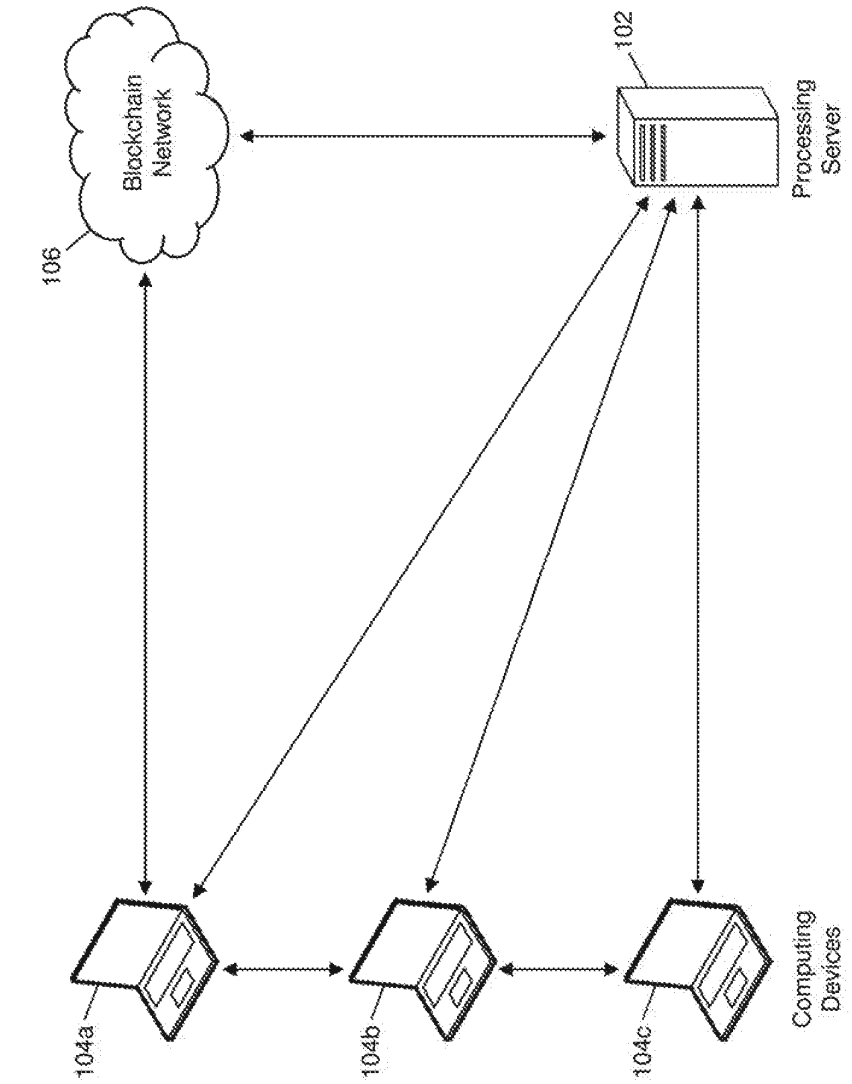

100
Blockchain Network
106
102
Processing Server
104a
104b
104c
Computing Devices

FIG. 1

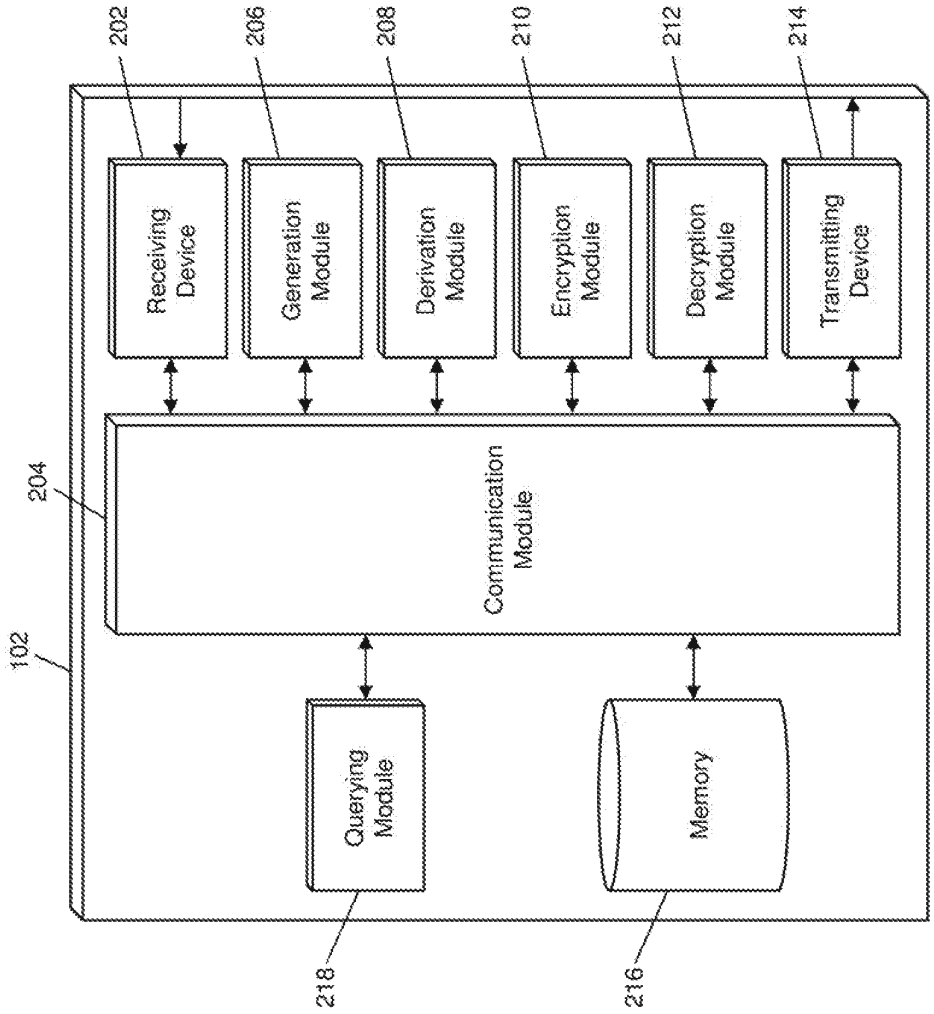

202
206
208
210
212
214
Receiving Device
Generation Module
Derivation Module
Encryption Module
Decryption Module
Transmitting Device
204
Communication Module
102
Querying Module
Memory
218
216

FIG. 2

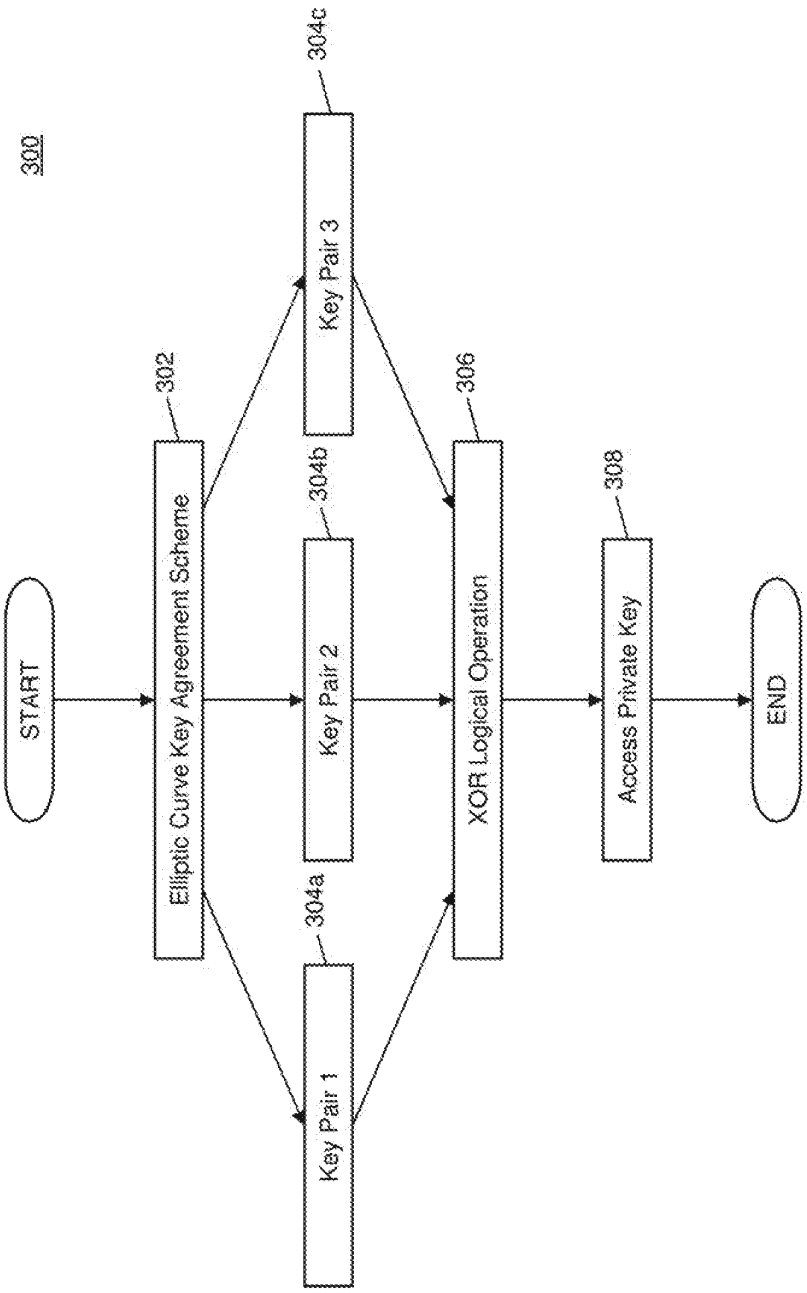

300
START
Elliptic Curve Key Agreement Scheme
302
Key Pair 1
304a
Key Pair 2
304b
Key Pair 3
304c
XOR Logical Operation
306
Access Private Key
308
END

FIG. 3

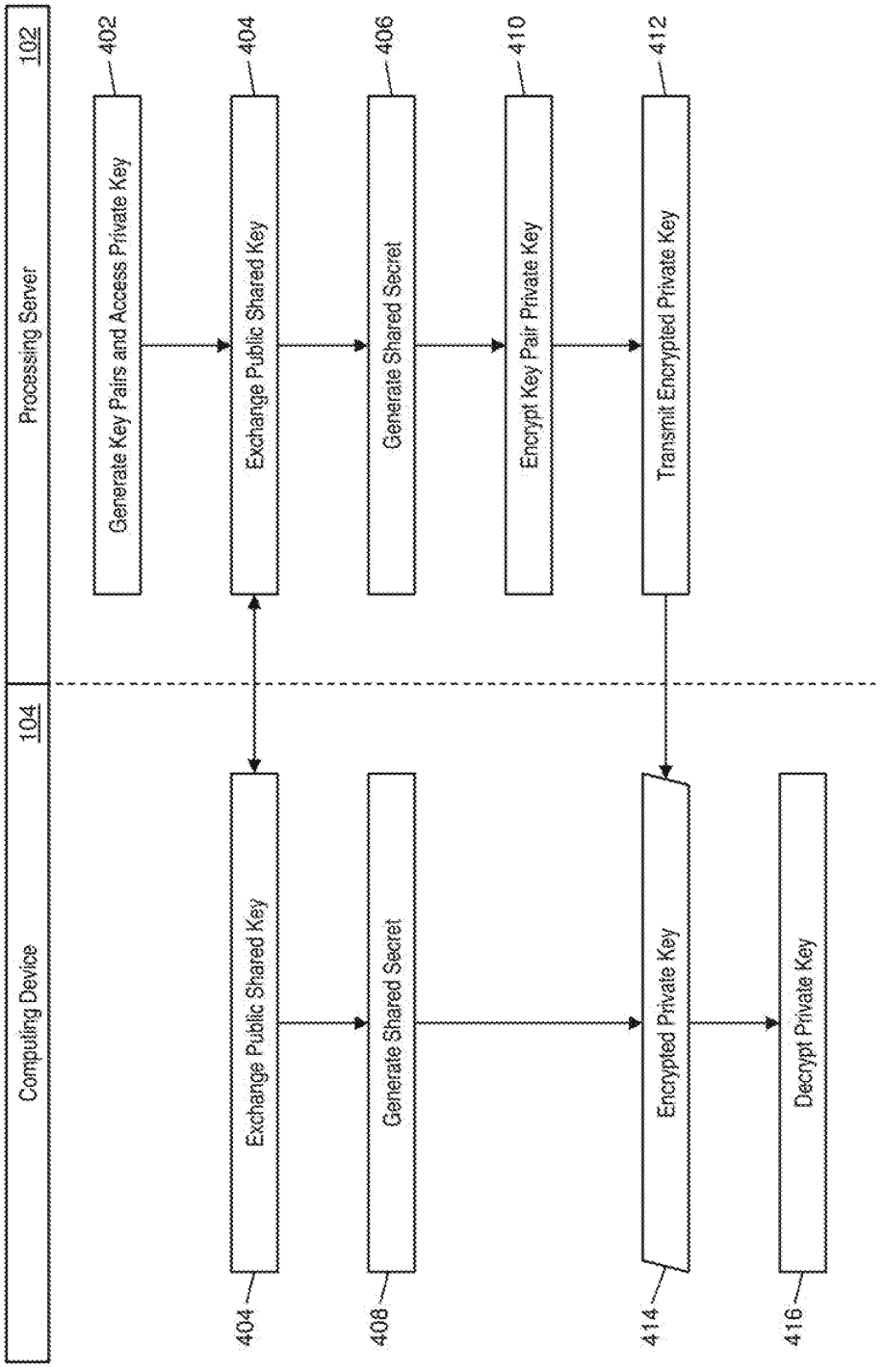

Computing Device
104
Processing Server
102
402
Generate Key Pairs and Access Private Key
404
Exchange Public Shared Key
406
Generate Shared Secret
410
Encrypt Key Pair Private Key
412
Transmit Encrypted Private Key
404
Exchange Public Shared Key
408
Generate Shared Secret
414
Encrypted Private Key
416
Decrypt Private Key

FIG. 4

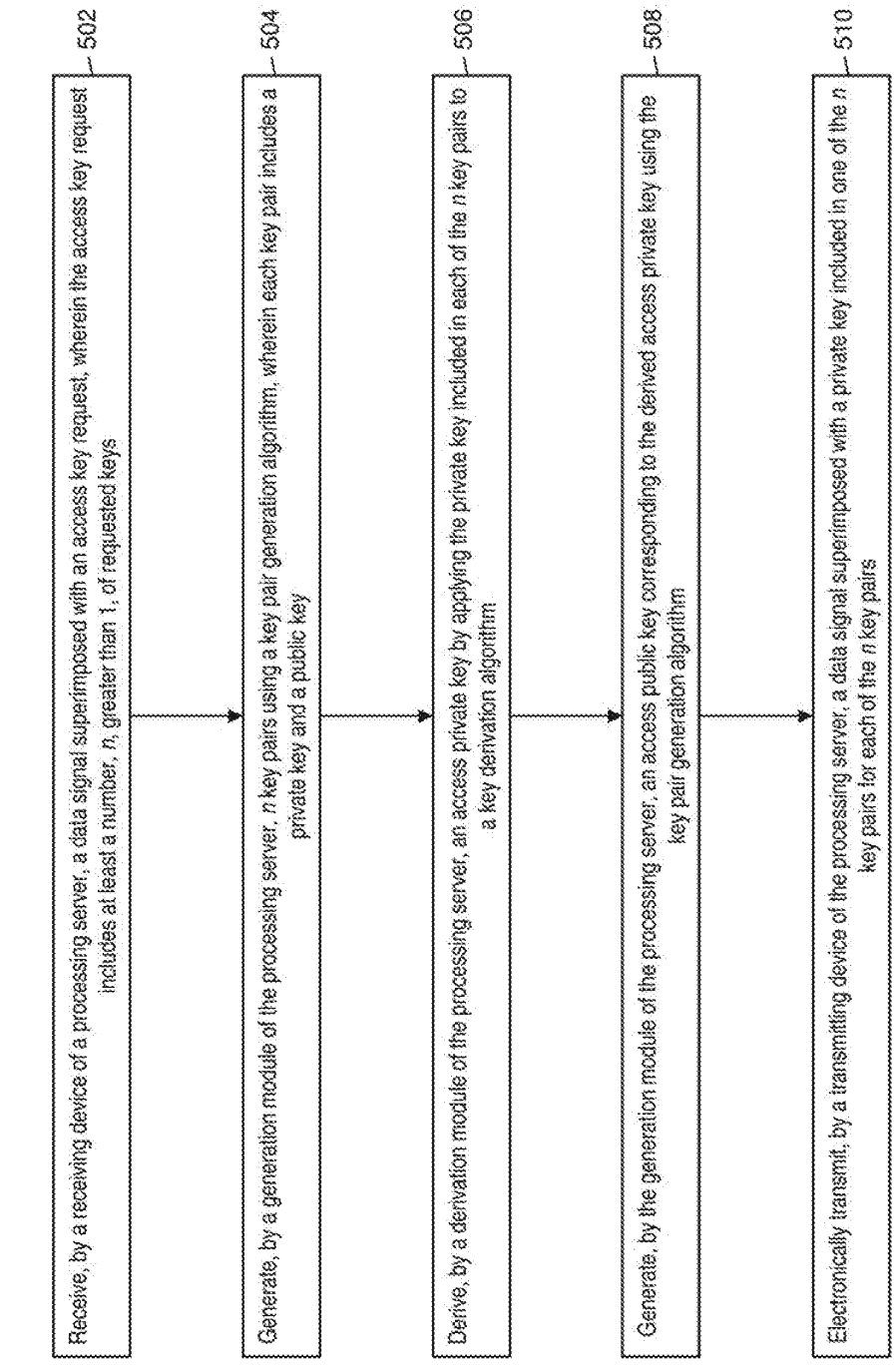

500
Receive, by a receiving device of a processing server, a data signal superimposed with an access key request, wherein the access key request includes at least a number, n, greater than 1, of requested keys
502
Generate, by a generation module of the processing server, n key pairs using a key pair generation algorithm, wherein each key pair includes a private key and a public key
504
Derive, by a derivation module of the processing server, an access private key by applying the private key included in each of the n key pairs to a key derivation algorithm
506
Generate, by the generation module of the processing server, an access public key corresponding to the derived access private key using the key pair generation algorithm
508
Electronically transmit, by a transmitting device of the processing server, a data signal superimposed with a private key included in one of the n key pairs for each of the n key pairs
510

FIG. 5

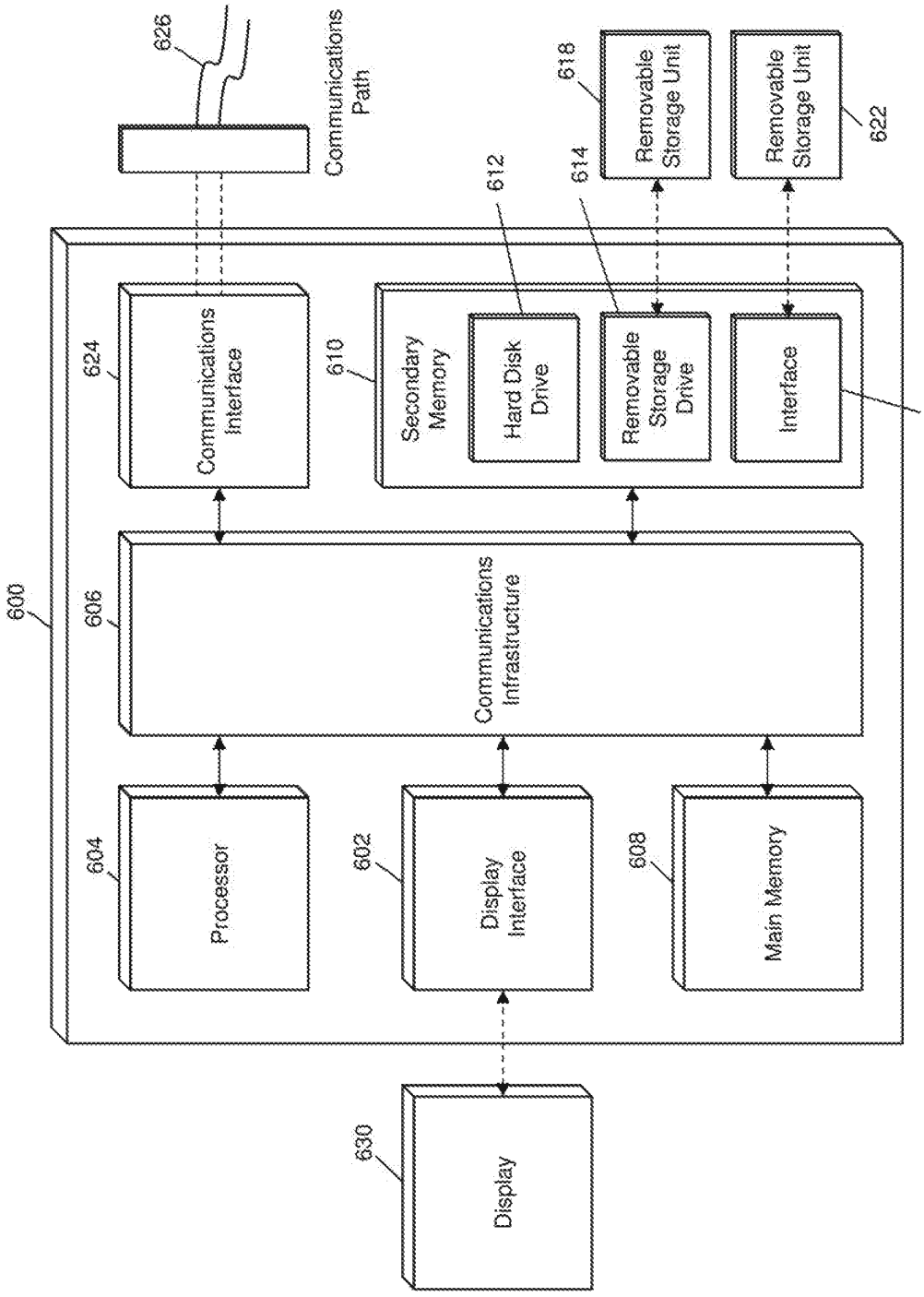

600
606
Communications Infrastructure
604
Processor
602
Display Interface
608
Main Memory
630
Display
624
Communications Interface
610
Secondary Memory
612
Hard Disk Drive
614
Removable Storage Drive
620
Interface
618
Removable Storage Unit
622
Removable Storage Unit
626
Communications Path

FIG. 6