METHOD AND DEVICE FOR GENERATING LOGISTICS DISTRIBUTION NETWORK

This application claims priority to Chinese Patent Application No. 201610204711.X, filed with the Chinese Patent Office on April 1, 2016 and entitled "METHOD AND DEVICE FOR GENERATING LOGISTICS DISTRIBUTION NETWORK", which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

The present application relates to the technical field of Internet information processing, and in particular, to a method and device for generating a logistics distribution network.

BACKGROUND

In an existing replenishment network, a logistics distribution network between a production base and warehouses is known, and replenishment among the warehouses mainly has the following modes:

Mode 1: The warehouses are independent of each other. The production base directly delivers goods to the terminal warehouses. This mode operates simply, and replenishment may be directly performed according to demands.

Mode 2: The warehouses have different levels, and multi-level replenishment is performed. The base first replenishes the inventory in a parent warehouse, and the inventory then flows level by level to a terminal warehouse. In this mode, costs and efficiency are fully considered. Trunk line transportation may be used for a parent warehouse, and common logistics may be used for a terminal warehouse. Moreover, replenishment frequency may be flexibly adjusted and configured for warehouses of different levels, so that costs are further reduced.

Mode 3: The warehouses have different levels, and the base can replenish the inventory in a warehouse of any level. Compared with Mode 2, Mode 3 is more flexible. In Mode 3, a warehouse that has an urgent need and requires high efficiency can be directly replenished, and other warehouses can be replenished based on levels by using an existing warehouse network.

Given that warehouses belong to logistics providers, the foregoing three logistics modes can only be used among internal warehouses of a logistics provider. Each logistics provider

can only control respective logistics resource information. That is, the problem that logistics resource information of respective logistics providers cannot be centrally controlled exists in the existing technologies.

SUMMARY

In view of this, the present application provides a method for generating a logistics distribution network, so as to resolve the current problem that logistics resource information of respective logistics providers cannot be centrally controlled.

A method for generating a logistics distribution network includes:

determining, by a supply-chain collaboration server, an expected sales range of a transaction object;

determining, according to corresponding relationships between identifiers of warehouses and coverage ranges of distribution services obtained from logistics provider servers, identifiers of selectable warehouses of which corresponding coverage ranges of distribution services are capable of jointly covering the expected sales range; and

generating a logistics distribution network for the transaction object according to the identifiers of the selectable warehouses and the corresponding coverage ranges of the distribution services, the logistics distribution network using the selectable warehouses as nodes and using distribution paths between the selectable warehouses as routes.

A method for generating a logistics distribution network includes:

determining, by a logistics provider server, stored corresponding relationships between identifiers of warehouses of logistics providers and coverage ranges of distribution services; and

sending the determined corresponding relationships between identifiers of warehouses and coverage ranges of distribution services to a supply-chain collaboration server, the corresponding relationship being used by the supply-chain collaboration server to generate a logistics distribution network for a transaction object.

A supply-chain collaboration server includes:

an expected-sales-range determining unit, configured to determine an expected sales range of a transaction object;

a warehouse determining unit, configured to determine, according to corresponding relationships between identifiers of warehouses and coverage ranges of distribution services obtained from logistics provider servers, identifiers of selectable warehouses of which

corresponding coverage ranges of distribution services can jointly cover the expected sales range; and

a network generation unit, configured to generate a logistics distribution network for the transaction object according to the identifiers of the selectable warehouses and the corresponding coverage ranges of the distribution services, the logistics distribution network using the selectable warehouses as nodes and using distribution paths between the selectable warehouses as routes.

A logistics provider server includes:

a determining unit, configured to determine stored corresponding relationships between identifiers of warehouses of logistics providers and coverage ranges of distribution services; and

a sending unit, configured to send the determined corresponding relationships between identifiers of warehouses and coverage ranges of distribution services to a supply-chain collaboration server, the corresponding relationship being used by the supply-chain collaboration server to generate a logistics distribution network for a transaction object.

The beneficial effects of the present application are as follows:

A supply-chain collaboration server is introduced in the solution in the embodiments of the present application. The supply-chain collaboration server may communicate with logistics provider servers, obtain corresponding relationships between identifiers of warehouses and coverage ranges of distribution services of the warehouses from the logistics provider servers, and customize, according to an expected sales range of a transaction object, a corresponding logistics distribution network for the transaction object. Subsequently, logistics information of the transaction object can be processed and practical logistics operations can be performed based on the generated logistics distribution network, achieving integration and central control of logistics resource information of logistics providers based on the expected sales range of the transaction object.

BRIEF DESCRIPTION OF THE DRAWINGS

To describe the technical solutions of the embodiments of the present application more clearly, the following briefly introduces the accompanying drawings required for describing the embodiments. Apparently, the accompanying drawings in the following description show only some embodiments of the present application, and a person of ordinary skill in the art may still derive other drawings from these accompanying drawings without creative efforts.

FIG. 1 is a schematic structural diagram of a system for generating a logistics distribution network according to an embodiment of the present application;

FIG. 2 is a first schematic flowchart of a method for generating a logistics distribution network according to an embodiment of the present application;

FIG. 3 is a schematic diagram of relationships between a warehouse, its parent warehouses and child warehouses according to an embodiment of the present application;

FIG. 4 is a schematic diagram of a logistics distribution network of a transaction object according to an embodiment of the present application;

FIG. 5 is a schematic diagram of replenishment proportions for warehouses according to an embodiment of the present application;

FIG. 6 is a schematic diagram of replenishment demand quantities of warehouses according to an embodiment of the present application;

FIG. 7 is a schematic diagram of stock demand quantities of warehouses according to an embodiment of the present application;

FIG. 8 is a second schematic flowchart of a method for generating a logistics distribution network according to an embodiment of the present application;

FIG. 9 is a schematic structural diagram of a supply-chain collaboration server according to an embodiment of the present application; and

FIG. 10 is a schematic structural diagram of a logistics provider server according to an embodiment of the present application.

DETAILED DESCRIPTION OF THE INVENTION

To achieve the objective of the present application, embodiments of the present application provide a method and device for generating a logistics distribution network. In the method, a supply-chain collaboration server connects logistics provider servers, to obtain logistics resource information of logistics providers. The logistics resource information herein is mainly corresponding relationships between identifiers of warehouses and coverage ranges of distribution services of the warehouses. The supply-chain collaboration server may acquire other resource information from the logistics provider servers according to an actual demand. Next, after an expected sales range of a transaction object is acquired, the obtained logistics resource information is used to determine selectable warehouses of which corresponding coverage ranges of distribution services can jointly cover the expected sales range, and a logistics distribution network is generated for the transaction object.

Subsequently, logistics information of the transaction object can be processed and practical logistics operations can be performed based on the generated logistics distribution network, achieving integration and central control of logistics resources of the logistics providers, allowing logistics services not to be limited to one logistics provider, and saving logistics expenses for the transaction object.

To clearly describe the solutions in the embodiments of the present application, a system for generating a logistics distribution network that can implement the embodiments of the present application is described below first:

As shown in FIG. 1, FIG. 1 is a schematic structural diagram of a system for generating a logistics distribution network according to an embodiment of the present application. The system includes at least two logistics provider servers 11 and a supply-chain collaboration server 12.

Each logistics provider server 11 is configured to: store logistics resource information of logistics providers, the logistics resource information including: corresponding relationships between identifiers of warehouses and coverage ranges of distribution services; and send the logistics resource information to the supply-chain collaboration server.

The supply-chain collaboration server 12 is configured to: obtain the logistics resource information of the logistics providers from the logistics provider servers, determine an expected sales range of a transaction object; determine, according to the obtained logistics resource information, identifiers of selectable warehouses of which corresponding coverage ranges of distribution services can jointly cover the expected sales range; and generate a logistics distribution network for the transaction object according to the identifiers of the selectable warehouses and the corresponding coverage ranges of the distribution services, the logistics distribution network using the selectable warehouses as nodes and using distribution paths between the selectable warehouses as routes.

The following describes the embodiments of the present application in further detail with reference to the accompanying drawings in the embodiments in the specification. Apparently, the described embodiments are some of the embodiments of the present application rather than all of the embodiments. All other embodiments obtained by a person of ordinary skill in the art based on the embodiments of the present application without creative efforts shall fall within the protection scope of the present application.

As shown in FIG. 2, FIG. 2 is a schematic flowchart of a method for generating a logistics distribution network according to an embodiment of the present application. The method may include the following steps.

Step 201: A supply-chain collaboration server determines an expected sales range of a transaction object.

The expected sales range of the transaction object may be set in advance according to a sales demand of a supplier, a distributor or an agent. For example, the expected sales range of the transaction object may be central China, China, Asia or the like.

Specifically, the expected sales range of the transaction object may be determined in the following manner:

receiving, by the supply-chain collaboration server, an expected sales range of the transaction object sent by a supplier terminal; and

determining the received expected sales range as the expected sales range of the transaction object.

Step 202: Determine, according to corresponding relationships between identifiers of warehouses and coverage ranges of distribution services obtained from logistics provider servers, identifiers of selectable warehouses of which corresponding coverage ranges of distribution services can jointly cover the expected sales range.

A logistics provider server stores logistics resource information. The logistics resource information includes the foregoing corresponding relationships between identifiers of warehouses and coverage ranges of distribution services, and physical locations and warehouse capacity information of the warehouses.

It should be noted that it needs to be ensured that coverage ranges of distribution services can jointly cover the expected sales range. Therefore, selectable warehouses represented by the determined identifiers of selectable warehouses can ensure that the transaction object flows directly or flows level by level from a supplier to a terminal warehouse.

The distribution service includes a dispatch service and a collection and transfer service. After the coverage ranges of the distribution services of the warehouses are obtained, a plurality of warehouses may be selected based on the condition of satisfying an expected coverage range of the transaction object. A combination of coverage ranges of the plurality of warehouses can completely cover the expected sales range. Certainly, partial areas in the expected sales range may be repeatedly covered.

Every warehouse has a particular distribution function. Some warehouses only have a collection and transfer function, and transaction objects may be gathered in such a warehouse and transferred from the warehouse to other warehouses in a particular area. Some warehouses only have a dispatch function, and a transaction object may be delivered from such a warehouse to a user in a particular range. Some warehouses have both a collection and

transfer function and a dispatch function. A coverage range of a distribution service is used to represent these functions of the warehouses herein. A coverage range of a distribution service corresponding to the warehouse that only has a collection and transfer function refers to a coverage range of a collection and transfer service. A coverage range of a distribution service corresponding to the warehouse that only has a dispatch function refers to a coverage range of a dispatch service. A coverage range of a distribution service corresponding to the warehouse that has both a collection and transfer function and a dispatch function refers to a coverage range of a dispatch service and a coverage range of a collection and transfer service.

Specifically, step 202 may be specifically implemented by using the following steps.

First step: Select, according to the corresponding relationships between identifiers of warehouses and coverage ranges of distribution services obtained from the logistics provider servers, identifiers of first selectable warehouses of which corresponding coverage ranges of dispatch services can jointly cover the expected sales range.

In an expected sales range, a transaction object eventually needs to be delivered by a warehouse to a ship-to address specified by a user. Therefore, identifiers of first selectable warehouses of which corresponding coverage ranges of dispatch services can jointly cover the expected sales range need to be selected herein.

The selected first selectable warehouses need to have a dispatch service function. Therefore, the first selectable warehouse herein may be a warehouse that has both a dispatch service function and a collection and transfer service function. In this case, the first selectable warehouse corresponds to both a coverage range of a dispatch service and a coverage range of a collection and transfer service.

Assuming that in the foregoing step 201, the transaction object is an air conditioner and the expected sales range is China, the obtained coverage ranges of distribution services of a warehouse A to a warehouse I are shown in Table 1:

Table 1:

Identifier of Warehouse	Coverage Range of Dispatch Service of Warehouse	Coverage Range of Collection and Transfer Service of Warehouse
A	NULL	East China, South Central China, Southwest China
B	NULL	Southwest China, North China
C	Northwest China	East China, South Central China, Southwest China
D	NULL	Southwest China

E	Northeast China	North China
F	East China	NULL
G	South Central China	NULL
H	Southwest China	NULL
I	North China	NULL

Based on Table 1, the determined identifiers of the first selectable warehouses are C, E, F, G, H, and I. The warehouse C and the warehouse E herein both correspond to a coverage range of a dispatch service and a coverage range of a collection and transfer service.

Second step: Determine identifiers of second selectable warehouses of which corresponding coverage ranges of collection and transfer services can jointly cover physical addresses of warehouses represented by the identifiers of the first selectable warehouses.

By using the foregoing first step, a transaction object can be successfully delivered to a ship-to address specified by a user. However, how transaction objects flow to or flow level by level to the first selectable warehouses further needs to depend on the warehouses that have a collection and transfer service function. Therefore, in the second step herein, the warehouses that have a collection and transfer service function need to be selected, and coverage ranges of the selected warehouses that have a collection and transfer service function need to cover physical addresses of the foregoing first selectable warehouses, so that transaction objects can flow from the warehouse that has a collection and transfer function to the first selectable warehouses.

Some warehouses have both a dispatch function and a collection and transfer function. Therefore, the first selectable warehouses selected in the foregoing first step and the second selectable warehouses selected in the second step may overlap.

The identifiers of the first selectable warehouses and identifiers of the second selectable warehouses may be from different logistics provider servers, that is, the first selectable warehouses and second selectable warehouses may belong to different logistics providers.

Following the foregoing example, based on the foregoing Table 1, the determined identifiers of the second selectable warehouses are A, B, C, D, and E. C and E in the identifiers of the second selectable warehouses herein and C and E in the identifiers of the first selectable warehouses overlap.

Third step: Use the determined identifiers of the first selectable warehouses and the determined identifiers of the second selectable warehouses as the identifiers of the selectable warehouses of which the corresponding coverage ranges of the distribution services can

jointly cover the expected sales range.

Following the foregoing example, in this case, the determined identifiers of the selectable warehouses are A, B, C, D, E, F, G, H, and I.

Step 203: Generate a logistics distribution network for the transaction object according to the identifiers of the selectable warehouses and the corresponding coverage ranges of the distribution services, the logistics distribution network using the selectable warehouses as nodes and using distribution paths between the selectable warehouses as routes.

The identifiers of the selectable warehouses are obtained, and the coverage ranges of the distribution services of the selectable warehouses can jointly cover the expected sales range of the transaction object. Therefore, transportation paths between the selectable warehouses may be determined with reference to the coverage ranges, and the transportation paths between the selectable warehouses are used to generate the logistics distribution network for the transaction object.

Specifically, the foregoing step 203 may be implemented via the following step 1) to step 4):

Step 1): Use, among the identifiers of the first selectable warehouses, the identifiers of the first selectable warehouses other than the identifiers of the first selectable warehouses which correspond to coverage ranges of collection and transfer services as identifiers of terminal warehouses, where the terminal warehouses are linked to users purchasing the transaction object;

The link herein means that a transaction object in a terminal warehouse may be directly distributed to a user without any intermediate warehouse.

Following the example in Table 1, after C and E are removed, F, G, H, and I are obtained as identifiers of terminal warehouses.

Step 2): Select a preset quantity of identifiers of second selectable warehouses from the identifiers of the second selectable warehouses according to a production address of the transaction object, and use the preset quantity of identifiers as identifiers of base warehouses, where the base warehouses are linked to a production base of the transaction object.

To facilitate the transportation of a transaction object from a production address to a base warehouse, the production address of the transaction object is used as a reference herein to select identifiers of the second selectable warehouses whose distances from the production base of the transaction object, transportation costs, and transportation duration satisfy particular constraint conditions, and use the selected identifiers of the second selectable warehouses as the identifiers of the base warehouses.

Following the example in Table 1, assume that the warehouse A and the warehouse B satisfy a particular constraint condition herein, then A and B may be selected and used as the identifiers of the base warehouses.

Step 3): Determine, for each selectable warehouse other than the terminal warehouses and the base warehouses among the selectable warehouses, a parent warehouse and a child warehouse of the selectable warehouse according to a geographical location of the selectable warehouse, where the transaction object sequentially flows through the parent warehouse of the selectable warehouse, the selectable warehouse, and the child warehouse of the selectable warehouse during logistics transportation.

Following the example in Table 1, the warehouse C, the warehouse D, and the warehouse E are selectable warehouses herein. Assume that it is determined that the warehouse A is a parent warehouse of the warehouse C, and the warehouse F, the warehouse G, and the warehouse H are child warehouses of the warehouse C. It is determined that the warehouse B is a parent warehouse of the warehouse D, and the warehouse H is a child warehouse of the warehouse D. It is determined that the warehouse B is a parent warehouse of the warehouse E, and the warehouse I is a child warehouse of the warehouse E. FIG. 3 shows level relationships between the warehouse C and the parent warehouses and child warehouses.

Step 4): Connect each selectable warehouse and a parent warehouse and a child warehouse of the selectable warehouse, to form the logistics distribution network for the transaction object, where the logistics distribution network is a directed acyclic network.

After the foregoing process, a logistics distribution network generated for air conditioners is shown in FIG. 4.

After the logistics distribution network is generated, the logistics distribution network may be used to process logistics information. A specific process of the processing may include the following step A to step D:

Step A: for each selectable warehouse having a plurality of parent warehouses, determine, according to logistics transportation capabilities of the plurality of parent warehouses of the selectable warehouse, replenishment proportions for replenishing the inventory of the selectable warehouse by the plurality of parent warehouses.

If logistics transportation capabilities of the parent warehouses are higher, it is determined that replenishment proportions for replenishing the inventory of the selectable warehouse by the parent warehouses are higher. In addition, warehouse capacity information of warehouses may further be used in combination to determine replenishment proportions

for replenishing the inventory of the selectable warehouse by the plurality of parent warehouses. The replenishment proportions determined in step A in the foregoing may be shown in FIG. 5.

Step B: Determine stock demand quantities of the warehouses according to replenishment demand quantities and the replenishment proportions of the warehouses, where the stock demand quantity of each of the warehouses includes a replenishment demand quantity of the warehouse and stock quantities needed for child warehouses of the warehouse.

Specifically, step B herein may include the following step B1 to step B5:

Step B1: Perform the following step B2 to step B5 for each warehouse in each level of warehouses, level by level, starting from an upper-level warehouse of a terminal warehouse, until a base warehouse is reached:

Step B2: Determine a replenishment demand quantity of the warehouse.

Step B3: Determine a stock demand quantity of a child warehouse of the warehouse and a replenishment proportion for replenishing the inventory of the child warehouse by the warehouse, where a stock demand quantity of a terminal warehouse is a replenishment demand quantity of the terminal warehouse.

Step B4: Determine a stock quantity that the warehouse needs to prepare for the child warehouse by using the determined stock demand quantity of the child warehouse and the determined replenishment proportion for replenishing the inventory of the child warehouse by the warehouse.

Step B5: Use a sum of the replenishment demand quantity of the warehouse and the stock quantity that the warehouse needs to prepare for the child warehouse as a stock demand quantity of the warehouse.

The foregoing process of step B1 to step B5 may be represented by using the schematic diagrams of the replenishment demand quantities shown in FIG. 6 and the stock demand quantities shown in FIG. 7.

A solid-line box in FIG. 6 represents a self-demand of a warehouse, that is, a replenishment demand quantity of the warehouse. For example, the warehouse F and the warehouse C have a dispatch capability and each has predicted sales of 100 pieces. The warehouse A and the warehouse D do not need stock and are only used to fulfil a transfer and collection function. A dotted-line box represents a summed demand of child warehouses. For example, the warehouse I does not have a child warehouse, the summed child demand is 0. A demand of a child warehouse of the warehouse E is 100, and 100 is shown. In FIG. 7, a dotted-line box represents a summed child demand. For example, the warehouse I is the only

child warehouse of the warehouse E, and a demand of the warehouse I is 100. Therefore, a summed child demand of the warehouse E is 100. A self-demand of the warehouse E is 100. Therefore, the demand of the warehouse E from the only parent warehouse B is 200. The warehouse B also needs to provide a supply to the warehouse D. A self-demand of the warehouse D is 0. A summed demand of child warehouses of the warehouse D is 100. Therefore, it is obtained that the total demand of the warehouse D is 100. The warehouse B needs to supply 40% of the 100-piece demand of the warehouse D, that is, needs to supply 40 pieces. Therefore, the warehouse B eventually needs to stock 240 pieces.

Step C: Generate logistics task messages of the warehouses by using the determined stock demand quantities of the warehouses and the logistics distribution network, where each of the logistics task messages includes: an identifier of a warehouse, a replenishment demand quantity of the warehouse, a stock demand quantity of the warehouse, and information about a parent warehouse and information about a child warehouse of the warehouse.

Step D: Deliver the determined logistics task messages to corresponding logistics provider servers.

In the foregoing description, the method for generating a logistics distribution network according to this embodiment of the present application is described from the perspective of a supply-chain collaboration server. Further, an embodiment of the present application further provides a method for generating a logistics distribution network from the perspective of a logistics provider server, as shown in the flowchart of FIG. 8. The method includes the following steps.

Step 801: The logistics provider server determines stored corresponding relationships between identifiers of warehouses of logistics providers and coverage ranges of distribution services.

Step 802: The logistics provider server sends the determined corresponding relationships between identifiers of warehouses and coverage ranges of distribution services to a supply-chain collaboration server, the corresponding relationship being used by the supply-chain collaboration server to generate a logistics distribution network for a transaction object.

In addition, the logistics provider server may further receive a logistics task message delivered by the supply-chain collaboration server, where the logistics task message includes: an identifier of a warehouse, a replenishment demand quantity of the warehouse, a stock demand quantity of the warehouse, and information about a parent warehouse and information about a child warehouse of the warehouse.

The method for generating a logistics distribution network provided from the perspective of a logistics provider server is essentially the same as the method for generating a logistics distribution network according to the embodiment of the present application described from the perspective of a supply-chain collaboration server. The only difference is the perspective of description. Refer to the foregoing description for related details, which are no longer elaborated herein.

Based on the same inventive concept, an embodiment of the present application further provides a supply-chain collaboration server and a logistics provider server, which are specifically as follows:

FIG. 9 is a schematic structural diagram of the supply-chain collaboration server according to an embodiment of the present application. The supply-chain collaboration server includes:

an expected-sales-range determining unit 91, configured to determine an expected sales range of a transaction object;

a warehouse determining unit 92, configured to determine, according to corresponding relationships between identifiers of warehouses and coverage ranges of distribution services obtained from logistics provider servers, identifiers of selectable warehouses of which corresponding coverage ranges of distribution services can jointly cover the expected sales range; and

a network generation unit 93, configured to generate a logistics distribution network for the transaction object according to the identifiers of the selectable warehouses and the corresponding coverage ranges of the distribution services, the logistics distribution network using the selectable warehouses as nodes and using distribution paths between the selectable warehouses as routes.

Preferably, the expected-sales-range determining unit 91 is specifically configured to: receive an expected sales range of the transaction object sent by a supplier terminal; and determine the received expected sales range as the expected sales range of the transaction object.

Preferably, the coverage ranges of distribution services include: coverage ranges of dispatch services and coverage ranges of collection and transfer services; and

the warehouse determining unit 92 is specifically configured to: select, according to the corresponding relationships between identifiers of warehouses and coverage ranges of distribution services obtained from the logistics provider servers, identifiers of first selectable warehouses of which corresponding coverage ranges of dispatch services can jointly cover

the expected sales range; determine identifiers of second selectable warehouses of which corresponding coverage ranges of collection and transfer services can jointly cover physical addresses of warehouses represented by the identifiers of the first selectable warehouses; and use the determined identifiers of the first selectable warehouses and the determined identifiers of the second selectable warehouses as the identifiers of the selectable warehouses of which the corresponding coverage ranges of the distribution services can jointly cover the expected sales range.

Preferably, the network generation unit 93 is specifically configured to: use, among the identifiers of the first selectable warehouses, the identifiers of the first selectable warehouses other than the identifiers of the first selectable warehouses that correspond to coverage ranges of collection and transfer services as identifiers of terminal warehouses, where the terminal warehouses are linked to users purchasing the transaction object; select a preset quantity of identifiers of second selectable warehouses from the identifiers of the second selectable warehouses according to a production address of the transaction object, and use the preset quantity of identifiers as identifiers of base warehouses, where the base warehouses are linked to a production base of the transaction object; determine, for each selectable warehouse among the selectable warehouses other than the terminal warehouses and the base warehouses, a parent warehouse and a child warehouse of the selectable warehouse according to a geographical location of the selectable warehouse, where the transaction object sequentially flows through the parent warehouse of the selectable warehouse, the selectable warehouse, and the child warehouse of the selectable warehouse during logistics transportation; and connect the each selectable warehouse and a parent warehouse and a child warehouse of the selectable warehouse, to form the logistics distribution network for the transaction object, where the logistics distribution network is a directed acyclic network.

Preferably, the supply-chain collaboration server further includes:

a replenishment proportion determining unit 94, configured to, for each selectable warehouse having a plurality of parent warehouses, determine, according to logistics transportation capabilities of the plurality of parent warehouses of the selectable warehouse, replenishment proportions for replenishing the inventory of the selectable warehouse by the plurality of parent warehouses;

a warehouse stock-demand-quantity determining unit 95, configured to determine stock demand quantities of the warehouses according to replenishment demand quantities and the replenishment proportions of the warehouses, where the stock demand quantity of each of the warehouses includes a replenishment demand quantity of a warehouse and replenishment

quantities that the warehouse needs to prepare for child warehouses of the warehouse;

a logistics-task-message generation unit 96, configured to generate logistics task messages for the warehouses by using the determined stock demand quantities of the warehouses and the logistics distribution network, where each of the logistics task messages includes: an identifier of a warehouse, a replenishment demand quantity of the warehouse, a stock demand quantity of the warehouse, and information about a parent warehouse and information about a child warehouse of the warehouse; and

a sending unit 97, configured to deliver the determined logistics task messages to corresponding logistics provider servers.

Preferably, the warehouse stock-demand-quantity determining unit 95 is specifically configured to perform the following operations for each warehouse in each level of warehouses, level by level, starting from an upper-level warehouse of a terminal warehouse, until a base warehouse is reached: determining a replenishment demand quantity of the warehouse; determining a stock demand quantity of a child warehouse of the warehouse and a replenishment proportion for replenishing the inventory of the child warehouse by the warehouse, where a stock demand quantity of a terminal warehouse is a replenishment demand quantity of the terminal warehouse; determining a stock quantity that the warehouse needs to prepare for the child warehouse by using the determined stock demand quantity of the child warehouse and the determined replenishment proportion for replenishing the inventory of the child warehouse by the warehouse; and using a sum of the replenishment demand quantity of the warehouse and the stock quantity that the warehouse needs to prepare for the child warehouse as a stock demand quantity of the warehouse.

FIG. 10 is a schematic structural diagram of a logistics provider server according to an embodiment of the present application. The logistics provider server includes:

a determining unit 1001, configured to determine stored corresponding relationships between identifiers of warehouses of logistics providers and coverage ranges of distribution services; and

a sending unit 1002, configured to send the determined corresponding relationships between identifiers of warehouses and coverage ranges of distribution services to a supply-chain collaboration server, the corresponding relationship being used by the supply-chain collaboration server to generate a logistics distribution network for a transaction object.

Preferably, the logistics provider server further includes:

a receiving unit 1003, configured to receive a logistics task message delivered by the

supply-chain collaboration server, where the logistics task message includes: an identifier of a warehouse, a replenishment demand quantity of the warehouse, a stock demand quantity of the warehouse, and information about a parent warehouse and information about a child warehouse of the warehouse.

A person skilled in the art should understand that the embodiments of the present invention may be provided as a method, a device (apparatus), or a computer program product. Therefore, the present invention may use a form of a hardware embodiment, a software embodiment, or an embodiment combining software and hardware. In addition, the present invention may use a form of a computer program product implemented on one or more computer usable storage media (including but not limited to a disk memory, a CD-ROM, and an optical memory) including computer usable program code.

The present invention is described with reference to flowcharts and/or block diagrams of the method, the device (apparatus), and the computer program product in the embodiments of the present invention. It should be understood that computer program instructions can implement each process and/or block in the flowcharts and/or block diagrams and a combination of processes and/or blocks in the flowcharts and/or block diagrams. These computer program instructions may be provided to a general-purpose computer, an application-specific computer, an embedded processor, or a processor of another programmable data processing device to generate a machine, so that a device configured to implement functions specified in one or more processes in the flowcharts and/or one or more blocks in the block diagrams is generated by using instructions executed by the computer or the processor of another programmable data processing device.

These computer program instructions may also be stored in a computer readable memory that can guide a computer or another programmable data processing device to work in a specific manner, so that the instructions stored in the computer readable memory generate an article of manufacture including an instruction device, where the instruction device implements functions specified in one or more processes in the flowcharts and/or one or more blocks in the block diagrams.

These computer program instructions may also be loaded into a computer or another programmable data processing device, so that a series of operation steps are performed on the computer or another programmable device to generate processing implemented by a computer, and instructions executed on the computer or another programmable device provide steps for implementing functions specified in one or more processes in the flowcharts and/or one or more blocks in the block diagrams.

Although preferred embodiments of the present invention are described, once acquiring basic innovative concepts, a person skilled in the art may make other changes and modifications to these embodiments. Therefore, the appended claims intend to be explained to include preferred embodiments and all changes and modifications that fall within scope of the present invention.

Obviously, a person skilled in the art may make various modifications and variations to the present invention without departing from the spirit and scope of the present invention. In this way, if these modifications and variations to the present invention fall within the scope of claims of the present invention and equivalent technologies thereof, the present invention also intends to cover these modifications and variations.

CLAIMS

What is claimed is:

1. A method for generating a logistics distribution network, comprising:

determining, by a supply-chain collaboration server, an expected sales range of a transaction object;

determining, according to corresponding relationships between identifiers of warehouses and coverage ranges of distribution services obtained from logistics provider servers, identifiers of selectable warehouses of which corresponding coverage ranges of distribution services are capable of jointly covering the expected sales range; and

generating a logistics distribution network for the transaction object according to the identifiers of the selectable warehouses and the corresponding coverage ranges of the distribution services, the logistics distribution network using the selectable warehouses as nodes and using distribution paths between the selectable warehouses as routes.

2. The method according to claim 1, wherein the determining, by a supply-chain collaboration server, of an expected sales range of a transaction object comprises:

receiving, by the supply-chain collaboration server, an expected sales range of the transaction object sent by a supplier terminal; and

determining the received expected sales range as the expected sales range of the transaction object.

3. The method according to claim 1, wherein the coverage ranges of distribution services comprise: coverage ranges of dispatch services and coverage ranges of collection and transfer services; and

the determining, according to corresponding relationships between identifiers of warehouses and coverage ranges of distribution services obtained from logistics provider servers, identifiers of selectable warehouses of which corresponding coverage ranges of distribution services are capable of jointly covering the expected sales range comprises:

selecting, according to the corresponding relationships between identifiers of warehouses and coverage ranges of distribution services obtained from the logistics provider servers, identifiers of first selectable warehouses of which corresponding coverage ranges of dispatch services are capable of jointly covering the expected sales range;

determining identifiers of second selectable warehouses of which corresponding coverage ranges of collection and transfer services are capable of jointly covering physical addresses of warehouses represented by the identifiers of the first selectable warehouses; and

using the determined identifiers of the first selectable warehouses and the determined identifiers of the second selectable warehouses as the identifiers of the selectable warehouses of which the corresponding coverage ranges of the distribution services are capable of jointly covering the expected sales range.

4. The method according to claim 3, wherein the generating of a logistics distribution network for the transaction object according to the identifiers of the selectable warehouses and the corresponding coverage ranges of the distribution services comprises:

using, among the identifiers of the first selectable warehouses, the identifiers of the first selectable warehouses other than the identifiers of the first selectable warehouses which correspond to coverage ranges of collection and transfer services as identifiers of terminal warehouses, wherein the terminal warehouses are linked to users purchasing the transaction object;

selecting a preset quantity of identifiers of second selectable warehouses from the identifiers of the second selectable warehouses according to a production address of the transaction object, and using the preset quantity of identifiers as identifiers of base warehouses, wherein the base warehouses are linked to a production base of the transaction object;

determining, for each selectable warehouse other than the terminal warehouses and the base warehouses among the selectable warehouses, a parent warehouse and a child warehouse of the selectable warehouse according to a geographical location of the selectable warehouse, wherein the transaction object sequentially flows through the parent warehouse of the selectable warehouse, the selectable warehouse, and the child warehouse of the selectable warehouse during logistics transportation; and

connecting each selectable warehouse and a parent warehouse and a child warehouse of the selectable warehouse, to form the logistics distribution network for the transaction object, wherein the logistics distribution network is a directed acyclic network.

5. The method according to claim 4, wherein after the connecting of each selectable warehouse and a parent warehouse and a child warehouse of the selectable warehouse, to form the logistics distribution network for the transaction object, the method further

comprises:

for each selectable warehouse having a plurality of parent warehouses, determining, according to logistics transportation capabilities of the plurality of parent warehouses of the selectable warehouse, replenishment proportions for replenishing the inventory of the selectable warehouse by the plurality of parent warehouses;

determining stock demand quantities of the warehouses according to replenishment demand quantities and the replenishment proportions of the warehouses, wherein the stock demand quantity of each of the warehouses comprises a replenishment demand quantity of the warehouse and replenishment quantities needed for child warehouses of the warehouse;

generating logistics task messages of the warehouses by using the determined stock demand quantities of the warehouses and the logistics distribution network, wherein each of the logistics task messages comprises: an identifier of a warehouse, a replenishment demand quantity of the warehouse, a stock demand quantity of the warehouse, and information about a parent warehouse and information about a child warehouse of the warehouse; and

delivering the determined logistics task messages to corresponding logistics provider servers.

6. The method according to claim 5, wherein the determining stock demand quantities of the warehouses according to replenishment demand quantities and the replenishment proportions of the warehouses comprises:

performing the following operations for each warehouse in each level of warehouses, level by level, starting from an upper-level warehouse of a terminal warehouse, until a base warehouse is reached:

determining a replenishment demand quantity of the warehouse;

determining a stock demand quantity of a child warehouse of the warehouse and a replenishment proportion for replenishing the inventory of the child warehouse by the warehouse, wherein a stock demand quantity of a terminal warehouse is a replenishment demand quantity of the terminal warehouse;

determining a stock quantity that the warehouse needs to prepare for the child warehouse by using the determined stock demand quantity of the child warehouse and the determined replenishment proportion for replenishing the inventory of the child warehouse by the warehouse; and

using a sum of the replenishment demand quantity of the warehouse and the stock quantity that the warehouse needs to prepare for the child warehouse as a stock demand quantity of the warehouse.

7. A method for generating a logistics distribution network, comprising:

determining, by a logistics provider server, stored corresponding relationships between identifiers of warehouses of logistics providers and coverage ranges of distribution services; and

sending the determined corresponding relationships between identifiers of warehouses and coverage ranges of distribution services to a supply-chain collaboration server, the corresponding relationship being used by the supply-chain collaboration server to generate a logistics distribution network for a transaction object.

8. The method according to claim 7, wherein the method further comprises:

receiving a logistics task message delivered by the supply-chain collaboration server, wherein the logistics task message comprises: an identifier of a warehouse, a replenishment demand quantity of the warehouse, a stock demand quantity of the warehouse, and information about a parent warehouse and information about a child warehouse of the warehouse.

9. A supply-chain collaboration server, comprising:

an expected-sales-range determining unit, configured to determine an expected sales range of a transaction object;

a warehouse determining unit, configured to determine, according to corresponding relationships between identifiers of warehouses and coverage ranges of distribution services obtained from logistics provider servers, identifiers of selectable warehouses of which corresponding coverage ranges of distribution services are capable of jointly covering the expected sales range; and

a network generation unit, configured to generate a logistics distribution network for the transaction object according to the identifiers of the selectable warehouses and the corresponding coverage ranges of the distribution services, the logistics distribution network using the selectable warehouses as nodes and using distribution paths between the selectable warehouses as routes.

10. A logistics provider server, comprising:

a determining unit, configured to determine stored corresponding relationships between identifiers of warehouses of logistics providers and coverage ranges of distribution services; and

a sending unit, configured to send the determined corresponding relationships between identifiers of warehouses and coverage ranges of distribution services to a supply-chain collaboration server, the corresponding relationship being used by the supply-chain collaboration server to generate a logistics distribution network for a transaction object.