

MESSAGE PROCESSING METHOD, APPARATUS, DEVICE AND STORAGE MEDIUM

TECHNICAL FIELD

[0001] Embodiments of the disclosure relate to the field of data processing, and in particular to a message processing method, apparatus, device and storage medium.

BACKGROUND

[0002] In a game place, in order to guarantee fairness of game, it is necessary to analyze scene data such as behaviors of players and game controllers and placing positions of game props in the game place and to judge whether preset related rules are met or not. In a case where the related rules are not met, warning may be performed according to a corresponding warning mechanism.

[0003] In some solutions, a data analysis system that detects the scene data in the game place may send an warning message to a management system that processes the warning message after generating the warning message according to a detection result, and the management system performs warning by sending an instruction to an warning indicator lamp or sending a prompt to a manager. The coupling degree between the data analysis system and the management system is relatively high, such that the maintenance difficulty is relatively high.

SUMMARY

[0004] The embodiments of the disclosure provide a message processing method, apparatus, device and storage medium.

[0005] In a first aspect, a message processing method is provided. The message

processing method includes that: a plurality of messages generated by a data analysis system are acquired via at least one message queue, where the data analysis system is used for analyzing scene data to generate the plurality of messages; a target channel corresponding to each message in at least two connecting channels is determined; and each message is forwarded to a management system via the target channel corresponding to each message to enable the management system to process a message transmitted by each target channel based on a message processing strategy corresponding to each target channel.

[0006] In some embodiments, the method is applied to a message broker component. The message broker component is configured to forward the plurality of messages generated by the data analysis system to the management system, where the data analysis system includes a plurality of function modules, each function module being configured to analyze the scene data collected in a game place in real time by adopting an analysis method corresponding to the function module to generate a corresponding message; the message is used for indicating whether there is an abnormal event in the game place or not; and the management system is configured to exhibit the plurality of messages forwarded by the message broker component to a game controller.

[0007] In some embodiments, the data analysis system further includes a camera component arranged in the game place, the camera component being configured to collect the scene data in the game place in real time.

[0008] In some embodiments, the operation that a plurality of messages generated by a data analysis system is acquired via at least one message queue includes: a target topic corresponding to the message queue is acquired for each message queue in at least one message queue, and the message corresponding to the target topic in the plurality of messages is stored in the message queue; and the plurality of messages generated by the data analysis system are pulled from the at least one message queue.

[0009] In some embodiments, the operation that a target channel corresponding to each message in at least two connecting channels is determined includes: a target channel corresponding to each message is determined based on the message queue corresponding to each message and a preset first mapping relationship table, where the first mapping

relationship table includes a mapping relationship between the message queue and the target channel.

[0010] In some embodiments, the operation that a target channel corresponding to each message in at least two connecting channels is determined further includes: each message is analyzed to obtain attribute information carried by each message; and the target channel corresponding to each message in at least two connecting channels is determined based on the attribute information carried by each message.

[0011] According to the embodiment of the disclosure, target channels corresponding to the messages in part of message queues may be directly determined based on the preset mapping relationship, such that the forwarding efficiency of the message is guaranteed. Meanwhile, in a case where there is no mapping relationship of the message queue where the message is in the first mapping relationship table, the message may be transmitted to the corresponding channel accurately based on the attribute information of the message, such that the transfer accuracy of the message is improved.

[0012] In some embodiments, the attribute information at least includes at least one of a message type or a message identifier, the message type being used for determining a priority by which the management system processes the message, and the message identifier being used for identifying a way through which the management system exhibits the message.

[0013] In some embodiment, in a case where the attribute information includes the message type, the operation that a target channel corresponding to each message in at least two connecting channels is determined based on the attribute information carried by each message includes: in a case where the message type of the message is an warning message, a first connecting channel corresponding to the warning type in the at least two connecting channels is regarded as the target channel corresponding to the message. In a case where the message type of the message is a non-warning type, regarding a second connecting channel corresponding to the non-warning type in the at least two connecting channels as the target channel corresponding to the message, where the priority by which the management system processes the message in the first connecting channel is superior to the priority by which the management system processes the message in the second

connecting channel.

[0014] In some embodiments, the operation that a first connecting channel corresponding to the warning type in the at least two connecting channels is regarded as the target channel corresponding to the message includes: a warning grade of the message is determined according to the warning type of the message; and a first connecting channel corresponding to the warning grade in the at least two connecting channels is regarded as the target channel corresponding to the message.

[0015] Based on the embodiment, the message broker component may classify the plurality of messages transmitted in the data analysis system from dimensionality of the warning grade and transmit the messages to the management system via different first connecting channels respectively according to different warning grades. Thus, it is unnecessary to classify the warning grades of the messages again by the management system, and the management system processes the messages of different first connecting channels by adopting different processing priorities, such that the processing efficiency of the messages is improved.

[0016] In some embodiments, the operation that in a case where the attribute information includes the message identifier of the message, a target channel corresponding to each message in the at least one connecting channels is determined based on the attribute information carried by each message includes: a third connecting channel corresponding to the message identifier in the at least two connecting channels is regarded as the target channel corresponding to the message, where the management system exhibits the message corresponding to the message identifier in the third connecting channel via an exhibition way corresponding to the message identifier.

[0017] In some embodiments, the operation that a third connecting channel corresponding to the message identifier in the at least two connecting channels is regarded as the target channel corresponding to the message includes: the exhibition way corresponding to the message is determined according to the message identifier of the message and a preset second mapping relationship table, where the second mapping relationship table includes a mapping relationship between the message and the exhibition way and the exhibition way includes at least one of display screen exhibition,

indicator lamp exhibition or audio exhibition; and the third connecting channel corresponding to the exhibition way in the at least two connecting channels is regarded as the target channel corresponding to the message based on the exhibition way of the message.

[0018] Based on the embodiment, the message broker component may classify the plurality of messages transmitted in the data analysis system from dimensionality of the message identifier and transmit the messages to the management system via different third connecting channels respectively according to different message identifiers. Thus, it is unnecessary to classify the warning grades of the messages again by the management system, and the management system directly exhibits the messages of different third connecting channels by adopting different exhibition ways based on the third connecting channels, such that the processing efficiency of the messages is improved.

[0019] In a second aspect, a message processing system is provided. The message processing system includes a data analysis system, a message broker component and a management system. The data analysis system is configured to analyze scene data to generate a plurality of messages and send the plurality of messages to the message broker component; the message broker component is configured to acquire the plurality of messages via at least one message queue, determine a target channel corresponding to each message in at least two connecting channels and forward each message to the management system via the target channel corresponding to each message; and the management system is configured to process a message transmitted by each target channel based on a message processing strategy corresponding to each target channel.

[0020] In a third aspect, a message processing apparatus is provided. The message processing apparatus includes an acquisition unit configured to acquire a plurality of messages generated by a data analysis system via at least one message queue, where the data analysis system is used for analyzing scene data to generate the plurality of messages; a determination unit configured to determine a target channel corresponding to each message in at least two connecting channels; and a forwarding unit configured to forward each message to a management system via the target channel corresponding to each message to enable the management system to process a message transmitted by each

target channel based on a message processing strategy corresponding to each target channel.

[0021] In a fourth aspect, a message processing device is provided. The message processing device includes a memory and a processor, where the memory stores a computer program capable of running on the processor, and the processor realizes the steps of the method when executing the computer program.

[0022] In a fifth aspect, provided is a computer storage medium, having one or more computer programs stored thereon, where the one or more computer programs, when executed by one or more processors, may realize the steps of the method.

[0023] In the embodiment of the disclosure, the plurality of messages generated by the data analysis system are received via at least one message queue in the message broker component. Compared with a scheme that the data analysis system is directly communicated with the management system in traditional technologies, decoupling among the sub systems in the message processing system may be realized. In a development process of the data analysis system or the management system, it is unnecessary to modify the other system when one of the systems is changed, such that the expandability of the system is improved while the maintenance cost of the system is lowered. Further, aiming at message settings of different types and the connecting channels corresponding to the types, it may be convenient for the management system to set the message processing strategies corresponding to the connecting channels for different connecting channels. When receiving the messages, the management system may directly process the messages according to the message processing strategies corresponding to the target channels that transmits the messages, such that the message processing efficiency may be improved.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] FIG. 1 is a structural schematic diagram of a message processing system provided by an embodiment of the disclosure.

[0025] FIG. 2 is a flowchart of a message processing method provided by an embodiment of the disclosure.

[0026] FIG. 3 is a flowchart of a message processing method provided by an embodiment of the disclosure.

[0027] FIG. 4 is a flowchart of a message processing method provided by an embodiment of the disclosure.

[0028] FIG. 5 is a flowchart of a message processing method provided by an embodiment of the disclosure.

[0029] FIG. 6 is a flowchart of a message processing method provided by another embodiment of the disclosure.

[0030] FIG. 7 is a schematic diagram of system architecture of a message processing system provided by an embodiment of the disclosure.

[0031] FIG. 8 is a schematic diagram of a structural composition of a message processing system provided by an embodiment of the disclosure.

[0032] FIG. 9 is a schematic diagram of a hardware entity of a message processing device provided by an embodiment of the disclosure.

DETAILED DESCRIPTION

[0033] The technical solutions of the disclosure will be specifically described below through the embodiments and in combination with the drawings in detail. The following specific embodiments may be combined. The same or similar concepts or processes will not be elaborated in some embodiments.

[0034] It is to be noted that, in the embodiments of the disclosure, "first", "second" and the like are adopted to distinguish similar objects and not intended to describe a target sequence or order. In addition, the technical solutions recorded in the embodiments of the disclosure may be freely combined without conflicts.

[0035] The message processing method provided in the embodiments of the disclosure may be applied to a casino scenario. In the casino scenario, the player mentioned anywhere in the embodiments of the disclosure may include a player or a banker, the game controller mentioned anywhere in the embodiments of the disclosure may refer to a dealer, the game table mentioned anywhere in the embodiments of the disclosure may refer to a gambling table, the game currency mentioned anywhere in the embodiments of the disclosure may include chip, the placement region mentioned anywhere in the embodiments of the disclosure may refer to an anteing region or a betting region on the game table. The management system mentioned anywhere in the embodiments of the disclosure may refer to a Casinos Management System (CMS).

[0036] In some implementation modes, the game on the game table may be Baccarat. In some other implementation modes, the game on the game table may be other games, such as Zhajinhua, Niuniu, Fishing Joy, Texas Poker, one-arm bandit, show-hand, Pai Gow or Fight the landlord. The game type is not limited in the embodiments of the disclosure. The game on the game table may be a card game or a non-card game.

[0037] FIG. 1 is the structural schematic diagram of a message processing system provided by the embodiment of the disclosure. As shown in FIG. 1, the system 100 may include the data analysis system 101, the message broker component 102 and the management system 103.

[0038] In some implementation modes, the data analysis system 101 may include the camera component and an analysis device. The camera component may be a bird view camera component. The camera component may include a plurality of cameras, for example, the camera component may include two cameras, three cameras, four cameras and etc. The plurality of cameras may be arranged above a game table, such that each camera may shoot the one game table, or, the plurality of cameras may be arranged above a plurality of game tables, such that each camera may shoot each game table in the plurality of game tables. In some other implementation modes, the camera component may include one camera. The camera may be arranged above one game table, or, the camera may be arranged above the plurality of game tables. The analyzing device may only correspond to one camera component. The analyzing device may further correspond

to a plurality of camera components, for example, the plurality of camera components corresponding to the analyzing device may be camera components configured to shoot the game tables in one or more game places, or, the plurality of camera components corresponding to the analyzing device may be camera components configured to shoot the game tables in a part of regions of one game place. The part of regions may be common regions, Very Important Person (VIP) regions, etc.

[0039] In some implementation modes, it is necessary to arrange the camera components in the data analysis system 101 in the game place to collect the scene data in the current game place. The scene data may include action data of figure objects (game controllers and/or players) and game prop data in the game tables. The analyzing device in the data analysis system 101 may be arranged in the game place. For example, the analyzing device may be connected with a server in the game place. In some other implementation modes, the analyzing device in the data analysis system 101 may further be arranged at a cloud.

[0040] The camera assembly may be in communication connection with the analyzing device. In some implementation modes, the camera components may shoot real-time images periodically or aperiodically and send the shot real-time images to the analyzing device. For example, in a case where the camera component includes the plurality of cameras, the plurality of cameras may shoot the real-time images at every target interval and send the shot real-time images to the analyzing device. The plurality of cameras may shoot the real-time images at the same time or at different times. In some other implementation modes, the camera components may shoot real-time videos and send the real-time videos to the analyzing device. For example, in a case where the camera component includes the plurality of cameras, the plurality of cameras may send the shot real-time videos to the analyzing device respectively, such that the analyzing device crops the real-time images from the real-time videos. The real-time images in the embodiment of the disclosure may be any one or more of undermentioned images.

[0041] In some implementation modes, the camera components may shoot images continuously so as to send the shot images to the analyzing device continuously so as to detect state change of an object in a scene within a period of time or judge events

occurring within the period of time. In some other implementation modes, the camera component may be triggered by a target to shoot an image. For example, the camera component may start shooting an image responsive to an instruction that a game result comes out or game currency is placed. The analyzing device may analyze the game currency on the game table and a game controller and player at the game table in the game place based on the real-time image to determine whether actions of the game controller and/or the player conform to rules or are proper.

[0042] In some embodiments, the analyzing device in the data analysis system 101 may be provided with a plurality of function modules, and each function module may be configured to analyze the currently collected scene data by adopting different analysis methods. The plurality of function modules may share the camera components in the data analysis system. For example, under the circumstance that the camera component includes the plurality of cameras, each function module in the plurality of function modules may analyze real-time images/real-time videos collected by part or all of cameras in the plurality of cameras, and the cameras corresponding to different function modules may be same, different or partially same.

[0043] The data analysis system 101 may be in communication connection with the message broker component 102. In some embodiments, the data analysis system 101 may send the messages sent to the management system 103 first to the message broker component 102 and then send the messages to the management system 103 via the message broker component 102. A message transfer mode between the data analysis system 101 and the message broker component 102 may be an issuing/subscribing mode, the data analysis system 101 may issue the messages with special topic to the message queue arranged in the message broker component 102, and then the message broker component 102 pulls the messages with special topics from the message queue by way of subscribing the special topic. The data analysis system and the message broker component are decoupled by way of issuing/subscribing, such that the expandability of the message processing system is improved.

[0044] In some embodiments, the message broker component is configured to forward the plurality of messages generated by the data analysis system to the management

system. The data analysis system may include the analyzing device and the camera components arranged in the game place. The data analysis system collects the scene data in the game place in real time via the camera components and analyzes the scene data via a preset analyzing method in the analyzing device, for example, to identify and/or detect an object and identify an event, to generate a corresponding message. The message broker component 102 may further subscribe messages of part of topics to further screen messages with different topics. For example, in a case where the data analysis system 101 includes three function modules, the first function module may generate messages of three topics A, B and C, the second function module may generate messages of three topics B, C and D, and the third function module may generate messages of two topics A and D. In the message broker component 102, four message queues may be arranged to store messages corresponding to the four topics A, B, C and C respectively. Then, the message broker component 102 may subscribe all or part of topics to further pull messages needed to be forwarded from the four message queues.

[0045] The message broker component may specifically a message-oriented middleware which may either be embedded into the data analysis system or the management system or be independent from the data analysis system and the management system. Its major action is to provide a message service between the data analysis system and the management system by way of decoupling.

[0046] In some embodiments, the messages generated by the data analysis system 101 may include a warning message or a non-warning message. Under the condition that the analyzing device in the data analysis system 101 determines that the actions of the game controller or the player are improper, for reducing the loss of the game place or players, the data analysis system 101 may send warning information to the management system 103 on the game table corresponding to the game controller or player whose actions are improper such that the management system 103 may give a warning corresponding to the warning information to warn the game controller or the player through the game table to avoid a condition that the improper actions of the game controller or the player cause the loss of the game place or the players. In the embodiment of the disclosure, the data analysis system 101 may send the messages sent to the message broker component 102 and then forwards the messages to the management system 103 via the message broker

component 102.

[0047] In some embodiments, the analyzing device in the data analysis system 101 may encapsulate the generated messages to obtain a message packet carrying the message type, the message identifier and the message content and send the message packet to the message queues in the message broker component 102. The message queue in the message broker component 102 may be RocketMQ and the message broker component 102 may select at least one topic to be subscribed according to a demand.

[0048] In some embodiments, the message broker component 102 and the management system 103 may be in communication connection by adopting at least one connecting channel. Different connecting channels may forward different messages, and correspondingly, the management system 103 may further process the messages in the different connecting channels by adopting different processing modes. For example, the connecting channel between the message broker component 102 and the management system 103 may include a connecting channel for lightening indicator lamps at different colors, a connecting channel for exhibiting the message content. The management system 103 will lighten the indicator lamps corresponding to the connecting channel for the messages in the connecting channel for lightening the indicator lamps at different colors according to the message content of the message and display different colors according to the message content. The management system 103 will analyze the message to obtain corresponding message content for the message in the connecting channel for exhibiting the message content and exhibit the message content on a corresponding display interface.

[0049] The embodiments of the disclosure are not limited thereto. In the embodiment corresponding to FIG. 1, the data analysis system 101, the message broker component 102 and the management system 103 that are presented are independent respectively. However, in another embodiments, the data analysis system 101 and the message broker component 102 may be integrated, or, the message broker component 102 and the management system 103 may be integrated.

[0050] A message processing method provided in the embodiments of the disclosure will be described below. According to the method, abnormal game behaviors in the game

place may be supervised, and under the condition that the player or the game controller does an action that impairs the fairness in the game, a management system may warn, thereby timely giving an early warning about the condition that the player does an action that does not conform to a game rule to cause the loss of a game place.

[0051] FIG. 2 is a flowchart of a message processing method provided by an embodiment of the disclosure. As shown in FIG. 2, the method is applied to a message broker component. The method includes the following operations.

[0052] In S201, a plurality of messages generated by a data analysis system are acquired via at least one message queue, herein the data analysis system is used for analyzing scene data to generate the plurality of messages.

[0053] In some embodiments, the message broker component is configured to forward the plurality of messages generated by the data analysis system to the management system. The data analysis system may include the analyzing device and the camera components arranged in the recreation ground. The data analysis system collects the scene data in the recreation ground in real time via the camera components and analyzes the scene data via a preset analyzing method in the analyzing device, for example, to identify and/or detect an object and identify an event, to generate a corresponding message. The message may include the warning message and/or the non-warning message. Specifically, in a case where it is judged that the analyzing result meets a warning condition, for example, under the circumstance that the analyzing result that there is a cheating behavior in the game, the corresponding warning message is generated; under the circumstance that it is judged that the analyzing result does not meet the warning condition, the corresponding non-warning message is generated. The non-warning message may be the message including the analyzing result, for example, the message including the state data of the game prop of the current game scene or a notification message representing a normal game state.

[0054] In some embodiments, the camera components may acquire real-time scene data in the current game place and transmit the real-time scene data to the analyzing device. The analyzing device may analyze the real-time scene data based on a preset period to obtain a plurality of messages. Different analysis methods may further be

arranged in the data analysis system, and each analysis method may include at least one message, such that the data analysis system may obtain the plurality of messages corresponding to the plurality of analysis methods. The analyzing method may include, but not limited to, object detection, attribute information identification of the object, state identification of the object, identification of relationship among the objects, detection and/or identification of an event, detection and/or identification of change of event state and etc. Specific objects and events may be determined according to a real-time scene, for example, in a table top card game scene, the objects may include persons and/or cards participating in the game and the events include dealing cards to special persons.

[0055] It is to be noted that the messages generated by the data analysis system may be configured to determine whether there is abnormal conditions in the current game scene or not. The warning message represents the abnormal condition while the non-warning message may represent no abnormal condition. For example, the data analysis system may generate the warning message for representing abnormality of the behavior of the game controller and may further generate the message that represents whether the behavior of the player is abnormal or not. The message directing at whether there is abnormality in behavior of the game controller or not further may include the following several aspects: whether control of the game progress by the game controller is in accordance with a standard game rule or not, whether the placing position of the game prop by the game controller is in accordance with a standard placing position or not, whether the receiving quantity and the distributing quality of the game props by the game controller are in accordance with those in the standard game rule and etc. The message directing at whether the behavior of the player is abnormal or not further may include the following several aspects: whether the placing position of the game prop by the player is in accordance with a standard placing position or not, whether a gesture action of the player in the gaming process is accordance with a standard gesture rule or not, whether a using quantity of the game props or acquired data of the player are in accordance with the standard game rule and etc.

[0056] In some embodiments, after generating the plurality of messages, the data analysis system may encapsulate the message by adopting a preset encapsulation method for each message to obtain a message packet including the attribute information of the

message and send the encapsulated message packet to the messages agent component. The attribute information of the message may include one of the follows: message type, message identifier and message content. In the embodiments below, the message is called a message for short.

[0057] In some embodiments, the message broker component may be preset with at least one message queue, and the plurality of messages generated by the data analysis system may be stored via the at least one message queue. The at least one message queue may serve as a message-oriented middleware through which the plurality of messages may be stored. Meanwhile, the message broker component may acquire part of or all of the plurality of messages stored in the message-oriented middleware based on the demand of the management system. In a case where the management system needs all the messages generated by the data analysis system, the message broker component may acquire all messages stored by the message-oriented middleware. In a case where the message broker component may acquire all messages stored by the message-oriented middleware, the message broker component may acquire part of messages in the plurality of messages stored in the message-oriented middleware.

[0058] In some embodiments, the message transfer mode between the data analysis system and the message broker component may be an issuing/subscribing mode, the data analysis system may issue the messages with at least one topic to the message queue arranged in the message broker component, and then the message broker component pulls the messages with the topic from the message queue by way of subscribing the special topic. The data analysis system and the message broker component are decoupled by way of issuing/subscribing, such that the expandability of the message processing system is improved. For example, in a case where messages corresponding to N topics may be generated in the data analysis system, the message broker component may be provided with N message queues correspondingly and each message queue corresponds to one of the N topics.

[0059] Based on the embodiment of the disclosure, as the messages are transferred between the data analysis system and the message broker component by the issuing/subscribing mode, in a case where the data analysis system needs to change its

function module or add the function module additionally, it is unnecessary for operation and maintenance staffs to modify the message broker component synchronously as the data analysis system and the message broker component are decoupled, such that the expandability of the message processing system is improved, and meanwhile, the development cost and the operation and maintenance cost of the system are further lowered.

[0060] Specifically, when it is needed to add an analytical method in the data analysis system, the data analysis system may receive a configuration instruction sent by the operation and maintenance staff. The configuration instruction is used for newly adding the function module corresponding to the analytical method in the data analysis system. The newly added function module may generate messages with different tops and issue the same based on the corresponding analytical method, and the message broker component may subscribe the messages corresponding to each topic issued by the newly added function module by adopting the message queue corresponding to each topic under a circumstance of no modification.

[0061] In S202, a target channel corresponding to each message in at least two connecting channels is determined.

[0062] In some embodiments, the message broker component and the management system may be in communication connection by adopting at least two connecting channels. Each connecting channel is configured to transmit the messages corresponding to the connecting channel, and correspondingly, after receiving the messages in the connecting channel, the management system will process the messages by adopting the message processing strategy corresponding to the connecting channel.

[0063] In some embodiments, after receiving the plurality of messages generated by the data analysis system via the at least one message queue, the message agent compound may determines the connecting channel corresponding to the message based on the attribute information carried by each message. The S202 may be realized in the following manner: for each message, based on the attribute information carried by the message, the message type of the message is acquired, and the message type includes the warning message and the non-warning message. Correspondingly, the at least two connecting

channels may include at least one connecting channel configured to transfer the warning message and at least one connecting channel configured to transfer the non-warning message. Therefore, in a case where the message is the warning message, at least one connecting channel configured to transfer the warning message in the at least two connecting channels is regarded as the target channel of the message. In a case where the message is the non-warning message, at least one connecting channel configured to transfer the non-warning message in the at least two connecting channels is regarded as the target channel of the message.

[0064] In some embodiments, after receiving the plurality of messages generated by the data analysis system via the at least one message queue, for each message, the message agent compound may determine the target channel corresponding to the message in the at least one connecting channel based on the message queue pulling the message. The message broker component is pre-set with a corresponding relationship between each message queue and the connecting channel.

[0065] It is to be noted that for each message, there may be one or more the target channels corresponding to the message, that is, the same message may be merely forwarded to the management system via one connecting channel. The management system merely adopts one message processing strategy to process the message. The same message may further be forwarded to the management system via different connecting channels. The management system may adopt different message processing strategies to process the message. For example, if there is one warning message, in a case where the warning message is transferred to the management system via one target channel, the management system may merely process the warning message by way of generating a prompt sound; in a case where the warning message is transferred to the management system via the plurality of target channels, the management system may process the warning message by way of generating the prompt sound, lightening the indicator lamp and exhibiting by the display device and etc.

[0066] In some embodiments, the connecting channel may be established based on a websocket protocol and the connecting channel established based on the protocol may realize full-duplex communication on a single Transmission Control Protocol (TCP)

connection. Meanwhile, based on the connecting channel, the message broker component may push the message to the management system actively and the management system may further send a special request to the message broker component. In this way, it is only needed to accomplish handshake once between the message broker component and the management system to establish a persistent connecting channel and perform bidirectional data transmission based on the connecting channel.

[0067] In S203, each message is forwarded to a management system via the target channel corresponding to each message to enable the management system to process a message transmitted by each target channel based on a message processing strategy corresponding to each target channel.

[0068] In some embodiments, in a case where the management system receives the message in the connecting channel for transferring the warning message, the message may be processed by adopting corresponding warning message processing strategy, for example, a corresponding warning prompt sound may be generated based on the message, a corresponding warning indicator lamp may further be lightened based on the message, the warning message may further be exhibited on the preset display device based on the message and etc. In a case where the management system receives the message of the connecting channel for transferring the non-warning message, the message may be processed by adopting the corresponding non-warning message processing strategy, for example, the corresponding normal indicator lamp may be lightened based on the message and the non-warning message may further be exhibited on the preset display device based on the message.

[0069] In the embodiment of the disclosure, the plurality of messages generated by the data analysis system are received via at least one message queue. Compared with a scheme that the data analysis system is directly communicated with the management system in the related art, decoupling among the sub systems in the message processing system may be realized. In a development process of the data analysis system or the management system, it is unnecessary to modify the other system when one of the systems is changed, such that the expandability of the system is improved while the maintenance cost of the system is lowered. Further, aiming at message settings of

different types and the connecting channels corresponding to the types, it may be convenient for the management system to set the message processing strategies corresponding to the connecting channels for different connecting channels. When receiving the messages, the management system may directly process the messages according to the message processing strategies corresponding to the target channels that transmits the messages, such that the message processing efficiency may be improved.

[0070] Referring to FIG. 3, FIG. 3 is an optional flow schematic diagram of a message processing method provided by the embodiment of the disclosure. Based on FIG. 2, S201 in FIG. 2 may be updated to S301, S202 may be updated to S302, and description will be made in combination with steps shown in FIG. 3.

[0071] In S301, the plurality of messages generated by the data analysis system are acquired via the at least one message queue.

[0072] In some embodiments, the data analysis system includes a plurality of function modules, each function module being configured to analyze the scene data collected in a game place in real time by adopting an analysis method corresponding to the function module to generate a corresponding message; the message is used for indicating whether there is an abnormal event in the game place or not. Further, different function modules may adopt different analytical methods to analyze the scene data collected in real time in the game place.

[0073] It is to be noted that the plurality of function modules in the data analysis system are not detection modules realized via a hardware but software in form of, for example, program and plug-in, formed by different detecting algorithms. These function modules are logical, such that the function modules may be combined at will or may be further split according to the implemented functions.

[0074] In some embodiments, the plurality of messages generated by the data analysis system are acquired via the at least one message queue from S3011 to S3012.

[0075] In S3011, a target topic corresponding to the message queue is acquired for each message queue in at least one message queue, and storing the message corresponding to the target topic in the plurality of messages in the message queue.

- [0076] In S3012, the plurality of messages generated by the data analysis system are pulled from the at least one message queue.
- [0077] In S302, a target channel corresponding to each message in at least two connecting channels is determined.
- [0078] In some embodiments, a target channel corresponding to each message in at least two connecting channels via the S3021.
- [0079] In S3021, a target channel corresponding to each message is determined based on the message queue corresponding to each message and a preset first mapping relationship table, herein the first mapping relationship table includes a mapping relationship between the message queue and the target channel.
- [0080] In some embodiments, a target channel corresponding to each message is determined in at least two connecting channels via S3022.
- [0081] In S3022, each message is analyzed to obtain attribute information carried by each message, and the target channel corresponding to each message is determined in at least two connecting channels based on the attribute information carried by each message.
- [0082] In some other embodiments, a target channel corresponding to each message in at least two connecting channels via the S3021 and S3022 simultaneously. For example, for each message, the target channel corresponding to the message is determined based on the message queue corresponding to the message and the first mapping relationship table. The first mapping relationship table includes the mapping relationship between the message queue and the target channel. In a case where the message does not exist in the first mapping relationship, the message is analyzed to obtain the attribute information carried by the message. Based on the attribute information carried by the message, the target channel corresponding to the message is determined in the at least two connecting channels. According to the embodiment of the disclosure, target channels corresponding to the messages in the message queue may be determined based on the preset mapping relationship, such that the forwarding efficiency of the message is improved. Meanwhile, in a case where there is no mapping relationship of the message queue where the message

is in the first mapping relationship table, the message may be transmitted to the corresponding channel accurately based on the attribute information of the message, such that the transfer accuracy of the message is improved.

[0083] In some embodiments, the attribute information at least includes one of the follows: message type and message identifier. In a case where the attribute information includes the message type, the operation that a target channel corresponding to each message is determined in at least two connecting channels based on the attribute information carried by each message in FIG. 3 may be realized via S401 to S402 in FIG. 4. Referring to FIG. 4, FIG. 4 is an optional flow schematic diagram of a message processing method provided by the embodiment of the disclosure. Description will be made in combination with steps shown in FIG. 4.

[0084] In S401, in a case where the message type of the message is a warning message, a first connecting channel corresponding to the warning type in the at least two connecting channels is regarded as the target channel corresponding to the message.

[0085] In S402, in a case where the message type of the message is a non-warning type, a second connecting channel corresponding to the non-warning type in the at least two connecting channels is regarded as the target channel corresponding to the message, herein the priority by which the management system processes the message in the first connecting channel is superior to the priority by which the management system processes the message in the second connecting channel.

[0086] In some embodiments, the at least one first connecting channel corresponding to the warning type and at least one second connecting channel corresponding to the non-warning type may exist in the at least two connecting channel. For example, if there are P connecting channels, M1 first connecting channels corresponding to the warning type and N1 second connecting channels corresponding to the non-warning type may exist, herein M1 is greater than or equal to 0, N1 is greater than or equal to 0, and the sum of M1 and N1 is smaller than or equal to P. In a case where the sum of M1 and N1 is smaller than P, it represents that there is a message capable of forwarding the warning type and the non-warning type simultaneously in the at least two connecting channels.

[0087] It is to be noted that in the game process, the game controller or the player is not abnormal in most time, such that the corresponding data analysis system will transmit the message of the non-warning type in most time, and meanwhile, the staff often needs not to process the message of the non-warning type. The staff often needs to pay attention to the message of the warning type under a circumstance of abnormal behaviors of the game controller or the player, for example, misdealing, such that for the first connecting channel corresponding to the warning type, the priority of the management system that process the message in the first connecting channel is relatively high, and for the second connecting channel corresponding to the non-warning type, the priority of the management system that process the message in the second connecting channel is relatively low.

[0088] In some other embodiments, the first connecting channel corresponding to the warning type in the at least two connecting channels may be regarded as the target channel corresponding to the message via S4011 to S4012.

[0089] In S4011, a warning grade of the message is determined according to the warning type of the message.

[0090] In S4012, a first connecting channel corresponding to the warning grade in the at least two connecting channels is regarded as the target channel corresponding to the message.

[0091] In a case where the message type of the message is the warning type, the warning type is not only used for representing whether the message is the warning message or not, but also used for representing the warning grade of the message. Correspondingly, different warning grades corresponding to different first connecting channels, for example, if there are M1 first connecting channels in the at least two connecting channels and the warning grade of the message includes totally three grades: first warning grade, second warning grade and third warning grade ranked from high to low according to the warning grade, the first connecting channel corresponding to the first warning grade, the first connecting channel corresponding to the second warning grade and the first connecting channel corresponding to the third warning grade may exist in the M1 first connecting channels.

[0092] For the messages in the first connecting channels corresponding to different warning grades, the management system may further process the messages by adopting different priorities. For example, based on the example, the priority of the management system that processes the messages transmitted by the first connecting channels corresponding to the first warning grade is higher than the priority of the management system that processes the messages transmitted by the first connecting channels corresponding to the second warning grade, and meanwhile, the priority of the management system that processes the messages transmitted by the first connecting channels corresponding to the second warning grade is higher than the priority of the management system that processes the messages transmitted by the first connecting channels corresponding to the third warning grade.

[0093] In some embodiments, as the messages generated by the data analysis system have been classified, the message broker component may remove information about the message type in an original message in a process of transmitting the messages to the management system so as to transmit the messages without the message type information to the management system via the connecting channels. For example, for the warning process of lightening the abnormal indicator lamp according to behavior abnormality of the player, the warning message generated by the data analysis system may need the warning message carrying the message type, the player identifier and the abnormal type and the like of the warning message. After classifying the alarm message, the message broker component determines the target first connecting channel corresponding to the warning message, and the management system will send out a lightening signal to the corresponding abnormal indicator lamp for the message transferred by the target first connecting channel, such that in the process that the management system forwards the warning message, it is unnecessary to forward the original warning message and it is necessary to forward the request of lightening the indicator lamp. Therefore, the transmission bandwidth between the message broker component and the management system is saved.

[0094] Based on the embodiment, the message agent component may classify the plurality of messages transmitted in the data analysis system from dimensionality of the warning grade and transmit the messages to the management system via different first

connecting channels respectively according to different warning grades. Thus, it is unnecessary to classify the warning grades of the messages again by the management system, and the management system processes the messages of different first connecting channels by adopting different processing priorities, such that the processing efficiency of the messages is improved.

[0095] In some embodiments, in a case where the attribute information includes the message identifier of the message, the operation that a target channel corresponding to each message is determined in at least two connecting channels based on the attribute information carried by each message in FIG. 3 may be realized via S501 in FIG. 5. Referring to FIG. 5, FIG. 5 is an optional flow schematic diagram of a message processing method provided by the embodiment of the disclosure. Description will be made in combination with steps shown in FIG. 5.

[0096] In S501, a third connecting channel corresponding to the message identifier in the at least two connecting channels is regarded as the target channel corresponding to the message, herein the management system exhibits the message corresponding to the message identifier in the third connecting channel via an exhibition way corresponding to the message identifier.

[0097] In some embodiments, for any one third connecting channel, the third connecting channel is merely configured to transfer the message corresponding to the message identifier, such that when the management system acquires the message transferred by the message broker component via the third connecting channel, the message in the third connecting channel may be directly exhibited by the exhibition mode corresponding to the message identifier.

[0098] In some other embodiments, the third connecting channel corresponding to the message identifier in the at least two connecting channels may be regarded as the target channel corresponding to the message via S5011 to S5012.

[0099] In S5011, the exhibition way corresponding to the message is determined according to the message identifier of the message and a preset second mapping relationship table, herein the second mapping relationship table includes a mapping

relationship between the message and the exhibition way and the exhibition way includes at least one of display screen exhibition, indicator lamp exhibition or audio exhibition.

[00100] In S5012, the third connecting channel corresponding to the exhibition way in the at least two connecting channels is regarded as the target channel corresponding to the message based on the exhibition way of the message.

[00101] The message broker component is pre-set with a second mapping relationship table. The second mapping relationship table may include all message identifiers generated by the data analysis system and the exhibition mode corresponding to each message identifier. Each message identifier may merely correspond to one exhibition mode and may further correspond to various exhibition modes simultaneously, which is not defined in the disclosure. For example, for the function modules in the data analysis system for detecting whether the player is in the corresponding position or not, the function modules are configured to acquire a real-time image of a position corresponding to the game table, judges whether the player is in position or based on the real-time image and generate the non-warning message for indicating that the player is in position under the circumstance that the player is in position. For the non-warning message, the second mapping relationship table may merely store a corresponding relationship between the non-warning message and exhibition of the indicator lamp, that is, the management system may transfer related information by lightening the indicator lamp representing that the player is in position all the time. Correspondingly, in a case where the player is not in position, the function modules will generate the warning message representing that the player is not in position. For the warning message, the second mapping relationship may merely store the corresponding relationship between the warning message and exhibition of the indicator lamp and may further store a corresponding relationship between the warning message and audio exhibition, that is, the management system may transfer the related information by way of lightening the indicator lamp representing that the player is not in position and playing related prompt sound.

[00102] In some embodiments, for each third connecting channel, after the message transferred in the third connecting channel is transferred to the management system, the

management system exhibits the message based on the exhibition mode corresponding to the third connecting channel.

[00103] Based on the embodiment, the message broker component may classify the plurality of messages transmitted in the data analysis system from dimensionality of the message identifier and transmit the messages to the management system via different third connecting channels respectively according to different message identifiers. Thus, it is unnecessary to classify the warning grades of the messages again by the management system, and the management system exhibits the messages of different third connecting channels by adopting different exhibition ways, such that the processing efficiency of the messages is improved.

[00104] The embodiment of the disclosure further provides a message processing system. The message processing system includes a data analysis system, a message broker component and a management system, herein the data analysis system is configured to analyze scene data to generate a plurality of messages and send the plurality of messages to the message broker component; the message broker component is configured to acquire the plurality of messages via at least one message queue, determine a target channel corresponding to each message in at least two connecting channels and forward each message to the management system via the target channel corresponding to each message; and the management system is configured to process a message transmitted by each target channel based on a message processing strategy corresponding to each target channel.

[00105] The embodiment of the disclosure further provides a message processing method applied to the message processing system. Referring to FIG. 6, FIG. 6 is an optional flow schematic diagram of a message processing method provided by the embodiment of the disclosure. Description will be made in combination with steps shown in FIG. 6.

[00106] In S601, the data analysis system analyzes scene data to generate a plurality of messages and send the plurality of messages to the message broker component.

[00107] In S602, the message broker component acquires the plurality of messages via

at least one message queue, determines a target channel corresponding to each message in at least two connecting channels and forwards each message to the management system via the target channel corresponding to each message.

[00108] In S603, the management system processes a message transmitted by each target channel based on a message processing strategy corresponding to each target channel.

[00109] In the embodiment of the disclosure, as the plurality of messages generated by the data analysis system are received via at least one message queue, compared with a scheme that the data analysis system is directly communicated with the management system in the related art, decoupling among the sub systems in the message processing system may be realized. In a development process of the data analysis system or the management system, it is unnecessary to modify the other system when one of the systems is changed, such that the expandability of the system is improved while the maintenance cost of the system is lowered. Further, aiming at message settings of different types and the connecting channels corresponding to the types in the message broke component and the management system, it may be convenient for the management system to set the message processing strategies corresponding to the connecting channels for different connecting channels. When receiving the messages, the management system may directly process the messages according to the message processing strategies corresponding to the target channels that transmits the messages, such that the message processing efficiency may be improved.

[00110] Description on an exemplary application of the embodiment of the application in an actual application scenario will be made below. Referring to FIG. 7, Fig. 7 is an optional system architecture schematic diagram of a message processing system provided by an embodiment of the disclosure. The data analysis system 701 and the message broker component 702 transfer the messages in the at least one message queue via the RocketMQ (message-oriented middleware), and the message broker component 702 and the management system 7403 transfers the messages via the WebSocket (connecting channel).

[00111] In some embodiments, the data analysis system includes the plurality of

function modules (core-function) 7011, the function modules 7011 are not detection modules realized via a hardware but software in form of, for example, program and plug-in, formed by different detecting algorithms. These function modules are logical, such that the function modules may be combined at will or may be further split according to the implemented functions.

[00112] In some embodiments, each function module operates the corresponding service processing logic and generates the message, and the message may include the non-warning message and the warning message. Then, the function module may send the message needed to be pushed to the CMS system to the message queue of RocketMQ, and the message broker component (msg-broker-service) forwards the non-warning message and/or the warning message finally to the CMS system via the WebSocket channel by subscribing the messages in the RocketMQ message queue. The data analysis system may send data in real time to the management system by way of WebSocket. It is to be noted that the main reason of using a WebSocket interaction mode rather than Http to communicate is that it is unnecessary to establish a connection between networks every time, it is only needed to establish a connection at one time to push the data in real time, thereby lowering the delay cost caused by network connection.

[00113] In order to acquire more comprehensive scene data, in the game place, the data analysis system (Data Analyzing Service, DAS) may adopt different function modules for different types of scene data, and the different function modules correspond to different service processing logics, for example, the service logic corresponding to a core function module for detecting a card dealing sequence includes judging whether the card dealing sequence is in accordance with the game rule or not according to the sequence of paper cards, and the core function module for detecting a game currency placing logic of the player includes judging whether the player is in a region allowed to place the game currency and/or place the game currency in the game stage according to an association relationship between the hand of the player and the game currency and the position of the game currency. According to the embodiment of the disclosure, the message broker component is arranged between the data analysis system and the management system by establishing the message broker component (msg-broker-service), and further, the WebSocket messages sent by all the function modules are collected uniformly via the

message broker component and are forwarded to the downstream management system. In some embodiments, the embodiment of the disclosure further may classify the messages send out: warning messages and non-warning messages, and messages of different types are pushed to different WebSocket channels. Via the abovementioned embodiments, it is only needed to establish a connection between the CMS system and msg-broker-service and it is not needed to establish an independent WebSocket connection for each function module. In a case where the function module is additionally arranged, it is not needed to modify an existing WebSocket program of the CMS system, such that the expandability of the system is improved.

[00114] In some embodiments, each function module in the data analysis system performs data encapsulation on the messages sent to the CMS system respectively and finally sends the encapsulated messages to topics corresponding to the RocketMQ; the encapsulated message includes message type (messageType), message identifier (alarmId) and message content (alarmInfo) of the current message. The message broker component gets the content of the message sent to the CMS system by subscribing topic corresponding to RocketMQ and judges the WebSocket channel where the message is sent or sends the message directly to some WebSocket (because the message sent by some topic may be sent to one WebSocket) based on the message type and the message identifier of the message by analyzing the encapsulated message. A connection is established between the CMS system and the message broker component via different WebSocket to process the received information by different instructions, for example, the CMS system lightens the indicator lamps at different colors according to different warning messages or the CMS system exhibits corresponding information.

[00115] By means of the embodiments, the message broker component independent on WebSocket connection between each function module and CMS in the data analysis system may subscribe and forward the messages. Dependence among systems is reduced and expandability is improved. Meanwhile, the technical scheme further may be repeatedly used in other game systems, and is small in cost, simple in logic, easy to implement and high in precision.

[00116] FIG. 8 is a composition structural schematic diagram of a message processing

apparatus provided by an embodiment of the disclosure. As shown in the FIG. 8, the message processing apparatus 800 includes an acquisition unit 801, a determination unit 802 and a forwarding unit 803.

[00117] The acquisition unit 801 is configured to acquire a plurality of messages generated by a data analysis system via at least one message queue, herein the data analysis system is used for analyzing scene data to generate the plurality of messages.

[00118] The determination unit 802 is configured to determine a target channel corresponding to each message in at least two connecting channels.

[00119] The forwarding unit 803 is configured to forward each message to a management system via the target channel corresponding to each message to enable the management system to process a message transmitted by each target channel based on a message processing strategy corresponding to each target channel.

[00120] In some embodiments, the message processing apparatus is applied to a message broker component. The message broker component is configured to forward the plurality of messages generated by the data analysis system to the management system, herein the data analysis system includes a plurality of function modules, each function module being configured to analyze the scene data collected in a game place in real time by adopting an analysis method corresponding to the function module to generate a corresponding message; the message is used for indicating whether there is an abnormal event in the game place or not; and the management system is configured to exhibit the plurality of messages forwarded by the message broker component to a game controller.

[00121] In some embodiments, the data analysis system further includes a camera component arranged in the game place, the camera component being configured to collect the scene data in the game place in real time.

[00122] In some embodiments, the acquisition unit 801 is further configured to acquire a target topic corresponding to the message queue for each message queue in at least one message queue, and store the message corresponding to the target topic in the plurality of messages in the message queue, and pull the plurality of messages generated by the data analysis system from the at least one message queue.

- [00123] In some embodiments, the determination unit 802 is further configured to determine a target channel corresponding to each message based on the message queue corresponding to each message and a preset first mapping relationship table, herein the first mapping relationship table includes a mapping relationship between the message queue and the target channel.
- [00124] In some embodiments, the determination unit 802 is further configured to analyze each message to obtain attribute information carried by each message, and determine the target channel corresponding to each message in at least two connecting channels based on the attribute information carried by each message.
- [00125] In some embodiments, the attribute information at least includes at least one of a message type or a message identifier, the message type being used for determining a priority by which the management system processes the message, and the message identifier being used for identifying a way through which the management system exhibits the message.
- [00126] In some embodiments, in a case where the attribute information includes the message type, the determination unit 802 is further configured to regard a first connecting channel corresponding to the warning type in the at least two connecting channels as the target channel corresponding to the message in a case where the message type of the message is an warning message. In a case where the message type of the message is a non-warning type, regarding a second connecting channel corresponding to the non-warning type in the at least two connecting channels as the target channel corresponding to the message, herein the priority by which the management system processes the message in the first connecting channel is superior to the priority by which the management system processes the message in the second connecting channel.
- [00127] In some embodiments, the determination unit 802 is further configured to determine an alarm grade of the message according to the alarm type of the message and to regard a first connecting channel corresponding to the alarm grade in the at least two connecting channels as the target channel corresponding to the message.
- [00128] In some implementation modes, in a case where the attribute information

includes the message identifier of the message, the determination unit 802 is further configured to regard a third connecting channel corresponding to the message identifier in the at least two connecting channels as the target channel corresponding to the message, herein the management system exhibits the message corresponding to the message identifier in the third connecting channel via an exhibition way corresponding to the message identifier.

[00129] In some implementation modes, the determination unit 802 is further configured to determine the exhibition way corresponding to the message according to the message identifier of the message and a preset second mapping relationship table, herein the second mapping relationship table includes a mapping relationship between the message and the exhibition way and the exhibition way includes at least one of display screen exhibition, indicator lamp exhibition or audio exhibition; and the third connecting channel corresponding to the exhibition way in the at least two connecting channels is regarded as the target channel corresponding to the message based on the exhibition way of the message.

[00130] The above descriptions about the apparatus embodiments are similar to descriptions about the method embodiments and beneficial effects similar to those of the method embodiments are achieved. Technical details undisclosed in the apparatus embodiments of the disclosure may be understood with reference to the descriptions about the method embodiments of the disclosure.

[00131] It is to be noted that, in the embodiments of the disclosure, when implemented in form of software function module and sold or used as an independent product, the warning method may also be stored in a computer-readable storage medium. Based on such an understanding, the technical solutions of the embodiments of the disclosure substantially or parts making contributions to the related art may be embodied in form of a software product. The computer software product is stored in a storage medium, including a plurality of instructions configured to enable a device to execute all or part of the method in each embodiment of the disclosure. The storage medium includes various media capable of storing program codes such as a U disk, a mobile hard disk, a Read Only Memory (ROM), a magnetic disk or an optical disk. Therefore, the embodiments of

the disclosure are not limited to any target hardware and software combination.

[00132] FIG. 9 is a schematic diagram of a hardware entity of a message processing device provided by an embodiment of the disclosure. As shown in FIG. 9, the hardware entity of the message processing device 900 includes a processor 901 and a memory 902. The memory 902 stores a computer program capable of running in the processor 901. The processor 901 executes the program to implement the steps in the method of any abovementioned embodiment.

[00133] The memory 902 stores the computer program capable of running in the processor. The memory 902 is configured to store an instruction and application executable for the processor 901, may also cache data (for example, image data, audio data, voice communication data, and video communication data) to be processed or having been processed by the processor 901 and each module in the message processing device 900, and may be implemented through a flash or a Random Access Memory (RAM).

[00134] The processor 901 executes the program to implement the steps of any abovementioned message processing method. The processor 901 usually controls overall operations of the message processing device 900.

[00135] The embodiments of the disclosure provide a computer storage medium, which stores one or more programs. The one or more programs may be executed by one or more processors to implement the steps of the warning method in any abovementioned embodiment.

[00136] It is to be pointed out here that the above descriptions about the storage medium and device embodiments are similar to the descriptions about the method embodiment and beneficial effects similar to those of the method embodiment are achieved. Technical details undisclosed in the storage medium and device embodiments of the disclosure are understood with reference to the descriptions about the method embodiment of the disclosure.

[00137] The processor may be at least one of an Application Specific Integrated Circuit (ASIC), a Digital Signal Processor (DSP), a Digital Signal Processing Device (DSPD), a

Programmable Logic Device (PLD), a Field Programmable Gate Array (FPGA), a Central Processing unit (CPU), a controller, a microcontroller, or a microprocessor. It can be understood that other electronic devices may also be configured to realize functions of the processor, and no specific limits are made in the embodiments of the disclosure.

[00138] The computer storage medium/memory may be a memory such as a ROM, a Programmable Read-Only Memory (PROM), an Erasable Programmable Read-Only Memory (EPROM), an Electrically Erasable Programmable Read-Only Memory (EEPROM), a Ferromagnetic Random Access Memory (FRAM), a flash memory, a magnetic surface memory, an optical disk, or a Compact Disc Read-Only Memory (CD-ROM), or may be any terminal including one or any combination of the abovementioned memories, such as a mobile phone, a computer, a tablet device, and a personal digital assistant.

[00139] It is to be understood that "one embodiment" or "an embodiment" or "the embodiment of the disclosure" or "the abovementioned embodiment" or "some embodiments" mentioned in the whole specification means that target features, structures or characteristics related to the embodiment are included in at least one embodiment of the disclosure. Therefore, "in one embodiment" or "in an embodiment" or "the embodiment of the disclosure" or "the abovementioned embodiment" or "some embodiments" appearing everywhere in the whole specification does not always refer to the same embodiment. In addition, these target features, structures or characteristics may be combined in one or more embodiments freely as appropriate. It is to be understood that, in each embodiment of the disclosure, a magnitude of a sequence number of each process does not mean an execution sequence and the execution sequence of each process should be determined by its function and an internal logic and should not form any limit to an implementation process of the embodiments of the disclosure. The sequence numbers of the embodiments of the disclosure are adopted not to represent superiority-inferiority of the embodiments but only for description.

[00140] If not specified, when the message processing device executes any step in the embodiments of the disclosure, the processor of the message processing device executes the step. Unless otherwise specified, the sequence of execution of the following steps by

the message processing device is not limited in the embodiments of the disclosure. In addition, the same method or different methods may be used to process data in different embodiments. It is also to be noted that any step in the embodiments of the disclosure may be executed independently by the message processing device, namely the message processing device may execute any step in the abovementioned embodiments independent of execution of the other steps.

[00141] In some implementation modes provided by the disclosure, it is to be understood that the disclosed device and method may be implemented in another manner. For example, the device embodiment described above is only schematic, and for example, division of the units is only logic function division, and other division manners may be adopted during practical implementation. For example, multiple units or components may be combined or integrated into another system, or some characteristics may be neglected or not executed. In addition, coupling or direct coupling or communication connection between each displayed or discussed component may be indirect coupling or communication connection, implemented through some interfaces, of the device or the units, and may be electrical and mechanical or adopt other forms.

[00142] The units described as separate parts may or may not be physically separated, and parts displayed as units may or may not be physical units, and namely may be located in the same place, or may also be distributed to multiple network units. Part of all of the units may be selected according to a practical requirement to achieve the purposes of the solutions of the embodiments.

[00143] In addition, each function unit in each embodiment of the disclosure may be integrated into a processing unit, each unit may also serve as an independent unit and two or more than two units may also be integrated into a unit. The integrated unit may be implemented in a hardware form and may also be implemented in form of hardware and software function unit.

[00144] The methods disclosed in some method embodiments provided in the disclosure may be freely combined without conflicts to obtain new method embodiments.

[00145] The characteristics disclosed in some product embodiments provided in the

disclosure may be freely combined without conflicts to obtain new product embodiments.

[00146] The characteristics disclosed in some method or device embodiments provided in the disclosure may be freely combined without conflicts to obtain new method embodiments or device embodiments.

[00147] Those of ordinary skill in the art should know that all or part of the steps of the method embodiment may be implemented by related hardware instructed through a program, the program may be stored in a computer-readable storage medium, and the program is executed to execute the steps of the method embodiment. The storage medium includes: various media capable of storing program codes such as a mobile storage device, a ROM, a magnetic disk, or an optical disc.

[00148] Or, when implemented in form of software function module and sold or used as an independent product, the integrated unit of the disclosure may also be stored in a computer-readable storage medium. Based on such an understanding, the technical solutions of the embodiments of the disclosure substantially or parts making contributions to the related art may be embodied in form of a software product. The computer software product is stored in a storage medium, including a plurality of instructions configured to cause a computer device (which may be a personal computer, a warning device, a network device or the like) to execute all or part of the method in each embodiment of the disclosure. The storage medium includes: various media capable of storing program codes such as a mobile hard disk, a ROM, a magnetic disk, or an optical disc.

[00149] In the embodiments of the disclosure, the descriptions about the same steps and the same contents in different embodiments may refer to those in the other embodiments. In the embodiments of the disclosure, term "and" does not influence the sequence of the steps.

[00150] The above is only the implementation mode of the disclosure and not intended to limit the scope of protection of the disclosure. Any variations or replacements apparent to those skilled in the art within the technical scope disclosed by the disclosure shall fall within the scope of protection of the disclosure. Therefore, the scope of protection of the

disclosure shall be subject to the scope of protection of the claims.

CLAIMS

1. A message processing method, comprising:

acquiring a plurality of messages generated by a data analysis system via at least one message queue, wherein the data analysis system is used for analyzing scene data to generate the plurality of messages;

determining a target channel corresponding to each message in at least two connecting channels; and

forwarding the each message to a management system via the target channel corresponding to the each message to enable the management system to process a message transmitted by each target channel based on a message processing strategy corresponding to the each target channel.

2. The method according to claim 1, wherein the method is applied to a message broker component, the message broker component being configured to forward the plurality of messages generated by the data analysis system to the management system, wherein

the data analysis system comprises a plurality of function modules, each function module of the plurality of function modules is configured to analyze the scene data collected in a game place in real time by adopting an analysis method corresponding to the function module to generate a corresponding message; the message is used for indicating whether there is an abnormal event in the game place or not;

the management system is configured to exhibit the plurality of messages forwarded by the message broker component to a game controller.

3. The method according to claim 2, wherein the data analysis system further comprises a camera component arranged in the game place, the camera component being configured to

collect the scene data in the game place in real time.

4. The method according to claim 3, wherein the acquiring a plurality of messages generated by a data analysis system via at least one message queue comprises:

acquiring a target topic corresponding to the message queue for each message queue in at least one message queue, and storing the message corresponding to the target topic in the plurality of messages in the message queue; and

pulling the plurality of messages generated by the data analysis system from the at least one message queue.

5. The method according to claim 1, wherein the determining a target channel corresponding to each message in at least two connecting channels comprises:

determining a target channel corresponding to the each message based on the message queue corresponding to the each message and a preset first mapping relationship table, wherein the first mapping relationship table comprises a mapping relationship between the message queue and the target channel.

6. The method according to any one of claims 1-4, wherein the determining a target channel corresponding to each message in at least two connecting channels further comprises:

analyzing the each message to obtain attribute information carried by the each message; and

determining the target channel corresponding to the each message in the at least two connecting channels based on the attribute information carried by the each message.

7. The method according to claim 6, wherein the attribute information at least comprises at least one of a message type or a message identifier, the message type being used for determining a priority by which the management system processes the message, and the message identifier being used for identifying a way through which the management system exhibits the message.

8. The method according to claim 7, wherein in a case where the attribute information comprises the message type, the determining the target channel corresponding to the each message in the at least two connecting channels based on the attribute information carried by the each message comprises:

in a case where the message type of the message is a warning message, regarding a first connecting channel corresponding to the warning type in the at least two connecting channels as the target channel corresponding to the message; and

in a case where the message type of the message is a non-warning type, regarding a second connecting channel corresponding to the non-warning type in the at least two connecting channels as the target channel corresponding to the message, wherein the priority by which the management system processes the message in the first connecting channel is superior to the priority by which the management system processes the message in the second connecting channel.

9. The method according to claim 8, wherein the regarding a first connecting channel corresponding to the warning type in the at least two connecting channels as the target channel corresponding to the message comprises:

determining an warning grade of the message according to the warning type of the message; and

regarding a first connecting channel corresponding to the warning grade in the at least two connecting channels as the target channel corresponding to the message.

10. The method according to claim 7, wherein in a case where the attribute information comprises the message identifier of the message, the determining the target channel corresponding to the each message in the at least one connecting channels based on the attribute information carried by the each message comprises:

regarding a third connecting channel corresponding to the message identifier in the at least two connecting channels as the target channel corresponding to the message, wherein the management system exhibits the message corresponding to the message identifier in the third connecting channel via an exhibition way corresponding to the message identifier.

11. The method according to claim 10, wherein the regarding a third connecting channel corresponding to the message identifier in the at least two connecting channels as the target channel corresponding to the message comprises:

determining the exhibition way corresponding to the message according to the message identifier of the message and a preset second mapping relationship table, wherein the second mapping relationship table comprises a mapping relationship between the message and the exhibition way, and the exhibition way comprises at least one of display screen exhibition, indicator lamp exhibition or audio exhibition; and

regarding the third connecting channel corresponding to the exhibition way in the at least two connecting channels as the target channel corresponding to the message based on the exhibition way of the message.

12. A message processing system, wherein the message processing system comprises a data analysis system, a message broker component and a management system, wherein

the data analysis system is configured to analyze scene data to generate a plurality of messages and send the plurality of messages to the message broker component;

the message broker component is configured to acquire the plurality of messages via at least one message queue, determine a target channel corresponding to each message in at least two connecting channels, and forward the each message to the management system via the target channel corresponding to the each message;

the management system is configured to process a message transmitted by each target channel based on a message processing strategy corresponding to the each target channel.

13. A message processing apparatus, comprising:

an acquisition unit, configured to acquire a plurality of messages generated by a data analysis system via at least one message queue, wherein the data analysis system is used for analyzing scene data to generate the plurality of messages;

a determination unit, configured to determine a target channel corresponding to each message in at least two connecting channels; and

a forwarding unit, configured to forward the each message to a management system via the target channel corresponding to the each message to enable the management system to process a message transmitted by each target channel based on a message processing strategy corresponding to the each target channel.

14. A message processing device, comprising a memory and a processor,

wherein the memory stores a computer program capable of running on the processor,

the processor is configured to execute the computer program to:

acquire a plurality of messages generated by a data analysis system via at least one message queue, wherein the data analysis system is used for analyzing scene data to generate the plurality of messages;

determine a target channel corresponding to each message in at least two connecting

channels; and

forward the each message to a management system via the target channel corresponding to the each message to enable the management system to process a message transmitted by each target channel based on a message processing strategy corresponding to the each target channel.

15. The device according to claim 14, wherein when the determining a target channel corresponding to each message in at least two connecting channels, the processor is configured to:

determine a target channel corresponding to the each message based on the message queue corresponding to the each message and a preset first mapping relationship table, wherein the first mapping relationship table comprises a mapping relationship between the message queue and the target channel.

16. The device according to claim 14, wherein when the determining a target channel corresponding to each message in at least two connecting channels, the processor is further configured to:

analyze the each message to obtain attribute information carried by the each message;
and

determine the target channel corresponding to the each message in the at least two connecting channels based on the attribute information carried by the each message.

17. The device according to claim 16, wherein the attribute information at least comprises at least one of a message type or a message identifier, the message type being used for determining a priority by which the management system processes the message, and the message identifier being used for identifying a way through which the management system

exhibits the message.

18. The device according to claim 17, wherein when the determining the target channel corresponding to the each message in the at least two connecting channels based on the attribute information carried by the each message in a case where the attribute information comprises the message type, the processor is configured to:

in a case where the message type of the message is a warning message, regard a first connecting channel corresponding to the warning type in the at least two connecting channels as the target channel corresponding to the message; and

in a case where the message type of the message is a non-warning type, regard a second connecting channel corresponding to the non-warning type in the at least two connecting channels as the target channel corresponding to the message, wherein the priority by which the management system processes the message in the first connecting channel is superior to the priority by which the management system processes the message in the second connecting channel.

19. A computer storage medium, having one or more computer programs stored thereon, wherein when executed by one or more processors, the one or more computer programs are configured to:

acquire a plurality of messages generated by a data analysis system via at least one message queue, wherein the data analysis system is used for analyzing scene data to generate the plurality of messages;

determine a target channel corresponding to each message in at least two connecting channels; and

forward the each message to a management system via the target channel corresponding to the each message to enable the management system to process a message transmitted by each target channel based on a message processing strategy corresponding to

the each target channel.

20. A computer program, comprising a computer-readable code, wherein when executed in an electronic device, a processor in the electronic device is configured to:

acquire a plurality of messages generated by a data analysis system via at least one message queue, wherein the data analysis system is used for analyzing scene data to generate the plurality of messages;

determine a target channel corresponding to each message in at least two connecting channels; and

forward the each message to a management system via the target channel corresponding to the each message to enable the management system to process a message transmitted by each target channel based on a message processing strategy corresponding to the each target channel.