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(54) **Titre : METHODE ET SYSTEME DE CONTROLE DE LA CIRCULATION**
(54) **Title: METHOD AND SYSTEM FOR TRAFFIC CONTROL**

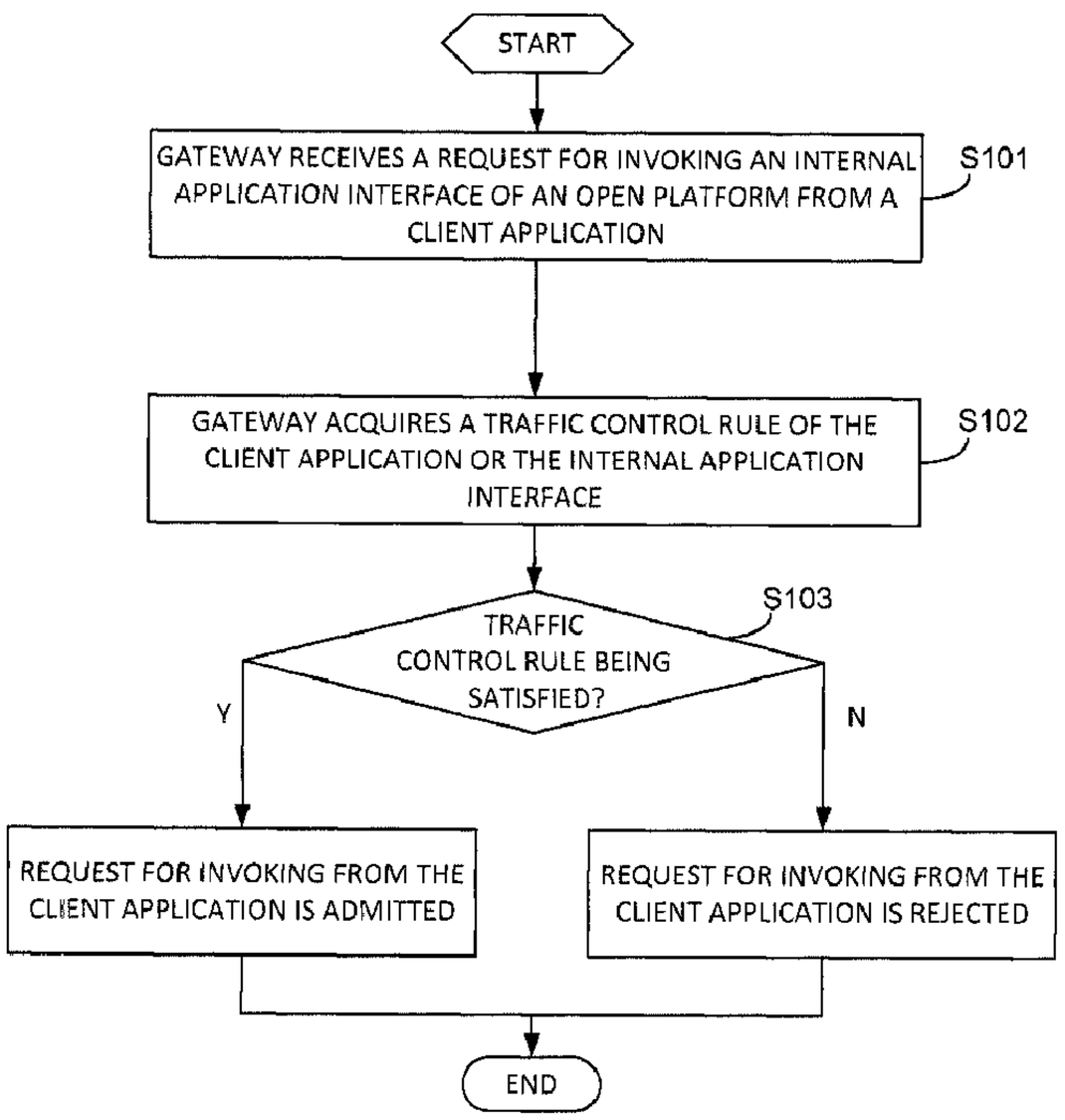

Fig. 1

(57) **Abrégé/Abstract:**
Disclosed are a traffic control method and system. The method comprises: a gateway receives a call request from a client application for an internal application interface of an open platform; the gateway obtains traffic control rules for the client application

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(57) **Abrégé(suite)/Abstract(continued):**
or the internal application interface; the gateway checks whether the client application or the internal application interface meets the traffic control rules; if yes, the gateway accepts the call request from the client application; otherwise, the gateway rejects the call request from the client application. The present invention prevents the same client application from excessively invoking an internal application through an internal application interface and prevents the same internal application from being invoked excessively, thus reducing system resource consumption and improving system stability.

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(54) **Title**: TRAFFIC CONTROL METHOD AND SYSTEM

(54) **发明名称**: 一种流量控制方法及系统

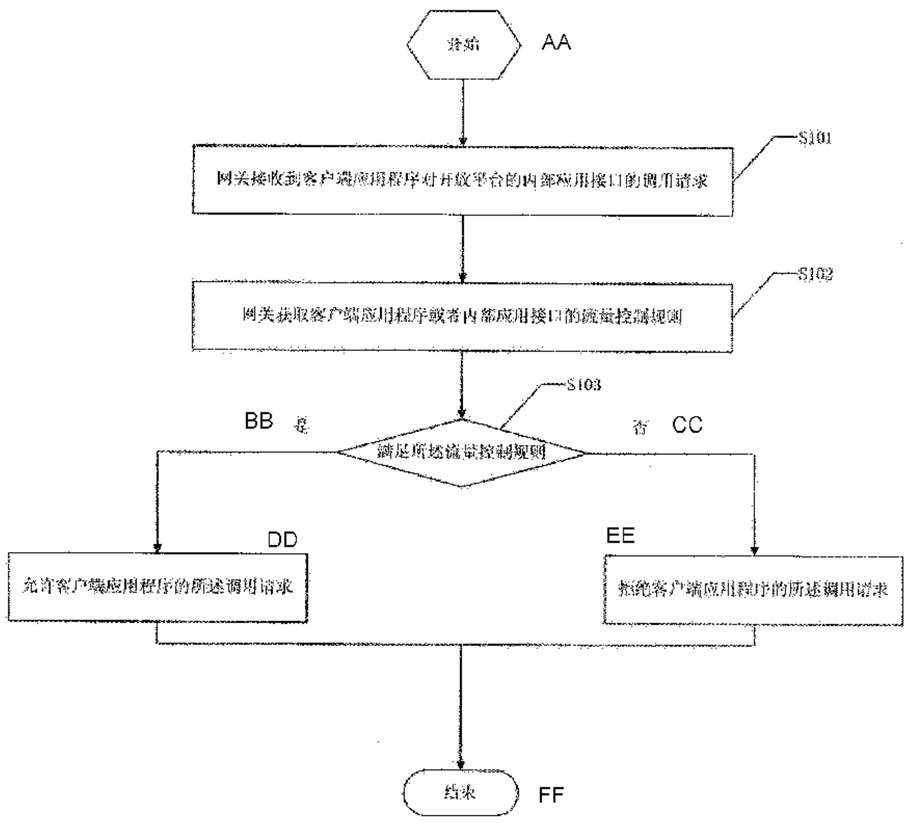

图 1 / Fig.1

S101 A gateway receives a call request from a client application for an internal application interface of an open platform
S102 The gateway obtains traffic control rules for the client application or the internal application interface
S103 Meets the traffic control rules
AA Start
BB Yes
CC No
DD Accepts the call request from the client application
EE Rejects the call request from the client application
FF End

(57) **Abstract**: Disclosed are a traffic control method and system. The method comprises: a gateway receives a call request from a client application for an internal application interface of an open platform; the gateway obtains traffic control rules for the client application or the internal application interface; the gateway checks whether the client application or the internal application interface meets the traffic control rules; if yes, the gateway accepts the call request from the client application; otherwise, the gateway rejects the call request from the client application. The present invention prevents the same client application from excessively invoking an internal application through an internal application interface and prevents the same internal application from being invoked excessively, thus reducing system resource consumption and improving system stability.

(57) **摘要**: 本发明公开一种流量控制方法及系统，流量控制方法包括：网关接收到客户端应用程序对开放平台的内部应用接口的调用请求；网关获取客户端应用程序或者内部应用接口的流量控制规则；网关检测客户端应用程序或者内部应用接口是否满足所述流量控制规则，如果客户端应用程序或者内部应用接口满足所述流量控制规则，则允许客户端应用程序的所述调用请求，否则拒绝客户端应用程序的所述调用请求。本发明避免同一客户端应用程序过度通过内部应用接口调用内部应用程序，也避免了同一内部应用程序被过度调用。因此减少了系统资源消耗，提高系统稳定性。

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METHOD AND SYSTEM FOR TRAFFIC CONTROL

TECHNICAL FIELD

The present invention relates to the technical field of communication technology, and particularly to a method and a system for traffic control.

BACKGROUND ART

An open platform is used for providing various internal applications for a client. Then, a client application is able to use the internal applications of the open platform by invoking an application interface of the open platform.

However, there might be following problems when the internal applications of the open platform are invoked by a great number of client applications:

1. one and the same client application performs a large number of invocations on the internal applications of the open platform, occupying resources used by the other client applications for invoking the internal applications of the open platform, which may lead to imbalanced distribution;

2. one and the same internal application is invoked heavily; since some internal applications are extremely system resource-consumed, once they are invoked heavily and extraneously, the system is prone to have a fault, and even to be broken down.

SUMMARY OF THE INVENTION

In view of this, it is necessary to provide a method and a system for traffic control, in order to solve the problem with the conventional solutions that the current open platform cannot provide efficient traffic control for the client application invoking the internal application.

A traffic control method is provided, which comprises:

receiving, by a gateway, a request for invoking an internal application interface of an open platform from a client application;

acquiring, by the gateway, a traffic control rule of the client application or the internal application interface;

detecting, by the gateway, whether the traffic control rule is satisfied by the client application or the internal application interface; if so, admitting the request for invoking from the client application; otherwise, rejecting the request for invoking from the client application.

A traffic control system is provided, which comprises a gateway and modules provided in the gateway, comprising:

an invocation request receiving module, configured to receive a request for invoking an internal application interface of an open platform from a client application;

a traffic control rule acquirement module, configured to acquire a traffic control rule of the client application or the internal application interface;

a traffic detection module, configured to detect whether the traffic control rule is satisfied by the client application or the internal application interface, wherein if the traffic control rule is satisfied by the client application or the internal application interface, the request for invoking from the client application is admitted; otherwise, the request for invoking from the client application is rejected.

In the present disclosure, by establishing the traffic controlling rule for the internal application interface of the open platform or the client application, the client application is admitted to invoke the internal application interface only if the traffic control rule is satisfied. By setting an appropriate traffic control rule, the internal application interface being invoked by the client application is controlled, so as to avoid the situation that the internal applications are excessively invoked by one and the same client application via the internal application interface, and meanwhile to avoid the situation that one and the same internal application is invoked excessively. Therefore, consumption of system resource is reduced, and system stability is improved.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a workflow diagram of a traffic control method according to the present disclosure;

Fig. 2 is a structure module diagram of a traffic control system according to the present disclosure; and

Fig. 3 is a structure diagram of one embodiment of the traffic control system according to the present disclosure.

DESCRIPTION OF THE EMBODIMENTS

The detailed description is set forth below in connection with the appended drawings and specific embodiments.

As shown in Fig. 1, a workflow diagram of a traffic control method according to the present disclosure comprises:

Step S101 of receiving, by a gateway, a request for invoking an internal application interface of an open platform from a client application;

Step S102 of acquiring, by the gateway, a traffic control rule of the client application or the internal application interface;

Step S103 of detecting, by the gateway, whether the traffic control rule is satisfied by the client application or the internal application interface; if so, admitting the request for invoking from the client application; otherwise, rejecting the request for invoking from the client application.

The gateway is an interface used for communicating with the client, and all requests from the clients are forwarded via the gateway. When the client application needs to invoke the application interface, the gateway executes Step S102 to obtain the corresponding traffic control rule, wherein the gateway decides to select a traffic control rule of the client application, or a traffic control rule of the internal application interface, or both the traffic control rule of the client application and the traffic control rule of the internal application interface according to configuration files. In Step S102, the gateway acquires the traffic control rule of the client application or the internal application interface, which comprises one of following three cases:

Case I: acquiring the traffic control rule of the client application;

Case II: acquiring the traffic control rule of the internal application interface;

Case III: acquiring the traffic control rule of the client application and the traffic

control rule of the internal application interface.

In one of the embodiments,

during a preset period of counting invocations of an application, if a number of times at which the client application invokes does not exceed an upper application invocation threshold corresponding to the client application, the traffic control rule is satisfied; otherwise, the traffic control rule is not satisfied; or

during a preset period of counting invocations on an application interface, if a number of times at which the internal application interface is invoked exceeds an application interface threshold corresponding to the internal application interface, the traffic control rule is satisfied; otherwise, the traffic control rule is not satisfied; or

during a preset period of counting invocations on the internal application interface from the client application, if a number of times at which the client application invokes the internal application interface does not exceed an upper joint invocation threshold corresponding to both the client application and the internal application interface, the traffic control rule is satisfied; otherwise, the traffic control rule is not satisfied.

This embodiment contains three kinds of traffic control rules, and the gateway may select a combination of one or more of the rules with respect to different client applications and different internal application interfaces, according to the configuration files.

For example, for the client application A invoking the application interface B, the traffic control rule can be selected as:

during the preset period of counting invocations of the application, if the number of times at which the client application invokes does not exceed the upper application invocation threshold corresponding to the client application, the traffic control rule is satisfied; otherwise, the traffic control rule is not satisfied.

At this time, only invocations from the client application are restricted, but no restriction applies to the application interface.

Alternately, traffic control rule may be selected as:

during the preset period of counting invocations of the application interface, if

the number of times at which the internal application interface is invoked exceeds the application interface threshold corresponding to the internal application interface, the traffic control rule is satisfied; otherwise, the traffic control rule is not satisfied.

At this time, only invocations on the application interface are restricted, but no restriction applies to the client application.

However, the traffic control rule may also be selected as a combination of the above two kinds of traffic control rules, i.e., not only performing traffic restriction on the invocation from the client application but also restricting the invocations on the application interface.

More specifically, it may be refined to restrict the invocations on a specific application interface from a specific client application, i.e., the traffic control rule is:

during the preset period of counting invocations on the internal application interface from the client application, if the number of times at which the client application invokes the internal application interface does not exceed the upper joint invocation threshold corresponding to both the client application and the internal application interface, the traffic control rule is satisfied; otherwise, the traffic control rule is not satisfied.

Wherein the period of counting invocations of the application, the period of counting invocations on the application interface, and the period of counting invocations on the internal application interface from the client application may be the same or different, and those periods may be selected according to practical requirements, such as one day, one hour or one minute.

One of the embodiments further comprises:

acquiring, by an analysis control system which communicates with the gateway, the number of times at which the client application invokes, by invoking an access log for the gateway; if, during the preset period of counting invocations of the application, it is detected that the number of times at which the client application invokes exceeds an application invocation warning threshold corresponding to the client application, acquiring an email address of a contact of the client application and sending a warning email to the email address of the contact, wherein the application invocation warning

threshold is no more than the upper application invocation threshold; or

acquiring, by an analysis control system which communicates with the gateway, the number of times at which the client application invokes, by invoking an access log for the gateway; if, during a preset period of counting invocations on the internal application interface from the client application, it is detected that the number of times at which the client application invokes the internal application interface exceeds a joint invocation warning threshold corresponding to both the client application and the internal application interface, acquiring an email address of a contact of the client application and sending a warning email to the email address of the contact, wherein the joint invocation warning threshold is no more than the upper joint invocation threshold.

In the present embodiment, if the number of times at which the client application invokes or the number of times at which the client application invokes the internal application interface exceeds a warning threshold, the warning email is sent to the contact of the client application. Then, if the contact considers that it is necessary to increase the threshold, an acknowledgement of a request for increasing may be sent to the gateway and the threshold is increased accordingly. With this embodiment, the threshold may be increased for the client application which is required to increase the threshold.

One of the embodiments further comprises:

acquiring, by an analysis control system which communicates with the gateway, the number of times at which the client application invokes, by invoking an access log for the gateway, and calculating an estimated number of times at which the client application invokes during a future increment estimation period; if the estimated number of times of invocations exceeds the upper application invocation threshold corresponding to the client application, saving the upper application invocation threshold as a history upper application invocation threshold, taking a program identification of the client application as an identification of the application to be updated, taking the estimated number of times of invocations as an upper application invocation threshold to be updated, sending a request for updating the upper

application invocation threshold which includes the upper application invocation threshold to be updated and the corresponding identification of the application to be updated; then after the increment estimation period elapses, if no acknowledgement of a request for increasing the upper application invocation threshold is received, taking the history upper application invocation threshold as the upper application invocation threshold to be updated, and sending the request for updating the upper application invocation threshold;

receiving, by the gateway, the request for updating the upper application invocation threshold sent from the analysis control system, and updating the upper application invocation threshold corresponding to the identification of the application to be updated as the upper application invocation threshold to be updated;

receiving, by the gateway, the acknowledgement of the request for increasing the upper application invocation threshold, and then forwarding the request to the analysis control system.

The analysis control system which communicates with the gateway acquires the number of times at which the client application invokes, by invoking the access log for the gateway, and calculates the estimated number of times at which the client application invokes during the future increment estimation period. When it is found that the estimated number of times of invocations exceeds the upper application invocation threshold, the request for updating the upper application invocation threshold is sent to the gateway, and the upper application invocation threshold is temporarily increased. Thereby, a situation can be avoided in which the client application is not available due to reaching an upper limit. However, the increment of the upper limit is not unrestricted. It is necessary for the client application to send the acknowledgement of the request for increasing the upper application invocation threshold within a period of time; otherwise, the upper application invocation threshold may be re-adjusted to the threshold originally kept, so as to restrict the invocations from the client application.

One of the embodiments further comprises:

acquiring, by an analysis control system which communicates with the gateway,

the number of times at which the client application invokes the internal application interface, by invoking an access log for the gateway, and calculating an estimated number of times at which the client application invokes the internal application interface during a future increment estimation period; if the estimated number of times exceeds the preset upper joint invocation threshold corresponding to the client application, saving the upper joint invocation threshold as a history upper joint invocation threshold, taking a program identification of the client application as an identification of the application to be updated, taking the estimated number of times as the upper joint invocation threshold, sending a request for updating the upper joint invocation threshold which includes the upper joint invocation threshold to be updated and the corresponding identification of the application to be updated; then after the increment estimation period elapses, if no acknowledgement of a request for increasing the upper joint invocation threshold is received, taking the history upper joint invocation threshold as the upper joint invocation threshold to be updated, and sending the request for updating the upper joint invocation threshold;

receiving, by the gateway, the request for updating the upper joint invocation threshold sent from the analysis control system, and updating the upper joint invocation threshold corresponding to the identification of the application to be updated as the upper joint invocation threshold to be updated;

receiving, by the gateway, the acknowledgement of the request for increasing the upper joint invocation threshold, and forwarding the request to the analysis control system.

In one of the embodiments,

when the request for invoking from the client application is admitted by the gateway, the number of times at which the client application invokes is increased, the number of times at which the internal application interface is invoked is increased, and the number of times at which the client application invokes the internal application interface is increased; and those increased numbers of times are sent to a cluster counter which communicates with the gateway;

when the gateway detects whether the client application or the internal

application interface satisfies the traffic control rule, one of the following is acquired from the cluster counter:

the number of times at which the client application invokes during the preset period of counting invocations of the application,

the number of times at which the internal application interface is invoked during the preset period of counting invocations on the application interface,

the number of times at which the client application invokes the internal application interface during the preset period of counting invocations on the internal application interface from the client application.

The number of times at which the client application invokes, the number of times at which the internal application interface is invoked, and the number of times at which the client application invokes the internal application interface are all saved by the cluster counter, which can reduce workload of the gateway.

One of the embodiments further comprises:

allocating, by the gateway, at least one thread to the application interface in advance, and setting the at least one thread as an idle thread;

if the request for invoking from the client application is admitted by the gateway, detecting whether the internal application interface has an idle thread;

if the internal application interface has at least one idle thread, selecting one thread from the idle threads of the internal application interface as a current thread; invoking, by the client application, the internal application interface by the current thread, and setting the current thread as a working thread; and when the client application finishes the invocation on the internal application interface, setting the current thread as the idle thread;

if the internal application interface does not have an idle thread, suspending the request for invoking from the client application, until the internal application interface has at least one idle thread.

Accordingly, the internal application interface may be restricted by the threads, thereby a great number of parallel invocations on one and the same internal application interface may be avoided.

Fig. 2 is a structure module diagram of a traffic control system of the present disclosure, comprising: a gateway 21, and modules provided in the gateway 21 which comprise:

an invocation request receiving module 2101, configured to receive a request for invoking an internal application interface of an open platform from a client application;

a traffic control rule acquirement module 2102, configured to acquire a traffic control rule of the client application or the internal application interface;

a traffic detection module 2103, configured to detect whether the traffic control rule is satisfied by the client application or the internal application interface, wherein if the traffic control rule is satisfied by the client application or the internal application interface, the request for invoking from the client application is admitted; otherwise, the request for invoking from the client application is rejected.

In one of the embodiments,

during a preset period of counting invocations of an application, if a number of times at which the client application invokes does not exceed an upper application invocation threshold corresponding to the client application, the traffic control rule is satisfied; otherwise, the traffic control rule is not satisfied; or

during a preset period of counting invocations on an application interface, if a number of times at which the internal application interface is invoked exceeds an application interface threshold corresponding to the internal application interface, the traffic control rule is satisfied; otherwise, the traffic control rule is not satisfied; or

during a preset period of counting invocations on the internal application interface from the client application, if a number of times at which the client application invokes the internal application interface does not exceed an upper joint invocation threshold corresponding to both the client application and the internal application interface, the traffic control rule is satisfied; otherwise, the traffic control rule is not satisfied.

One of the embodiments further comprises an analysis control system 22 which communicates with the gateway 21, and

a traffic warning module 221 provided in the analysis control system 22, configured to:

acquire the number of times at which the client application invokes, by invoking an access log for the gateway; if, during the preset period of counting invocations of the application, it is detected that the number of times at which the client application invokes exceeds an application invocation warning threshold corresponding to the client application, acquire an email address of a contact of the client application and to send a warning email to the email address of the contact, wherein the application invocation warning threshold is no more than the upper application invocation threshold; or

acquire the number of times at which the client application invokes, by invoking an access log for the gateway; if, during a preset period of counting invocations on the internal application interface from the client application, it is detected that the number of times at which the client application invokes the internal application interface exceeds a joint invocation warning threshold corresponding to both the client application and the internal application interface, acquire an email address of a contact of the client application and to send a warning email to the email address of the contact, wherein the joint invocation warning threshold is no more than the upper joint invocation threshold.

One of the embodiments further comprises the analysis control system 22 which communicates with the gateway, and

a module 222 provided in the analysis control system 22 for sending request for updating upper application invocation threshold, configured to: acquire the number of times at which the client application invokes, by invoking an access log for the gateway, and calculate an estimated number of times at which the client application invokes during a future increment estimation period; if the estimated number of times of invocations exceeds the upper application invocation threshold corresponding to the client application, save the upper application invocation threshold as a history upper application invocation threshold, take a program identification of the client application as an identification of the application to be updated, take the estimated

number of times of invocations as an upper application invocation threshold to be updated, send a request for updating the upper application invocation threshold which includes the upper application invocation threshold to be updated and the corresponding identification of the application to be updated; then after the increment estimation period elapses, if no acknowledgement of a request for increasing the upper application invocation threshold is received, take the history upper application invocation threshold as the upper application invocation threshold to be updated, and send the request for updating the upper application invocation threshold;

a module 2104 provided in the gateway 21 for receiving request for updating upper application invocation threshold, configured to: receive the request for updating the upper application invocation threshold sent from the analysis control system, and update the upper application invocation threshold corresponding to the identification of the application to be updated as the upper application invocation threshold to be updated;

a module 2105 provided in the gateway 21 for receiving acknowledgement of request for increasing upper application invocation threshold, configured to receive the acknowledgement of the request for increasing the upper application invocation threshold and forward the request to the analysis control system.

One of the embodiments further comprises the analysis control system 22 which communicates with the gateway 21, and

a module 223 provided in the analysis control system 22 for sending request for updating upper joint invocation threshold, configured to acquire the number of times at which the client application invokes the internal application interface, by invoking an access log for the gateway, and calculate an estimated number of times at which the client application invokes the internal application interface during a future increment estimation period; if the estimated number of times exceeds the preset upper joint invocation threshold corresponding to the client application, save the upper joint invocation threshold as a history upper joint invocation threshold, take a program identification of the client application as an identification of the application to be updated, take the estimated number of times as the upper joint invocation

threshold, send a request for updating the upper joint invocation threshold which includes the upper joint invocation threshold to be updated and the corresponding identification of the application to be updated; then after the increment estimation period elapses, if no acknowledgement of a request for increasing the upper joint invocation threshold is received, take the history upper joint invocation threshold as the upper joint invocation threshold to be updated, and send the request for updating the upper joint invocation threshold;

a module 2106 provided in the gateway 21 for receiving request for updating upper joint invocation threshold, configured to receive the request for updating the upper joint invocation threshold sent from the analysis control system, and update the upper joint invocation threshold corresponding to the identification of the application to be updated as the upper joint invocation threshold to be updated;

a module 2107 provided in the gateway 21 for receiving acknowledgement of request for increasing upper joint invocation threshold, configured to receive the acknowledgement of the request for increasing the upper joint invocation threshold, and forward the request to the analysis control system.

One of the embodiments further comprises:

a module 2108 provided in the gateway 21 for sending number of times of invocations, configured to, when the request for invoking from the client application is admitted, increase the number of times at which the client application invokes, and the number of times at which the internal application interface is invoked, the number of times at which the client application invokes the internal application interface; and send those increased numbers of times to a cluster counter 23 which communicates with the gateway;

a traffic detection module 2103 provided in the gateway 21, configured to, when it detects whether the client application or the internal application interface satisfies the traffic control rule, acquire from the cluster counter 23:

the number of times at which the client application invokes during the preset period of counting invocations of the application, or

the number of times at which the internal application interface is invoked during

the preset period of counting invocations on the application interface, or

the number of times at which the client application invokes the internal application interface during the preset period of counting invocations on the internal application interface from the client application.

One of the embodiments further comprises

a thread allocation module 2109 provided in the gateway 21, configured to allocate at least one thread to the application interface in advance and set the at least one thread as an idle thread;

a thread detection module 2110 provided in the gateway 21, configured to detect whether the internal application interface has an idle thread, if the request for invoking from the client application is admitted;

wherein if the internal application interface has at least one idle thread, one thread is selected from the idle threads of the internal application interface as a current thread; the internal application interface is invoked by the client application using the current thread, and the current thread is set as a working thread; when the client application finishes the invocation on the internal application interface, the current thread is set as an idle thread;

if the internal application interface does not have an idle thread, the request for invocation of the client application is suspended, until the internal application interface has at least one idle thread.

Fig. 3 is a structure diagram of one example of a traffic controlling system according to the present disclosure. The system comprises a gateway 31, a distributed centralized counter 32, a log analysis system 33 and a transaction control system 34.

A traffic-controlled dimension pool 311 is provided in the gateway 31 which is dedicated in traffic control for invoking the internal application interface from the client application. The distributed centralized counter 32 is used for saving the number of times at which the client application invokes, the number of times at which the internal application interface is invoked and the number of times at which the client application invokes the internal application interface.

The log analysis system 33 and the transaction control system 34 together form

the aforesaid analysis control system. The log analysis system 33 obtains logs from the gateway 31 for analyzing, and calculates whether the number of times at which the client application invokes exceeds the application invocation warning threshold corresponding to the client application during the preset period of counting invocations of the application, or whether the number of times at which the client application invokes the internal application interface exceeds the joint invocation warning threshold corresponding to both the client application and the internal application interface during the preset period of counting invocations of the internal application interface from the client application. If so, the transaction control system 34 is notified of sending the warning email. Wherein, the period of counting invocations of the application and the period of counting invocations on the internal application interface from the client application are set to be one day.

Meanwhile, the log analysis system 33 acquires the number of times at which the client application invokes, and calculates the estimated number of times at which the client application invokes during the future increment estimation period; acquires the number of times at which the client application invokes the internal application interface, and calculates an estimated number of times at which the client application invokes the internal application interface during the future increment estimation period. Then, the transaction control system 34 decides whether to send to the gateway 31 the request for updating the upper application invocation threshold and the request for updating the upper joint invocation threshold, based on the results of the calculations performed by the log analysis system 33. The increment estimation period is preferably set to be three days.

Accordingly, if the number of times at which the client application invokes exceeds the application invocation warning threshold corresponding to the client application, or if the number of times at which the client application invokes the internal application exceeds the joint invocation warning threshold corresponding to both the client application and the internal application interface, the warning email will be sent. Meanwhile, the estimated number of times at which the client application invokes during the future increment estimation period and the estimated number of

times at which the client application invokes the internal application interface during the future increment estimation period are calculated, the upper application invocation threshold and the upper joint invocation threshold are increased appropriately, and the client application is temporarily allowed to use exceeding the upper limit, thereby avoiding affecting user experience. After the increment estimation period, i.e., three days, elapses, if the client application does not acknowledge to increase the upper limit, the upper application invocation threshold and the upper joint invocation threshold will be adjusted down to the previous values. Thus, the client application may be restricted to invoke the application interface.

The aforesaid embodiments only specify several modes of carrying out the present disclosure, are described specifically in detail, but cannot be understood as the restriction to the scope of the present patent for invention. It should be pointed out that those skilled in the art can make some transformations and improvements without departing from the conception of the present disclosure, and all those fall into the protection scope of the present disclosure. Therefore, the protection scope of the patent for invention should be subject to the claims attached.

What is claimed is:

1. A traffic control method, comprising:

receiving, by a gateway, a request for invoking an internal application interface of an open platform from a client application;

acquiring, by the gateway, a traffic control rule of the client application or the internal application interface;

detecting, by the gateway, whether the traffic control rule is satisfied by the client application or the internal application interface; if so, admitting the request for invoking from the client application; otherwise, rejecting the request for invoking from the client application.

2. The traffic control method of claim 1, wherein

during a preset period of counting invocations of an application, if a number of times at which the client application invokes does not exceed an upper application invocation threshold corresponding to the client application, the traffic control rule is satisfied; otherwise, the traffic control rule is not satisfied; or

during a preset period of counting invocations on an application interface, if a number of times at which the internal application interface is invoked exceeds an application interface threshold corresponding to the internal application interface, the traffic control rule is satisfied; otherwise, the traffic control rule is not satisfied; or

during a preset period of counting invocations on the internal application interface from the client application, if a number of times at which the client application invokes the internal application interface does not exceed an upper joint invocation threshold corresponding to both the client application and the internal application interface, the traffic control rule is satisfied; otherwise, the traffic control rule is not satisfied.

3. The traffic control method of claim 2, further comprising:

acquiring, by an analysis control system which communicates with the gateway, the number of times at which the client application invokes, by invoking an access log

for the gateway; if, during the preset period of counting invocations of the application, it is detected that the number of times at which the client application invokes exceeds an application invocation warning threshold corresponding to the client application, acquiring an email address of a contact of the client application and sending a warning email to the email address of the contact, wherein the application invocation warning threshold is no more than the upper application invocation threshold; or

acquiring, by an analysis control system which communicates with the gateway, the number of times at which the client application invokes, by invoking an access log for the gateway; if, during a preset period of counting invocations on the internal application interface from the client application, it is detected that the number of times at which the client application invokes the internal application interface exceeds a joint invocation warning threshold corresponding to both the client application and the internal application interface, acquiring an email address of a contact of the client application and sending a warning email to the email address of the contact, wherein the joint invocation warning threshold is no more than the upper joint invocation threshold.

4. The traffic control method of claim 2, further comprising:

acquiring, by an analysis control system which communicates with the gateway, the number of times at which the client application invokes, by invoking an access log for the gateway, and calculating an estimated number of times at which the client application invokes during a future increment estimation period; if the estimated number of times of invocations exceeds the upper application invocation threshold corresponding to the client application, saving the upper application invocation threshold as a history upper application invocation threshold, taking a program identification of the client application as an identification of the application to be updated, taking the estimated number of times of invocations as an upper application invocation threshold to be updated, sending a request for updating the upper application invocation threshold which includes the upper application invocation threshold to be updated and the corresponding identification of the application to be

updated; then after the increment estimation period elapses, if no acknowledgement of a request for increasing the upper application invocation threshold is received, taking the history upper application invocation threshold as the upper application invocation threshold to be updated, and sending the request for updating the upper application invocation threshold;

receiving, by the gateway, the request for updating the upper application invocation threshold sent from the analysis control system, and updating the upper application invocation threshold corresponding to the identification of the application to be updated as the upper application invocation threshold to be updated;

receiving, by the gateway, the acknowledgement of the request for increasing the upper application invocation threshold, and then forwarding the request to the analysis control system.

5. The traffic control method of claim 2, further comprising:

acquiring, by an analysis control system which communicates with the gateway, the number of times at which the client application invokes the internal application interface, by invoking an access log for the gateway, and calculating an estimated number of times at which the client application invokes the internal application interface during a future increment estimation period; if the estimated number of times exceeds the preset upper joint invocation threshold corresponding to the client application, saving the upper joint invocation threshold as a history upper joint invocation threshold, taking a program identification of the client application as an identification of the application to be updated, taking the estimated number of times as the upper joint invocation threshold, sending a request for updating the upper joint invocation threshold which includes the upper joint invocation threshold to be updated and the corresponding identification of the application to be updated; then after the increment estimation period elapses, if no acknowledgement of a request for increasing the upper joint invocation threshold is received, taking the history upper joint invocation threshold as the upper joint invocation threshold to be updated, and sending the request for updating the upper joint invocation threshold;

receiving, by the gateway, the request for updating the upper joint invocation threshold sent from the analysis control system, and updating the upper joint invocation threshold corresponding to the identification of the application to be updated as the upper joint invocation threshold to be updated;

receiving, by the gateway, the acknowledgement of the request for increasing the upper joint invocation threshold, and forwarding the request to the analysis control system.

6. The traffic control method of claim 1, further comprising:

when the request for invoking from the client application is admitted by the gateway, increasing the number of times at which the client application invokes, the number of times at which the internal application interface is invoked, and the number of times at which the client application invokes the internal application interface; and sending those increased numbers of times to a cluster counter which communicates with the gateway;

when the gateway detects whether the client application or the internal application interface satisfies the traffic control rule, acquiring from the cluster counter:

the number of times at which the client application invokes during a preset period of counting invocations of an application, or

the number of times at which the internal application interface is invoked during a preset period of counting invocations on an application interface, or

the number of times at which the client application invokes the internal application interface during a preset period of counting invocations on the internal application interface from the client application.

7. The traffic control method of claim 1, further comprising:

allocating, by the gateway, at least one thread to the application interface in advance, and setting the at least one thread as an idle thread;

if the request for invoking from the client application is admitted by the gateway,

detecting whether the internal application interface has an idle thread;

if the internal application interface has at least one idle thread, selecting one thread from the idle threads of the internal application interface as a current thread; invoking, by the client application, the internal application interface by the current thread, and setting the current thread as a working thread; and when the client application finishes the invocation on the internal application interface, setting the current thread as the idle thread;

if the internal application interface does not have an idle thread, suspending the request for invoking from the client application, until the internal application interface has at least one idle thread.

8. A traffic control system, comprising a gateway and modules provided in the gateway, which comprise:

an invocation request receiving module, configured to receive a request for invoking an internal application interface of an open platform from a client application;

a traffic control rule acquirement module, configured to acquire a traffic control rule of the client application or the internal application interface;

a traffic detection module, configured to detect whether the traffic control rule is satisfied by the client application or the internal application interface, wherein if the traffic control rule is satisfied by the client application or the internal application interface, the request for invoking from the client application is admitted; otherwise, the request for invoking from the client application is rejected.

9. The traffic control system of claim 8, wherein

during a preset period of counting invocations of an application, if a number of times at which the client application invokes does not exceed an upper application invocation threshold corresponding to the client application, the traffic control rule is satisfied; otherwise, the traffic control rule is not satisfied; or

during a preset period of counting invocations on an application interface, if a

number of times at which the internal application interface is invoked exceeds an application interface threshold corresponding to the internal application interface, the traffic control rule is satisfied; otherwise, the traffic control rule is not satisfied; or

during a preset period of counting invocations on the internal application interface from the client application, if a number of times at which the client application invokes the internal application interface does not exceed an upper joint invocation threshold corresponding to both the client application and the internal application interface, the traffic control rule is satisfied; otherwise, the traffic control rule is not satisfied.

10. The traffic control system of claim 9, further comprising:

an analysis control system which communicates with the gateway; and

a traffic warning module provided in the analysis control system, configured to:

acquire the number of times at which the client application invokes, by invoking an access log for the gateway; if, during the preset period of counting invocations of the application, it is detected that the number of times at which the client application invokes exceeds an application invocation warning threshold corresponding to the client application, acquire an email address of a contact of the client application and to send a warning email to the email address of the contact, wherein the application invocation warning threshold is no more than the upper application invocation threshold; or

acquire the number of times at which the client application invokes, by invoking an access log for the gateway; if, during a preset period of counting invocations on the internal application interface from the client application, it is detected that the number of times at which the client application invokes the internal application interface exceeds a joint invocation warning threshold corresponding to both the client application and the internal application interface, acquire an email address of a contact of the client application and to send a warning email to the email address of the contact, wherein the joint invocation warning threshold is no more than the upper joint invocation threshold.

11. The traffic control system of claim 9, further comprising:

an analysis control system which communicates with the gateway; and

a module provided in the analysis control system for sending request for updating upper application invocation threshold, configured to:

acquire the number of times at which the client application invokes, by invoking an access log for the gateway, and calculate an estimated number of times at which the client application invokes during a future increment estimation period; if the estimated number of times of invocations exceeds the upper application invocation threshold corresponding to the client application, save the upper application invocation threshold as a history upper application invocation threshold, take a program identification of the client application as an identification of the application to be updated, take the estimated number of times of invocations as an upper application invocation threshold to be updated, send a request for updating the upper application invocation threshold which includes the upper application invocation threshold to be updated and the corresponding identification of the application to be updated; then after the increment estimation period elapses, if no acknowledgement of a request for increasing the upper application invocation threshold is received, take the history upper application invocation threshold as the upper application invocation threshold to be updated, and send the request for updating the upper application invocation threshold;

a module provided in the gateway for receiving request for updating upper application invocation threshold, configured to: receive the request for updating the upper application invocation threshold sent from the analysis control system, and update the upper application invocation threshold corresponding to the identification of the application to be updated as the upper application invocation threshold to be updated;

a module provided in the gateway for receiving acknowledgement of request for increasing upper application invocation threshold, configured to receive the

acknowledgement of the request for increasing the upper application invocation threshold and forward the request to the analysis control system.

12. The traffic control system of claim 9, further comprising:

an analysis control system which communicates with the gateway; and

a module provided in the analysis control system for sending request for updating upper joint invocation threshold, configured to acquire the number of times at which the client application invokes the internal application interface, by invoking an access log for the gateway, and calculate an estimated number of times at which the client application invokes the internal application interface during a future increment estimation period; if the estimated number of times exceeds the preset upper joint invocation threshold corresponding to the client application, save the upper joint invocation threshold as a history upper joint invocation threshold, take a program identification of the client application as an identification of the application to be updated, take the estimated number of times as the upper joint invocation threshold, send a request for updating the upper joint invocation threshold which includes the upper joint invocation threshold to be updated and the corresponding identification of the application to be updated; then after the increment estimation period elapses, if no acknowledgement of a request for increasing the upper joint invocation threshold is received, take the history upper joint invocation threshold as the upper joint invocation threshold to be updated, and send the request for updating the upper joint invocation threshold;

a module provided in the gateway for receiving request for updating upper joint invocation threshold, configured to receive the request for updating the upper joint invocation threshold sent from the analysis control system, and update the upper joint invocation threshold corresponding to the identification of the application to be updated as the upper joint invocation threshold to be updated;

a module provided in the gateway for receiving acknowledgement of request for increasing upper joint invocation threshold, configured to receive the acknowledgement of the request for increasing the upper joint invocation threshold,

and forward the request to the analysis control system.

13. The traffic control system of claim 8, further comprising:

a module provided in the gateway for sending number of times of invocations, configured to, when the request for invoking from the client application is admitted, increase the number of times at which the client application invokes, and the number of times at which the internal application interface is invoked, the number of times at which the client application invokes the internal application interface; and send those increased numbers of times to a cluster counter which communicates with the gateway;

a traffic detection module provided in the gateway, configured to, when it detects whether the client application or the internal application interface satisfies the traffic control rule, acquire from the cluster counter:

the number of times at which the client application invokes during a preset period of counting invocations of an application, or

the number of times at which the internal application interface is invoked during a preset period of counting invocations on an application interface, or

the number of times at which the client application invokes the internal application interface during a preset period of counting invocations on the internal application interface from the client application.

14. The traffic control system of claim 8, further comprising:

a thread allocation module provided in the gateway, configured to allocate at least one thread to the application interface in advance and set the at least one thread as an idle thread;

a thread detection module provided in the gateway, configured to detect whether the internal application interface has an idle thread, if the request for invoking from the client application is admitted;

wherein if the internal application interface has at least one idle thread, one thread is selected from the idle threads of the internal application interface as a current

thread; the internal application interface is invoked by the client application using the current thread, and the current thread is set as a working thread; when the client application finishes the invocation on the internal application interface, the current thread is set as an idle thread;

if the internal application interface does not have an idle thread, the request for invocation of the client application is suspended, until the internal application interface has at least one idle thread.

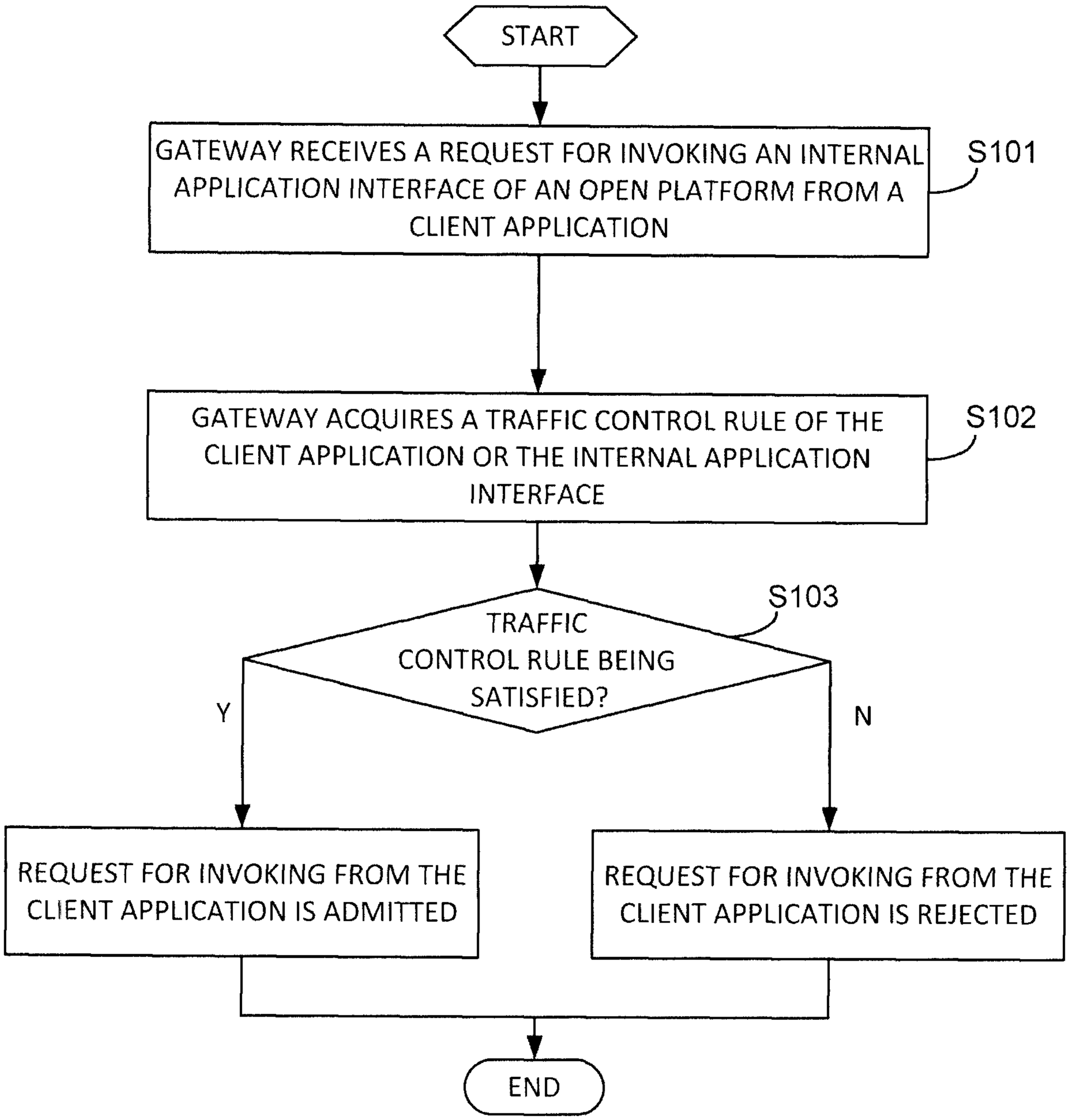
START
GATEWAY RECEIVES A REQUEST FOR INVOKING AN INTERNAL APPLICATION INTERFACE OF AN OPEN PLATFORM FROM A CLIENT APPLICATION
S101
GATEWAY ACQUIRES A TRAFFIC CONTROL RULE OF THE CLIENT APPLICATION OR THE INTERNAL APPLICATION INTERFACE
S102
TRAFFIC CONTROL RULE BEING SATISFIED?
S103
Y
N
REQUEST FOR INVOKING FROM THE CLIENT APPLICATION IS ADMITTED
REQUEST FOR INVOKING FROM THE CLIENT APPLICATION IS REJECTED
END

Fig. 1

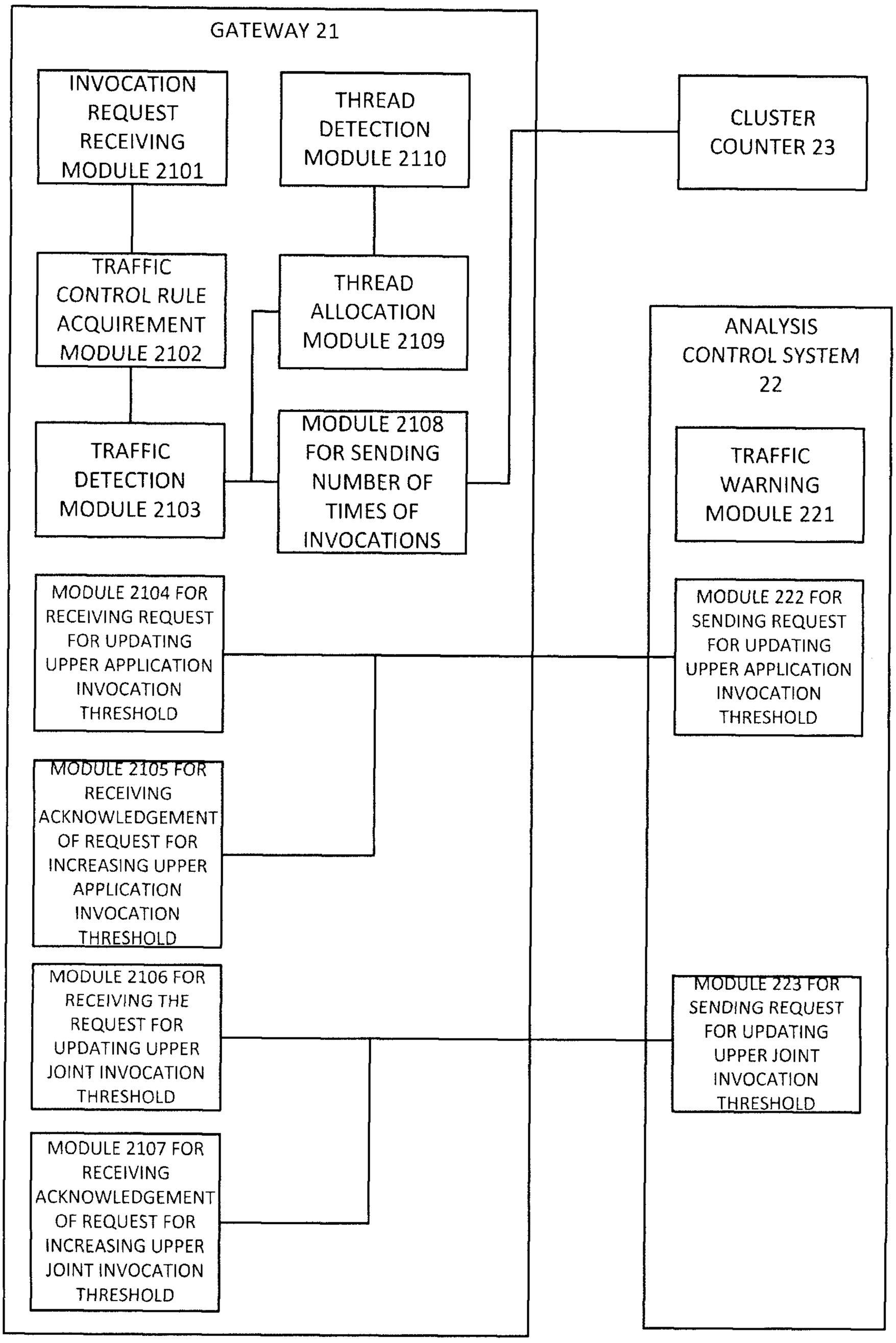
GATEWAY 21
INVOCATION REQUEST RECEIVING MODULE 2101
THREAD DETECTION MODULE 2110
CLUSTER COUNTER 23
TRAFFIC CONTROL RULE ACQUIREMENT MODULE 2102
THREAD ALLOCATION MODULE 2109
ANALYSIS CONTROL SYSTEM 22
TRAFFIC DETECTION MODULE 2103
MODULE 2108 FOR SENDING NUMBER OF TIMES OF INVOCATIONS
TRAFFIC WARNING MODULE 221
MODULE 2104 FOR RECEIVING REQUEST FOR UPDATING UPPER APPLICATION INVOCATION THRESHOLD
MODULE 222 FOR SENDING REQUEST FOR UPDATING UPPER APPLICATION INVOCATION THRESHOLD
MODULE 2105 FOR RECEIVING ACKNOWLEDGEMENT OF REQUEST FOR INCREASING UPPER APPLICATION INVOCATION THRESHOLD
MODULE 2106 FOR RECEIVING THE REQUEST FOR UPDATING UPPER JOINT INVOCATION THRESHOLD
MODULE 223 FOR SENDING REQUEST FOR UPDATING UPPER JOINT INVOCATION THRESHOLD
MODULE 2107 FOR RECEIVING ACKNOWLEDGEMENT OF REQUEST FOR INCREASING UPPER JOINT INVOCATION THRESHOLD

Fig. 2

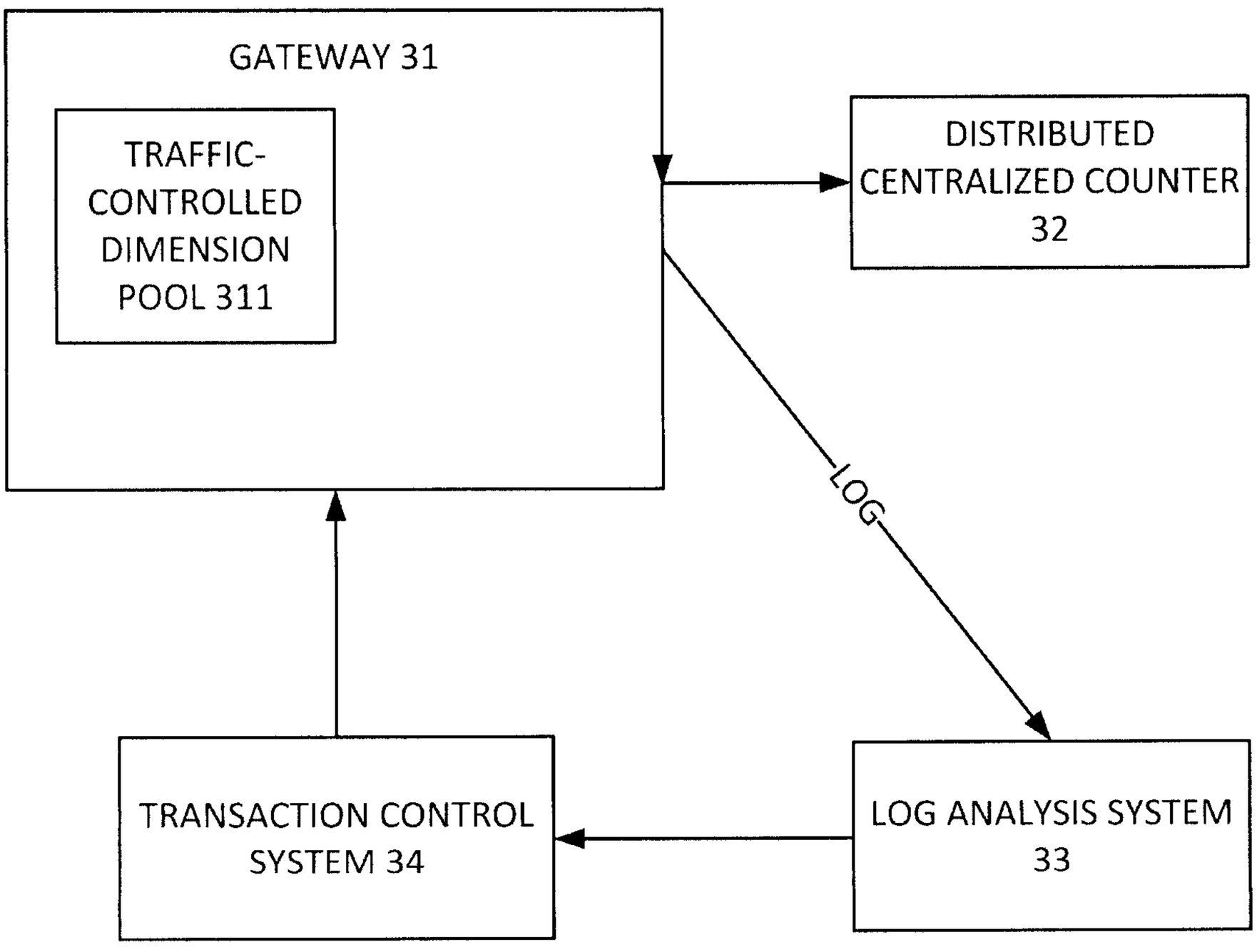
GATEWAY 31
TRAFFIC-CONTROLLED DIMENSION POOL 311
DISTRIBUTED CENTRALIZED COUNTER 32
LOG
TRANSACTION CONTROL SYSTEM 34
LOG ANALYSIS SYSTEM 33

Fig. 3