

APPLICATION CONFIGURATION METHOD, APPARATUS AND DEVICE, AND COMPUTER STORAGE MEDIUM

TECHNICAL FIELD

[0001] Embodiments of the disclosure relate, but are not limited, to the field of gaming, and particularly to an application configuration method, apparatus and device, and a computer storage medium.

BACKGROUND

[0002] In the computer software industry, a complete application usually includes an executable file and a configuration file. The executable file is obtained by compiling prewritten codes. The configuration file may be changed according to different requirements and application scenes, and thus usually needs to be modified in computer operation and maintenance. Some values or some logical relations of the configuration file may be modified to enable the application to run different service logics, thereby making a single application version capable of meeting requirements of different scenes at the same time.

[0003] However, the configuration file in an application of an edge device in the related art is too large.

SUMMARY

[0004] The embodiments of the disclosure provide an application configuration method, apparatus and device, and a computer storage medium.

[0005] A first aspect provides an application configuration method, which may include that: attribute information of a game matched with a target game region

corresponding to an edge device is determined; a target application installed in the edge device is determined based on the attribute information of the game, the target application being configured to analytically process an acquired image of the target game region; a first download request is sent to a cloud server, the first download request instructing to download a configuration file configured to update the target application; and the configuration file configured to update the target application sent from the cloud server is received.

[0006] In some embodiments, before the first download request is sent to the cloud server, the method may further include that: query information is sent to the cloud server, the query information instructing to query whether a configuration file of the target application is updated, or, subscription information is sent to the cloud server, the subscription information instructing to notify in a case where the configuration file of the target application is updated; notification information sent by the cloud server is received, the notification information indicating that the configuration file of the target application is updated; and the configuration file configured to update the target application is determined to be configured for the target application.

[0007] Accordingly, the target application installed in the edge device is determined according to the attribute information of the game matched with the target game region, and the configuration file configured to update the target application is further acquired from the cloud server. Then, the edge device may acquire a required configuration file configured to update the target application from a cloud reasonably according to the attribute information of the game rather than store all existing attribute information of the game in the edge device. Therefore, the size of a configuration file in an application of the edge device is reduced greatly, the space occupied by the configuration file in the edge device is reduced, while the normal use of application installed in the edge device is not affected.

[0008] In some embodiments, the operation that the configuration file configured to update the target application is determined to be configured for the target application may include one of the following operations.

[0009] Indication information of whether to update the configuration file of the target

application is displayed; and in response to an operation for updating the configuration file of the target application, the configuration file configured to update the target application is determined to be configured for the target application.

[0010] First update information preconfigured in the edge device is acquired, the first update information instructing to use a latest configuration file of the target application, and the configuration file configured to update the target application is determined to be configured for the target application based on the first update information.

[0011] Accordingly, the configuration file configured to update the target application is determined to be configured for the target application in response to the operation of updating the configuration file of the target application, so that the edge device may determine whether to update the target application using an updated configuration file according to a practical scene, and the edge device may independently determine whether to update the target application according to its own need. Through the first update information preconfigured in the edge device, the edge device may determine whether to update the target application using the updated configuration file based on the first update information, so that the updated configuration file may be acquired without a triggering operation of a user, and the efficiency of acquiring updated configuration files by a large batch of edge devices is improved.

[0012] In some embodiments, the method may further include that: operating system information of the edge device is determined.

[0013] The first download request may further instruct to download the configuration file matched with the operating system information of the edge device and configured to update the target application.

[0014] Accordingly, the edge device acquires the operating system information of the edge device, and sends a request of downloading the updated configuration file matched with the operating system information of the edge device to the cloud server, and then the cloud server, when sending the updated configuration file to the edge device, may not send an updated configuration file unmatched with the operating system information of the edge device but only send the updated configuration file matched with the operating

system information of the edge device to the edge device. Therefore, bandwidth pressure of the cloud server when transmitting data to the edge device may be reduced to a great extent, and memory occupation of the edge device is also reduced to a great extent.

[0015] In some embodiments, the operation that the attribute information of the game matched with the target game region corresponding to the edge device is determined may include one of the following operations.

[0016] An image to be processed obtained by photographing the target game region is acquired, and the image to be processed is analytically processed to determine the attribute information of the game.

[0017] In response to an input operation on an input box displayed by the edge device and configured to input a game name, the attribute information of the game is determined based on the input game name.

[0018] Accordingly, the image to be processed is analytically processed to determine the attribute information of the game without any operation of the user over the edge device, so that an automation level of the edge device is improved, and the manual maintenance cost is reduced. The attribute information of the game is determined in response to the input operation for the displayed input box configured to input the game name, so that the determined attribute information of the game is accurate.

[0019] In some embodiments, after the operation that the configuration file configured to update the target application sent from the cloud server is received, the method may further include that: second update information is obtained in response to a modification operation on the first update information preconfigured in the edge device, the first update information instructing to use the latest configuration file of the target application, and the second update information instructing to use a previous-version configuration file of the configuration file configured to update the target application; a second download request is sent to the cloud server based on the second update information, the second download request instructing to download the previous-version configuration file; and the previous-version configuration file sent by the cloud server is received.

[0020] Accordingly, when the edge device determines that the previous-version

configuration file is required to be configured for the target application, the edge device may modify the first update information to the second update information, and acquire the previous-version configuration file from the cloud server based on the second update information. Therefore, rollback of a historical-version configuration file is implemented, and the situation in which the target application cannot be backed to a historical configuration is avoided.

[0021] In some embodiments, after the operation that the configuration file configured to update the target application sent from the cloud server is received, the method may further include that: after the edge device is initialized, it is determined that attribute information of the game is changed relative to attribute information of the game before the edge device is initialized; a specified application installed in the edge device is determined based on the changed attribute information of the game, the specified application being configured to analytically process the acquired image of the target game region; and a configuration file of the specified application is acquired from the cloud server.

[0022] Accordingly, when the edge device is initialized, and the attribute information of the game is changed, the edge device may reinstall the specified application corresponding to the changed attribute information of the game, and then acquire the configuration file of the specified application from the cloud server. Therefore, the corresponding configuration file may still be configured for the specified application when the attribute information of the game is changed, and the specified application may analytically process the acquired image of the target game region.

[0023] A second aspect provides an application configuration method, which may include that: a first download request sent by an edge device is received, the first download request instructing to download a configuration file configured to update a target application installed in the edge device, the target application being configured to analytically process an acquired image of a target game region, and the target application being determined based on attribute information of a game matched with the target game region; and the configuration file configured to update the target application is sent to the edge device.

[0024] In some embodiments, before the operation that the first download request sent by the edge device is received, the method may further include that: query information sent by the edge device is received, the query information instructing to query whether a configuration file of the target application is updated, or, subscription information sent by the edge device is received, the subscription information instructing to notify when the configuration file of the target application is updated; and notification information is sent to the edge device, the notification information indicating that the configuration file of the target application is updated.

[0025] In some embodiments, the method may further include that: a first configuration list including multiple configuration file identifiers arranged according to a version sequence is acquired, a configuration file to which each configuration file identifier is mapped being configured to configure the target application, each configuration file identifier including a file name and a version number, the multiple configuration file identifiers having a same file name, and the multiple configuration file identifiers being arranged in turn according to version numbers of the multiple configuration file identifiers; a latest-version configuration file identifier is determined from the first configuration list; the configuration file to which the latest-version configuration file identifier is mapped is determined as a present configuration file of the target application; and the configuration file configured to update the target application is obtained in response to an update operation for the present configuration file.

[0026] Accordingly, a cloud server maintains the first configuration list, so that configuration files configured to configure the target application and corresponding to different versions and the same file name may be acquired, and furthermore, an update operation may be easily performed on the configuration file that any configuration file identifier is mapped to in the first configuration list.

[0027] In some embodiments, the method may further include that: a second configuration list is generated based on the configuration file configured to update the target application, the second configuration list including the multiple configuration file identifiers arranged according to the version sequence and a configuration file identifier mapped to the configuration file configured to update the target application; a second

download request sent by the edge device is received, the second download request instructing to download a previous-version configuration file to which a specified configuration file identifier is mapped, and a version of the previous-version configuration file being lower than a version of the configuration file configured to update the target application; and in a case of determining a configuration file to which the specified configuration file identifier is mapped based on the second configuration list, the acquired previous-version configuration file to which the specified configuration file identifier is mapped is sent to the edge device.

[0028] Accordingly, new configuration lists are continuously generated, so that a cloud device may obtain configuration file identifiers of all versions of the target application from the newly generated configuration lists, and further determine configuration files of all the versions based on the configuration file identifiers of all the versions. Therefore, management over the configuration files of the target application is greatly facilitated, and the convenience for reading the configuration file of a certain version of the target application is improved.

[0029] In some embodiments, the method may further include that: when the previous-version configuration file to which the specified configuration file identifier is mapped cannot be determined based on the second configuration list, the previous-version configuration file to which the specified configuration file identifier is mapped is acquired based on the first configuration list; and the acquired previous-version configuration file to which the specified configuration file identifier is mapped is sent to the edge device.

[0030] Accordingly, the cloud server may simultaneously maintain the first configuration list and the second configuration list, and when the second configuration list is corrupted, the previous-version configuration file may be acquired based on the first configuration list, so that the situation in which the previous-version configuration file cannot be acquired when a certain configuration list of the cloud server is corrupted is avoided.

[0031] A third aspect provides an application configuration apparatus, which may include a determination unit, a sending unit and a receiving unit. The determination unit

is configured to determine attribute information of a game matched with a target game region corresponding to an edge device, and is further configured to determine a target application installed in the edge device based on the attribute information of the game, the target application being configured to analytically process an acquired image of the target game region. The sending unit is configured to send a first download request to a cloud server, the first download request instructing to download a configuration file configured to update the target application. The receiving unit is configured to receive the configuration file configured to update the target application from the cloud server.

[0032] A fourth aspect provides an application configuration apparatus, which may include a receiving unit and a sending unit. The receiving unit is configured to receive a first download request sent by an edge device, the first download request instructing to download a configuration file configured to update a target application installed in the edge device, the target application being configured to analytically process an acquired image of a target game region, and the target application being determined based on attribute information of a game matched with the target game region. The sending unit is configured to send the configuration file configured to update the target application to the edge device.

[0033] A fifth aspect provides an application configuration device, which may include a memory and a processor. The memory may store a computer program capable of running in the processor. The processor may execute the computer program to implement the steps in the method described above.

[0034] A sixth aspect provides a computer storage medium, which may store one or more programs. The one or more programs may be executed by one or more processors to implement the steps in the method described above.

[0035] In the embodiments of the disclosure, the target application installed in the edge device is determined according to the attribute information of the game matched with the target game region, and the configuration file configured to update the target application is further acquired from the cloud server. Then, the edge device may acquire the required configuration file configured to update the target application from the cloud reasonably according to the attribute information of the game rather than store all the

existing attribute information of the game in the edge device. Therefore, the size of a configuration file in an application of the edge device is reduced greatly, the space occupied by the configuration file in the edge device is reduced, and the normal use of application installed in the edge device is not affected.

BRIEF DESCRIPTION OF THE DRAWINGS

[0036] In order to describe the technical solutions of the embodiments of the disclosure more clearly, the drawings required to be used in descriptions about the embodiments or a conventional art will be simply introduced below. It is apparent that the drawings described below are only some embodiments of the disclosure. Other drawings may further be obtained by those of ordinary skill in the art according to these drawings without creative work.

[0037] FIG. 1 is an architecture diagram of an application configuration system according to an embodiment of the disclosure.

[0038] FIG. 2 is an implementation flowchart of an application configuration method according to an embodiment of the disclosure.

[0039] FIG. 3 is an implementation flowchart of another application configuration method according to an embodiment of the disclosure.

[0040] FIG. 4 is an implementation flowchart of yet another application configuration method according to an embodiment of the disclosure.

[0041] FIG. 5 is an implementation flowchart of still another application configuration method according to an embodiment of the disclosure.

[0042] FIG. 6 is an implementation flowchart of an application configuration method according to another embodiment of the disclosure.

[0043] FIG. 7 is an architecture diagram of another application configuration system according to an embodiment of the disclosure.

[0044] FIG. 8 is a schematic process diagram of updating a configuration file list according to an embodiment of the disclosure.

[0045] FIG. 9 is a composition structure diagram of an application configuration apparatus according to an embodiment of the disclosure.

[0046] FIG. 10 is a composition structure diagram of another application configuration apparatus according to an embodiment of the disclosure.

[0047] FIG. 11 is a schematic diagram of a hardware entity of an application configuration device according to an embodiment of the disclosure.

DETAILED DESCRIPTION

[0048] 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.

[0049] 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 specific sequence or order. In addition, the technical solutions recorded in the embodiments of the disclosure may be freely combined without conflicts.

[0050] At present, in the game industry, an application running in an edge device corresponding to a game region is usually required to be adapted to different game rules and hardware (for example, patterns in the game region and/or apparatuses used in a process of playing a game) using different configuration files. The configuration file of the edge device is updated in two implementation manners: one is full update, and the other is manual modification.

[0051] The full update manner includes that: all latest configuration files of the application are included in a new version package, and when a latest version is installed in the edge device, resource files of all scenes have been included, and then

corresponding resource files are used in different scenes to achieve purposes. However, in this method, the application has a "very bloated" version package, and the device needs full update every time when there is a new resource file.

[0052] In the manual modification manner, the configuration files of the device are required to be modified and uploaded manually. Apparently, this manner is feasible when a large batch of edge devices are required to be managed.

[0053] It is to be noted that the resource file and configuration file in the embodiments of the disclosure can be understood as the same meaning.

[0054] FIG. 1 is an architecture diagram of an application configuration system according to an embodiment of the disclosure. As shown in FIG. 1, the application configuration system may include a cloud server 101, a first edge device 102, a second edge device 103, and a third edge device 104.

[0055] The cloud server 101 may communicate with the first edge device 102, the second edge device 103, and the third edge device 104 respectively. In an implementation process, when the cloud server 101 communicates with any edge device, the cloud server 101 may communicate with any edge device in a wired communication manner and/or a wireless communication manner. The first edge device 102 may analytically process an acquired image of a first game region 105. The second edge device 103 may analytically process an acquired image of a second game region 106. The third edge device 104 may analytically process an acquired image of a third game region 107.

[0056] Any two pieces of attribute information in attribute information of games played in the first game region 105, the second game region 106, and the third game region 107 may be different. Alternatively, at least two pieces of attribute information in the attribute information of the games played in the first game region 105, the second game region 106, and the third game region 107 are the same.

[0057] The embodiment of the disclosure is not limited thereto. The cloud server may communicate with another number of edge devices. The other number is, for example, 1, 2, or an integer more than or equal to 3. For example, the other number may be the same

as the number of all game regions in a place where a game may be played. One game region or at least two game regions in all the game regions may correspond to an edge device. In some implementation modes, the game region may include a game table or a game control region. When the game region is a game table, one or at least two players may play the game at the game table. When the game region is a table control region, one or at least two players may sit in the game control region to control the game presented in the game control region. In the implementation modes of the disclosure, a pattern in the game region may be a pattern on a surface of the game table. The pattern includes, for example, at least one of tablecloth, a decorative pattern, or a decoration.

[0058] In some implementation modes, any edge device may directly communicate with the cloud server. In some other implementation modes, any edge device may communicate with the cloud server through a server in the place where the game may be played, so that the server in the place where the game may be played implements management over communication data between the cloud server and any edge device.

[0059] In the implementation modes of the disclosure, if game attribute information of games played in at least two game regions is the same, it is determined that applications in at least two edge devices corresponding to the at least two game regions one to one are also the same. If game attribute information of games played in any two game regions is partially the same or different, it is determined that applications in two edge devices corresponding to the any two game regions one to one are partially different or completely different. Any application in any edge device may analytically process on an acquired image of the game region.

[0060] FIG. 2 is an implementation flowchart of an application configuration method according to an embodiment of the disclosure. As shown in FIG. 2, the method is applied to an edge device. The method includes the following operations.

[0061] In S201, attribute information of a game matched with a target game region corresponding to the edge device is determined.

[0062] The edge device may be installed in the target game region or arranged separately with the target game region.

[0063] The edge device may be any edge device among the first edge device 102, second edge device 103, third edge device 104, etc., in the abovementioned embodiment. The edge device may be any device capable of performing data processing. For example, the edge device may include one or combination of at least two of a server, a mobile phone, a pad, a computer with a wireless transceiver function, a palm computer, a desktop computer, a personal digital assistant, a portable media player, an intelligent speaker, a navigation device, a wearable device such as a smart watch, smart glasses, and a smart necklace, a pedometer, a digital Television (TV), a Virtual Reality (VR) terminal device, an Augmented Reality (AR) terminal device, a wireless terminal in industrial control, a wireless terminal in self driving, a wireless terminal in remote medical surgery, a wireless terminal in smart grid, a wireless terminal in transportation safety, a wireless terminal in smart city, a wireless terminal in smart home, a vehicle, vehicle-mounted device, and vehicle-mounted module in an Internet of vehicles system, etc. An implementation mode of the edge device is not limited in the embodiment of the disclosure.

[0064] In some implementation modes, the edge device may include a camera. The camera may photograph the target game region, and input a shot image to a processing module or processor of the edge device for the processing module or the processor to analytically process the shot image. For example, the processing module or the processor may analytically process the shot image based on an application installed in the edge device. In some other implementation modes, the edge device may include no camera, and the edge device may receive an image shot by a camera independent of the edge device. In some implementation modes, attribute information of the camera may correspond to the attribute information of the game. For example, different game types correspond to different attribute information of the camera.

[0065] The target game region may be one game region, or, the target game region may be at least two game regions. For example, the target game region may be two game regions, three game regions, or four game regions. In some embodiments, any game region may be a game region in a place where the game may be played, and the game region may include a region for placing tokens and a game prop operating region. The edge device may analyze at least one of a game result of the game prop operating region,

a change of the tokens in the region for placing tokens, an action of a game operator (or a game controller), or an action of a player through the shot image of the game region to implement management over behaviors of the player and/or behaviors of the game operator in the place where the game may be played, so that the situation in which a behavior of the game operator or a behavior of the player violates a game rule is reduced to a great extent.

[0066] The attribute information of the game in the embodiment of the disclosure may refer to attribute information of a present game in the target game region, unless otherwise specified.

[0067] The attribute information of the game may include at least one of a game type, a game name, a game version, a game playing method (or game rule), etc. The game type may include board and card games, a roulette game, etc. The board and card games may include a card game, a board game, etc. The game name may be the name of any game. For example, the game name may be game A, game B, and game C. The differences between game versions may be caused by at least one of the followings: a change in a pattern in the game region; a change in at least one of the shape, color or size of a game prop; at least one of the shape, size or position of each of a region for placing tokens and a game prop operating region, etc. The difference between game playing methods may be caused by a geographical reason, the game version, or other factors.

[0068] In S202, a target application installed in the edge device is determined based on the attribute information of the game.

[0069] The target application is configured to analytically process an acquired image of the target game region. In the embodiment of the application, the application can be understood as an application program or service.

[0070] The target application may be at least one application in all applications installed in the edge device. For example, the target application may be any application in all the applications installed in the edge device. For another example, the target application may be all the applications installed in the edge device. For another example, the target application may be part of applications in all the applications installed in the

edge device.

[0071] In some implementation modes, S202 may be implemented in the following manner: in a case of determining that attribute information of the game at a present moment is different from attribute information of the game before the present moment, difference information between the two pieces of attribute information is determined, and at least one application associated with the difference information is determined based on the difference information. For example, when the color of a pattern in the target game region is changed, an application for analyzing and processing data related to the pattern in all the applications may be determined as the at least one application.

[0072] The target application may be an application visible to a user or an application invisible to the user. The target application may include one of an application configured to convert an input image, an application configured to analytically process the input image, an application responsible for data synchronization, an application configured to present interface data, etc. The conversion of the input image may include at least one of feature extraction, scaling processing, cropping processing, de-noising processing, noise addition processing, gray processing, rotation processing, normalization processing, etc., on the input image. The analytical processing on the input image may include feature extraction processing, up-sampling processing, down-sampling processing, full connection processing, etc., on the input image. For example, the analytical processing on the input image may include implementation of analysis and processing on the input image through a convolutional neural network. The application responsible for data synchronization may synchronize obtained data to a storage device.

[0073] In S203, a first download request is sent to a cloud server, the first download request instructing to download a configuration file configured to update the target application.

[0074] The cloud server may be understood as a cloud or a server.

[0075] In S204, the configuration file configured to update the target application sent from the cloud server is received.

[0076] One application may include at least one configuration file; in other words, one

application may be configured with at least one configuration file, so as to implement different scenes and execute different functions based on the at least one configuration file. The configuration file configured to update the target application may be one configuration file or at least two configuration files. In some implementation modes, the edge device may acquire the configuration file configured to update the target application from the cloud server based on the difference information.

[0077] In some implementation modes, different applications may use different configuration files or the same configuration file. For example, the same one or more configuration files may be configured for application A and application B.

[0078] In some implementation modes, the target application in the edge device may only include an executable file, and the target application is updated based on the acquired configuration file configured to update the target application. In such case, the target application not only includes the executable file but also includes the configuration file configured to update the target application.

[0079] In some other implementation modes, the target application in the edge device may include the executable file and a present configuration file. File names of the present configuration file and the configuration file configured to update the target application are the same, but file versions are different. The version of the present configuration file may be higher or lower than the file version of the configuration file configured to update the target application. Therefore, the edge device may replace the present configuration file with the configuration file configured to update the target application to further implement updating of the target application. The present configuration file may be a configured file that has been stored in the edge device.

[0080] In the embodiment of the disclosure, the target application installed in the edge device is determined according to the attribute information of the game matched with the target game region, and the configuration file configured to update the target application is further acquired from the cloud server. Then, the edge device may acquire the required configuration file configured to update the target application from the cloud reasonably according to the attribute information of the game rather than store the existing attribute information of all the games in the edge device. Therefore, the size of a configuration file

in an application of the edge device is reduced greatly, the space occupied by the configuration file in the edge device is reduced, and the normal use of the application installed in the edge device is not affected.

[0081] FIG. 3 is an implementation flowchart of another application configuration method according to an embodiment of the disclosure. As shown in FIG. 3, the method is applied to a cloud server. The method includes the following operations.

[0082] In S301, a first download request sent by an edge device is received, the first download request instructing to download a configuration file configured to update a target application installed in the edge device, the target application being configured to analytically process an acquired image of a target game region, and the target application being determined based on attribute information of a game matched with the target game region.

[0083] In S302, the configuration file configured to update the target application is sent to the edge device.

[0084] In some implementation modes, the configuration file configured to update the target application may be obtained by updating a present configuration file.

[0085] An update operation for the present configuration file of the target application may include a modification and/or deletion operation for some contents in the present configuration file of the target application and/or an operation of adding contents to some positions in the present configuration file of the target application.

[0086] A file name of the present configuration file of the target application may be the same as a file name of the configuration file configured to update the target application. A version represented by a version number of the configuration file configured to update the target application may be higher or lower than a version represented by a version number of the present configuration file of the target application.

[0087] In the embodiment of the disclosure, since the cloud server sends the configuration file configured to update the target application to the edge device in a case of determining that the present configuration file of the target application is updated to

the configuration file configured to update the target application, the cloud server sends an updated configuration file to the edge device rather than sends configuration files corresponding to all existing attribute information of the game to the edge device. Therefore, bandwidth pressure of the cloud server when sending data to the edge device is alleviated.

[0088] It is to be noted that, in the embodiment of the disclosure, the updated configuration file may be understood as the configuration file configured to update the target application, unless otherwise specified.

[0089] An implementation mode that the edge device queries whether a configuration file of the target application in the cloud server is updated such that the edge device obtains the configuration file configured to update the target application will be described below.

[0090] FIG. 4 is an implementation flowchart of another application configuration method according to an embodiment of the disclosure. As shown in FIG. 4, the method includes the following operations.

[0091] In S401, an edge device determines attribute information of a game matched with a target game region corresponding to the edge device.

[0092] In S402, the edge device determines a target application installed in the edge device based on the attribute information of the game.

[0093] In S403, a cloud server obtains a configuration file configured to update the target application in response to an update operation for a present configuration file of the target application.

[0094] In some implementation modes, the cloud server may communicate with a cloud management background (backend-service). The cloud management background may acquire the update operation of a user for the present configuration file of the target application to obtain an updated configuration file, and upload the updated configuration file to the cloud server.

[0095] In S404, the edge device sends query information to the cloud server, the query information instructing to query whether the configuration file of the target application is updated, and the cloud server receives the query information sent by the edge device.

[0096] In some implementation modes, the edge device may send the query information to the cloud server at intervals of a set time length. The set time length may be fixed, or may be changed according to a scene requirement. For example, in a place where the game may be played, fewer players play the game in the morning, and updating of applications may slightly affect the players and/or the place where the game may be played, so the set time length may be set to be relatively small. More players play the game, and updating of applications may greatly affect the players and/or the place where the game may be played, so the set time length may be set to be relatively great.

[0097] In some other implementation modes, the edge device may send the query information to the cloud server in a case where the game is not played in the target game region, and is not allowed to send the query information to the cloud server in a case where the game is being played in the target game region.

[0098] In some other implementation modes, the edge device may send the query information to the server in a case where the attribute information of the game in the target game region is changed. The edge device may determine that the attribute information of the game in the target game region is changed in one of the following manners: an image to be processed obtained by photographing the target game region is analytically processed to determine that the attribute information of the game is changed; and in response to a modification operation on the game attribute of the game displayed on the edge device, it is determined that the attribute information of the game is changed. That the attribute information of the game is changed may include that: the color of a pattern in the target game region is changed, at least one of the shape, size or position of a certain region in the game region is changed, etc. For example, if a region for placing tokens in the target game region is moved from the left to the right or a certain region for placing tokens is deleted, it is determined that the attribute information of the game is changed.

[0099] In S405, the cloud server sends notification information to the edge device, and

the edge device receives the notification information sent by the cloud server, the notification information indicating that the configuration file of the target application is updated.

[00100] In some implementation modes, the notification information may also indicate that the configuration file of the target application is not updated. In such case, the edge device may prohibit an update operation for the target application based on the notification information indicating that the configuration file of the target application is not updated.

[00101] In S406, the edge device determines to configure the configuration file configured to update the target application for the target application.

[00102] In S407, the edge device sends a first download request instructing to download the configuration file configured to update the target application to the cloud server, and the cloud server receives the first download request sent by the edge device.

[00103] In S408, the cloud server sends the configuration file configured to update the target application to the edge device, and the edge device acquires the configuration file configured to update the target application from the cloud server.

[00104] In this manner, after S408, if the edge device is further required to continue to update the target application, the query information may be sent to the cloud server again to query whether the configuration file of the target application is updated, and in a case where the configuration file is updated, a latest-version configuration file is acquired again.

[00105] An implementation mode that the edge device subscribes to the configuration file of the target application in the cloud server such that the edge device is notified when the configuration file of the target application in the cloud server is updated and the edge device obtains the configuration file configured to update the target application will be described below.

[00106] FIG. 5 is an implementation flowchart of another application configuration method according to an embodiment of the disclosure. As shown in FIG. 5, the method

includes the following operations.

- [00107] In S501, an edge device determines attribute information of a game matched with a target game region corresponding to the edge device.
- [00108] In S502, the edge device determines a target application installed in the edge device based on the attribute information of the game.
- [00109] In S503, the edge device sends subscription information to a cloud server, the subscription information instructing to notify when a configuration file of the target application is updated, and the cloud server receives the subscription information sent by the edge device.
- [00110] In some implementation modes, the cloud server may send information indicating successful subscription to the edge device.
- [00111] In S504, the cloud server obtains a configuration file configured to update the target application in response to an update operation for a present configuration file of the target application.
- [00112] In S505, the cloud server sends notification information to the edge device, and the edge device receives the notification information sent by the cloud server, the notification information indicating that the configuration file of the target application is updated.
- [00113] In S506, the edge device determines to configure the configuration file configured to update the target application for the target application.
- [00114] In S507, the edge device sends a first download request instructing to download the configuration file configured to update the target application to the cloud server, and the cloud server receives the first download request sent by the edge device.
- [00115] In S508, the cloud server sends the configuration file configured to update the target application to the edge device, and the edge device acquires the configuration file configured to update the target application from the cloud server.

[00116] In this manner, after S508, the cloud server may send the notification information to the edge device again in a case of determining that the configuration file of the target application is updated again, and then the edge device may acquire a latest-version configuration file from the cloud server again when determining, based on the notification information, that the target application is required to be updated again.

[00117] In the embodiment of the disclosure, the edge device sends the query information to the cloud server, or the edge device sends the subscription information to the cloud server, and then the edge device may learn that the configuration file of the target application is updated, the updated configuration file being configured to update the target application, so that the edge device may acquire the configuration file configured to update the target application, furthermore, the edge device may independently select whether to obtain the configuration file configured to update the target application, and the edge device may reasonably determine whether to update the target application according to its own situation. On the other hand, the cloud server transmits the configuration file configured to update the target application to the edge device, so that the cloud server may send updated configuration files to a large batch of edge devices, the large batch of edge devices may download the updated configuration files concurrently to further enter the same state within a relatively small time difference, and the situation in which the configuration file in each edge device is manually modified to bring inconveniences to operations of a user and cause relatively high time consumption is avoided.

[00118] In some embodiments, S406 or S506 may be implemented in the following manner: indication information of whether to update the configuration file of the target application is displayed; and in response to an operation for updating the configuration file of the target application, the configuration file configured to update the target application is determined to be configured for the target application.

[00119] In some implementation modes, the notification information may also include the indication information, so that the edge device may display the received indication information. In some other implementation modes, the edge device may generate the indication information based on the notification information, thereby displaying the

generated indication information.

[00120] In some implementation modes, the notification information or the indication information may also include parameter information of the configuration file configured to update the target application. For example, the indication information may indicate at least one of contents that are modified in the configuration file of the present version compared with a configuration file of a previous version, a version number of the configuration file of the present version, etc. Through the parameter information of the configuration file, the user may determine whether to update the target application as needed.

[00121] In an implementation process, the edge device may display a target window. The target window may display whether to update the configuration file of the target application, and display an "OK" button, a "Do not update" button, and a "Remind me later" button. In response to a triggering operation of the user over the "OK" button, the edge device determines to configure the configuration file configured to update the target application for the target application.

[00122] In some other embodiments, S406 or S506 may be implemented in the following manner: first update information preconfigured in the edge device is acquired, the first update information instructing to use a latest configuration file of the target application; and the configuration file configured to update the target application is determined to be configured for the target application based on the first update information.

[00123] In some implementation modes, the edge device may display a configuration content of update information, and determine according to a choice of the user over the first update information in the configuration content that the first update information is preconfigured in the edge device. In some other implementation modes, the cloud server may determine to configure the first update information for the edge device, and send the first update information to the edge device, so that the first update information is preconfigured in the edge device.

[00124] In the embodiment of the disclosure, the configuration file configured to

update the target application is determined to be configured for the target application in response to the operation of updating the configuration file of the target application, so that the edge device may determine whether to update the target application using an updated configuration file according to a practical scene, and the edge device may independently determine whether to update the target application according to its own need. Through the first update information preconfigured in the edge device, the edge device may determine whether to update the target application using the updated configuration file based on the first update information, so that the updated configuration file may be acquired without the triggering operation of the user, and the efficiency of acquiring updated configuration files by a large batch of edge devices is improved.

[00125] FIG. 6 is an implementation flowchart of an application configuration method according to another embodiment of the disclosure. As shown in FIG. 6, the method includes the following operations.

[00126] In S601, an edge device determines attribute information of a game matched with a target game region corresponding to the edge device, the edge device being configured to analytically process an acquired image of the target game region.

[00127] After the edge device is initialized, to enable the edge device to analyze a scene in the game region accurately, the edge device needs to know about the attribute information of the game to determine a target application configured to analytically process the acquired image of the target game region based on the attribute information of the game. A manner for acquiring the attribute information of the game will be introduced below.

[00128] In some implementation modes, S601 may be implemented in the following manner: an image to be processed obtained by photographing the target game region is acquired; and the image to be processed is analytically processed to determine the attribute information of the game.

[00129] The image to be processed may include at least one image. In a case where the image to be processed includes at least two images, the at least two images may be continuous or discontinuous. The at least one image may be a directly shot image, or may

be an image extracted from a shot video.

[00130] In an implementation process, the edge device may determine the attribute information of the game corresponding to the image to be processed through a neural network model such as a classifier.

[00131] In some other implementation modes, S601 may be implemented in the following manner: in response to an input operation on an input box displayed by the edge device and configured to input a game name, the attribute information of the game is determined based on the input game name.

[00132] In an implementation process, after the edge device is initialized, the edge device may display the input box configured to input the game name, and the user may input the game name through the input box such that the edge device may determine the attribute information of the game based on the input game name. In some implementation modes, the edge device may display multiple game identifiers corresponding to the input game name and matched with the game name based on the input game name, the game identifier including a game name, version information, etc., thereby determining the attribute information of the game in response to an operation of the user over a target game identifier in the multiple game identifiers.

[00133] In the embodiment of the disclosure, the image to be processed is analytically processed to determine the attribute information of the game without any operation of the user over the edge device, so that an automation level of the edge device is improved, and the manual maintenance cost is reduced. The attribute information of the game is determined in response to the input operation for the displayed input box configured to input the game name, so that the determined attribute information of the game is accurate.

[00134] In S602, the edge device determines a target application installed in the edge device based on the attribute information of the game.

[00135] In S603, the edge device sends a first download request to a cloud server, the first download request instructing to download a configuration file configured to update the target application, and the cloud server receives the first download request sent by the edge device.

- [00136] Before the edge device sends the first download request to the cloud server, a present configuration file of the target application may also be stored in the edge device. The application may execute the present configuration file to implement a rule or scene corresponding to the present configuration file.
- [00137] In some embodiments, the method may further include that: operating system information of the edge device is acquired.
- [00138] In some implementation modes, the present configuration file of the target application may include a present configuration file, matched with the operating system information of the edge device, of the target application.
- [00139] The operating system information may include operating system type information and/or operating system version information. The operating system type information may include one of Android system, IOS system, windows system, mac os system, linux system, etc. The same operating system type information may include different operating system version information. For example, for windows system, operating system version information of windows system may include one of windows 7, windows 8, windows 10, etc.
- [00140] In this manner, the present configuration file of the target application corresponding to an operating system of the edge device rather than a present configuration file corresponding to another operating system is stored in the edge device, so that memory occupation of the edge device is greatly reduced.
- [00141] In some embodiments, the first download request further gives an instruction of downloading the configuration file matched with the operating system information of the edge device and configured to update the target application.
- [00142] In S604, the cloud server sends the configuration file configured to update the target application to the edge device, and the edge device receives the configuration file configured to update the target application from the cloud server.
- [00143] In some implementation modes, the cloud server sends the configuration file matched with the operating system information of the edge device and configured to

update the target application to the edge device.

[00144] In some game updating manners, if a game needs to be updated, the latest patch is required to be downloaded from the official websites of the game, and the patch includes some configuration files, so that the device updates the game based on the patch of the game. However, for adapting to updating requirements of different devices, the patch usually includes configuration files corresponding to each and every type of operating system information. In such case, the file size of the patch is relatively large, bandwidth pressure of the cloud server when transmitting data to the device is increased, and in addition, memory occupation of the device is also increased to a great extent.

[00145] In the embodiment of the disclosure, the edge device acquires the operating system information of the edge device, and sends a request of downloading the updated configuration file matched with the operating system information of the edge device to the cloud server, and then the cloud server, when sending the updated configuration file to the edge device, may not send an updated configuration file unmatched with the operating system information of the edge device but only send the updated configuration file matched with the operating system information of the edge device to the edge device. Therefore, bandwidth pressure of the cloud server when transmitting data to the edge device may be reduced to a great extent, and memory occupation of the edge device is also reduced to a great extent.

[00146] The scene in the game region may be switched frequently. For example, in general, a pattern in the game region is usually green. However, for adapting to some festivals such as the Christmas or the Spring Festival, the place where the game may be played may change the pattern in the game region to red sometimes, which may cause a change of the attribute information of the game, and correspondingly, an operation and maintenance worker may update the present configuration file of the target application to make more accurate an analytical processing result of the scene with a red pattern. However, after the festival, the place where the game may be played may usually continue to use the green pattern instead of the red pattern, and correspondingly, the configuration file of the target application may also be changed back to the present configuration file before updating. To implement rollback of the configuration file, the

method of the embodiment of the disclosure may further include following S605 to S607.

[00147] In S605, the edge device modifies first update information to second update information in response to a modification operation on the first update information preconfigured in the edge device.

[00148] The first update information instructs to use a latest configuration file of the target application. The second update information instructs to use a previous-version configuration file of the configuration file configured to update the target application.

[00149] In some implementation modes, the edge device may modify the first update information to the second update information according to a choice of the user over the second update information in the configuration content. In some other implementation modes, the cloud server may determine to configure the second update information for the edge device, and send the second update information to the edge device, so that the first update information in the edge device is replaced with the second update information.

[00150] A version of the previous-version configuration file is lower than a version of the updated configuration file. In some implementation modes, the previous-version configuration file may be the present configuration file.

[00151] In S606, the edge device sends a second download request to the cloud server based on the second update information, the second download request instructing to download the previous-version configuration file; and the cloud server receives the second download request sent by the edge device.

[00152] In S607, the cloud server sends the previous-version configuration file to the edge device, and the edge device receives the previous-version configuration file sent by the cloud server.

[00153] The edge device may update the target application after receiving the previous-version configuration file.

[00154] In the embodiment of the disclosure, when the edge device determines that the

previous-version configuration file is required to be configured for the target application, the edge device may modify the first update information to the second update information, and acquire the previous-version configuration file from the cloud server based on the second update information. Therefore, rollback of a historical-version configuration file is implemented, and the situation in which the target application cannot be backed to a historical configuration is avoided.

[00155] In a reality scene, a game matched with a game region usually keeps changing. For example, the target game region is used for game A, and when a game region used for game B is not enough, the target game region may be reconstructed into a game region for game B. For example, the game matched with the target game region may be changed by changing the pattern of the game region. When the game matched with the game region is changed, the attribute information of the game is also changed. Since the target game region corresponds to the edge device, the change of the game in the game region may cause a change of the application configured to analyze the game region.

[00156] Here, only one scene in which the attribute information of the game is changed is described. In a practical process, there may also be other scenes in which the attribute information of the game is changed, for example, a game version is changed, a game rule is changed, the pattern in the target game region is changed, and positions of different regions in the game region are changed.

[00157] To ensure that the edge device may still analytically process the acquired image of the target game region in a case where the attribute information of the game is changed, the embodiment of the disclosure provides the following technical solution.

[00158] After the edge device is initialized, it is determined that attribute information of the game is changed relative to attribute information of the game before the edge device is initialized. A specified application installed in the edge device is determined based on the changed attribute information of the game, the specified application being configured to analytically process the acquired image of the target game region. A configuration file of the specified application is acquired from the cloud server.

[00159] The initialization of the edge device may include that the edge device

uninstalls the installed target application. In some implementation modes, the edge device may automatically execute an initialization flow in a restart process. In some other implementation modes, the edge device may execute the initialization flow in response to a triggering operation for initialization in settings.

[00160] In some implementation modes, the edge device may acquire an image to be processed obtained by photographing the target game region. When it is determined based on the image to be processed that attribute information of the game after restart of the edge device is different from attribute information of the game determined before restart of the edge device, it is determined that the attribute information of the game is changed.

[00161] The attribute information of the game determined before restart of the edge device may be stored in the edge device. The initialization flow of the edge device may not affect the attribute information of the game before initialization, which is stored in the edge device.

[00162] In some other implementation modes, in response to the input operation on the input box displayed by the edge device and configured to input the game name, the edge device may determine that the attribute information of the game is changed when the input game name is different from a game name determined before restart of the edge device.

[00163] The edge device may display the input box after initialization such that the user inputs the game name through the input box.

[00164] In the embodiment of the disclosure, in a case where the edge device has been initialized and the attribute information of the game is changed, the edge device may reinstall the specified application corresponding to the changed attribute information of the game, and then acquire the configuration file of the specified application from the cloud server. Therefore, the corresponding configuration file may still be configured for the specified application in a case where the attribute information of the game is changed, and the specified application may analytically process the acquired image of the target game region.

[00165] A manner in which the cloud server acquires the configuration file for updating the target application will be described below.

[00166] First, the cloud server may acquire a first configuration list including multiple configuration file identifiers arranged according to a version sequence. A configuration file to which each configuration file identifier is mapped is configured to configure the target application. Each configuration file identifier includes a file name and a version number. The multiple configuration file identifiers have a same file name, and the multiple configuration file identifiers are arranged in turn according to version numbers of the multiple configuration file identifiers.

[00167] The multiple configuration files may be arranged according to the version number from high to low or from low to high.

[00168] Then, the cloud server may determine a latest-version configuration file identifier from the first configuration list.

[00169] Next, the cloud server may determine the configuration file to which the latest-version configuration file identifier is mapped as the present configuration file of the target application.

[00170] Finally, the cloud server may obtain the configuration file configured to update the target application in response to the update operation for the present configuration file.

[00171] In the embodiment of the disclosure, the cloud server maintains the first configuration list, so that configuration files configured to configure the target application and corresponding to different versions and the same file name may be acquired, and furthermore, an update operation may be easily performed on the configuration file to which any configuration file identifier is mapped in the first configuration list.

[00172] In some implementation modes, the cloud server may acquire the previous-version configuration file and send the previous-version configuration file to the edge device in the following manner.

- [00173] First, the cloud server may generate a second configuration list based on the configuration file configured to update the target application. The second configuration list includes the multiple configuration file identifiers arranged according to the version sequence and a configuration file identifier mapped to the configuration file configured to update the target application.
- [00174] In some implementation modes, the cloud server may simultaneously maintain the first configuration list and the second configuration list. In some other implementation modes, the cloud server may delete the first configuration list after obtaining the second configuration list. In such case, the cloud server may maintain the latest configuration list only.
- [00175] Then, the cloud server may receive a second download request sent by the edge device. The second download request instructs to download a previous-version configuration file to which a specified configuration file identifier is mapped. A version of the previous-version configuration file is lower than the version of the configuration file configured to update the target application.
- [00176] Finally, in a case of determining a configuration file to which the specified configuration file identifier is mapped based on the second configuration list, the cloud server may send the edge device the acquired previous-version configuration file to which the specified configuration file identifier is mapped.
- [00177] In the embodiment of the disclosure, new configuration lists are continuously generated, so that a cloud device may obtain configuration file identifiers of all versions of the target application from the newly generated configuration lists, and further determine configuration files of all the versions based on the configuration file identifiers of all the versions. Therefore, management over the configuration file of the target application is greatly facilitated, and the convenience for reading the configuration file of a certain version of the target application is improved.
- [00178] In a reality scene, a configuration file list may usually be corrupted. For example, in some implementation scenes, if the second configuration list is corrupted, or in a case where a mapping relationship between the specified configuration file identifier

and the previous-version configuration file is damaged, the cloud server cannot acquire the previous-version configuration file based on the second configuration list. To solve this problem, the embodiment of the disclosure may further disclose the following method.

[00179] In a case where the previous-version configuration file to which the specified configuration file identifier is mapped cannot be determined based on the second configuration list, the previous-version configuration file to which the specified configuration file identifier is mapped is acquired based on the first configuration list. The acquired previous-version configuration file to which the specified configuration file identifier is mapped is sent to the edge device.

[00180] In the embodiment of the disclosure, the cloud server may simultaneously maintain the first configuration list and the second configuration list, and in a case where the second configuration list is corrupted, the previous-version configuration file may be acquired based on the first configuration list, so that the situation in which the previous-version configuration file cannot be acquired when a certain configuration list of the cloud server is corrupted is avoided.

[00181] In the embodiment of the disclosure, since different attribute information of the game causes different game scenes, the edge device may automatically acquire and update corresponding configuration files according to different scenes, and only one configuration file is required to be maintained at the same time in the edge device. An application is separated from a resource file, the resource file is managed by the cloud, and an initial version package of the application includes no resource file, so that the version package of the application may be thinned. In addition, simultaneous upgrading of a large batch of edge devices may also be supported, and all the devices concurrently download latest resource files through the cloud, and thus may enter the same state within an extremely small time difference.

[00182] In the embodiment of the disclosure, the resource files of all the applications are managed through the cloud, each resource file is uniquely identified with an increasing version number, and the version package of the application includes no resource file and only includes a resource name and the corresponding version number.

In addition, application service in the edge device regularly checks the latest version of the configuration file to complete automatic updating of the configuration file by difference synchronization.

[00183] FIG. 7 is an architecture diagram of another application configuration system according to an embodiment of the disclosure. As shown in FIG. 7, the application configuration system 700 may be the same as the abovementioned application configuration system 100. The application configuration system 700 includes edge device A, edge device B, a Remote Procedure Call (RPC) interface 701, a cloud server 702, and a DataBase (DB) 703.

[00184] Edge device A may be installed with application 1 (service-1), application 2 (service-2), application 3 (service-3), and application 4 (service-4). In edge device A, a configuration file of application 1 may include resource-a-v0.1 and resource-b-latest, resource-a-v0.1 may represent version v0.1 of resource file resource-a, and resource-b-latest represents a latest version of the resource file resource-b. A configuration file of application 2 may include resource-c-v0.1 and resource-a-latest. A configuration file of application 3 may include resource-a-v0.2 and resource-b-latest. A configuration file of application 4 may include resource-a-latest and resource-b-latest.

[00185] Edge device B may be installed with application 1 (service-1), application 2 (service-2), application 3 (service-3), and application 5 (service-5). In edge device B, a configuration file of application 1 may include resource-a-v0.1 and resource-b-latest. A configuration file of application 2 may include resource-c-v0.1 and resource-a-v0.2. A configuration file of application 3 may include resource-a-v0.2 and resource-b-v0.1. A configuration file of application 5 may include resource-a-latest and resource-b-v0.1.

[00186] Edge device A or edge device B may acquire any configuration file from the cloud server 702 through the RPC interface 701.

[00187] Any configuration file described above may be stored in the DB 703, so that the cloud server 702 may read the any configuration file from the DB 703.

[00188] In the embodiment of the disclosure, the cloud server may cooperate with the edge device to complete configuration of an application in the edge device, a

configuration file is stored in the cloud server taking a version number as an identifier, and the RPC interface for querying and downloading is provided for edge service to call. The edge service is required to maintain a required configuration file name and a corresponding version number, and selects the version of the configuration file according to an application scene for real-time downloading to a local server from the cloud.

[00189] FIG. 8 is a schematic process diagram of updating a configuration file list according to an embodiment of the disclosure. As shown in FIG. 8, configuration files are stored in the cloud taking name+version as unique identifiers. When a certain configuration file is required to be updated, a new file is uploaded through a cloud management background (backend-service), the new file may be stored taking version+1 as an identifier, the version number is updated to a latest version number, and the old file may still be kept and provided for downloading taking name+version as the identifier.

[00190] As shown in FIG. 8, when receiving an update operation, the cloud management background may update a configuration file to which a configuration file identifier in the first configuration list is mapped to obtain a latest configuration file, and generate a second configuration resource list based on a latest configuration file identifier and the first configuration resource list, the second resource list including the latest configuration file identifier (resource-a-v0.3[latest]) and configuration file identifiers (resource-a-v0.2, resource-a-v0.1, resource-x-xxx, resource-x-xxx, etc.) in the first configuration list. The first configuration resource list may be called an old resource list, and the second configuration resource list may be called a new configuration resource list. The second configuration resource list may be displayed through the cloud management background. Both the first configuration resource list and the second configuration resource list may be lists corresponding to configuration file name resource-a.

[00191] In the embodiment of the disclosure, the application service in the edge device checks whether required resource service is updated by regular roll polling and subscription. When it is found that the locally maintained configuration file is different from the latest version in the cloud, whether to use the latest configuration file as the configuration file is confirmed. If the latest configuration file is used, the latest configuration file is downloaded to replace the corresponding local configuration file.

[00192] In the embodiment of the disclosure, the configuration file used by the application service in the edge device is stored in the cloud service, and the version package of the application includes no configuration file. The edge application calls the cloud RPC interface to check the version of the local configuration file, and is automatically updated to a configuration of the corresponding version. The configuration file is stored in the cloud taking name+version as the unique identifier. The configuration file is uploaded and updated from latest to version+1 through the cloud management background.

[00193] In this manner, the version package of the application of the edge device is no more required to include any configuration file, so that the space occupied by the version package is reduced. The version package is transmitted through a network, so that the bandwidth pressure may also be alleviated. The edge device automatically checks whether the local configuration file is required to be updated, and when finding that the local configuration file is required to be updated, automatically downloads and uses the latest version without human intervention, so that the configuration updating efficiency is improved. The configuration file is managed using the version number, and the edge device may support management over configuration files of multiple versions in a specific scene, and supports rollback to historical versions.

[00194] A scene of full update of the configuration file of the edge device in the embodiment of the disclosure will be described. The user selects a configuration file required to be updated through the cloud management background backend-service, and after a new file is uploaded, the edge device may automatically download the latest configuration file according to a local configuration and apply it to local service.

[00195] A rollback scene of the configuration file of the edge device is as follows. The user modifies a parameter of the edge device to set the edge device to use the configuration file of a specific version number (name+version), and the application service may automatically download and use the configuration file of the corresponding version number after restart. Multiple scenes may co-exist in the place where the game may be played. Configuration file resource-a is simultaneously used in multiple scenes, the latest version resource-a-latest being used in scene 1, and the historical version

resource-a-v0.1 being used in scene 2. The user modifies the parameter (corresponding to the update information) of the game region in scene 1 to keep using the latest version of resource-a in scene 1 (corresponding to a first update parameter) and continue using the configuration file of version v0.1 in scene 2 (implemented by modifying the first update parameter to a second update parameter). The multiple scenes run concurrently without mutual influences.

[00196] Based on the abovementioned embodiments, the embodiments of the disclosure provide an application configuration apparatus. Each unit of the apparatus and each module of each unit may be implemented through a processor in the application configuration apparatus, and of course, may also be implemented through a specific logic circuit.

[00197] FIG. 9 is a composition structure diagram of an application configuration apparatus according to an embodiment of the disclosure. As shown in FIG. 9, the application configuration apparatus 900 may be a processor or chip, etc., and the processor or chip may be applied to the edge device in any embodiment. Alternatively, the application configuration apparatus may be the edge device in any embodiment. The application configuration apparatus 900 includes a determination unit 901, a sending unit 902, and a receiving module 903.

[00198] The determination unit 901 is configured to determine attribute information of a game matched with a target game region corresponding to an edge device. The determination unit 901 is further configured to determine a target application installed in the edge device based on the attribute information of the game, the target application being configured to analytically process an acquired image of the target game region. The sending unit 902 is configured to send a first download request to a cloud server, the first download request instructing to download a configuration file configured to update the target application. The receiving unit 903 is configured to receive the configuration file configured to update the target application sent from the cloud server.

[00199] In some embodiments, the sending unit 902 is further configured to send query information to the cloud server, the query information instructing to query whether a configuration file of the target application is updated, or, send subscription information to

the cloud server, the subscription information instructing to notify in a case where the configuration file of the target application is updated. The receiving unit 903 is further configured to receive notification information sent by the cloud server, the notification information indicating that the configuration file of the target application is updated. The determination unit 901 is further configured to determine to configure the configuration file configured to update the target application for the target application.

[00200] In some embodiments, the determination unit 901 is further configured to display indication information of whether to update the configuration file of the target application, and in response to an operation for updating the configuration file of the target application, determine to configure the configuration file configured to update the target application for the target application.

[00201] In some embodiments, the determination unit 901 is further configured to acquire first update information preconfigured in the edge device, the first update information instructing to use a latest configuration file of the target application, and determine to configure the configuration file configured to update the target application for the target application based on the first update information.

[00202] In some embodiments, the determination unit 901 is further configured to determine operating system information of the edge device, the first download request further instructing to download the configuration file matched with the operating system information of the edge device and configured to update the target application.

[00203] In some embodiments, the determination unit 901 is further configured to acquire an image to be processed obtained by photographing the target game region, and analytically process the image to be processed to determine the attribute information of the game.

[00204] In some embodiments, the determination unit 901 is further configured to, in response to an input operation on an input box displayed by the edge device and configured to input a game name, determine the attribute information of the game based on the input game name.

[00205] In some embodiments, the determination unit 901 is further configured to

obtain second update information in response to a modification operation on the first update information preconfigured in the edge device, the first update information instructing to use the latest configuration file of the target application, and the second update information instructing to use a previous-version configuration file of the configuration file configured to update the target application. The sending unit 902 is further configured to send a second download request to the cloud server based on the second update information, the second download request instructing to download the previous-version configuration file. The receiving unit 903 is further configured to receive the previous-version configuration file sent by the cloud server.

[00206] In some embodiments, the determination unit 901 is further configured to, after the edge device is initialized, determine that attribute information of the game is changed relative to attribute information of the game before the edge device is initialized, determine a specified application installed in the edge device based on the changed attribute information of the game, the specified application being configured to analytically process the acquired image of the target game region, and acquire a configuration file of the specified application from the cloud server.

[00207] FIG. 10 is a composition structure diagram of another application configuration apparatus according to an embodiment of the disclosure. As shown in FIG. 10, the application configuration apparatus 1000 may be a processor or chip, etc., and the processor or chip may be applied to the cloud server in any embodiment. Alternatively, the application configuration apparatus may be the cloud server in any embodiment. The application configuration apparatus 1000 includes a receiving unit 1001 and a sending unit 1002.

[00208] The receiving unit 1001 is configured to receive a first download request sent by an edge device, the first download request instructing to download a configuration file configured to update a target application installed in the edge device, the target application being configured to analytically process an acquired image of a target game region, and the target application being determined based on attribute information of a game matched with the target game region. The sending unit 1002 is configured to send the configuration file configured to update the target application to the edge device.

[00209] In some embodiments, the receiving unit 1001 is further configured to receive query information sent by the edge device, the query information instructing to query whether a configuration file of the target application is updated, or, receive subscription information sent by the edge device, the subscription information instructing to notify in a case where the configuration file of the target application is updated. The sending unit 1002 is further configured to send notification information to the edge device, the notification information indicating that the configuration file of the target application is updated.

[00210] In some embodiments, the application configuration apparatus 1000 further includes a determination unit 1003, which is configured to: acquire a first configuration list including multiple configuration file identifiers arranged according to a version sequence, a configuration file to which each configuration file identifier is mapped being configured to configure the target application, each configuration file identifier including a file name and a version number, the multiple configuration file identifiers having a same file name, and the multiple configuration file identifiers being arranged in turn according to version numbers of the multiple configuration file identifiers; determine a latest-version configuration file identifier from the first configuration list; determine the configuration file to which the latest-version configuration file identifier is mapped as a present configuration file of the target application; and obtain the configuration file configured to update the target application in response to an update operation for the present configuration file.

[00211] In some embodiments, the determination unit 1003 is further configured to generate a second configuration list based on the configuration file configured to update the target application, the second configuration list including the multiple configuration file identifiers arranged according to the version sequence and a configuration file identifier mapped to the configuration file configured to update the target application. The receiving unit 1001 is further configured to receive a second download request sent by the edge device, the second download request instructing to download a previous-version configuration file to which a specified configuration file identifier is mapped, and a version of the previous-version configuration file being lower than a version of the configuration file configured to update the target application. The sending unit 1002 is

further configured to, in a case of determining a configuration file to which the specified configuration file identifier is mapped based on the second configuration list, send the edge device the acquired previous-version configuration file to which the specified configuration file identifier is mapped.

[00212] In some embodiments, the determination unit 1003 is further configured to, in a case where the previous-version configuration file to which the specified configuration file identifier is mapped fails to be determined based on the second configuration list, acquire the previous-version configuration file to which the specified configuration file identifier is mapped based on the first configuration list. The sending unit 1002 is further configured to send the edge device the acquired previous-version configuration file to which the specified configuration file identifier is mapped.

[00213] 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.

[00214] It is to be noted that, in the embodiments of the disclosure, when implemented in form of a software function module and sold or used as an independent product, the application configuration method may also be stored in a computer 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 an application configuration 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 specific hardware and software combination.

[00215] 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 application configuration method in any abovementioned embodiment.

[00216] 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.

[00217] FIG. 11 is a schematic diagram of a hardware entity of an application configuration device according to an embodiment of the disclosure. As shown in FIG. 11, the hardware entity of the application configuration device 1100 includes a processor 1101 and a memory 1102. The memory 1102 stores a computer program capable of running in the processor 1101. The processor 1101 executes the program to implement the steps in the method of any abovementioned embodiment. The application configuration device 1100 may be the edge device or cloud server in any embodiment.

[00218] The memory 1102 stores the computer program capable of running in the processor 1101. The memory 1102 is configured to store an instruction and application executable for the processor 1101, 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 1201 and each module in the application configuration device 1100, and may be implemented through a flash or a Random Access Memory (RAM).

[00219] The processor 1101 executes the program to implement the steps of any abovementioned application configuration method. The processor 1101 usually controls overall operations of the application configuration device 1100. The application configuration apparatus, the chip, or the processor may include any one or integration of multiple 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 Graphics Processing Unit (GPU), an embedded Neural-network Processing Unit (NPU),

a controller, a microcontroller, and 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.

[00220] 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.

[00221] The processor or application configuration apparatus in the embodiments of the disclosure may be an integrated circuit chip and has a signal processing capability. In an implementation process, each step of the method embodiments may be completed by an integrated logical circuit of hardware in the processor or an instruction in a software form. The processor may be a universal processor, a DSP, an ASIC, an FPGA or another PLD, a discrete gate or transistor logic device, and a discrete hardware component. Each method, step and logical block diagram disclosed in the embodiment of the disclosure may be implemented or executed. The universal processor may be a microprocessor, or the processor may also be any conventional processor, etc. The steps of the method disclosed in combination with the embodiment of the disclosure may be directly embodied to be executed and completed by a hardware decoding processor or executed and completed by a combination of hardware and software modules in the decoding processor. The software module may be located in a mature storage medium in this field such as a RAM, a flash memory, a ROM, a PROM or EEPROM, and a register. The storage medium is located in a memory, and the processor reads information in the memory and completes the steps of the method in combination with hardware.

[00222] It can be understood that the memory or computer storage medium in the embodiments of the disclosure may be a volatile memory or a nonvolatile memory, or may include both the volatile and nonvolatile memories. The nonvolatile memory may be

a ROM, a PROM, an EPROM, an EEPROM, or a flash memory. The volatile memory may be a RAM, and is used as an external high-speed cache. It is exemplarily but unlimitedly described that RAMs in various forms may be adopted, such as a Static RAM (SRAM), a Dynamic RAM (DRAM), a Synchronous DRAM (SDRAM), a Double Data Rate SDRAM (DDR SDRAM), an Enhanced SDRAM (ESDRAM), a Synchlink DRAM (SLDRAM), and a Direct Rambus RAM (DR RAM). It is to be noted that the memory of a system and method described in the disclosure is intended to include, but not limited to, memories of these and any other proper types.

[00223] It is to be understood that the memory is exemplarily but unlimitedly described. For example, the memory in the embodiments of the disclosure may also be an SRAM, a DRAM, an SDRAM, a DDR SDRAM, an ESDRAM, an SLDRAM, and a DR RAM. That is, the memory in the embodiments of the disclosure is intended to include, but not limited to, memories of these and any other proper types.

[00224] It is to be understood that "one embodiment" or "an embodiment" or "the embodiment of the disclosure" or "the abovementioned embodiment" or "some implementation modes" or "some embodiments" mentioned in the whole specification means that specific 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 implementation modes" or "some embodiments" appearing everywhere in the whole specification does not always refer to the same embodiment. In addition, these specific 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.

[00225] Unless specified, when the edge device/cloud server executes any step in the

embodiments of the disclosure, the processor of the edge device/cloud server executes the step. Unless otherwise specified, the sequence of execution of the following steps by the edge device/cloud server 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 edge device/cloud server, namely the edge device/cloud server may execute any step in the abovementioned embodiments independent of execution of the other steps.

[00226] In some embodiments provided by the disclosure, it is to be understood that the disclosed device and method may be implemented in another manner. 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.

[00227] 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.

[00228] 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.

[00229] The methods disclosed in some method embodiments provided in the disclosure may be freely combined without conflicts to obtain new method embodiments.

[00230] The characteristics disclosed in some product embodiments provided in the disclosure may be freely combined without conflicts to obtain new product embodiments.

[00231] 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.

[00232] 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 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 a compact disc.

[00233] Or, when implemented in form of a software function module and sold or used as an independent product, the integrated unit of the disclosure may also be stored in a computer 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 computer device (which may be a personal computer, a server, 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.

[00234] 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. For example, that a terminal device executes A and executes B may refer to that the terminal device executes A at first and then executes B, or the terminal device executes B at first and then executes A, or the terminal device executes B at the same time of executing A.

[00235] It is to be noted that the drawings in the embodiments of the disclosure are

only for describing the schematic positions of each device in the terminal device and do not represent the actual positions in the terminal device, and the actual positions of each device or each region may be correspondingly changed or shifted according to a practical situation (for example, the structure of the terminal device). Moreover, the scales of different parts in the terminal device in the figures do not represent the actual scales.

[00236] Singular forms "a/an", "said" and "the" used in the embodiments and appended claims of the disclosure are also intended to include plural forms unless other meanings are clearly expressed in the context.

[00237] It is to be understood that term "and/or" used in the disclosure is only an association relationship describing associated objects and represents that three relationships may exist. For example, A and/or B may represent three situations: independent existence of A, existence of both A and B and independent existence of B. In addition, character "/" in the disclosure usually represents that previous and next associated objects form an "or" relationship.

[00238] It is to be noted that, in each embodiment involved in the disclosure, all the steps may be executed or part of the steps may be executed if a complete technical solutions may be formed.

[00239] 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. An application configuration method, comprising:

determining attribute information of a game matched with a target game region corresponding to an edge device;

determining a target application installed in the edge device based on the attribute information of the game, the target application being configured to analytically process an acquired image of the target game region;

sending a first download request to a cloud server, the first download request instructing to download a configuration file configured to update the target application; and

receiving the configuration file configured to update the target application sent from the cloud server.

2. The method of claim 1, before sending the first download request to the cloud server, further comprising:

sending query information to the cloud server, the query information instructing to query whether a configuration file of the target application is updated, or, sending subscription information to the cloud server, the subscription information instructing to notify in a case where the configuration file of the target application is updated;

receiving notification information sent by the cloud server, the notification information indicating that the configuration file of the target application is updated; and

determining to configure the configuration file configured to update the target application for the target application.

3. The method of claim 2, wherein determining to configure the configuration file configured to update the target application for the target application comprises one of:

displaying indication information of whether to update the configuration file of the target application, and in response to an operation for updating the configuration file of the target application, determining to configure the configuration file configured to update the target application for the target application; or

acquiring first update information preconfigured in the edge device, the first update information instructing to use a latest configuration file of the target application, and determining to configure the configuration file configured to update the target application for the target application based on the first update information.

4. The method of any one of claims 1 to 3, further comprising:

determining operating system information of the edge device,

wherein the first download request further instruct to download the configuration file matched with the operating system information of the edge device and configured to update the target application.

5. The method of any one of claims 1 to 4, wherein determining the attribute information of the game matched with the target game region corresponding to the edge device comprises one of:

acquiring an image to be processed obtained by photographing the target game region, and analytically processing the image to be processed to determine the attribute information of the game; or

in response to an input operation on an input box displayed by the edge device and configured to input a game name, determining the attribute information of the game based on the input game name.

6. The method of any one of claims 1 to 5, after receiving the configuration file configured to update the target application sent from the cloud server, further comprising:

obtaining second update information in response to a modification operation on the first update information preconfigured in the edge device, the first update information instructing to use the latest configuration file of the target application, and the second update information instructing to use a previous-version configuration file of the configuration file configured to update the target application;

sending a second download request to the cloud server based on the second update information, the second download request instructing to download the previous-version configuration file; and

receiving the previous-version configuration file sent by the cloud server.

7. The method of any one of claims 1 to 6, after receiving the configuration file configured to update the target application sent from the cloud server, further comprising:

after the edge device is initialized, determining that attribute information of the game is changed relative to attribute information of the game before the edge device is initialized;

determining a specified application installed in the edge device based on the changed attribute information of the game, the specified application being configured to analytically process the acquired image of the target game region; and

acquiring a configuration file of the specified application from the cloud server.

8. An application configuration method, comprising:

receiving a first download request sent by an edge device, the first download request instructing to download a configuration file configured to update a target application installed

in the edge device, the target application being configured to analytically process an acquired image of a target game region, and the target application being determined based on attribute information of a game matched with the target game region; and

sending the configuration file configured to update the target application to the edge device.

9. The method of claim 8, before receiving the first download request sent by the edge device, further comprising:

receiving query information sent by the edge device, the query information instructing to query whether a configuration file of the target application is updated, or, receiving subscription information sent by the edge device, the subscription information instructing to notify in a case where the configuration file of the target application is updated; and

sending notification information to the edge device, the notification information indicating that the configuration file of the target application is updated.

10. The method of claim 8 or 9, further comprising:

acquiring a first configuration list comprising a plurality of configuration file identifiers arranged according to a version sequence, a configuration file to which each configuration file identifier of the plurality of configuration file identifiers is mapped being configured to configure the target application, the each configuration file identifier comprising a file name and a version number, the plurality of configuration file identifiers having a same file name, and the plurality of configuration file identifiers being arranged in turn according to version numbers of the plurality of configuration file identifiers;

determining a latest-version configuration file identifier from the first configuration list;

determining the configuration file to which the latest-version configuration file

identifier is mapped as a present configuration file of the target application; and

obtaining the configuration file configured to update the target application in response to an update operation for the present configuration file.

11. The method of claim 10, further comprising:

generating a second configuration list based on the configuration file configured to update the target application, the second configuration list comprising the plurality of configuration file identifiers arranged according to the version sequence and a configuration file identifier mapped to the configuration file configured to update the target application;

receiving a second download request sent by the edge device, the second download request instructing to download a previous-version configuration file to which a specified configuration file identifier is mapped, and a version of the previous-version configuration file being lower than a version of the configuration file configured to update the target application; and

in a case of determining a configuration file to which the specified configuration file identifier is mapped based on the second configuration list, sending the edge device acquired previous-version configuration file to which the specified configuration file identifier is mapped.

12. The method of claim 11, further comprising:

in a case of failing to determine the previous-version configuration file to which the specified configuration file identifier is mapped based on the second configuration list, acquiring the previous-version configuration file to which the specified configuration file identifier is mapped based on the first configuration list; and

sending the edge device the acquired previous-version configuration file to which the specified configuration file identifier is mapped.

13. An application configuration apparatus, comprising:

a determination unit, configured to determine attribute information of a game matched with a target game region corresponding to an edge device,

the determination unit being further configured to determine a target application installed in the edge device based on the attribute information of the game, the target application being configured to analytically process an acquired image of the target game region;

a sending unit, configured to send a first download request to a cloud server, the first download request instructing to download a configuration file configured to update the target application; and

a receiving unit, configured to receive the configuration file configured to update the target application sent from the cloud server.

14. An application configuration apparatus, comprising:

a receiving unit, configured to receive a first download request sent by an edge device, the first download request instructing to download a configuration file configured to update a target application installed in the edge device, the target application being configured to analytically process an acquired image of a target game region, and the target application being determined based on attribute information of a game matched with the target game region; and

a sending unit, configured to send the configuration file configured to update the target application to the edge device.

15. An application configuration device, comprising a memory and a processor, wherein

the memory stores a computer program capable of running in the processor;

the processor executes the computer program to implement the steps in the method of any one of claims 1 to 7, or,

the processor executes the computer program to implement the steps in the method of any one of claims 8 to 12.

16. A computer storage medium, storing one or more programs, wherein the one or more programs are executed by one or more processors to implement the steps in the method of any one of claims 1 to 7, or,

the one or more programs are executed by the one or more processors to implement the steps in the method of any one of claims 8 to 12.

17. A computer program, comprising computer-readable codes which, when executed in an electronic device, cause a processor in the electronic device to perform the method of any one of claims 1 to 7, or perform the method of any one of claims 8 to 12.