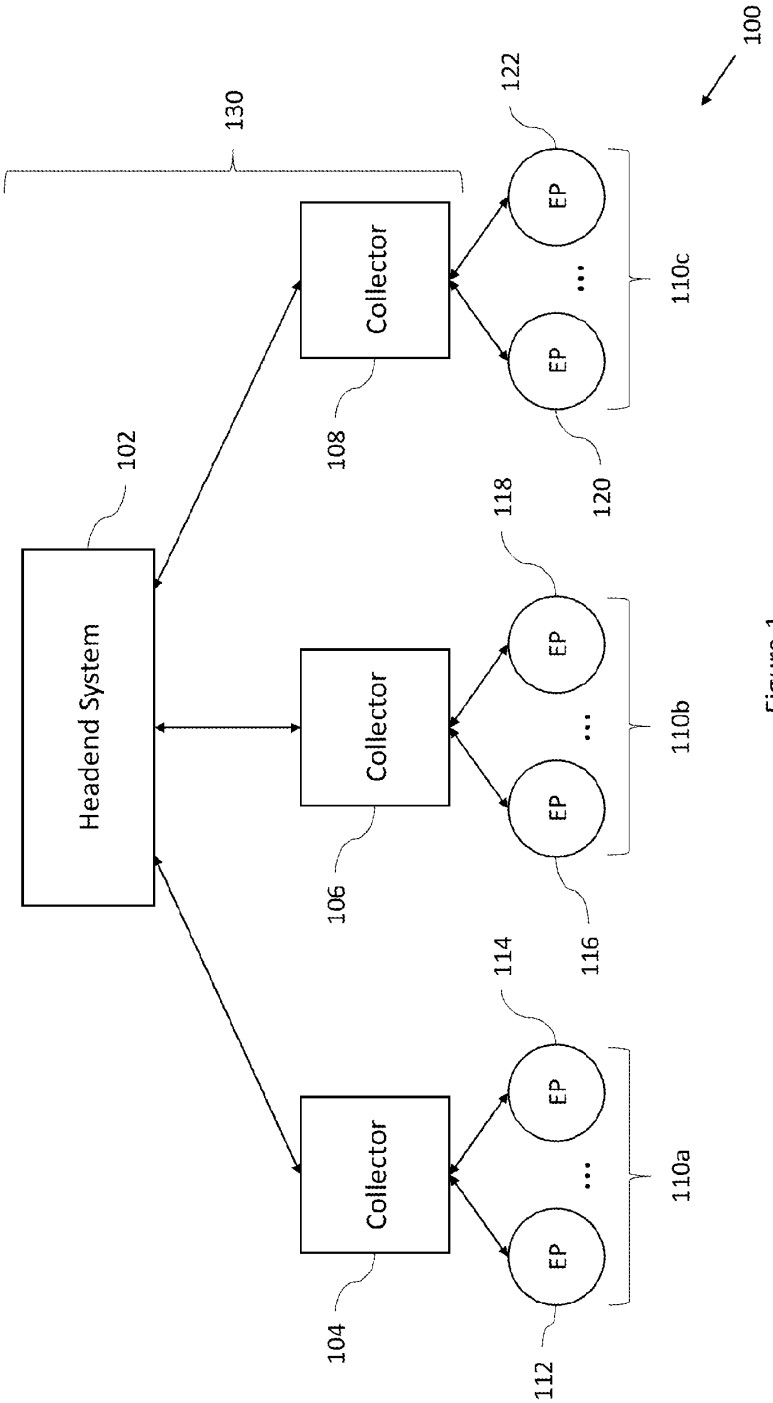

100
130
122
EP
EP
110c
Collector
108
120
102
Headend System
118
EP
EP
110b
Collector
106
116
114
EP
EP
110a
Collector
104
112

Figure 1

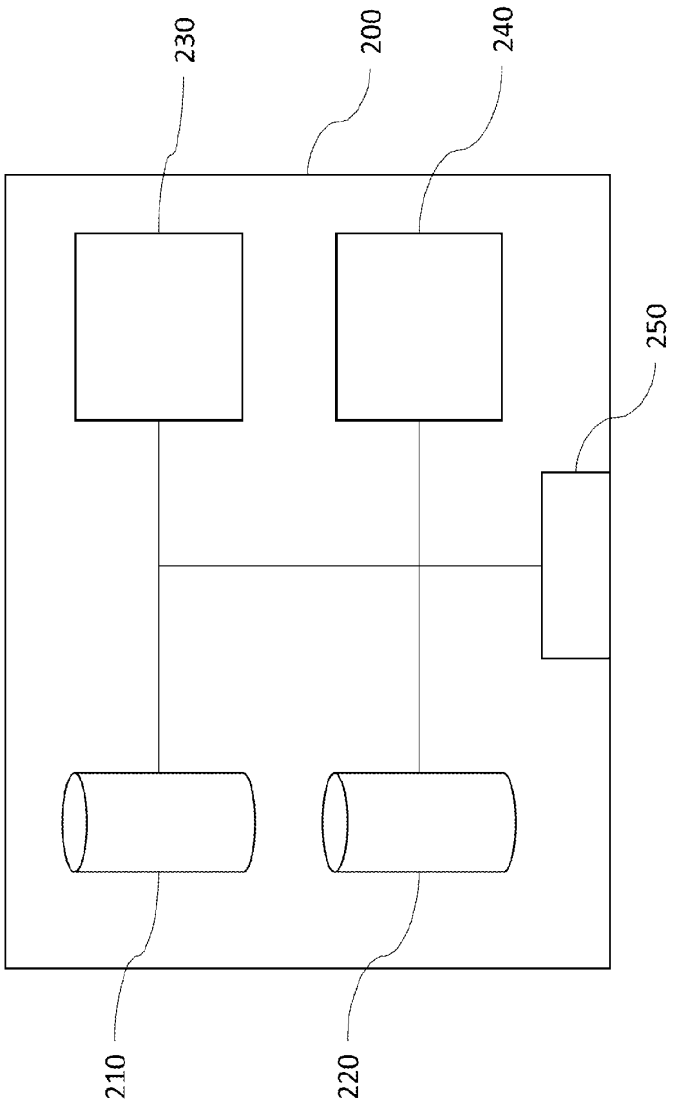


Figure 2

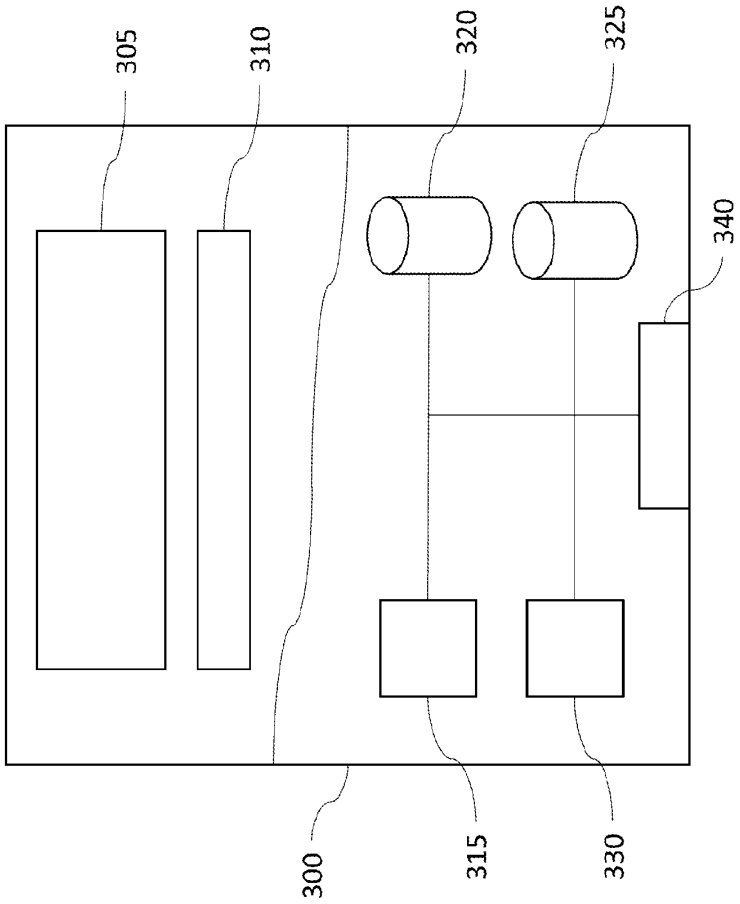


Figure 3

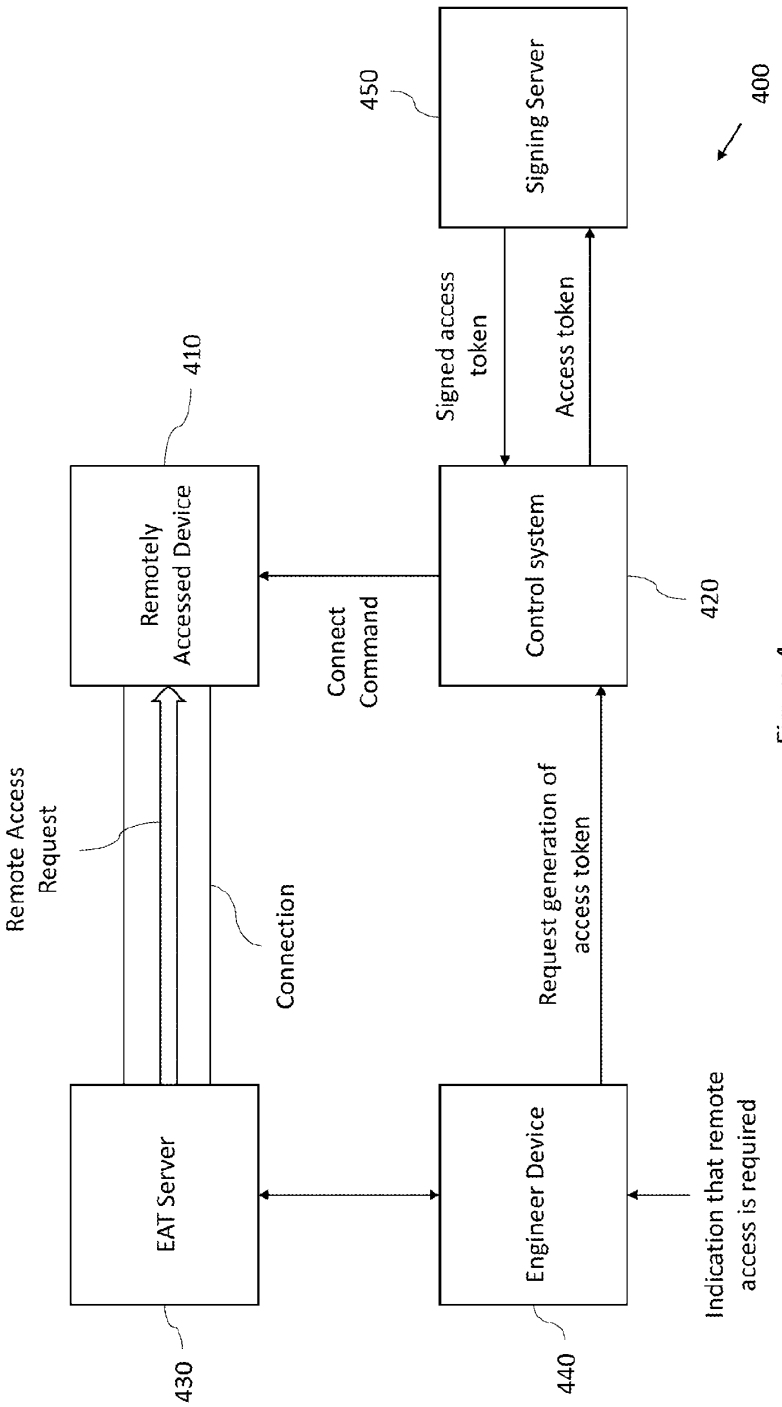

400
450
Signing Server
Signed access token
Access token
410
Remotely Accessed Device
Connect Command
Control system
420
Remote Access Request
Connection
Request generation of access token
EAT Server
Engineer Device
Indication that remote access is required
430
440

Figure 4

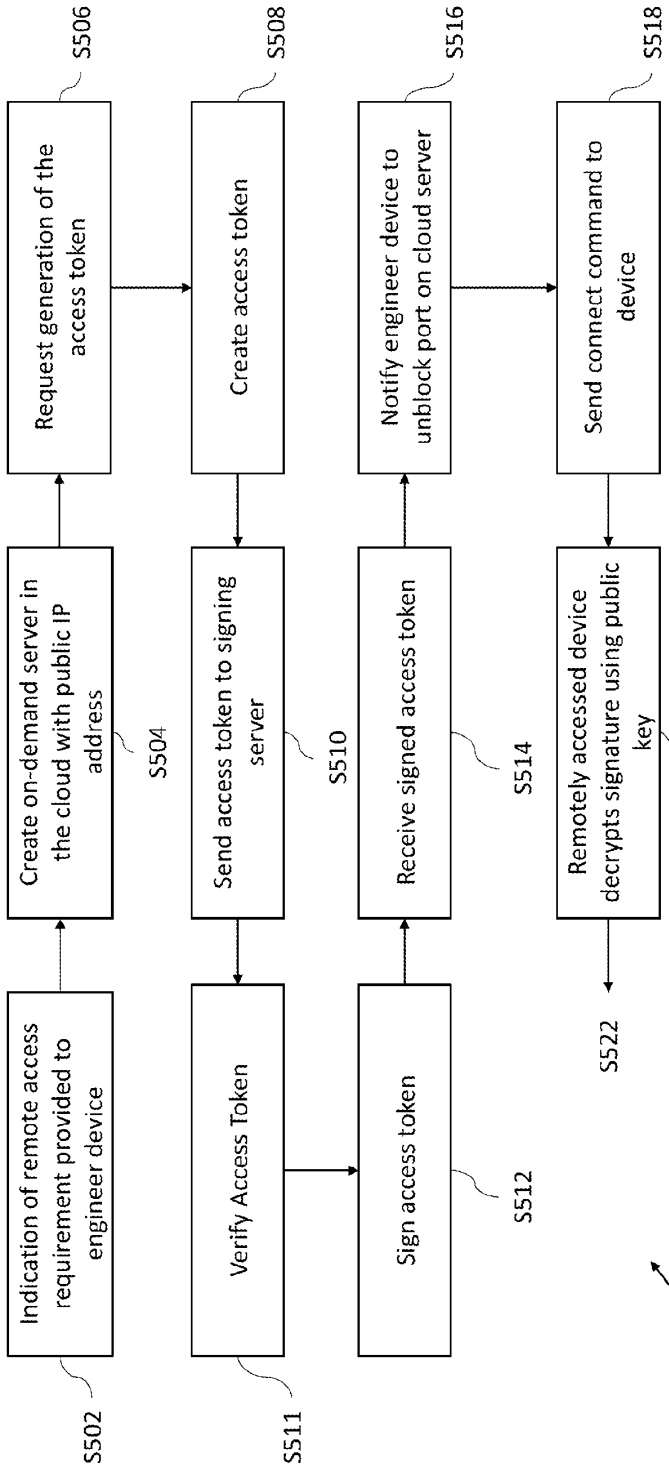

Indication of remote access requirement provided to engineer device
S502
Create on-demand server in the cloud with public IP address
S504
Request generation of the access token
S506
Verify Access Token
S511
Create access token
S508
Send access token to signing server
S510
Sign access token
S512
Receive signed access token
S514
Notify engineer device to unblock port on cloud server
S516
Remotely accessed device decrypts signature using public key
S520
Send connect command to device
S518
S522
500

Figure 5A

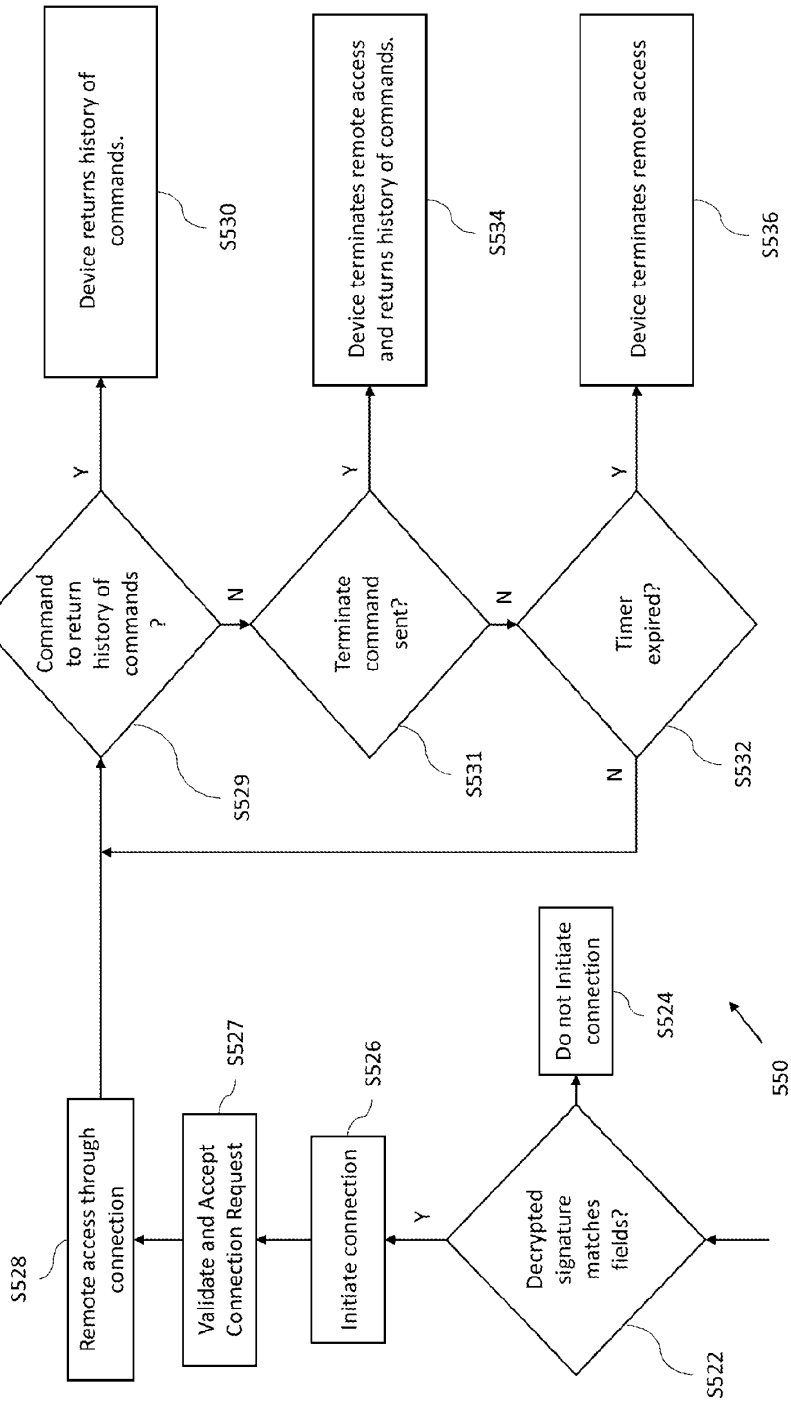

Decrypted signature matches fields?
S522
Y
Initiate connection
S526
Validate and Accept Connection Request
S527
Remote access through connection
S528
Do not Initiate connection
S524
550
Command to return history of commands ?
S529
N
Y
Device returns history of commands.
S530
Terminate command sent?
S531
N
Y
Device terminates remote access and returns history of commands.
S534
Timer expired?
S532
N
Y
Device terminates remote access
S536

Figure 5B

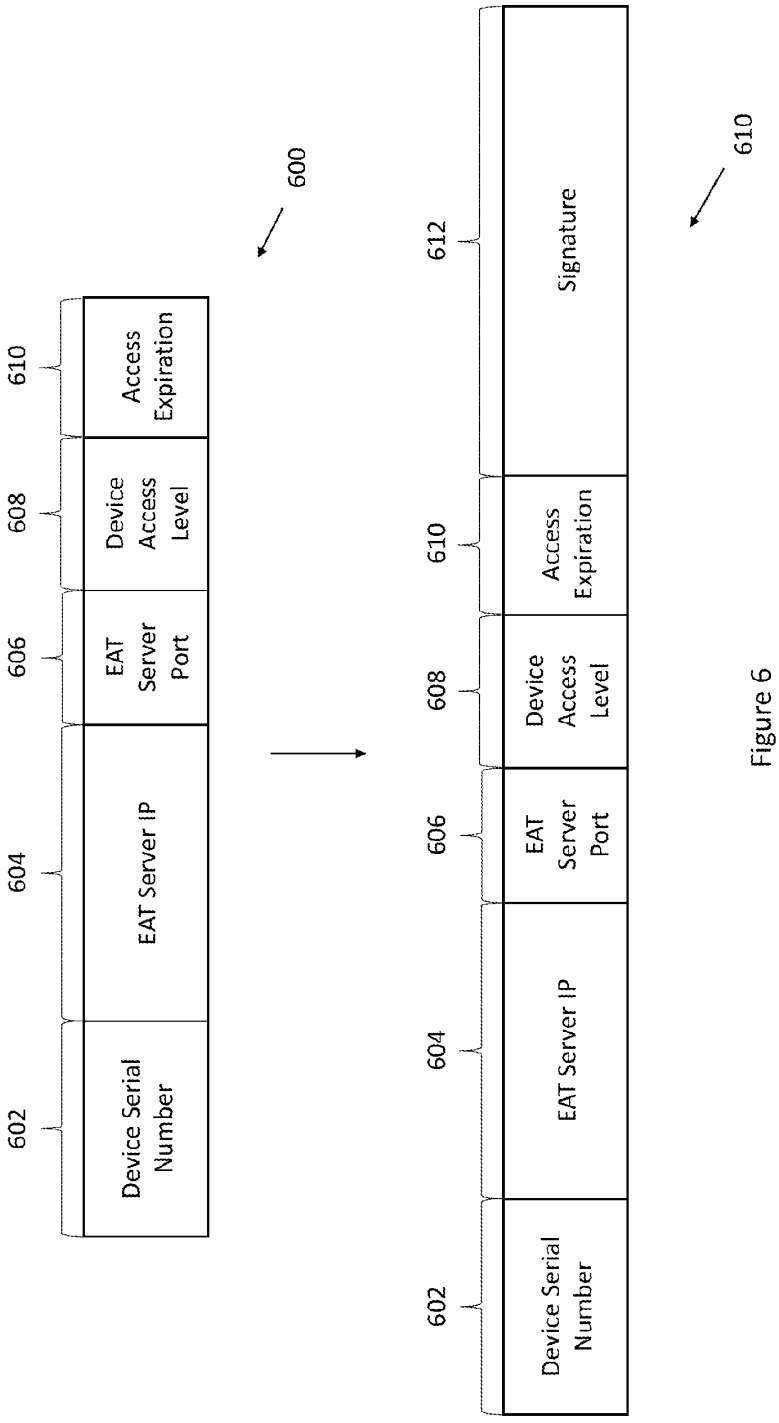

600
602
Device Serial Number
604
EAT Server IP
606
EAT Server Port
608
Device Access Level
610
Access Expiration
610
612
Signature

Figure 6

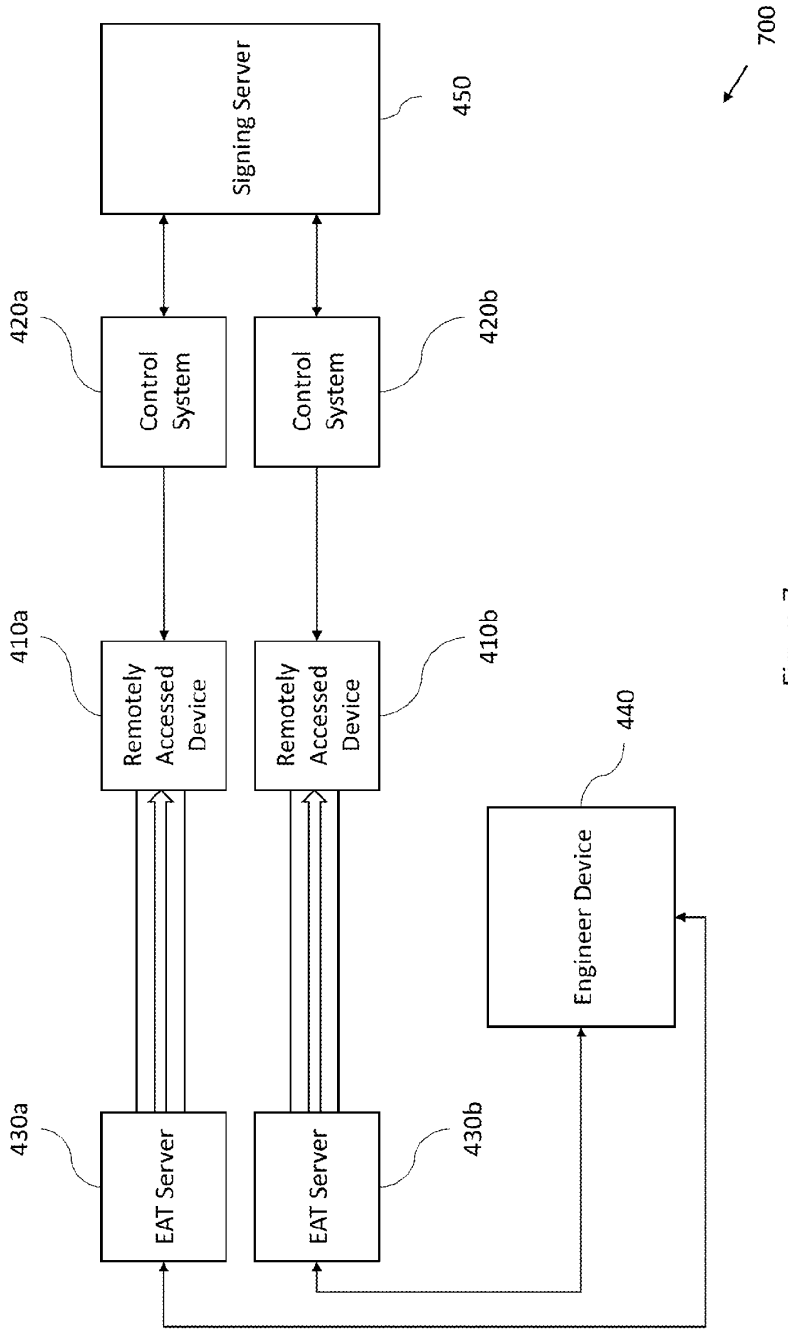

700
Signing Server
450
420a
Control System
Control System
420b
410a
Remotely Accessed Device
Remotely Accessed Device
410b
440
Engineer Device
430a
EAT Server
EAT Server
430b

Figure 7