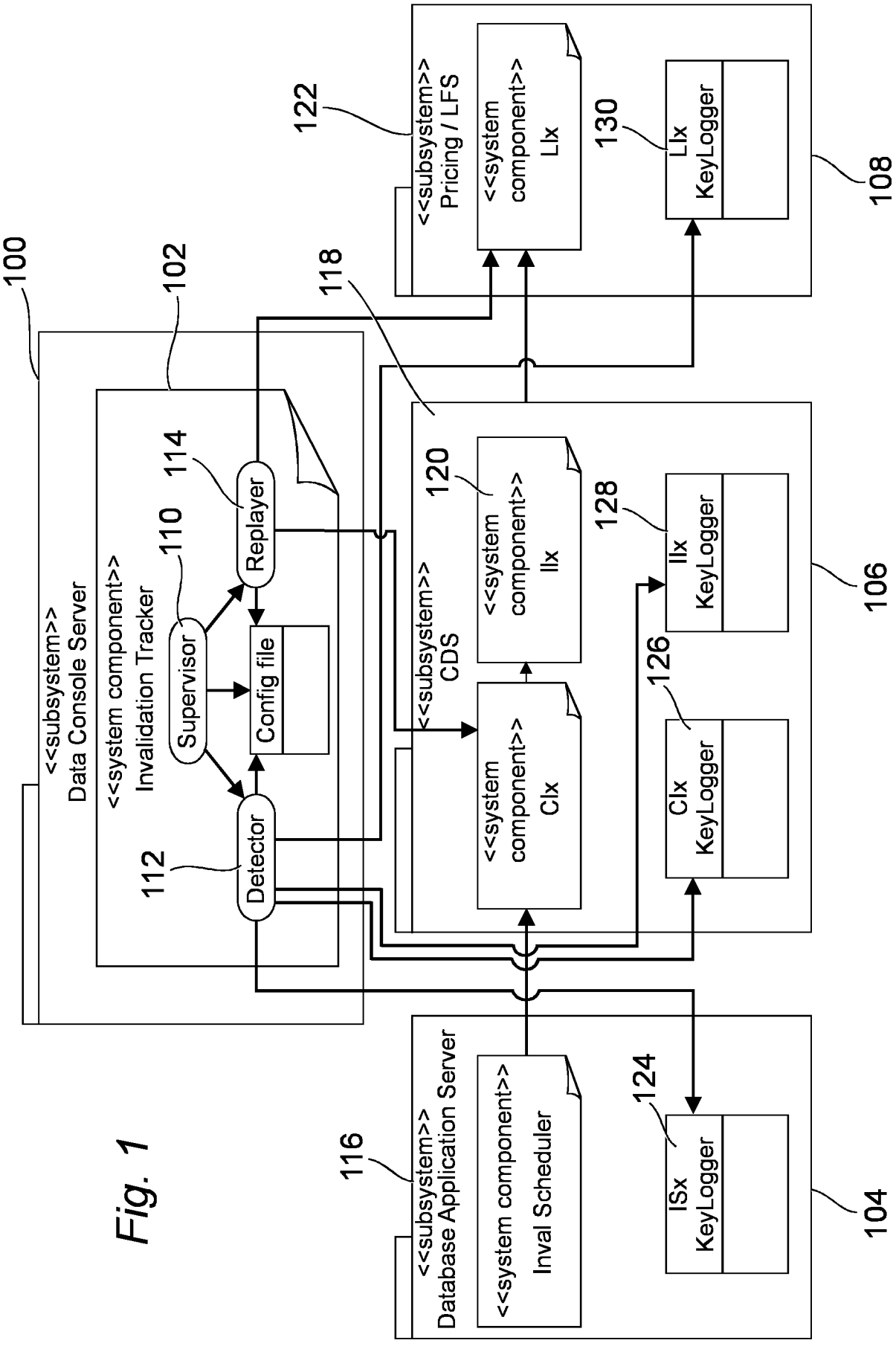

100
102
118
122
130
108
114
110
120
128
106
112
126
116
124
104
<<subsystem>>
Data Console Server
<<system component>>
Invalidation Tracker
Supervisor
Replayer
Detector
Config file
<<subsystem>>
Pricing / LFS
<<system component>>
Llx
Llx KeyLogger
<<subsystem>>
CDS
<<system component>>
Ilx
Ilx KeyLogger
<<system component>>
Clx
Clx KeyLogger
<<subsystem>>
Database Application Server
<<system component>>
Inval Scheduler
ISx KeyLogger

Fig. 1

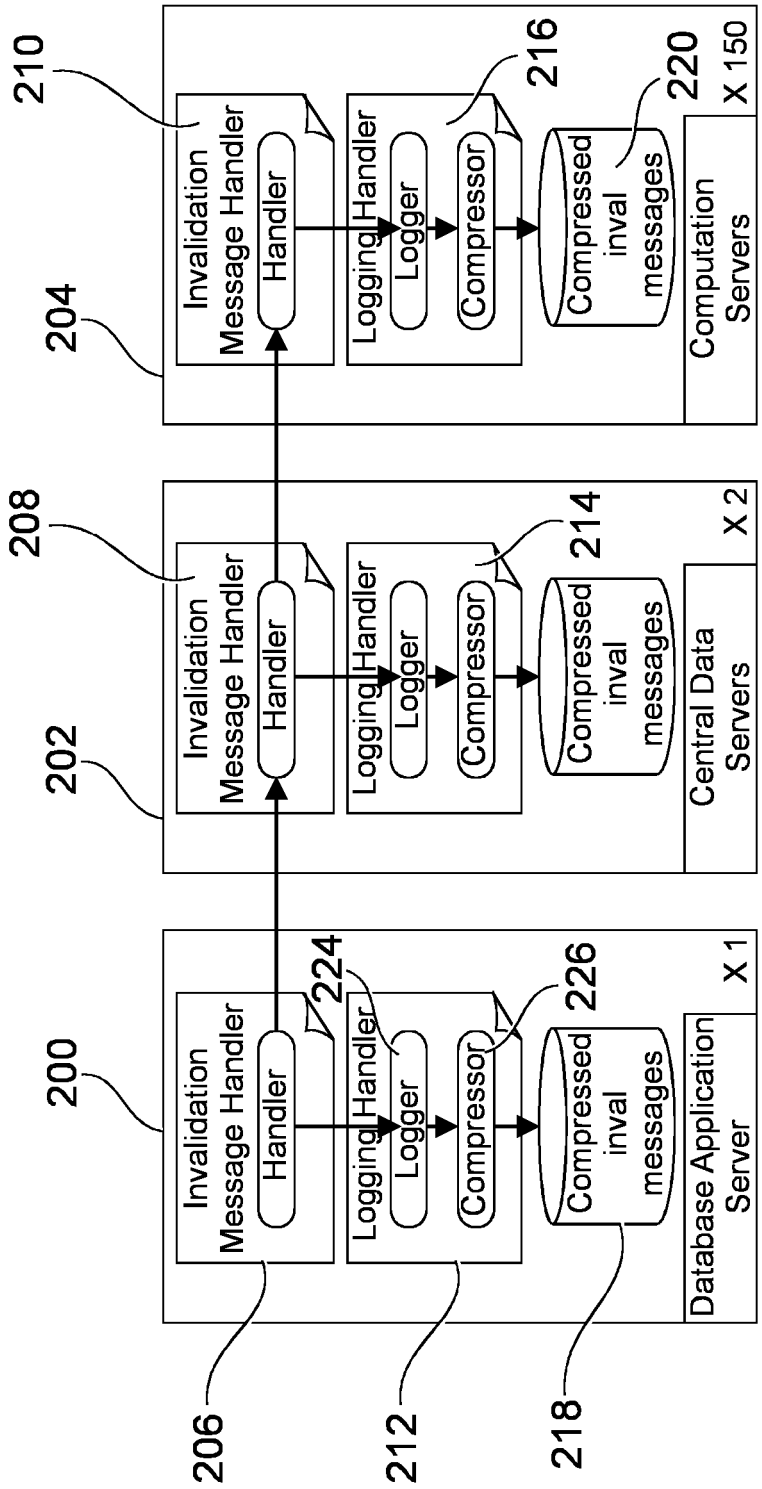

210
204
208
202
200
206
212
218
216
220
214
224
226
Invalidation Message Handler
Handler
Logging Handler
Logger
Compressor
Compressed inval messages
Computation Servers
X 150
Central Data Servers
X 2
Database Application Server
X 1

Fig. 2

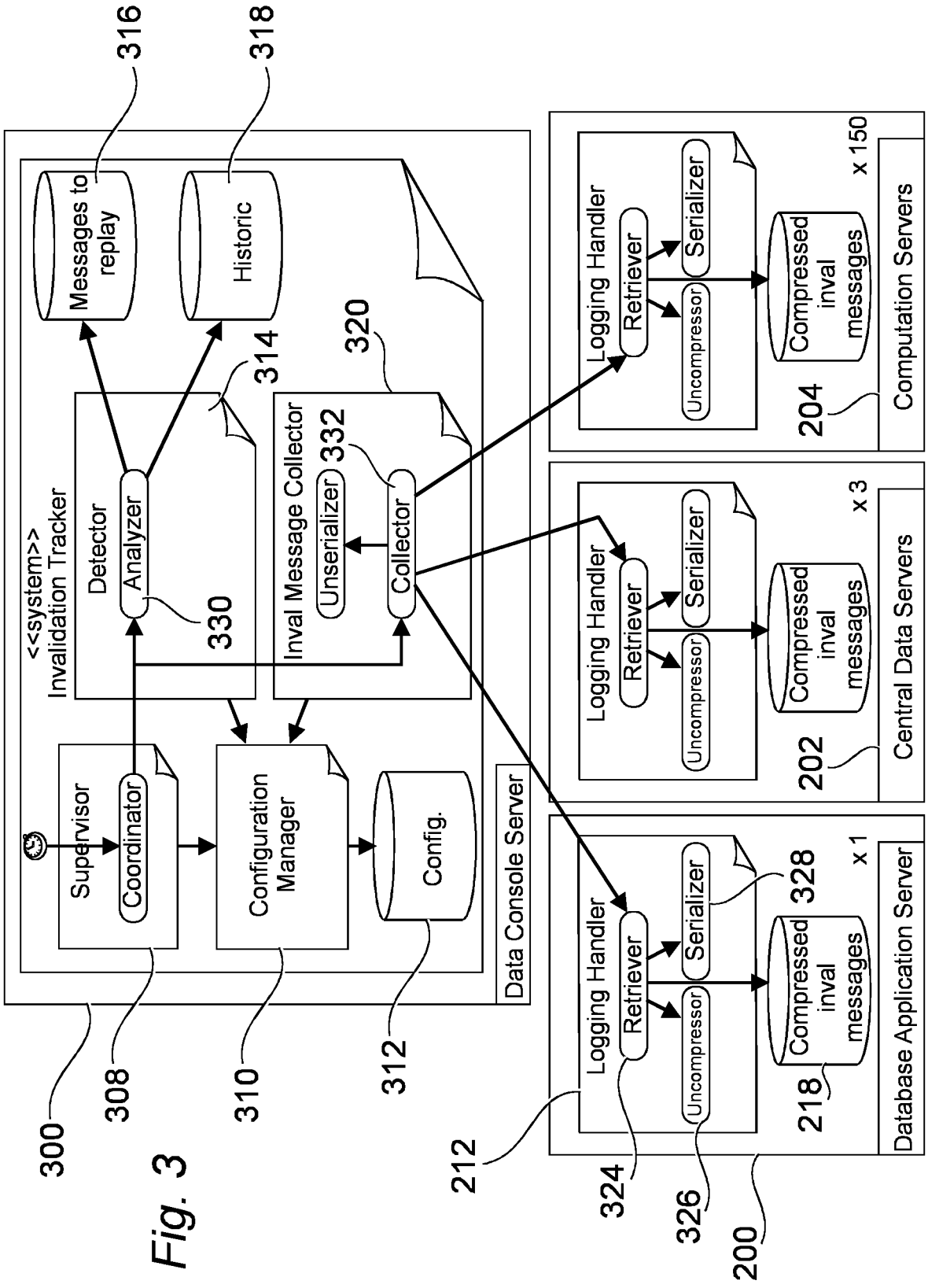

316
318
Messages to replay
Historic
<<system>>
Invalidation Tracker
Detector
Analyzer
330
314
320
Inval Message Collector
Unserializer
332
Collector
Supervisor
Coordinator
Configuration Manager
Config.
Data Console Server
300
308
310
312
212
Logging Handler
Retriever
Uncompressor
Serializer
Compressed inval messages
328
218
x 1
Database Application Server
324
326
200
Logging Handler
Retriever
Uncompressor
Serializer
Compressed inval messages
202
x 3
Central Data Servers
Logging Handler
Retriever
Uncompressor
Serializer
Compressed inval messages
204
x 150
Computation Servers

Fig. 3

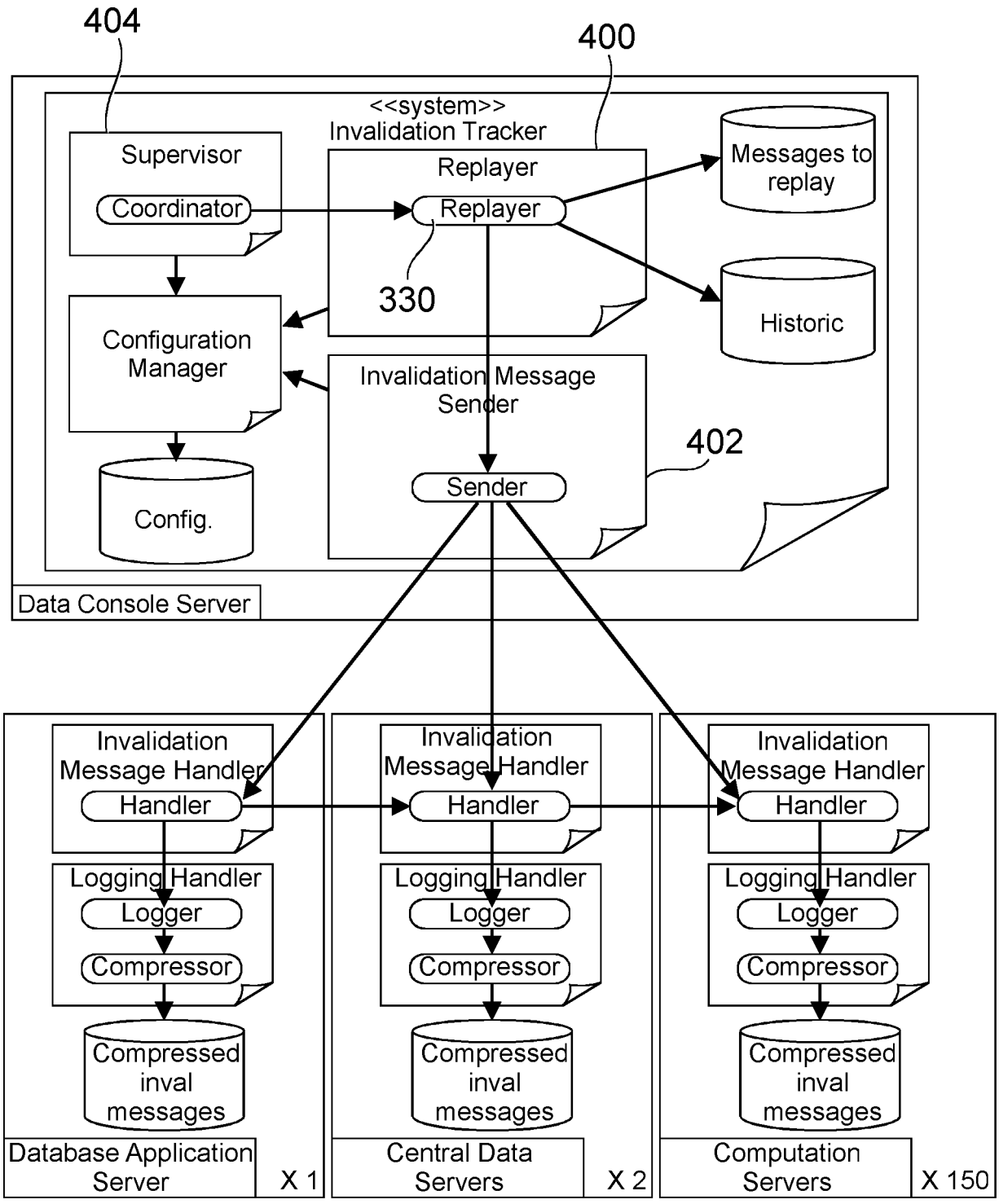

404
400
<<system>>
Invalidation Tracker
Supervisor
Coordinator
Replayer
Replayer
330
Messages to replay
Historic
Configuration Manager
Invalidation Message Sender
Sender
402
Config.
Data Console Server
Invalidation Message Handler
Handler
Logging Handler
Logger
Compressor
Compressed inval messages
Database Application Server
X 1
Central Data Servers
X 2
Computation Servers
X 150

Fig. 4

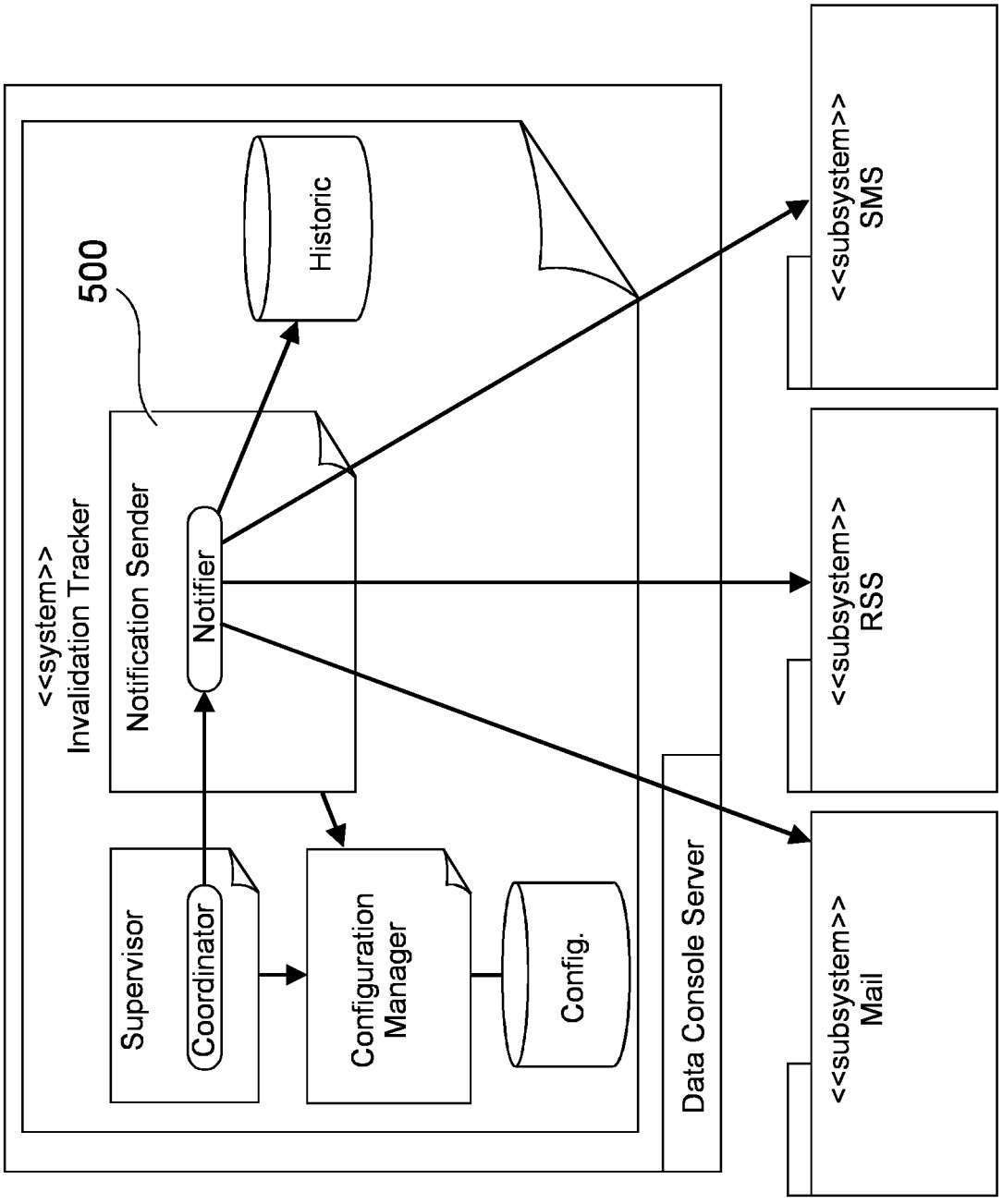

500
<<system>>
Invalidation Tracker
Notification Sender
Notifier
Historic
Supervisor
Coordinator
Configuration Manager
Config.
Data Console Server
<<subsystem>>
SMS
<<subsystem>>
RSS
<<subsystem>>
Mail

Fig. 5

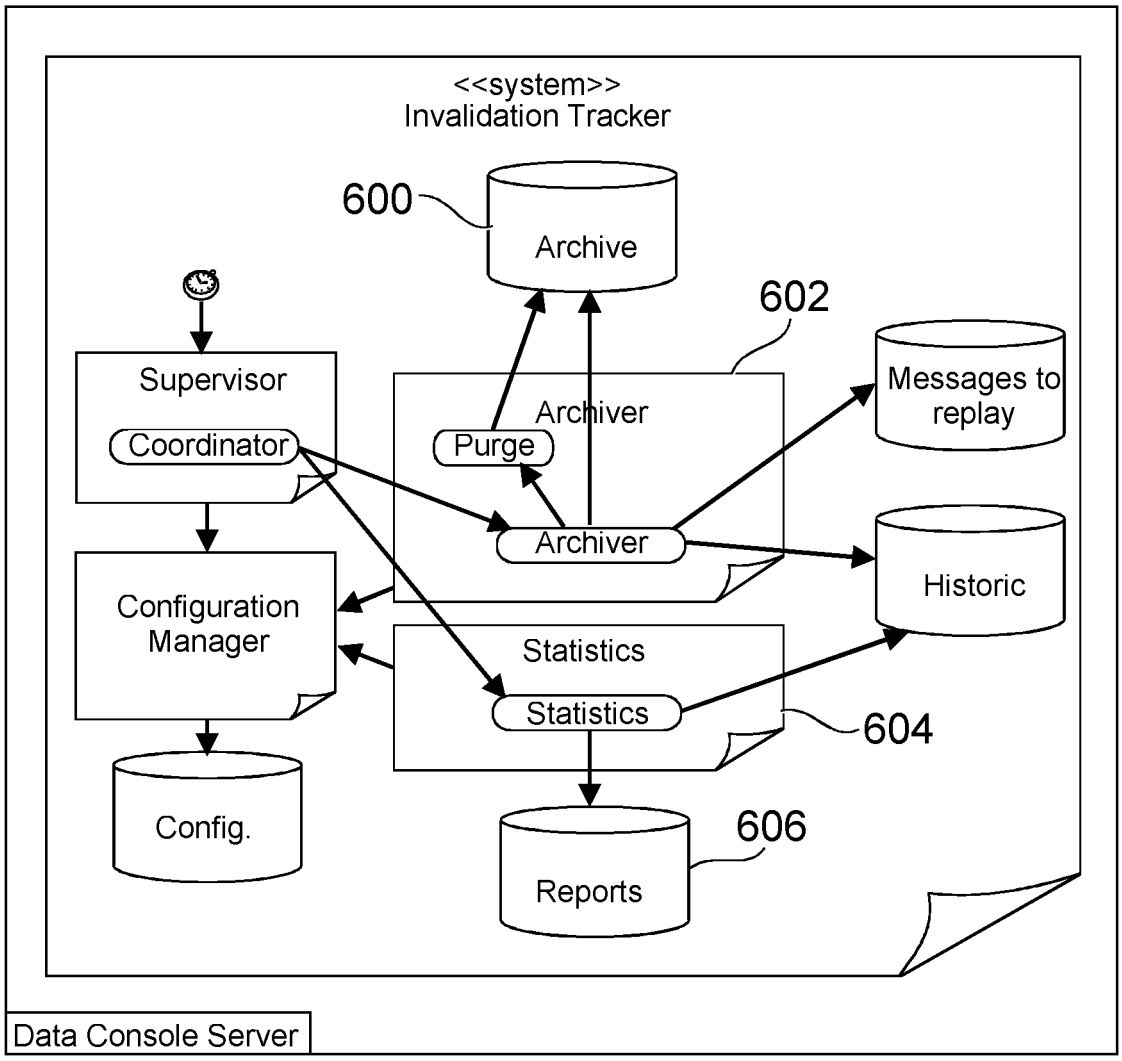

<<system>>
Invalidation Tracker
600
Archive
602
Supervisor
Coordinator
Archiver
Purge
Archiver
Messages to replay
Historic
Configuration Manager
Statistics
Statistics
604
Config.
606
Reports
Data Console Server

Fig. 6

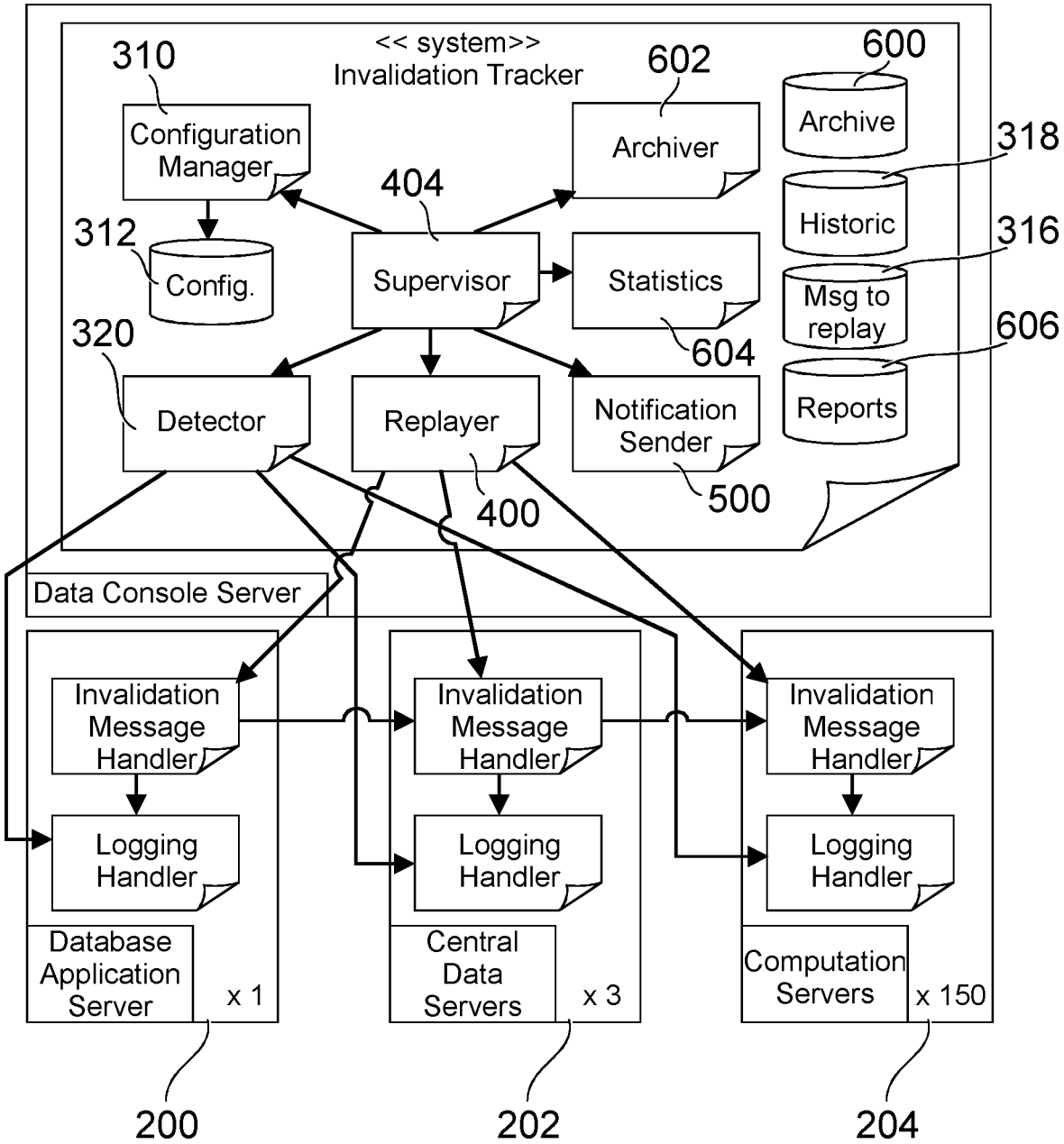

310
<< system>>
Invalidation Tracker
602
600
Configuration Manager
Archiver
Archive
318
404
Historic
312
316
Config.
Supervisor
Statistics
Msg to replay
320
606
604
Detector
Replayer
Notification Sender
Reports
500
400
Data Console Server
Invalidation Message Handler
Invalidation Message Handler
Invalidation Message Handler
Logging Handler
Logging Handler
Logging Handler
Database Application Server
x 1
Central Data Servers
x 3
Computation Servers
x 150
200
202
204

Fig. 7

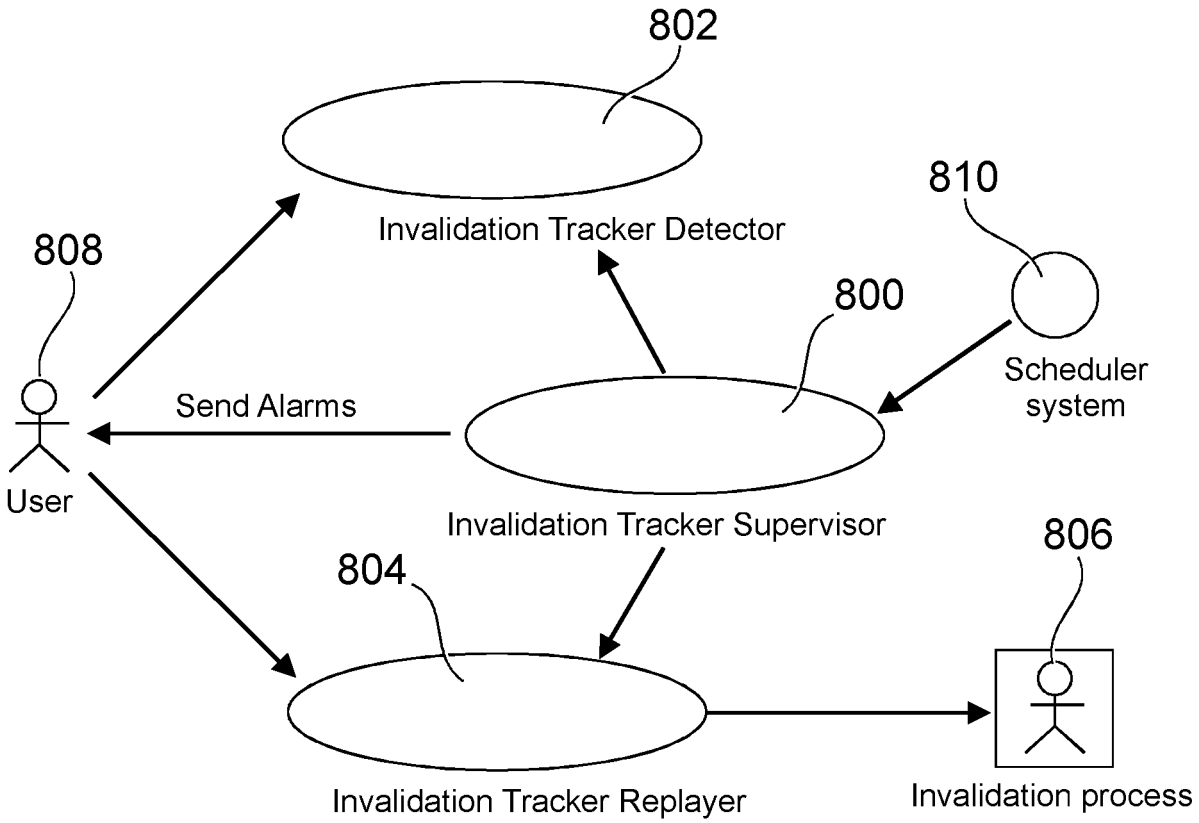

802
Invalidation Tracker Detector
810
808
800
Scheduler system
Send Alarms
User
Invalidation Tracker Supervisor
806
804
Invalidation Tracker Replayer
Invalidation process

Fig. 8

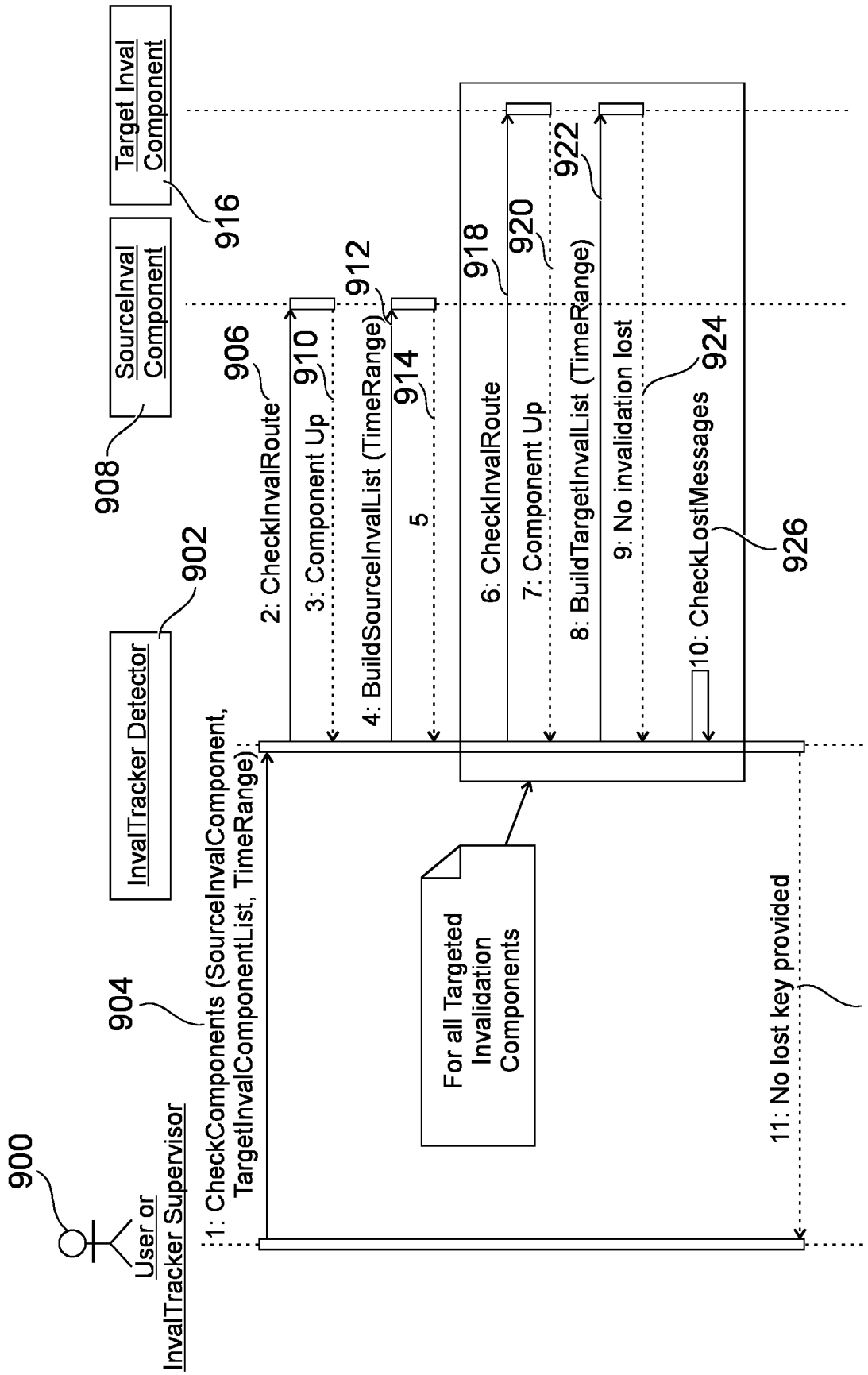

900
User or
InvalTracker Supervisor
904
1: CheckComponents (SourceInvalComponent, TargetInvalComponentList, TimeRange)
InvalTracker Detector
902
908
SourceInval Component
916
Target Inval Component
906
2: CheckInvalRoute
910
3: Component Up
912
4: BuildSourceInvalList (TimeRange)
914
5
For all Targeted Invalidation Components
918
6: CheckInvalRoute
920
7: Component Up
922
8: BuildTargetInvalList (TimeRange)
924
9: No invalidation lost
926
10: CheckLostMessages
928
11: No lost key provided

Fig. 9

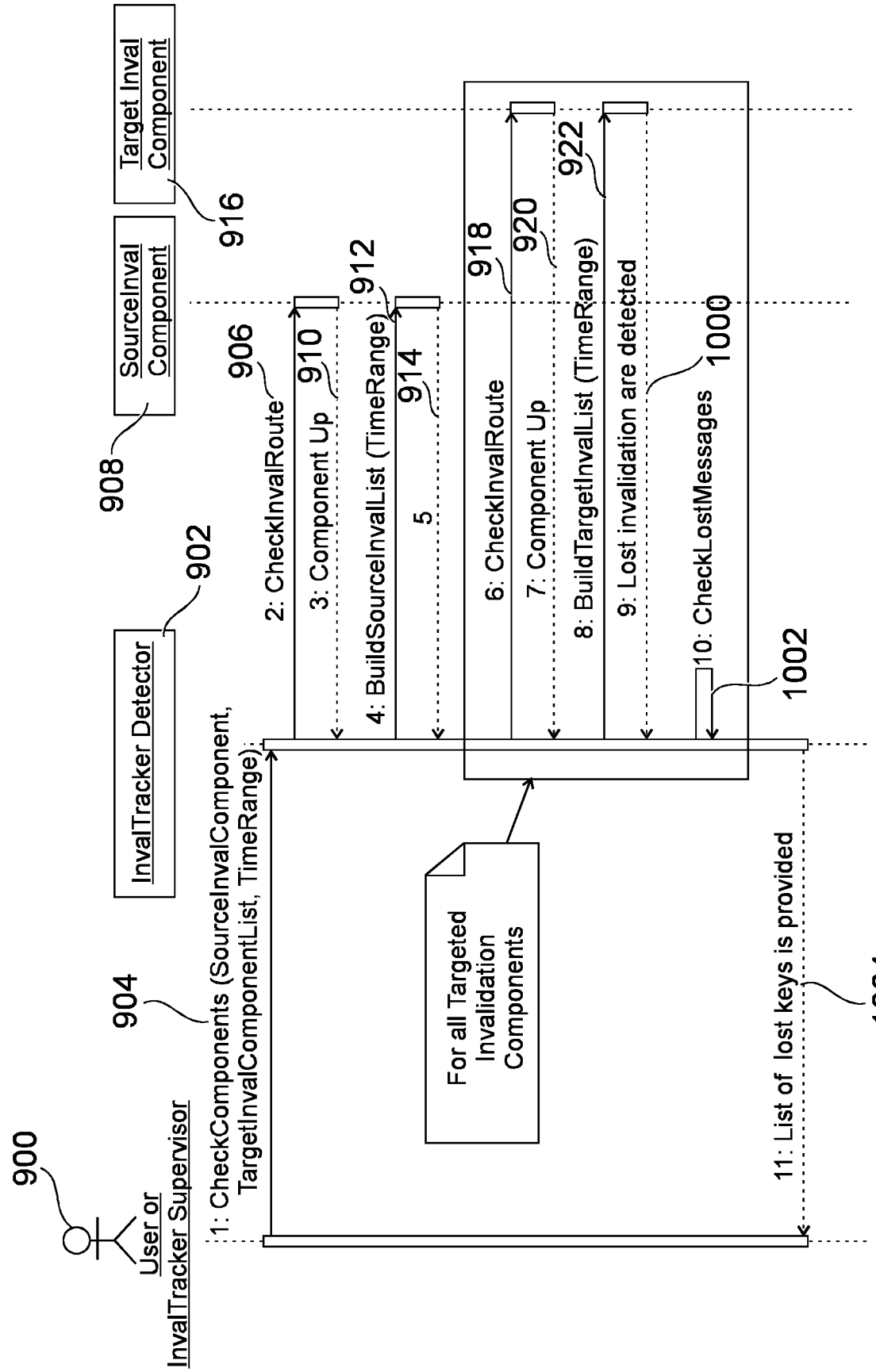

900
User or
InvalTracker Supervisor
904
1: CheckComponents (SourceInvalComponent, TargetInvalComponentList, TimeRange);
InvalTracker Detector
902
SourceInval Component
908
Target Inval Component
916
906
2: CheckInvalRoute
3: Component Up
910
912
4: BuildSourceInvalList (TimeRange)
914
5
For all Targeted Invalidation Components
6: CheckInvalRoute
918
7: Component Up
920
8: BuildTargetInvalList (TimeRange)
922
9: Lost invalidation are detected
10: CheckLostMessages
1000
1002
11: List of lost keys is provided
1004

Fig. 10

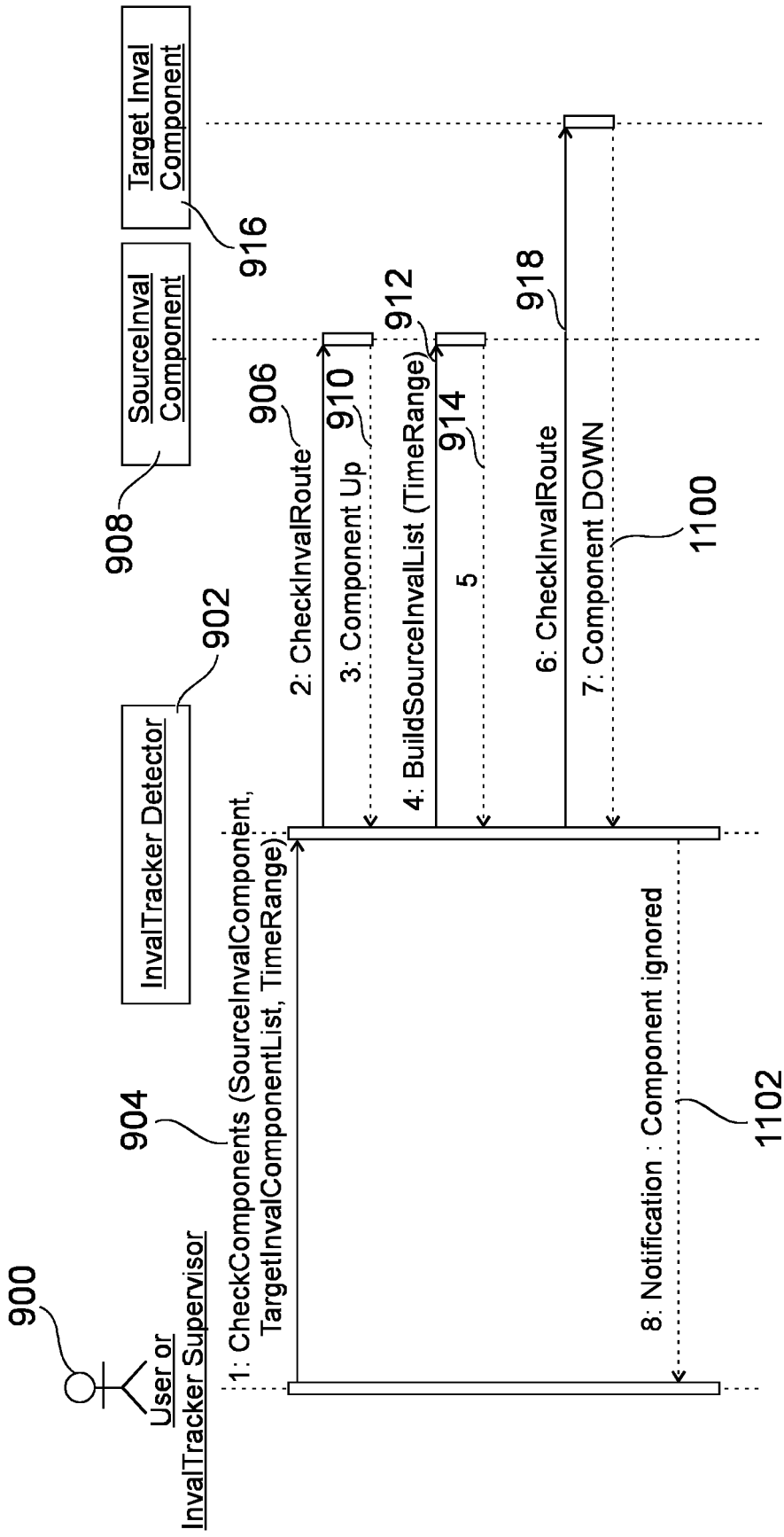

900
User or
InvalTracker Supervisor
904
1: CheckComponents (SourceInvalComponent, TargetInvalComponentList, TimeRange)
InvalTracker Detector
902
908
SourceInval Component
906
2: CheckInvalRoute
910
3: Component Up
912
4: BuildSourceInvalList (TimeRange)
914
5
916
Target Inval Component
918
6: CheckInvalRoute
1100
7: Component DOWN
1102
8: Notification : Component ignored

Fig. 11

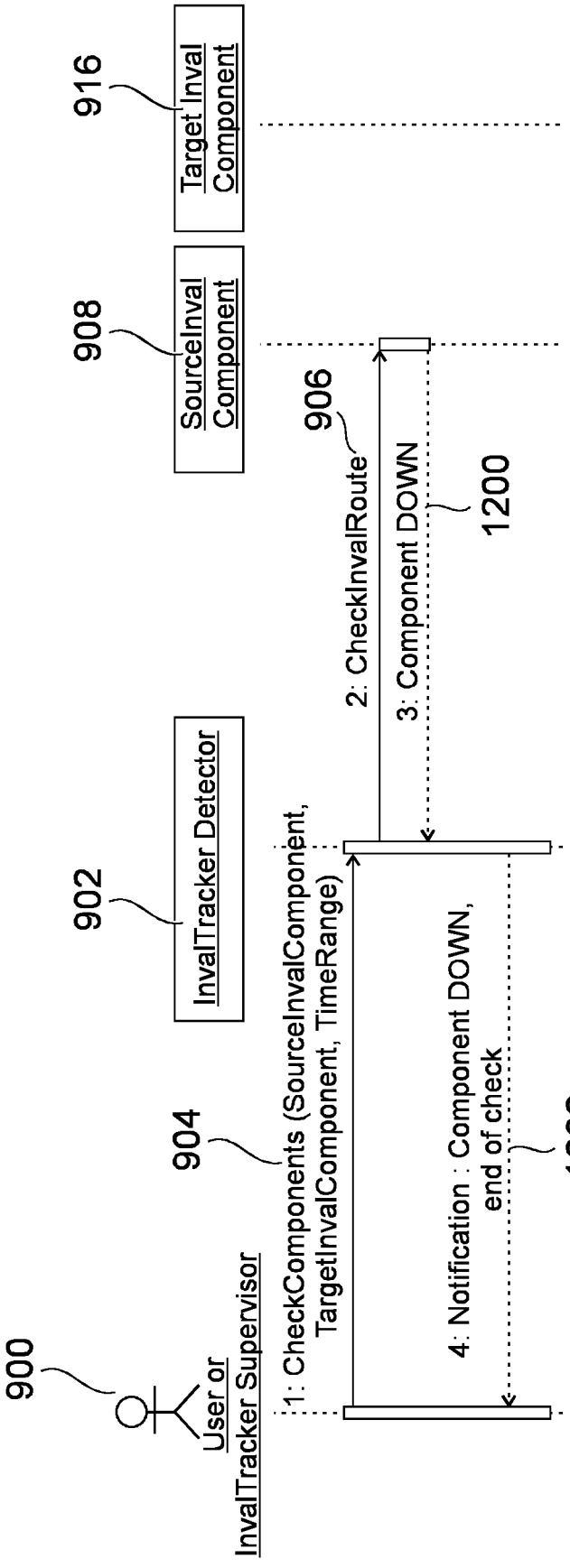

900
User or
InvalTracker Supervisor
902
InvalTracker Detector
904
908
SourceInval Component
916
Target Inval Component
906
1: CheckComponents (SourceInvalComponent, TargetInvalComponent, TimeRange)
2: CheckInvalRoute
3: Component DOWN
1200
4: Notification : Component DOWN, end of check
1202

Fig. 12

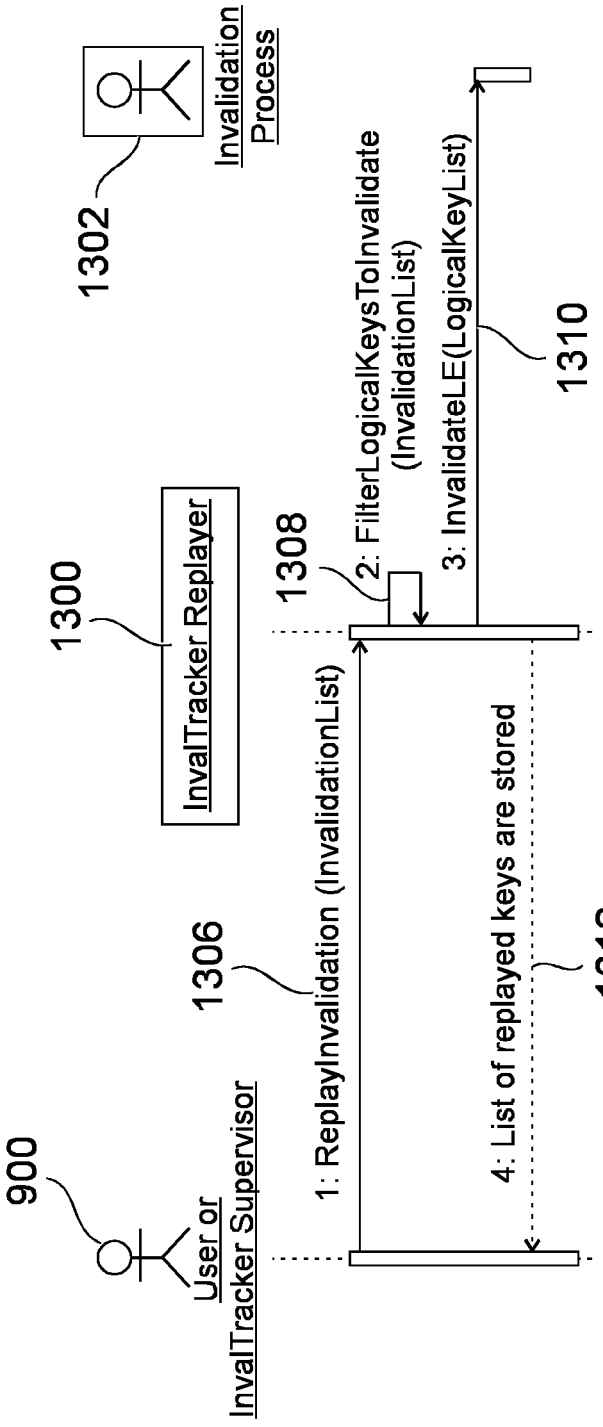

900
User or
InvalTracker Supervisor
1306
1: ReplayInvalidation (InvalidationList)
1300
InvalTracker Replayer
1308
2: FilterLogicalKeysToInvalidate
(InvalidationList)
3: InvalidateLE(LogicalKeyList)
1310
1302
Invalidation
Process
4: List of replayed keys are stored
1312

Fig. 13

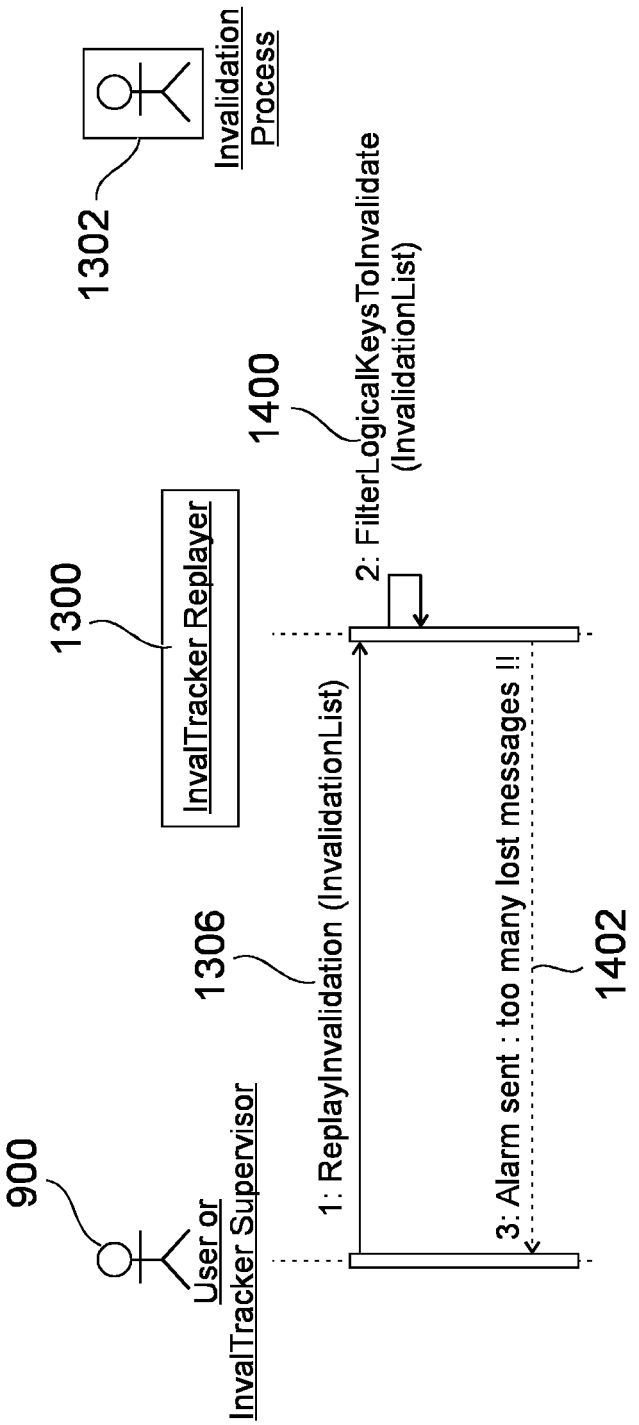

900
User or
InvalTracker Supervisor
1306
1: ReplayInvalidation (InvalidationList)
1300
InvalTracker Replayer
1400
2: FilterLogicalKeysToInvalidate
(InvalidationList)
1302
Invalidation
Process
1402
3: Alarm sent : too many lost messages !!

Fig. 14

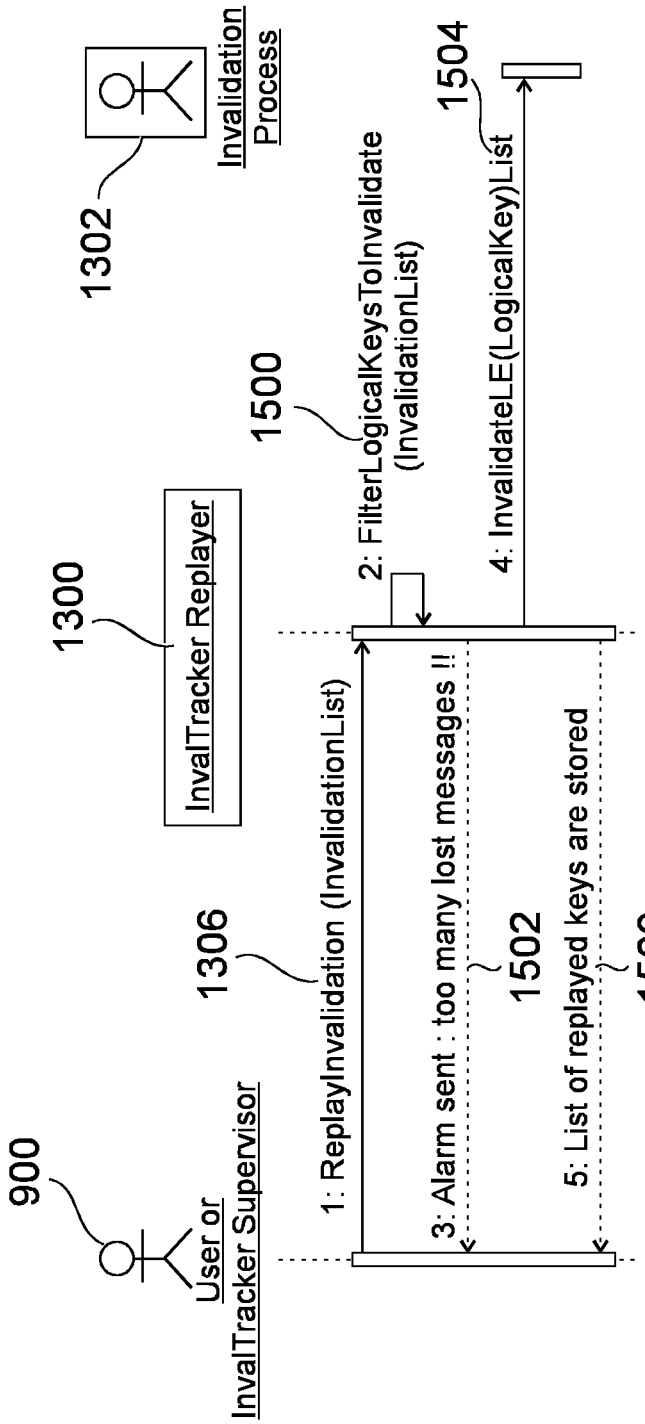

900
User or
InvalTracker Supervisor
1300
InvalTracker Replayer
1302
Invalidation
Process
1306
1: ReplayInvalidation (InvalidationList)
1500
2: FilterLogicalKeysToInvalidate
(InvalidationList)
1502
3: Alarm sent : too many lost messages !!
1504
4: InvalidateLE(LogicalKey)List
1506
5: List of replayed keys are stored

Fig. 15

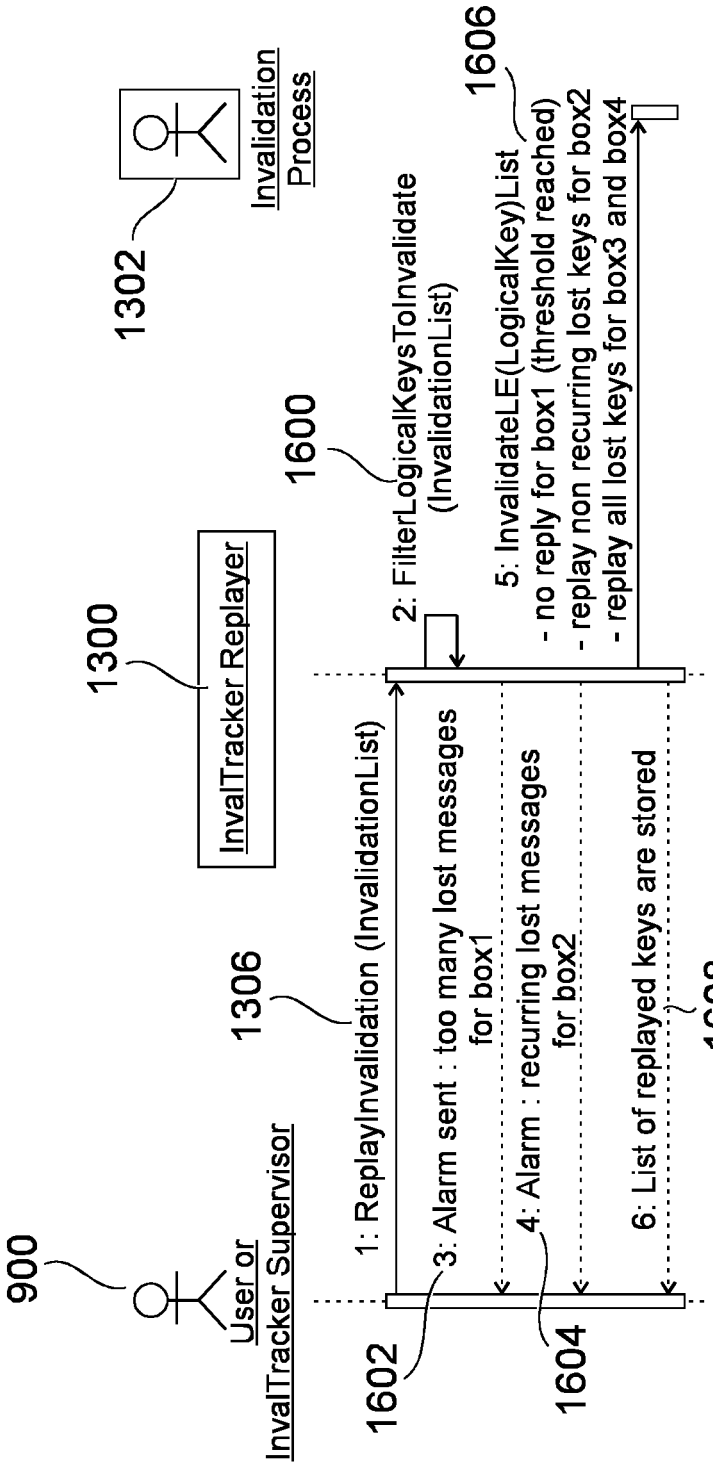

900
User or
InvalTracker Supervisor
1300
InvalTracker Replayer
1302
Invalidation
Process
1306
1: ReplayInvalidation (InvalidationList)
1600
2: FilterLogicalKeysToInvalidate
(InvalidationList)
3: Alarm sent : too many lost messages
for box1
4: Alarm : recurring lost messages
for box2
1602
1604
1606
5: InvalidateLE(LogicalKey)List
- no reply for box1 (threshold reached)
- replay non recurring lost keys for box2
- replay all lost keys for box3 and box4
6: List of replayed keys are stored
1608

Fig. 16

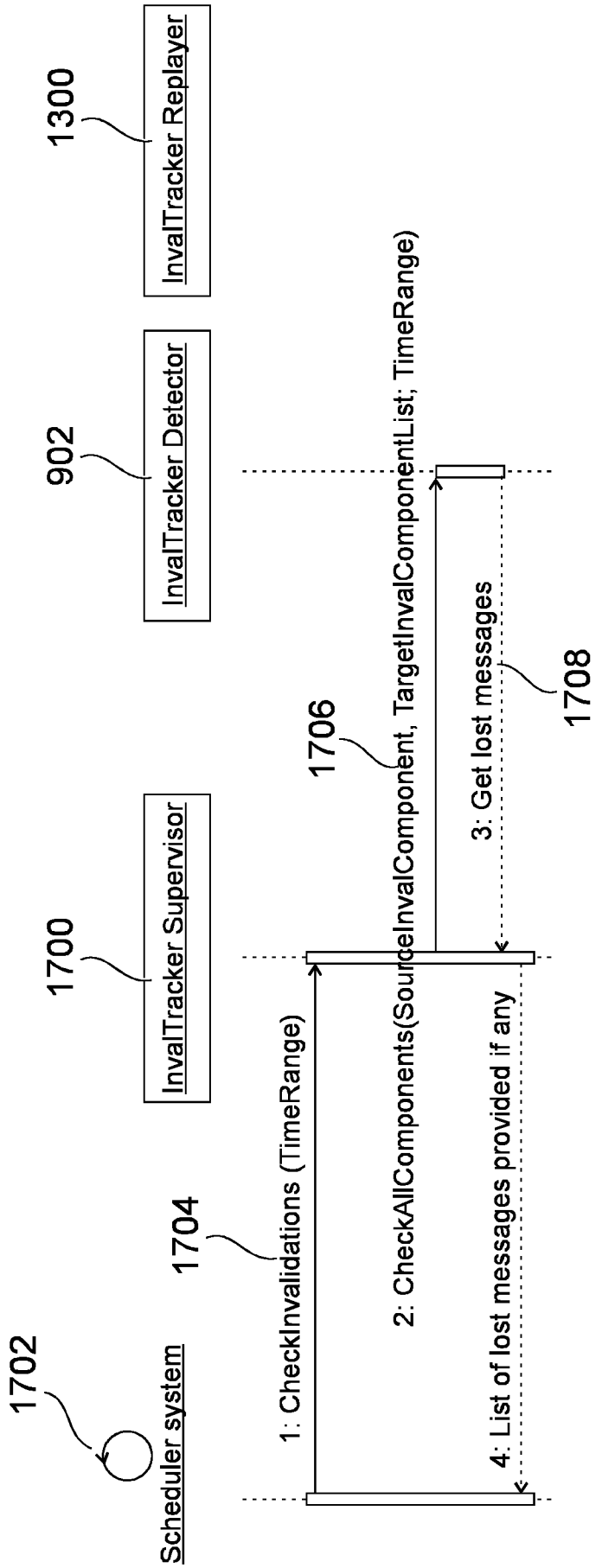

1300
InvalTracker Replayer
902
InvalTracker Detector
1700
InvalTracker Supervisor
1706
1708
1704
1702
Scheduler system
1: CheckInvalidations (TimeRange)
2: CheckAllComponents(SourceInvalComponent, TargetInvalComponentList; TimeRange)
3: Get lost messages
4: List of lost messages provided if any

Fig. 17

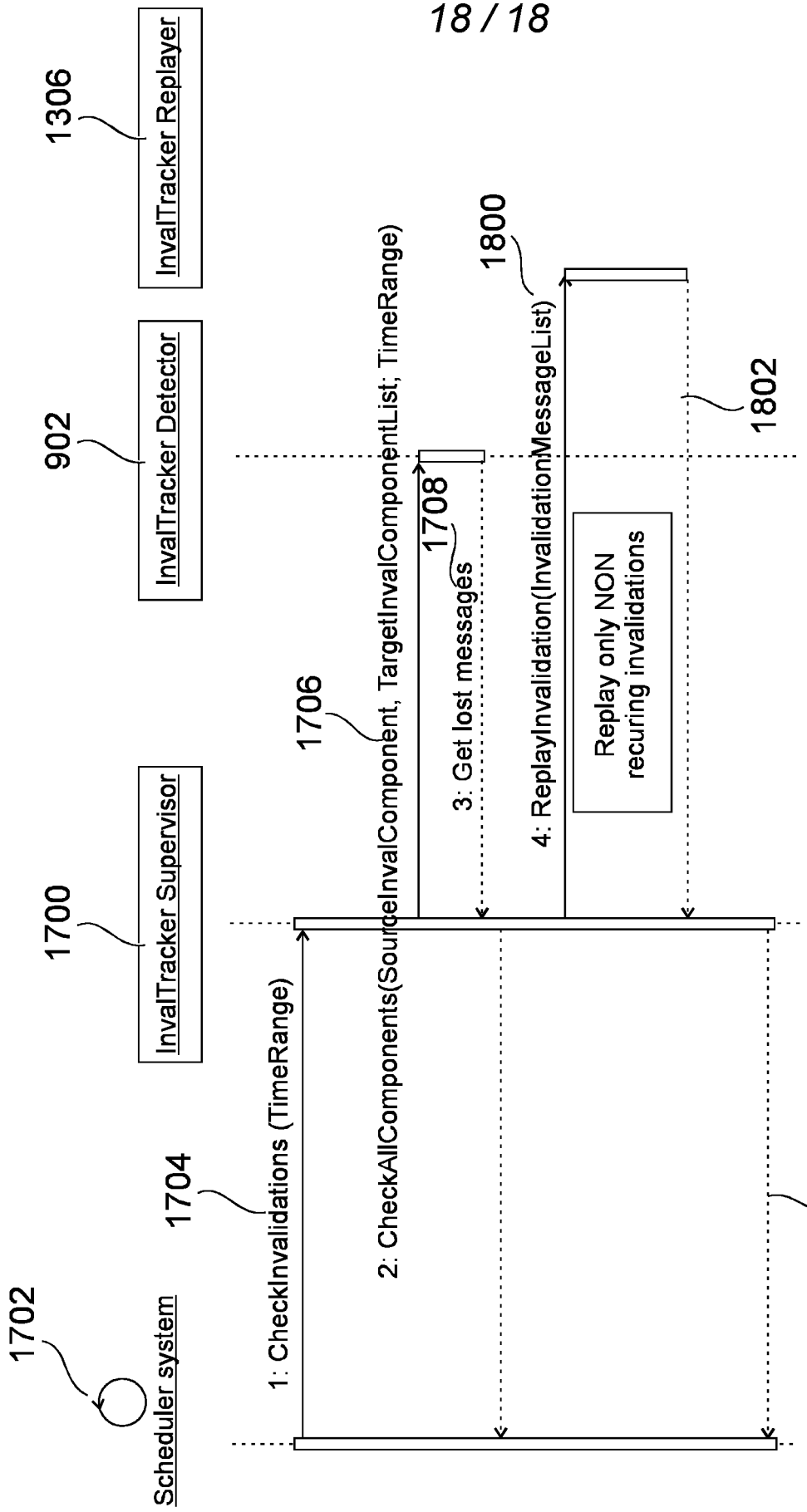

1306
InvalTracker Replayer
902
InvalTracker Detector
1700
InvalTracker Supervisor
1702
Scheduler system
1704
1: CheckInvalidations (TimeRange)
1706
2: CheckAllComponents(SourceInvalComponent, TargetInvalComponentList; TimeRange)
1708
3: Get lost messages
1800
4: ReplayInvalidation(InvalidationMessageList)
Replay only NON recuring invalidations
1802
1804

Fig. 18