1”
300
#module “myspace”
302
struct foos1
304
{
308
int16_t
Char
int32_t
struct foos2
int8_t
va;
sb[6];
vc[3]
sd;
ve;
306
}

FIG. 3A

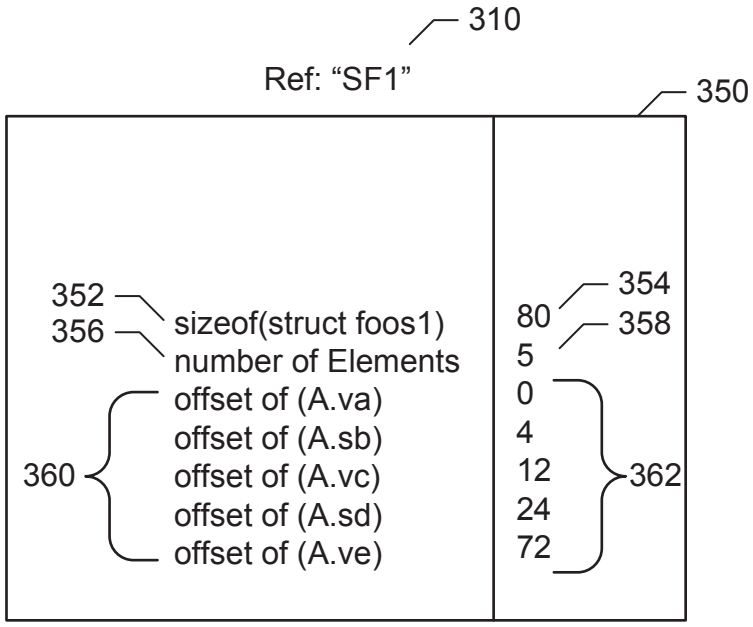
310
Ref: “SF1”
350
352
356
sizeof(struct foos1)
number of Elements
360
offset of (A.va)
offset of (A.sb)
offset of (A.vc)
offset of (A.sd)
offset of (A.ve)
354
80
358
5
0
4
12
24
72
362

FIG. 3B

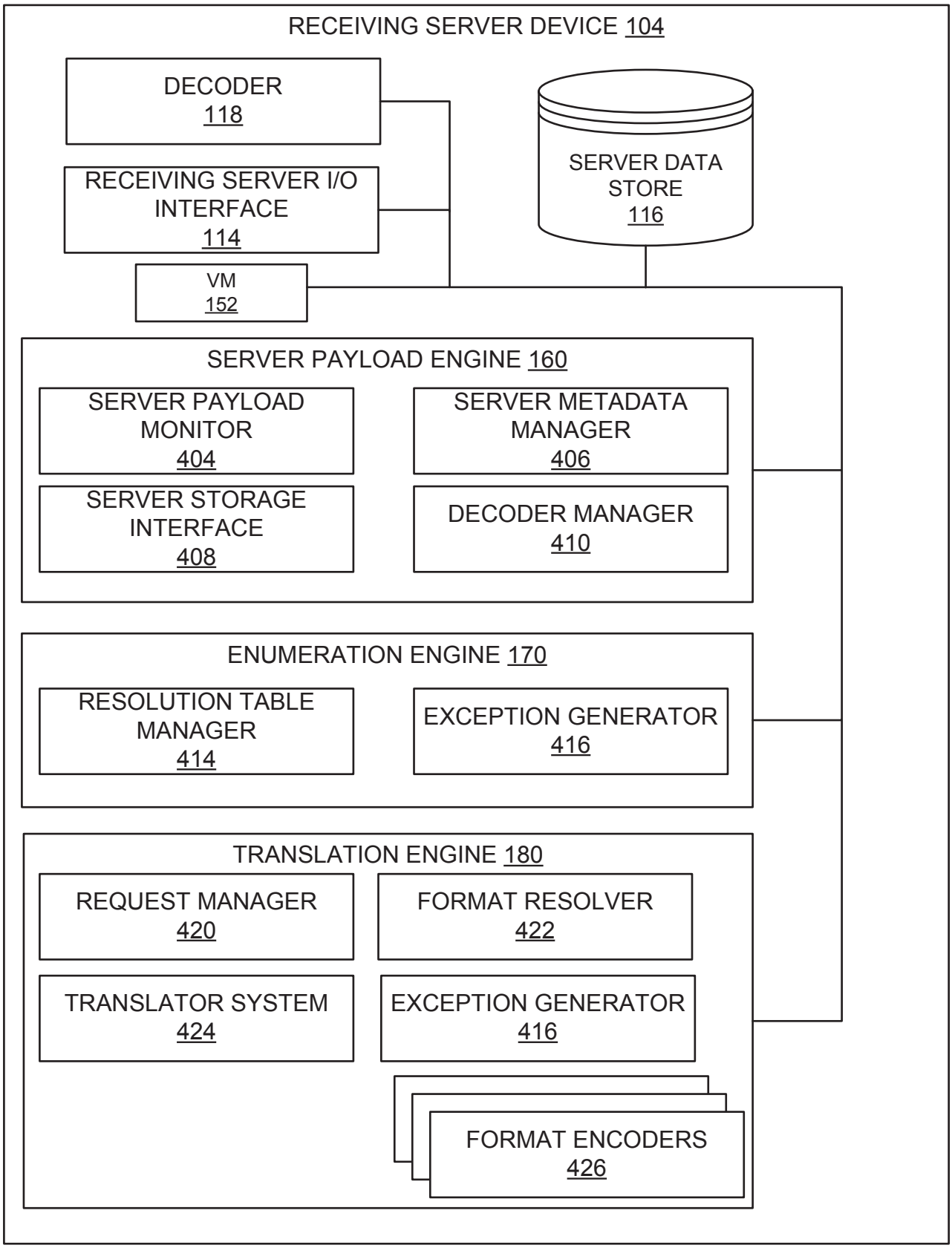
RECEIVING SERVER DEVICE 104
DECODER 118
RECEIVING SERVER I/O INTERFACE 114
VM 152
SERVER DATA STORE 116
SERVER PAYLOAD ENGINE 160
SERVER PAYLOAD MONITOR 404
SERVER METADATA MANAGER 406
SERVER STORAGE INTERFACE 408
DECODER MANAGER 410
ENUMERATION ENGINE 170
RESOLUTION TABLE MANAGER 414
EXCEPTION GENERATOR 416
TRANSLATION ENGINE 180
REQUEST MANAGER 420
FORMAT RESOLVER 422
TRANSLATOR SYSTEM 424
EXCEPTION GENERATOR 416
FORMAT ENCODERS 426

FIG. 4

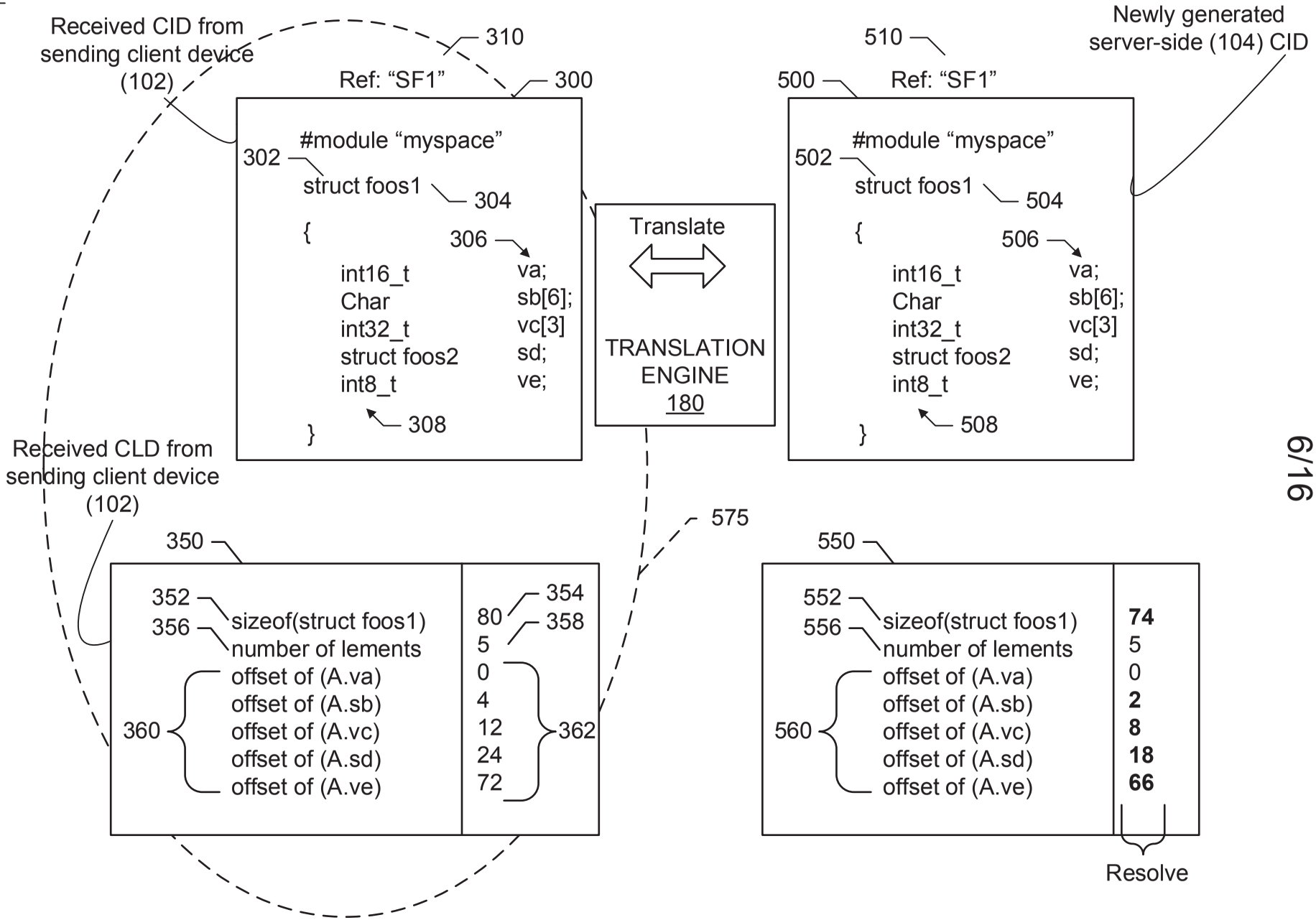
Received CID from sending client device (102)
310
Ref: "SF1"
300
#module "myspace"
302
struct foos1
304
{
306
int16_t va;
Char sb[6];
int32_t vc[3]
struct foos2 sd;
int8_t ve;
308
}
Translate
TRANSLATION ENGINE 180
510
Newly generated server-side (104) CID
500
Ref: "SF1"
#module "myspace"
502
struct foos1
504
{
506
int16_t va;
Char sb[6];
int32_t vc[3]
struct foos2 sd;
int8_t ve;
508
}
Received CLD from sending client device (102)
575
350
352
356
sizeof(struct foos1)
number of lements
360
offset of (A.va)
offset of (A.sb)
offset of (A.vc)
offset of (A.sd)
offset of (A.ve)
354
358
362
80
5
0
4
12
24
72
550
552
556
sizeof(struct foos1)
number of lements
560
offset of (A.va)
offset of (A.sb)
offset of (A.vc)
offset of (A.sd)
offset of (A.ve)
74
5
0
2
8
18
66
Resolve

FIG. 5

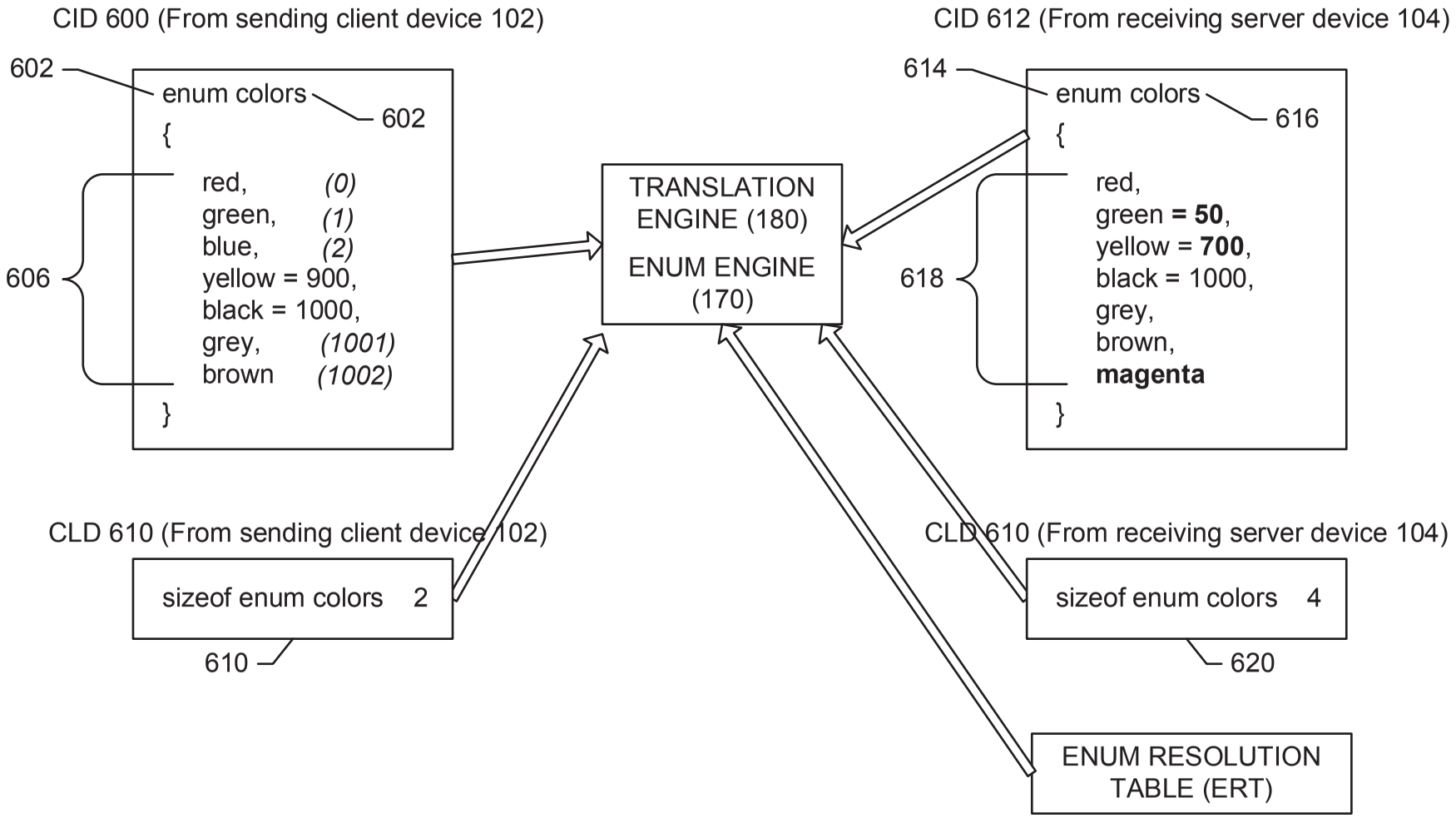
CID 600 (From sending client device 102)
602
enum colors
602
{
red, (0)
green, (1)
blue, (2)
yellow = 900,
black = 1000,
grey, (1001)
brown (1002)
}
606
TRANSLATION ENGINE (180)
ENUM ENGINE (170)
CID 612 (From receiving server device 104)
614
enum colors
616
{
red,
green = 50,
yellow = 700,
black = 1000,
grey,
brown,
magenta
}
618
CLD 610 (From sending client device 102)
sizeof enum colors 2
610
CLD 610 (From receiving server device 104)
sizeof enum colors 4
620
ENUM RESOLUTION TABLE (ERT)

FIG. 6

700

	PEER 1 (702)	PEER 2 (704)
Composite Type (706)	enum	enum
Composite Name (708)	colors	colors
Composite Size (bytes) (710)	2	4

Composite Elements (712)	Element Index (714)	Element Name (716)	Element Value (718)	Element Index (714)	Element Name (716)	Element Value (718)	Element Parity (720)	Secondary (2º) Resolution (722)
	0	red	---*(0)*	0	red	---	TRUE	n/a
728 →	1	green	---*(1)*	1	green	50	TRUE	n/a
724 →	2	blue	---*(2)*	2	yellow	700	FALSE	Peer 1=FALSE Peer 2 = 2º term “yellow”
726 →	3	yellow	900	3	black	1000	FALSE	Peer 1=2º term “yellow” Peer 2=2º term “black”
	4	black	1000	4	grey	---*(1001)*	FALSE	Peer 1=2º term “black” Peer 2=2º term “grey”
	5	grey	---*(1001)*	5	brown	---*(1002)*	FALSE	Peer 1=2º term “grey” Peer 2=2º term “brown”
	6	brown	---*(1002)*	6	magenta	100000	FALSE	Peer 1=2º term “brown” Peer 2=FALSE
	...	...	...	...	...	...	...	...

FIG. 7

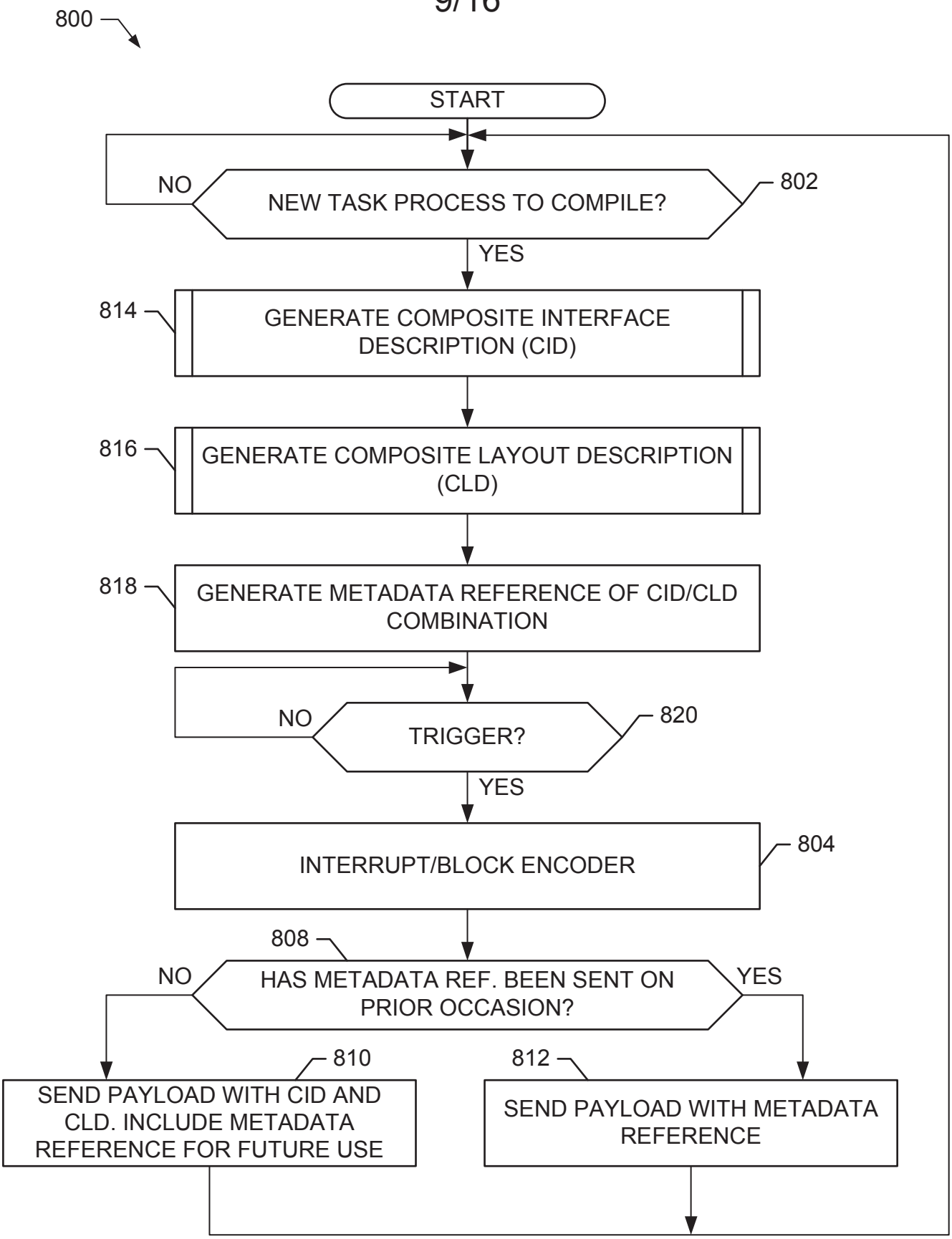
800
START
NO
NEW TASK PROCESS TO COMPILE?
802
YES
814
GENERATE COMPOSITE INTERFACE DESCRIPTION (CID)
816
GENERATE COMPOSITE LAYOUT DESCRIPTION (CLD)
818
GENERATE METADATA REFERENCE OF CID/CLD COMBINATION
NO
TRIGGER?
820
YES
INTERRUPT/BLOCK ENCODER
804
808
NO
HAS METADATA REF. BEEN SENT ON PRIOR OCCASION?
YES
810
SEND PAYLOAD WITH CID AND CLD. INCLUDE METADATA REFERENCE FOR FUTURE USE
812
SEND PAYLOAD WITH METADATA REFERENCE

FIG. 8

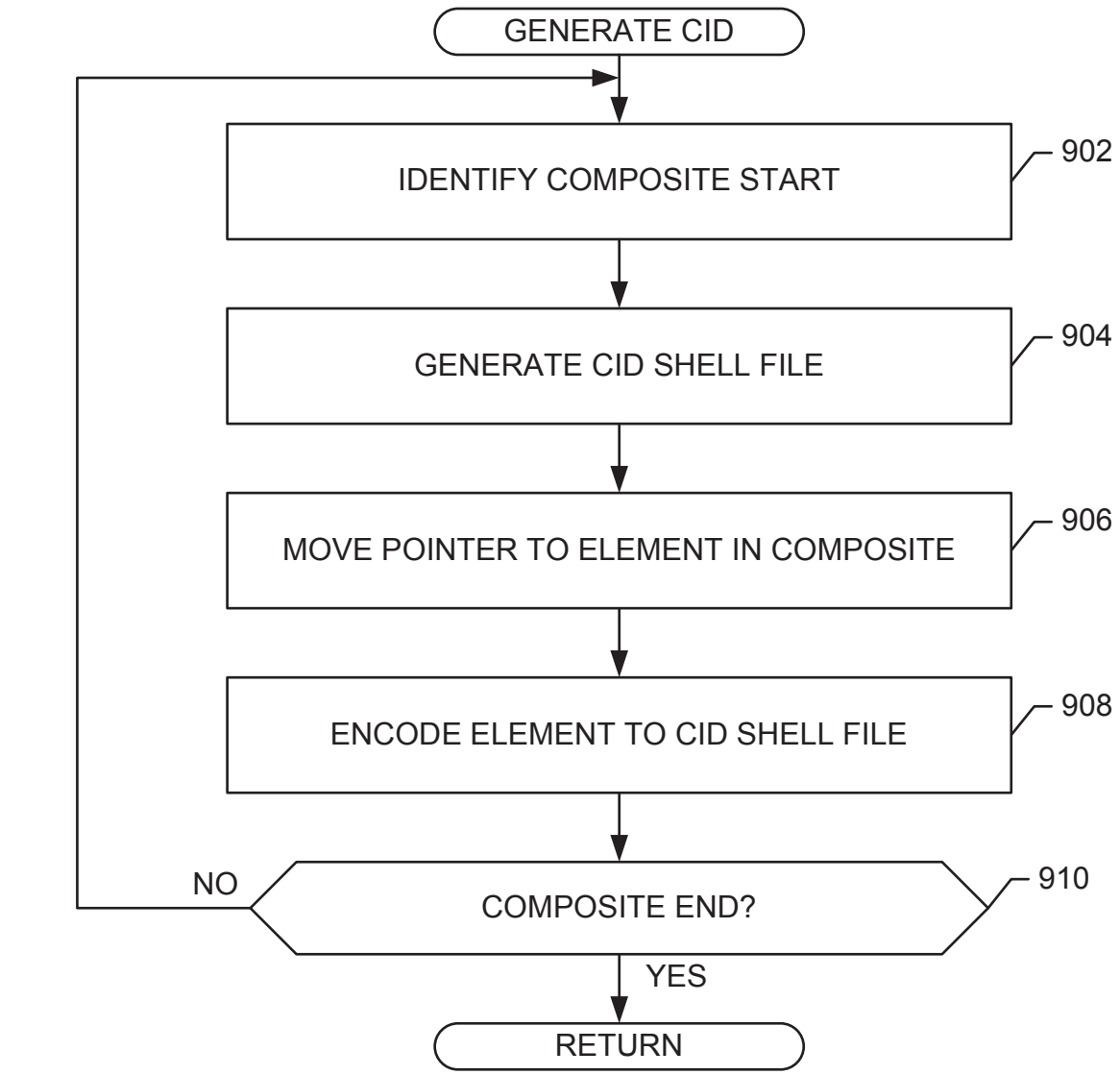
814
GENERATE CID
IDENTIFY COMPOSITE START
902
GENERATE CID SHELL FILE
904
MOVE POINTER TO ELEMENT IN COMPOSITE
906
ENCODE ELEMENT TO CID SHELL FILE
908
NO
COMPOSITE END?
910
YES
RETURN

FIG. 9

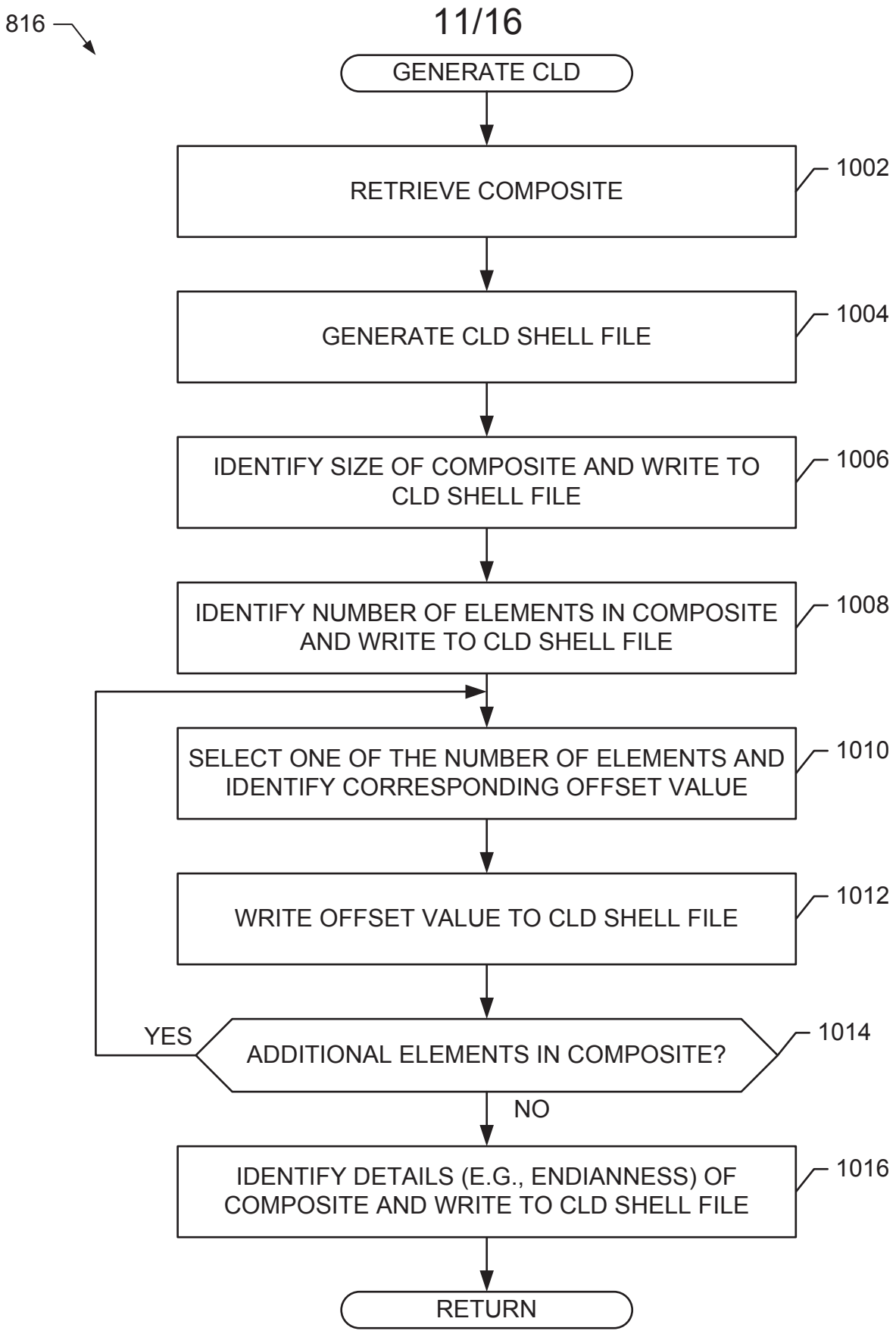
816
GENERATE CLD
RETRIEVE COMPOSITE
1002
GENERATE CLD SHELL FILE
1004
IDENTIFY SIZE OF COMPOSITE AND WRITE TO CLD SHELL FILE
1006
IDENTIFY NUMBER OF ELEMENTS IN COMPOSITE AND WRITE TO CLD SHELL FILE
1008
SELECT ONE OF THE NUMBER OF ELEMENTS AND IDENTIFY CORRESPONDING OFFSET VALUE
1010
WRITE OFFSET VALUE TO CLD SHELL FILE
1012
YES
ADDITIONAL ELEMENTS IN COMPOSITE?
1014
NO
IDENTIFY DETAILS (E.G., ENDIANNESS) OF COMPOSITE AND WRITE TO CLD SHELL FILE
1016
RETURN

FIG. 10

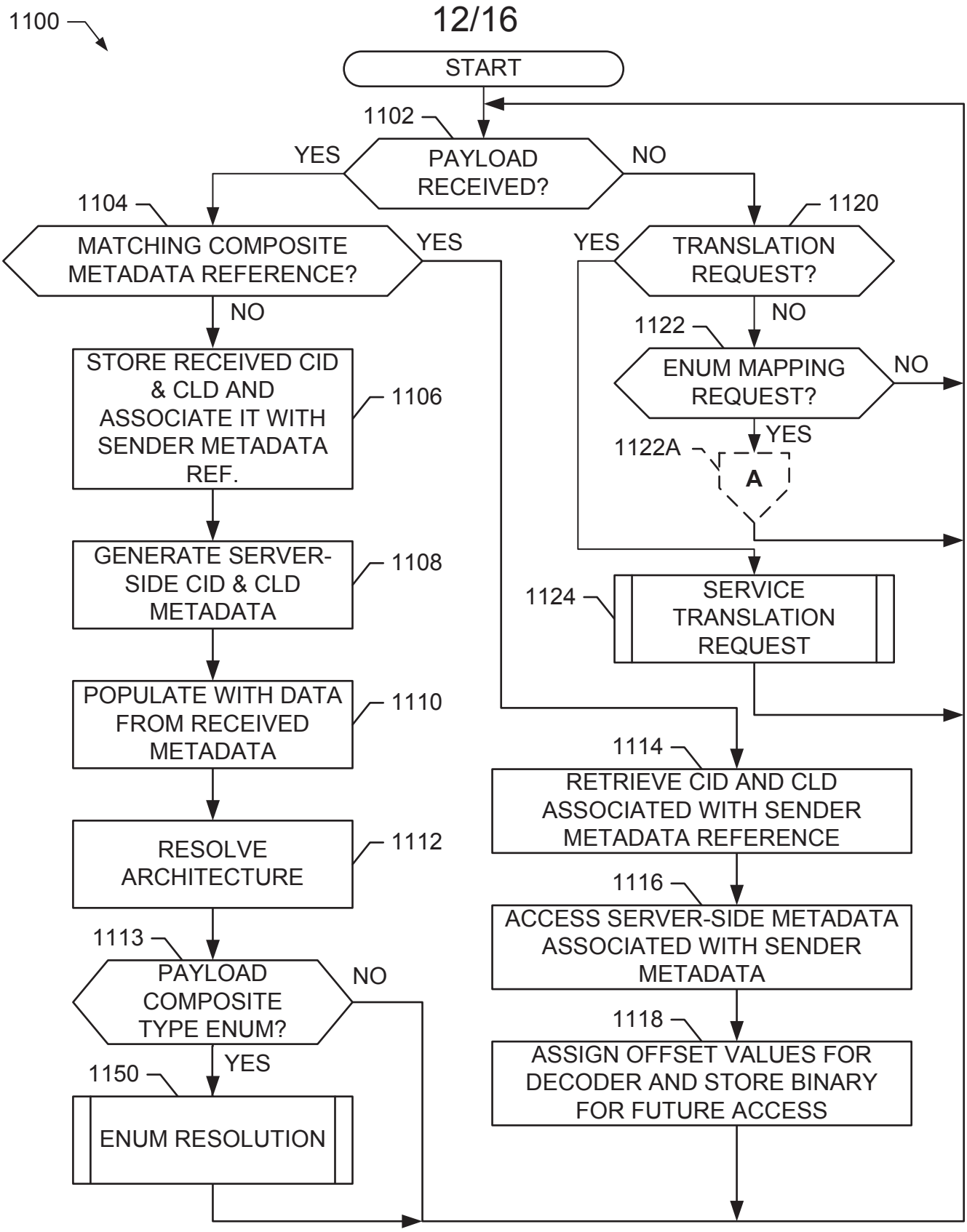
1100
START
1102
PAYLOAD RECEIVED?
YES
NO
1104
MATCHING COMPOSITE METADATA REFERENCE?
YES
NO
STORE RECEIVED CID & CLD AND ASSOCIATE IT WITH SENDER METADATA REF.
1106
GENERATE SERVER-SIDE CID & CLD METADATA
1108
POPULATE WITH DATA FROM RECEIVED METADATA
1110
RESOLVE ARCHITECTURE
1112
1113
PAYLOAD COMPOSITE TYPE ENUM?
NO
YES
1150
ENUM RESOLUTION
1120
TRANSLATION REQUEST?
YES
NO
1122
ENUM MAPPING REQUEST?
NO
YES
1122A
A
1124
SERVICE TRANSLATION REQUEST
1114
RETRIEVE CID AND CLD ASSOCIATED WITH SENDER METADATA REFERENCE
1116
ACCESS SERVER-SIDE METADATA ASSOCIATED WITH SENDER METADATA
1118
ASSIGN OFFSET VALUES FOR DECODER AND STORE BINARY FOR FUTURE ACCESS

FIG. 11

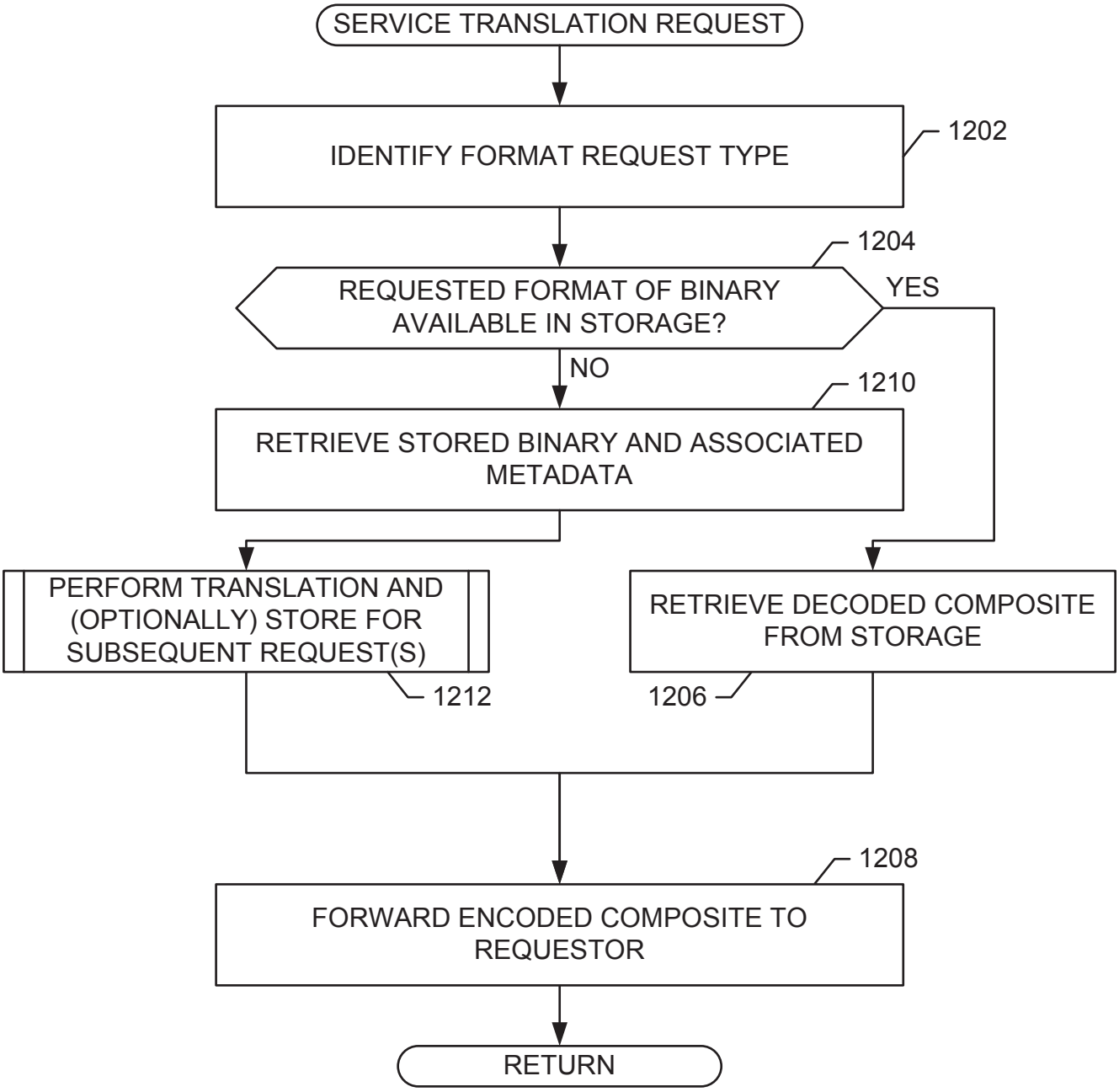
1124
SERVICE TRANSLATION REQUEST
IDENTIFY FORMAT REQUEST TYPE
1202
1204
REQUESTED FORMAT OF BINARY AVAILABLE IN STORAGE?
YES
NO
1210
RETRIEVE STORED BINARY AND ASSOCIATED METADATA
PERFORM TRANSLATION AND (OPTIONALLY) STORE FOR SUBSEQUENT REQUEST(S)
1212
RETRIEVE DECODED COMPOSITE FROM STORAGE
1206
1208
FORWARD ENCODED COMPOSITE TO REQUESTOR
RETURN

FIG. 12

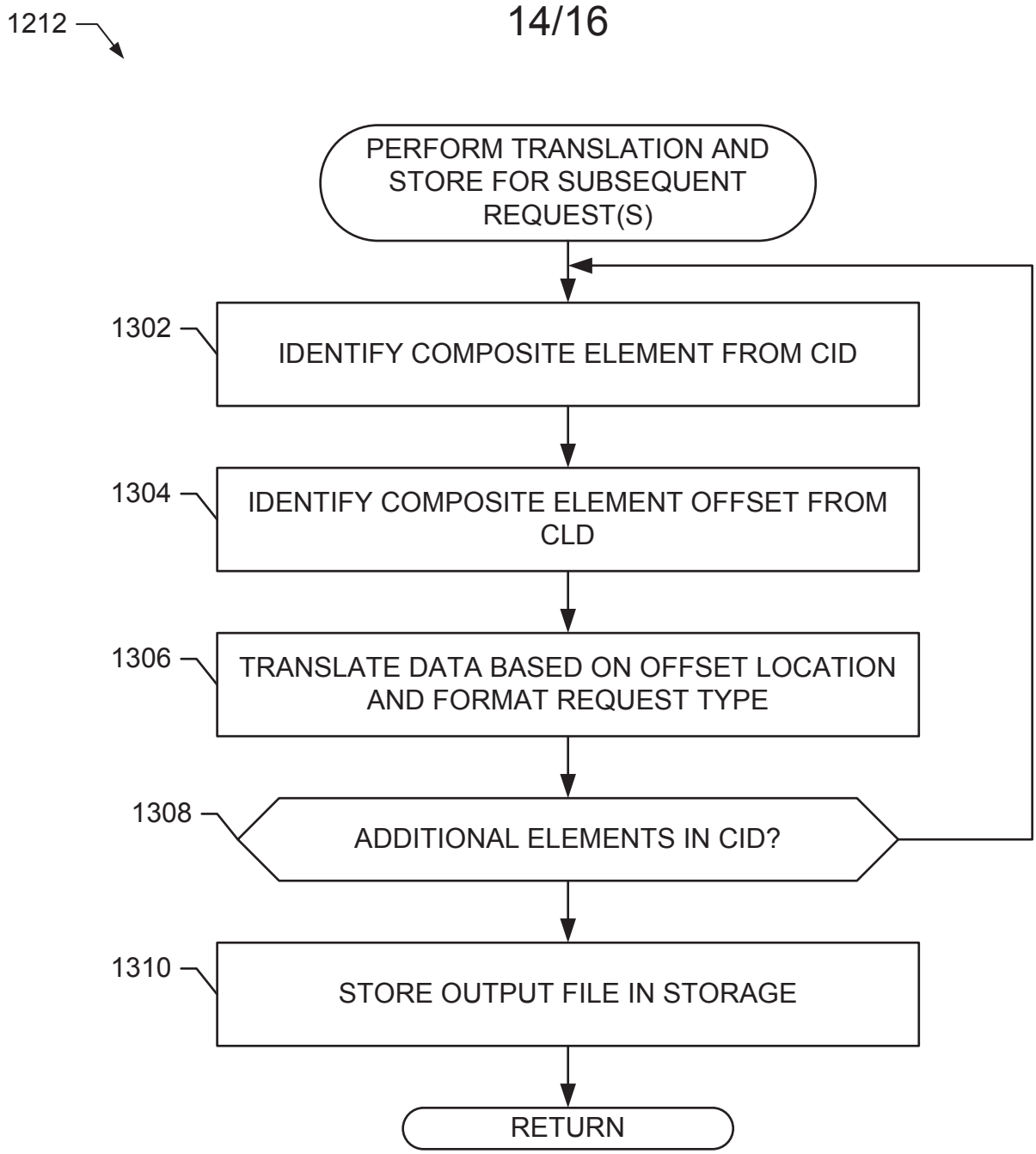
1212
PERFORM TRANSLATION AND STORE FOR SUBSEQUENT REQUEST(S)
1302
IDENTIFY COMPOSITE ELEMENT FROM CID
1304
IDENTIFY COMPOSITE ELEMENT OFFSET FROM CLD
1306
TRANSLATE DATA BASED ON OFFSET LOCATION AND FORMAT REQUEST TYPE
1308
ADDITIONAL ELEMENTS IN CID?
1310
STORE OUTPUT FILE IN STORAGE
RETURN

FIG. 13

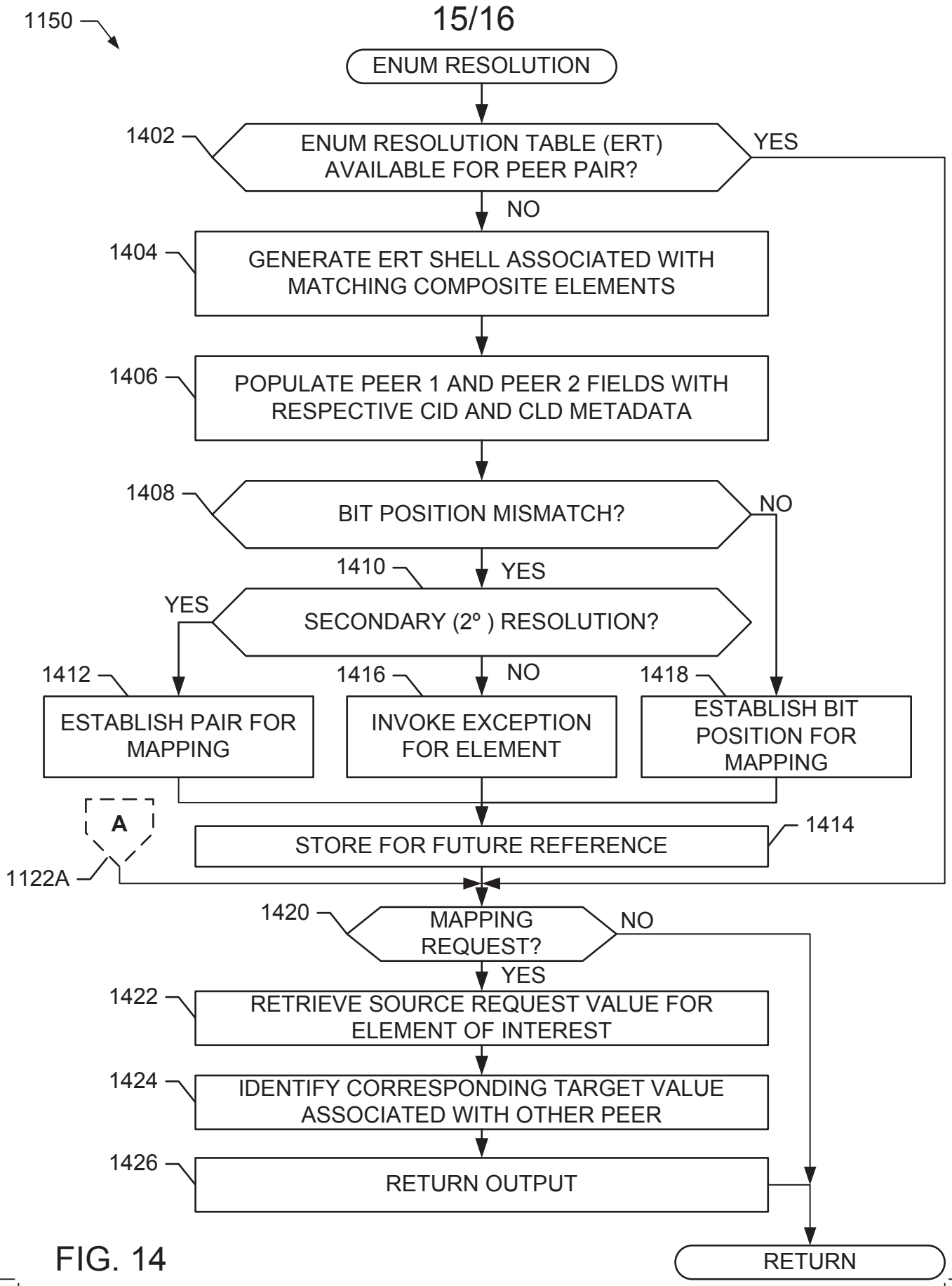
1150
ENUM RESOLUTION
1402
ENUM RESOLUTION TABLE (ERT) AVAILABLE FOR PEER PAIR?
YES
NO
1404
GENERATE ERT SHELL ASSOCIATED WITH MATCHING COMPOSITE ELEMENTS
1406
POPULATE PEER 1 AND PEER 2 FIELDS WITH RESPECTIVE CID AND CLD METADATA
1408
BIT POSITION MISMATCH?
NO
1410
YES
YES
SECONDARY (2º) RESOLUTION?
1412
ESTABLISH PAIR FOR MAPPING
1416
NO
INVOKE EXCEPTION FOR ELEMENT
1418
ESTABLISH BIT POSITION FOR MAPPING
A
1122A
STORE FOR FUTURE REFERENCE
1414
1420
MAPPING REQUEST?
NO
YES
1422
RETRIEVE SOURCE REQUEST VALUE FOR ELEMENT OF INTEREST
1424
IDENTIFY CORRESPONDING TARGET VALUE ASSOCIATED WITH OTHER PEER
1426
RETURN OUTPUT
RETURN

FIG. 14

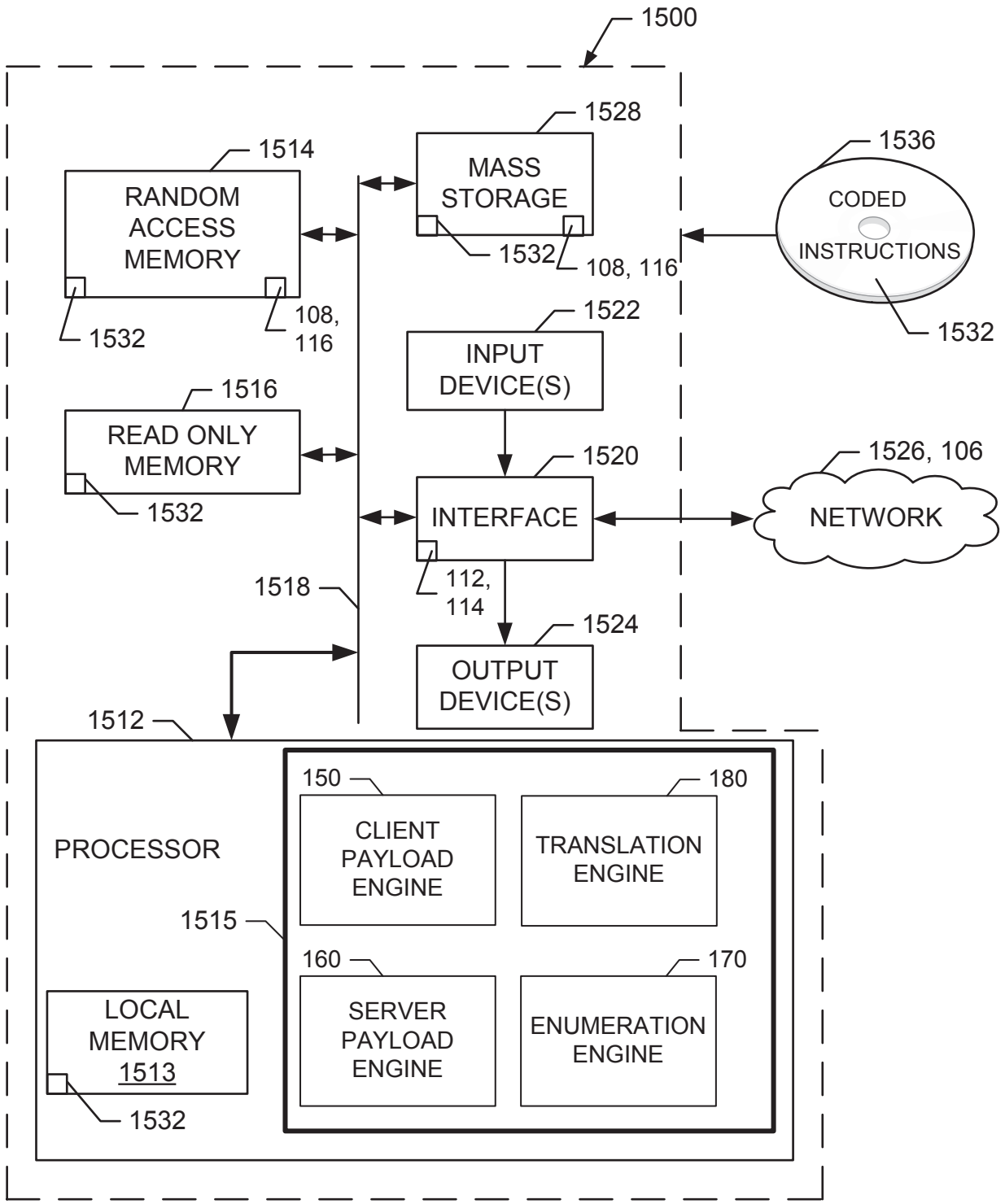
1500
1528
MASS STORAGE
1532
108, 116
1514
RANDOM ACCESS MEMORY
1532
108, 116
1536
CODED INSTRUCTIONS
1532
1522
INPUT DEVICE(S)
1516
READ ONLY MEMORY
1532
1520
INTERFACE
112, 114
1526, 106
NETWORK
1518
1524
OUTPUT DEVICE(S)
1512
PROCESSOR
1515
150
CLIENT PAYLOAD ENGINE
180
TRANSLATION ENGINE
160
SERVER PAYLOAD ENGINE
170
ENUMERATION ENGINE
LOCAL MEMORY 1513
1532

FIG. 15