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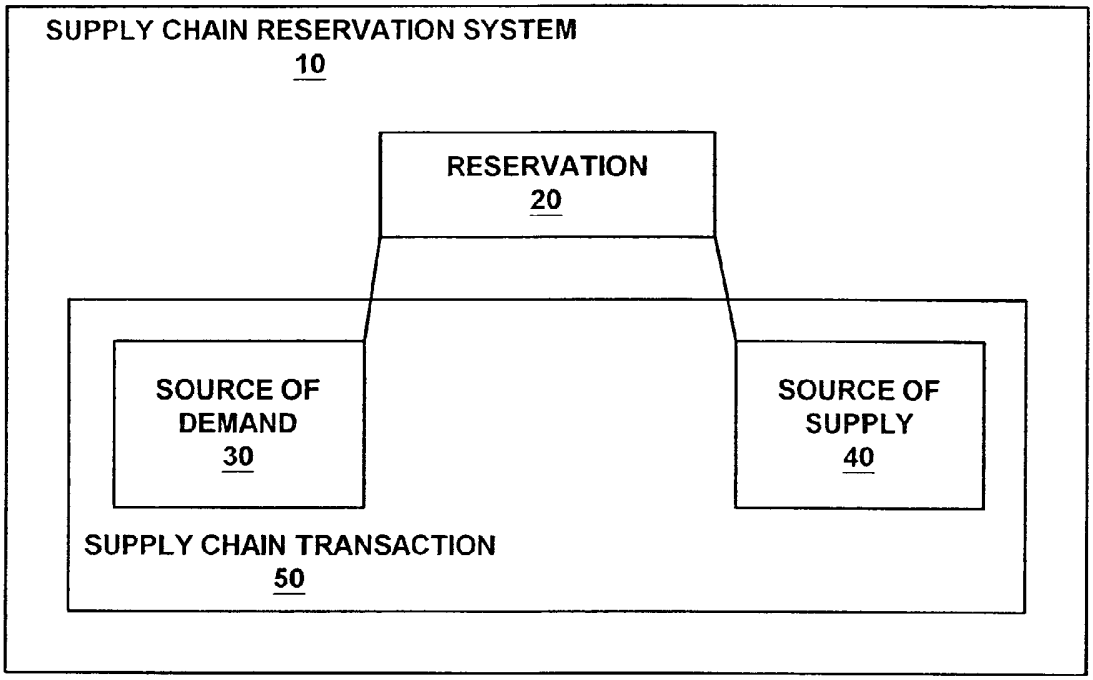
(54) **Title:** SUPPLY CHAIN RESERVATION



(57) **Abstract:** A method for managing a supply chain which provides for mapping each demand and its respective source of supply. The method entails attaching a reservation between a demand and a supply. The reservation is updated as the status of the source of supply changes. As a result, the userhas complete visibility for modeling the entire supply chain as material moves from one location to another.

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SUPPLY CHAIN RESERVATION

FIELD

The present writing relates to management of a supply chain, and more particularly to a system for reserving a source of supply for a demand.

BACKGROUND

To achieve optimal performance, entities want to be able to continuously reduce inventory, while still having enough to satisfy every demand at any given time. Supply chain management is the concept utilized to minimize overhead, maximize performance while timely and efficiently meeting all demands. Supply chain management looks at all the things that one needs to do to control the business process across the entire supply chain.

When managing a supply chain, one needs to know such things as how much quantity is needed on hand of an item to supply any given demand. This requires knowing the supplier's lead time, knowing the transportation options, how long it takes to get the item, how much it costs, how fast it is sold or used, and the like. For example, one may know how many memory chips are currently on hand. However, to optimize performance, one needs to know how many, of a particular speed, latency

and capacity, will be available from one's supplier in two days so that one can meet their demands next week.

The prior art allows the user to see a peg between a specific purchase order and production job, or requisition and receiving slip, or the like. However, no system currently allows the user to link all the peggings together to see a complete end-to-end pegging scenario. The inability to obtain a complete pegging scenario results in inefficiencies. For example, a requisition may peg a demand for a component to the component received from a vendor. However, someone must decide who gets the component and for what job, the work order, whether to route the item to an inventory location or manufacturing location, and the like. Current methods also do not provide sufficient granular details. Therefore, decision makers do not readily have information necessary to make the best decision possible. Without a complete end-to-end pegging, the supply chain is subject to contentions between competing demands. Furthermore, current methods are not effective for scheduling tasks and materials. Thus the need exists to be able to create a complete end-to-end pegging scenario.

The present writing discloses

a method for managing a supply chain which provides for mapping each demand and its respective source of supply. The method entails attaching a reservation between a demand and a supply. The reservation is updated as the status of the source of supply changes. As a result, the user has complete visibility for modeling the entire supply chain as material moves from one location to another.

SUMMARY

The present invention comprises a supply chain reservation system for providing a complete end-to-end pegging scenario. The present invention provides a solution for managing allocations across a supply chain. The present invention is readily configurable by the user to model all transaction types that make up a supply chain.

In one embodiment, the present invention is fully architected and partially implemented as a supply chain reservation system that identifies a source of demand and identifies a source of supply to satisfy the demand. A reservation is utilized to link the source of demand with the source of supply. If the source of supply is not available, then the source of supply also constitutes another demand in the reservation system. The process then continues by identifying a source of supply to satisfy each further demand. Reservations are utilized to link the respective sources of demand with the sources of supply. The process continues until an available source of supply is located.

In so doing, the supply chain reservation system can provide a complete end-to-end mapping of the supply chain being modeled. The end-to-end mapping provides visibility and traceability. The supply chain reservation system also provides for the seamless transfer of reservations along the supply chain as material moves along the supply chain. The reservation system can eliminate contentions throughout the supply chain. The reservation system also provides the content for possibly scheduling

tasks and resources throughout the supply chain. Such features can provide improved just-in-time inventory management throughout the user's enterprise.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is illustrated by way of example and not by way of limitation, in the figures of the accompanying drawings and in which like reference numerals refer to similar elements and in which:

Figure 1 shows a diagram of a supply chain reservation system, in accordance with one embodiment of the present invention.

Figure 2 shows a flow diagram of a supply chain reservation system, in accordance with one embodiment of the present invention.

Figure 3 shows a diagram of a supply chain reservation system applied in a manufacturing example, in accordance with an alternative embodiment of the present invention.

Figure 4 shows a flow diagram of a supply chain reservation system, in accordance with an alternative embodiment of the present invention.

Figure 5 shows a diagram of a supply chain reservation system applied in a manufacturing example, in accordance with an alternative embodiment of the present invention.

Figure 6 shows a diagram of a supply chain reservation system applied in a logistics example, in accordance with an alternative embodiment of the present invention.

Figure 7 shows a diagram of a computer system platform in accordance with one embodiment of the present invention.

DETAILED DESCRIPTION

Reference will now be made in detail to the embodiments of the invention, examples of which are illustrated in the accompanying drawings. While the invention will be described in conjunction with the preferred embodiments, it will be understood that they are not intended to limit the invention to these embodiments. On the contrary, the invention is intended to cover alternatives, modifications and equivalents, which may be included within the spirit and scope of the invention as defined by the appended claims. Furthermore, in the following detailed description of the present invention, numerous specific details are set forth in order to provide a thorough understanding of the present invention. However, it will be obvious to one of ordinary skill in the art that the present invention may be practiced without these specific details. In other instances, well-known methods, procedures, components, and circuits have not been described in detail as not to unnecessarily obscure aspects of the present invention.

The present invention provides a method and system for implementing an automated supply chain management system. The supply chain reservation system models a supply chain by the generic concept of matching supply to demand. Thereafter, creating a reservation between the matching source of supply to the source of demand, provides a complete end-to-end mapping of the supply chain being modeled. The reservation can be seamlessly transferred along the supply chain as material moves along the supply chain. The reservation system provides traceability, visibility, eliminates contentions, and can be used to schedule task and materials

throughout the supply chain. The present invention and its benefits are further described bellow.

Referring now to Figure 1, a diagram of an automated supply chain reservation system 10 in accordance with one embodiment of the present invention is shown. As depicted in figure 1, a supply chain consists of at least one transaction 50, such as an assembly job, available raw material stock, or the like. Although the supply chain is made up of one or more different transaction types, each can be modeled as a source of demand 30 and a source of supply 40. The supply chain reservation system 10 models this generic concept of matching supply to demand by attaching a reservation 20 between the source of demand 30 and its source of supply 40.

The generic concept of matching supply to demand is leveraged, so that via these supply chain transactions, the system can continually update the status of how a particular source of demand 10 is going to be satisfied, as things progress (i.e. move from one place to another) through the supply chain. Updating the status of the reservation 20 allows it to move seamlessly as items progress through the system. Therefore, the reservation 20 provides visibility and traceability.

Figure 2 shows a process performed by a supply chain reservation system in accordance with an embodiment of the present invention. The process begins 100 by identifying a demand 110. A source of supply that is capable of satisfying the demand is then identified 120. The supply is reserved for the demand 130. If the supply is available 140, the process is

done 150, and the supply is sourced to the demand upon request. However, if the supply is not currently available, then the supply also constitutes a additional demand 160. The above process (120, 130, 140 and 150 or 160) is repeated for the additional demand.

The process shown in Figure 2 models a supply chain in which each task type has only one demand and one source of supply for each demand. However, in most supply chains a task type may have one or more demands, one or more sources, and or one or more supplies. For example in a simple manufacturing scenario, a company may sell a product which is assembled from components Y and Z. Figure 3 illustrates a manufacturing supply chain for this manufacturing scenario. The supply chain includes a customer order 200 and a production job 240. The production job 240 requires two components Y 310 and Z 320.

When the manufacturer receives the customer order 200, a reservation system in accordance with another embodiment of the invention checks to see if the production job 240 is available to source the customer order 200. The reservation system then creates a reservation 220 that links the customer order 200, as a demand 210, to the production job 240, as a supply 230. The production job 240 also constitutes a demand 250 for a supply 290, component Y 310, and a demand 260 for another supply 300, component Z 320. Therefore a reservation 270 is attached between the demand 250 the source 290. Another reservation 280 is made between the demand 260 and the source 300.

An available supply is sourced to the demand upon request. However, if the supply is not available, the reservation system checks to see what are the different sources of supplies that can provide the component, for example is it a make or buy item.

If the manufacturer has component Y 310 in inventory but not component Z 320, the supply 290 is available while the supply 300 is not available. Because component Z 320 is not available, it also constitutes a demand 340. A requisition for the component Z from a vendor 370 is a intangible source of supply 360. The reservation system thus attaches a reservation between the demand 340 and the supply 360. When component Z is received from the vendor 380, component Z is placed in inventory 330 and the status of reservation 350 is updated to reflect that the demand 340 has been satisfied by the supply 360. Furthermore, reservation 280 is updated to reflect that component Z 330 is now a true supply and available for sourcing upon request. Thus the reservations 220, 270, 280, 350 are able to seamlessly reflect the status as material moves along the supply chain.

With reference now to Figure 4, a flow chart of the steps of a supply chain reservation process in accordance with an embodiment of the present invention is shown. As depicted in Figure 4, the operating steps provide for a reservation system in which a transaction type may consist of one or more demands that each need one or more sources of supply. The loop along the left maps the sequential demand-source-demand path. The nested loops along the right provides for mapping each sequential demand-source-demand path for multiple demands having one or more sources of supply.

The level counter is used to assist comprehension of the flow diagram. The level is used in the following description to assist the reader in keeping track of the node in the supply chain that the discussion is referring to. The level is not necessarily an element of the invention.

The process begins at an originating task type 400 (Level 1). A demand is identified 410 in the reservation system. A source of supply, for the demand, is then identified 420. The supply is reserved for the demand 430. If the supply is not available 440, the current supply becomes a demand 450 (for example move to level 2 460). A source of supply for the demand (for example at level 2) is then identified 420. The availability of the source is then tested again 440.

If the supply is available, it is determined whether the current demand requires another supply 470. If the current demand requires another supply 470, the source of supply is identified 420 and the process as described above is repeated.

If the current demand does not require another supply 470, the process moves back up a level (for example back to level 1 480) If there is no higher level 490, the process is done 500. Otherwise, the previous demand (for example at level 1) is re-identified 510.

Again it is determined whether the re-identified demand requires another supply 470. If another supply is not required, the process continues back up through the levels of demand as described above. If another supply

is required, the process continues by identifying a source of supply 420, reserving the supply for the demand 430, and so on.

For example, referring to Figures 3 & 4, the customer order 200, can be considered the originating task type (at level 1 400). The customer order 200 is identified 410 as the demand 210. A source of supply 230, the production job 240, is then identified 420. The supply 230 is reserved 430 for the demand 210. The availability of the supply is then tested 440. Assuming that the supply 230, production job 240, is not available, the current supply 230 becomes 450 a demand 250. (The new demand 250 is at level 2 460).

A source of supply, for the demand 250 is then identified 420. For example, component Y 310 is identified as a supply 290. A reservation 430 is attached between the demand 250 and the supply 290. The availability of the supply 290 is tested 440. In the example, the component Y 310 is available in inventory. Therefore, the process continues by determining whether the demand 250 requires any other supply 470. For example, component Z 320 is identified 420 as a supply 290. Again a reservation 430 is attached between the demand 260 and the supply 300.

The availability of the supply 300 is tested 440. In the example, component Z 320 is not available. Therefore, the supply 300 becomes a demand 340. (The new demand 340 is at level 3 460).

A source of supply, for the demand 340 is then identified 420. A reservation 430 is attached between the demand 340 and the supply 360. In

this case the requisition 370 constitutes an available intangible supply, because the supplier is outside the manufacturers supply chain. Therefore, when availability is tested 440, the process continues by determining if the demand 340 requires any other supply 470.

In this case the demand 340 does not require any other supply. Therefore, the process moves back up to level 2 480. Thus, the demand 260 is re-identified 510, and tested whether any other supply is required 470 for demand 260. Again demand 260 does not require any other supply, and the process moves back up to level 1 480. The demand 210 is re-identified 510, and tested whether any other supply is required 470 for demand 210. Again demand 210 does not require any other supply 470. However, there is no higher level 480 490, and therefore the process is done 500.

In another embodiment of the present invention, a reservation system is maintained by updating the information about a reservation. Thus, as a demand gets sourced, fulfilled, the reservation gets updated. For example, any time a supply that was pending, for example an intangible supply represented by a requisition, becomes a true supply, for example real inventory, the event triggers a transfer of the reservation from the intangible supply source to the actual supply source. Or any time a pending work order or assembly job becomes a true supply, such as a product, the event triggers a transfer of the reservation from intangible supply source, represented by the work order, to an actual supply source, represented by a finished good in inventory. The process concludes when the originating demand, for example a customer order, is satisfied, product

shipped. The information about the satisfied reservations can then be saved as a historic transaction in a history table.

The historic transaction can contain information related to the source of demand and source of supply. For example, the historic transaction may contain information about the transaction type, the item, the quantity, identity of the source of demand, identity of the source of supply, availability, time needed, lead time, expected delivery, special requirements, and the like. The historic transaction can also accumulate the entire supply chain history, from the end order to the lowest material supplier. Thus, the historic transaction can contain all the information that has happened to the article.

The reservation can be utilized to reduce or eliminate contentions. The reservation between a demand and a supply can also be utilized to schedule tasks and materials.

The reservation system also provides a complete mapping, an end-to-end pegging scenario, of the supply chain as material moves through the manufacturers system. The user can therefore drill down or up at any place in the mapping and obtain complete visibility of the supply chain.

The reservation system can also allow integration of the supply chain across separate organizations. The reservations can be created and updated by various organizations, by opening the reservation system via portal technology, electronic notification, exchange based products, and the

like, which allow the various organizations to input information into the reservation system.

A first example of modeling a supply chain, in accordance with one embodiment of the present invention, is now described. As shown in Figure 5, an aircraft manufacturer 630 receives demand orders 650 for planes from various customers 600, 610, 620. For example a demand order 650 received from a first passenger airline 600 may be for a model X plane. A demand order 650 received from a cargo carrier 610 may be for a model X plane without seats. While a demand order 650 received from a military 620 may be for a model Y plane without seats, and with radiation hardened electronic components.

The headquarters 640 of the aircraft manufacturer receives and enters the various demand orders 650 into a reservation system, in accordance with an embodiment of the present invention. Headquarters 640 issues a manufacturing job order to the appropriate final assembly plant. For example a manufacturing job order is issued for a model X pane. The demand orders 650 are modeled as intangible sources of demand. While the manufacturing job 640 is modeled as an intangible source of supply for the demand. A reservation is created linking the manufacturing job 640 to the demand order 650.

Upon receipt of the manufacturing job order 670 for a model X plane, plant A 660 issues various work orders and requisitions 740, 750, 760, 770, 780, for the various sub-assemblies needed to manufacture the model X

plane. The reservation system models the manufacturing job order 670 as a source of demand for the various sources of supply, represented by the work orders and requisitions 740, 750, 760, 700, 780. Reservations are created linking the various work orders and requisitions 740, 750, 760, 700, 780 to the manufacturing job order 670. For example to produce a model X plane for a passenger airline, the plant will order a fuselage, two wings, three types of avionics equipment, two engines, and two hundred and sixty seats

Furthermore, upon receipt of the work orders 740, 750, 760 the fuselage division 690, the wings division 700, and avionics division 710 each issue various requisitions 820, 830, 840 for material needed to build the sub-assemblies. Again the reservation system models the various work orders 740, 750, 760 as sources of demands for the various sources of supply, represented by the requisitions 820, 830, 840. Reservations are created linking the various requisitions 820, 830, 840 to their respective work orders 740, 750, 760.

Furthermore, the reservation system can also model the supply chain within each division. For example, the supply chain for fuselage division can be modeled by the demand for a sub-assembly. The supply for this demand is a production job. The production job also constitutes a demand for the material used to build the sub-assembly. Therefore, the production job creates a demand for a source of supply, the material. The source of supply, the material, is represented by the requisition for the material from the appropriate material vendor.

In building aircraft timing is an important consideration. For example it is very important that the sub assemblies arrive at the final assembly plant in the order that they are needed. The subassemblies are too large to store and are to costly to have laying around. Furthermore, each type of subassembly has different lead times to manufacturer. The reservation between the manufacturing job 670 and the various work orders and requisitions 740, 750, 760, 770, 780 can be utilized to schedule the various delivery dates of the various subassemblies so that each supply along the supply chain is available to be source upon request, and not any sooner. For example, a plane may be assembled by attaching the wings to the fuselage, then installing the avionics and engines, and finally installing the seats. Therefore, the reservations can be utilized to schedule delivery of the fuselage first, the wings second, the avionics and engines at the same time, and the seats fourth.

The reservations can also provide the ability to eliminate contentions. For example the model X and model Y planes may both use the same engines. The manufacturer may place an order for six engines, two to build a model X plane (say requisition #1), two to build a model Y plane (say requisition #2), and two to fill an order for spare parts (and say requisition #3). However, the manufacturer may only receive five engines from the engines vendor. The reservations identify which requisition for which manufacturing job the engines are for. For example, the packing slip for the five engines may indicate that two engines fill requisition #1, two engines fill requisition #2, and one engine is a partial shipment under requisition #3. Thus, the reservations clearly identify which

manufacturing jobs the engines are for, and that the spare parts order cannot be sourced yet.

The reservation also provides the ability to identify special requirements. For example, the electronic components used in the avionics may be identical in function. However the components used to build the avionics built for the military, require that they be radiation hardened. The reservation can allow this requirement to be utilized to further identify the supply and the demand that the item sources.

A second example of modeling a supply chain, in accordance with one embodiment of the present invention, is now described. A reservation system may also model the supply chain of a logistics organization. As shown in Figure 6, the logistics organization carries cargo from various locations 900, 950, 990 to one or more of its merge-in-transit (MIT) centers 920, 1040. The cargo is redistributed from arriving trucks 910, 960, 1000, 1030, 1060 on to departing trucks 930, 970, 1010, 1050, 1070. The departing trucks 930, 970, 1010, 1050, 1070 carry the cargo to various final destinations 940, 980, 1020, 1080. The logistics organization may have a finite number of trucks, with limited cargo carry capacity. The cargo may also have various restrictions concerning delivery times. The routes between locations may also establish preferred MIT centers for use by each originating and destination location.

The reservation system begins by modeling the destination locations 940, 980, 1020, 1080 as demands. Various trucks 930, 970, 1010, 1050, 1070

are modeled as supplies. The reservation system checks to see if one or more trucks 930, 970, 1010, 1050, 1070 are available, and then attaches a reservation linking the demand, the destination location (for example 1020), with the source of supply, an available truck (for example 1010).

The truck 1010 then becomes a demand. The MIT centers 920 1040 are modeled as supplies. The reservation system checks to see if one or more MIT centers 920 1040 are available, and then attaches a reservation linking the demand, the truck 1010, with the source of supply, an available MIT center (for example 920).

The MIT center 920 then becomes a demand. Various trucks 910, 960, 1000, 1030, 1060 are modeled as supplies. The reservation system checks to see if one or more trucks 910, 960, 1000, 1030, 1060 are available, and then attaches a reservation linking the demand, the MIT center 920, with the source of supply, an available truck (for example 910).

The truck 910 then becomes a demand. Various locations 900, 950, 990 are modeled as supplies. The reservation system checks to see if one or more locations 900, 950, 990 are available, and then places a reservation linking the demand, the truck 910, with the source of supply, an available location (for example 900).

The above example illustrates how the reservation system can model the supply chain necessary to get a package from an originating location 900 to a desired destination location 1020. To handle competing demands

with differing requirements, for example multiple lots of cargo with various delivery requirements such as express and normal delivery, it may be desirable for the reservation system to be able to first prioritize various demands before sources of supply are identified and reserved. Furthermore, to accommodate preferred routings, it may be desirable for the reservation system to be able to order the possible sources of supply by preference. Such characteristics of the reservation system can provide for complete modeling of the supply chain, and optimum performance thereof.

Figure 7 shows a diagram of a computer platform for implementing a supply chain reservation system in accordance with one embodiment of the present invention. As depicted in figure 7, a supply chain reservation server 1100 functions as the host for modeling the supply chain. The supply chain reservation server 1100 receives transactions from various users 1110, 1120, 1130, 1140, 1150, 1160, 1170, 1180, such as receiving, shipping, material inventory, manufacturing, marketing and sales, purchasing, product inventory, accounting, and the like. Furthermore, additional users can be connected via portal technology 1200, electronic notification, exchange based products, and the like.

The supply chain reservation system is implement, for example, by using a database program running on the supply chain reservation server 1100. The users 1110, 1120, 1130, 1140, 1150, 1160, 1170, 1180, 1210, 1220, 1230, 1240 are connected to the supply chain reservation server via a distributed network, such as a LAN, WAN, ethernet, internet, or the like.

In general, the supply chain reservation server 1100 shows the basic component of a computer system used to implement the supply chain reservation system. The server 1100 comprises an address/data bus 1240 for communicating information, one or more central processing units 1250 coupled with the bus 1240 for processing information and instructions, a computer readable volatile memory unit 1260 (e.g. random access memory, static RAM, dynamic RAN, etc.) couple with the bus 1240 for storing information and instruction for the central processor(s) 1250, a computer readable non-volatile memory unit 1270 (e.g, read only memory, programmed ROM, flash memory, EPROM, EEPROM, etc.) coupled with the bus 1240 for storing static information and instructions for the processor(s) 1250. The server 1100 also includes a mass storage computer readable data storage device 1300 such as magnetic or optical disk and disk drive coupled with the bus 1240 for storing information and instructions. Optionally, the server 1100 can include a display device 1280 coupled to the bus 1240 for displaying information to the computer user, an alphanumeric input device 1290 for communicating information and command selections to the central processor(s) 1250, and a input/output port interface 1310 coupled to the bus 1240 for communicating information and command selections between the distributed network 1190 to the processor(s) 1250.

The supply chain reservation server models one or more supply chain transactions as a source of demand and or a source of supply. Upon identifying the demand and an appropriate supply for satisfying the demand, the supply chain server attaches a reservation.

As systems become more collaborative, and as the concept of internal and external blur, the concept of a reservation as being something that has an independent existence becomes important. A reservation, in accordance with the present invention, becomes a business object that can be utilized to model a supply chain. Reservations can be utilized to take action and make decision at each node in the supply chain. The present invention, abstracts out the concept of supply and demand, linking them with a reservation, and creates rules of how reservations behave, so that reservations can be utilized to manage allocations. Managing allocations can entail eliminating contentions, scheduling tasks and materials, and the like. Hence, a reservation is a business objects for managing allocations across a supply chain.

The foregoing descriptions of specific embodiments of the present invention have been presented for purposes of illustration and description. They are not intended to be exhaustive or to limit the invention to the precise forms disclosed, and obviously many modifications and variations are possible in light of the above teaching. The embodiments were chosen and described in order to best explain the principles of the invention and its practical application, to thereby enable others skilled in the art to best utilize the invention and various embodiments with various modifications as are suited to the particular use contemplated. It is intended that the scope of the invention be defined by the Claims appended hereto and their equivalents.

CLAIMS

What is claimed is:

1. A method of modeling a supply chain, comprising:

identifying a source of demand;

identifying a source of supply; and

linking a reservation with the source of demand and the source of supply.

2. The method according to claim 1, wherein the reservation contains information concerning the source of demand.

3. The method according to claim 2, further comprising updating the information contained in the reservation in response to a change of status of the source of demand.

4. The method according to claim 1, wherein the reservation contains information concerning the source of supply.

5. The method according to claim 3, further comprising updating the information contained in the reservation in response to a change of status of the source of supply.

6. A method of managing allocation in a supply chain, comprising:

a means for identifying a demand;

a means for identifying a supply; and

a means for linking the demand with the supply.

7. The method according to claim 6, wherein a contention is reduced.

8. The method according to claim 6, wherein a task is scheduled.

9. The method according to claim 6, wherein a material is scheduled.

10. A supply chain reservation system, comprising a reservation attaching a demand and a source of a supply.

11. The supply chain reservation system according to claim 10, wherein the reservation contains information concerning the demand.

12. The supply chain reservation system according to claim 11, wherein the information is updated in response to a change of status of the demand.

13. The supply chain reservation system according to claim 10, wherein the reservation contains information concerning the supply.

14. The supply chain reservation system according to claim 13, wherein the information is updated in response to a change of status of the supply.

15. A method for managing a supply chain, comprising:

a) identifying a demand;

b) identifying a source of a supply for the demand;

c) reserving the supply as the source for the demand;

d) making the supply an additional demand when the supply is not available; and

e) performing b and c above for the additional demand, when the supply is not available.

16. The method as recited in claim 15 wherein the demand requires more than one supply, further comprising performing b,c,d,and e above for each additional supply required by the demand.

17. The method as recited in claim 15 wherein there are one or more competing demands, further comprising prioritizing the competing demands.

18. The method as recited in claim 15 wherein there are one or more sources of the supply, further comprising preferencing the sources.

19. A computer implemented supply chain reservation system, comprising:

a) receiving a supply chain transaction via a distributed computer network;

b) identifying a source of demand corresponding to the transaction;

c) identifying a source of supply corresponding to the transaction; and

d) linking a reservation with the source of demand and the source of supply.

20. The computer implement supply chain reservation system as recited in claim 19, further comprising:

receiving information concerning the status of the transaction via a distributed computer network; and

updating the reservation based upon the status of the transaction.

21. The computer implement supply chain reservation system as recited in claim 19, further comprising providing traceability of the supply chain transaction via a distributed computer network.

22. The computer implement supply chain reservation system as recited in claim 19, wherein the distributed computer network comprises:

one or more user devices; and

a supply chain reservation server, including a processor coupled to a computer readable memory, the memory containing computer readable instructions which when executed cause the server to implement steps a, b, c, and d.

23. A computer-readable medium carrying one or more sequences of instructions which when execute by a computer system cause the computer

system to implement a method for managing allocation in a supply chain, comprising:

receiving a supply chain transaction;

identifying a source of demand corresponding to the transaction;

identifying a source of supply corresponding to the transaction; and

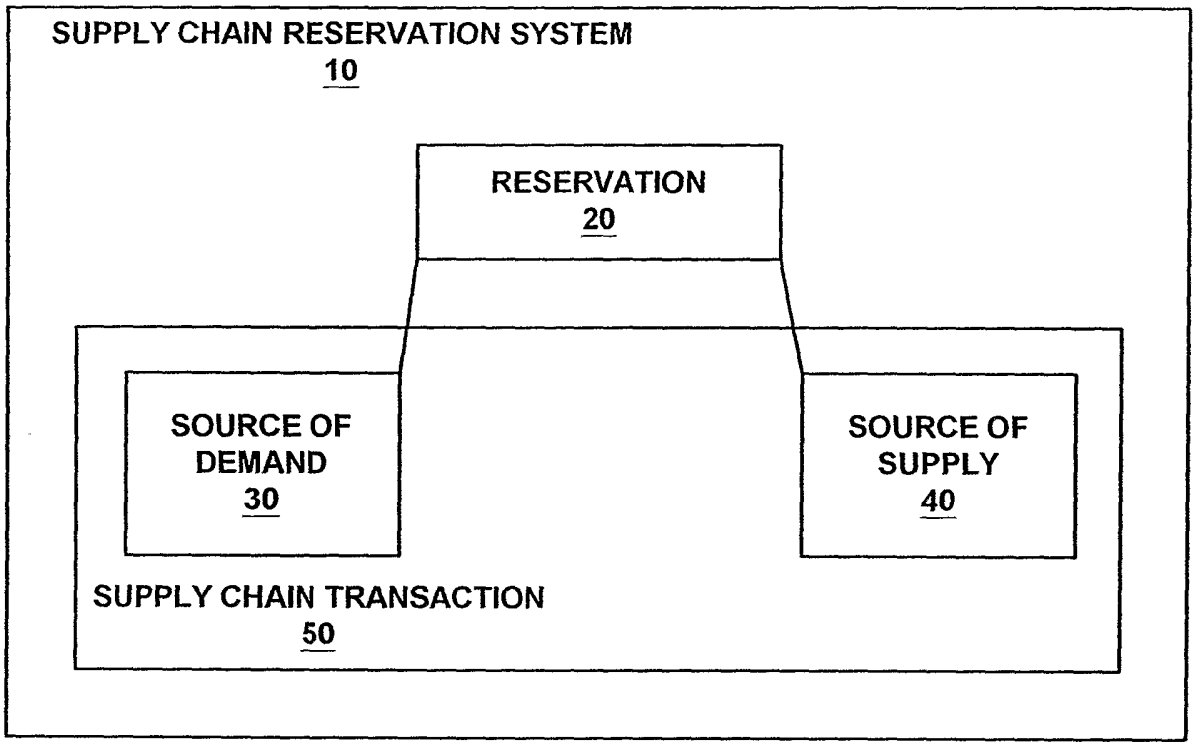
linking a reservation with the source of demand and the source of supply.

24. The computer-readable media as recited in claim 23, further comprising:

receiving information concerning the status of the transaction; and

updating the reservation based upon the status of the transaction.

25. The computer-readable media as recited in claim 23, further comprising providing traceability of the supply chain transaction.


SUPPLY CHAIN RESERVATION SYSTEM
10
RESERVATION
20
SOURCE OF
DEMAND
30
SOURCE OF
SUPPLY
40
SUPPLY CHAIN TRANSACTION
50

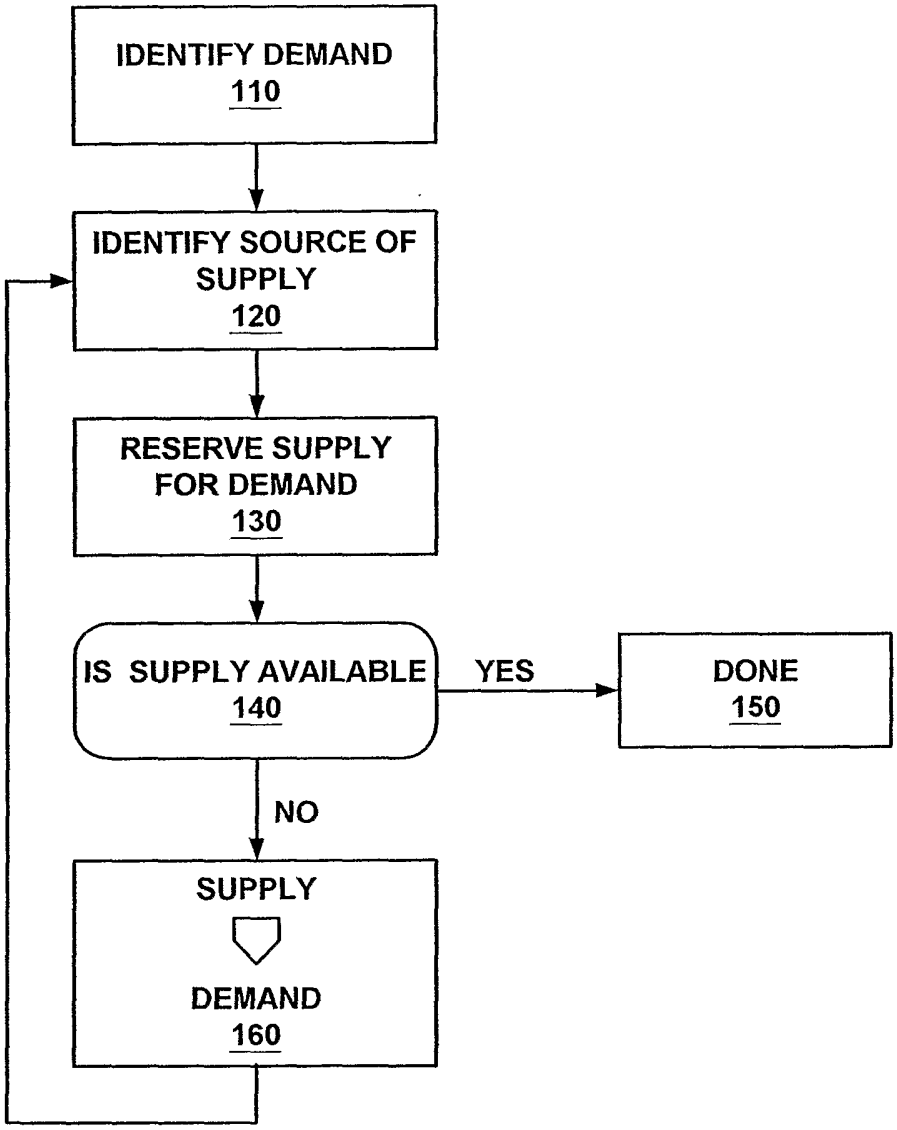

IDENTIFY DEMAND
110
IDENTIFY SOURCE OF SUPPLY
120
RESERVE SUPPLY FOR DEMAND
130
IS SUPPLY AVAILABLE
140
YES
DONE
150
NO
SUPPLY
DEMAND
160

FIGURE 2

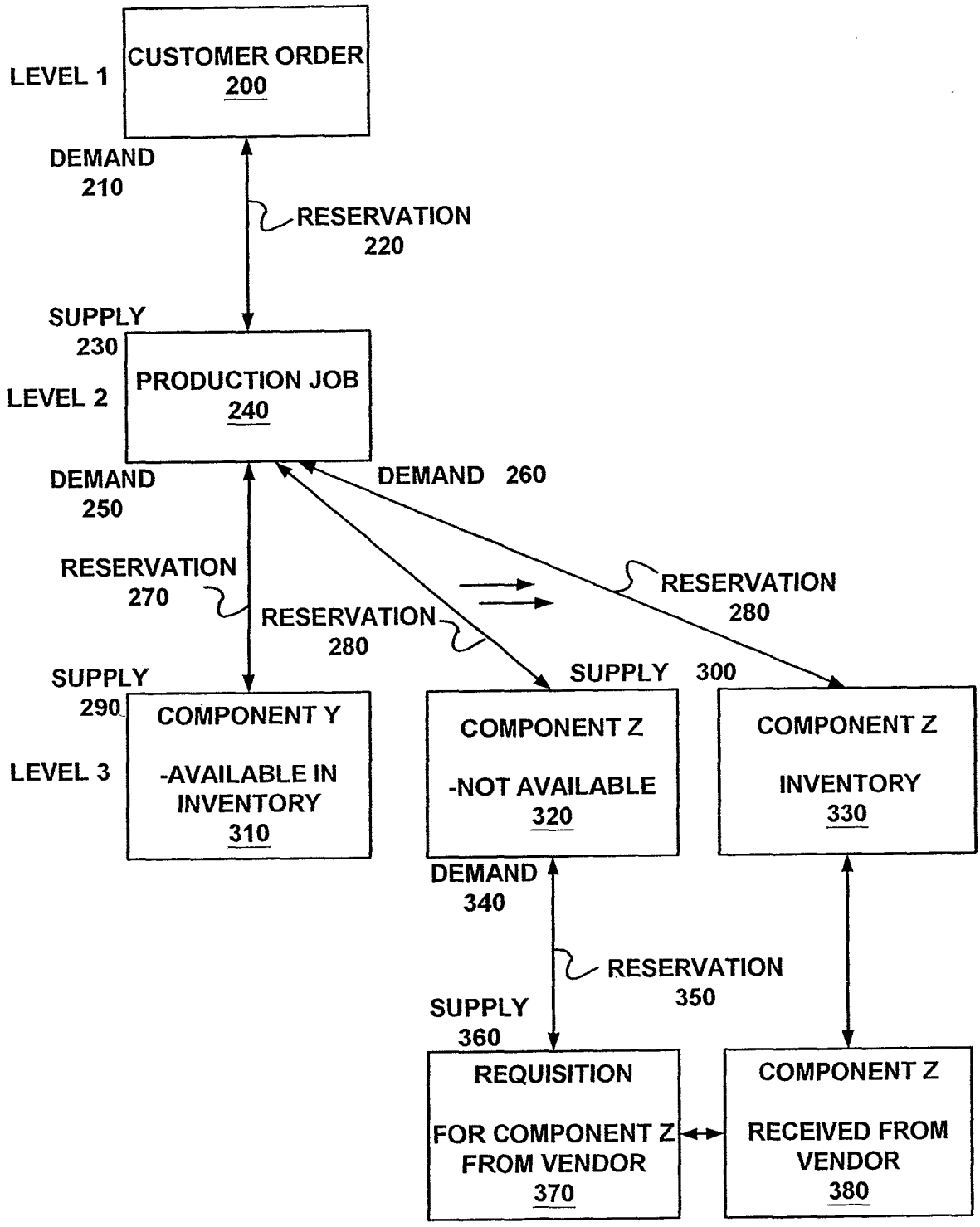

LEVEL 1
CUSTOMER ORDER
200
DEMAND
210
RESERVATION
220
SUPPLY
230
LEVEL 2
PRODUCTION JOB
240
DEMAND
250
DEMAND 260
RESERVATION
270
RESERVATION
280
RESERVATION
280
SUPPLY
290
SUPPLY 300
LEVEL 3
COMPONENT Y
-AVAILABLE IN INVENTORY
310
COMPONENT Z
-NOT AVAILABLE
320
COMPONENT Z
INVENTORY
330
DEMAND
340
RESERVATION
350
SUPPLY
360
REQUISITION
FOR COMPONENT Z FROM VENDOR
370
COMPONENT Z
RECEIVED FROM VENDOR
380

FIGURE 3

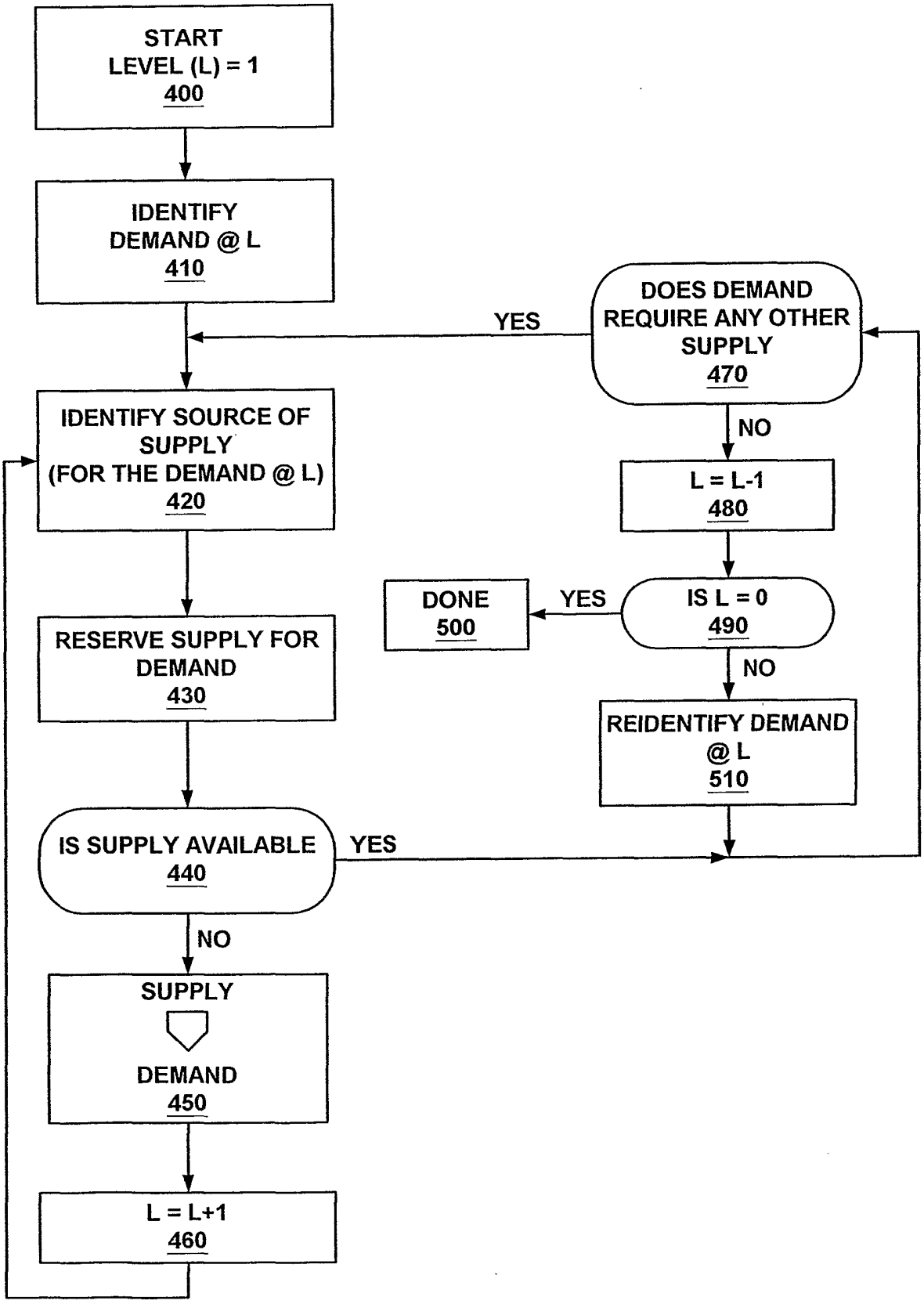

START
LEVEL (L) = 1
400
IDENTIFY
DEMAND @ L
410
DOES DEMAND
REQUIRE ANY OTHER
SUPPLY
470
YES
NO
IDENTIFY SOURCE OF
SUPPLY
(FOR THE DEMAND @ L)
420
L = L-1
480
DONE
500
YES
IS L = 0
490
NO
RESERVE SUPPLY FOR
DEMAND
430
REIDENTIFY DEMAND
@ L
510
IS SUPPLY AVAILABLE
440
YES
NO
SUPPLY
DEMAND
450
L = L+1
460

FIGURE 4

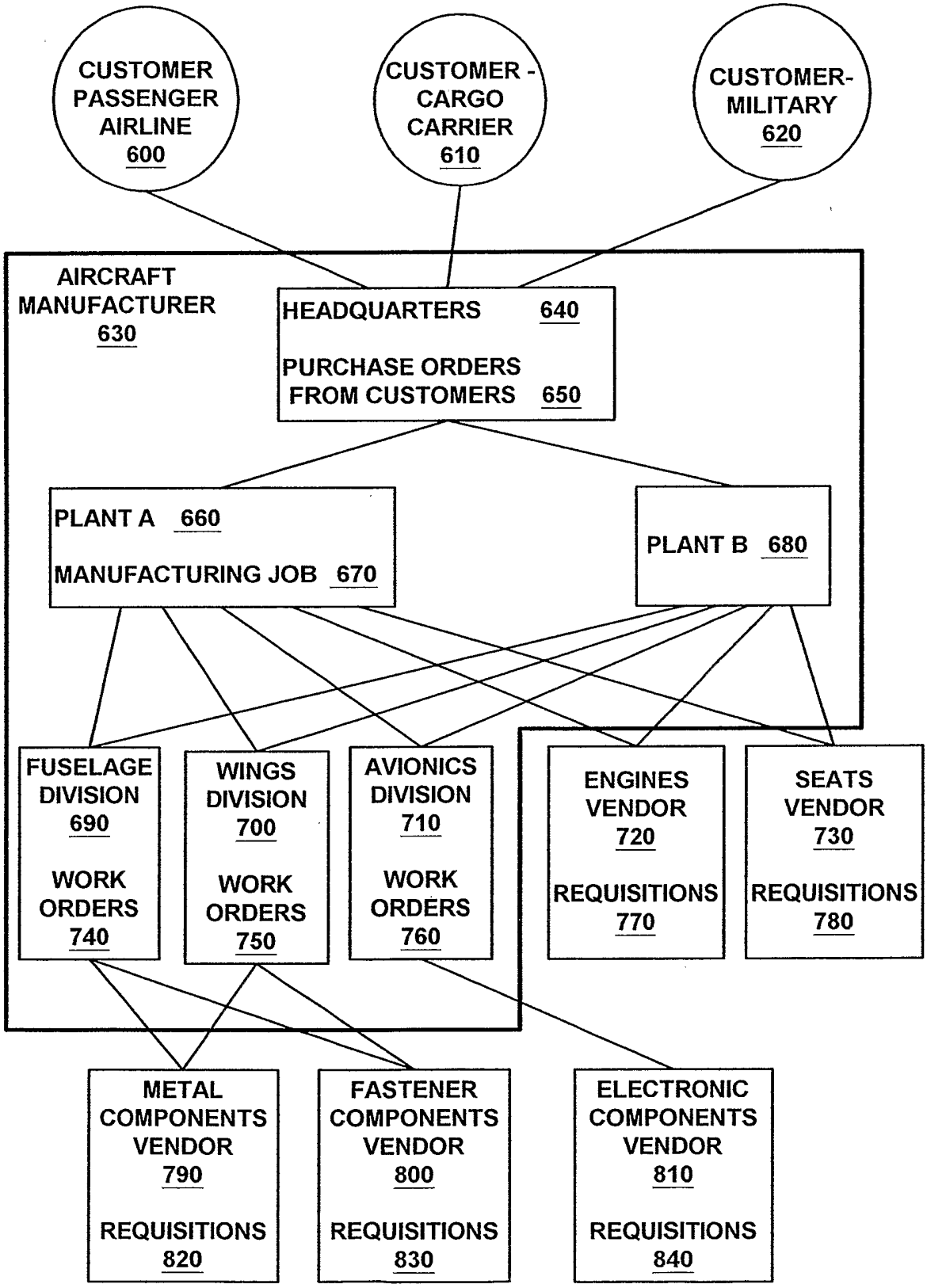

CUSTOMER PASSENGER AIRLINE 600
CUSTOMER - CARGO CARRIER 610
CUSTOMER- MILITARY 620
AIRCRAFT MANUFACTURER 630
HEADQUARTERS 640
PURCHASE ORDERS FROM CUSTOMERS 650
PLANT A 660
MANUFACTURING JOB 670
PLANT B 680
FUSELAGE DIVISION 690
WORK ORDERS 740
WINGS DIVISION 700
WORK ORDERS 750
AVIONICS DIVISION 710
WORK ORDERS 760
ENGINES VENDOR 720
REQUISITIONS 770
SEATS VENDOR 730
REQUISITIONS 780
METAL COMPONENTS VENDOR 790
REQUISITIONS 820
FASTENER COMPONENTS VENDOR 800
REQUISITIONS 830
ELECTRONIC COMPONENTS VENDOR 810
REQUISITIONS 840

FIGURE 5

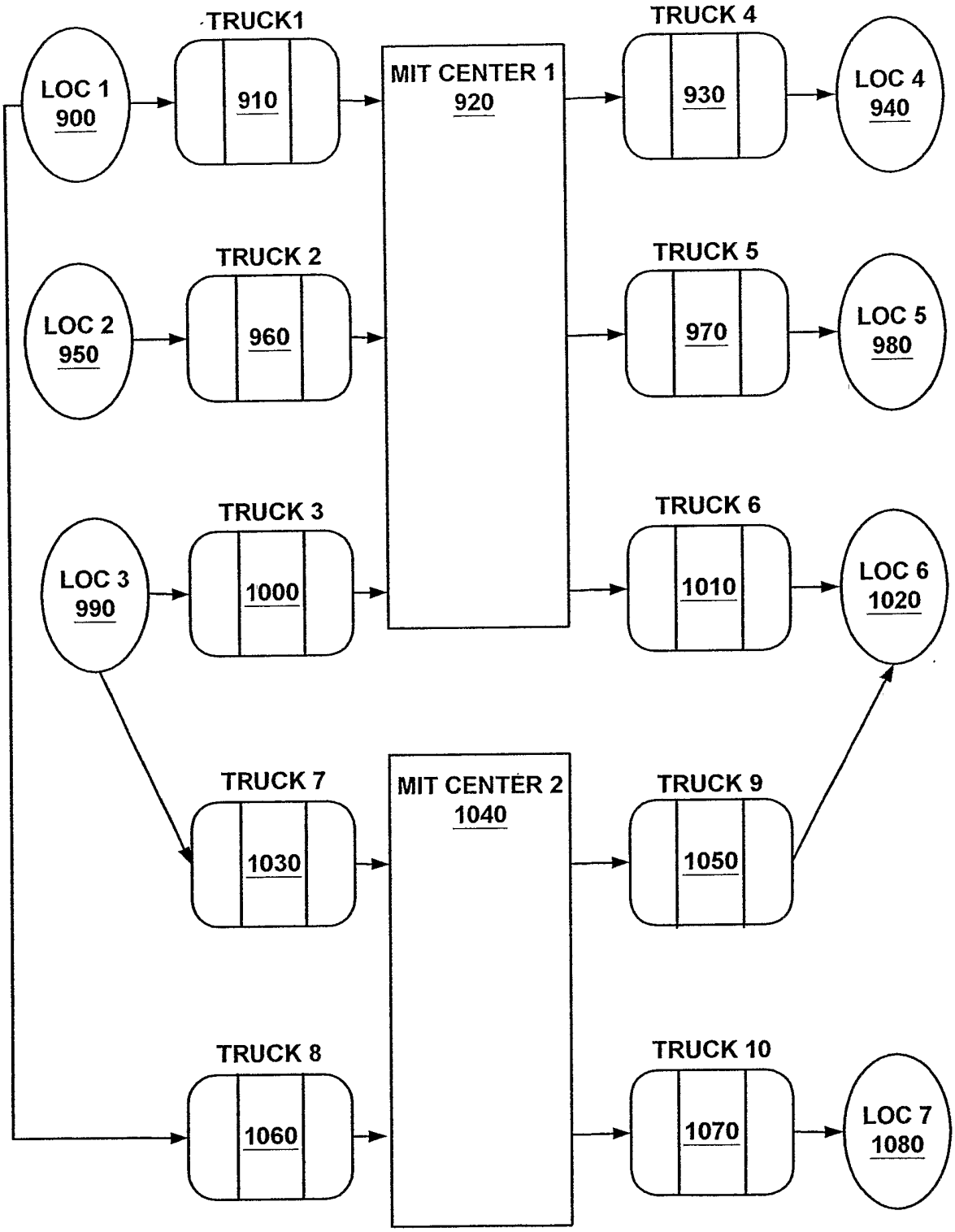

LOC 1
900
TRUCK1
910
MIT CENTER 1
920
TRUCK 4
930
LOC 4
940
LOC 2
950
TRUCK 2
960
TRUCK 5
970
LOC 5
980
LOC 3
990
TRUCK 3
1000
TRUCK 6
1010
LOC 6
1020
TRUCK 7
1030
MIT CENTER 2
1040
TRUCK 9
1050
TRUCK 8
1060
TRUCK 10
1070
LOC 7
1080

FIGURE 6

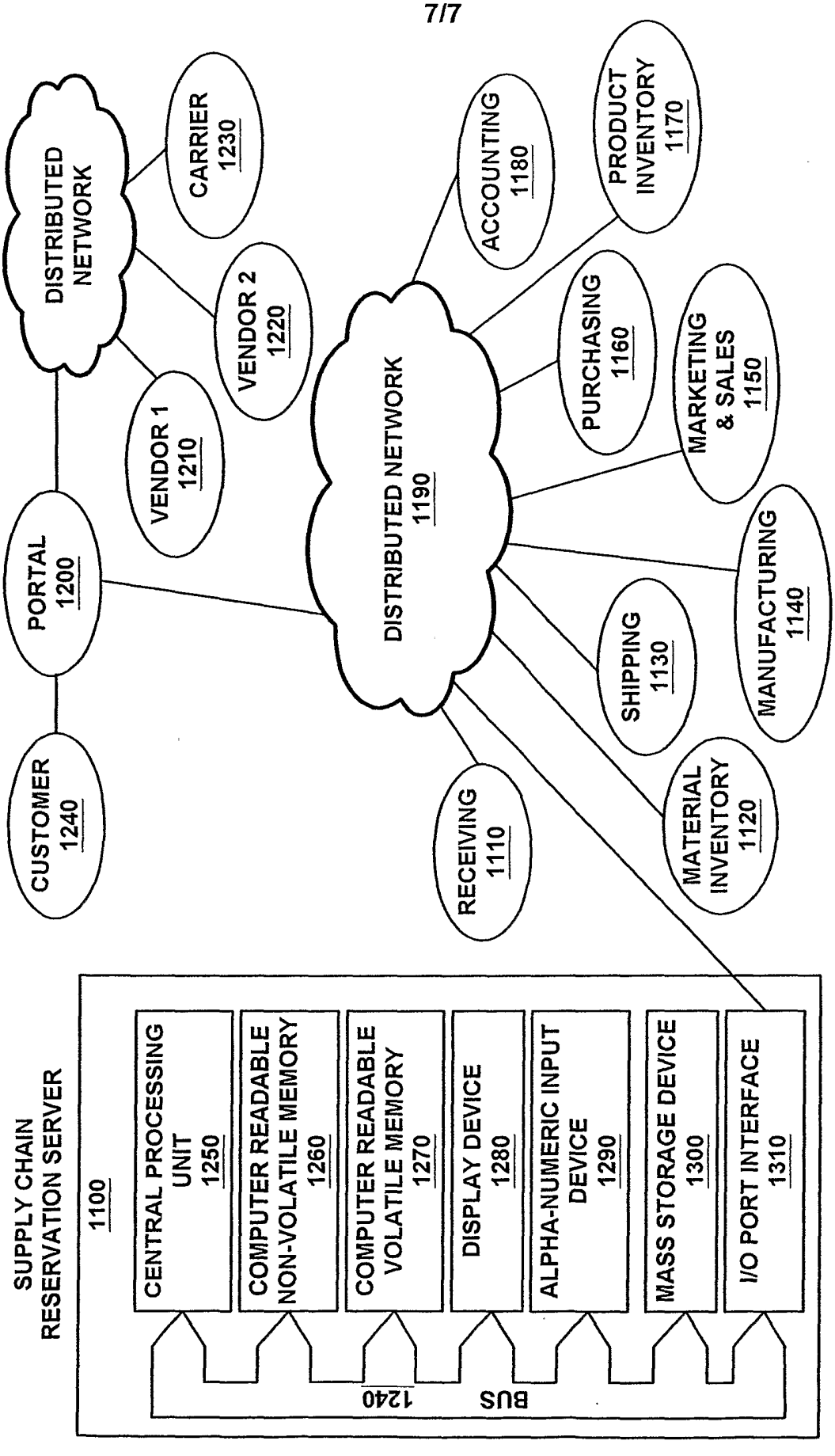

SUPPLY CHAIN RESERVATION SERVER
1100
CENTRAL PROCESSING UNIT 1250
COMPUTER READABLE NON-VOLATILE MEMORY 1260
COMPUTER READABLE VOLATILE MEMORY 1270
DISPLAY DEVICE 1280
ALPHA-NUMERIC INPUT DEVICE 1290
MASS STORAGE DEVICE 1300
I/O PORT INTERFACE 1310
BUS 1240
DISTRIBUTED NETWORK 1190
PORTAL 1200
DISTRIBUTED NETWORK
CUSTOMER 1240
VENDOR 1 1210
VENDOR 2 1220
CARRIER 1230
RECEIVING 1110
MATERIAL INVENTORY 1120
SHIPPING 1130
MANUFACTURING 1140
MARKETING & SALES 1150
PURCHASING 1160
ACCOUNTING 1180
PRODUCT INVENTORY 1170

FIGURE 7