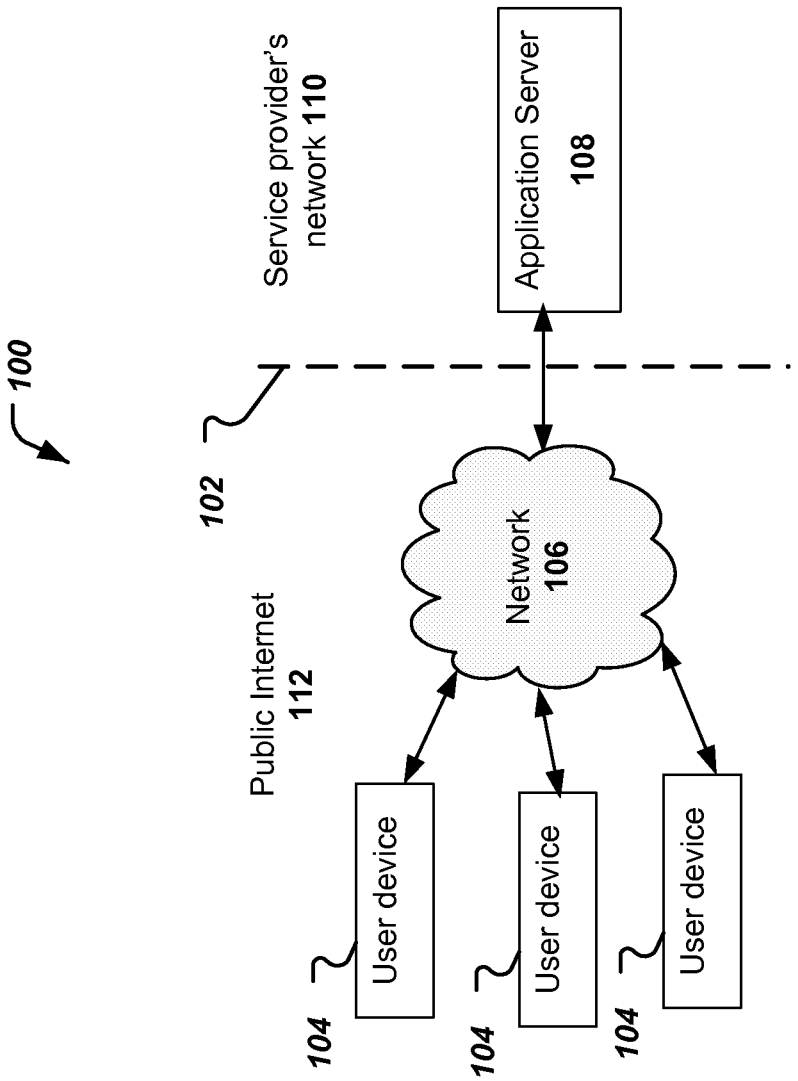

100
Service provider's network 110
Application Server 108
102
Network 106
Public Internet 112
User device
User device
User device
104
104
104

FIG. 1

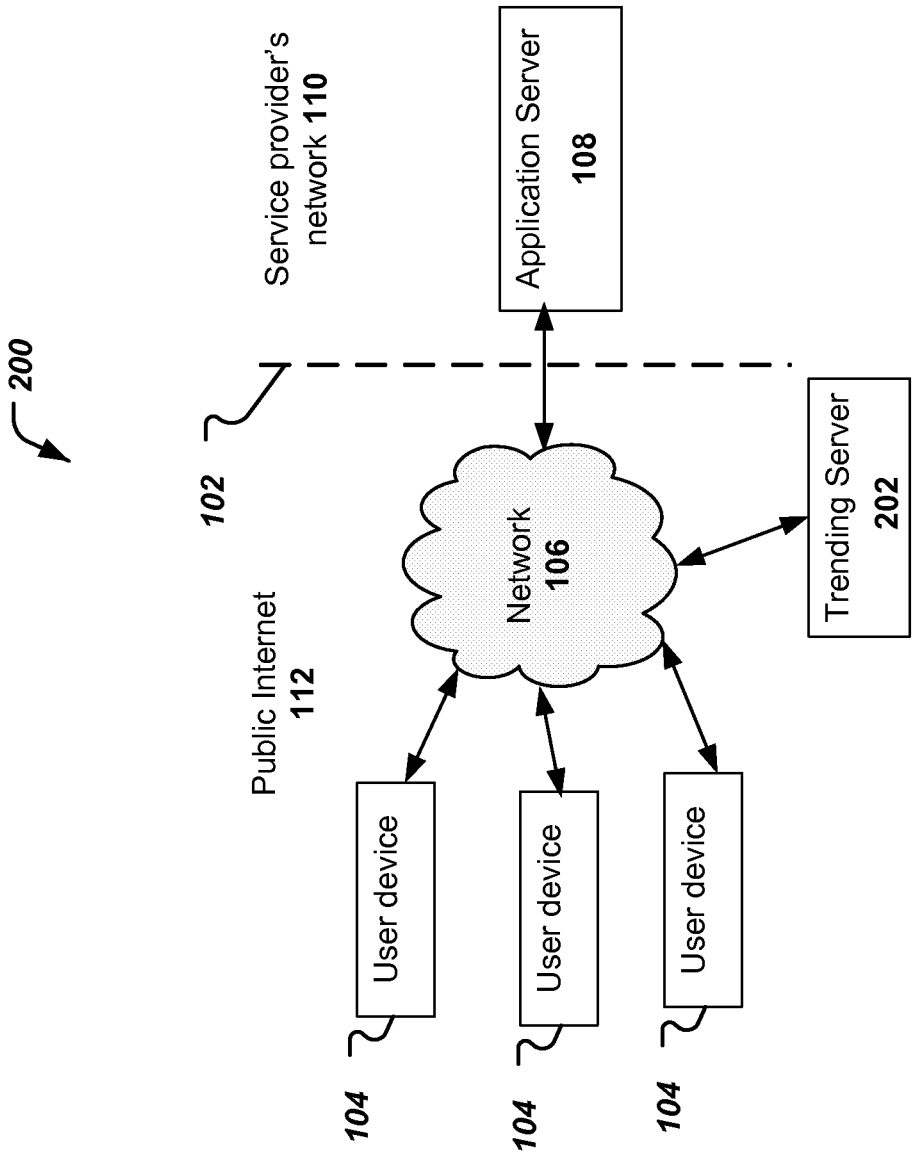

200
Service provider's network 110
Application Server 108
102
Network 106
Trending Server 202
Public Internet 112
User device
User device
User device
104
104
104

FIG. 2

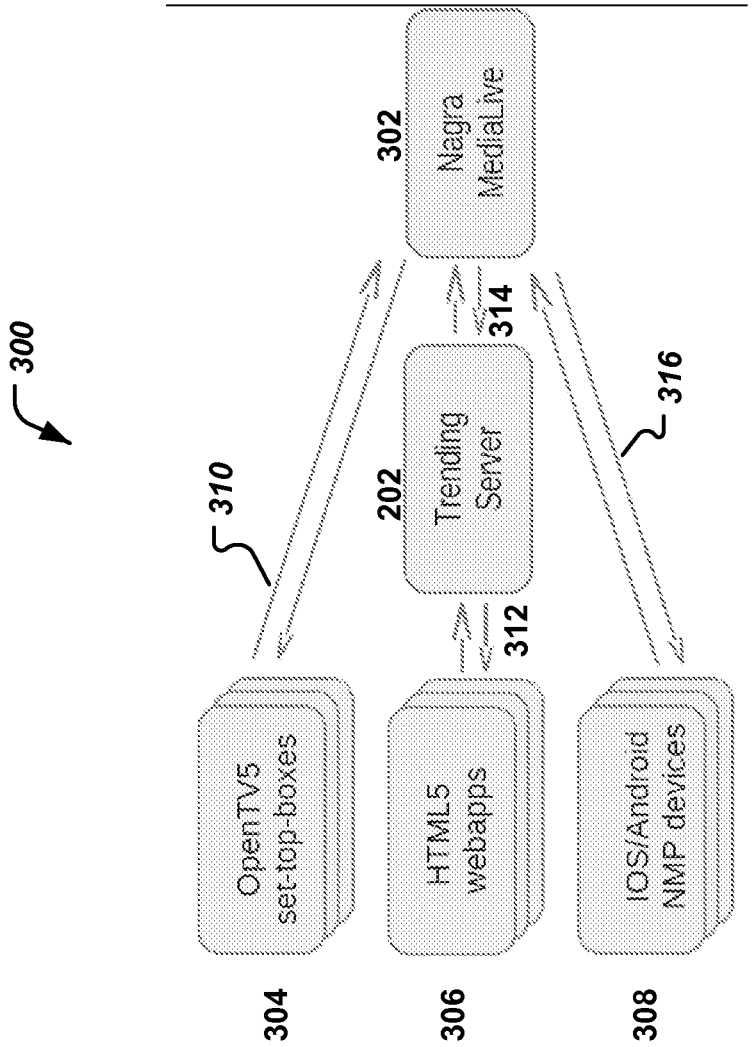

300
302
Nagra MediaLive
314
316
310
202
Trending Server
312
OpenTV5 set-top-boxes
HTML5 webapps
IOS/Android NMP devices
304
306
308

FIG. 3

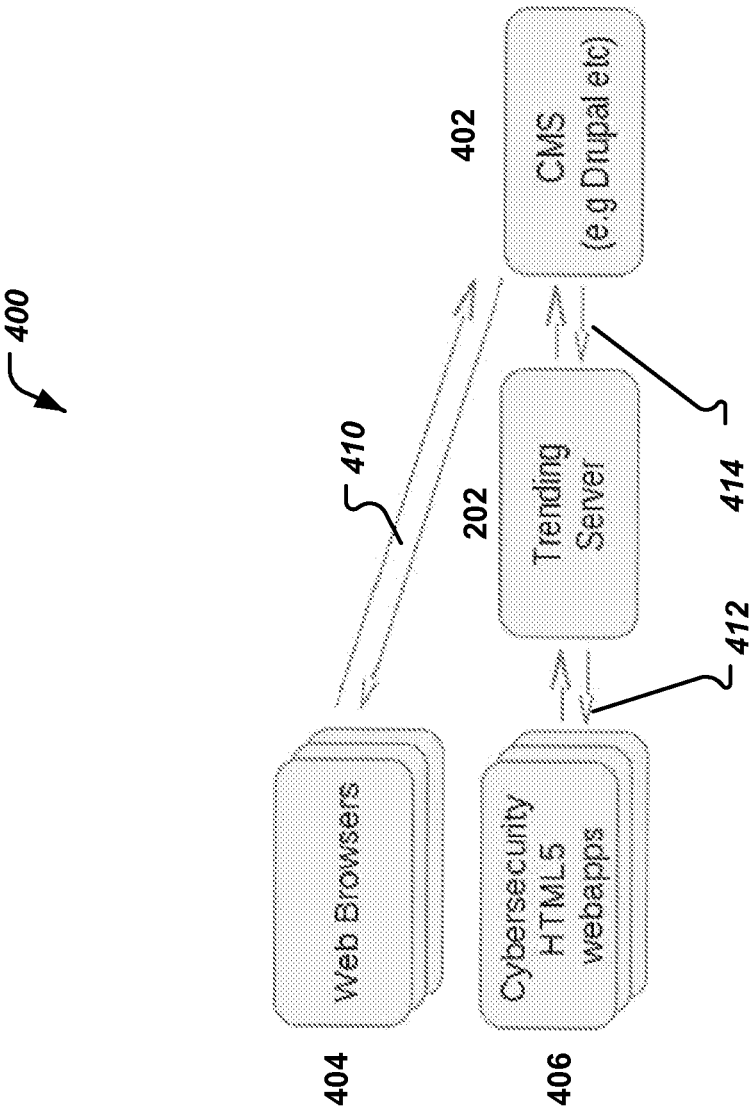

400
402
CMS
(e.g Drupal etc)
410
202
Trending
Server
414
412
Web Browsers
Cybersecurity
HTML5
webapps
404
406

FIG. 4

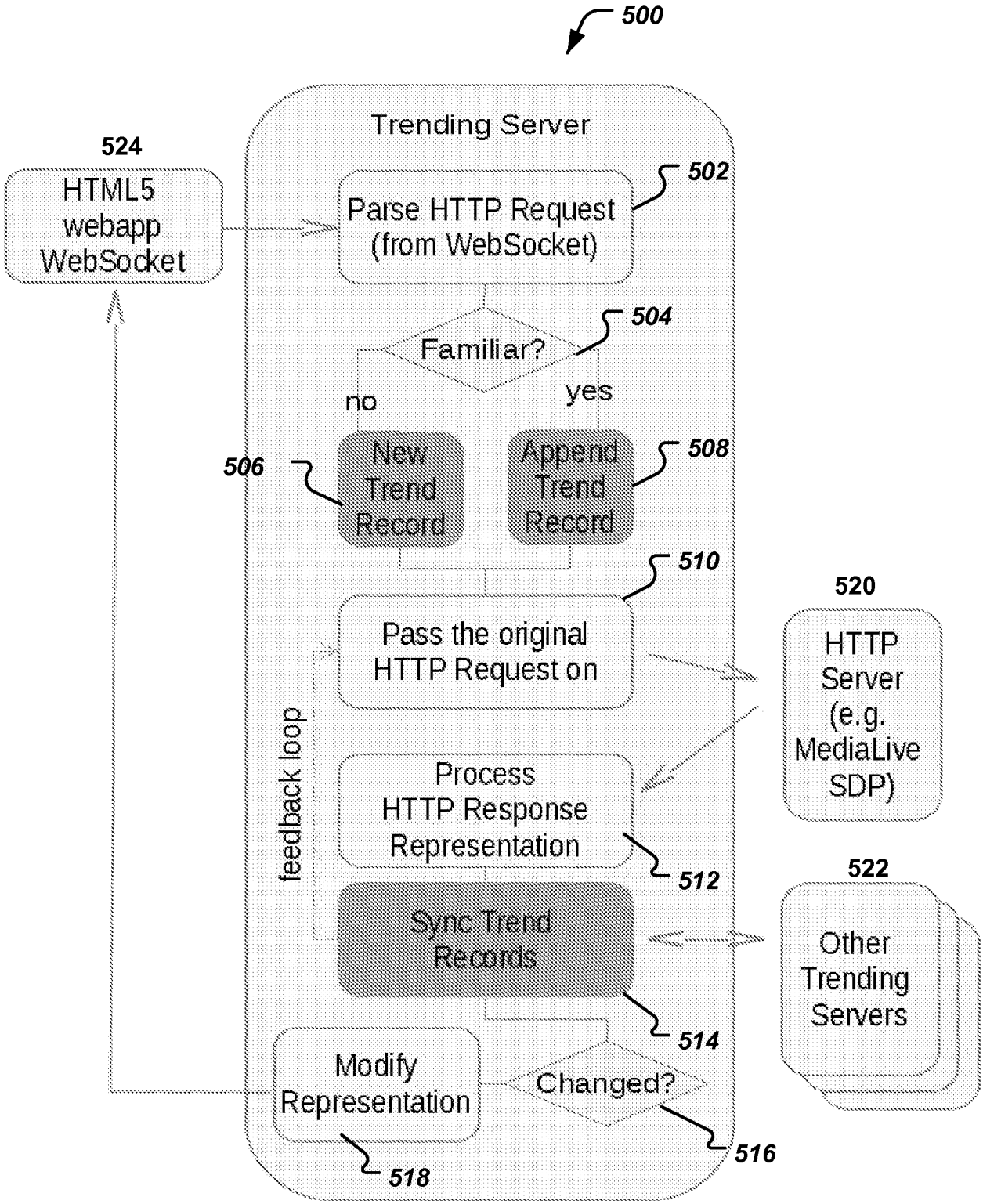

500
Trending Server
524
HTML5
webapp
WebSocket
Parse HTTP Request
(from WebSocket)
502
Familiar?
504
no
yes
New
Trend
Record
506
Append
Trend
Record
508
Pass the original
HTTP Request on
510
520
HTTP
Server
(e.g.
MediaLive
SDP)
feedback loop
Process
HTTP Response
Representation
512
522
Sync Trend
Records
Other
Trending
Servers
514
Modify
Representation
Changed?
516
518

Fig. 5

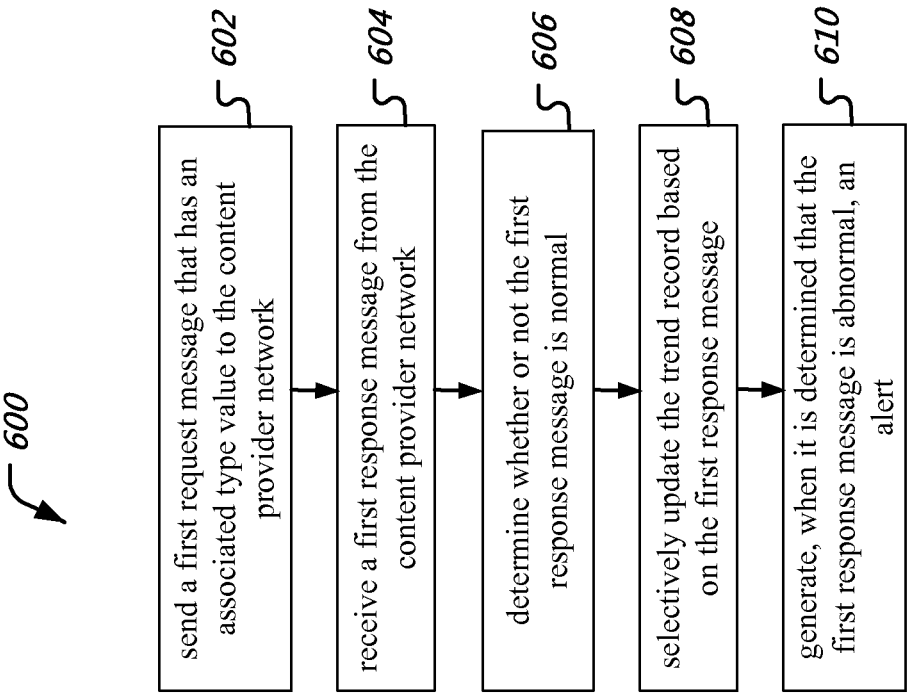

600
send a first request message that has an associated type value to the content provider network
602
receive a first response message from the content provider network
604
determine whether or not the first response message is normal
606
selectively update the trend record based on the first response message
608
generate, when it is determined that the first response message is abnormal, an alert
610

FIG. 6

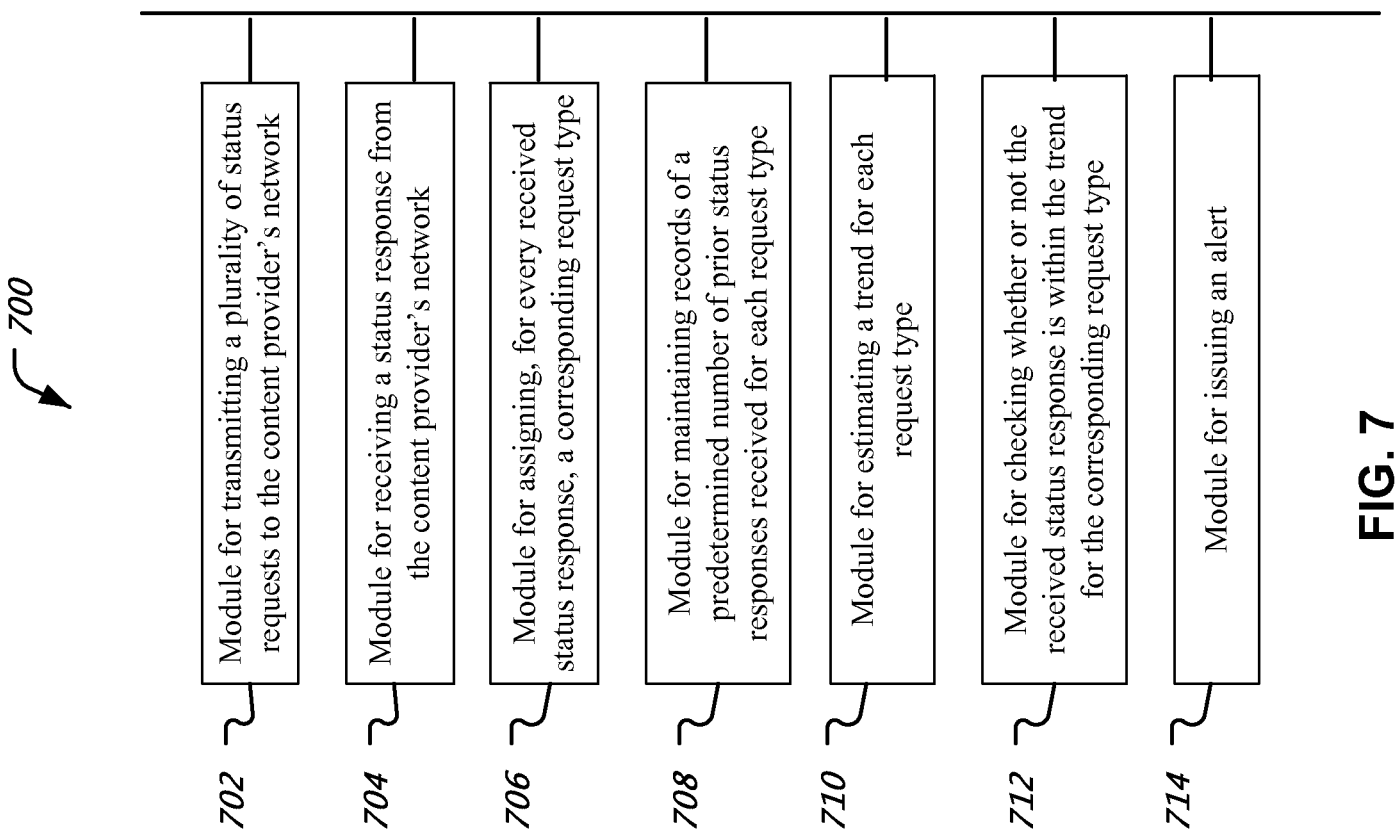

700
Module for transmitting a plurality of status requests to the content provider's network
702
Module for receiving a status response from the content provider's network
704
Module for assigning, for every received status response, a corresponding request type
706
Module for maintaining records of a predetermined number of prior status responses received for each request type
708
Module for estimating a trend for each request type
710
Module for checking whether or not the received status response is within the trend for the corresponding request type
712
Module for issuing an alert
714

FIG. 7

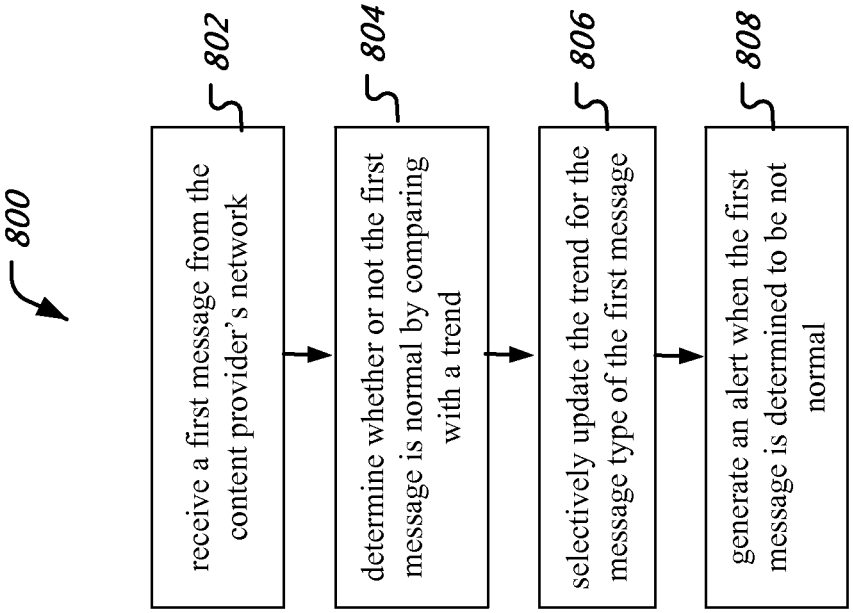

800
802
receive a first message from the content provider's network
804
determine whether or not the first message is normal by comparing with a trend
806
selectively update the trend for the message type of the first message
808
generate an alert when the first message is determined to be not normal

FIG. 8

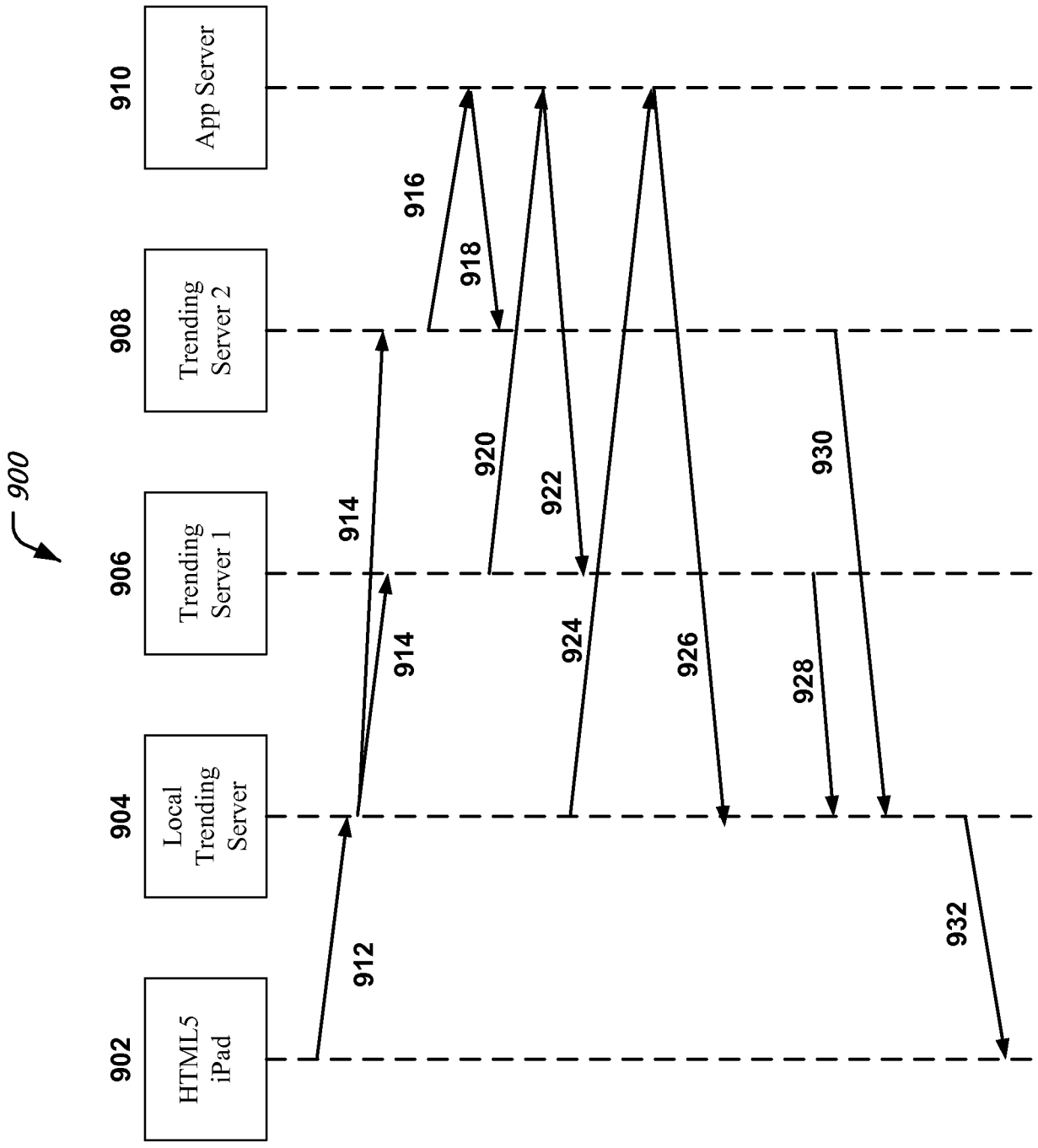

900
902
HTML5 iPad
904
Local Trending Server
906
Trending Server 1
908
Trending Server 2
910
App Server
912
914
914
916
918
920
922
924
926
928
930
932

FIG. 9

```
Object {requestId: 1310632497, result: Array[16], resultCode: "0", token: null
}
1.    requestId: 1310632497
2.    result: Array[16]
1.    0: Object
2.    1: Object
3.    2: Object
4.    3: Object
5.    4: Object
1.    editorialAsset: Object
1.    actors: "Frank Oz;Ian
2.                    McDiarmid;Ewan McGregor;Natalie Portman;Hayden
3.                    Christensen"
4.    aspectRatio: null
5.    assetList: null
6.    assetOrder: null
7.    assetPlayType: "E"
8.    assetType: "VE"
9.    audioMode: null
10.   audioPid: Array[0]
11.   audioSubtracks: null
12.   bestSalesIndex: 100
13.   casDescriptor: null
14.   casId: null
15.   changeLog: null
16.   contentType: null
17.   copyProtections: null
18.   copyright: null
19.   countries: "GB;US"
20.   creationDate: 1342099530000
21.   cuBroadcastChannelName: null
22.   cuBroadcastEndDate: null
23.   cuBroadcastStartDate: null
24.   definition: "HD"
25.   description: "Anakin Skywalker shares a forbidden romance
26.                    with Padmé Amidala while his teacher, Obi-Wan Kenobi,
27.                    makes an investigation of a separatist assassination
28.                    attempt on Padmé which leads to the discovery of a
29.                    secret Republican clone army. "
30.   directors: "George Lucas"
31.   dualMono: "false"
32.   duration: 30
33.   durationMillis: 1800000
34.   encoding: null
35.   exportID: null
36.   fileName: null
37.   fileSize: null
38.   genre: "Action;Adventure;ScienceFiction"
```

FIG. 10

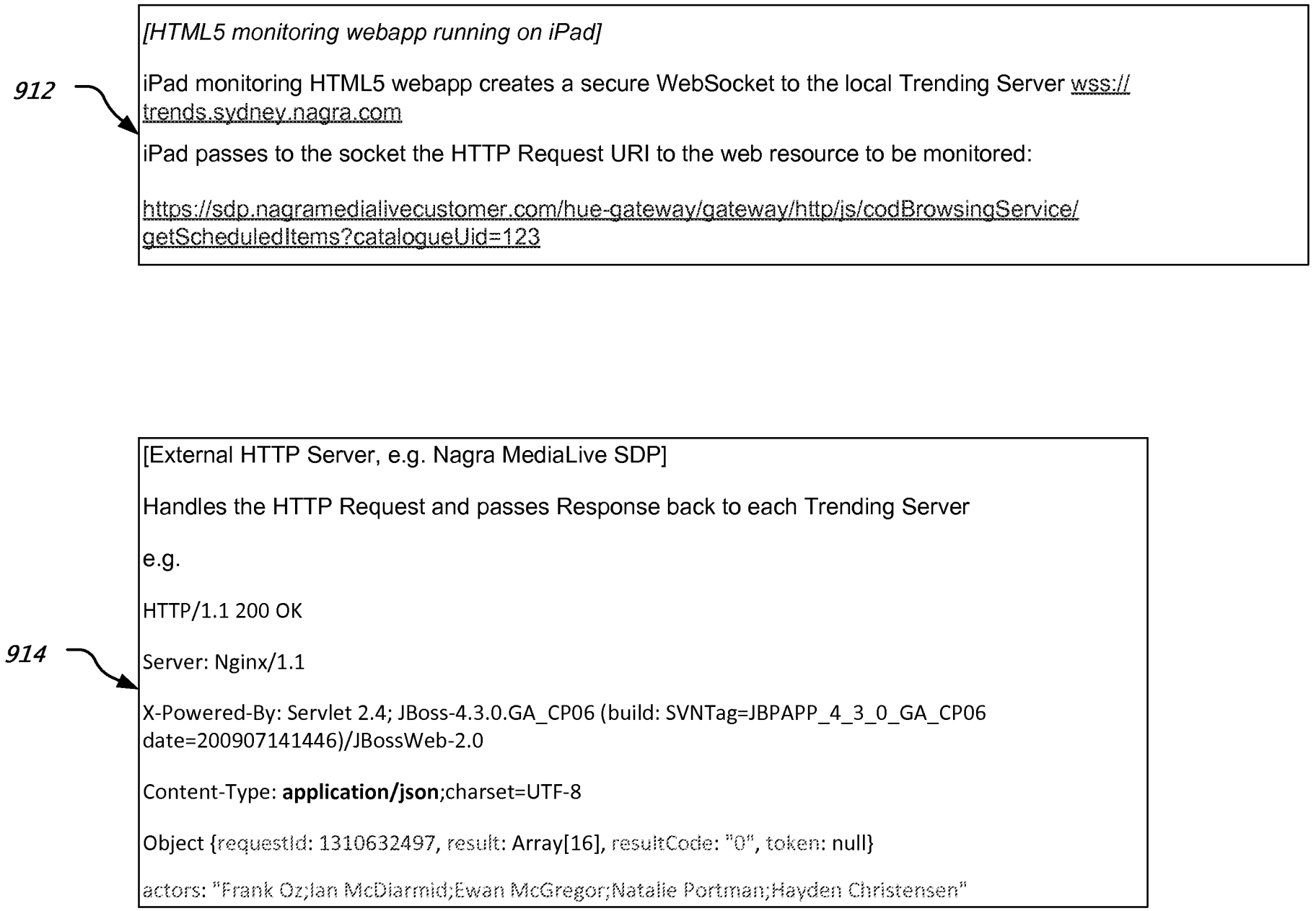

[HTML5 monitoring webapp running on iPad]
912
iPad monitoring HTML5 webapp creates a secure WebSocket to the local Trending Server wss://trends.sydney.nagra.com
iPad passes to the socket the HTTP Request URI to the web resource to be monitored:
https://sdp.nagramedialivecustomer.com/hue-gateway/gateway/http/js/codBrowsingService/getScheduledItems?catalogueUid=123
[External HTTP Server, e.g. Nagra MediaLive SDP]
Handles the HTTP Request and passes Response back to each Trending Server
e.g.
914
HTTP/1.1 200 OK
Server: Nginx/1.1
X-Powered-By: Servlet 2.4; JBoss-4.3.0.GA_CP06 (build: SVNTag=JBPAPP_4_3_0_GA_CP06 date=200907141446)/JBossWeb-2.0
Content-Type: application/json;charset=UTF-8
Object {requestId: 1310632497, result: Array[16], resultCode: "0", token: null}
actors: "Frank Oz;Ian McDiarmid;Ewan McGregor;Natalie Portman;Hayden Christensen"

FIG. 11

928

[Global Trending Servers]

Then parses the response to create a representation of the web resource response to include meta-data with respect to previous history in the trending record.

Object {requestId: 1310632497, result: Array[16], resultCode: "0", token: null, trendingServer:"Nagra San Francisco"}

actors: "Frank Oz;Ian McDiarmid;Ewan McGregor;Natalie Portman;Hayden Christensen"

actors_trend: Normal, unchanged

930

Object {requestId: 1310632497, result: Array[16], resultCode: "0", token: null, trendingServer:"Nagra Chesaux"}

actors: "Frank Oz;Ian McDiarmid;Ewan McGregor;Natalie Portman;Hayden Christensen"

actors_trend: Normal, unchanged

931

Object {requestId: 1310632497, result: Array[16], resultCode: "0", token: null, trendingServer:"Nagra Sydney"}

actors: "**Pwned** Oz;Ian McDiarmid;Ewan McGregor;Natalie Portman;Hayden Christensen"

actors_trend: Unexpected, normally "Frank Oz;Ian McDiarmid;Ewan McGregor;Natalie Portman;Hayden Christensen"

FIG. 12

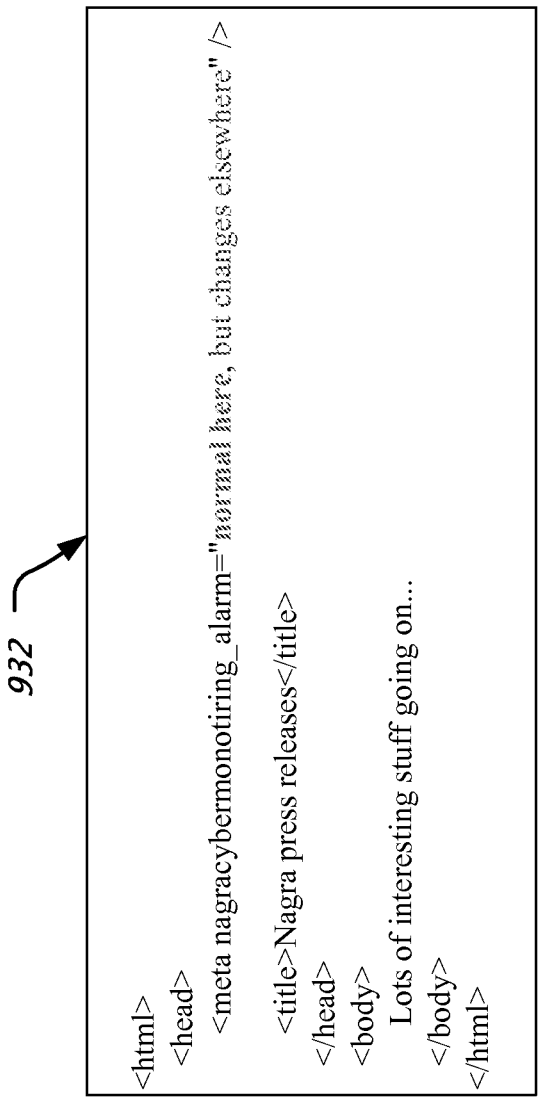
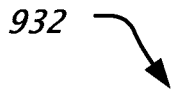

932
<html>
<head>
<meta nagracybermonotiring_alarm="normal here, but changes elsewhere" />
<title>Nagra press releases</title>
</head>
<body>
Lots of interesting stuff going on...
</body>
</html>

FIG. 13

932

```
<html>
  <head>
    <title>Anonymous woz ere</title>
    <meta nagracybermonotiring_alarm="modified unexpected" />
    <meta nagracybermonotiring_verbose="title changed when it never has before" />
    <meta nagracybermonotiring_verbose="body changed by more than 50% within 2 days, usually 2% once per day" />
  </head>
  <body>
    Nagra totally pwned
  </body>
</html>
```

FIG. 14




```
1.    editorialAsset: Object
1.    actors: {normal unchanged value}
...
2.    copyProtections: clear-to-air {modified unexpected was null}
3.    ...
4.    countries: "GB;US;AUS" {modified unexpected AUS has been added}
5.    creationDate: {normal unchanged value}
          ...
1.    description: "Anakin Skywalker is a complete
2.                  idiot, why are you even bothering, go here for something else
3.                  instead."  {modified unexpected}
4.    directors: "Mr. Hacker"  {modified unexpected change}
5.    dualMono: {normal unchanged value}
6.
...
7.    modifiedDate: 1371096438000 13 June 2013    {modified unexpected was 1343175423000 (25 July 2012) }
8.    ...
9.    nPVR: "true" {modified unexpected was previously "false"}

10.   name: "Star Wars II
11.             : Attack Of The Clones"
          ...
1.    recordable: "true" {modified unexpected was previously "false"}
```

FIG. 15