2014-1495

IN THE
UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

PI-NET INTERNATIONAL, INC.,

Plaintiff-Appellant,

V.

JPMORGAN CHASE & CO.,

Defendant-Appellee,

Appeal from the United States District Court for the District of Delaware
in Case No. 1:12-cv-00282, Judge Sue L. Robinson

CORRECTED BRIEF OF PLAINTIFF-APPELLANT PI-NET INTERNATIONAL, INC.

December 5, 2014

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UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

Pi-Net International, Inc. v. J.P. Morgan Chase & Co.

No. 2014-1495

CERTIFICATE OF INTEREST

Attorney for Plaintiff-Appellant, Pi-Net International, Inc. certifies the following:

1. The full name of every party or amicus represented by me is:

Pi-Net International, Inc.

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

Pi-Net International, Inc.

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curiae represented by me are:

None

4. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency or are expected to appear in this court are:

William J. Weidner, Bell Law Firm, P.C.
Dr. Lakshmi Arunachalam,
Withdrawn: George Pazuniak, Victoria Brieant, John Carpenter

December 5, 2014
Date

/s/William Weidner
Signature of counsel

William J. Weidner
Printed name of counsel

TABLE OF CONTENTS

Contents

TABLE OF AUTHORITIES

Cases:

Other Authorities:

STATEMENT OF RELATED CASES

No appeal in this case has ever been before any appellate court. No other case known to Plaintiff's counsel will directly affect or be directly affected by this appeal.

JURISDICTIONAL STATEMENT

Delaware district court ("DDC") had subject matter jurisdiction under 28USC§§1331,1338(a). CAFC has appellate jurisdiction under 28USC§1295 over DDC's May'14 Order, Notice of Appeal filed 5/21/2014.

STATEMENT OF ISSUES

Whether DDC's claim constructions, ruling claim terms indefinite and summary judgment of invalidity and non-infringement of asserted claims 1-6, 10-12, 14-16, 35 of U.S.Patent Nos. 5,987,500('500); 4 of 8,037,158('158); 1-8, 10-11 of 8,108,492('492) are incorrect.

STATEMENT OF CASE

Appeal stems from DDC's Opinion and Orders on claim construction, summary judgment of invalidity and non-infringement.

STATEMENT OF FACTS

Judge Andrews, after two years, transferred case to Judge Robinson. Markman conducted a week later. DDC ruled. Two days later, Notice of Appeal filed, against client instructions. Judges failed to recuse despite financial and relationship conflicts of interest. 60(d)(3) Motion is pending in DDC. Stay of Appeal or dismissal without prejudice is proper. Motion-to-Substitute-Plaintiff is pending in

CAFC. CAFC has not docketed Dr.Arunachalam's (new assignee of patents) *pro se* Entry-of-Appearance.

CR1[DDC failed to construe in light of specification, filehistory, in the context of the whole claim; ignored Dr. Bardash's well-founded sworn opinions, misled by Spielman's unsworn statements, lacking legal or technical basis.]

A. JPMC's use of DrA's Pioneering Invention, Exchange of Structured Data from WebApplications Displayed on a Webbrowser

Patents-in-suit share common specification, derive priority from 1995 provisional application S/N 60/006,634. DrA pioneered Web banking and other applications displayed on a Webbrowser. Its ubiquitous use changed how we live, work, achieving huge commercial success. She raised venture capital, implemented her patents in software, conducted beta/pilot trials with global corporations toward commercializing a product, with infringers killing innovation.

B. Patents-in-Suit Constituted A Leap Forward in Automating Interactive WebApplications

***CR2*[**DrA solved a complex technological problem meeting universal need to draw Back-office information systems to offer transactional services to WebUsers to perform real-time Webtransactions through exchange of structured data from WebApplications in a Webbrowser. This represented a major advance over prior art in 1995, one-way Web browsing, hyperlinking, HTML forms, CGI,

applications were local to a Back-office, not connecting to the Web, shortcomings (A-71,73,'492:1:33-2:45;5:40-54).**]**

SUMMARY OF ARGUMENT

DDC erred (***CR1***) in construing claim terms, ruling claim terms indefinite, holding claims invalid for indefiniteness and non-infringement.

ARGUMENT

I. Standard of Review

Claim construction is an issue of law reviewed *de novo*. Applying law of regional circuit, grant of summary judgment is reviewed *de novo.*

II. DDC's Claim Construction Errors

DDC copied Spielman's opinions, unsupported by fact or foundation. *See* ***CR1***. *Phillips.v.AWHCorp*,415F.3d1303,1313(Fed.Cir.2005)(en banc). Inventor, acting as her own lexicographer, set out certain definitions and provided clear, unmistakable prosecution disclaimer or disavowal.

Thorner.v.SonyComputerEntm'tAm.LLC,669F3d1362,1365(Fed.Cir.2012).

1) "**REAL-TIME**" Specification discloses "real-time" as "non-deferred." *See* ***CR1***.

> "…WebUser's capabilities…from…Webbrowser…one-way, browse-only interactions…limited "deferred" transactional capabilities...E-mail…referred to as "**deferred transactions**" because…consumer's request is not processed until…e-mail is received, read, and…person or system reading… e-mail executes…transaction. **This transaction is thus not performed in real-time**." (A-15'500:1:23-32)

Construction of "real-time" cannot include features of email or CGI. DDC confused CGI with real-time.

> "Davison describes how to **create a standard HTML Webpage** that contains **HTML forms**…non-interactive Webpages that **do not allow a user to perform live, real-time**, **bi-directional transactions** …input data from the forms-based document is sent to an application program, which…generates a reply document to be sent to the user... **CGI**…does **not** allow a user…to perform **real-time** transactions…nor does it allow the value-added network service provider to keep the transaction flow captive at the network entry point…Davison does not teach…presently claimed invention…" (A179-183'500filehistory)

"Real-time" relates to user experience. DDC acknowledged (A581-583Opinionpp1-3) specification states:

> ***CR3***["…WebMerchant …POSvcApplication…user **100**…able to **perform real-time transactions** …moves$500 …**transaction** …**performed in real-time**, **in**…**same manner**… **transaction** …**performed by**…**live teller at**…**bank**… **ATM machine**…user **100** now…more than browse his bank account… perform…**real-time transactions** from **a Web client**…significant aspect of **the present invention**." (A-74'492:7:10-23)]

> "…**perform**…**real-time**…**transactions that he can perform with**…**live salesperson at**…**car dealership**" (A-71'492:2:24-45)

Misled by JPMC, DDC construed incorrectly. Ruling must be reversed. It would have been correct for DDC to construe "real-time" as "non-deferred" and stopped at that.

2) "**VALUE-ADDED NETWORK (VAN) SERVICE PROVIDER**," "**VAN SERVICE**," "**VAN**," "**SERVICE NETWORK**," "**VANSWITCH**," "**VAN SYSTEM**" **COINED BY INVENTOR**

CR4*[**DDC construed "value-added network (VAN) service provider" as "provider of a point-of-service(POSvc) application," gives guidance for consistently construing these terms. *NTPInc.v.RIM*418F3d1282(Fed.Cir.2005) "Because NTP's patents …derive from…same patent application and share…common terms…must*** interpret…claims consistently across all asserted patents." *OmegaEnggInc.v.RaytekCorp*334F3d1314,1334(Fed.Cir.2003). "…unless otherwise compelled…same claim term in…same patent or related patents carries…same construed meaning."**]**

DDC missed specification requires: POSvcApplication ***must*** be displayed on a Webpage or other GUI.

> "Exchange501…displays…Webpage505…includes… POSvcApplications510...A POSvcApplication…is displayed via…graphical user interface component…the present invention supports HyperText Markup Language as the graphical user interface component." (A-17'500:6:28-36)

Correct construction is "**provider of a POSvcApplication displayed on a Webpage**."

"**VAN SERVICE**" Consistent with DDC's construction of

- "**VAN Service Provider**" as "**provider of a POSvcApplication**," then
- "**VAN Service**" is a "**POSvcApplication displayed on a Webpage, that provides a value-add to the network**," supported by specification:

A-75‘492:9:10-13, 9-23,Figs.5C,5B,5D,6A: “VAN service **704**” or “application service **704**” is disclosed as a point-of-service application(POSvcApplication) displayed on a Webpage. “POSvcApplication” is the “value-add” to the network (eg.Web banking).

“**VALUE-ADDED NETWORK(VAN)**” is a “**network that includes a POSvcApplication displayed on a Webpage**, **that provides a value-add to the network**” consistent with DDC above. Specification supports “**VAN**” is “an OSI application layer network that includes a POSvcApplication displayed on a Webpage”:

> “switching service 702 is an **OSI application layer** switch…Interconnected application layer switches form the **application network** backbone.” (A-74‘492:8:52-63)
>
> “WebApplication network portal.” (Title of ‘492)

“**SERVICE NETWORK**” Consistent with DDC’s construction of

- “**VAN Service Provider**” as “**provider of a POSvcApplication**,”
- “**VAN Service**” is a “**POSvcApplication**,”
- **“Service**” is **“VAN Service**,” or “POSvcApplication” displayed on a Webpage. This is consistent with A-71‘492:2:9-10, which discloses “application or service.”
- “**Service network**” is “**an OSI application layer network running on top of a facilities network and that provides value-added network (VAN)**

> **services**." "VAN Services" are "POSvcApplications displayed on a Webpage, that provide value-add to the network," (eg, Web banking POSvcApplication is an example of a value-add to the network.) A "**facilities network**" is "**an IP-based network with physical hardware components that provides underlying network communication services up to layer 4 of the OSI model**."

DDC acknowledged:

> "…specification describes an "embodiment includ[ing] a service network running on top of a facilities network, namely the Internet, the Web or e-mail networks...(A-73'492:5:55-6:5)…**service network**, operating within the boundaries of an **IP-based facilities network**."(A-73'492:6:30-33)." (A587-588Opinionpp.7-8)

PTAB construed, distinguishing between a facilities network (which provides the underlying network services from layers 1-4 of the OSI model) and a service network which provides the value-added services like Web banking. (A-684)

DDC acknowledges that a service network includes an Exchange which displays a Webpage **505** that includes POSvcApplications **510**. Specification discloses that a necessary component of a service network is a POSvcApplication displayed on a Webpage.

DDC failed to note: priority provisional application 60/006,634 (A-483-484pps 4-5) distinguishes a service network from a facilities network, giving analogy of telephone service network. Physical poles and cables of a phone network is the

facilities network. Voice service network is the application network that delivers voice services. Voice is the value-added network service or VAN service.

> "…Web evolving as…medium for electronic commerce (EC), new value - added network (VAN) services are expected to emerge… simple telephone call is…well - known example of a value - added network service…telephone network has two different but interrelated aspects: In terms of its physical components, it is a "facilities network." In terms of the varieties of VAN services that it provides, it is a set of many "traffic networks", each representing a particular interconnection of facilities. Traffic is the flow of multi–media information through the network …consider…simple transaction of daily commerce, such as ordering and paying for pizza…home banking… payroll services for businesses from banks, offered as a VAN service. The Internet, like the telecommunications network, is a system of interconnected facilities that could carry traffic from a variety of EC services. From the perspective of its **physical components**, the "Facilities Network" for EC exists today…There is no direct access to…end user from...VAN service providers, such as a Bank. There are some missing elements needed to capture and control the end user environment. The "Traffic Network" is THE challenge." (A-483-484pp4-5)

Ethernet cord, OSI Layer 3 network layer router or switch (eg, Cisco router/switch) (A-72'492:4) are examples of a facilities network, which is a TCP/IP-based (A-73'492:6:30-33) network with physical hardware components. Example of service network over the Web is a Web banking application network.

DDC missed specification A-72'492:4:58-5:27 describes OSI application layer 307, which is distinct from layers 1-4 of the OSI model, constituting the TCP/IP-based physical Internet or "IP-based facilities network," (A-73'492:6:32-33).

CR5[DDC missed specification:

- distinguished between network layer vs application layer,(A-72,73‘492:4:58-5:27;Fig.3) defines **metes and bounds** of what the structure is;
- evidences that any ambiguity has been resolved by specification disclosing a metric that distinguishes service network as application network including the POSvcApplication limitation and the distinction from a facilities network, which is a TCP/IP-based physical Internet or Web.

  HalliburtonEnergyServs.,514F3d,1255-56,85USPQ2d,1663 “…quantitative metric (eg…limitation as to a physical property) rather than a qualitative functional feature”);
- provide[s] a formula for calculating a property along with examples that meet the claim limitation and examples that do not;”
- discloses a “**service network**” which is an OSI layer 7 application network that includes a POSvcApplication (**providing examples** of such a “service network” **meeting the claim limitation**, eg, Web banking network, that includes a Web banking POSvcApplication on a Webpage, Figs.6A,5D) and is distinct from a facilities network, an IP-based facilities network, which only goes up to layer 4 of the OSI model, such as the physical Internet and the Web.

> “FIG.5B illustrates…Exchange**501** comprises **Webpage505** and **point-of-service (POSvc)** applications**510**. Exchange**501**…includes a switching component and an object routing component… management agent component…service management functions according to one embodiment of the present invention.

…**POSvcApplication**…is **displayed via the graphical user interface component**…HyperText Markup Language…

Once Bank POSvcApplication510 has been activated, user100 will be able to connect to Bank services and utilize the application to perform banking transactions, …This connection between user**100** and Bank services is managed by exchange**501**.

…provide…services in POSvcApplication**510**(**1**)…**merchants or other service providers**…provide services to users.

… provide intra-merchant…services…inter-merchant services. For example, if Bank creates a POSvcApplication for use by the Bank Payroll department…provide…employees with a means for submitting timecards for payroll processing by…Bank's…(HR) Department…employee selects…**Bank HR POSvcApplication**…" (A-73,74'492:6:18-7:50)

- **provides examples that do not meet the claim limitation** A-72,73'492:4:58-5:27; 6:32-33 of an IP-based facilities network such as…Internet,Web...

(*id*,1256,85USPQ2d,1663 (citing *Oakley,Inc.v.SunglassHutInt'l,*

316F.3d1331,1341,65USPQ2d1321,1326(Fed.Cir.2003). "Dialing into the

bank via a modem line" is an example of a facilities network;

"…user **100**… **dialing into the bank via a modem line**. If user **100** is a WebUser…no current mechanism for performing…real-time transaction with the bank, as illustrated in FIG.4A … bank…unable to be a true "WebMerchant," namely a **merchant capable of providing complete transactional services on the Web**.
According to one embodiment of the present invention, as **illustrated in FIG.4B**…**a WebMerchant can provide real-time transactional capabilities to users who desire to access the merchants' services via the Web**. This embodiment includes a **service network** running on top of a facilities network, namely the Internet, the Web or e-mail networks." (A-73'492:5:43-61)

- **provides** a general **guideline and examples sufficient** to **teach a person skilled in the art when claim limitation was satisfied**;

  (*Marosi*,710F.2d,803,218USPQ292);

- demonstrates that **boundaries of claim term in the claim as a whole are clear and precise and not insolubly ambiguous**, upon primary inquiry as to whether the language leaves room for ambiguity or whether the boundaries are clear and precise.**]**

"Service network" is, thus, ***not*** indefinite ***nor* insolubly ambiguous.** DDC ***inconsistently*** ruling "service network" indefinite ***must*** be reversed.

DDC construed "VAN service provider." DDC ***must*** construe "service network" consistent with "VAN service provider," "VAN service" and "value-added network" shown above to be construable. *See* ***CR4***. "…common terms… ***must*** interpret consistently..."

Pazuniak filed "service network" as "online network" against DrA's instructions. DDC need be guided only by intrinsic and extrinsic evidence, ***not*** by Pazuniak's or JPMC/Spielman's incorrect construction. Scope of '492 claim claiming "service network" is clear, boundaries of protected subject matter are clearly delineated. The '492 claim and "service network" are ***not*** indefinite.

> ...*Miller*,441F.2d689,169USPQ597(CCPA1971)."If…scope of…subject matter embraced by…claims is clear, and if applicants have not otherwise indicated that they intend the invention to be of a scope different from that defined in the claims, then the claims

> comply with 35U.S.C.112(b) or pre-AIA 35U.S.C.112, 2nd para. *UltimaxCementMfg.v.CTSCementMfg.*,587F.3d1339,1352,92USPQ2d 1865,1873(Fed.Cir.2010) (finding that "a claim to a formula containing over 5000 possible combinations is not necessarily ambiguous if it sufficiently notifies the public of the scope of the claims."). A claim is indefinite when the boundaries of the protected subject matter are not clearly delineated and the scope is unclear. For example, a genus claim that covers multiple species is broad, but is not indefinite because of its breadth, which is otherwise clear." *MPEP2173.04[R-11.2013]*

"**VAN SWITCH**" contains the common claim term "VAN," which is construable as shown above, consistent with DDC's construction of "VAN service provider" as "a provider of a POSvcApplication." "VAN service" is construable as "a POSvcApplication." Consistent with DDC and above construction of terms "VAN service provider," "VAN service," and "VAN," "VANswitch" includes a POSvcApplication. This is consistent with specification which discloses that the "VANswitch" is an OSI application layer switch (A-72-74'492:8:52;5:23-27;4:58-64) and includes a POSvcApplication (A-75'492:9:9-16). DDC acknowledges (A-583-586Opinion) that specification discloses that VANswitch is an OSI application layer switch with four components (Fig.7), boundary service, switching service, management service and POSvcApplications (A-75'492:9:9-16).

> "boundary service 701 provides…interface between VANswitch 520, the Internet and the Web, and multi-media end user devices…on-line service provider. A user can…be routed or "switched" to an application accessible via a remote VANswitch." (A-74'492:8:41-51)

> "Switching service 702 is an OSI application layer switch, ... represents…core of …VANswitch ... [and] performs…routing of user

> connections to remote VANswitches… Interconnected application layer switches form…application network backbone. These switches are one significant aspect of the present invention." (A-74‘492:8:52-63)
>
> "Management service 703 contains tools...to manage network resources…applications…security…fault…configuration… performance…and billing management." (A-74‘492:8:64-9:6)
>
> "[A]pplication service 704 contains application programs that deliver customer services. Application service 704 includes [point-of-service] applications…Fig. 6A..." (A-75‘492:9:9-11)
>
> "…specification..."exchange 501 and management agent 601 ... together constitute a [VAN] switch" (‘492:7:52-54;8:41-42)…" "exchange and a management agent component...together perform …switching, object routing, application and service management functions according to one embodiment of the present invention." (A-73‘492:6:35-38)"

The construction for "VANswitch" as ***at least*** "an OSI application layer switch including a POSvcApplication" is consistent with construction of terms "VAN service provider," "VAN service," "VAN." So the term "VANswitch" cannot be ambiguous, much less insolubly ambiguous and **is** amenable to construction. *See* ***CR5***. The distinction between an OSI network layer switch (which DDC references in (A-585-586Opinionpp.5-6) vs OSI application layer switch, (A-72,73‘492:4:58-5:27) defines clearly the metes and bounds of what the structure is. Any ambiguity has been resolved by specification disclosing a metric that distinguishes "VANswitch" as an OSI application layer switch including POSvcApplication limitation and the distinction from an OSI layer 3 network layer

switch (eg.Cisco switch), which is a hardware switch in a physical network, a TCP/IP-based physical Internet or Web, as for example, a "quantitative metric (e.g., numeric limitation as to a physical property) rather than a qualitative functional feature" *Halliburton, supra*; specification provide[s] a formula for calculating a property along with examples that meet the claim limitation and examples that do not" by noting that specification discloses a "VANswitch," a layer 7 application layer switch that includes a POSvcApplication and is distinct from OSI layer 3 network layer switch in an IP-based facilities network, which only goes up to layer 4 of the OSI model, such as the physical Internet and the Web. Specification provides **examples** of such a "VANswitch" that **meet the common claim limitation**, "VAN," at A-75'492:9:10-16 that it includes POSvcApplications, eg, a Web banking POSvcApplication on a Webpage as in Figs.6A,5C,5B,5D and also provides **examples that do not meet the claim limitation** (A-72,73'492:4:58-5:27) and of an OSI layer 3 network layer switch (A-72'492:4:7-10) as in an IP-based facilities network ('492:6:32-33). *Halliburton, Oakley, supra*; specification provides a general guideline and examples sufficient to teach a person skilled in the art when the claim limitation was satisfied (*Marosi, supra*). Upon primary inquiry as to whether language leaves room for ambiguity or whether boundaries are clear and precise, boundaries of "VANswitch" in the claim as a whole are clear and precise and not insolubly ambiguous, and is consistent

with DDC's construction of the claim term "VAN service provider," hence "VAN," "VAN service." DDC is wrong in its extrapolation (A-585-586Opinion pp.5-6), despite DDC acknowledging the definition of a network layer switch, which is clearly distinguished from a VANswitch, which is an application layer switch. Figs.5B, 6A,7 show a VANswitch. The specification shows that "VANswitch" is ***not*** indefinite. DDC already construed VAN service provider and hence VANswitch can and must be construed consistent with the claim terms "VAN service provider," "VAN" and "VAN service." So, "VANswitch" is not insolubly ambiguous. DDC has already offered a claim construction, yet was led astray by JPMC/Spielman. DDC **inconsistently** ruling this claim term as indefinite is incorrect and must be reversed.,

CR6[DDC failed to note that prosecution history estoppel prevents Patentee, DDC or USPTO to change the construction of the term, that was agreed to between inventor and original Examiner in order for the claim to issue by distinguishing a VANswitch as an OSI application layer switch from a network layer switch as in A-72,73'492:4:58-5:27 to distinguish from the then cited prior art, Focsaneanu, during original prosecution of 6,212,556 patent (A-395-399), deriving priority from same provisional application 60/006,634 (A-479-575). This already established the metes and bounds of "VANswitch".**]**

The key **applications component of a VANswitch**, the POSvcApplication displayed on a Webpage, referred to as VAN service **704**, must be included in construction of VANswitch, as also **boundary services component of VANswitch**. *See **CR2**, **CR3***, (A-73‘492:5:46-54), (A-74‘492:7:10-23), (A-73-75‘492:6:18-7:50;9:9-21; Figs5B,5C,5D,6A), (A-74‘492:8:44-51). Without boundary services component of VANswitch, Back-Office is an island (the prior art in 1995), not connected to a front-end POSvcApplication displayed on a Webpage or Webbrowser, because boundary services component provides the interface between VANswitch, the Web and front-end POSvcApplication displayed on a Webpage or Webbrowser **and to the on-line service provider or WebMerchant**.(A-18‘500:8) This was overlooked by DDC in its construction of VANswitch. These two key components of VANswitch differentiate prior art from the present invention.

Nothing in intrinsic evidence supports DDC’s statement: “…specification offers overlapping and competing definitions for…VANswitch and its four components.” Specification states, as DDC acknowledged:

> “FIG.5B illustrates exchange 501. Exchange 501 comprises Webpage 505 and point-of-service (POSvc) applications 510. Exchange 501 also conceptually includes a switching component and an object routing component…(A-73’492:6:18-22)

Specification and drawings show Exchange 501 includes certain VANswitch components. There is no overlap, claims or claim term are not rendered indefinite,

because–VANswitch includes all the cited components of Exchange, because Exchange is a component of VANswitch – the fact that both have some of the same components does not fail to inform, with reasonable certainty, those skilled in the art about the scope of the meaning of VANswitch.[1]

UltimaxCementMfg.v.CTSCement Mfg,587F.3d1339,1352, 92USPQ2d1865,1873(Fed.Cir.2010) ("a claim to a formula containing over 5000 possible combinations is not necessarily ambiguous if it sufficiently notifies the public of the scope of the claims.")

"VANswitch" has a clear meaning from the specification itself, as DDC has acknowledged. The specification provides the detailed characteristics of VANswitch (A-72-75'492:7:51-9:23;4:58-5:27;6:18-25;33-38; Figs.3,7,5B,6A,5C,5D, 5B,8.) Specification states: "Exchange **501** and management agent **601** together constitute a VANswitch."(A-74'492:8:41-43) "Exchange **501** comprises Webpage **505** and point-of-service (POSvc) applications **510**."(A-73'492:6:18-20). Exchange is illustrated in Figs.5B,5C,5D,6A. Text and

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[1] *C.R.Bard v.M3 Sys*.157F.3d 1340,1360(Fed.Cir.1998) ("It is incorrect to construe the claims as barring all overlap"); *AndersenCorp.v.FiberComposites, LLC*,474F.3d1361,1370(Fed.Cir.2007)("Even though the 'composite composition' claims, as construed by the Court, cover substantially the same subject matter that is covered by the 'pellet' and 'linear extrudate' claims, overlapping patent claims are not unusual, and the overlap does not require us to construe the 'composite composition' claims to cover subject matter that differs from the subject matter covered by the other two sets of claims.")

drawings in specification make clear that application service, VAN service **704**, includes one or more POSvcApplication(s), is a key component of "VANswitch" and needs to be included in the claim construction for VANswitch. The POSvcApplication is and ***must*** be displayed on a Webpage or Webbrowser, as per the specification (A-73'492:6:41-47).

DDC, misled by JPMC/Spielman, incorrectly stated (A-585-586Opinion pp.5-6): "specification does not describe... switch as to allow one of ordinary skill in the art to identify…scope of…invention" "Spielman opined…"patents-in-suit provide no algorithms, source code, or any other descriptive language offering any guidance as to how to configure a VANswitch so as to perform 'real-time' transactions using TMP or any other protocol..."specification discloses only one embodiment of the VANswitch." This finds no intrinsic or extrinsic support. Specification discloses at least two or more embodiments, from infinite number of VAN services:

> "VANswitch 520 provides **multi**-protocol object routing, depending upon the specific VAN services chosen…One embodiment of the present invention utilizes TMP and distributed on-line service information bases (DOLSIBs) to perform object routing. Alternatively, TMP can incorporate s-HTTP, Java™…WinSock API or ORB with DOLSIBs to perform object routing."(A-74'492:7,8)

Specification(A-74'492:8:7-39) and filehistory(*see **CR8***) clearly spell out an algorithm for VANswitch to enable real-time transactions from a POSvcApplication displayed on a Webpage — the end-to-end connection managed by exchange 501 from the POSvcApplication displayed on a Webpage or

Webbrowser to WebMerchant's services; the networked object with information entries and attributes routed as an encapsulated whole over the OSI application layer network, the service network over the Web, from the POSvcApplication displayed on a Webpage to WebMerchant services. The networked object with information entries and attributes displayed in POSvcApplication on Webpage or Webbrowser is a key construct in the algorithm provided in the specification and is an integral part of "VANswitch." *see* Fig.5D, ***CR8***. POSvcApplication is VAN service 704, which is Application Service 704 of VANswitch. VANswitch is an end-to-end solution for providing two-way real-time Webtransactions from a POSvcApplication displayed on a Webpage or Webbrowser, utilizing boundary services, switching service, management service and application service of VANswitch. More than sufficient algorithm is presented in specification to allow one of ordinary skill or one skilled in the art at the time of the invention to be able to implement the invention without undue experimentation.

DDC acknowledged this (A-583-584Opinionpp. 3-4), as per specification (A-73,74 '492:7:4-6;6:18-62). DDC acknowledged VANswitch is not the same as ordinary meaning of "switch" at A-585-586Opinionpp.5-6, "network layer switches," which have been disclaimed both in filehistory(***CR6***) and specification (A-72,73'492:4:58-5:27):

> ***CR7***[“FIG.3 illustrates…(OSI) reference model…**The present invention is implemented to function as a routing switch within the "application layer" of the OSI model**…
>
> Network layer 303…contains hardware units such as routers… Transport layer 304...application layer 307…provides…means for application programs to access…OSI environment…**the present invention is implemented to function as a routing switch in application layer 307**. Application layer routing creates an open channel for the management, and…selective flow of data from remote databases on a network.” (A-72,73‘492:4:58-5:27)]

The original filehistory(***CR6***) of the related ‘556 patent (A-395-399) in the same priority chain already established and distinguished the cited art, namely, Focsaneanu, which involved network layer switches from the inventor-coined VANswitch, which does not take on an ordinary meaning but only what the inventor ascribed to it, (inventor is her own lexicographer) namely, that “The present invention is implemented to function as a routing switch within the "application layer" of the OSI model.” DDC already acknowledged (A-583Opinp3) that VANswitch is an OSI application layer switch. DDC acknowledged that “network switch” (footnote 8 of A-586Opinp.6) is a “computer networking device used to connect devices together on a computer network,” which is exactly what the specification states is the network layer, which is distinctly different from the application layer of the OSI model. This OSI network layer switch has been distinguished both in filehistory(***CR6***), discussed above, as well as in specification from an OSI application layer switch. DDC literally acknowledged the difference

between network layer switch, the ordinary meaning of a switch, and OSI application layer switch. DDC already acknowledged (A588Opinp.8) that "Exchange 501 and management agent constitute a VANswitch." DDC acknowledged A-591Opinp.11 that the configurable VANswitch comprises means for switching to a transactional application in response to a user specification from a WorldWideWebapplication. DDC (A-593Opinp13) acknowledged:

> "…patent specification describes…"switching service" as "an OSI application layer switch. The switching service performs … routing of user connections to … back-office networks … application layer switches form the application network backbone. These switches are one significant aspect of the invention."

Misled by JPMC/Spielman's opinion, unsupported by any intrinsic or extrinsic evidence, DDC incorrectly concluded: "Nor do the figures disclose algorithms." Misled by JPMC, DDC forgot what it already acknowledged that a VANswitch is an OSI application layer switch and that the "means for switching…" is "switching service 702," which is an OSI application layer switch. Patent prosecution history estoppel prevents both PTO and Patentee to change what had been agreed to and accepted by the original Examiner in allowing the patent to issue. [As noted by the Supreme Court in *FestoCorp.v.Shoketsu KinzokuKogyoKabushikiCo*.,535 U.S.722,122 S.Ct.1831,1838,62USPQ2d1705, 1710 (2002), a clear and complete prosecution file record is important in that "[p]rosecution history estoppel requires that the claims of a patent be interpreted in light of the proceedings in the PTO

during the application process." In *Festo,* the court held that "a narrowing amendment made to satisfy any requirement of the Patent Act may give rise to an estoppel." The fact that VANswitch is an application layer switch is narrow and is not broad like the ordinary meaning of a switch as network layer switch, satisfies the requirement of the Patent Act and gives rise to an estoppel. DDC completely missed this because DDC was misled by JPMC/Spielman's incorrect, unfounded technical and legal arguments. Specification (A-74'492:7:10-23) spells out the invention: *See* ***CR3, CR10***.

The object or object identity or networked object is disclosed (A-74'492:8:8-13;'492:7:10-20) as "information entries and attributes," related to a real-time Webtransaction from a POSvcApplication displayed on a Webpage or Webbrowser (eg, user name, amount transferred, checking, savings account numbers are the "attributes" in the Web banking POSvcApplication (A-74'492:7:10-23;Fig.5D), and user 100, $500, the specific checking, savings account numbers are the corresponding "information entries").

The limitation used to define VANswitch as an OSI application layer switch including a POSvcApplication distinguishing VANswitch from OSI layer 3 network layer switch is perfectly acceptable "<u>because it set definite boundaries on the patent protection sought</u>." *reBarr*,444F.2d 588,170USPQ 330(CCPA 1971).

See ***CR6*** ‘556(A-395-399)filehistory of network layer switch vs application layer switch.

CR11**[**Distinction between layer 3 network layer switch and layer 7 VANswitch as an application layer switch… serves to precisely define present structural attributes of interrelated component parts of the claimed assembly. *In reVenezia,*530F.2d956, 189USPQ149(CCPA1976). A “determination of whether the limitation is sufficiently definite will be highly dependent on context (e.g.,the disclosure in the specification and the knowledge of a person of ordinary skill in the art.” *Halliburton, supra*. A claim limitation reciting “transparent to infrared rays” was held to be definite because specification showed that a substantial amount of infrared radiation was always transmitted even though the degree of transparency varied depending on certain factors. *Swinehart,*439 F.2d at 214,169USPQ230. Likewise, the claims in another case were held definite because applicant provided “a general guideline and examples sufficient to enable a person of ordinary skill in the art to determine whether a process uses a silicon dioxide source ‘essentially free of alkali metal’ to make a reaction mixture ‘essentially free of alkali metal’ to produce a zeolitic compound ‘essentially free of alkali metal.’” *Marosi,*710F.2d799,803,218USPQ289,293(Fed.Cir.1983).**]**

DDC incorrectly followed JPMC’s incorrect argument that the four components of VANswitch describe functions and hence indefinite. Specification defines first

what the four components are and then discloses what they do. Functional language is perfectly acceptable. Language is not ambiguous because the language sets forth well-defined boundaries of the invention, does not just state the problem or a result obtained; there is a clear cut indication of scope of subject matter covered by claim; one of ordinary skill in the art would know from the claim terms what structure or steps are encompassed by the claim. The primary inquiry is whether the language leaves room for ambiguity or **whether the boundaries are clear and precise**. Specification of the patents-in-suit clearly meets the above requirements.

The algorithm, contrary to what JPMC alleges, is clearly specified in the specification (A-72,74‘492:8:8-39;7:10-23;8:8-9:33;4:58-5:27) and in ‘500/’178 filehistories(***CR8***).

> “DOLSIBs are virtual information stores optimized for networking. All information entries and attributes in a DOLSIB virtual information store are associated with a networked object identity...”
> (A-74‘492:8:7-39)

***CR8*[**

> “…Examiner contends…Davison teaches…claimed elements in "an HTML Webpage with URL links to application programs," thus rendering the claimed invention unpatentable. Applicants respectfully submit that the object identities according to the presently claimed invention are distinctly different from an HTML page with URL links. As claimed in…pending claims, the object identity represents a networked object…establishes the individual object as an "IP'-reachable" or accessible node on the Internet. This Internet address is used to uniquely identify and access the object from the virtual information store. This type of an "object" is significantly

> different from an HTML page that is accessed via a URL. Although an HTML page may be utilized by a user to specify the type of transaction desired (e.g. a POSvcApplication is essentially viewed by the user as a Webpage, as described in the specification), the HTML page described in Davison is simply an entry form and does not provide any type of object routing capability, as presently claimed. Davison describes how to create a standard HTML Webpage that contains HTML forms. These forms are non-interactive Webpages that do not allow a user to perform live, real-time, bi-directional transactions, with object routing, as claimed.
> In contrast, according to the presently claimed invention, if a WebMerchant decides to offer a POSvcApplication that allows access to checking and savings accounts, **the object identities** according to the claimed invention refer to the individual checking and savings accounts, not to the POSvcApplication Webpage. Each account is an individual network addressed object that is accessible on the network. Thus, each account is **an object identity associated with information entries and attributes**, and the object identity represents a **networked object**. The object identity (the account) is associated with a unique network address, and the unique network address is utilized to identify and route the object identity on the Web/network. This type of an object routing system is not taught or suggested by Davison. As such Applicant respectfully submits that the claimed invention is patentable over Davison." (A-179-183,319-320;'178/'500filehist)**]**

DDC's ruling that "VANswitch" is indefinite must be reversed. The correct construction for "VANswitch" is "an OSI application layer switch that includes POSvcApplications displayed on a Webpage and boundary, switching and management components."

"**VAN SYSTEM**" contains the common term VAN and is construable, consistent with DDC's construction of "VAN service provider" as a "provider of POSvcApplication." Hence, "VAN system" is a "system that includes a

POSvcApplication displayed on a Webpage in an OSI application layer network" and enables real-time Webtransactions from POSvcApplications displayed on a Webpage. Claim 35 in '500 patent and the title spell out what a VAN system is and each of those means-plus-function claims are construable, ***not*** indefinite, as shown below. DDC's ruling that "VAN system" is indefinite must be reversed.

3) "**SWITCHING**" Specification defines this term:

> "Configurable value-added network switching" (A-16'500:3:30-32)
>
> "Switching to a transactional application in response to a user specification from a WorldWideWebApplication" (A-15'500:2:37-40)
>
> "OSI application layer routing of user connections to a remote VANswitch;" (A-18'500:8:44-47)
>
> "…the present invention is implemented to function as a **routing switch in application layer 307**. Application layer routing creates an open channel for the management, and the selective flow of data from remote databases on a network." (A-17'500:5:10-14)
>
> "**A user can connect** to a local application, namely one accessible via a local VANswitch, **or be routed or "switched" to an application** accessible via a remote VANswitch." (A-18'500:8:40-43)
>
> "Switching service 702 is an **OSI application layer** switch. Switching service 702 thus represents the core of the VANswitch. It performs a number of tasks including the **routing of user connections** to remote VANswitches, described in the paragraph above…" (A-18'500:8:44-47)

The term "switching" is ***not*** indefinite, as JPMC misled DDC to its incorrect conclusion, which ***must be reversed***. "**Switching**" is simply "**OSI application layer routing to an application**." The routing is "OSI application layer routing

of user connections to an application." The metes and bounds of this claim term is clearly specified as OSI application layer switching and routing, distinguished away from OSI network layer switching and network layer routing (A-16,17 '500:4:45-5:14;Fig.3). The claim itself lends support to what the claim term "switching" is. "Switching to a transactional application in response to a user specification from a network application." The network referenced in "network application" is the Web and hence "network application" is a "WebApplication."

4) "**POINT-OF-SERVICE (POSvc)APPLICATION**" DDC (A589-590Opinionpp.9-10) incorrectly construed "POSvcApplication" as "a software program that transmits a user's request for a service," not in accord with the specification. ***CR9*[**DDC erred by misapplying "broadest reasonable interpretation" ("…not a rule of claim construction," per Judge Newman *re Skvorecz*,Fed.Cir.No.2008-1221,9/3/09) to arrive at a legally incorrect interpretation, without exploring the metes and bounds to which Plaintiff is entitled, particularly as this term was coined by inventor and can only take on the meaning ascribed to it by inventor in specification and filehistory.] DDC missed the disclosures in specification that a POSvcApplication is a transactional application, from which a WebUser **100** transacts; that this POSvcApplication is a transactional application that ***must*** be displayed on a Webpage or Webbrowser;

and POSvcApplication is an **application that executes** the type of **transaction** that the user may be interested in performing.

> "POSvcApplications 510 are **transactional applications**, namely applications that are designed to incorporate and take advantage of the capabilities provided by the present invention…switching, object routing, application and service management functions." (A-17'500:6:11-14)

> "A **POSvcApplication** is an application that can **execute the type of transaction that the user may be interested in performing**. The POSvc list is **displayed via the graphical user interface component**. One embodiment of the present invention supports HyperText Markup Language as the graphical user interface component...variety of other graphical user interface standards can also be utilized to implement the graphical user interface." (A-17'500:6:30-36)

DDC also fails to give credence to the very next sentence in the Patent, which characterizes the application as "displayed via the graphical user interface component." Nor did DDC address the fact that such an application is a "transactional application[] . . .designed to incorporate and take advantage of the capabilities provided by the present invention," including "switching, object routing, application and service management functions." (A-17'500:6:11-13). So, the POSvcApplication is a transactional application that displays an individual networked object identity with information entries and attributes (Fig. 5D), designed to incorporate object routing. DDC's construction also disregards the fact that the ability of a POSvcApplication to "perform . . . robust, real-time transactions from a Web client is a significant aspect of the present invention. (A-

17‘500:6:66-7:12). Such functionality is better captured in the PO’s construction, “a POSvcApplication is a transactional application displayed on a Webpage or Webbrowser and including an individual networked object with information entries and attributes (with which the WebUser interacts and transacts from) and that executes a real-time Webtransaction a user wants to perform.” DDC does not offer the broadest reasonable construction in light of specification as would be read by a person of ordinary skill in the art. Figs.4B,5B-D,6A illustrate a POSvcApplication being displayed on a Webpage. Specification (A-19‘500:9:2-4), too, clearly states that “[a]pplication service 704 includes POSvcApplications such as Bank POSvc described above, and illustrated in Fig. 6A,” which corresponds to VAN service 704. ***CR10***[Fig.5D shows POSvcApplication displayed on a Webpage including object identity with information entries and attributes (“NAME,” “PASSWORD”) displayed on Webpage. A-17‘500:6:66-7:12 also details information entries, such as, user **100**, checking, savings account #s, $500 for attributes, name of user, checking, savings accounts, amount transferred, in checking account object identity, which is an individual networked object that uniquely identifies a specific instantiation of the object. (A-18‘500:7:65-8:3).**]** *See* ***CR7***; (***CR8***) A-179-183,319-320‘178/‘500 filehistories.

While A-17‘500:6:30-34 describes “POSvcApplication” as “an application that can execute the type of transaction that the user may be interested in performing,”

DDC's construction fails to reflect even this aspect of the patent. For example, there is no discussion of 'transmits the user's request for a service." DDC overlooked the goal of the patent is for a WebUser to be able to perform a real-time Webtransaction from a POSvcApplication displayed on a Webpage or Webbrowser and that this capability did not exist for a WebUser prior to the present invention. See A-17'500:5:27-42; ***CR2***.

DDC's construction is so broad as to encompass a CGI program or even a Webbrowser, as specification distinguishes away:

> ""Webbrowser" as used in the context of the present specification includes conventional Webbrowsers such as NCSA Mosaic™ from NCSA and Netscape Mosaic™ from Netscape™. The present invention is independent of the Webbrowser being utilized and the user can use any Webbrowser, without modifications to the Webbrowser." (A-72'492:3)

DDC ignored specification (A-73'492:6) states: "Exchange 501 processes the consumer's request and displays an exchange Webpage 505 that includes a list of POSvcApplications 510 accessible by exchange 501." In Patents-in-suit, a POSvcApplication displayed on a Webpage is a Web client displayed on a Webbrowser or Webpage and is the front-end client program a WebUser 100 utilizes to run the application to perform two-way real-time transactions from the WebMerchant WebApplication. Further, the Patents state: "If user 100 desires to perform a number of banking transactions, and selects the Bank application, a Bank POSvcApplication will be activated and presented to user 100, as illustrated

in FIG.5D…" when the POSvcApplication is selected, the POSvcApplication activated, the WebUser 100:

> "will be able to connect to Bank services and utilize the application to perform banking transactions, thus accessing data from a host or data repository 575 in the Bank "Back-office."…As illustrated in FIG.5D, once the connection is made between Bank POSvcApplication 510(1), for example, and Bank services, an operator agent on Webserver 104 may be activated to ensure the availability of distributed functions and capabilities." (A-73'492:6:65-7:9).

Figs.5C,5D and specification show that POSvcApplication has and displays networked objects with both attributes and information entries:

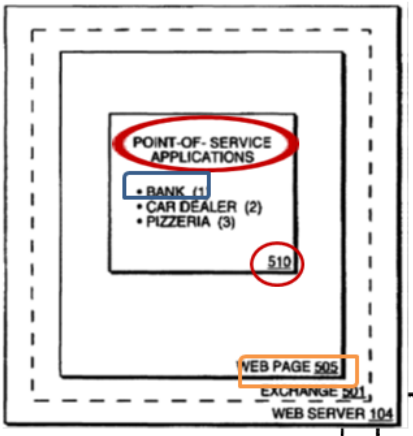

Figure 5C

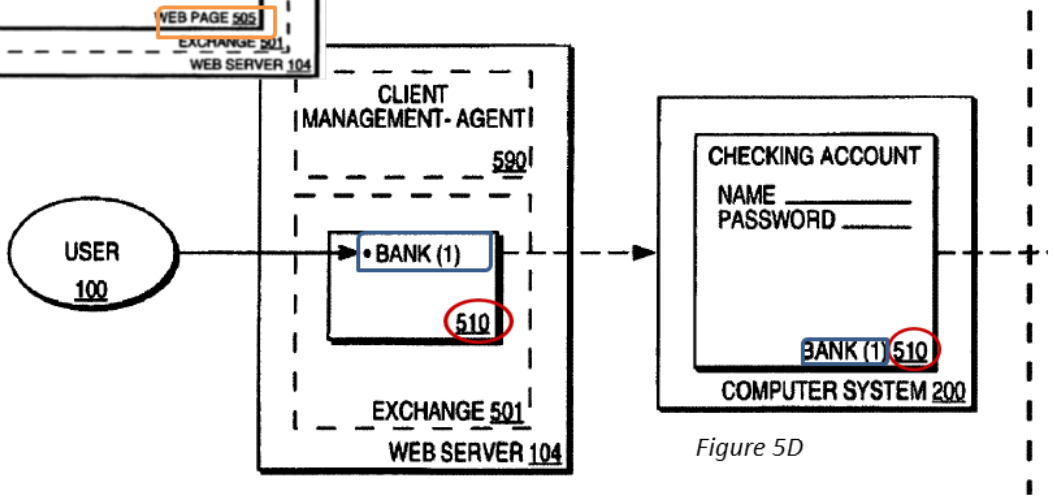

Figure 5D

One skilled in the art would look at all disclosures in the patent. Such examination demonstrates that the construction provided by Plaintiff derives entirely from actual definitions of the term in specification, drawings and text.

5) "**TRANSACTIONAL APPLICATION ("TA")**," "**BACK-END TA**," "**SELECTED BACK-END TA**", "**COMPUTER SYSTEM EXECUTING THE BACK-END TA FOR PROCESSING THE TRANSACTION REQUEST IN REAL-TIME**":

See ***CR9***, ***CR4***. DDC misapplied "broadest reasonable interpretation" ("an examination expedient, not a rule of claim construction," per Judge Newman, *Skvorecz*,supra) resulting in a legally incorrect interpretation, without exploring the metes and bounds to which DrA is entitled. DDC failed to consistently construe these terms. *NTP*, supra, "same claim term…carries…same construed meaning."

DDC's constructions (A-591-592Opinionpp11-12) of these terms contradict one another. DDC construed "transactional application" as "a software program that transmits a user's request for a service." Applying this construction, "back-end TA," would then be "a back-end software program that transmits a user's request for a service." However, DDC construed "back-end TA" as "a software program that executes a user's request for a service." DDC incorrectly ruled the fourth term indefinite, "Computer System Executing the Back-End TA for Processing the Transaction Request in Real-Time" that includes the common term "TA." Four contradictory, inconsistent constructions involving the common term "TA." *See NTPv.RIM* above. Ruling on these 4 terms must be reversed.

DDC incorrectly states (A-593Opinp13): "Fig.4B represents an embodiment of the invention and depicts a "back-office" with an operating system and applications." DrA did ***not*** invent the back-office applications that have existed for eons of years. Fig.4A is the "back-office." Fig.5D shows that the "back-office" is behind the dotted line in Fig.5D. Figs.4B,5D show the invention in front of the dotted line in Fig.5D. Fig.5D shows the transactional application running on computer system 200, which is the back-end, not in the front-end. The specification states:

> "…exchange 501 in Fig.5D is shown as running on a different computer system (Webserver 104) from the computer systems of the WebMerchants running POSvcApplications (computer system 200). Exchange 501 may, however, also be on the same computer system as one or more of the computer systems of the WebMerchants." (A-17'500:6:48-53)

So, the term "back-end" and "computer system executing the back-end transactional application" refers to computer system "200" in Fig. 5D, which represents a computer system of the WebMerchant running the (POSvcApplication) or transactional application, but not at a Webbrowser nor Webpage. DDC failed to construe "back-end" in light of claim as a whole, in light of specification and construed it in a vacuum.

"**Transactional application**" is "**an application that performs a transaction**" is the correct construction, supported by the specification:

> "If user 100 desires to perform…banking transactions, and selects the Bank application…FIG.5D…Bank POSvcApplication 510…activated, **user 100** will be able to connect to Bank services and **utilize the application to perform banking transactions**..." (A-17'500:6:44-47;6:54-56).

DDC's constructions are not in accord with the specification, which discloses in Fig.5D and A-17'500:6:50-51 that "the computer systems of the WebMerchants running POSvcApplications (computer system 200)" are ***not*** behind the dotted line shown in Fig.5D, behind the dotted line is the Back-office of a WebMerchant or other VAN service provider. Computer system 200 is not at the front-end of a Webserver. Computer system 200 is at the back-end running the TA, but this back-end TA is not beyond the dotted line in Fig.5D. So a "back-end TA" is an "application that performs a transaction and running on a computer ***not*** at the front-end on a Webpage or Webserver." In Fig.5D, claim term "back-end TA" is shown running on computer system 200. The "selected back-end TA" is construed likewise.

DDC blindly copied JPMC/Spielman, missing the whole point of the invention and erroneously stated: (A-608Opin28) "the specification offers no details about…back-office computer system or its "applications"… specification does not discuss how the applications would process the transaction requests." Dr. Bardash and DrA, skilled in the art, stated and specification discloses that the invention in this patent has nothing to do with the Back-office or applications in

the Back-office which have existed for eons of years. These applications were local to the Back-office. DrA's inventions are about the Web, see specification (A-15'500:1:11-12), "relates to the area of Internet communications," ***not*** about the Back-office. DDC erroneously concluded that the term "computer system executing the back-end TA for processing the transaction request in real-time" is governed by §112, paragraph 6. It is a matter of law that if the structure is already provided in the claim, then this is ***not*** governed by §112, paragraph 6. Per MPEP 2173.05(G), functional language may also be employed to limit the claims without using the means-plus-function format. See, e.g., *K-2Corp.v.SalomonS.A.*, 191F.3d1356,1363(Fed.Cir.1999). Unlike means-plus-function claim language that applies only to purely functional limitations, *Phillips.v.AWH Corp,*415F.3d1303, 1311(Fed.Cir.2005) *(en banc)* ("Means-plus-function claiming applies only to purely functional limitations that do not provide the structure that performs the recited function."), functional claiming often involves the recitation of some structure followed by its function. eg, *Schreiber*,128F.3d1473,1478 (Fed.Cir.1997) the claims were directed to a conical spout (the structure) that "allow[ed] several kernels of popped popcorn to pass through at the same time" (the function). As noted by the court in *Schreiber*, "[a] patent applicant is free to recite features of an apparatus either structurally or functionally." *Id.*" DDC erroneously concluded that this term is guided by §112, paragraph 6, but the above discussion shows that

it is not. The Court must reverse this incorrect ruling. Like in *Inventio,*649F.3d1350,1356(Fed.Cir.2011), this claim term "computer system executing the back-end TA for processing the transaction request in real-time" connotes sufficiently definite structure. All evidence intrinsic to the patent (*see* "computer system 200 in Fig.5D and A-17'500:6:48-53, provisional application and any relevant extrinsic evidence (Dr. Bardash's Declaration and DrA's statement in her deposition and old Back-office systems and prior art) point to the fact that there is clear structure for this term:

"Computer system executing the back-end TA for processing the transaction request in real-time" is **computer system 200**, as shown in Fig. 5D,computer systems of the WebMerchants running POSvcApplications (computer system 200), not at the front-end. Metes and bounds of this structure have been clearly delineated in specification and diagrams, Figs.5D,4A,4B. The "back-end TA" is an application that performs a transaction and runs on a computer system ***not*** at the front-end in a Webpage or Webbrowser. This term is ***not*** indefinite. This term is construable. DDC itself has construed the term "TA" and "back-end TA."

The claim recites said "computer system executing the back-end TA," delineates the components that said computer system is connected to, describes how said computer system interacts with those components, and describes the processing that said computer system performs. The written descriptions show that the said

computer system conveys structure to skilled artisans. Dr. Bardash opined already that he and other skilled artisans are taught by the specification that said computer system conveys sufficiently definite structure and also that the claims and specification recited the connections made by said computer system, and detailed how said system performed its function of "processing the transaction request in real-time," (A-17-19'500:6:66-7:12; 9:1-16;Exchange 6:7-65;Fig.5B,VANswitch A-18-19,8:33-9:16;7:64-8:4;8:19-31;'500filehistory,) the components include POSvcApplications on a Webpage that this computer system connects to, utilizing the object identity with information entries and attributes… This Court would find like in *Inventio*, that the limitation connoted sufficiently definite structure based upon a reading of claim 1 of '492 patent and the written description, diagrams and filehistory.

Language in the claims is not ambiguous because there is a clear cut indication of the scope of the subject matter covered by the claim; language sets forth well-defined boundaries of the invention; and one of ordinary skill in the art would know from the claim terms what structure or steps are encompassed by the claim, as the specification details (A-17'500:6:44-47;6:48-56). The primary inquiry is whether language leaves room for ambiguity or **whether boundaries are clear and precise**. Upon such primary inquiry, language of claim and claim term leaves no room for ambiguity and boundaries are clear and precise. DrA demonstrated

that specification provides a formula for calculating a property along with examples that meet claim limitation and examples that do not. She demonstrated that Back-office applications is not what DrA invented but she invented WebApplications, POSvcApplications on a Webpage. *Oakley,Inc v.SunglassHut Int'l(*Fed.Cir.2003), *supra*. DrA demonstrated that specification provides a general guideline and examples (see Web banking application, HR POSvc, Fig.5D and many more examples '500:6:40-7:40) sufficient to teach a person skilled in the art when the claim limitation was satisfied. (*Marosi,supra*). DDC failed to note that claims do particularly point out and distinctly claim the invention, as required by MPEP 2173. Claim language defines clearly the metes and bounds of what the structure is. DDC missed what Dr. Bardash had correctly pointed out to DDC that one skilled in the art would understand the specification including the drawings as showing the structures of the claimed invention. If the scope of a claim would be reasonably ascertainable by those skilled in the art, then the claim is not indefinite. Newman *reSkvorecz, supra*. DDC blindly copied JPMC/Spielman. MPEP§2173.02 states: "Some latitude in the manner of expression and the aptness of terms should be permitted even though the claim language is not as precise as the examiner might desire." …for a person skilled in field of the invention would understand claim when viewed in the context of the specification.

The term "computer system executing the Back-end TA for processing the transaction request in real-time" is, thus, ***not*** subject to 112 paragraph 6 and is ***not*** indefinite. Claim 1 of '492 patent should be allowed, as a person skilled in the field of the invention would understand the claim when viewed in the context of the specification. These terms, particularly, "computer system executing the back-end TA for processing the transaction request in real-time," are construable***, not*** indefinite. Ruling must be reversed.

"Back-End"	Computer system 200 or computer systems of the WebMerchants running POSvcApplications (computer system 200)
"Back-End TA;" "The selected Back-end TA"	An application that performs a transaction running on computer system 200 or computer systems of the WebMerchants running POSvcApplications (computer system 200)
"Computer system executing the Back-end TA for processing the transaction request in real-	A-17'500:6:48-53 Computer system 200 as shown in Fig. 5D or computer systems of the

time"	WebMerchants running POSvcApplications (computer system 200), and not Webserver.

6) "**WebApplication**" and "**network application**": DDC incorrectly construed "WebApplication" as "a software program running on a facilities network"(A-590-591Opinionpp.10-11), not in accord with specification, intrinsic or extrinsic record or in view of the claim as a whole. DDC misapplied "broadest reasonable interpretation" *Skvorecz*,*supra* , ***CR9***, to reach a legally incorrect interpretation, without exploring metes and bounds to which DrA is entitled. Illustrative are these excerpts from '500 specification:

> "Thus, unlike his prior access to his account, user **100** now has… capability to…more than browse his bank account. The ability to perform these types of robust, real-time transactions from a Web client is a significant aspect of the present invention." (A-18'500:7:8-12)
>
> "The present invention is independent of the Webbrowser being utilized …without modifications to the Webbrowser."(A-16'500:3:34-37)
>
> "Webbrowsers are software interfaces that run on Web clients to allow access to Webservers via a simple user interface. A WebUser's capabilities today from a Webbrowser…extremely limited. The user can perform one-way, browse-only interactions." (A-15'500:1:21-27)

These excerpts support the construction "WebApplication" is a "transactional application that is a Web client displayed on a Webpage or Webbrowser that

executes a real-time Webtransaction and displays an object identity with information entries and attributes." *See* discussion on POSvcApplication above for support for including the object identity with information entries and attributes. The claim language requires the WebApplication to be a POSvcApplication displayed on a Webpage. Plaintiff's construction that a WebApplication is the same as a POSvcApplication displayed on a Webpage or Webbrowser is in accord with the specification, title and claim language. The Web client application displayed on a Webbrowser is distinct from the Webbrowser, even though the Webbrowser is itself a Web client. *See* ***CR8*** '500filehistory above, which states POSvcApplication is distinctly different from a Webpage or URL or HTML form. Claim 1 in the '492 patent recites that the POSvcApplication is displayed on a Webpage, and so does the specification, column6. Cols 1, 5, 7 clearly distinguish the present invention from hyperlinking.

> "POSvcApplications 510 are transactional applications … displayed via the graphical user interface component. One embodiment of the present invention supports HyperText Markup Language as the graphical user interface component. (A-17'500:6:11-13;6:30-39).

DrA's patents disclose that the Webbrowser serves as the user interface on which a WebApplication is displayed and hence as a user interface for the WebApplication.

> "…Webbrowsers are software interfaces that run on Web clients to allow access to Webservers via a simple user interface." (A-15'500:1)

The 'client' as used in a client-server application refers to the program an end user uses to run the application. For example, in a database application, an end user enters the information using the 'client' application, and the 'server' application is used to store the information in a database.

A WebApplication is "an application that is a Web client displayed in a Webbrowser," and this is "a significant aspect of the present invention." Construction for "WebApplication" and "network application" is same as POSvcApplication.

7) "MEANS FOR SWITCHING TO A TRANSACTIONAL APPLICATION IN RESPONSE TO A USER SPECIFICATION FROM A NETWORK APPLICATION"

DDC's ruling this indefinite is at odds with specification (A-18'500:8:44-55) and filehistory of the patent and related patents in the priority chain of this patent, in which the PTO and inventor agreed and established that the "means for switching" is "switching service 702" "that is an OSI application layer switch" in distinguishing from the then cited prior art, namely, Focsaneanu, related to a network layer switch, for the patent to issue. PTAB construed this term in IPR of '500 patent to mean "switching service 702," and simply expanded out what the specification states the switching service 702 is (A-716-717). Prosecution history estoppel prevents inventor or PTO or court to change the claim construction adopted during prosecution for issuance. *Festo*,535 U.S.734. "In that instance the

prosecution history has established that the inventor turned his attention to the subject matter in question, knew the words for both the broader and narrower claim, and affirmatively chose the latter." *Id.*734-735. ("Prosecution history may rebut the inference that a thing not described was indescribable."). "The patent applicant who narrows his claims has thus acknowledged "an inability to claim the broader subject matter" and has presumptively limited his patent application to the literal terms of its claims. "*Id.*737.Pet.App.19a,n.8. See 5A*Chisum on Patents* 18.05[2] [a][ii](2003).

Disclosure of the steps for performing the function here, as also true for the other means-plus-function elements discussed below, is no less an algorithm than that which was found sufficient in *ChicagoBd.OptionsExch.,Inc.v.Int'l Sec.Exch., LLC,*748 F.3d1134,1141-42(Fed.Cir.2014).

DDC failed to observe that the description of the invention provides the foundation for the scope and content of the claims, and serves to demonstrate that DrA was indeed in possession of the invention claimed. *Skvorecz, supra*, ***CR9***. Misled by JPMC/Spielman, DDC failed to observe that DrA employed "such descriptive means as words, structures, figures, diagrams, formulas, etc., that fully set forth the claimed invention," *Lockwood v.AmericanAirlinesInc.*,107 F.3d1565 (Fed.Cir.'97). *See* Figs.7,3,6A,5B, file histories.

> "Switching service 702 is an OSI application layer switch. Switching service 702 thus represents the core of the VANswitch. It performs a

> number of tasks including the routing of user connections to remote VANswitches…multiplexing and prioritization of requests… flow control. Switching service 702 also facilitates open systems' connectivity with both the Internet…and private networks…, such as banking networks. Interconnected application layer switches form the application network backbone. These switches are one significant aspect of the present invention."(A-18'500:8:44-55)

JPMC/Spielman misled DDC to its erroneous conclusion that all means-plus-function terms and claims in '500 patent are indefinite.

"A functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used. *Innova/PureWaterInc.v.SafariWater FiltrationSys.Inc.*381F.3d1111,1117-20,72USPQ2d1001,1006-08(Fed.Cir.2004). JPMC/Spielman failed to note that specification (A-72'492:4:58-5:27) discloses OSI application layer switch is distinctly different from a network layer switch (eg, a Cisco network layer switch.) Specification also states that switching service 702 is an OSI application layer switch and describes switching service 702 (A-72-74'492:8:52-63;4:62-64;5:23-27). The limitation used to define switching service 702, although functional, set definite boundaries on the patent protection sought and is perfectly permissible function language and serves to precisely define present structural attributes of claimed VANswitch and means-plus-function claim. *Barr*,444F.2d 588,170USPQ 330(CCPA 1971), it was held that the limitation used to define a radical on a chemical compound as "incapable of forming a dye with

said oxidizing developing agent" although functional, was perfectly acceptable because it set definite boundaries on the patent protection sought. In a claim that was directed to a kit of component parts capable of being assembled, the Court held that limitations such as "members adapted to be positioned" and "portions . . . being resiliently dilatable whereby said housing may be slidably positioned" serve to precisely define present structural attributes of interrelated component parts of the claimed assembly. *Venezia*,530F.2d956,189USPQ149 (CCPA1976).

JPMC/Spielman failed to note that there is ***no*** ambiguity about OSI application layer switch, the definition in the specification of the term "means for switching…" or "switching service 702" is defined by what it is, an OSI application layer switch, ***not*** a network layer switch. DDC ***should*** hold claim and claim term definite because patentee provided a general guideline and examples sufficient to enable a person of ordinary skill in the art to determine whether claim calls for use of OSI application layer switch to perform the function. "When a claim limitation employs functional language, the examiner's determination of whether the limitation is sufficiently definite will be highly dependent on context (e.g., the disclosure in the specification and the knowledge of a person of ordinary skill in the art)." *See* ***CR11***.

Language in Patentee's claims is not ambiguous because there is a clear cut indication of scope of subject matter covered by claim; language sets forth well-

defined boundaries of the invention that switching service 702 is an OSI application layer switch, that is clearly distinguished in patent specification from a network layer switch; and one of ordinary skill in the art would know from the claim terms what structure or steps are encompassed by the claim, as specification discloses (A-74'492:8:52-63). Upon such primary inquiry by the court, language of claim and claim term "means for switching…" where the structure, switching service 702 which is an OSI application layer switch, is itself now part of the claim term, leaves no room for ambiguity and boundaries are clear and precise.

During prosecution, patentee resolved ambiguities of a functional limitation by (1) using a quantitative metric (e.g., numeric limitation as to a physical property) rather than a qualitative functional feature, namely, that the claim term is an OSI application layer switch distinguished from a network layer switch; (2) demonstrated that the "specification provide[s] a formula for calculating a property along with examples that meet the claim limitation and examples that do not" *Oakley, supra* and (3) demonstrated that specification provides a general guideline and examples sufficient to teach a person skilled in the art when the claim limitation was satisfied (*Marosi,supra*); and (4) applicant wrote the claims to recite the particular structure that accomplishes the function. DDC was misled by JPMC/Spielman in failing to note that the claims do particularly point out and distinctly claim the invention, as required by MPEP 2173. OSI application layer

switch versus network layer switch in the "means for switching…" as switching service 702 defines clearly the metes and bounds of what the structure is, not what it does. A person skilled in the art would understand the specification including the drawings as showing the structures of the claimed invention. DDC missed what Dr. Bardash had correctly pointed out to DDC that one skilled in the art would understand the specification including the drawings as showing the structures of the claimed invention. This claim term is ***NOT*** indefinite. Ruling must be reversed.

JPMC's argument about algorithm is unfounded, distracting DDC's attention from the true disclosures in the specification that make these terms definite.

8) Dependent Claim2 is ***not*** indefinite. It includes 3 means plus function terms:

8a) "**MEANS FOR RECEIVING SAID USER SPECIFICATION**":

Specification states: "When Webserver 104 receives user 100's indication that he desires to perform real-time transactions, the request is handed over to an exchange component."(A-73'492:6:8-11) DDC could have unambiguously construed this term "means for receiving said user specification" as a Webserver, as this defines clearly the metes and bounds of what the structure is. This term is construable**, *not*** indefinite. Ruling must be reversed.

8b) "**MEANS FOR ENABLING A SWITCH TO SAID TRANSACTIONAL APPLICATION**":

DDC failed to note that the "means for enabling a switch to a transactional application" is clearly spelled out as boundary service 701 of the VANswitch, as the boundary service 701 enables a user to be "routed or "switched" to an application accessible via a remote VANswitch," as disclosed in specification:

> "boundary service 701 provides…interfaces between VANswitch 520, the Internet and the Web, and multi-media end user devices... interface to…on-line service provider. A user can connect to a local application, namely one accessible via a local VANswitch, or be routed or "switched" to an application accessible via a remote VANswitch." (A-18'500:8:36-43)

The "means for enabling a switch to said transactional application" as boundary service 701 defines clearly the metes and bounds of what the structure is, not what it does. This term is construable***, not*** indefinite. Ruling must be reversed.

8c) "**MEANS FOR ACTIVATING SAID TRANSACTIONAL APPLICATION**"

PTAB and DrA construed this term as "the selected POSvcApplication." This term is unambiguously construable, as per specification, which DDC failed to note, misled by JPMC, hence ***not*** indefinite.

> "…example of…POSvcApplication list…illustrated in FIG.5C. User 100 can thus select from POSvcApplications Bank 510(1), Car Dealer 510(2)...If user 100…selects the Bank application, a Bank POSvcApplication will be activated and presented to user 100, as…in FIG.5D." (A-17'500:6:40-47)

Ruling must be reversed.

9) "**MEANS FOR CREATING A TRANSACTION LINK BETWEEN SAID NETWORK APPLICATION AND SAID TA**"

JPMC/Spielman misled DDC away from clearly defined structure in specification (A-18'500:8:1-3): "individual networked objects with information entries and attributes." Pazuniak construed this term as "object data structure with information entries and attributes." Specification and '500filehistory give examples, e.g. checking account object in POSvcApplication 510 on Webpage, Fig.5D, (A-17,18'500:6:66-7:12;7:65-8:3); ***CR3***, ***CR10***. This term is construable, Claim3 is ***not*** indefinite. Ruling must be reversed.

10a) "**MEANS FOR PRESENTING SAID USER WITH A LIST OF TA[S], EACH OF SAID TA[S] BEING ASSOCIATED WITH A PARTICULAR VALUE-ADDED NETWORK SERVICE PROVIDER**"

"Means for presenting…" is "Webpage or Webbrowser or graphical user interface component displaying a list of...," as per specification:

> "…displays…exchange Webpage 505 that includes a list of POSvcApplications 510…POSvcApplication…is displayed via…graphical user interface component. One embodiment of the present invention supports HyperText Markup Language as…graphical user interface component…example of…POSvcApplication list…illustrated in FIG.5C…If user 100 …selects…Bank application…Bank POSvcApplication…activated and presented to user 100, as…in FIG.5D." (A-17'500:6:29-35;6:40-47).

Claim4 is ***not*** indefinite. Ruling must be reversed.

10b) "**MEANS FOR SUBMITTING SAID USER SPECIFICATION ACCORDING TO A USER'S SELECTION OF SAID TA FROM SAID LIST OF TA[S]**"

Specification and '500filehistory support "means for submitting…" is "information entries and attributes in POSvcApplication displayed on Webpage," the interactive data structure with which WebUser interacts to perform Webtransaction. An individual networked object or object identity with information entries and attributes is the means by which a user specifies and instantiates Webtransaction. *See* A-17,18'500:6:54-56; 6:66-7:12; 8:1-3;***CR8***. Claim term and Claim4 are ***not*** indefinite. Ruling must be reversed.

11) "**MEANS FOR TRANSMITTING A TRANSACTION REQUEST FROM SAID TA**"

DDC missed specification supports "means for transmitting…" is "Exchange."

> "…Webserver 104 receives user 100's indication that he desires to perform real-time transactions, the request is handed over to…exchange component. Thus, from Web page 105, for example, user 100 can select button 500, entitled "Transactions" and Webserver 104 hands user 100's request over to…exchange component…Once Bank POSvcApplication…activated, user 100…able to connect to Bank services and utilize the application to perform banking transactions…This connection between user 100 and Bank services is managed by exchange 501. As illustrated in FIG.5D, once the connection is made between Bank POSvcApplication 510(1), for example, and Bank services..."(A-17'500:6)

See '500filehistory excerpts in discussion on "VANswitch." DDC failed to note Exchange manages the connection between WebUser **100** and WebMerchant services. Algorithm and structure in Fig. 5B and specification(A-17'500:6:7-27) consists of Exchange Webpage, POSvcApplications, switching service 702, object router, service management component, creating and providing distributed control

of a service network, operating within the boundaries of IP-based facilities network and manages the transaction flow from user to WebMerchant services. It is the means for transmitting said transaction request from said TA. Claim term is construable, Claim1 is ***not*** indefinite. Ruling must be reversed.

12) "**MEANS FOR PROCESSING SAID TRANSACTION REQUEST**"

DDC missed specification discloses:

> "**Exchange 501 processes the consumer's request** and displays an exchange Webpage 505 that includes a list of POSvcApplications 510 accessible by exchange 501." A-17'500:6:28-30

Claim term and Claim1 are ***not*** indefinite. Ruling must be reversed.

13) "**MEANS FOR COUPLING SAID MEANS FOR TRANSMITTING TO A HOST MEANS**"

DDC missed the point of the invention that the host means for processing in this patent refers ***not*** to back-office processing, but to computer system 200 in Fig. 5D. PTAB's construction for "means for coupling said means for transmitting to a host means" is "an interface through which a user selects a transactional application." **(**A-723). Claim term and Claim5 are ***not*** indefinite. Ruling must be reversed.

14) "**MEANS FOR ACTIVATING AN AGENT TO CREATE A TRANSACTION LINK BETWEEN SAID USER APPLICATION AND SAID TA**"

PTAB construed this as "an interface through which a user selects a transactional application." DDC, misled by JPMC, missed specification:

> "…user **100** … selects… Bank application… Bank POSvcApplication will be activated and presented to user 100…illustrated in FIG.5D…Once Bank POSvcApplication…activated, user 100…able to connect to Bank services and utilize the application to perform banking transactions…This connection between user 100 and Bank services is managed by exchange 501." A-17'500:6:44-47

Claim term and Claim35 are ***not*** indefinite. Ruling must be reversed. The structure is " individual networked object with information entries and attributes in POSvcApplication on Webpage." User instantiates an object and a Webtransaction, utilizing "individual networked object with information entries and attributes."

15) "**OBJECT ROUTING**": DDC, misled by JPMC, missed specification (A-18'500:8:1-3) and '500 filehistories, *see* ***CR8***.

> "…object identities according to the presently claimed invention are distinctly different from…HTML page with URL links…the object identity represents a networked object…This type of an "object" is significantly different from an HTML page that is accessed via a URL…HTML page described in Davison is simply an entry form and does not provide any type of object routing capability, as presently claimed. Davison describes how to create a standard HTML Webpage that contains HTML forms. These forms are non-interactive Webpages that do not allow a user to perform live, real-time, bi-directional transactions,…
> In contrast, according to the presently claimed invention, if a WebMerchant decides to offer a POSvcApplication that allows access to checking and savings accounts, **the object identities according to the claimed invention refer to the individual checking and savings accounts**, not to the POSvcApplication Webpage…Thus, each account is an **object identity associated with information entries and attributes, and the object identity represents a networked object**. The object identity (the account) …**route the object identity on the Web**. This type of an **object routing** system is not taught or

> suggested by Davison..." (A-179-183,319-320;'178/'500 filehistories)(***CR8***)

Specification and '178/'500 filehistories support construction of "object routing" as "OSI application layer routing of individual networked objects from a selected POSvcApplication displayed on a Webpage or Webbrowser to a WebMerchant's services." The construction for "individual networked objects" is "the information entries and attributes in a DOLSIB." "DOLSIB is a virtual information store optimized for networking." *See* A-74'492:8:7-12. DDC missed even that "object routing" is routing of objects.

> "…perform object routing. DOLSIBs are virtual information stores optimized for networking. All information entries and attributes in a DOLSIB virtual information store are associated with a networked object identity. The networked object identity identifies the information entries and attributes in the DOLSIB as individual networked objects…" (A-74'492:8:7-12)

This term is not tied to any protocol (*see* specification (A-74'492:7,8): "multi-protocol object routing"), proprietary or otherwise, as JPMC misled DDC. Specification (A-74'492:8:7-12) and '178/'500 filehistories disclose algorithm, contrary to JPMC/Spielman.

The priority Provisional Application 60/006,634 discloses "uniquely identify, retrieve and route dynamically changing information elements that have to be accessed remotely, using multi - media, object routing." (A-484-485ProvApp)

There is no intrinsic evidence that limits "object routing" to a system using TMP. Specification does not restrict "object routing" to TMP and does not require a unique IP address to be hierarchically assigned to each object. These are embodiments of the invention. See *Hill-Rom Servs, Inc.v.StrykerCorp, Fed.Cir.2014*:

> "[T]his court has expressly rejected the contention that if a patent describes only a single embodiment,…claims of…patent must be construed as being limited to that embodiment…[e]ven when…specification describes only a single embodiment… claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using 'words or expressions of manifest exclusion or restriction."

Court noted that claim terms may be limited to specific description in specification only when specification or filehistory includes language such as "the present invention requires ..." or "the present invention is ..." or "all embodiments of the present invention are...." *Id*. The patents do not describe the invention as limited to TMP. There is no disclosure that the present invention "is," "includes," or "refers to" TMP or unique IP address being hierarchically assigned to each object. Nor is there language of limitation or restriction. Nothing in specification or filehistory suggests the conclusion that the invention is limited to use of TMP or unique IP address to be hierarchically assigned to each object. Absent such language, courts cannot inject limitations into claim term or the claims. *Id*. Hence, no basis to narrow "object routing" to a particular protocol–TMP–or require a unique IP

address to be hierarchically assigned to each object. DDC/JPMC's construction has no basis.

Neither specification nor filehistory gives reason to limit the term to a particular form of communication protocol.

OSI application layer routing of individual networked objects—information entries and attributes in a DOLSIB, a virtual information store optimized for networking —***from*** a POSvcApplication displayed on a Webpage or in a Webbrowser is used to complete the transfer of funds in a real-time Webtransaction in a funds transfer WebApplication/POSvcApplication displayed on a Webpage, as claimed in '158 patent. A VIS is a "transient information store in which information entries and attributes are associated with a networked object identity." A virtual information store in the patents is virtual, not real; "virtual" is construed as "temporary" or "transient," whereas a database is a real information store, ***not*** a virtual information store. *See* IBM Computer dictionary. A "networked object identity identifies the information entries and attributes in the DOLSIB as individual networked objects"—information entries and attributes, which are values of the characteristics of an object and characteristics of an object. (A-49'158:8:13-15). "Application layer routing creates an open channel for the management, and the selective flow of data from remote databases on a network." (A-48'158:5:27-29). "[T]he present invention is implemented to function as a

routing switch in [the] application layer."(A-48'158:5:25-26). The present phrase differs, however, in that the OSI application layer routing occurs 'from a POSvcApplication displayed on a Webpage or Webbrowser.'

The claimed virtual information store in the '158 patent includes both information entries and attributes, whereas all alleged prior art only contain one or the other, but not both. *See* eg, A-46'158:2:52-54: "The method for enabling object routing comprises the steps of creating a virtual information store containing…" Clearly, if this were a permanent store, such as a physical memory, or a database, it would not be created as part of a process for practicing the invention. Construction of "virtual" as something that is transient and temporarily created, is also consistent with standard terminology in the computer field. eg, one computer dictionary defines "virtual" as "Not real." In general, it distinguishes something that is merely conceptual from something that has physical reality." DDC erred in construing claim term. Ruling must be reversed.

16) "A ROUTED TRANSACTIONAL DATA STRUCTURE THAT IS BOTH COMPLETE AND NON-DEFERRED, IN ADDITION TO BEING SPECIFIC TO THE POSVCAPPLICATION"

DDC's construction, "back-end real-time response to a user's request for a service," is not in accord with specification, '500 filehistory or claim language. While DDC acknowledges that Dr. Bardash opined that the invention in this patent

is not about back-office or Fig.4A, DDC was misled by JPMC. The invention in this patent solves the problem that existed in 1995:

> "…today…user 100 walking into a bank…driving up to a teller machine…interacting with a live bank teller…automated teller machine (ATM)... dialing into the bank via a modem line. **If user 100 is a WebUser, however, there is no current mechanism for performing a robust, real-time transaction with the bank, as illustrated in FIG.4A**…" (A-17'500:5:27-42)

In 1995, applications were local to the back-office and were islands not connecting to the front-end on a Webpage. POSvcApplications on a Webpage were non-existent in 1995. Merchant services interfaced with front-end applications at live teller, ATM machine or call center agent. However, when a WebUser 100 wanted to perform a real-time transaction, eg, to perform Web banking transactions in real-time, there were no Web banking applications on a Webpage or Webbrowser until DrA's inventions. The patents are unrelated to Fig. 4A or Back-Office, which existed prior to DrA's inventions. An enterprise does not allow access to Back-Office applications for security reasons. This is why WebMerchant has provided WebUser with POSvcApplications at front-end on Webpage or Webbrowser. WebUser 100 interacts with POSvcApplication on Webpage and interactive data structure in POSvcApplication with information entries and attributes (which is a complete, encapsulated whole) to make a transaction request and perform a real-time transaction as he would with live teller or ATM machine. ("A patent specification is not a catalog of all known technologies."MPEP2161.01; A patent

need not teach, and preferably omits, what is well-known in the art. *Buchner*,929F.2d660,661,18USPQ2d1331,1332(Fed.Cir.1991) and need not specify what one of ordinary skill in the art knows already, for example, an object or data structure. This complete data structure with information entries and attributes is specific to POSvcApplication from which WebUser transacts (A17‘500:6:66-7:12) and instantiated by WebUser and then this complete data structure with information entries and attributes is routed to complete a real-time (or non-deferred) Webtransaction.

The user inputs the values of the attributes in the live POSvc WebApplication displayed on Webpage or Webbrowser in order to perform a real-time Webtransaction. This data structure, called object identity with information entries and attributes, is interactive and this interactive object data structure is what makes the data structure transactional versus non-transactional. These information entries and attributes are routed in OSI application layer as a structured whole over the service network on the Web from POSvcApplication displayed on Webpage. This is the networked object between the POSvcApplication on a Webpage and WebMerchant services. This is the crux of the invention: this structured whole, object identity with information entries and attributes, makes it “complete” and is routed non-deferred from POSvcApplication on Webpage to WebMerchant services. Claim 1 in ‘158 patent is patentable under 101 and 112, 2nd paragraph,

this term is construable with ample support in specification. DDC failed to construe claim term in view of whole claim.

> "transferring funds from… checking…to…savings account in real-time, utilizing a routed transactional data structure that is both complete and non-deferred, in addition to being specific to …POSvcApplication, the routing occurring in response to the subsequent signals."(A-50'158claim1)

'178/'500filehistories state that the individual data structure in the '500 patent "is significantly different from an HTML page that is accessed via a URL." (A-319-320'178filehistorypp.5-7). The individual data structure—like that in Fig.5D —which in the example of a Web banking application shown in Fig.5D, refer to individual checking and savings accounts; "each account is an individual" data structure—"object identity— associated with information entries and attributes" that "represents a networked object."(A-319-320'178filehistorypp.5-7). Such an explanation—and corresponding construction—are likewise consistent with specification that "[t]he networked object identity identifies the information entries and attributes in the DOLSIB as individual networked objects"—information entries and attributes, which are values of the characteristics of an individual data structure and characteristics of an individual data structure.(A-49'158:8:13-15).

JPMC offers no construction for this central concept of '158 Patent, which is evident as to acknowledge a proper construction would be to admit to the novelty

and non-obviousness of the presently claimed invention. '158 Patent addresses concept of application layer routing of an individual data structure with information entries and attributes from a POSvcApplication on a Webpage or Webbrowser. "Application layer routing," in turn, "creates an open channel for the management, and the selective flow of data from remote databases on a network."(A-48'158:5:27-29)."[T]he present invention is implemented to function as a routing switch in [the] application layer."(A-48'158:5:25-26). DrA's construction of 'utilizing OSI application layer routing of an individual data structure (as a whole and in real-time, not deferred) with the values of the characteristics of an individual data structure and characteristics of an individual data structure—specific to a POSvcApplication displayed on a Webpage—from the POSvcApplication displayed on a Webpage" is correct and is a key feature that distinguishes the inventions in '158 and its priority patents from any of the cited art. In contrast, ***in CGI, the fields*** in an HTML form are ***not sent as a whole***—rather the fields in HTML form are sent individually field-by-field as standard I/O from Webpage to back-end application, local to back-end— nor are they sent in a non-deferred fashion. Claim term and Claim1 of '158 patent are ***not*** indefinite. Ruling must be reversed.

17) "**KEEPING THE TRANSACTION FLOW CAPTIVE**" '500 filehistory (***CR8***), provisional application (A-482), specification (A- 17'500:5:12-14;6:19-

61;Figs8,5D) support correct construction: "maintaining control at the Network Entry Point over the flow of a transaction."

I. DDC ERRED IN RULING CLAIMS INDEFINITE

Indefiniteness is a question of law reviewed de novo. *H-W Tech.*,*supr* (citing *ExxonResearch&Eng'gCo.v.United States*,265F.3d1371,1376(Fed.Cir.2001). *Nautilus,Inc.v.BiosigInstruments,Inc*.134S.Ct.2120,2124,2128(2014). *GeneralElec.Co.v.WabashApplianceCorp*.,304U.S.364,371(1938). *UnitedStatesv.Adams*,383U.S.39,48–49(1966); *FestoCorp.v.ShoketsuKinzokuKogyoKabushikiCo*.,535U.S.722,741(2002). The "certainty which the law requires in patents is not greater than is reasonable, having regard to their subject-matter."*Nautilus, Id*. New standard remains consistent with this Court's pronouncements: "Absolute clarity is not required to find a claim term definite…[A] claim term may be definite even when discerning…meaning is a 'formidable [task] and…conclusion may be one over which reasonable persons will disagree.'" *StarScientific,Inc.v.R.J.ReynoldsTobaccoCo*.,655F.3d 1364,1373(Fed.Cir.2011) "If...claims, read in light of…specification, reasonably apprise those skilled in the art both of the utilization and scope of the invention, and if the language is as precise as the subject matter permits, the courts can demand no more." *ShatterproofGlassCorp.v.Libbey-OwensFordCo*.,758 F.2d 613,624(Fed.Cir.1985).

PO's discussion above on claim construction evidences that claim terms and claims are ***not*** indefinite, DDC's ruling ***must*** be reversed. Fig.4B shows the invention lies in the Exchange (Webpage plus POSvcApplication) that connects to WebMerchant services, not in the legacy systems. DDC held that inventor had to provide an algorithm for each and every unique transaction that could be handled by each and every conventional legacy system of each merchant. But that does not implement the invention, but defeats it, when the point of the invention is not the legacy system or Back-office shown in the green box, but the "front-end" (shown in front of and outside the green box) for the purpose of connecting to WebMerchant services.

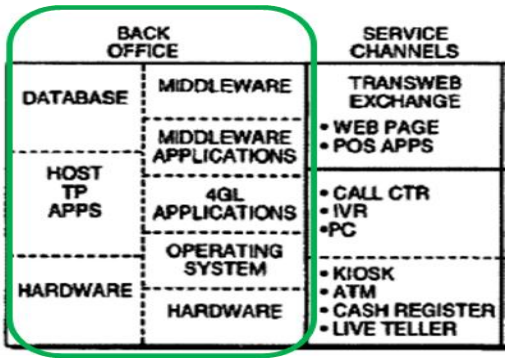

FIG. 4B

II. DDC ERRED IN RULING CLAIMS INVALID FOR LACK OF WRITTEN DESCRIPTION

"To satisfy the written description requirement, the specification must 'reasonably convey[ ] to *those skilled in the art* that the inventor had possession of the claimed subject matter as of the filing date.'" *LochnerTechnologies,LLC v. Vizio,Inc*.,2014 WL2898496(Fed.Cir.2014);

AriadPharms.,Inc.v.EliLilly&Co.,598F.3d1336135(Fed.Cir.2010en banc). The "level of detail required...varies, depending on… nature and scope of…claims and on…complexity and predictability of the relevant technology," and "requires an objective inquiry into the four corners of…specification from…perspective of a person of ordinary skill in the art." *Id*.

DDC ignored completely Dr. Bardash's response to Spielman's arguments. Dr. Bardash stated in his sworn responsive report:

> A person of ordinary skill in the art, in November 1995, and having read the specification of…patents-in-suit, would discern the bounds of what is meant by the term "VANswitch." Contrary to Ms. Spielman's assertions, there are no contradictory or irreconcilable descriptions of the VANswitch. (A-641)

He refuted each of Spielman's contentions on which DDC relied. DDC ignored Dr. Bardash's specific response that the specification provided a written description of eg, "Boundary Service" and "Switching Service."(A-639-654;A-589-593). There is no known precedent for "written description" requiring that specification provide a detailed analysis of each and every component of each structure in a patent claim, as Spielman demands. The algorithm has been spelled out in specification/filehistory–routing networked object with information entries and attributes from POSvcApplication on Webpage –a key construct.

DDC relied on Spielman's opinion that VANswitch was dependent on "TMP^{tm} Protocol." But, inventor had explained that the "^{tm}" after "TMP" was an

error, and not intended to describe a trademarked product. But the critical facts of record are Dr. Bardash's explanation that, regardless of what was meant by TMP^{tm}, the specification enables those skilled in the art to practice the invention (A-612-672).

JPMC misled: "specification describes POSvcApplications "by block diagrams denoting 'Bank 510(1), Car Dealer 510(2) or Pizzeria 510(3),' but offers no further description," citing Fig5C,A-73'492:6:51-55, and "specification lacks any details as to "how the VANswitch would accomplish allowing a user to connect to a point-of-service application." DDC ignored specification and Dr. Bardash's Report/Declaration (A-612-672), which specifically address DDC's issues. Fig5D shows POSvcApplications (510) are part of Exchange, and utilize a networked object with information entries and attributes to connect with WebMerchant services. DDC stated: "…specification only offers… block diagram of…'back-office,' generally identifying a system and applications. (*Id*.,Fig.4B)," DDC/Spielman contend: "[n]owhere in…specification does…inventor indicate that she had possession of such a system or the applications that process the user's [real-time] request." "The usage of the disputed claim terms in the context of the claims as a whole … informs the proper construction of the terms." *Abbot Labs. v. Syntron Bioresearch, Inc.*, 334 F.3d 1343, 1351 (Fed. Cir. 2003). See also *Merck & Co. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005) ("A claim

construction that gives meaning to all the terms of the claim is preferred over one that does not do so.") Dr. Bardash demonstrated in great detail why the claims are supported by the written description. (A639-655). Thus, there is at least a genuine dispute of material fact. Judgment of invalidity for lack of written description must be reversed.

III. DDC ERRED IN RULING CLAIMS INVALID FOR LACK OF ENABLEMENT

DDC, misled by Spielman's unsworn report (Spielman filed no declaration), incorrectly stated:

> "Spielman describes as an example that "TMP is described as incorporating, in the alternative, s-HTTP, JavaTM, the WinSock API or ORB with DOLSIBs to perform object routing," which "is counterintuitive," and the specification does not offer any examples of how this can be accomplished." (A-646-651)
>
> "…specification offers no explanation or information on any software programs. Fig8, which Bardash contends provides an "algorithm," only discloses, as explained by Spielman, a flowchart with boxes listing functions. (A-595) As…discussed in…claim construction order…means-plus-function limitations and…"computer system" limitation require algorithms or other analogous structure, which the specification does not provide." (A-594)

Despite citing Spielman, **DDC ignored Dr. Bardash's direct, comprehensive response** (A-612-672). DDC erred on the law. Enablement does not require that a specification provide an "explanation or information on [a] software program."

Second, DDC was confused in citing Dr.Bardash's reference to Fig.8. Dr.Bardash

cited Fig.8 to explain why the term "keeping a transaction flow captive" is not indefinite.

Enablement requirement

> "is met when at the time of filing the application one skilled in the art, having read the specification, could practice the invention without "undue experimentation." Whether undue experimentation is required "is not a single, simple factual determination, but rather is a conclusion reached by weighing many factual considerations"

such as quantity of experimentation necessary, amount of direction or guidance presented, presence or absence of working examples, nature of invention, state of prior art, relative skill of those in the art, predictability or unpredictability of the art, and breadth of claims. A reasonable amount of routine experimentation required to practice a claimed invention does not violate enablement requirement. *Cephalon,Inc.v.WatsonPharm.,Inc*.707 F.3d1330,1336(Fed.Cir.2013); *Wands*,858F.2d731,736–37 (Fed.Cir.1988. To prevail on lack of enablement, JPMC must prove by clear and convincing evidence. *JohnsHopkinsUniv.v.Cellpro,Inc*.,152 F.3d 1342,1359-60(Fed.Cir.1998).

"The specification need not explicitly teach those in the art to make and use the invention; the requirement is satisfied if, given what they already know, the specification teaches those in the art enough that they can make and use the invention without 'undue experimentation.'" *AmgenInc.v.HoechstMarion Roussel, Inc*.,314 F.3d1313,1334(Fed.Cir.2003); *HybritechInc.v.Monoclonal Antibodies,*

Inc.,802 F.2d1367,1384(Fed.Cir.1986) ("[A] patent need not teach, and preferably omits, what is well known in the art.").

IV. DDC ERRED IN RULING THAT CLAIMS ARE NOT INFRINGED

DDC erroneously granted summary judgment of non-infringement solely in light of erroneously ruling claim terms indefinite or construing them incorrectly.

CONCLUSION AND STATEMENT OF RELIEF SOUGHT

DDC's rulings are erroneous, as shown above. Plaintiff respectfully requests CAFC to reverse claim construction rulings, vacate summary judgment of non-infringement and invalidity, and remand to DDC for further proceedings. Oral hearing is requested.

December 5, 2014

Respectfully submitted,

/s/William Weidner

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Attorney for Plaintiff-Appellant

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UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT
Pi-Net International, Inc. v. JPMorgan Chase & Co.
No. 14-1495

CERTIFICATE OF SERVICE

I certify that on December 3, 2014, I electronically filed the foregoing **Corrected Brief of Plaintiff-Appellant** with the Clerk of the Court using the CM/ECF System, which will serve via e-mail notice of such filing to any of the following counsel registered as CM/ECF users and I caused to be served on counsel of record by Electronic Means (by email):

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Upon acceptance by the Court of the e-filed document, six paper copies will be filed with the Court, via overnight delivery, within the time provided in the Court's rules.

December 5, 2014

Respectfully submitted,

/s/William Weidner
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CERTIFICATE OF COMPLIANCE WITH FRAP 32(A)(7)(B)

The undersigned hereby certifies that this brief complies with the type-volume limitation of Federal Rules of Appellate Procedure 32(a)(7)(B).

1. The brief contains 13,862 words, excluding the parts of the brief exempted by Federal Rule of Appellate Procedure 32(a)(7)(B)(iii).

2. The brief has been prepared in a proportionally spaced typeface using Microsoft Word in 14 point Times New Roman font.

December 5, 2014

Respectfully submitted,

/s/William Weidner

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ADDENDUM FOR THE APPEAL BRIEF PURSUANT TO FED. CIR. R. 28(a)(12)

LIST OF DOCUMENTS IN ADDENDUM

Exhibit A

US005987500A

United States Patent [19]

Arunachalam

[11] Patent Number: 5,987,500

[45] Date of Patent: *Nov. 16, 1999

[54] **VALUE-ADDED NETWORK SYSTEM FOR ENABLING REAL-TIME, BY-DIRECTIONAL TRANSACTIONS ON A NETWORK**

[75] Inventor: **Lakshmi Arunachalam**, Menlo Park, Calif.

[73] Assignee: **Pi-Net International, Inc.**, Menlo Park, Calif.

[*] Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

[21] Appl. No.: **08/879,958**

[22] Filed: **Jun. 20, 1997**

Related U.S. Application Data

[62] Division of application No. 08/700,726, Aug. 5, 1996, Pat. No. 5,778,178

[60] Provisional application No. 60/006,634, Nov. 13, 1995.

[51] **Int. Cl.**[6] **G06F 13/00**

[52] **U.S. Cl.** **709/203**

[58] **Field of Search** ..... 364/DIG. 1, DIG. 2; 395/762, 200.3, 200.31, 200.32, 200.43, 681, 682, 683, 684, 685, 689; 709/200, 201, 202, 203, 213, 301, 302, 303, 304, 305; 710/200

[56] **References Cited**

PUBLICATIONS

"Coding with HTML forms: HTML goes interactive", Andrew Davidson, Dr. Dobb's Journal, V20, N6, Jun. 1995, p. 16.

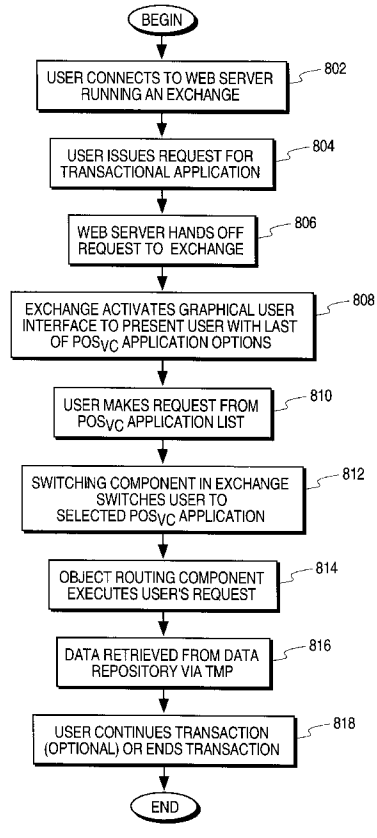
Primary Examiner—Robert B. Harrell

Attorney, Agent, or Firm—Blakely, Sokoloff, Taylor & Zafman LLP

[57] **ABSTRACT**

The present invention provides a method and apparatus for providing real-time, two-way transactional capabilities on the Web. Specifically, one embodiment of the present invention discloses a configurable value-added network switch for enabling real-time transactions on the World Wide Web. The configurable value added network switch comprises a system for switching to a transactional application in response to a user specification from a World Wide Web application, a system means for transmitting a transaction request from the transactional application, and a system for processing the transaction request. Additionally, a method for enabling object routing is disclosed, comprising the steps of creating a virtual information store containing information entries and attributes associating each of the information entries and the attributes with an object identity, and assigning a unique network address to each of the object identities. Finally, a method is disclosed for enabling service management of the value-added network service, to perform OAM&P functions on the services network.

35 Claims, 13 Drawing Sheets



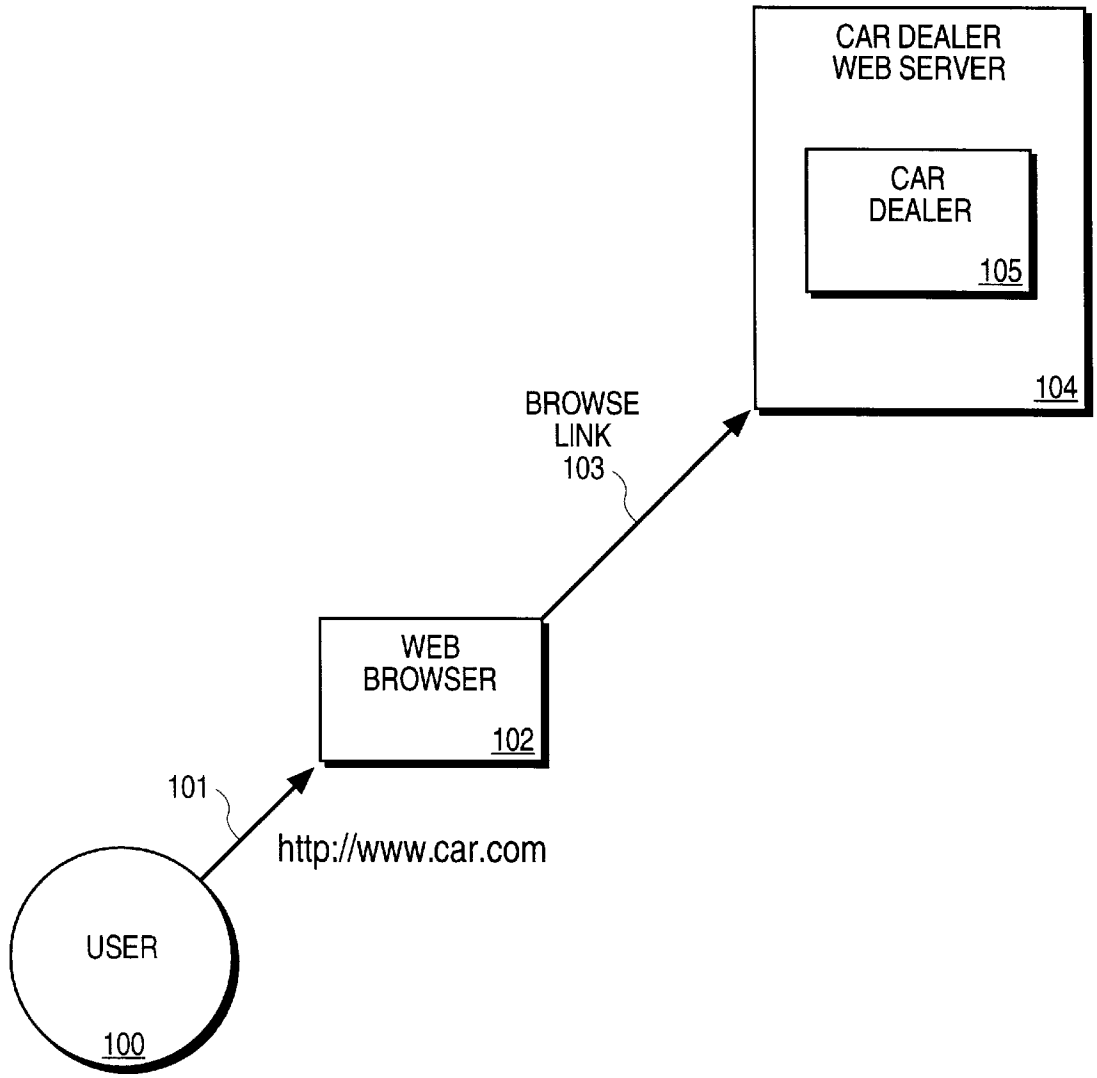


FIG. 1A (PRIOR ART)

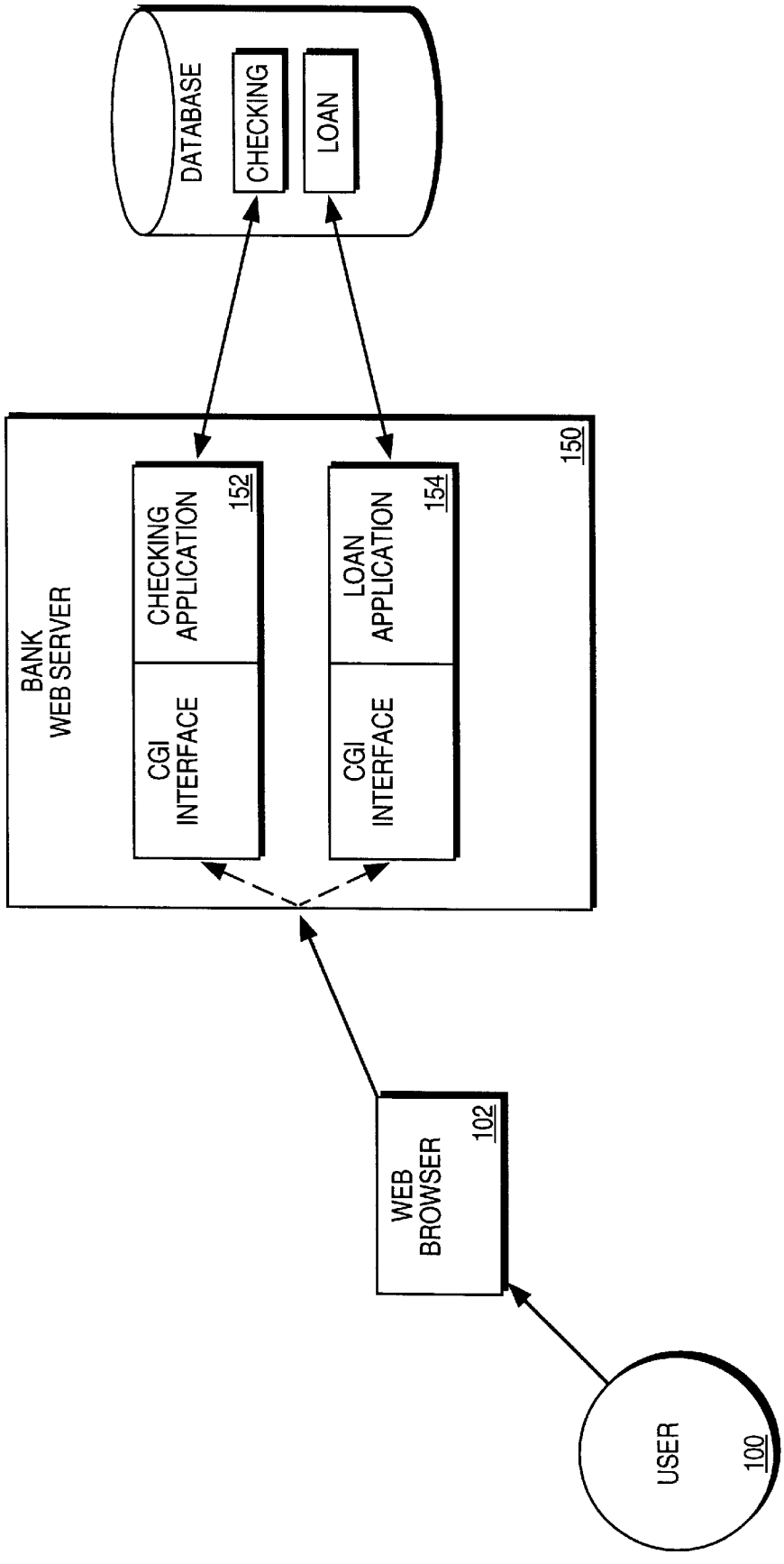


FIG. 1B (PRIOR ART)

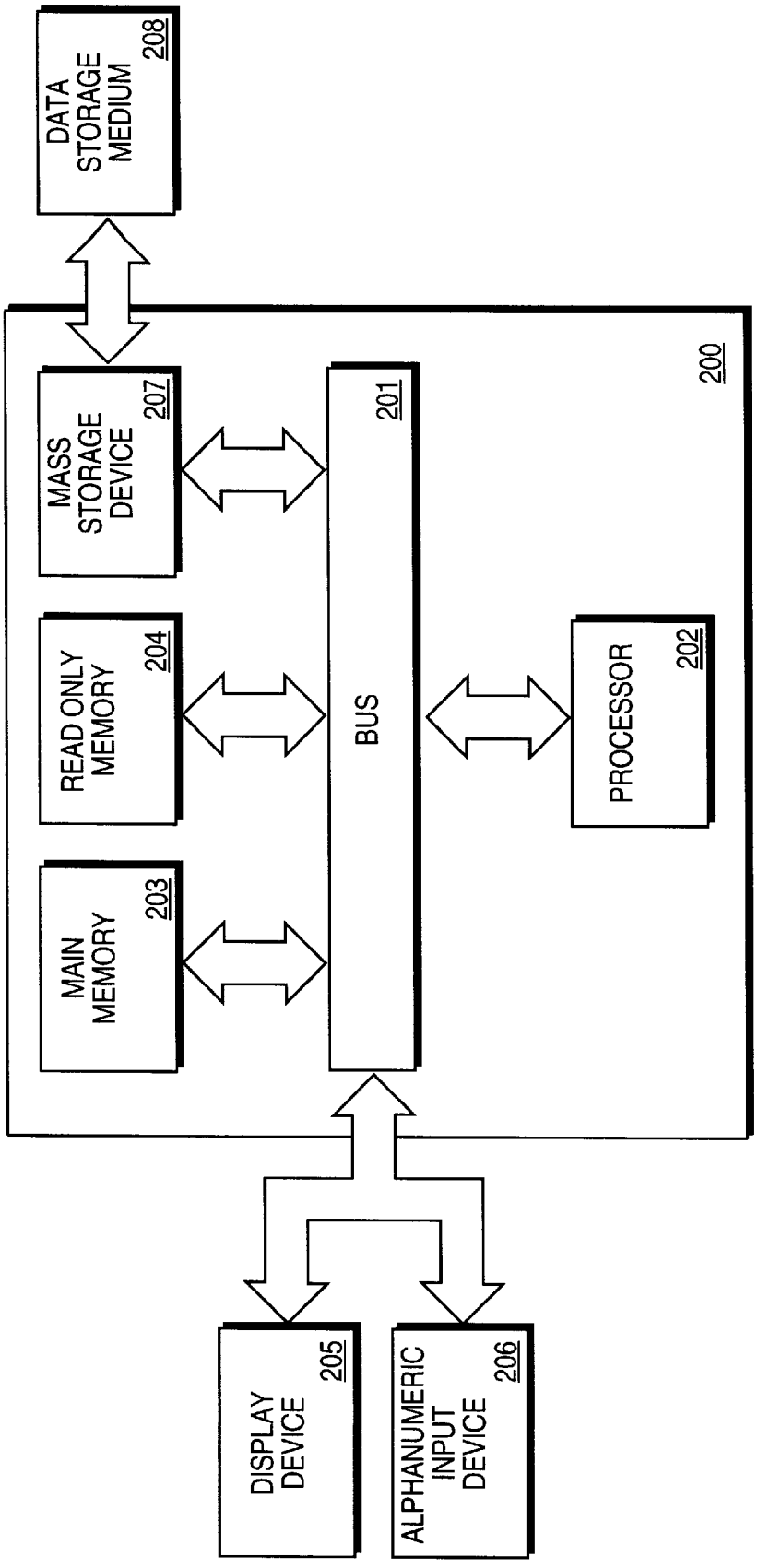

DATA STORAGE MEDIUM
208
200
MASS STORAGE DEVICE
207
201
READ ONLY MEMORY
204
BUS
PROCESSOR
202
MAIN MEMORY
203
DISPLAY DEVICE
205
ALPHANUMERIC INPUT DEVICE
206

FIG. 2

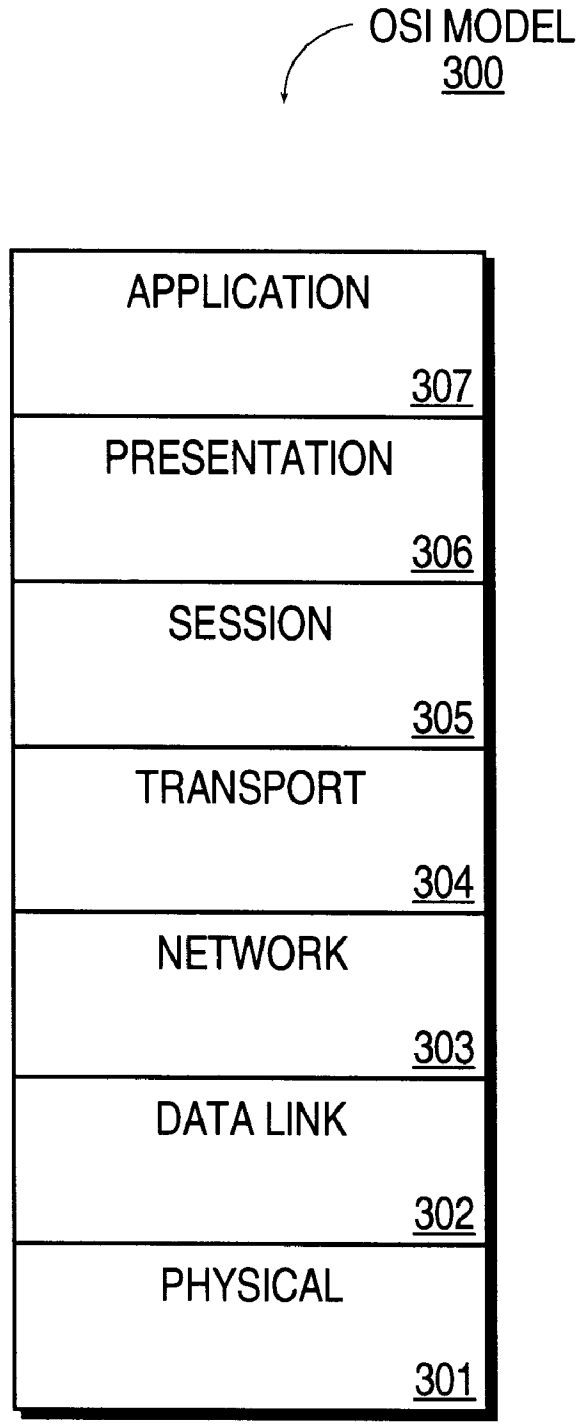

OSI MODEL
300
APPLICATION
307
PRESENTATION
306
SESSION
305
TRANSPORT
304
NETWORK
303
DATA LINK
302
PHYSICAL
301

FIG. 3

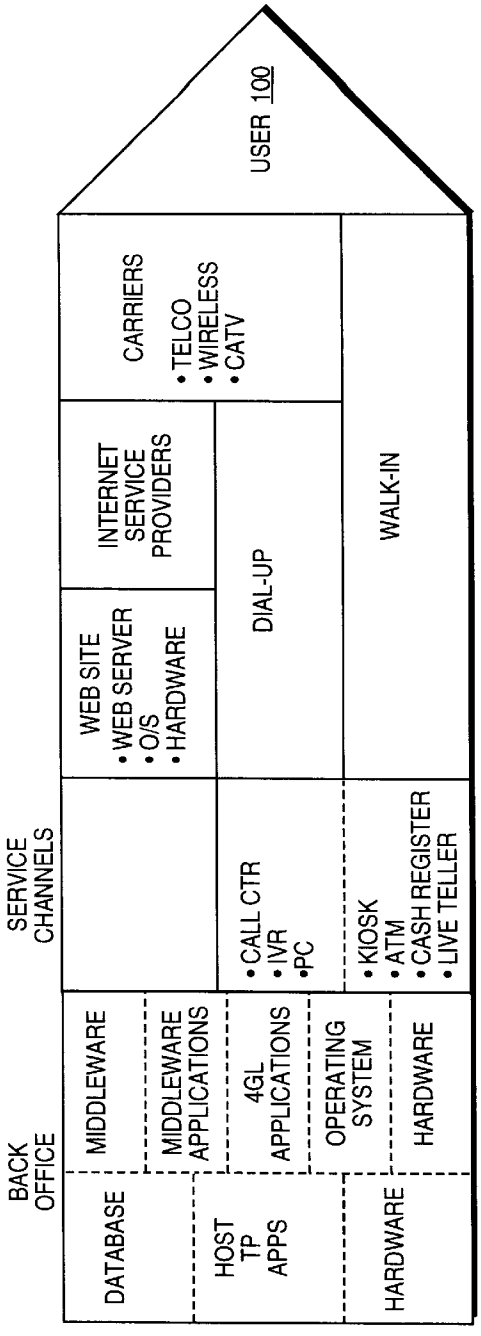

BACK OFFICE
SERVICE CHANNELS
USER 100
DATABASE
MIDDLEWARE
MIDDLEWARE APPLICATIONS
HOST TP APPS
4GL APPLICATIONS
OPERATING SYSTEM
HARDWARE
HARDWARE
WEB SITE
• WEB SERVER
• O/S
• HARDWARE
INTERNET SERVICE PROVIDERS
CARRIERS
• TELCO
• WIRELESS
• CATV
DIAL-UP
WALK-IN
• CALL CTR
• IVR
• PC
• KIOSK
• ATM
• CASH REGISTER
• LIVE TELLER

FIG. 4A

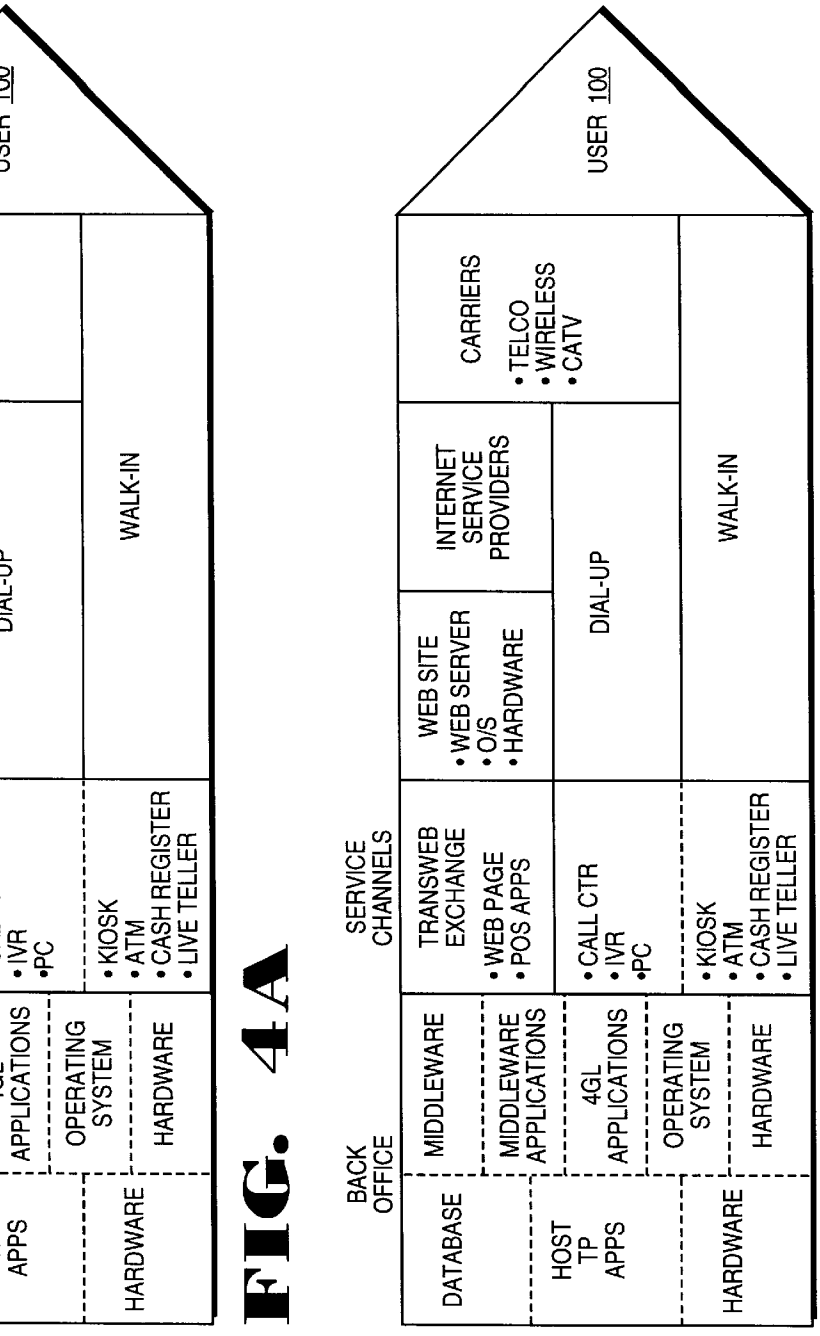

BACK OFFICE
SERVICE CHANNELS
USER 100
DATABASE
MIDDLEWARE
MIDDLEWARE APPLICATIONS
HOST TP APPS
4GL APPLICATIONS
OPERATING SYSTEM
HARDWARE
HARDWARE
TRANSWEB EXCHANGE
• WEB PAGE
• POS APPS
WEB SITE
• WEB SERVER
• O/S
• HARDWARE
INTERNET SERVICE PROVIDERS
CARRIERS
• TELCO
• WIRELESS
• CATV
DIAL-UP
WALK-IN
• CALL CTR
• IVR
• PC
• KIOSK
• ATM
• CASH REGISTER
• LIVE TELLER

FIG. 4B

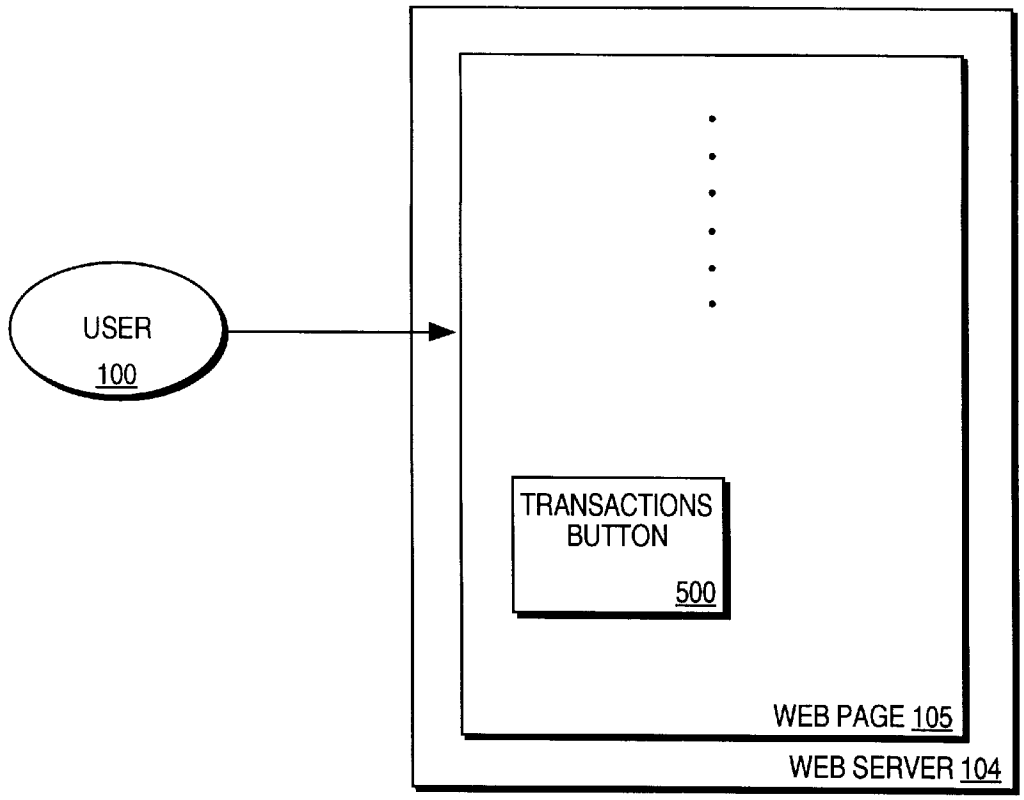

USER
100
TRANSACTIONS
BUTTON
500
WEB PAGE 105
WEB SERVER 104

FIG. 5A

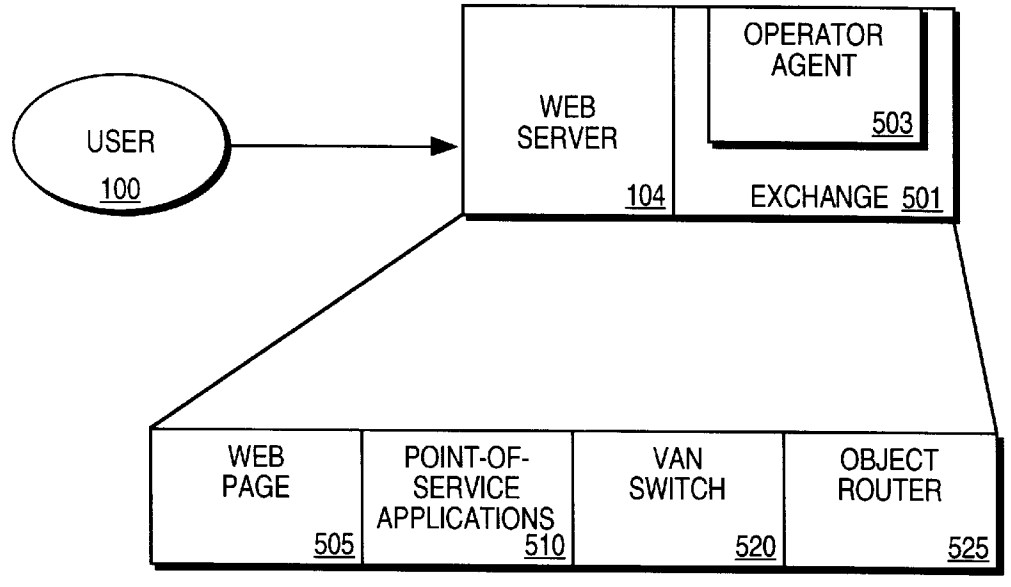

USER
100
WEB
SERVER
104
OPERATOR
AGENT
503
EXCHANGE 501
WEB
PAGE
505
POINT-OF-
SERVICE
APPLICATIONS
510
VAN
SWITCH
520
OBJECT
ROUTER
525

FIG. 5B

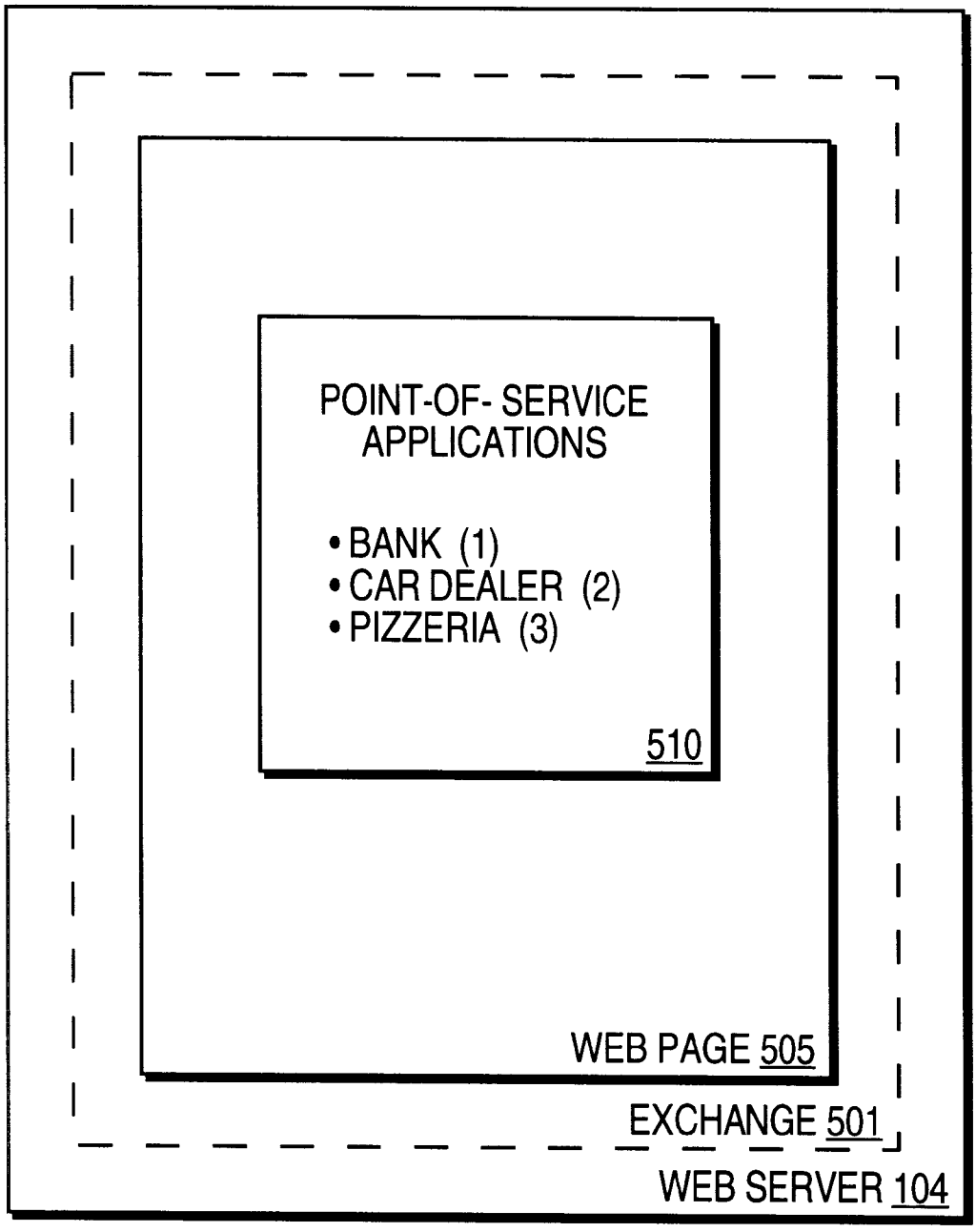

POINT-OF- SERVICE APPLICATIONS
• BANK (1)
• CAR DEALER (2)
• PIZZERIA (3)
510
WEB PAGE 505
EXCHANGE 501
WEB SERVER 104

FIG. 5C

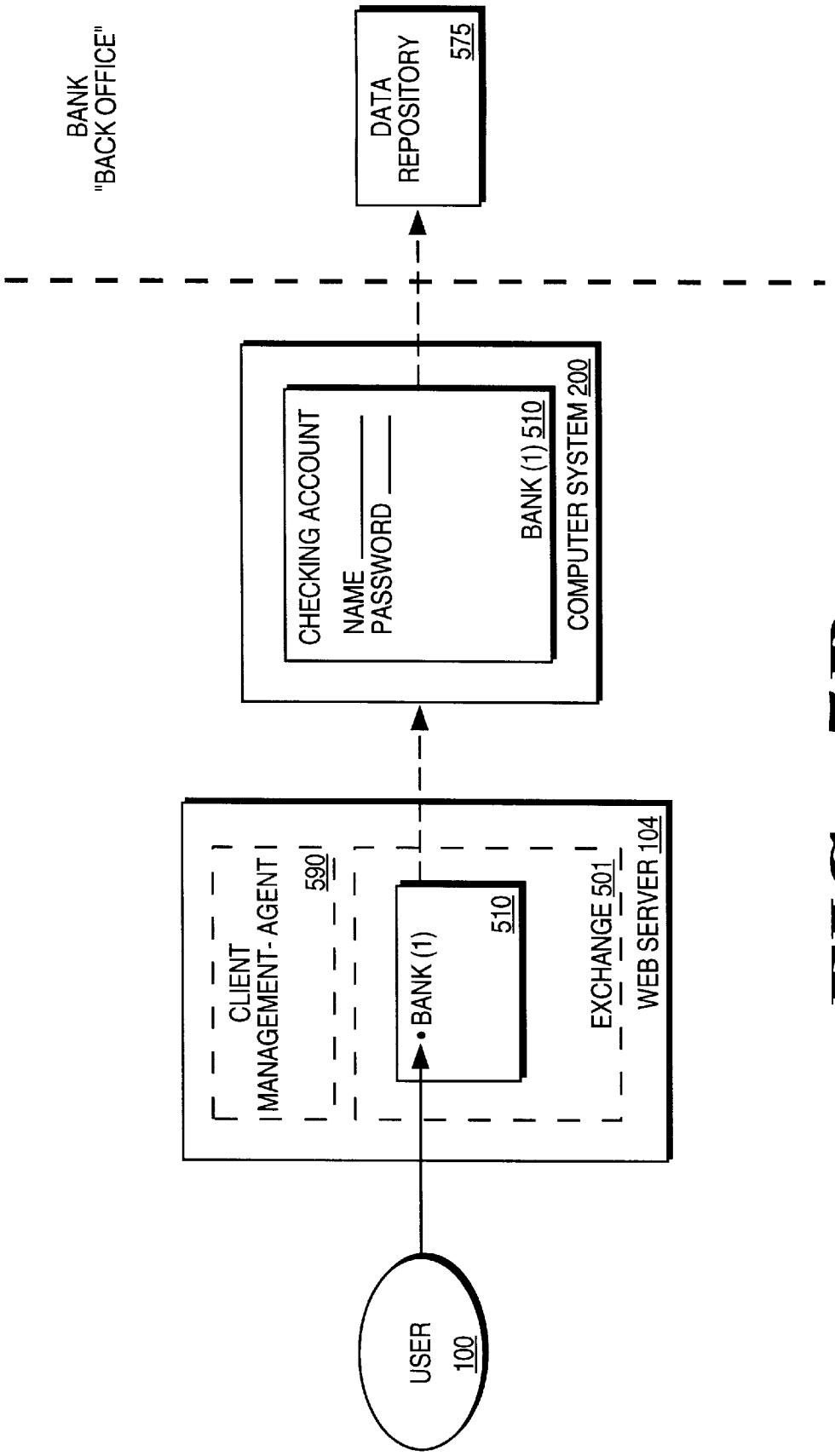

BANK
"BACK OFFICE"
DATA
REPOSITORY
575
CHECKING ACCOUNT
NAME
PASSWORD
BANK (1) 510
COMPUTER SYSTEM 200
CLIENT
MANAGEMENT- AGENT
590
• BANK (1)
510
EXCHANGE 501
WEB SERVER 104
USER
100

FIG. 5D

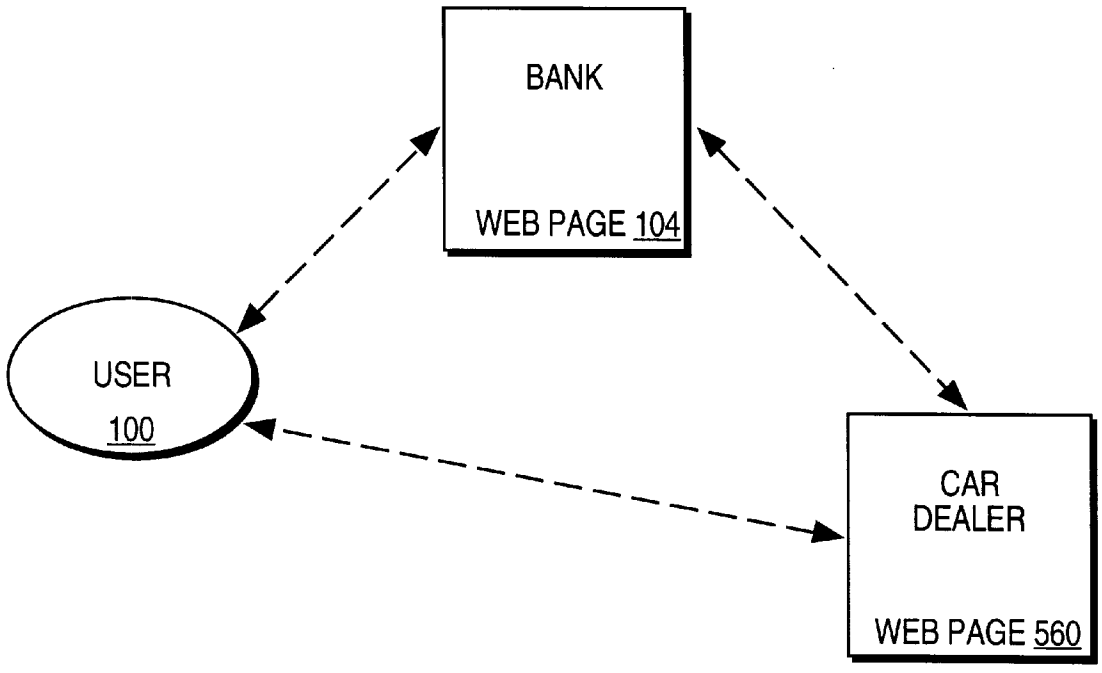


FIG. 5E

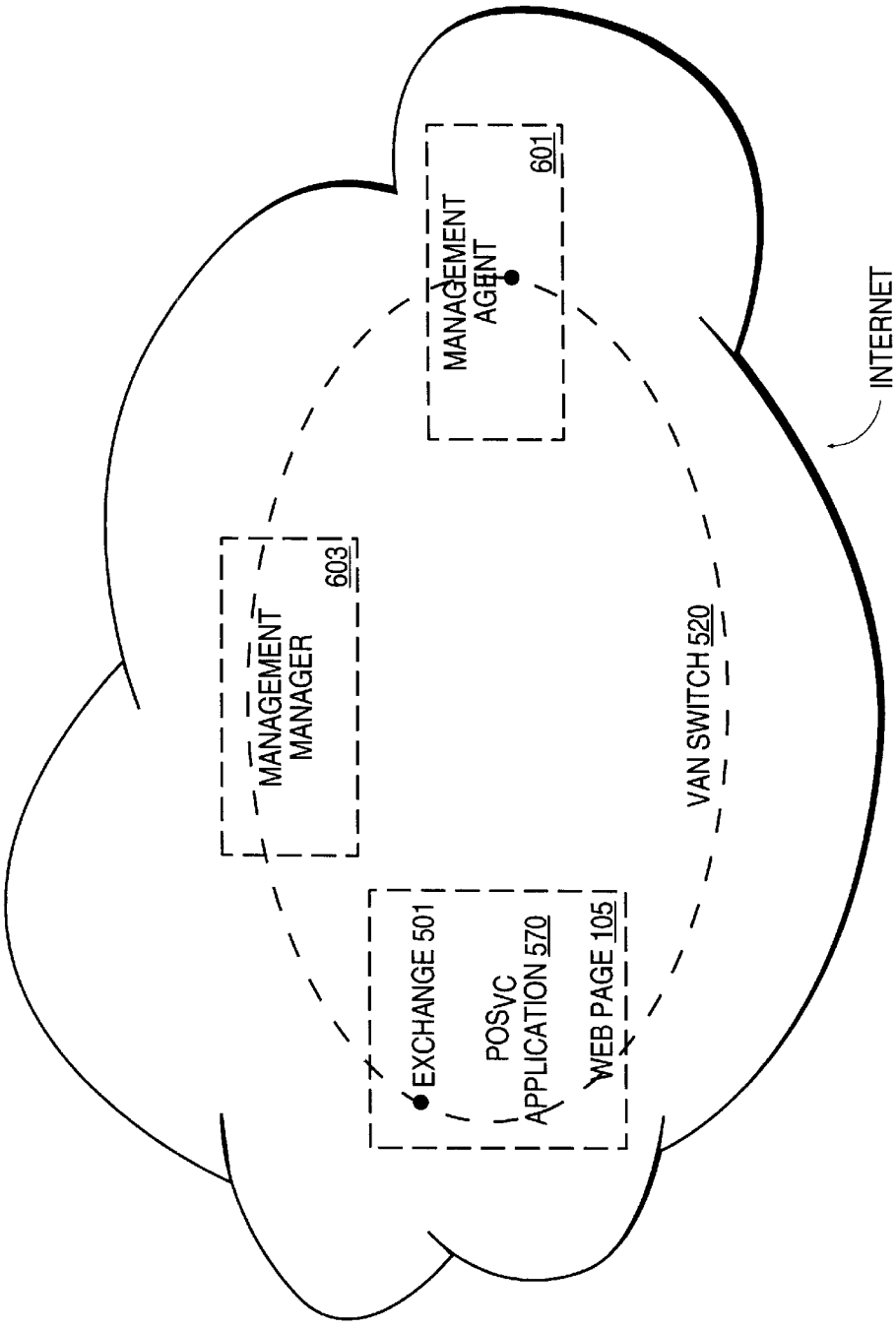

INTERNET
MANAGEMENT AGENT 601
MANAGEMENT MANAGER 603
VAN SWITCH 520
EXCHANGE 501
POSVC APPLICATION 570
WEB PAGE 105

FIG. 6A

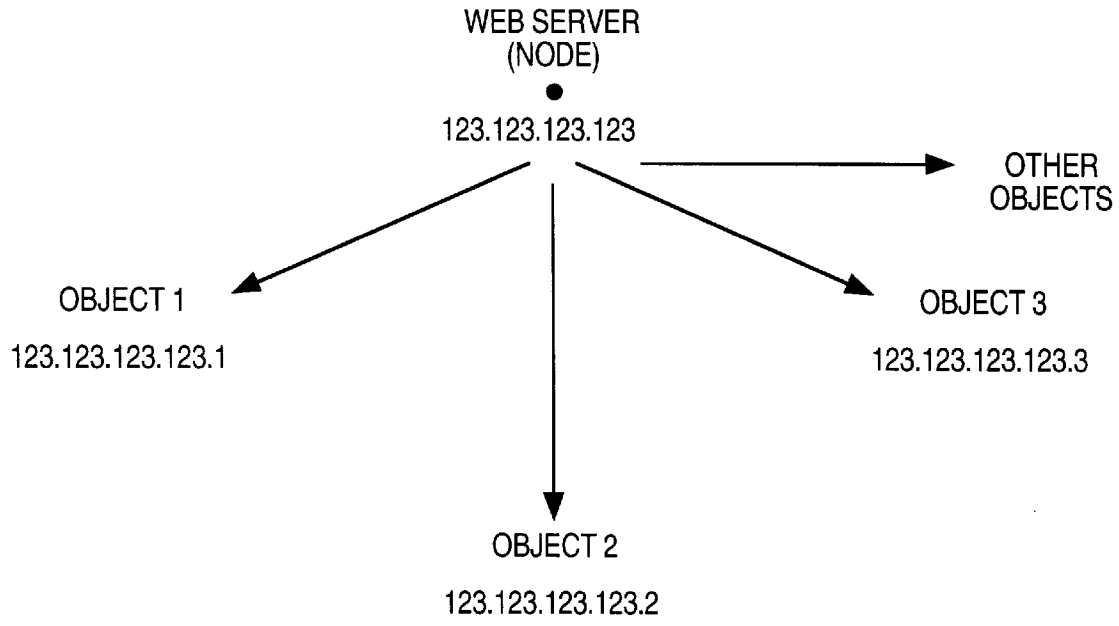

WEB SERVER
(NODE)
123.123.123.123
OTHER
OBJECTS
OBJECT 1
123.123.123.123.1
OBJECT 3
123.123.123.123.3
OBJECT 2
123.123.123.123.2

FIG. 6B

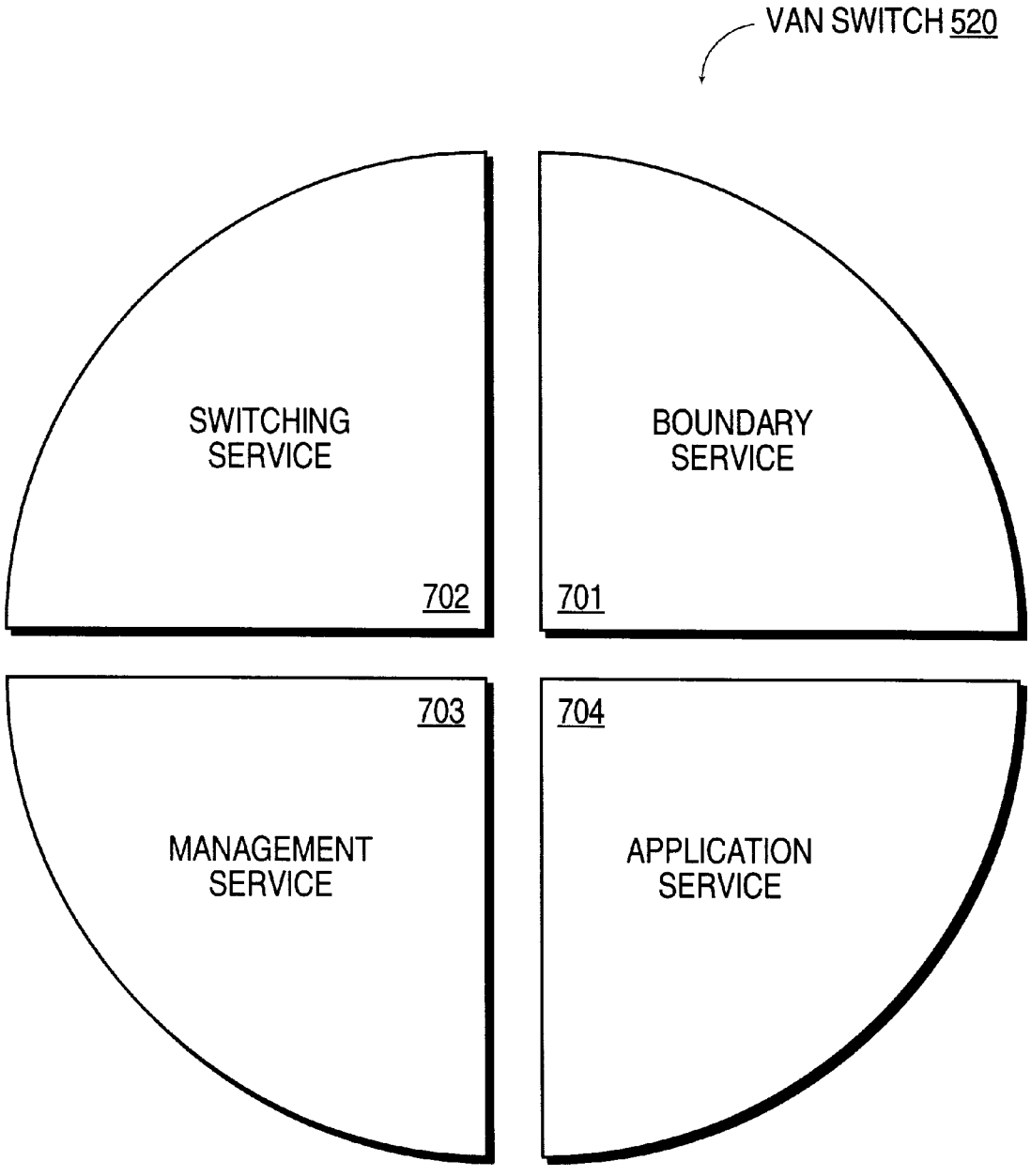

VAN SWITCH 520
SWITCHING SERVICE
702
BOUNDARY SERVICE
701
703
MANAGEMENT SERVICE
704
APPLICATION SERVICE

FIG. 7

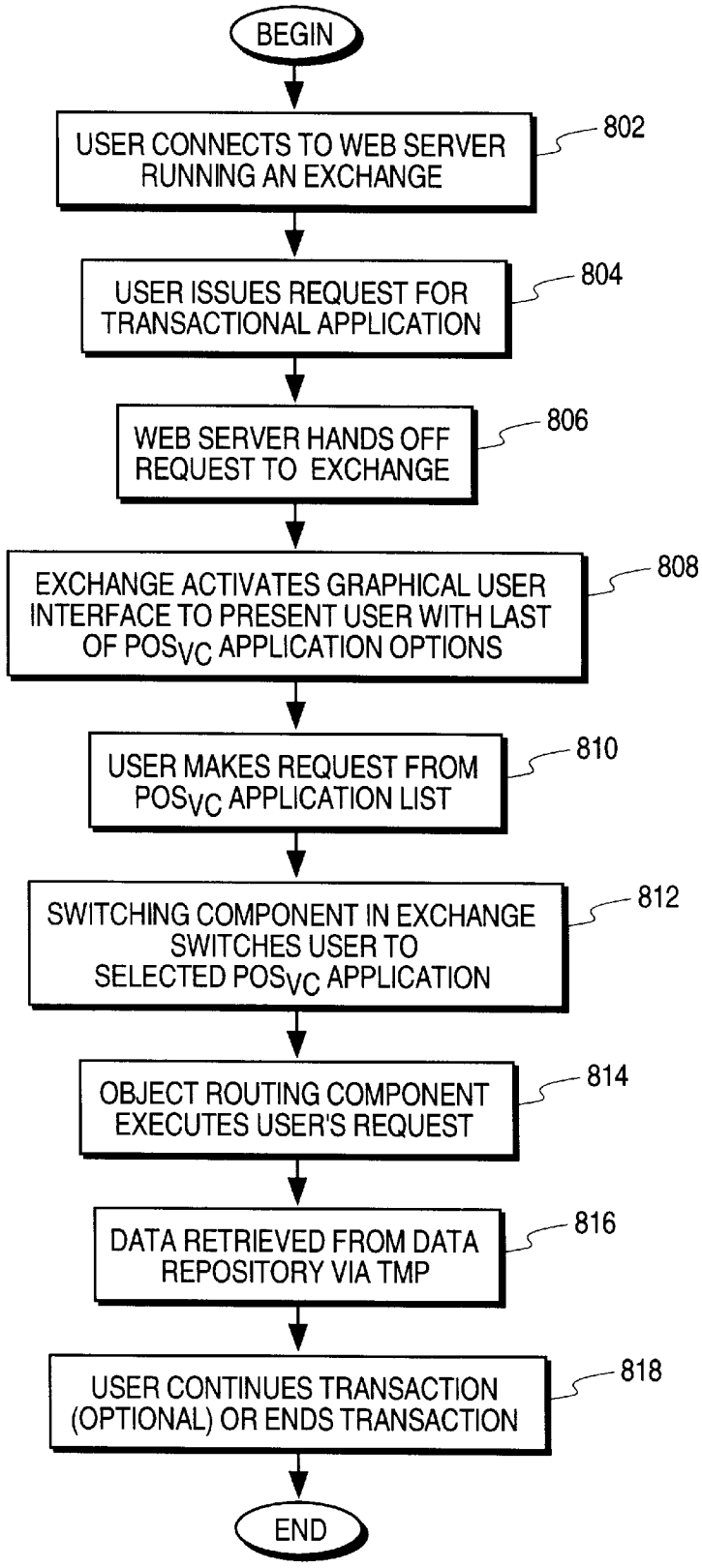

BEGIN
USER CONNECTS TO WEB SERVER RUNNING AN EXCHANGE
802
USER ISSUES REQUEST FOR TRANSACTIONAL APPLICATION
804
WEB SERVER HANDS OFF REQUEST TO EXCHANGE
806
EXCHANGE ACTIVATES GRAPHICAL USER INTERFACE TO PRESENT USER WITH LAST OF POSVC APPLICATION OPTIONS
808
USER MAKES REQUEST FROM POSVC APPLICATION LIST
810
SWITCHING COMPONENT IN EXCHANGE SWITCHES USER TO SELECTED POSVC APPLICATION
812
OBJECT ROUTING COMPONENT EXECUTES USER'S REQUEST
814
DATA RETRIEVED FROM DATA REPOSITORY VIA TMP
816
USER CONTINUES TRANSACTION (OPTIONAL) OR ENDS TRANSACTION
818
END

FIG. 8

VALUE-ADDED NETWORK SYSTEM FOR ENABLING REAL-TIME, BY-DIRECTIONAL TRANSACTIONS ON A NETWORK

RELATED APPLICATIONS

This is a divisional of application Ser. No. 08/700,726, filed Aug. 5, 1996, now U.S. Pat. No. 5,778,178.

FIELD OF THE INVENTION

The present invention relates to the area of Internet communications. Specifically, the present invention relates to a method and apparatus for configurable value-added network switching and object routing.

BACKGROUND OF THE INVENTION

With the Internet and the World Wide Web ("the Web") evolving rapidly as a viable consumer medium for electronic commerce, new on-line services are emerging to fill the needs of on-line users. An Internet user today can browse on the Web via the use of a Web browser. Web browsers are software interfaces that run on Web clients to allow access to Web servers via a simple user interface. A Web user's capabilities today from a Web browser are, however, extremely limited. The user can perform one-way, browse-only interactions. Additionally, the user has limited "deferred" transactional capabilities, namely electronic mail (e-mail) capabilities. E-mail capabilities are referred to as "deferred transactions" because the consumer's request is not processed until the e-mail is received, read, and the person or system reading the e-mail executes the transaction. This transaction is thus not performed in real-time.

FIG. **1A** illustrates typical user interactions on the Web today. User **100** sends out a request from Web browser **102** in the form of a universal resource locator (URL) **101** in the following manner: http://www.car.com. URL **101** is processed by Web browser **102** that determines the URL corresponds to car dealer Web page **105**, on car dealer Web server **104**. Web browser **102** then establishes browse link **103** to car dealer Web page **105**. User **100** can browse Web page **105** and select "hot links" to jump to other locations in Web page **105**, or to move to other Web pages on the Web. This interaction is typically a browse-only interaction. Under limited circumstances, the user may be able to fill out a form on car dealer Web page **105**, and e-mail the form to car dealer Web server **104**. This interaction is still strictly a one-way browse mode communications link, with the e-mail providing limited, deferred transactional capabilities.

Under limited circumstances, a user may have access to two-way services on the Web via Common Gateway Interface (CGI) applications. CGI is a standard interface for running external programs on a Web server. It allows Web servers to create documents dynamically when the server receives a request from the Web browser. When the Web server receives a request for a document, the Web server dynamically executes the appropriate CGI script and transmits the output of the execution back to the requesting Web browser. This interaction can thus be termed a "two-way" transaction. It is a severely limited transaction, however, because each CGI application is customized for a particular type of application or service.

For example, as illustrated in FIG. **1B**, user **100** may access bank **150**'s Web server and attempt to perform transactions on checking account **152** and to make a payment on loan account **154**. In order for user **100** to access checking account **152** and loan account **154** on the Web, CGI

application scripts must be created for each account, as illustrated in FIG. **1B**. The bank thus has to create individual scripts for each of its services to offer users access to these services. User **100** can then interact in a limited fashion with these individual applications. Creating and managing individual CGI scripts for each service is not a viable solution for merchants with a large number of services.

As the Web expands and electronic commerce becomes more desirable, the need increases for robust, real-time, bi-directional transactional capabilities on the Web. A true real-time, bi-directional transaction would allow a user to connect to a variety of services on the Web, and perform real-time transactions on those services. For example, although user **100** can browse car dealer Web page **105** today, the user cannot purchase the car, negotiate a car loan or perform other types of real-time, two-way transactions that he can perform with a live salesperson at the car dealership. Ideally, user **100** in FIG. **1A** would be able to access car dealer Web page **105**, select specific transactions that he desires to perform, such as purchase a car, and perform the purchase in real-time, with two-way interaction capabilities. CGI applications provide user **100** with a limited ability for two-way interaction with car dealer Web page **105**, but due to the lack of interaction and management between the car dealer and the bank, he will not be able to obtain a loan and complete the purchase of the car via a CGI application. The ability to complete robust real-time, two-way transactions is thus not truly available on the Web today.

SUMMARY OF THE INVENTION

It is therefore an object of the present invention to provide a method and apparatus for providing real-time, two-way transactional capabilities on the Web. Specifically, one embodiment of the present invention discloses a configurable value-added network switch for enabling real-time transactions on the World Wide Web. The configurable value added network switch comprises means for switching to a transactional application in response to a user specification from a World Wide Web application, means for transmitting a transaction request from the transactional application, and means for processing the transaction request.

According to another aspect of the present invention, a method and apparatus for enabling object routing on the World Wide Web is disclosed. The method for enabling object routing comprises the steps of creating a virtual information store containing information entries and attributes, associating each of the information entries and the attributes with an object identity, and assigning a unique network address to each of the object identities.

Other objects, features and advantages of the present invention will be apparent from the accompanying drawings and from the detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

The features and advantages of the present invention will be apparent from the accompanying drawings and from the detailed description of the present invention as set forth below.

FIG. **1A** is an illustration of a current user's browse capabilities on the Web via a Web browser.

FIG. **1B** is an illustration of a current user's capabilities to perform limited transactions on the Web via CGI applications.

FIG. **2** illustrates a typical computer system on which the present invention may be utilized.

FIG. **3** illustrates the Open Systems Interconnection (OSI) Model.

FIG. **4**A illustrates conceptually the user value chain as it exists today.

FIG. **4**B illustrates one embodiment of the present invention.

FIG. **5**A illustrates a user accessing a Web server including one embodiment of the present invention.

FIG. **5**B illustrates the exchange component according to one embodiment of the present invention.

FIG. **5**C illustrates an example of a point-of-service (POSvc) application list.

FIG. **5**D illustrates a user selecting a bank POSvc application from the POSvc application list.

FIG. **5**E illustrates a three-way transaction according to one embodiment of the present invention.

FIG. **6**A illustrates a value-added network (VAN) switch.

FIG. **6**B illustrates the hierarchical addressing tree structure of the networked objects in DOLSIBs.

FIG. **7** illustrates conceptually the layered architecture of a VAN switch.

FIG. **8** is a flow diagram illustrating one embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention relates to a method and apparatus for configurable value-added network switching and object routing and management. "Web browser" as used in the context of the present specification includes conventional Web browsers such as NCSA Mosaic™ from NCSA and Netscape Mosaic™ from Netscape™. The present invention is independent of the Web browser being utilized and the user can use any Web browser, without modifications to the Web browser. In the following detailed description, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It will be apparent to one of ordinary skill in the art, however, that these specific details need not be used to practice the present invention. In other instances, well-known structures, interfaces and processes have not been shown in detail in order not to unnecessarily obscure the present invention.

FIG. **2** illustrates a typical computer system **200** in which the present invention operates. The preferred embodiment of the present invention is implemented on an IBM™ Personal Computer manufactured by IBM Corporation of Armonk, N.Y. Alternate embodiments may be implemented on a Macintosh™ computer manufactured by Apple™ Computer, Incorporated of Cupertino, Calif. It will be apparent to those of ordinary skill in the art that other alternative computer system architectures may also be employed.

In general, such computer systems as illustrated by FIG. **2** comprise a bus **201** for communicating information, a processor **202** coupled with the bus **201** for processing information, main memory **203** coupled with the bus **201** for storing information and instructions for the processor **202**, a read-only memory **204** coupled with the bus **201** for storing static information and instructions for the processor **202**, a display device **205** coupled with the bus **201** for displaying information for a computer user, an input device **206** coupled with the bus **201** for communicating information and command selections to the processor **202**, and a mass storage device **207**, such as a magnetic disk and associated disk drive, coupled with the bus **201** for storing information

and instructions. A data storage medium **208** containing digital information is configured to operate with mass storage device **207** to allow processor **202** access to the digital information on data storage medium **208** via bus **201**.

Processor **202** may be any of a wide variety of general purpose processors or microprocessors such as the Pentium™ microprocessor manufactured by Intel™ Corporation or the Motorola™ 68040 or Power PC™ brand microprocessor manufactured by manufactured by Motorola™ Corporation. It will be apparent to those of ordinary skill in the art, however, that other varieties of processors may also be used in a particular computer system. Display device **205** may be a liquid crystal device, cathode ray tube (CRT), or other suitable display device. Mass storage device **207** may be a conventional hard disk drive, floppy disk drive, CD-ROM drive, or other magnetic or optical data storage device for reading and writing information stored on a hard disk, a floppy disk, a CD-ROM a magnetic tape, or other magnetic or optical data storage medium. Data storage medium **208** may be a hard disk, a floppy disk, a CD-ROM, a magnetic tape, or other magnetic or optical data storage medium.

In general, processor **202** retrieves processing instructions and data from a data storage medium **208** using mass storage device **207** and downloads this information into random access memory **203** for execution. Processor **202**, then executes an instruction stream from random access memory **203** or read-only memory **204**. Command selections and information input at input device **206** are used to direct the flow of instructions executed by processor **202**. Equivalent input device **206** may also be a pointing device such as a conventional mouse or trackball device. The results of this processing execution are then displayed on display device **205**.

The preferred embodiment of the present invention is implemented as a software module, which may be executed on a computer system such as computer system **200** in a conventional manner. Using well known techniques, the application software of the preferred embodiment is stored on data storage medium **208** and subsequently loaded into and executed within computer system **200**. Once initiated, the software of the preferred embodiment operates in the manner described below.

FIG. **3** illustrates the Open Systems Interconnection (OSI) reference model. OSI Model 300 is an international standard that provides a common basis for the coordination of standards development, for the purpose of systems interconnection. The present invention is implemented to function as a routing switch within the "application layer" of the OSI model. The model defines seven layers, with each layer communicating with its peer layer in another node through the use of a protocol. Physical layer **301** is the lowest layer, with responsibility to transmit unstructured bits across a link. Data link layer **302** is the next layer above physical layer **301**. Data link layer **302** transmits chunks across the link and deals with problems like checksumming to detect data corruption, orderly coordination of the use of shared media and addressing when multiple systems are reachable. Network bridges operate within data link layer **302**.

Network layer **303** enables any pair of systems in the network to communicate with each other. Network layer **303** contains hardware units such as routers, that handle routing, packet fragmentation and reassembly of packets. Transport layer **304** establishes a reliable communication stream between a pair of systems, dealing with errors such as lost packets, duplicate packets, packet reordering and fragmen-

tation. Session layer **305** offers services above the simple communication stream provided by transport layer **304**. These services include dialog control and chaining. Presentation layer **306** provides a means by which OSI compliant applications can agree on representations for data. Finally, application layer **307** includes services such as file transfer, access and management services (FTAM), electronic mail and virtual terminal (VT) services. Application layer **307** provides a means for application programs to access the OSI environment. As described above, the present invention is implemented to function as a routing switch in application layer **307**. Application layer routing creates an open channel for the management, and the selective flow of data from remote databases on a network.

A. Overview

FIG. **4**A illustrates conceptually the user value chain as it exists today. The user value chain in FIG. **4**A depicts the types of transactions that are performed today, and the channels through which the transactions are performed. A "transaction" for the purposes of the present invention includes any type of commercial or other type of interaction that a user may want to perform. Examples of transactions include a deposit into a bank account, a request for a loan from a bank, a purchase of a car from a car dealership or a purchase of a car with financing from a bank. A large variety of other transactions are also possible.

A typical user transaction today may involve user **100** walking into a bank or driving up to a teller machine, and interacting with a live bank teller, or automated teller machine (ATM) software applications. Alternatively, user **100** can perform the same transaction by using a personal computer (PC), activating application software on his PC to access his bank account, and dialing into the bank via a modem line. If user **100** is a Web user, however, there is no current mechanism for performing a robust, real-time transaction with the bank, as illustrated in FIG. **4**A. CGI scripts provide only limited two-way capabilities, as described above. Thus, due to this lack of a robust mechanism by which real-time Web transactions can be performed, the bank is unable to be a true "Web merchant," namely a merchant capable of providing complete transactional services on the Web.

According to one embodiment of the present invention, as illustrated in FIG. **4**B, each merchant that desires to be a Web merchant can provide real-time transactional capabilities to users who desire to access the merchants' services via the Web. This embodiment includes a service network running on top of a facilities network, namely the Internet, the Web or e-mail networks. For the purposes of this application, users are described as utilizing PC's to access the Web via Web server "switching" sites. (Switching is described in more detail below). Users may also utilize other personal devices such as network computers or cellular devices to access the merchants' services via appropriate switching sites. These switching sites include non-Web network computer sites and cellular provider sites. Five components interact to provide this service network functionality, namely an exchange, an operator agent, a management agent, a management manager and a graphical user interface. All five components are described in more detail below.

As illustrated in FIG. **5**A, user **100** accesses Web server **104**. Having accessed Web server **104**, user **100** can decide that he desires to perform real-time transactions. When Web server **104** receives user **100**'s indication that he desires to perform real-time transactions, the request is handed over to an exchange component. Thus, from Web page **105**, for example, user **100** can select button **500**, entitled "Transactions" and Web server **104** hands user **100**'s request over to the exchange component. The button and the title can be replaced by any mechanism that can instruct a Web server to hand over the consumer's request to the exchange component.

FIG. **5**B illustrates exchange **501**. Exchange **501** comprises Web page **505** and point-of-service (POSvc) applications **510**. Exchange **501** also conceptually includes a switching component and an object routing component (described in more detail below). POSvc applications **510** are transactional applications, namely applications that are designed to incorporate and take advantage of the capabilities provided by the present invention. Although exchange **501** is depicted as residing on Web server **104**, the exchange can also reside on a separate computer system that resides on the Internet and has an Internet address. Exchange **501** may also include operator agent **503** that interacts with a management manager (described in more detail below). Exchange **501** creates and allows for the management (or distributed control) of a service network, operating within the boundaries of an IP-based facilities network. Thus, exchange **501** and a management agent component, described in more detail below, under the headings "VAN Switch and Object Routing," together perform the switching, object routing, application and service management functions according to one embodiment of the present invention.

Exchange **501** processes the consumer's request and displays an exchange Web page **505** that includes a list of POSvc applications **510** accessible by exchange **501**. A POSvc application is an application that can execute the type of transaction that the user may be interested in performing. The POSvc list is displayed via the graphical user interface component. One embodiment of the present invention supports HyperText Markup Language as the graphical user interface component. Virtual Reality Markup Language and Java™ are also supported by this embodiment. A variety of other graphical user interface standards can also be utilized to implement the graphical user interface.

An example of a POSvc application list is illustrated in FIG. **5**C. User **100** can thus select from POSvc applications Bank **510(1)**, Car Dealer **510(2)** or Pizzeria **510(3)**. Numerous other POSvc applications can also be included in this selection. If user **100** desires to perform a number of banking transactions, and selects the Bank application, a Bank POSvc application will be activated and presented to user **100**, as illustrated in FIG. **5**D. For the purposes of illustration, exchange **501** in FIG. **5**D is shown as running on a different computer system (Web server **104**) from the computer systems of the Web merchants running POSvc applications (computer system **200**). Exchange **501** may, however, also be on the same computer system as one or more of the computer systems of the Web merchants.

Once Bank POSvc application **510** has been activated, user **100** will be able to connect to Bank services and utilize the application to perform banking transactions, thus accessing data from a host or data repository **575** in the Bank "Back Office." The Bank Back Office comprises legacy databases and other data repositories that are utilized by the Bank to store its data. This connection between user **100** and Bank services is managed by exchange **501**. As illustrated in FIG. **5**D, once the connection is made between Bank POSvc application **510(1)**, for example, and Bank services, an operator agent on Web server **104** may be activated to ensure the availability of distributed functions and capabilities.

Each Web merchant may choose the types of services that it would like to offer its clients. In this example, if Bank

decided to include in their POSvc application access to checking and savings accounts, user **100** will be able to perform real-time transactions against his checking and savings accounts. Thus, if user **100** moves $500 from his checking account into his savings account, the transaction will be performed in real-time, in the same manner the transaction would have been performed by a live teller at the bank or an ATM machine. Therefore, unlike his prior access to his account, user **100** now has the capability to do more than browse his bank account. The ability to perform these types of robust, real-time transactions from a Web client is a significant aspect of the present invention.

Bank can also decide to provide other types of services in POSvc application **510(1)**. For example, Bank may agree with Car dealership to allow Bank customers to purchase a car from that dealer, request a car loan from Bank, and have the entire transaction performed on the Web, as illustrated in FIG. **5**E. In this instance, the transactions are not merely two-way, between the user and Bank, but three-way, amongst the consumer, Bank and Car dealership. According to one aspect of the present invention, this three-way transaction can be expanded to n-way transactions, where n represents a predetermined number of merchants or other service providers who have agreed to cooperate to provide services to users. The present invention therefore allows for "any-to-any" communication and transactions on the Web, thus facilitating a large, flexible variety of robust, real-time transactions on the Web.

Finally, Bank may also decide to provide intra-merchant or intra-bank services, together with the inter-merchant services described above. For example, if Bank creates a POSvc application for use by the Bank Payroll department, Bank may provide its own employees with a means for submitting timecards for payroll processing by the Bank's Human Resources (HR) Department. An employee selects the Bank HR POSvc application, and submits his timecard. The employee's timecard is processed by accessing the employee's payroll information, stored in the Bank's Back Office. The transaction is thus processed in real-time, and the employee receives his paycheck immediately.

B. Van Switching and Object Routing

As described above, exchange **501** and management agent **601**, illustrated in FIG. **6**A, together constitute a value-added network (VAN) switch. These two elements may take on different roles as necessary, including peer-to-peer, client-server or master-slave roles. Management manager **603** is illustrated as residing on a separate computer system on the Internet. Management manager **603** can, however, also reside on the same machine as exchange **501**. Management manager **603** interacts with the operator agent **503** residing on exchange **501**.

VAN switch **520** provides multi-protocol object routing, depending upon the specific VAN services chosen. This multi-protocol object routing is provided via a proprietary protocol, TransWeb™ Management Protocol (TMP). TMP incorporates the same security features as the traditional Simple Network Management Protocol, SNMP. It also allows for the integration of other traditional security mechanisms, including RSA security mechanisms.

One embodiment of the present invention utilizes TMP and distributed on-line service information bases (DOLSIBs) to perform object routing. Alternatively, TMP can incorporate s-HTTP, Java™, the WinSock API or ORB with DOLSIBs to perform object routing. DOLSIBs are virtual information stores optimized for networking. All information entries and attributes in a DOLSIB virtual information store are associated with a networked object identity. The networked object identity identifies the information entries and attributes in the DOLSIB as individual networked objects, and each networked object is assigned an Internet address. The Internet address is assigned based on the IP address of the node at which the networked object resides.

For example, in FIG. **5**A, Web server **104** is a node on the Internet, with an IP address. All networked object associated with Web server **104** will therefore be assigned an Internet address based on the Web server **104**'s IP address. These networked objects thus "branch" from the node, creating a hierarchical tree structure. The Internet address for each networked object in the tree essentially establishes the individual object as an "IP-reachable" or accessible node on the Internet. TMP utilizes this Internet address to uniquely identify and access the object from the DOLSIB. FIG. **6**B illustrates an example of this hierarchical addressing tree structure.

Each object in the DOLSIB has a name, a syntax and an encoding. The name is an administratively assigned object ID specifying an object type. The object type together with the object instance serves to uniquely identify a specific instantiation of the object. For example, if object **610** is information about models of cars, then one instance of that object would provide user **100** with information about a specific model of the car while another instance would provide information about a different model of the car. The syntax of an object type defines the abstract data structure corresponding to that object type. Encoding of objects defines how the object is represented by the object type syntax while being transmitted over the network.

C. Management and Administration

As described above, exchange **501** and management agent **601** together constitute a VAN switch. FIG. **7** illustrates conceptually the layered architecture of VAN switch **520**. Specifically, boundary service **701** provides the interfaces between VAN switch **520**, the Internet and the Web, and multi-media end user devices such as PCs, televisions or telephones. Boundary service **701** also provides the interface to the on-line service provider. A user can connect to a local application, namely one accessible via a local VAN switch, or be routed or "switched" to an application accessible via a remote VAN switch.

Switching service **702** is an OSI application layer switch. Switching service **702** thus represents the core of the VAN switch. It performs a number of tasks including the routing of user connections to remote VAN switches, described in the paragraph above, multiplexing and prioritization of requests, and flow control. Switching service **702** also facilitates open systems' connectivity with both the Internet (a public switched network) and private networks including back office networks, such as banking networks. Interconnected application layer switches form the application network backbone. These switches are one significant aspect of the present invention.

Management service **703** contains tools such as Information Management Services (IMS) and application Network Management Services (NMS). These tools are used by the end users to manage network resources, including VAN switches. Management service **703** also provides applications that perform Operations, Administration, Maintenance & Provisioning (OAM&P) functions. These OAM&P functions include security management, fault management, configuration management, performance management and billing management. Providing OAM&P functions for applications in this manner is another significant aspect of the present invention.

Finally, application service **704** contains application programs that deliver customer services. Application service **704** includes POSvc applications such as Bank POSvc described above, and illustrated in FIG. **6**A. Other examples of VAN services include multi-media messaging, archival/retrieval management, directory services, data staging, conferencing, financial services, home banking, risk management and a variety of other vertical services. Each VAN service is designed to meet a particular set of requirements related to performance, reliability, maintenance and ability to handle expected traffic volume. Depending on the type of service, the characteristics of the network elements will differ. VAN service **704** provides a number of functions including communications services for both management and end users of the network and control for the user over the user's environment.

FIG. **8** is a flow diagram illustrating one embodiment of the present invention. A user connects to a Web server running an exchange component in step **802**. In step **804**, the user issues a request for a transactional application, and the web server hands off the request to an exchange in step **806**. The exchange activates a graphical user interface to present user with a list of POSvc application options in step **808**. In step **810**, the user makes a selection from the POSvc application list. In step **812**, the switching component in the exchange switches the user to the selected POSvc application, and in step **814**, the object routing component executes the user's request. Data is retrieved from the appropriate data repository via TMP in step **816**, and finally, the user may optionally continue the transaction in step **818** or end the transaction.

Thus, a configurable value-added network switching and object routing method and apparatus is disclosed. These specific arrangements and methods described herein are merely illustrative of the principles of the present invention. Numerous modifications in form and detail may be made by those of ordinary skill in the art without departing from the scope of the present invention. Although this invention has been shown in relation to a particular preferred embodiment, it should not be considered so limited. Rather, the present invention is limited only by the scope of the appended claims.

We claim:

1. A configurable value-added network switch for enabling real-time transactions on a network, said configurable value-added network switch compromising:

means for switching to a transactional application in response to a user specification from a network application, said transactional application providing a user with a plurality of transactional services managed by at least one value-added network service provider, said value-added network service provider keeping a transaction flow captive, said plurality of transactional services being performed interactively and in real time;

means for transmitting a transaction request from said transactional application; and

means for processing said transaction request.

2. The configurable value-added network switch as claimed in claim **1** wherein said means for switching to a transactional application further comprises:

means for receiving said user specification;

means for enabling a switch to said transactional application; and

means for activating said transactional application.

3. The configurable value-added network switch as claimed in claim **2** wherein said means for activating said transactional application further includes means for creating a transaction link between said network application and said transactional application.

4. The configurable value-added network switch as claimed in claim **2** wherein said means for receiving said user specification further comprises:

means for presenting said user with a list of transactional applications, each of said transactional application being associated with a particular value-added network service provider; and

means for submitting said user specification according to a user's selection of said transactional application from said list of transactional applications.

5. The configurable value-added network switch as claimed in claim **1** wherein said means for processing said transaction request further comprises means for coupling said means for transmitting to a host means.

6. The configurable value-added network switch as claimed in claim **5** wherein said host means contains data corresponding to said transaction request.

7. The configurable value-added network switch as claimed in claim **1** wherein said value-added network service providers cooperating to provide said plurality of transactional services to users.

8. The configurable value-added network switch as claimed in claim **1** further comprising means for controlling and prioritizing multiple transaction requests initiated by various users.

9. The configurable value-added network switch as claimed in claim **1** further comprising means for providing security management, fault management, configuration management, performance management and billing management.

10. A method for configuring a value-added network switch for enabling real-time transactions on a network, said method for configuring said value-added network switch compromising the steps of:

switching to a transactional application in response to a user specification from a network application, said transactional application providing a user with a plurality of transactional services managed by at least one value-added network service provider, said value-added network service provider keeping a transaction flow captive, said plurality of transactional services being performed interactively and in real time;

transmitting a transaction request from said transactional application; and processing said transaction request.

11. The method for configuring said value-added network switch as claimed in claim **10** wherein said step of switching to a transactional application further comprises the steps of:

receiving said user specification;

enabling a switch to said transactional application; and

activating said transactional application.

12. The method for configuring said value-added network switch as claimed in claim **11** wherein said step of activating said transactional application further includes a step of creating a transaction link between said network application and said transactional application.

13. The method for configuring said value-added network switch as claimed in claim **11** further comprising the steps of:

controlling security;

performing fault management;

providing configuration management;

managing performance; and

enabling billing management.

14. The method for configuring said value-added network switch as claimed in claim **11** wherein said step of receiving said user specification further comprises steps of:

presenting said user with a list of transactional applications, each of said transactional application being associated with a particular Internet service provider; and

submitting said user specification according to a user's selection of said transactional application from said list of transactional applications.

15. The method for configuring said value-added network switch as claimed in claim **10** wherein said step of processing said transaction request further comprises the step of transmitting said transaction request to a host means.

16. The method for configuring said value-added network switch as claimed in claim **15** wherein said host means contains data corresponding to said transaction request.

17. The method for configuring said value-added network switch as claimed in claim **10** wherein said value-added network service providers cooperate to provide said plurality of transactional services to said user.

18. The method for configuring said value-added network switch as claimed in claim **10** further comprising the step of controlling and prioritizing multiple transaction requests initiated by various users.

19. A method for enabling object routing on a network, said method for enabling object routing comprising the steps of:

associating an object identity with information entries and attributes, wherein the object identity represents a networked object;

storing said information entries and said attributes in a virtual information store; and

assigning a unique network address to said object identity.

20. The method in claim **19** wherein said step of associating said object identity with said information entries and said attributes in said virtual information store further includes the step of associating a name, a syntax and an encoding for said object identity.

21. The method in claim **20** wherein said name associated with said object identity specifies an object type.

22. The method in claim **21** wherein said object type and an object instance uniquely identify an instantiation of said object type.

23. The method in claim **22** wherein said syntax defines a data structure for said object type.

24. The method in claim **19** further comprising the step of utilizing said unique network address to identify and route said object identity on the network.

25. The method in claim **19** further comprising the step of utilizing said unique network address to identify and route said object identity on the Internet.

26. The method in claim **19** further comprising the step of utilizing said unique network address of said object identity to perform Operations, Administration, Maintenance & Provisioning (OAM&P) functions.

27. An object router on a network, said object router comprising:

means for associating an object identity with information entries and attributes, wherein the object identity represents a networked object;

means for storing said information entries and said attributes in a virtual information store; and

means for assigning a unique network address to said object identity.

28. The object router in claim **27** wherein said means for associating said object identity with said information entries and said attributes in said virtual information store further includes means for associating a name, a syntax and an encoding for said object identity.

29. The object router in claim **28** wherein said name of said object identity specifies an object type.

30. The object router in claim **29** wherein said object type and an object instance uniquely identify an instantiation of said object type.

31. The object router in claim **30** wherein said syntax defines a data structure for said object type.

32. The object router in claim **27** further comprising means for utilizing said unique network address to identify and route said object identity on the network.

33. The object router in claim **27** further comprising means for utilizing said unique network address to identify and route said object identity on the Internet.

34. The object router in claim **27** further comprising the step of utilizing said unique network address of said object identity to perform Operations, Administration, Maintenance & Provisioning (OAM&P) functions.

35. A configurable value-added network system for enabling real-time transactions on a network, said configurable value-added network system comprising:

means for switching to a transactional application in response to a user specification from a network application, said transactional application providing a user with a plurality of transactional services managed by at least one value-added network service provider, said value-added network service provider keeping a transaction flow captive, said plurality of transactional services being performed interactively and in real time;

means for activating an agent to create a transaction link between said user application and said transactional application;

means for transmitting a transaction request from said transactional application; and

a host means for processing said transaction request and retrieving data corresponding to said transaction request.

* * * * *

Exhibit B

US008037158B2

(12) **United States Patent**
Arunachalam

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(45) **Date of Patent: Oct. 11, 2011**

(54) **MULTIMEDIA TRANSACTIONAL SERVICES**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 184 days.

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Related U.S. Application Data

(60) Continuation-in-part of application No. 09/792,323, filed on Feb. 23, 2001, now Pat. No. 7,340,506, which is a continuation-in-part of application No. 08/879,958, filed on Jun. 20, 1997, now Pat. No. 5,987,500, which is a division of application No. 08/700,726, filed on Aug. 5, 1996, now Pat. No. 5,778,178.

(60) Provisional application No. 60/006,634, filed on Nov. 13, 1995.

(51) **Int. Cl.**
G06F 13/00 (2006.01)

(52) **U.S. Cl.** **709/219**; 709/225; 709/229

(58) **Field of Classification Search** 709/217, 709/219, 223, 225, 227, 229, 250; 719/328, 719/329

See application file for complete search history.

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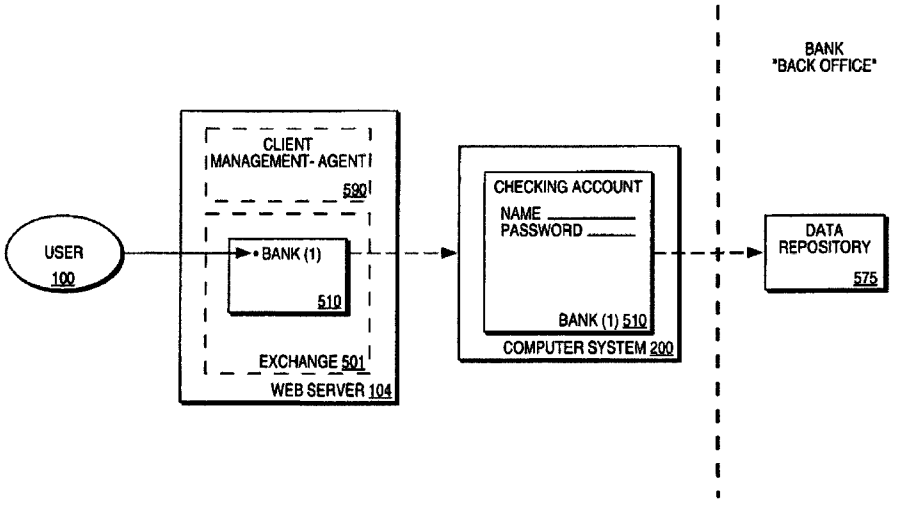
Primary Examiner — Viet Vu

(57) **ABSTRACT**

The present invention provides a method and apparatus for providing real-time, two-way transactional capabilities on the Web. Specifically, one embodiment of the present invention discloses a method for enabling object routing, the method comprising the steps of creating a virtual information store containing information entries and attributes associating each of the information entries and the attributes with an object identity, and assigning a unique network address to each of the object identities. A method is also disclosed for enabling service management of the value-added network service, to perform OAM&P functions on the services network.

11 Claims, 13 Drawing Sheets



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Plaintiff Webxchange Inc.'s Corrected Answering Brief in Opposition to Defendants' Motion to Bifurcate, and for Early Trial on, the Issue of Ineouitable Conduct /// Certificate of Service I, the undersigned, hereby certify that on May 13, 2009, I electronically filed the foregoing with the Clerk of the Court using CM/ECF, which will send notification of such filing(s) to the following: /// Certificate of Service I, the undersigned, hereby certify that on May 13, 2009, I electronically filed the foregoing with the Clerk of the Court using CM/ECF, which will send notification of such filing(s) to the following: /// Julia Heaney.

"Declaration of Eric 3. Stieglitz in Support Ofplaintiff Webxchange Inc.'S Answering Brief in Oppositionto Defendants' Motion to Bifurcate, and for Early Trial on,the Issue of Inequitable Conduct // Redacted—Public Version / signed Apr. 27, 2009Certificate of Servicei, the undersigned, hereby certify that on May 13, 2009, I electronically filed the foregoing with the Clerk of the Court using CM/ECF, which will send notification of such filing(s) to the following: (Two Parts)" Julia Heaney.

Case 1:08-cv-00131-JJF Document 142 Filed Jun. 1, 2009 p. 1 of 19 // Reply Brief in Support of Defendants' Motion to Bifurcate, and 11011 Early Trial on, the Issue of Inequitable Conduct /// Redacted Public Version /// Certificate of Service I hereby certify that on Jun. 1, 2009, I caused to be served by electronic mail the foregoing document and electronically filed the same with the Cleric of Court using CM/ECF which will send notification of such filing(s) to the following: Exhibits A-W to Redacted Reply Brief.

"Case 1:08-cv-00131-JJF Document 146 Filed Jun. 18, 2009 p. 1 of 5 // Motion for Leave to Amend Answer,Affirmative Defenses, and Counterclaims // Filed: Jun. 18, 2009".

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Open Market Enterprise Content Management and Delivery: Shopsite <URL:http://www.openmarket.com/cgi-bin/gx.cgi/AppLogic+FTContentServer?pagename=FutureTense/Apps/Xcelerate/Render&c=Artic..pp. 1-2 VVBX110OpenMarket Enterprise Content Management and Delivery: Transact <URL:http://www.openmarket.com/cgi-bin/gx. cgi/

AppLogic+FTContentServer?pagename=FutureTense/Apps/Xcelerate/Render&c=Artic..pp. 1-2 VVBX111Open Market.
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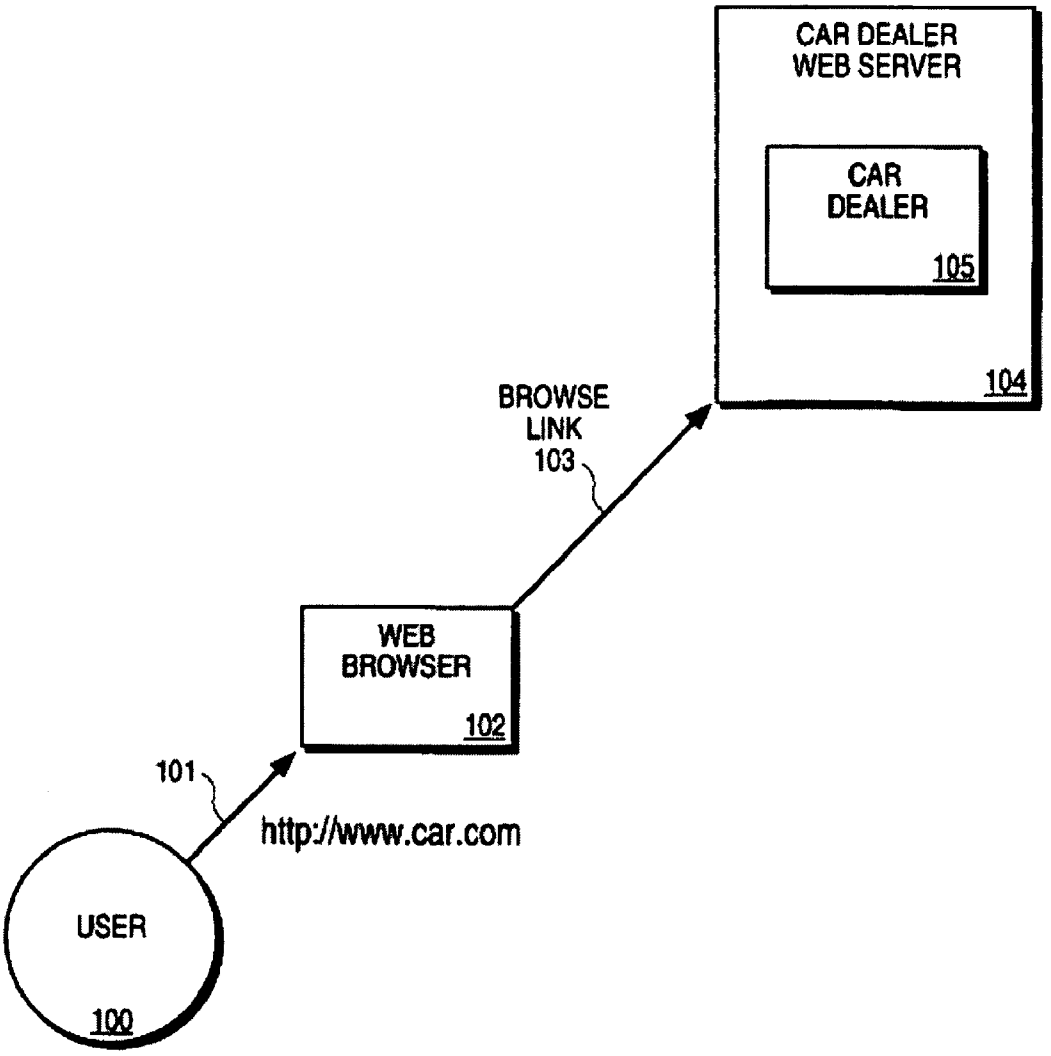

FIG. 1A (PRIOR ART)

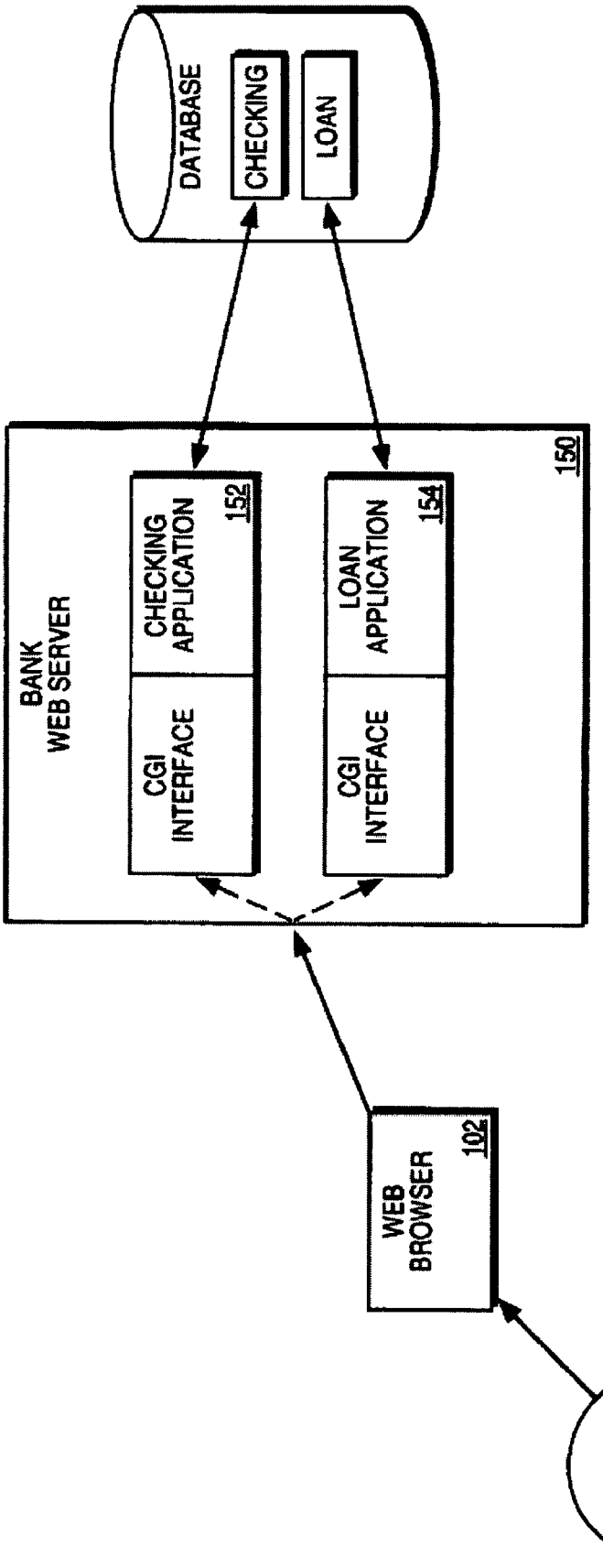

FIG. 1B (PRIOR ART)

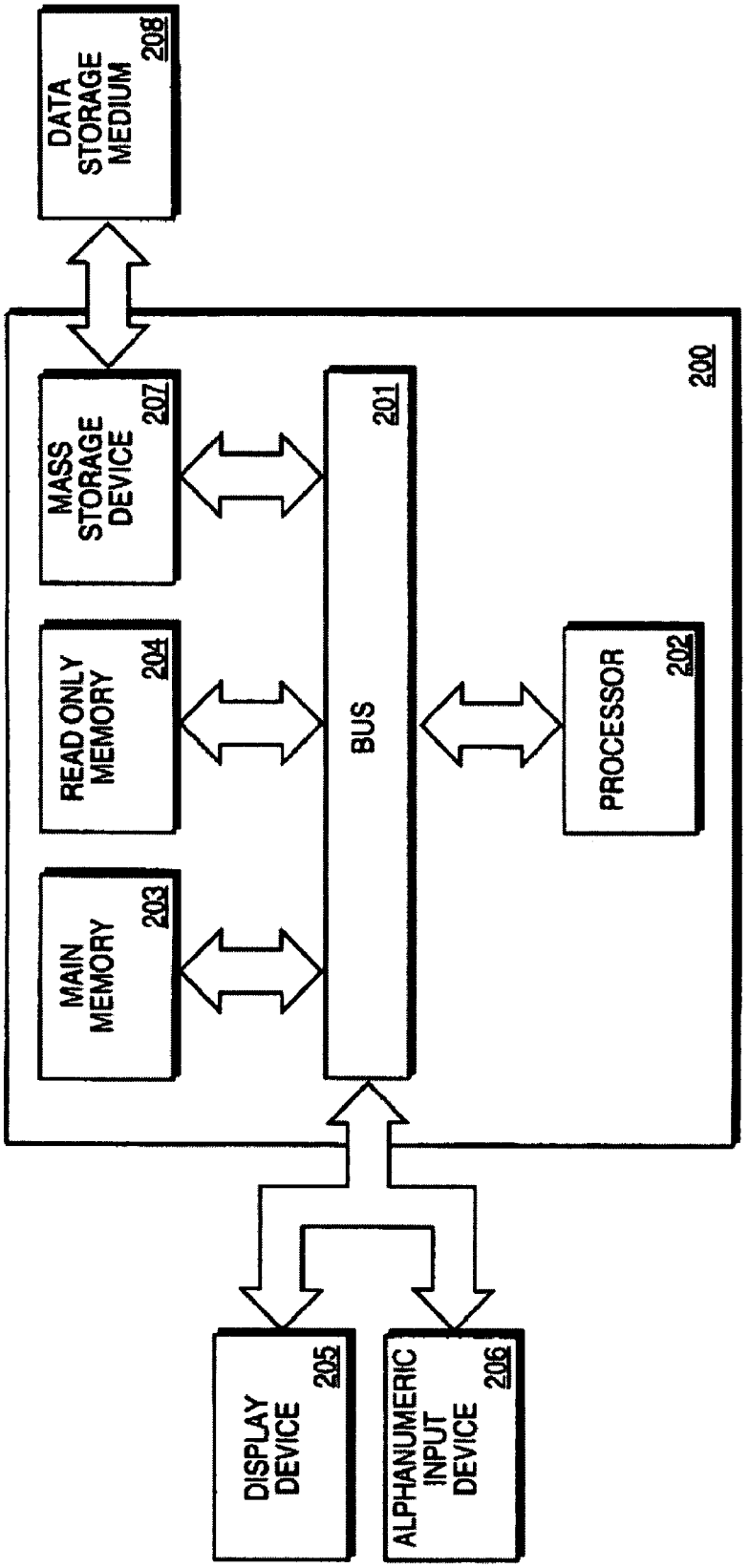
DATA STORAGE MEDIUM
208
200
MASS STORAGE DEVICE
207
BUS
201
READ ONLY MEMORY
204
PROCESSOR
202
MAIN MEMORY
203
DISPLAY DEVICE
205
ALPHANUMERIC INPUT DEVICE
206

FIG. 2

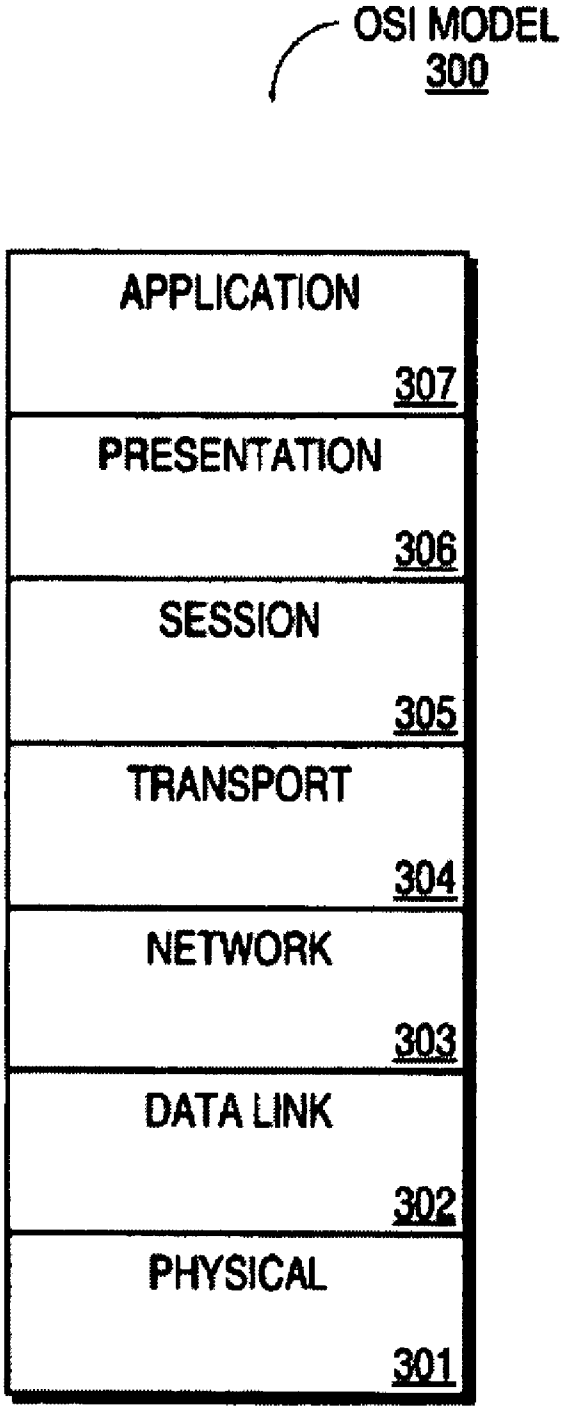
OSI MODEL
300
APPLICATION
307
PRESENTATION
306
SESSION
305
TRANSPORT
304
NETWORK
303
DATA LINK
302
PHYSICAL
301

FIG. 3

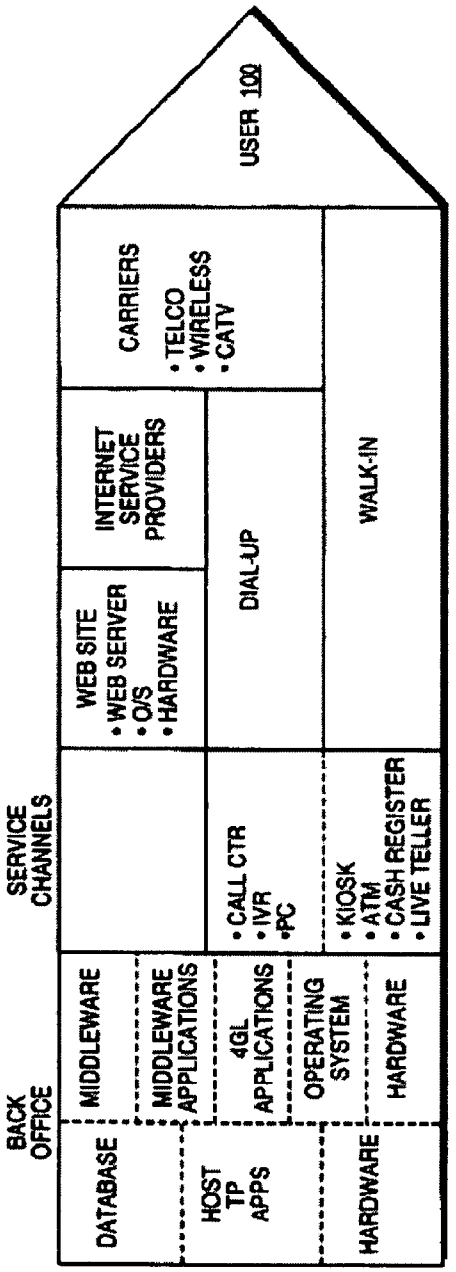
BACK OFFICE
SERVICE CHANNELS
USER 100
DATABASE
MIDDLEWARE
MIDDLEWARE APPLICATIONS
HOST TP APPS
4GL APPLICATIONS
OPERATING SYSTEM
HARDWARE
HARDWARE
WEB SITE
• WEB SERVER
• O/S
• HARDWARE
INTERNET SERVICE PROVIDERS
CARRIERS
• TELCO
• WIRELESS
• CATV
DIAL-UP
• CALL CTR
• IVR
• PC
WALK-IN
• KIOSK
• ATM
• CASH REGISTER
• LIVE TELLER

FIG. 4A

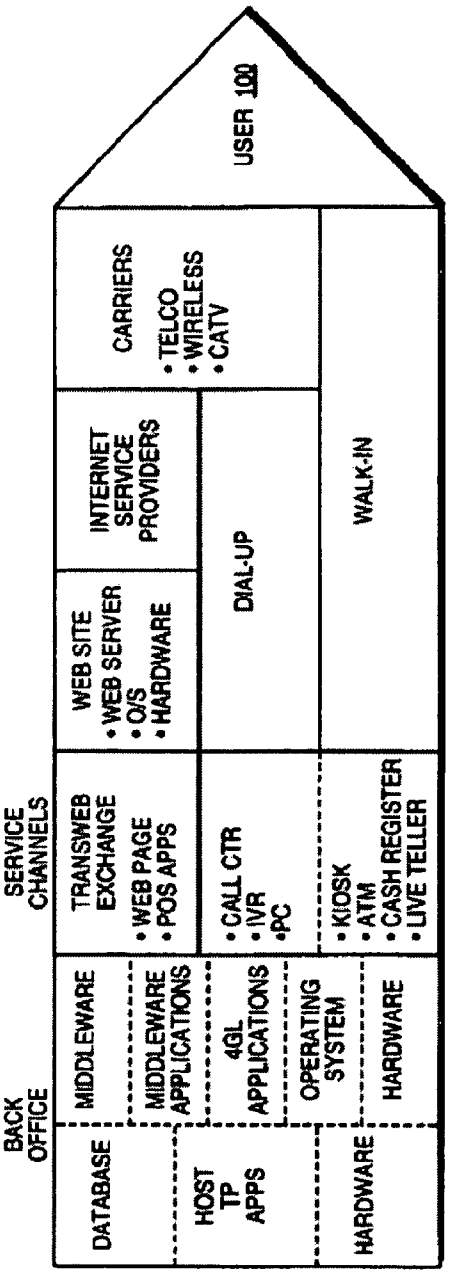
BACK OFFICE
SERVICE CHANNELS
USER 100
DATABASE
MIDDLEWARE
MIDDLEWARE APPLICATIONS
HOST TP APPS
4GL APPLICATIONS
OPERATING SYSTEM
HARDWARE
HARDWARE
TRANSWEB EXCHANGE
• WEB PAGE
• POS APPS
WEB SITE
• WEB SERVER
• O/S
• HARDWARE
INTERNET SERVICE PROVIDERS
CARRIERS
• TELCO
• WIRELESS
• CATV
DIAL-UP
• CALL CTR
• IVR
• PC
WALK-IN
• KIOSK
• ATM
• CASH REGISTER
• LIVE TELLER

FIG. 4B

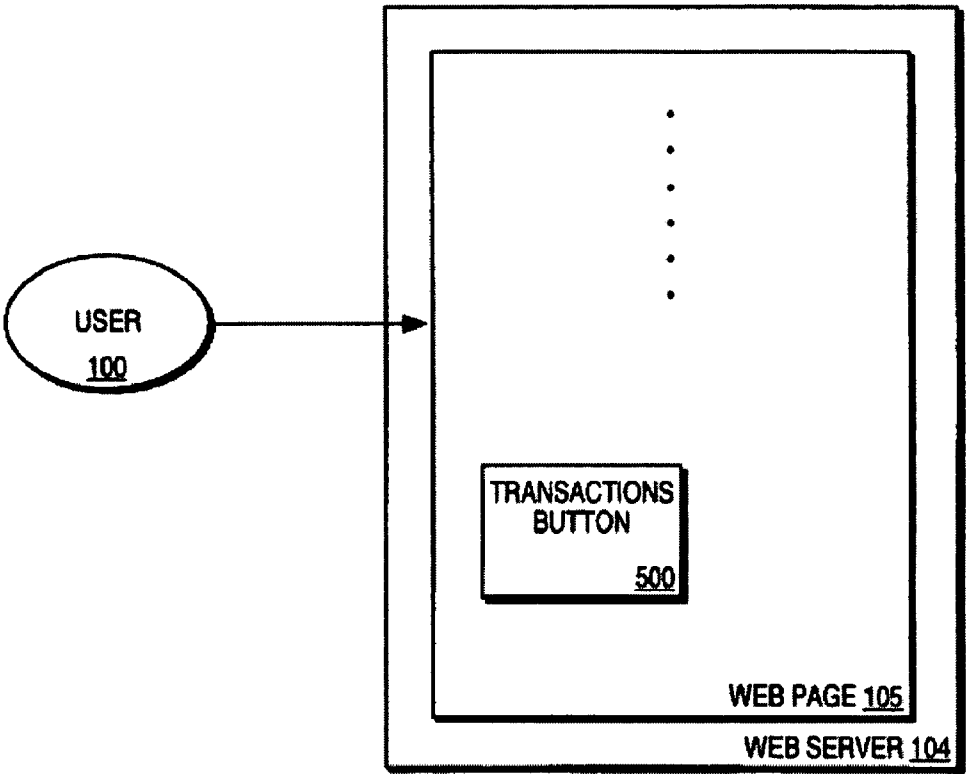
USER
100
TRANSACTIONS
BUTTON
500
WEB PAGE 105
WEB SERVER 104

FIG. 5A

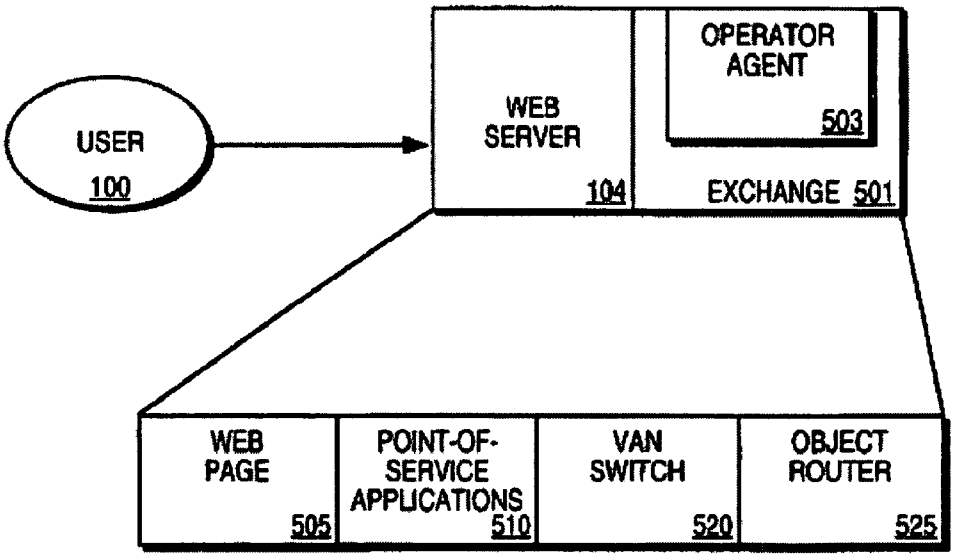
USER
100
WEB
SERVER
104
OPERATOR
AGENT
503
EXCHANGE 501
WEB
PAGE
505
POINT-OF-
SERVICE
APPLICATIONS
510
VAN
SWITCH
520
OBJECT
ROUTER
525

FIG. 5B

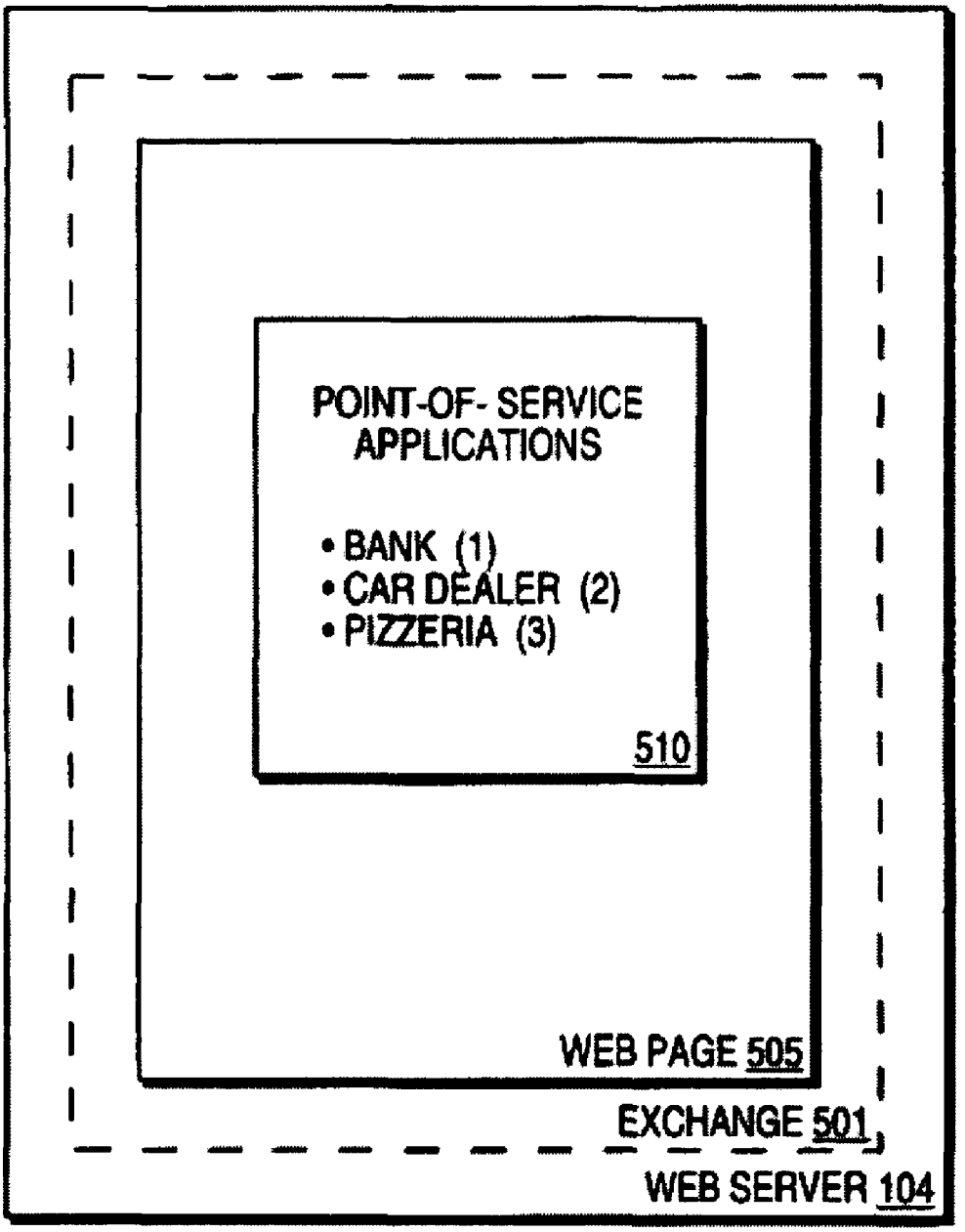
POINT-OF- SERVICE APPLICATIONS
• BANK (1)
• CAR DEALER (2)
• PIZZERIA (3)
510
WEB PAGE 505
EXCHANGE 501
WEB SERVER 104

FIG. 5C

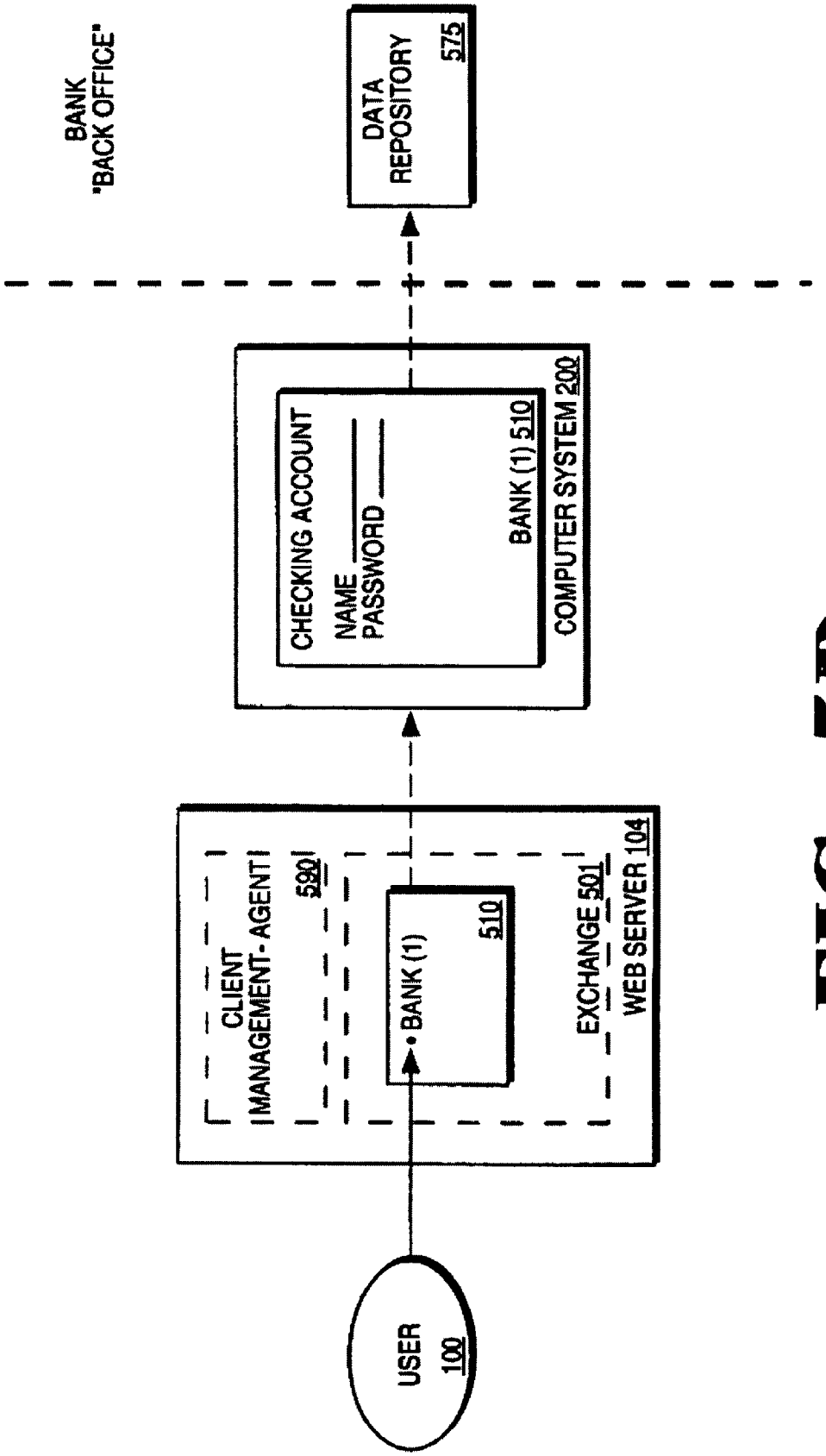
BANK "BACK OFFICE"
DATA REPOSITORY 575
CHECKING ACCOUNT
NAME
PASSWORD
BANK (1) 510
COMPUTER SYSTEM 200
CLIENT MANAGEMENT- AGENT 590
BANK (1) 510
EXCHANGE 501
WEB SERVER 104
USER 100

FIG. 5D

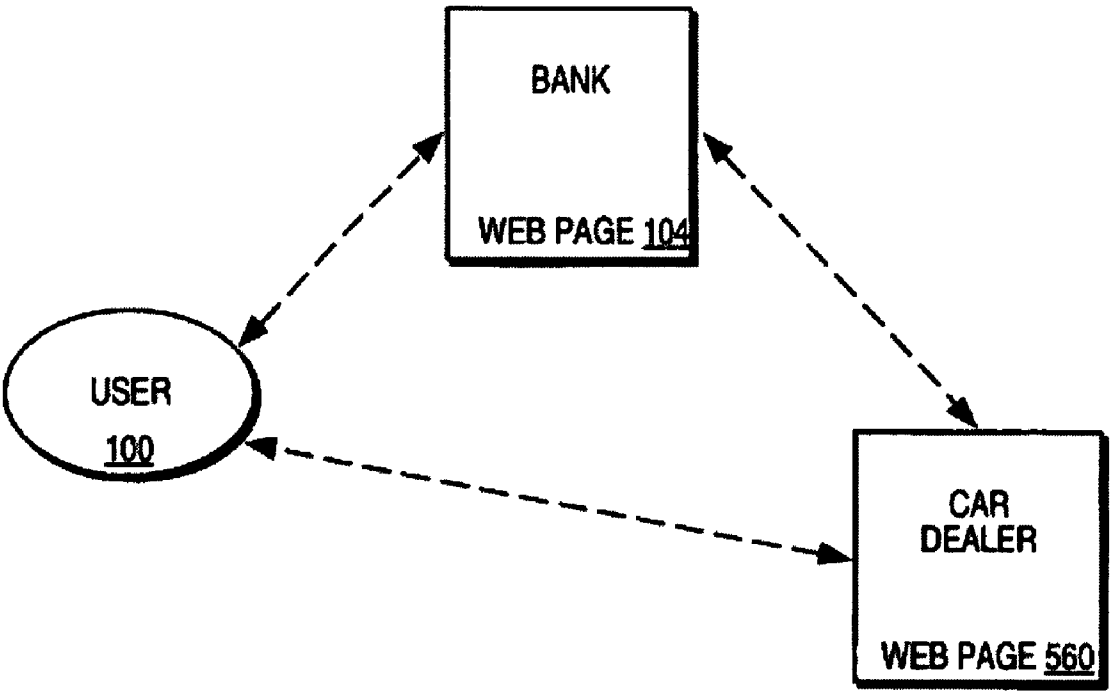

FIG. 5E

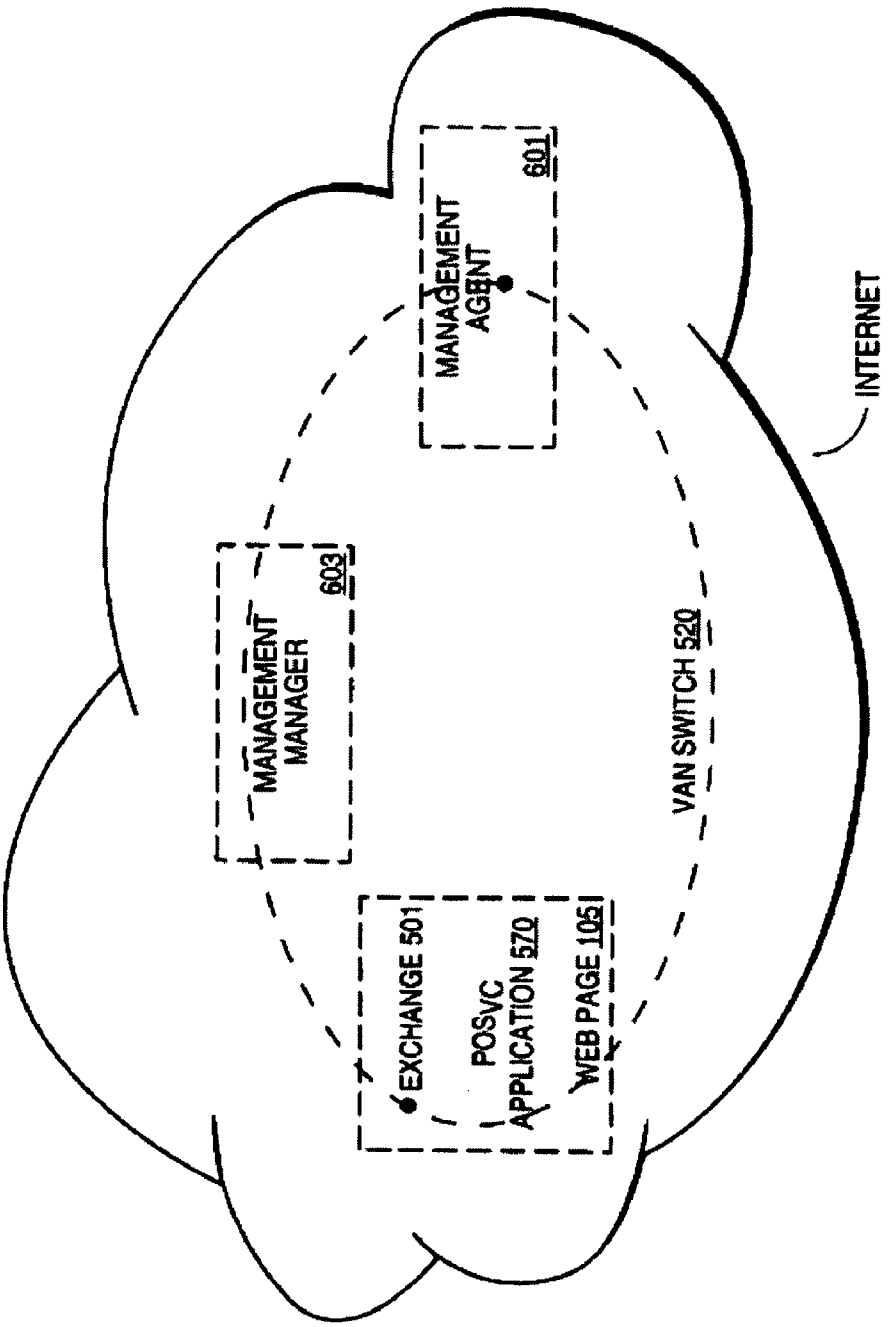
INTERNET
MANAGEMENT AGENT
601
MANAGEMENT MANAGER
603
VAN SWITCH 520
EXCHANGE 501
POSVC APPLICATION 570
WEB PAGE 105

FIG. 6A

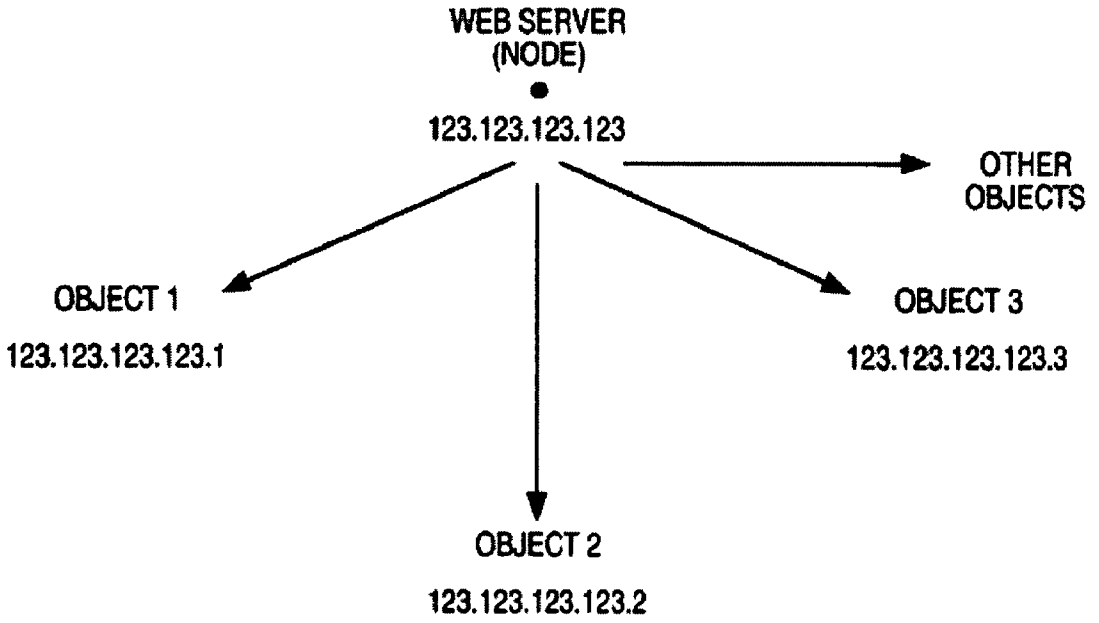
WEB SERVER
(NODE)
123.123.123.123
OTHER
OBJECTS
OBJECT 1
123.123.123.123.1
OBJECT 3
123.123.123.123.3
OBJECT 2
123.123.123.123.2

FIG. 6B

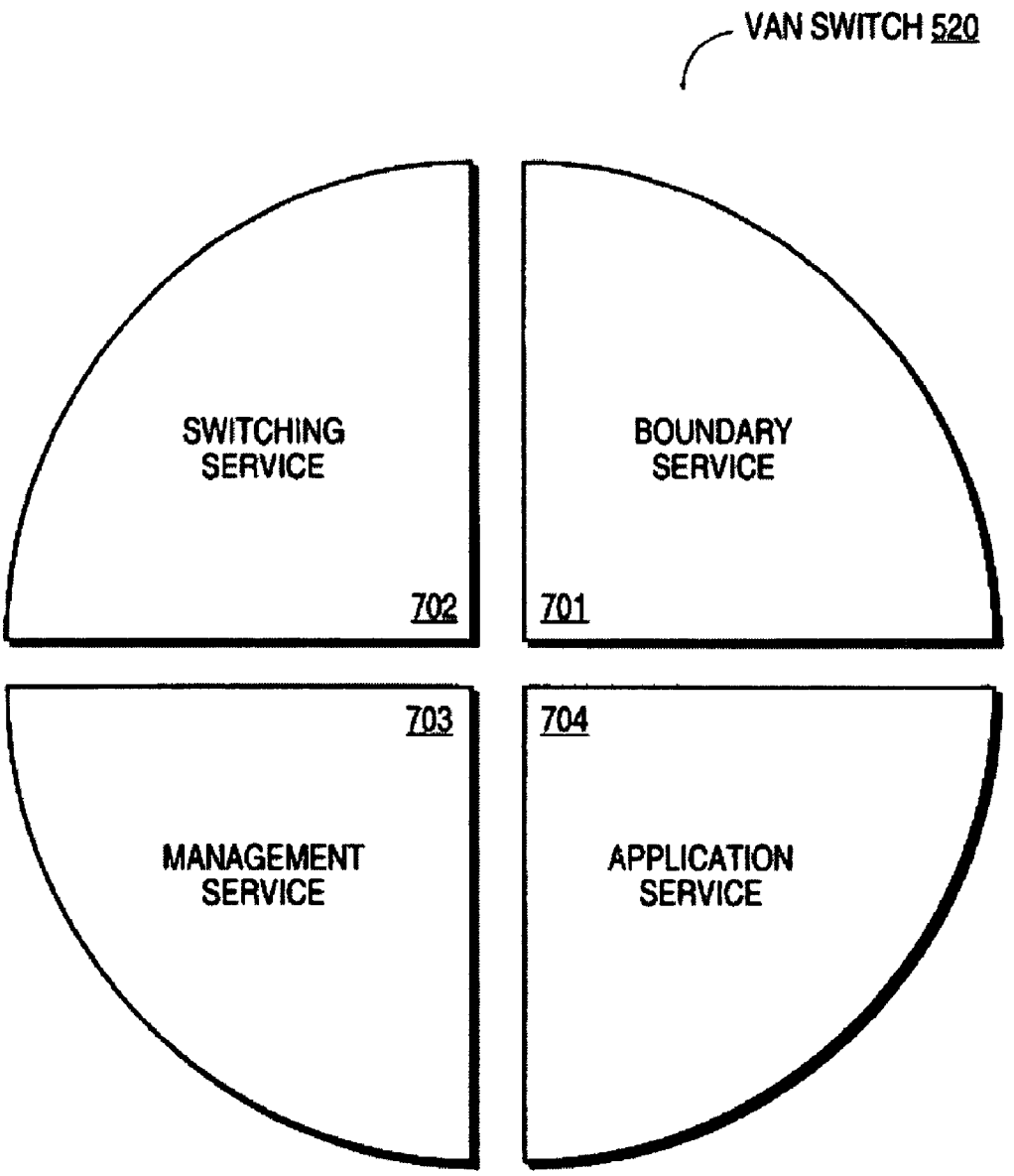
VAN SWITCH 520
SWITCHING SERVICE
702
BOUNDARY SERVICE
701
703
MANAGEMENT SERVICE
704
APPLICATION SERVICE

FIG. 7

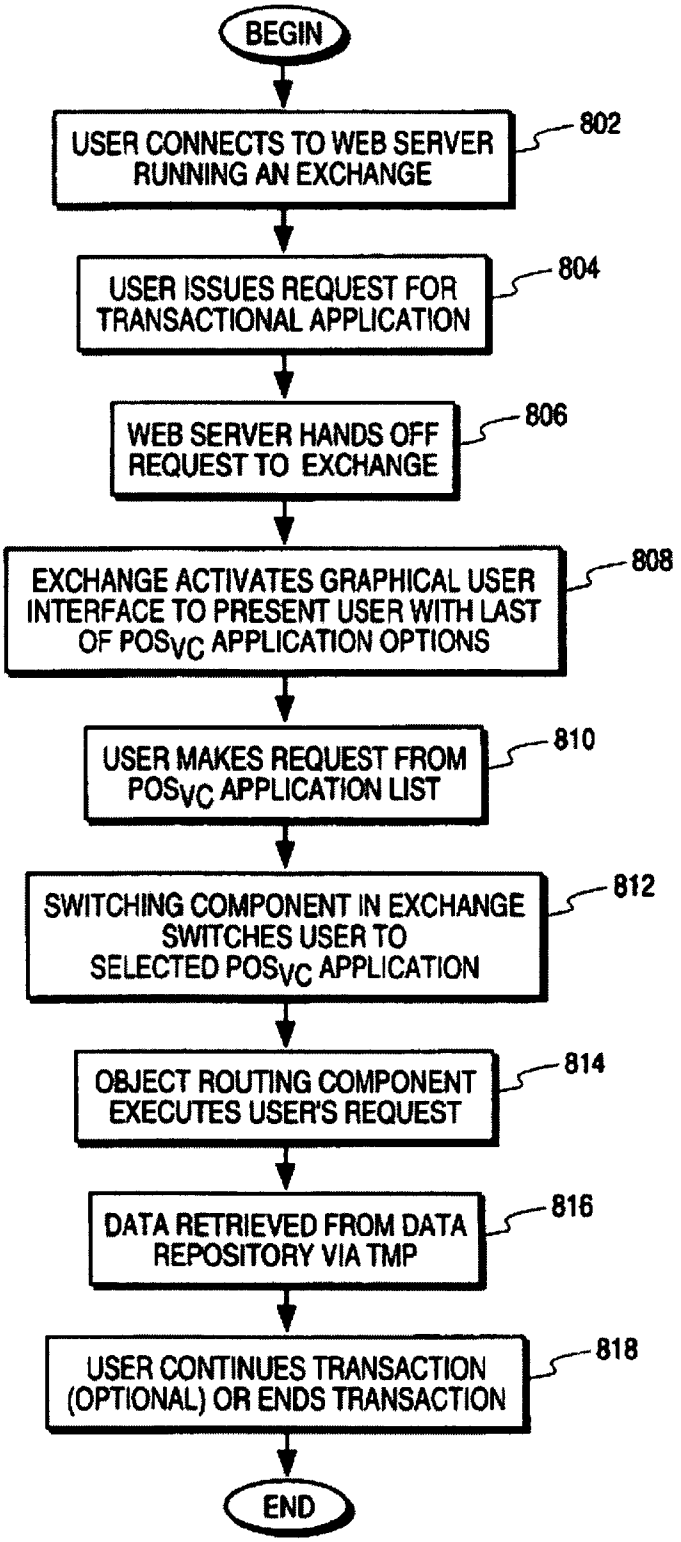
BEGIN
USER CONNECTS TO WEB SERVER RUNNING AN EXCHANGE
802
USER ISSUES REQUEST FOR TRANSACTIONAL APPLICATION
804
WEB SERVER HANDS OFF REQUEST TO EXCHANGE
806
EXCHANGE ACTIVATES GRAPHICAL USER INTERFACE TO PRESENT USER WITH LAST OF POSVC APPLICATION OPTIONS
808
USER MAKES REQUEST FROM POSVC APPLICATION LIST
810
SWITCHING COMPONENT IN EXCHANGE SWITCHES USER TO SELECTED POSVC APPLICATION
812
OBJECT ROUTING COMPONENT EXECUTES USER'S REQUEST
814
DATA RETRIEVED FROM DATA REPOSITORY VIA TMP
816
USER CONTINUES TRANSACTION (OPTIONAL) OR ENDS TRANSACTION
818
END

FIG. 8

MULTIMEDIA TRANSACTIONAL SERVICES

This application is a continuation-in-part of application Ser. No. 09/792,323, filed Feb. 23, 2001, now U.S. Pat. No. 7,340,506, which was a divisional of U.S. patent application Ser. No. 09/296,207 filed Apr. 21, 1999, now U.S. Pat. No. 6,212,556, which was a continuation-in-part of application Ser. No. 08/879,958 filed Jun. 20, 1997, now U.S. Pat. No. 5,987,500, which was a divisional of application Ser. No. 08/700,726 filed Aug. 5, 1996, now U.S. Pat. No. 5,778,178, which was related to and claimed priority from provisional application No. 60/006,634 filed Nov. 13, 1995. This application also claims benefit under 35 U.S.C. 119(e) to U.S. Provisional application Ser. No. 60/006,634 filed Nov. 13. 1995.

The following are related applications: application Ser. No. 09/863,704 filed May 23, 2001 and provisional application 60/206,422 filed May 23, 2000.

BACKGROUND

1. Field of the Invention

The present invention relates to the area of Internet communications. Specifically, the present invention relates to a method and apparatus for configurable value-added network switching and object routing.

2. Background of the Invention

With the Internet and the World Wide Web ("the Web") evolving rapidly as a viable consumer medium for electronic commerce, new on-line services are emerging to fill the needs of on-line users. An Internet user today can browse on the Web via the use of a Web browser. Web browsers are software interfaces that run on Web clients to allow access to Web servers via a simple user interface. A Web user's capabilities today from a Web browser are, however, extremely limited. The user can perform one-way, browse-only interactions. Additionally, the user has limited "deferred" transactional capabilities, namely electronic mail (e-mail) capabilities. E-mail capabilities are referred to as "deferred transactions" because the consumer's request is not processed until the e-mail is received, read, and the person or system reading the e-mail executes the transaction. This transaction is thus not performed in real-time.

FIG. **1**A illustrates typical user interactions on the Web today. User **100** sends out a request from Web browser **102** in the form of a universal resource locator (URL) **101** in the following manner: http://www.car.com. URL **101** is processed by Web browser **102** that determines the URL corresponds to car dealer Web page **105**, on car dealer Web server **104**. Web browser **102** then establishes browse link **103** to car dealer Web page **105**. User **100** can browse Web page **105** and select "hot links" to jump to other locations in Web page **105**, or to move to other Web pages on the Web. This interaction is typically a browse-only interaction. Under limited circumstances, the user may be able to fill out a form on car dealer Web page **105**, and e-mail the form to car dealer Web server **104**. This interaction is still strictly a one-way browse mode communications link, with the e-mail providing limited, deferred transactional capabilities.

Under limited circumstances, a user may have access to two-way services on the Web via Common Gateway Interface (CGI) applications. CGI is a standard interface for running external programs on a Web server. It allows Web servers to create documents dynamically when the server receives a request from the Web browser. When the Web server receives a request for a document, the Web server dynamically executes the appropriate CGI script and transmits the output

of the execution back to the requesting Web browser. This interaction can thus be termed a "two-way" transaction. It is a severely limited transaction, however, because each CGI application is customized for a particular type of application or service.

For example, as illustrated in FIG. **1**B, user **100** may access bank **150**'s Web server and attempt to perform transactions on checking account **152** and to make a payment on loan account **154**. In order for user **100** to access checking account **152** and loan account **154** on the Web, CGI application scripts must be created for each account, as illustrated in FIG. **1**B. The bank thus has to create individual scripts for each of its services to offer users access to these services. User **100** can then interact in a limited fashion with these individual applications. Creating and managing individual CGI scripts for each service is not a viable solution for merchants with a large number of services.

As the Web expands and electronic commerce becomes more desirable, the need increases for robust, real-time, bi-directional transactional capabilities on the Web. A true real-time, bi-directional transaction would allow a user to connect to a variety of services on the Web, and perform real-time transactions on those services. For example, although user **100** can browse car dealer Web page **105** today, the user cannot purchase the car, negotiate a car loan or perform other types of real-time, two-way transactions that he can perform with a live salesperson at the car dealership. Ideally, user **100** in FIG. **1**A would be able to access car dealer Web page **105**, select specific transactions that he desires to perform, such as purchase a car, and perform the purchase in real-time, with two-way interaction capabilities. CGI applications provide user **100** with a limited ability for two-way interaction with car dealer Web page **105**, but due to the lack of interaction and management between the car dealer and the bank, he will not be able to obtain a loan and complete the purchase of the car via a CGI application. The ability to complete robust real-time, two-way transactions is thus not truly available on the Web today.

SUMMARY OF THE INVENTION

It is therefore an object of the present invention to provide a method and apparatus for providing real-time, two-way transactional capabilities on the Web. Specifically, one embodiment of the present invention discloses a configurable value-added network switch for enabling real-time transactions on the World Wide Web. The configurable value added network switch comprises means for switching to a transactional application in response to a user specification from a World Wide Web application, means for transmitting a transaction request from the transactional application, and means for processing the transaction request.

According to another aspect of the present invention, a method and apparatus for enabling object routing on the World Wide Web is disclosed. The method for enabling object routing comprises the steps of creating a virtual information store containing information entries and attributes, associating each of the information entries and the attributes with an object identity, and assigning a unique network address to each of the object identities.

Other objects, features and advantages of the present invention will be apparent from the accompanying drawings and from the detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

The features and advantages of the present invention will be apparent from the accompanying drawings and from the detailed description of the present invention as set forth below.

FIG. **1**A is an illustration of a current user's browse capabilities on the Web via a Web browser.

FIG. **1**B is an illustration of a current user's capabilities to perform limited transactions on the Web via CGI applications.

FIG. **2** illustrates a typical computer system on which the present invention may be utilized.

FIG. **3** illustrates the Open Systems Interconnection (OSI) Model.

FIG. **4**A illustrates conceptually the user value chain as it exists today.

FIG. **4**B illustrates one embodiment of the present invention.

FIG. **5**A illustrates a user accessing a Web server including one embodiment of the present invention.

FIG. **5**B illustrates the exchange component according to one embodiment of the present invention.

FIG. **5**C illustrates an example of a point-of-service (POSvc) application list.

FIG. **5**D illustrates a user selecting a bank POSvc application from the POSvc application list.

FIG. **5**E illustrates a three-way transaction according to one embodiment of the present invention.

FIG. **6**A illustrates a value-added network (VAN) switch.

FIG. **6**B illustrates the hierarchical addressing tree structure of the networked objects in DOLSIBs.

FIG. **7** illustrates conceptually the layered architecture of a VAN switch.

FIG. **8** is a flow diagram illustrating one embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention relates to a method and apparatus for configurable value-added network switching and object routing and management. "Web browser" as used in the context of the present specification includes conventional Web browsers such as NCSA Mosaic™ from NCSA and Netscape Mosaic™ from Netscape™. The present invention is independent of the Web browser being utilized and the user can use any Web browser, without modifications to the Web browser. In the following detailed description, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It will be apparent to one of ordinary skill in the art, however, that these specific details need not be used to practice the present invention. In other instances, well-known structures, interfaces and processes have not been shown in detail in order not to unnecessarily obscure the present invention.

FIG. **2** illustrates a typical computer system **200** in which the present invention operates. \The preferred embodiment of the present invention is implemented on an IBM™ Personal Computer manufactured by IBM Corporation of Armonk, N.Y. Alternate embodiments may be implemented on a Macintosh™ computer manufactured by Apple™ Computer, Incorporated of Cupertino, Calif. It will be apparent to those of ordinary skill in the art that other alternative computer system architectures may also be employed.

In general, such computer systems as illustrated by FIG. **2** comprise a bus **201** for communicating information, a processor **202** coupled with the bus **201** for processing information, main memory **203** coupled with the bus **201** for storing information and instructions for the processor **202**, a read-only memory **204** coupled with the bus **201** for storing static information and instructions for the processor **202**, a display device **205** coupled with the bus **201** for displaying information for a computer user, an input device **206** coupled with the bus **201** for communicating information and command selections to the processor **202**, and a mass storage device **207**, such as a magnetic disk and associated disk drive, coupled with the bus **201** for storing information and instructions. A data storage medium **208** containing digital information is configured to operate with mass storage device **207** to allow processor **202** access to the digital information on data storage medium **208** via bus **201**.

Processor **202** may be any of a wide variety of general purpose processors or microprocessors such as the Pentium™ microprocessor manufactured by Intel™ Corporation or the Motorola™ 68040 or Power PC™ brand microprocessor manufactured by manufactured by Motorola™ Corporation. It will be apparent to those of ordinary skill in the art, however, that other varieties of processors may also be used in a particular computer system. Display device **205** may be a liquid crystal device, cathode ray tube (CRT), or other suitable display device. Mass storage device **207** may be a conventional hard disk drive, floppy disk drive, CD-ROM drive, or other magnetic or optical data storage device for reading and writing information stored on a hard disk, a floppy disk, a CD-ROM a magnetic tape, or other magnetic or optical data storage medium. Data storage medium **208** may be a hard disk, a floppy disk, a CD-ROM, a magnetic tape, or other magnetic or optical data storage medium.

In general, processor **202** retrieves processing instructions and data from a data storage medium **208** using mass storage device **207** and downloads this information into random access memory **203** for execution. Processor **202**, then executes an instruction stream from random access memory **203** or read-only memory **204**. Command selections and information input at input device **206** are used to direct the flow of instructions executed by processor **202**. Equivalent input device **206** may also be a pointing device such as a conventional mouse or trackball device. The results of this processing execution are then displayed on display device **205**.

The preferred embodiment of the present invention is implemented as a software module, which may be executed on a computer system such as computer system **200** in a conventional manner. Using well known techniques, the application software of the preferred embodiment is stored on data storage medium **208** and subsequently loaded into and executed within computer system **200**. Once initiated, the software of the preferred embodiment operates in the manner described below.

FIG. **3** illustrates the Open Systems Interconnection (OSI) reference model. OSI Model 300 is an international standard that provides a common basis for the coordination of standards development, for the purpose of systems interconnection. The present invention is implemented to function as a routing switch within the "application layer" of the OSI model. The model defines seven layers, with each layer communicating with its peer layer in another node through the use of a protocol. Physical layer **301** is the lowest layer, with responsibility to transmit unstructured bits across a link. Data link layer **302** is the next layer above physical layer **301**. Data link layer **302** transmits chunks across the link and deals with problems like checksumming to detect data corruption, orderly coordination of the use of shared media and addressing when multiple systems are reachable. Network bridges operate within data link layer **302**.

Network layer **303** enables any pair of systems in the network to communicate with each other. Network layer **303** contains hardware units such as routers, that handle routing, packet fragmentation and reassembly of packets. Transport

layer **304** establishes a reliable communication stream between a pair of systems, dealing with errors such as lost packets, duplicate packets, packet reordering and fragmentation. Session layer **305** offers services above the simple communication stream provided by transport layer **304**. These services include dialog control and chaining. Presentation layer **306** provides a means by which OSI compliant applications can agree on representations for data. Finally, application layer **307** includes services such as file transfer, access and management services (FTAM), electronic mail and virtual terminal (VT) services. Application layer **307** provides a means for application programs to access the OSI environment. As described above, the present invention is implemented to function as a routing switch in application layer **307**. Application layer routing creates an open channel for the management, and the selective flow of data from remote databases on a network.

A. Overview

FIG. **4**A illustrates conceptually the user value chain as it exists today. The user value chain in FIG. **4**A depicts the types of transactions that are performed today, and the channels through which the transactions are performed. A "transaction" for the purposes of the present invention includes any type of commercial or other type of interaction that a user may want to perform. Examples of transactions include a deposit into a bank account, a request for a loan from a bank, a purchase of a car from a car dealership or a purchase of a car with financing from a bank. A large variety of other transactions are also possible.

A typical user transaction today may involve user **100** walking into a bank or driving up to a teller machine, and interacting with a live bank teller, or automated teller machine (ATM) software applications. Alternatively, user **100** can perform the same transaction by using a personal computer (PC), activating application software on his PC to access his bank account, and dialing into the bank via a modem line. If user **100** is a Web user, however, there is no current mechanism for performing a robust, real-time transaction with the bank, as illustrated in FIG. **4**A. CGI scripts provide only limited two-way capabilities, as described above. Thus, due to this lack of a robust mechanism by which real-time Web transactions can be performed, the bank is unable to be a true "Web merchant," namely a merchant capable of providing complete transactional services on the Web.

According to one embodiment of the present invention, as illustrated in FIG. **4**B, each merchant that desires to be a Web merchant can provide real-time transactional capabilities to users who desire to access the merchants' services via the Web. This embodiment includes a service network running on top of a facilities network, namely the Internet, the Web or e-mail networks. For the purposes of this application, users are described as utilizing PC's to access the Web via Web server "switching" sites. (Switching is described in more detail below). Users may also utilize other personal devices such as network computers or cellular devices to access the merchants' services via appropriate switching sites. These switching sites include non-Web network computer sites and cellular provider sites. Five components interact to provide this service network functionality, namely an exchange, an operator agent, a management agent, a management manager and a graphical user interface. All five components are described in more detail below.

As illustrated in FIG. **5**A, user **100** accesses Web server **104**. Having accessed Web server **104**, user **100** can decide that he desires to perform real-time transactions. When Web server **104** receives user **100**'s indication that he desires to perform real-time transactions, the request is handed over to an exchange component. Thus, from Web page **105**, for example, user **100** can select button **500**, entitled "Transactions" and Web server **104** hands user **100**'s request over to the exchange component. The button and the title can be replaced by any mechanism that can instruct a Web server to hand over the consumer's request to the exchange component.

FIG. **5**B illustrates exchange **501**. Exchange **501** comprises Web page **505** and point-of-service (POSvc) applications **510**. Exchange **501** also conceptually includes a switching component and an object routing component (described in more detail below). POSvc applications **510** are transactional applications, namely applications that are designed to incorporate and take advantage of the capabilities provided by the present invention. Although exchange **501** is depicted as residing on Web server **104**, the exchange can also reside on a separate computer system that resides on the Internet and has an Internet address. Exchange **501** may also include operator agent **503** that interacts with a management manager (described in more detail below). Exchange **501** creates and allows for the management (or distributed control) of a service network, operating within the boundaries of an IP-based facilities network. Thus, exchange **501** and a management agent component, described in more detail below, under the headings "VAN Switch and Object Routing," together perform the switching, object routing, application and service management functions according to one embodiment of the present invention.

Exchange **501** processes the consumer's request and displays an exchange Web page **505** that includes a list of POSvc applications **510** accessible by exchange **501**. A POSvc application is an application that can execute the type of transaction that the user may be interested in performing. The POSvc list is displayed via the graphical user interface component. One embodiment of the present invention supports HyperText Markup Language as the graphical user interface component. Virtual Reality Markup Language and Java™ are also supported by this embodiment. A variety of other graphical user interface standards can also be utilized to implement the graphical user interface.

An example of a POSvc application list is illustrated in FIG. **5**C. User **100** can thus select from POSvc applications Bank **510**(**1**), Car Dealer **510**(**2**) or Pizzeria **510**(**3**). Numerous other POSvc applications can also be included in this selection. If user **100** desires to perform a number of banking transactions, and selects the Bank application, a Bank POSvc application will be activated and presented to user **100**, as illustrated in FIG. **5**D. For the purposes of illustration, exchange **501** in FIG. **5**D is shown as running on a different computer system (Web server **104**) from the computer systems of the Web merchants running POSvc applications (computer system **200**). Exchange **501** may, however, also be on the same computer system as one or more of the computer systems of the Web merchants.

Once Bank POSvc application **510** has been activated, user **100** will be able to connect to Bank services and utilize the application to perform banking transactions, thus accessing data from a host or data repository **575** in the Bank "Back Office." The Bank Back Office comprises legacy databases and other data repositories that are utilized by the Bank to store its data. This connection between user **100** and Bank services is managed by exchange **501**. As illustrated in FIG. **5**D, once the connection is made between Bank POSvc application **510**(**1**), for example, and Bank services, an operator agent on Web server **104** may be activated to ensure the availability of distributed functions and capabilities.

Each Web merchant may choose the types of services that it would like to offer its clients. In this example, if Bank decided to include in their POSvc application access to checking and savings accounts, user **100** will be able to perform real-time transactions against his checking and savings accounts. Thus, if user **100** moves $500 from his checking account into his savings account, the transaction will be performed in real-time, in the same manner the transaction would have been performed by a live teller at the bank or an ATM machine. Therefore, unlike his prior access to his account, user **100** now has the capability to do more than browse his bank account. The ability to perform these types of robust, real-time transactions from a Web client is a significant aspect of the present invention.

Bank can also decide to provide other types of services in POSvc application **510**(**1**). For example, Bank may agree with Car dealership to allow Bank customers to purchase a car from that dealer, request a car loan from Bank, and have the entire transaction performed on the Web, as illustrated in FIG. **5**E. In this instance, the transactions are not merely two-way, between the user and Bank, but three-way, amongst the consumer, Bank and Car dealership. According to one aspect of the present invention, this three-way transaction can be expanded to n-way transactions, where n represents a predetermined number of merchants or other service providers who have agreed to cooperate to provide services to users. The present invention therefore allows for "any-to-any" communication and transactions on the Web, thus facilitating a large, flexible variety of robust, real-time transactions on the Web.

Finally, Bank may also decide to provide intra-merchant or intra-bank services, together with the inter-merchant services described above. For example, if Bank creates a POSvc application for use by the Bank Payroll department, Bank may provide its own employees with a means for submitting timecards for payroll processing by the Bank's Human Resources (HR) Department. An employee selects the Bank HR POSvc application, and submits his timecard. The employee's timecard is processed by accessing the employee's payroll information, stored in the Bank's Back Office. The transaction is thus processed in real-time, and the employee receives his paycheck immediately.

B. Van Switching and Object Routing

As described above, exchange **501** and management agent **601**, illustrated in FIG. **6**A, together constitute a value-added network (VAN) switch. These two elements may take on different roles as necessary, including peer-to-peer, client-server or master-slave roles. Management manager **603** is illustrated as residing on a separate computer system on the Internet. Management manager **603** can, however, also reside on the same machine as exchange **501**. Management manager **603** interacts with the operator agent **503** residing on exchange **501**.

VAN switch **520** provides multi-protocol object routing, depending upon the specific VAN services chosen. This multi-protocol object routing is provided via a proprietary protocol, TransWeb™ Management Protocol (TMP). TMP incorporates the same security features as the traditional Simple Network Management Protocol, SNMP. It also allows for the integration of other traditional security mechanisms, including RSA security mechanisms.

One embodiment of the present invention utilizes TMP and distributed on-line service information bases (DOLSIBs) to perform object routing. Alternatively, TMP can incorporate s-HTTP, Java™, the WinSock API or ORB with DOLSIBs to perform object routing. DOLSIBs are virtual information stores optimized for networking. All information entries and attributes in a DOLSIB virtual information store are associated with a networked object identity. The networked object identity identifies the information entries and attributes in the DOLSIB as individual networked objects, and each networked object is assigned an Internet address. The Internet address is assigned based on the IP address of the node at which the networked object resides.

For example, in FIG. **5**A, Web server **104** is a node on the Internet, with an IP address. All networked object associated with Web server **104** will therefore be assigned an Internet address based on the Web server **104**'s IP address. These networked objects thus "branch" from the node, creating a hierarchical tree structure. The Internet address for each networked object in the tree essentially establishes the individual object as an "IP-reachable" or accessible node on the Internet. TMP utilizes this Internet address to uniquely identify and access the object from the DOLSIB. FIG. **6**B illustrates an example of this hierarchical addressing tree structure.

Each object in the DOLSIB has a name, a syntax and an encoding. The name is an administratively assigned object ID specifying an object type. The object type together with the object instance serves to uniquely identify a specific instantiation of the object. For example, if object **610** is information about models of cars, then one instance of that object would provide user **100** with information about a specific model of the car while another instance would provide information about a different model of the car. The syntax of an object type defines the abstract data structure corresponding to that object type. Encoding of objects defines how the object is represented by the object type syntax while being transmitted over the network.

C. Management and Administration

As described above, exchange **501** and management agent **601** together constitute a VAN switch. FIG. **7** illustrates conceptually the layered architecture of VAN switch **520**. Specifically, boundary service **701** provides the interfaces between VAN switch **520**, the Internet and the Web, and multi-media end user devices such as PCs, televisions or telephones. Boundary service **701** also provides the interface to the on-line service provider. A user can connect to a local application, namely one accessible via a local VAN switch, or be routed or "switched" to an application accessible via a remote VAN switch.

Switching service **702** is an OSI application layer switch. Switching service **702** thus represents the core of the VAN switch. It performs a number of tasks including the routing of user connections to remote VAN switches, described in the paragraph above, multiplexing and prioritization of requests, and flow control. Switching service **702** also facilitates open systems' connectivity with both the Internet (a public switched network) and private networks including back office networks, such as banking networks. Interconnected application layer switches form the application network backbone. These switches are one significant aspect of the present invention.

Management service **703** contains tools such as Information Management Services (IMS) and application Network Management Services (NMS). These tools are used by the end users to manage network resources, including VAN switches. Management service **703** also provides applications that perform Operations, Administration, Maintenance & Provisioning (OAM&P) functions. These OAM&P functions include security management, fault management, configuration management, performance management and billing management. Providing OAM&P functions for applications in this manner is another significant aspect of the present invention.

Finally, application service **704** contains application programs that deliver customer services. Application service **704** includes POSvc applications such as Bank POSvc described above, and illustrated in FIG. **6**A. Other examples of VAN services include multi-media messaging, archival/retrieval management, directory services, data staging, conferencing, financial services, home banking, risk management and a variety of other vertical services. Each VAN service is designed to meet a particular set of requirements related to performance, reliability, maintenance and ability to handle expected traffic volume. Depending on the type of service, the characteristics of the network elements will differ. VAN service **704** provides a number of functions including communications services for both management and end users of the network and control for the user over the user's environment.

FIG. **8** is a flow diagram illustrating one embodiment of the present invention. A user connects to a Web server running an exchange component in step **802**. In step **804**, the user issues a request for a transactional application, and the web server hands off the request to an exchange in step **806**. The exchange activates a graphical user interface to present user with a list of POSvc application options in step **808**. In step **810**, the user makes a selection from the POSvc application list. In step **812**, the switching component in the exchange switches the user to the selected POSvc application, and in step **814**, the object routing component executes the user's request. Data is retrieved from the appropriate data repository via TMP in step **816**, and finally, the user may optionally continue the transaction in step **818** or end the transaction.

Thus, a configurable value-added network switching and object routing method and apparatus is disclosed. These specific arrangements and methods described herein are merely illustrative of the principles of the present invention. Numerous modifications in form and detail may be made by those of ordinary skill in the art without departing from the scope of the present invention. Although this invention has been shown in relation to a particular preferred embodiment, it should not be considered so limited. Rather, the present invention is limited only by the scope of the appended claims.

The invention claimed is:

1. A method for performing a real time Web transaction from a Web application over a digital network atop the Web, the method comprising:

providing a Web page for display on a computer system coupled to an input device;

providing a point-of-service application as a selection within the Web page, wherein the point-of-service application provides access to both a checking and savings account, the point-of-service application operating in a service network atop the World Wide Web;

accepting a first signal from the Web user input device to select the point-of-service application;

accepting subsequent signals from the Web user input device; and

transferring funds from the checking account to the savings account in real-time utilizing a routed transactional data structure that is both complete and non-deferred, in addition to being specific to the point-of-service application, the routing occurring in response to the subsequent signals.

2. The method of claim **1**, wherein an exchange over the Web is used to complete the transfer of funds in a Web application.

3. The method of claim **1**, wherein a management agent is used to complete the transfer of funds in a Web application.

4. The method of claim **1**, wherein object routing is used to complete the transfer of funds in a Web application.

5. The method of claim **4**, wherein the object routing includes the use of a distributed on-line service information bases.

6. The method of claim **1**, wherein a virtual information store is used to complete the transfer of funds.

7. The method of claim **6**, wherein the virtual information store includes a networked object specific to a Web application in a Web transaction.

8. The method of claim **7**, wherein the networked object is the object identity in a Web transaction connecting from a Web application on a Web page to a transactional application executing anywhere across the Web.

9. The method of claim **1**, wherein the Web transaction is a loan requested from a lender across the Web from a Web application.

10. The method of claim **1**, wherein the Web transaction is a vehicle purchased with bank financing across the Web from a Web application.

11. The method of claim **1**, wherein the Web transaction is accessing an account across the Web from a Web application.

* * * * *

Exhibit C

US008108492B2

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Arunachalam

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(45) **Date of Patent: Jan. 31, 2012**

(54) **WEB APPLICATION NETWORK PORTAL**

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(60) Division of application No. 11/980,185, filed on Oct. 30, 2007, now Pat. No. 8,037,158, which is a continuation-in-part of application No. 09/792,323, filed on Feb. 23, 2001, now Pat. No. 7,340,506, which is a division of application No. 09/296,207, filed on Apr. 21, 1999, now Pat. No. 6,212,556, which is a continuation-in-part of application No. 08/879,958, filed on Jun. 20, 1997, now Pat. No. 5,987,500, which is a division of application No. 08/700,726, filed on Aug. 5, 1996, now Pat. No. 5,778,178.

(60) Provisional application No. 60/006,634, filed on Nov. 13, 1995.

(51) **Int. Cl.**
G06F 13/00 (2006.01)

(52) **U.S. Cl.** **709/219**; 709/225; 709/228

(58) **Field of Classification Search** 709/217, 709/219, 223, 224, 225, 227, 229
See application file for complete search history.

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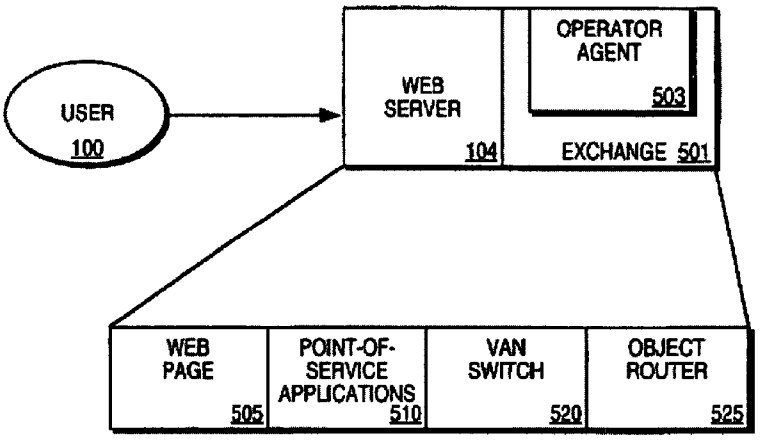
(Continued)

Primary Examiner — Viet Vu

(57) **ABSTRACT**

The present invention provides a method and apparatus for providing real-time, two-way transactional capabilities on the Web. Specifically, one embodiment of the present invention discloses a method for enabling object routing, the method comprising the steps of creating a virtual information store containing information entries and attributes associating each of the information entries and the attributes with an object identity, and assigning a unique network address to each of the object identities. A method is also disclosed for enabling service management of the value-added network service, to perform OAM&P functions on the services network.

13 Claims, 13 Drawing Sheets



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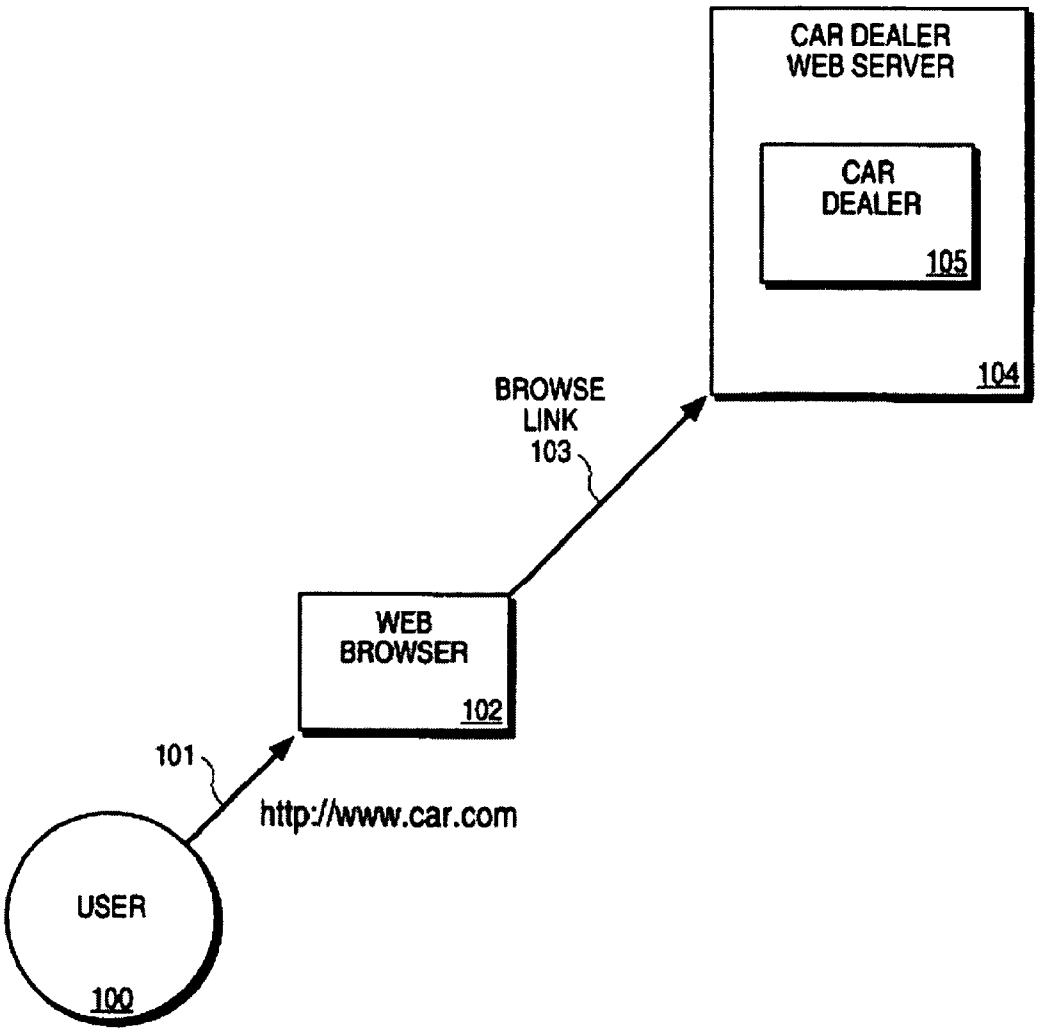

FIG. 1A (PRIOR ART)

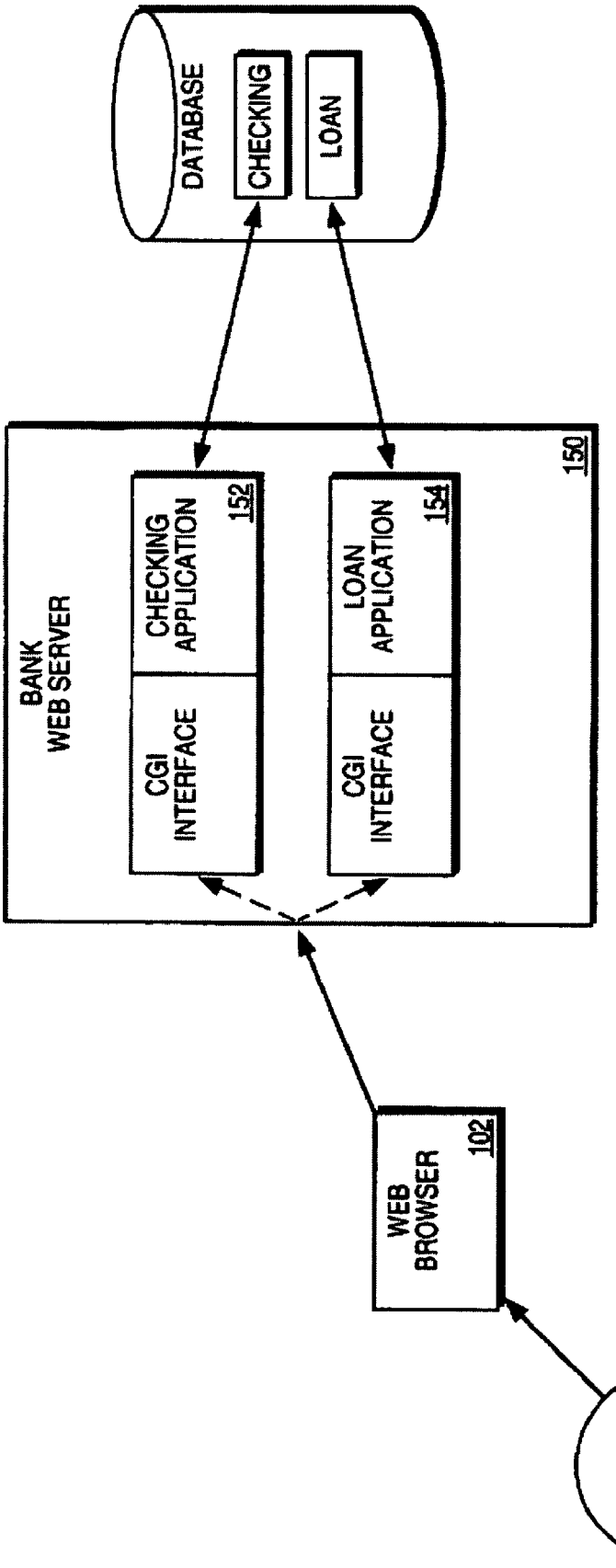

FIG. 1B (PRIOR ART)

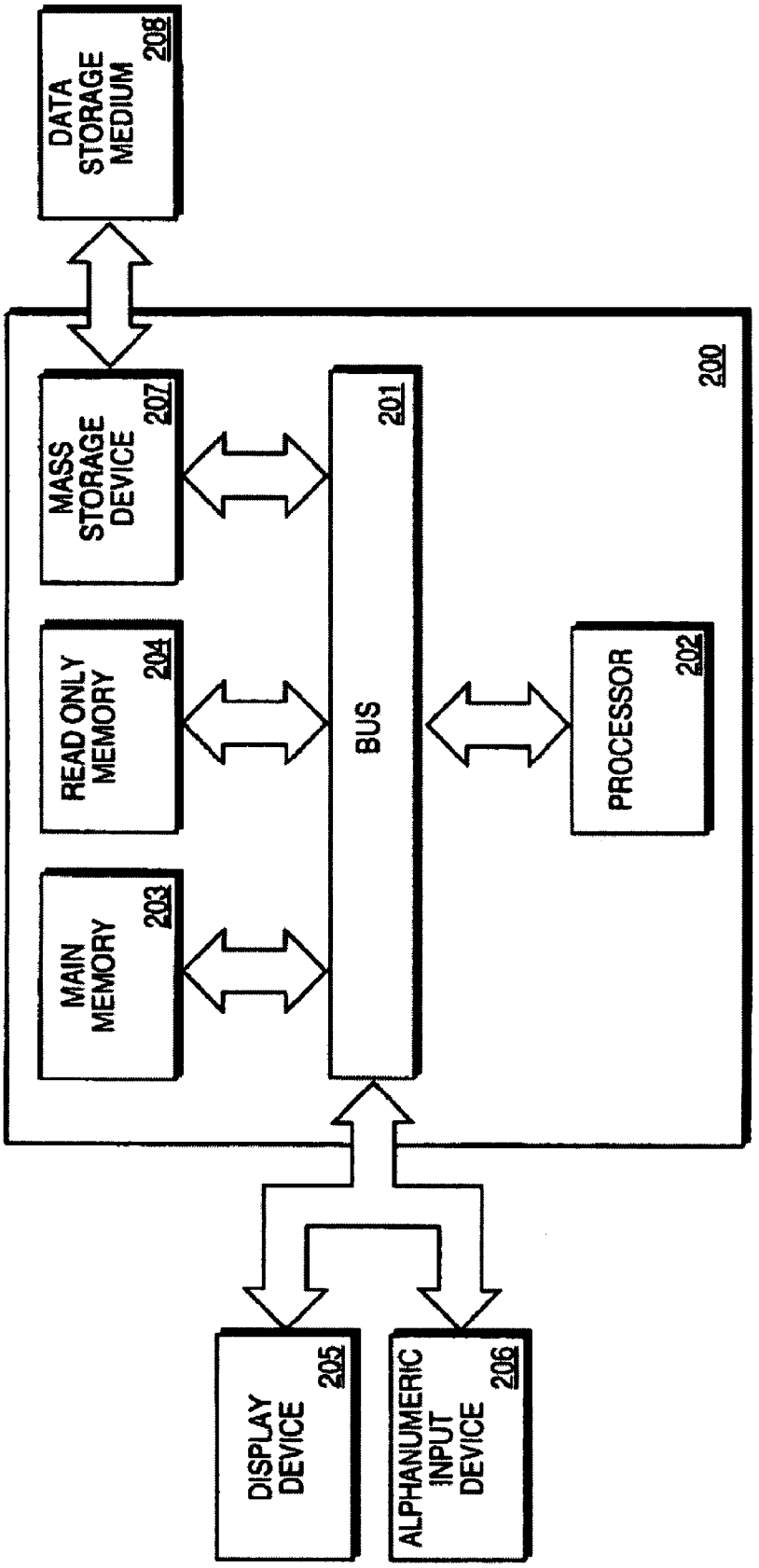
DATA STORAGE MEDIUM
208
200
MASS STORAGE DEVICE
207
BUS
201
READ ONLY MEMORY
204
PROCESSOR
202
MAIN MEMORY
203
DISPLAY DEVICE
205
ALPHANUMERIC INPUT DEVICE
206

FIG. 2

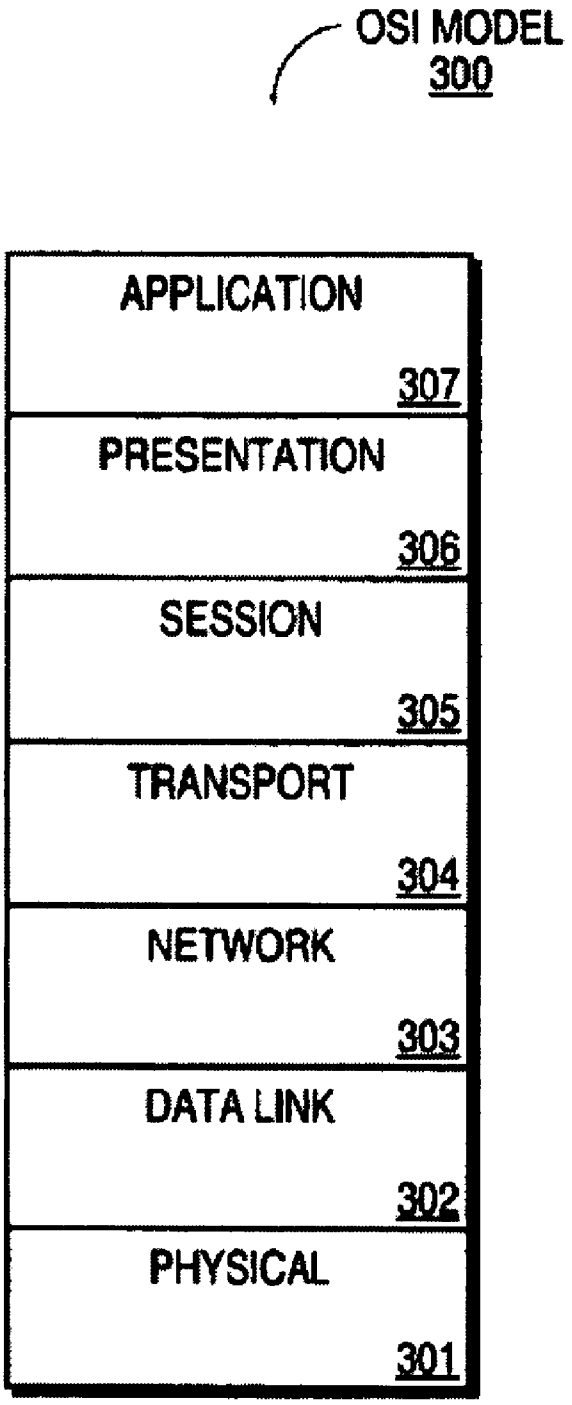
OSI MODEL
300
APPLICATION
307
PRESENTATION
306
SESSION
305
TRANSPORT
304
NETWORK
303
DATA LINK
302
PHYSICAL
301

FIG. 3

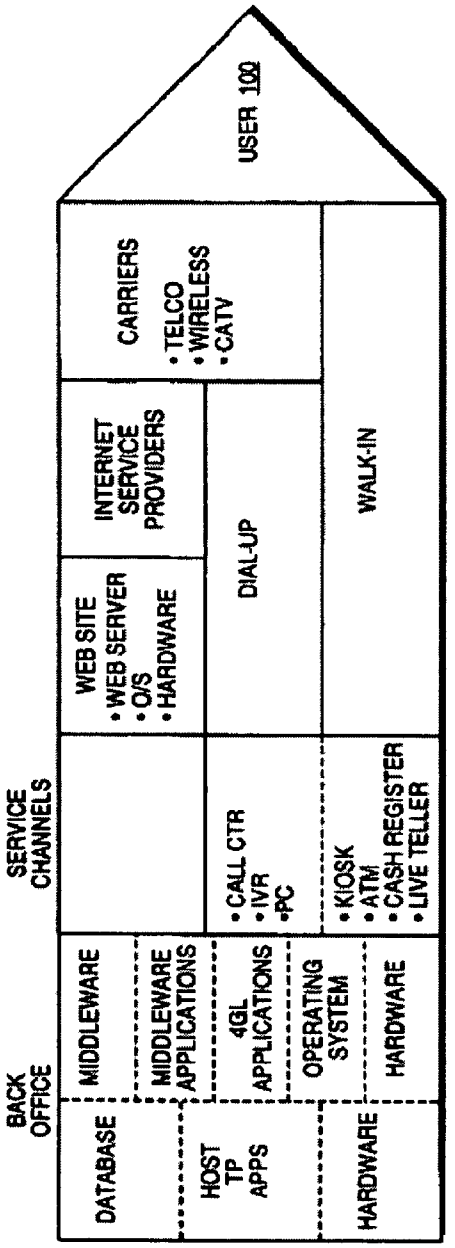
BACK OFFICE
DATABASE
HOST TP APPS
HARDWARE
MIDDLEWARE
MIDDLEWARE APPLICATIONS
4GL APPLICATIONS
OPERATING SYSTEM
HARDWARE
SERVICE CHANNELS
• CALL CTR • IVR • PC
• KIOSK • ATM • CASH REGISTER • LIVE TELLER
WEB SITE • WEB SERVER • O/S • HARDWARE
INTERNET SERVICE PROVIDERS
DIAL-UP
WALK-IN
CARRIERS • TELCO • WIRELESS • CATV
USER 100

FIG. 4A

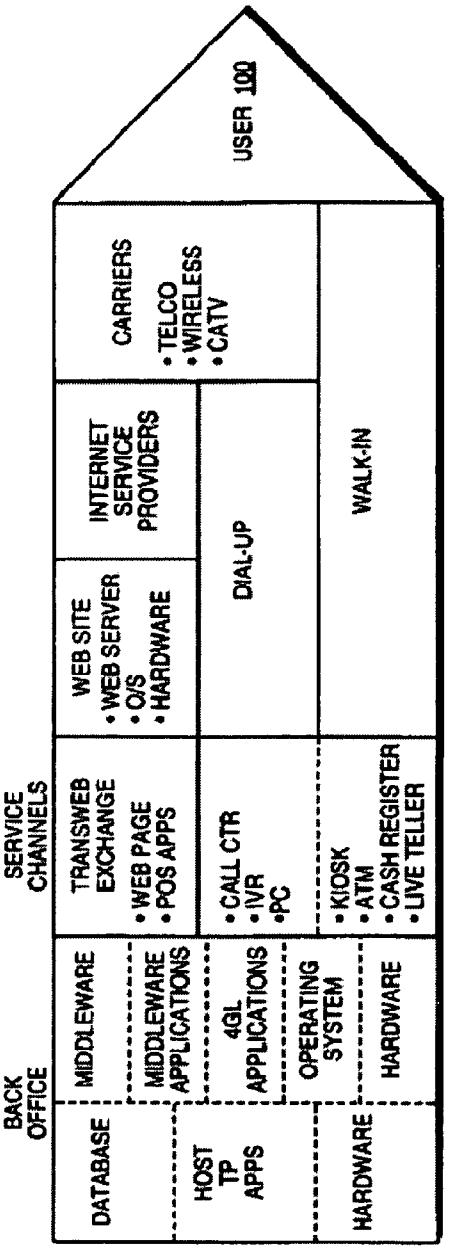
BACK OFFICE
DATABASE
HOST TP APPS
HARDWARE
MIDDLEWARE
MIDDLEWARE APPLICATIONS
4GL APPLICATIONS
OPERATING SYSTEM
HARDWARE
SERVICE CHANNELS
TRANSWEB EXCHANGE • WEB PAGE • POS APPS
• CALL CTR • IVR • PC
• KIOSK • ATM • CASH REGISTER • LIVE TELLER
WEB SITE • WEB SERVER • O/S • HARDWARE
INTERNET SERVICE PROVIDERS
DIAL-UP
WALK-IN
CARRIERS • TELCO • WIRELESS • CATV
USER 100

FIG. 4B

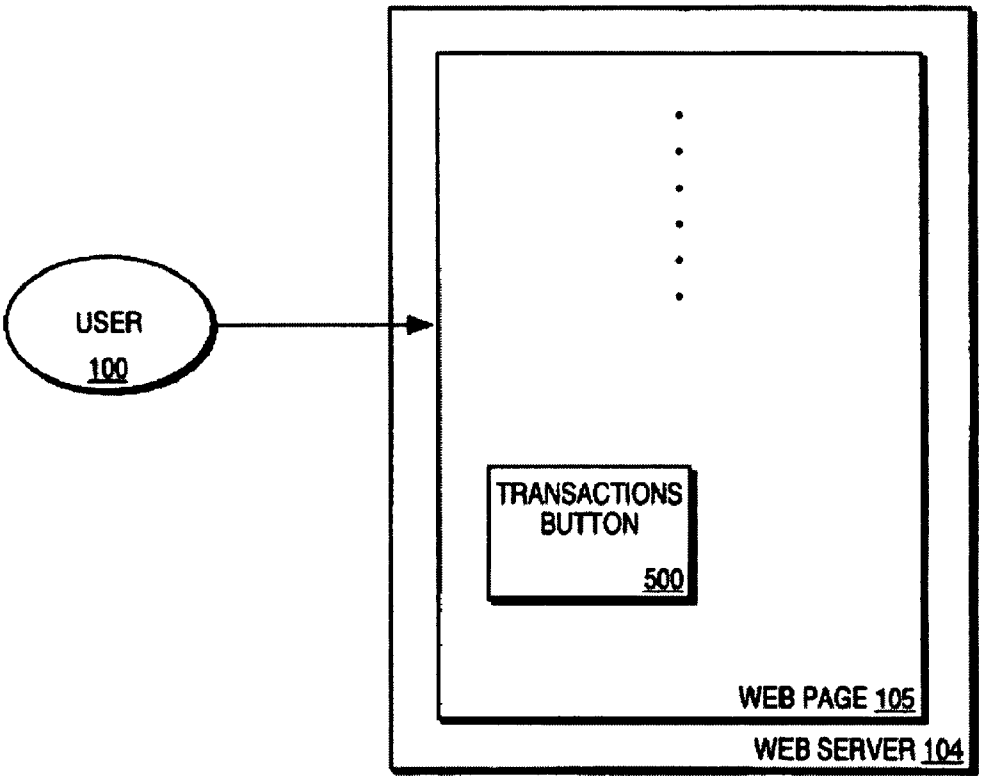
USER
100
TRANSACTIONS BUTTON
500
WEB PAGE 105
WEB SERVER 104

FIG. 5A

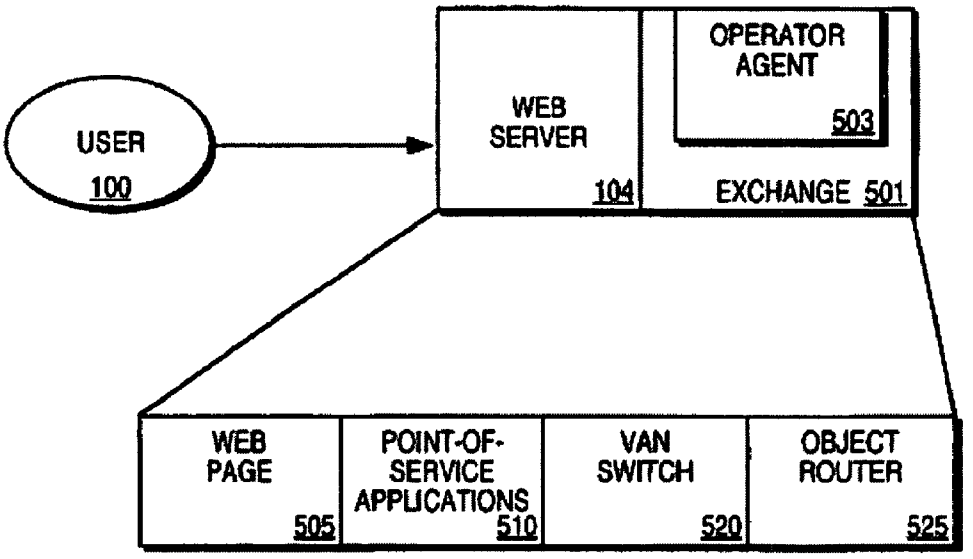
USER
100
WEB SERVER
104
OPERATOR AGENT
503
EXCHANGE 501
WEB PAGE
505
POINT-OF-SERVICE APPLICATIONS
510
VAN SWITCH
520
OBJECT ROUTER
525

FIG. 5B

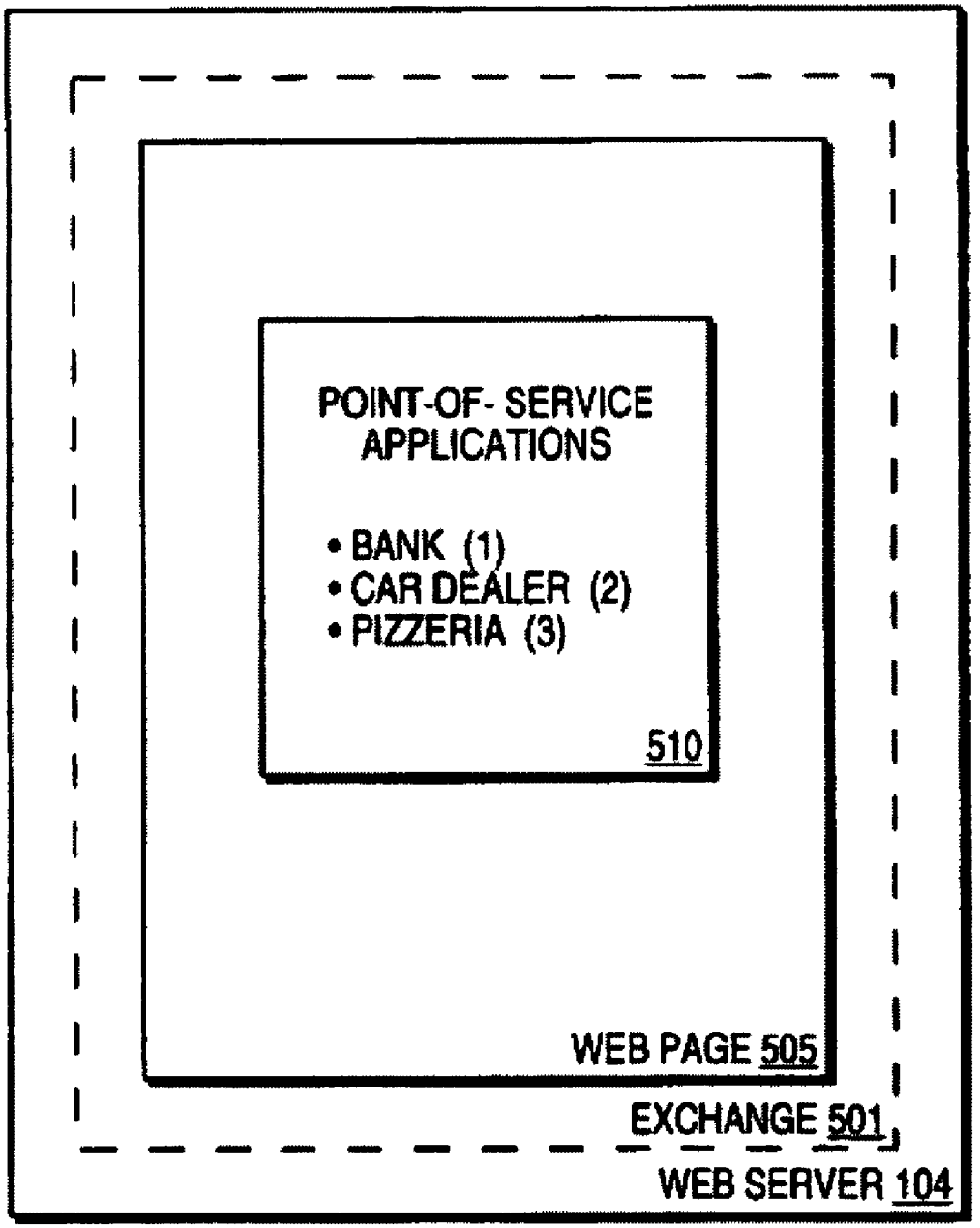
POINT-OF- SERVICE APPLICATIONS
• BANK (1)
• CAR DEALER (2)
• PIZZERIA (3)
510
WEB PAGE 505
EXCHANGE 501
WEB SERVER 104

FIG. 5C

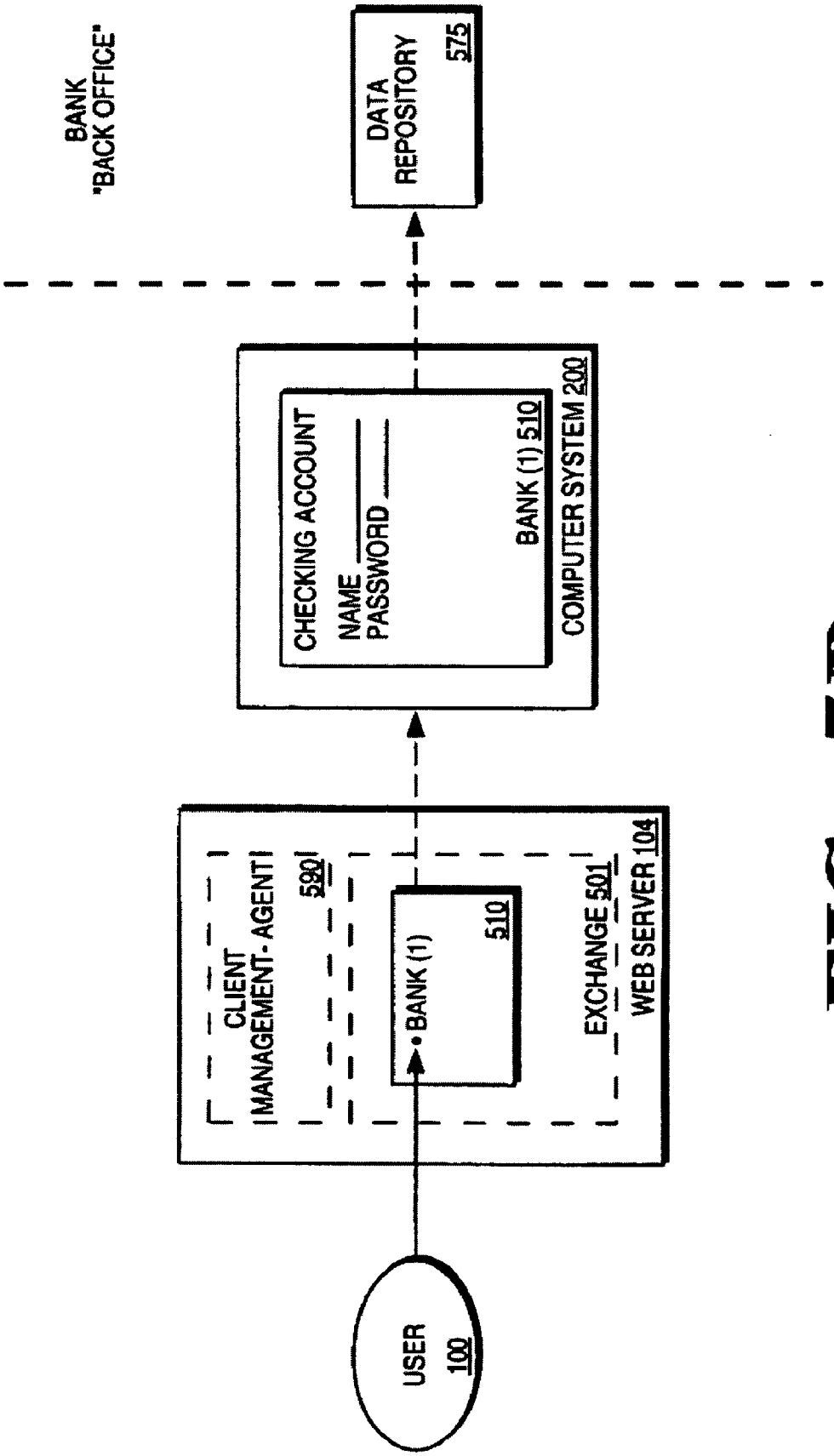
BANK "BACK OFFICE"
DATA REPOSITORY 575
CHECKING ACCOUNT
NAME
PASSWORD
BANK (1) 510
COMPUTER SYSTEM 200
CLIENT MANAGEMENT- AGENT 590
BANK (1) 510
EXCHANGE 501
WEB SERVER 104
USER 100

FIG. 5D

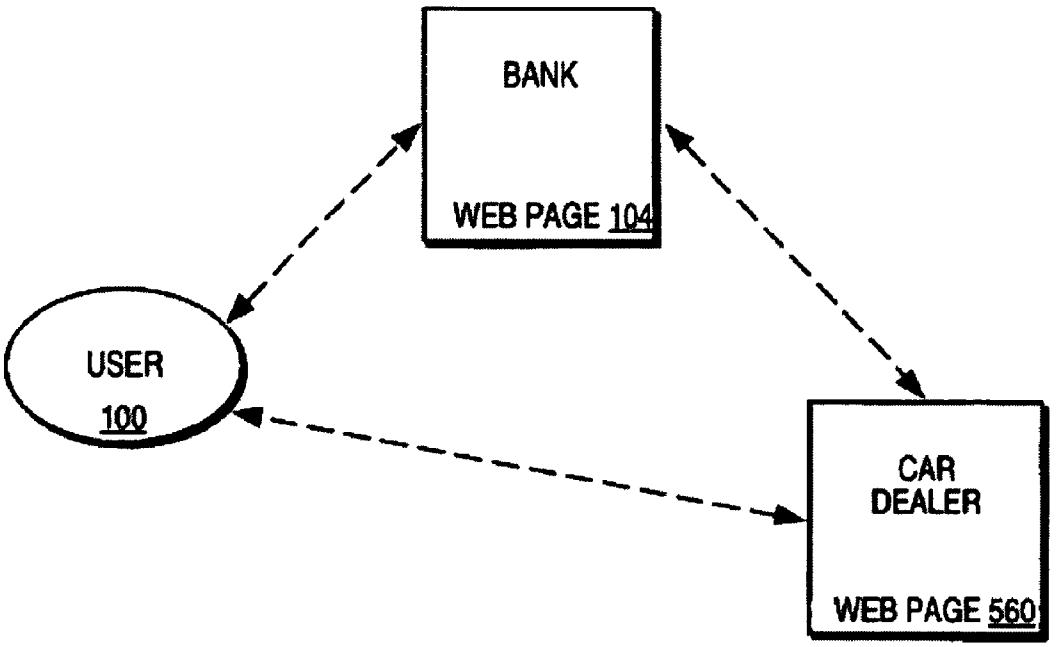

FIG. 5E

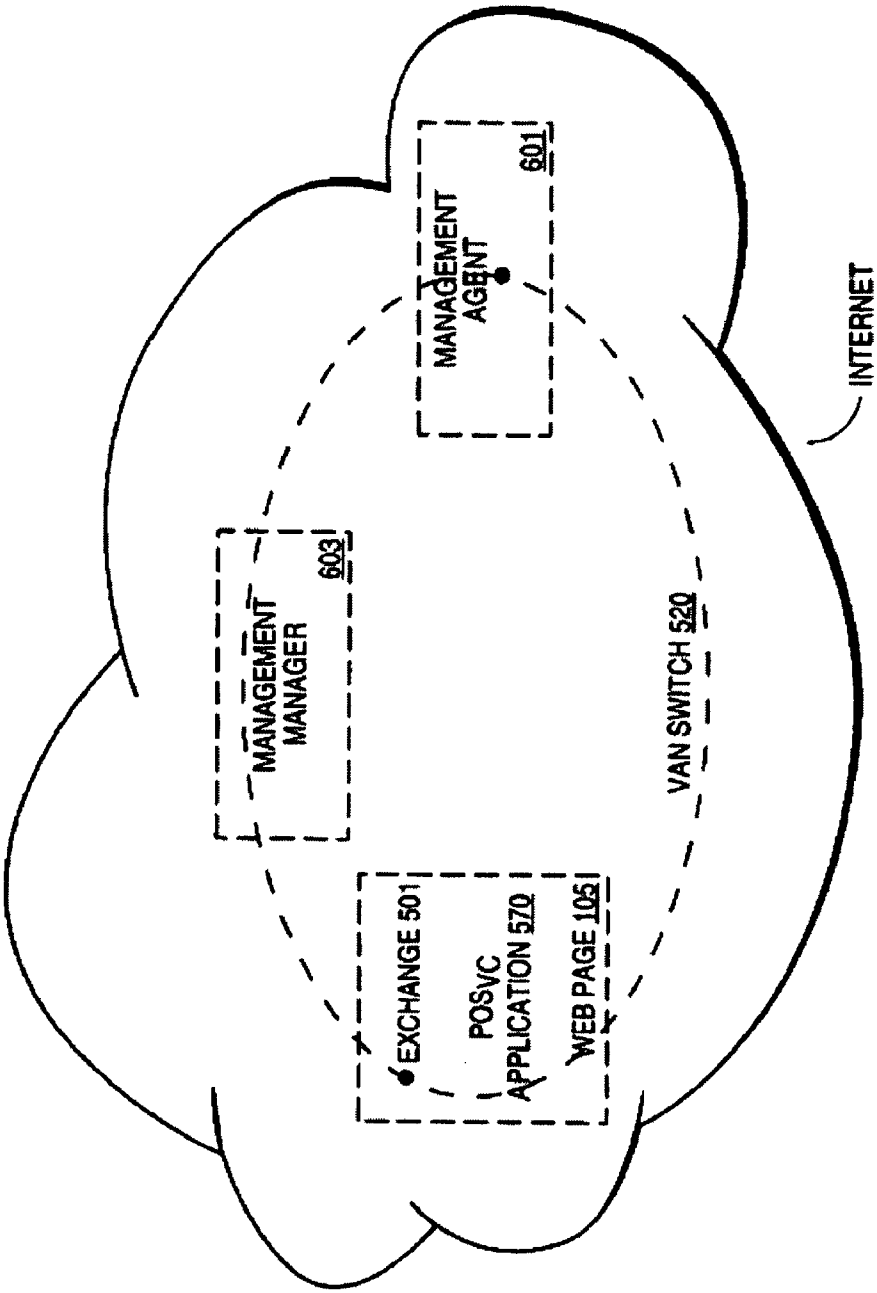
INTERNET
MANAGEMENT AGENT
601
MANAGEMENT MANAGER
603
VAN SWITCH 520
EXCHANGE 501
POSVC APPLICATION 570
WEB PAGE 105

FIG. 6A

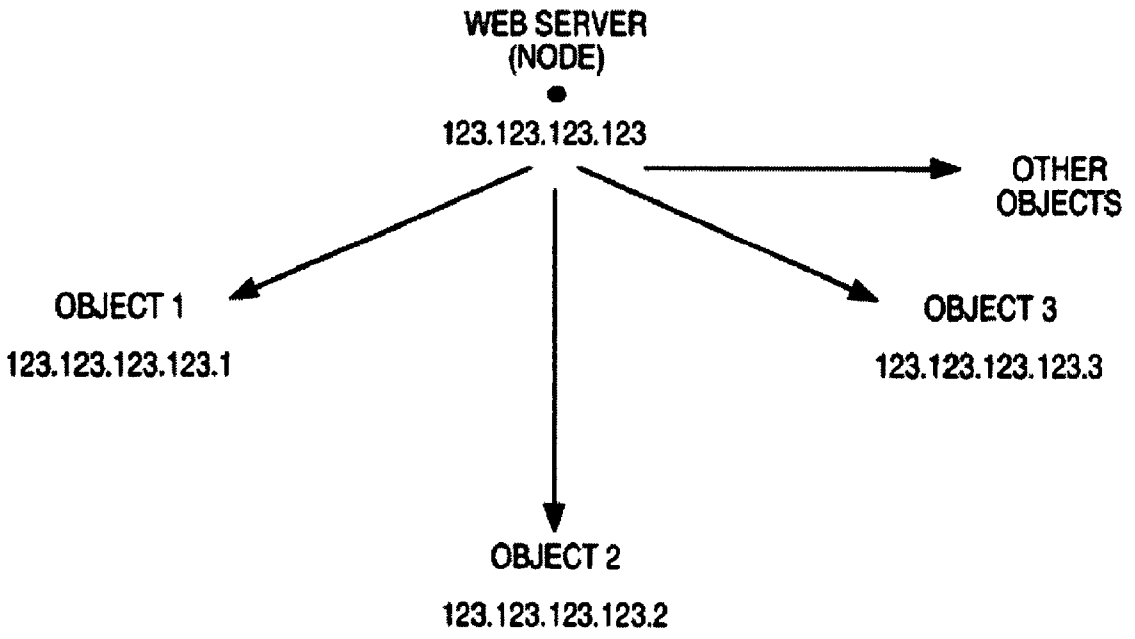
WEB SERVER
(NODE)
123.123.123.123
OTHER
OBJECTS
OBJECT 1
123.123.123.123.1
OBJECT 3
123.123.123.123.3
OBJECT 2
123.123.123.123.2

FIG. 6B

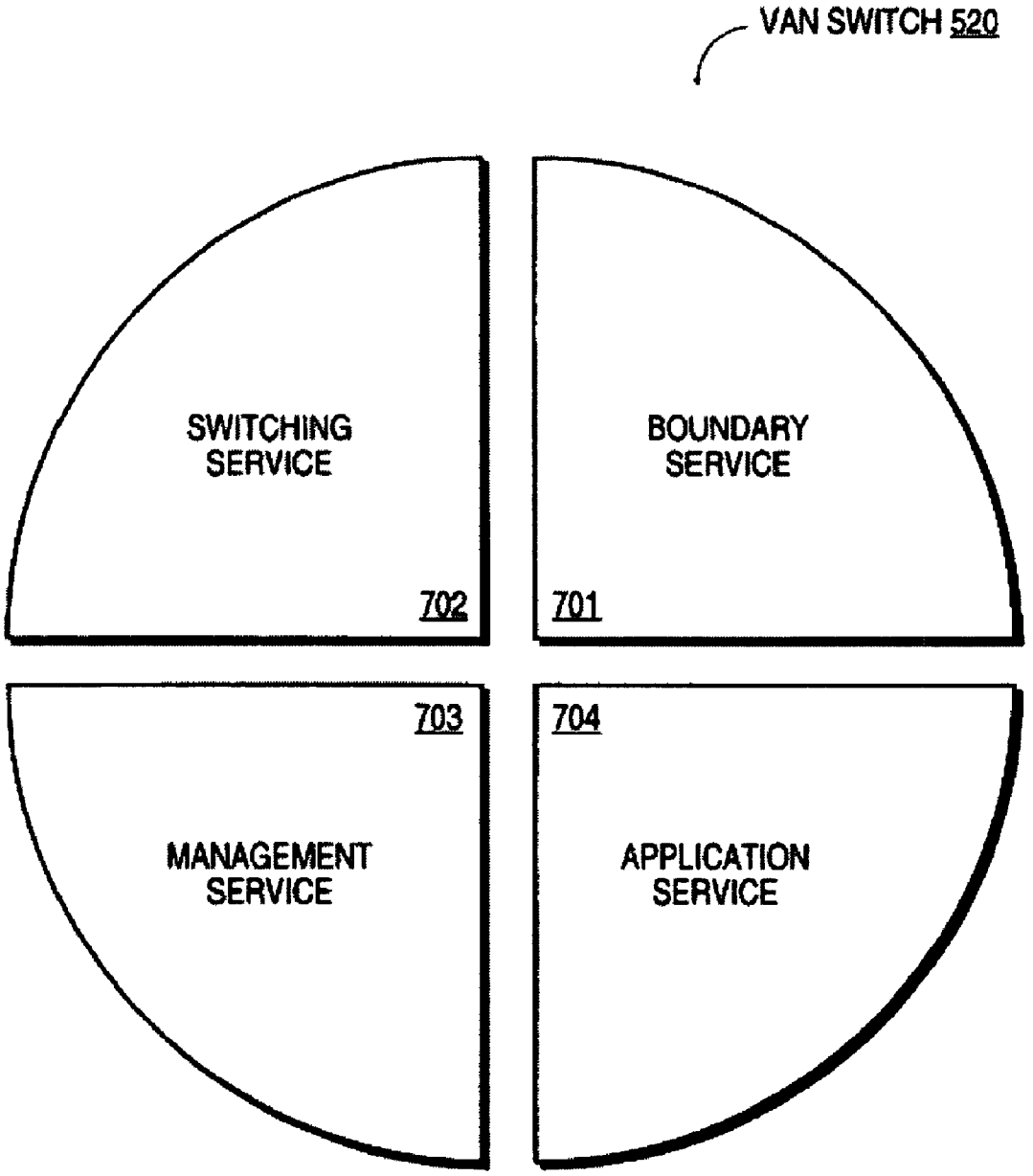
VAN SWITCH 520
SWITCHING SERVICE
702
BOUNDARY SERVICE
701
703
MANAGEMENT SERVICE
704
APPLICATION SERVICE

FIG. 7

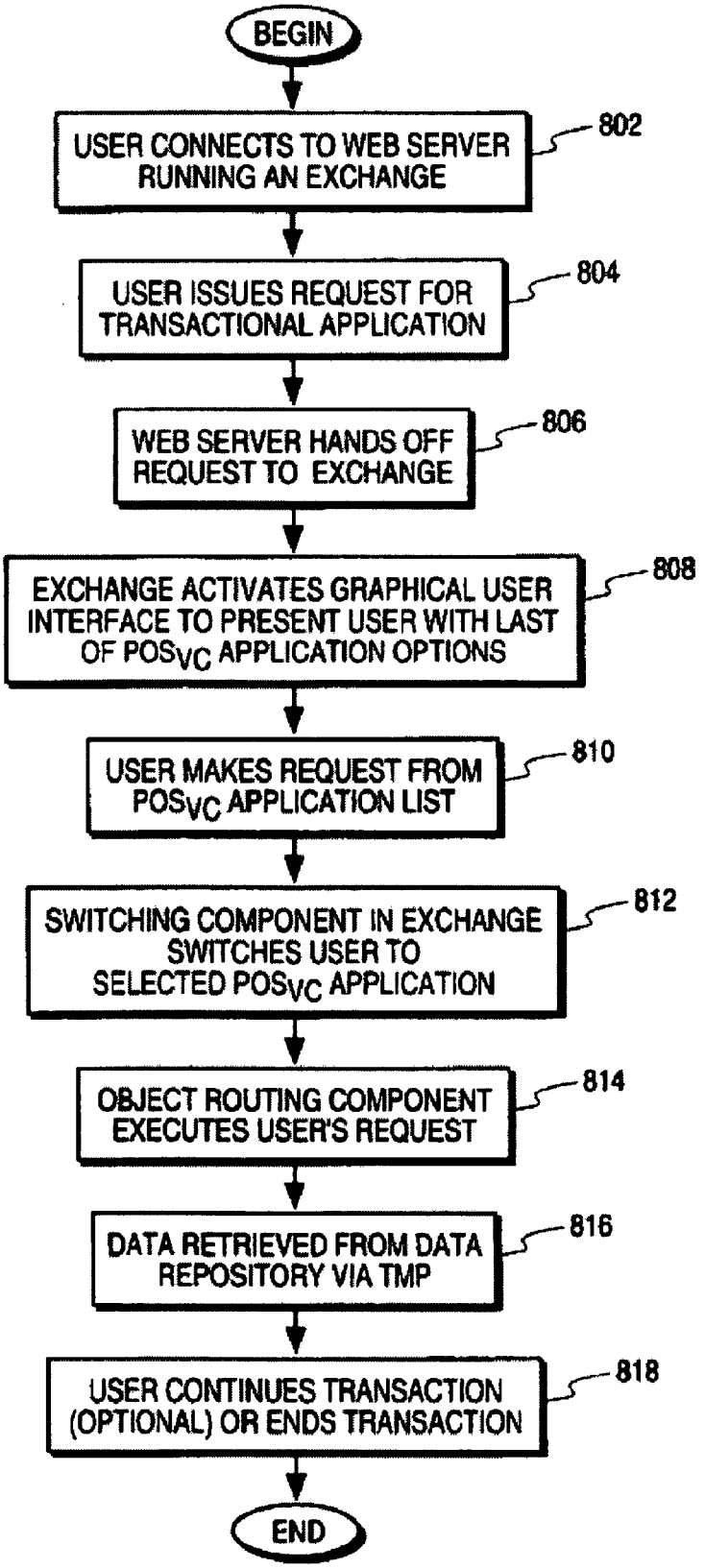
BEGIN
USER CONNECTS TO WEB SERVER RUNNING AN EXCHANGE
802
USER ISSUES REQUEST FOR TRANSACTIONAL APPLICATION
804
WEB SERVER HANDS OFF REQUEST TO EXCHANGE
806
EXCHANGE ACTIVATES GRAPHICAL USER INTERFACE TO PRESENT USER WITH LAST OF POSVC APPLICATION OPTIONS
808
USER MAKES REQUEST FROM POSVC APPLICATION LIST
810
SWITCHING COMPONENT IN EXCHANGE SWITCHES USER TO SELECTED POSVC APPLICATION
812
OBJECT ROUTING COMPONENT EXECUTES USER'S REQUEST
814
DATA RETRIEVED FROM DATA REPOSITORY VIA TMP
816
USER CONTINUES TRANSACTION (OPTIONAL) OR ENDS TRANSACTION
818
END

FIG. 8

WEB APPLICATION NETWORK PORTAL

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a divisional and claims the priority benefit of U.S. patent application Ser. No. 11/980,185 filed Oct. 30, 2007 now U.S. Pat. No. 8,037,158, which is a continuation-in-part of U.S. patent application Ser. No. 09/792,323, now U.S. Pat. No. 7,340,506, filed Feb. 23, 2001, which is a divisional of U.S. patent application Ser. No. 09/296,207, filed Apr. 21, 1999, now U.S. Pat. No. 6,212,556, which is a continuation-in-part of U.S. patent application Ser. No. 08/879,958, now U.S. Pat. No. 5,987,500, filed Jun. 20, 1997, which is a divisional and claims the priority benefit of U.S. patent application Ser. No. 08/700,726, now U.S. Pat. No. 5,778,178, filed Aug. 5, 1996, which claims the priority benefit of U.S. provisional application 60/006,634 filed Nov. 13, 1995. This application also claims benefit under 35 U.S.C. 119(e) to U.S. Provisional application Ser. No. 60/006,634 filed Nov. 13, 1995. The following applications are related applications: application Ser. Nos. 09/863,704; 12/628,066; 12/628,068; 12/628,069, 12/932,758 and 60/206,422.

BACKGROUND

1. Field of the Invention

The present invention relates to the area of Internet communications. Specifically, the present invention relates to a method and apparatus for configurable value-added network switching and object routing.

2. Background of the Invention

With the Internet and the World Wide Web ("the Web") evolving rapidly as a viable consumer medium for electronic commerce, new on-line services are emerging to fill the needs of on-line users. An Internet user today can browse on the Web via the use of a Web browser. Web browsers are software interfaces that run on Web clients to allow access to Web servers via a simple user interface. A Web user's capabilities today from a Web browser are, however, extremely limited. The user can perform one-way, browse-only interactions. Additionally, the user has limited "deferred" transactional capabilities, namely electronic mail (e-mail) capabilities. E-mail capabilities are referred to as "deferred transactions" because the consumer's request is not processed until the e-mail is received, read, and the person or system reading the e-mail executes the transaction. This transaction is thus not performed in real-time.

FIG. **1**A illustrates typical user interactions on the Web today. User **100** sends out a request from Web browser **102** in the form of a universal resource locator (URL) **101** in the following manner: http://www.car.com. URL **101** is processed by Web browser **102** that determines the URL corresponds to car dealer Web page **105**, on car dealer Web server **104**. Web browser **102** then establishes browse link **103** to car dealer Web page **105**. User **100** can browse Web page **105** and select "hot links" to jump to other locations in Web page **105**, or to move to other Web pages on the Web. This interaction is typically a browse-only interaction. Under limited circumstances, the user may be able to fill out a form on car dealer Web page **105**, and e-mail the form to car dealer Web server **104**. This interaction is still strictly a one-way browse mode communications link, with the e-mail providing limited, deferred transactional capabilities.

Under limited circumstances, a user may have access to two-way services on the Web via Common Gateway Interface (CGI) applications. CGI is a standard interface for running external programs on a Web server. It allows Web servers to create documents dynamically when the server receives a request from the Web browser. When the Web server receives a request for a document, the Web server dynamically executes the appropriate CGI script and transmits the output of the execution back to the requesting Web browser. This interaction can thus be termed a "two-way" transaction. It is a severely limited transaction, however, because each CGI application is customized for a particular type of application or service.

For example, as illustrated in FIG. **1**B, user **100** may access bank **150**'s Web server and attempt to perform transactions on checking account **152** and to make a payment on loan account **154**. In order for user **100** to access checking account **152** and loan account **154** on the Web, CGI application scripts must be created for each account, as illustrated in FIG. **1**B. The bank thus has to create individual scripts for each of its services to offer users access to these services. User **100** can then interact in a limited fashion with these individual applications. Creating and managing individual CGI scripts for each service is not a viable solution for merchants with a large number of services.

As the Web expands and electronic commerce becomes more desirable, the need increases for robust, real-time, bi-directional transactional capabilities on the Web. A true real-time, bi-directional transaction would allow a user to connect to a variety of services on the Web, and perform real-time transactions on those services. For example, although user **100** can browse car dealer Web page **105** today, the user cannot purchase the car, negotiate a car loan or perform other types of real-time, two-way transactions that he can perform with a live salesperson at the car dealership. Ideally, user **100** in FIG. **1**A would be able to access car dealer Web page **105**, select specific transactions that he desires to perform, such as purchase a car, and perform the purchase in real-time, with two-way interaction capabilities. CGI applications provide user **100** with a limited ability for two-way interaction with car dealer Web page **105**, but due to the lack of interaction and management between the car dealer and the bank, he will not be able to obtain a loan and complete the purchase of the car via a CGI application. The ability to complete robust real-time, two-way transactions is thus not truly available on the Web today.

SUMMARY OF THE INVENTION

It is therefore an object of the present invention to provide a method and apparatus for providing real-time, two-way transactional capabilities on the Web. Specifically, one embodiment of the present invention discloses a configurable value-added network switch for enabling real-time transactions on the World Wide Web. The configurable value added network switch comprises means for switching to a transactional application in response to a user specification from a World Wide Web application, means for transmitting a transaction request from the transactional application, and means for processing the transaction request.

According to another aspect of the present invention, a method and apparatus for enabling object routing on the World Wide Web is disclosed. The method for enabling object routing comprises the steps of creating a virtual information store containing information entries and attributes, associating each of the information entries and the attributes with an object identity, and assigning a unique network address to each of the object identities.

Other objects, features and advantages of the present invention will be apparent from the accompanying drawings and from the detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

The features and advantages of the present invention will be apparent from the accompanying drawings and from the detailed description of the present invention as set forth below.

FIG. **1**A is an illustration of a current user's browse capabilities on the Web via a Web browser.

FIG. **1**B is an illustration of a current user's capabilities to perform limited transactions on the Web via CGI applications.

FIG. **2** illustrates a typical computer system on which the present invention may be utilized.

FIG. **3** illustrates the Open Systems Interconnection (OSI) Model.

FIG. **4**A illustrates conceptually the user value chain as it exists today.

FIG. **4**B illustrates one embodiment of the present invention.

FIG. **5**A illustrates a user accessing a Web server including one embodiment of the present invention.

FIG. **5**B illustrates the exchange component according to one embodiment of the present invention.

FIG. **5**C illustrates an example of a point-of-service (POSvc) application list.

FIG. **5**D illustrates a user selecting a bank POSvc application from the POSvc application list.

FIG. **5**E illustrates a three-way transaction according to one embodiment of the present invention.

FIG. **6**A illustrates a value-added network (VAN) switch.

FIG. **6**B illustrates the hierarchical addressing tree structure of the networked objects in DOLSIBs.

FIG. **7** illustrates conceptually the layered architecture of a VAN switch.

FIG. **8** is a flow diagram illustrating one embodiment of the present invention.

DETAILED DESCRIPTION

The present invention relates to a method and apparatus for configurable value-added network switching and object routing and management. "Web browser" as used in the context of the present specification includes conventional Web browsers such as NCSA Mosaic™ from NCSA and Netscape Mosaic™ from Netscape™. The present invention is independent of the Web browser being utilized and the user can use any Web browser, without modifications to the Web browser. In the following detailed description, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It will be apparent to one of ordinary skill in the art, however, that these specific details need not be used to practice the present invention. In other instances, well-known structures, interfaces and processes have not been shown in detail in order not to unnecessarily obscure the present invention.

FIG. **2** illustrates a typical computer system **200** in which the present invention operates. The preferred embodiment of the present invention is implemented on an IBM™ Personal Computer manufactured by IBM Corporation of Armonk, N.Y. Alternate embodiments may be implemented on a Macintosh™ computer manufactured by Apple™ Computer, Incorporated of Cupertino, Calif. It will be apparent to those

of ordinary skill in the art that other alternative computer system architectures may also be employed.

In general, such computer systems as illustrated by FIG. **2** comprise a bus **201** for communicating information, a processor **202** coupled with the bus **201** for processing information, main memory **203** coupled with the bus **201** for storing information and instructions for the processor **202**, a read-only memory **204** coupled with the bus **201** for storing static information and instructions for the processor **202**, a display device **205** coupled with the bus **201** for displaying information for a computer user, an input device **206** coupled with the bus **201** for communicating information and command selections to the processor **202**, and a mass storage device **207**, such as a magnetic disk and associated disk drive, coupled with the bus **201** for storing information and instructions. A data storage medium **208** containing digital information is configured to operate with mass storage device **207** to allow processor **202** access to the digital information on data storage medium **208** via bus **201**.

Processor **202** may be any of a wide variety of general purpose processors or microprocessors such as the Pentium™ microprocessor manufactured by Intel™ Corporation or the Motorola™ 68040 or Power PC™ brand microprocessor manufactured by manufactured by Motorola™ Corporation. It will be apparent to those of ordinary skill in the art, however, that other varieties of processors may also be used in a particular computer system. Display device **205** may be a liquid crystal device, cathode ray tube (CRT), or other suitable display device. Mass storage device **207** may be a conventional hard disk drive, floppy disk drive, CD-ROM drive, or other magnetic or optical data storage device for reading and writing information stored on a hard disk, a floppy disk, a CD-ROM a magnetic tape, or other magnetic or optical data storage medium. Data storage medium **208** may be a hard disk, a floppy disk, a CD-ROM, a magnetic tape, or other magnetic or optical data storage medium.

In general, processor **202** retrieves processing instructions and data from a data storage medium **208** using mass storage device **207** and downloads this information into random access memory **203** for execution. Processor **202**, then executes an instruction stream from random access memory **203** or read-only memory **204**. Command selections and information input at input device **206** are used to direct the flow of instructions executed by processor **202**. Equivalent input device **206** may also be a pointing device such as a conventional mouse or trackball device. The results of this processing execution are then displayed on display device **205**.

The preferred embodiment of the present invention is implemented as a software module, which may be executed on a computer system such as computer system **200** in a conventional manner. Using well known techniques, the application software of the preferred embodiment is stored on data storage medium **208** and subsequently loaded into and executed within computer system **200**. Once initiated, the software of the preferred embodiment operates in the manner described below.

FIG. **3** illustrates the Open Systems Interconnection (OSI) reference model. OSI Model **300** is an international standard that provides a common basis for the coordination of standards development, for the purpose of systems interconnection. The present invention is implemented to function as a routing switch within the "application layer" of the OSI model. The model defines seven layers, with each layer communicating with its peer layer in another node through the use of a protocol. Physical layer **301** is the lowest layer, with responsibility to transmit unstructured bits across a link. Data

link layer **302** is the next layer above physical layer **301**. Data link layer **302** transmits chunks across the link and deals with problems like checksumming to detect data corruption, orderly coordination of the use of shared media and addressing when multiple systems are reachable. Network bridges operate within data link layer **302**.

Network layer **303** enables any pair of systems in the network to communicate with each other. Network layer **303** contains hardware units such as routers that handle routing, packet fragmentation and reassembly of packets. Transport layer **304** establishes a reliable communication stream between a pair of systems, dealing with errors such as lost packets, duplicate packets, packet reordering and fragmentation. Session layer **305** offers services above the simple communication stream provided by transport layer **304**. These services include dialog control and chaining. Presentation layer **306** provides a means by which OSI compliant applications can agree on representations for data. Finally, application layer **307** includes services such as file transfer, access and management services (FTAM), electronic mail and virtual terminal (VT) services. Application layer **307** provides a means for application programs to access the OSI environment. As described above, the present invention is implemented to function as a routing switch in application layer **307**. Application layer routing creates an open channel for the management, and the selective flow of data from remote databases on a network.

A. Overview

FIG. **4**A illustrates conceptually the user value chain as it exists today. The user value chain in FIG. **4**A depicts the types of transactions that are performed today, and the channels through which the transactions are performed. A "transaction" for the purposes of the present invention includes any type of commercial or other type of interaction that a user may want to perform. Examples of transactions include a deposit into a bank account, a request for a loan from a bank, a purchase of a car from a car dealership or a purchase of a car with financing from a bank. A large variety of other transactions are also possible.

A typical user transaction today may involve user **100** walking into a bank or driving up to a teller machine, and interacting with a live bank teller, or automated teller machine (ATM) software applications. Alternatively, user **100** can perform the same transaction by using a personal computer (PC), activating application software on his PC to access his bank account, and dialing into the bank via a modem line. If user **100** is a Web user, however, there is no current mechanism for performing a robust, real-time transaction with the bank, as illustrated in FIG. **4**A. CGI scripts provide only limited two-way capabilities, as described above. Thus, due to this lack of a robust mechanism by which real-time Web transactions can be performed, the bank is unable to be a true "Web merchant," namely a merchant capable of providing complete transactional services on the Web.

According to one embodiment of the present invention, as illustrated in FIG. **4**B, each merchant that desires to be a Web merchant can provide real-time transactional capabilities to users who desire to access the merchants' services via the Web. This embodiment includes a service network running on top of a facilities network, namely the Internet, the Web or e-mail networks. For the purposes of this application, users are described as utilizing PC's to access the Web via Web server "switching" sites. (Switching is described in more detail below). Users may also utilize other personal devices such as network computers or cellular devices to access the merchants' services via appropriate switching sites. These switching sites include non-Web network computer sites and cellular provider sites. Five components interact to provide this service network functionality, namely an exchange, an operator agent, a management agent, a management manager and a graphical user interface. All five components are described in more detail below.

As illustrated in FIG. **5**A, user **100** accesses Web server **104**. Having accessed Web server **104**, user **100** can decide that he desires to perform real-time transactions. When Web server **104** receives user **100**'s indication that he desires to perform real-time transactions, the request is handed over to an exchange component. Thus, from Web page **105**, for example, user **100** can select button **500**, entitled "Transactions" and Web server **104** hands user **100**'s request over to the exchange component. The button and the title can be replaced by any mechanism that can instruct a Web server to hand over the consumer's request to the exchange component.

FIG. **5**B illustrates exchange **501**. Exchange **501** comprises Web page **505** and point-of-service (POSvc) applications **510**. Exchange **501** also conceptually includes a switching component and an object routing component (described in more detail below). POSvc applications **510** are transactional applications, namely applications that are designed to incorporate and take advantage of the capabilities provided by the present invention. Although exchange **501** is depicted as residing on Web server **104**, the exchange can also reside on a separate computer system that resides on the Internet and has an Internet address. Exchange **501** may also include operator agent **503** that interacts with a management manager (described in more detail below). Exchange **501** creates and allows for the management (or distributed control) of a service network, operating within the boundaries of an IP-based facilities network. Thus, exchange **501** and a management agent component, described in more detail below, under the headings "VAN Switch and Object Routing," together perform the switching, object routing, application and service management functions according to one embodiment of the present invention.

Exchange **501** processes the consumer's request and displays an exchange Web page **505** that includes a list of POSvc applications **510** accessible by exchange **501**. A POSvc application is an application that can execute the type of transaction that the user may be interested in performing. The POSvc list is displayed via the graphical user interface component. One embodiment of the present invention supports HyperText Markup Language as the graphical user interface component. Virtual Reality Markup Language and Java™ are also supported by this embodiment. A variety of other graphical user interface standards can also be utilized to implement the graphical user interface.

An example of a POSvc application list is illustrated in FIG. **5**C. User **100** can thus select from POSvc applications Bank **510**(**1**), Car Dealer **510**(**2**) or Pizzeria **510**(**3**). Numerous other POSvc applications can also be included in this selection. If user **100** desires to perform a number of banking transactions, and selects the Bank application, a Bank POSvc application will be activated and presented to user **100**, as illustrated in FIG. **5**D. For the purposes of illustration, exchange **501** in FIG. **5**D is shown as running on a different computer system (Web server **104**) from the computer systems of the Web merchants running POSvc applications (computer system **200**). Exchange **501** may, however, also be on the same computer system as one or more of the computer systems of the Web merchants.

Once Bank POSvc application **510** has been activated, user **100** will be able to connect to Bank services and utilize the application to perform banking transactions, thus accessing

data from a host or data repository **575** in the Bank "Back Office." The Bank Back Office comprises legacy databases and other data repositories that are utilized by the Bank to store its data. This connection between user **100** and Bank services is managed by exchange **501**. As illustrated in FIG. **5**D, once the connection is made between Bank POSvc application **510**(**1**), for example, and Bank services, an operator agent on Web server **104** may be activated to ensure the availability of distributed functions and capabilities.

Each Web merchant may choose the types of services that it would like to offer its clients. In this example, if Bank decided to include in their POSvc application access to checking and savings accounts, user **100** will be able to perform real-time transactions against his checking and savings accounts. Thus, if user **100** moves $500 from his checking account into his savings account, the transaction will be performed in real-time, in the same manner the transaction would have been performed by a live teller at the bank or an ATM machine. Therefore, unlike his prior access to his account, user **100** now has the capability to do more than browse his bank account. The ability to perform these types of robust, real-time transactions from a Web client is a significant aspect of the present invention.

Bank can also decide to provide other types of services in POSvc application **510**(**1**). For example, Bank may agree with Car dealership to allow Bank customers to purchase a car from that dealer, request a car loan from Bank, and have the entire transaction performed on the Web, as illustrated in FIG. **5**E. In this instance, the transactions are not merely two-way, between the user and Bank, but three-way, amongst the consumer, Bank and Car dealership. According to one aspect of the present invention, this three-way transaction can be expanded to n-way transactions, where n represents a predetermined number of merchants or other service providers who have agreed to cooperate to provide services to users. The present invention therefore allows for "any-to-any" communication and transactions on the Web, thus facilitating a large, flexible variety of robust, real-time transactions on the Web.

Finally, Bank may also decide to provide intra-merchant or intra-bank services, together with the inter-merchant services described above. For example, if Bank creates a POSvc application for use by the Bank Payroll department, Bank may provide its own employees with a means for submitting timecards for payroll processing by the Bank's Human Resources (HR) Department. An employee selects the Bank HR POSvc application, and submits his timecard. The employee's timecard is processed by accessing the employee's payroll information, stored in the Bank's Back Office. The transaction is thus processed in real-time, and the employee receives his paycheck immediately.

B. Van Switching and Object Routing

As described above, exchange **501** and management agent **601**, illustrated in FIG. **6**A, together constitute a value-added network (VAN) switch. These two elements may take on different roles as necessary, including peer-to-peer, client-server or master-slave roles. Management manager **603** is illustrated as residing on a separate computer system on the Internet. Management manager **603** can, however, also reside on the same machine as exchange **501**. Management manager **603** interacts with the operator agent **503** residing on exchange **501**.

VAN switch **520** provides multi-protocol object routing, depending upon the specific VAN services chosen. This multi-protocol object routing is provided via a proprietary protocol, TransWeb™ Management Protocol (TMP). TMP incorporates the same security features as the traditional Simple Network Management Protocol, SNMP. It also allows for the integration of other traditional security mechanisms, including RSA security mechanisms.

One embodiment of the present invention utilizes TMP and distributed on-line service information bases (DOLSIBs) to perform object routing. Alternatively, TMP can incorporate s-HTTP, Java™, the WinSock API or ORB with DOLSIBs to perform object routing. DOLSIBs are virtual information stores optimized for networking. All information entries and attributes in a DOLSIB virtual information store are associated with a networked object identity. The networked object identity identifies the information entries and attributes in the DOLSIB as individual networked objects, and each networked object is assigned an Internet address. The Internet address is assigned based on the IP address of the node at which the networked object resides.

For example, in FIG. **5**A, Web server **104** is a node on the Internet, with an IP address. All networked object associated with Web server **104** will therefore be assigned an Internet address based on the Web server **104**'s IP address. These networked objects thus "branch" from the node, creating a hierarchical tree structure. The Internet address for each networked object in the tree essentially establishes the individual object as an "IP-reachable" or accessible node on the Internet. TMP utilizes this Internet address to uniquely identify and access the object from the DOLSIB. FIG. **6**B illustrates an example of this hierarchical addressing tree structure.

Each object in the DOLSIB has a name, a syntax and an encoding. The name is an administratively assigned object ID specifying an object type. The object type together with the object instance serves to uniquely identify a specific instantiation of the object. For example, if object **610** is information about models of cars, then one instance of that object would provide user **100** with information about a specific model of the car while another instance would provide information about a different model of the car. The syntax of an object type defines the abstract data structure corresponding to that object type. Encoding of objects defines how the object is represented by the object type syntax while being transmitted over the network.

C. Management and Administration

As described above, exchange **501** and management agent **601** together constitute a VAN switch. FIG. **7** illustrates conceptually the layered architecture of VAN switch **520**. Specifically, boundary service **701** provides the interfaces between VAN switch **520**, the Internet and the Web, and multi-media end user devices such as PCs, televisions or telephones. Boundary service **701** also provides the interface to the on-line service provider. A user can connect to a local application, namely one accessible via a local VAN switch, or be routed or "switched" to an application accessible via a remote VAN switch.

Switching service **702** is an OSI application layer switch. Switching service **702** thus represents the core of the VAN switch. It performs a number of tasks including the routing of user connections to remote VAN switches, described in the paragraph above, multiplexing and prioritization of requests, and flow control. Switching service **702** also facilitates open systems' connectivity with both the Internet (a public switched network) and private networks including back office networks, such as banking networks. Interconnected application layer switches form the application network backbone. These switches are one significant aspect of the present invention.

Management service **703** contains tools such as Information Management Services (IMS) and application Network Management Services (NMS). These tools are used by the end users to manage network resources, including VAN

switches. Management service **703** also provides applications that perform Operations, Administration, Maintenance & Provisioning (OAM&P) functions. These OAM&P functions include security management, fault management, configuration management, performance management and billing management. Providing OAM&P functions for applications in this manner is another significant aspect of the present invention.

Finally, application service **704** contains application programs that deliver customer services. Application service **704** includes POSvc applications such as Bank POSvc described above, and illustrated in FIG. **6**A. Other examples of VAN services include multi-media messaging, archival/retrieval management, directory services, data staging, conferencing, financial services, home banking, risk management and a variety of other vertical services. Each VAN service is designed to meet a particular set of requirements related to performance, reliability, maintenance and ability to handle expected traffic volume. Depending on the type of service, the characteristics of the network elements will differ. VAN service **704** provides a number of functions including communications services for both management and end users of the network and control for the user over the user's environment.

FIG. **8** is a flow diagram illustrating one embodiment of the present invention. A user connects to a Web server running an exchange component in step **802**. In step **804**, the user issues a request for a transactional application, and the web server hands off the request to an exchange in step **806**. The exchange activates a graphical user interface to present user with a list of POSvc application options in step **808**. In step **810**, the user makes a selection from the POSvc application list. In step **812**, the switching component in the exchange switches the user to the selected POSvc application, and in step **814**, the object routing component executes the user's request. Data is retrieved from the appropriate data repository via TMP in step **816**, and finally, the user may optionally continue the transaction in step **818** or end the transaction.

Thus, a configurable value-added network switching and object routing method and apparatus is disclosed. These specific arrangements and methods described herein are merely illustrative of the principles of the present invention. Numerous modifications in form and detail may be made by those of ordinary skill in the art without departing from the scope of the present invention. Although this invention has been shown in relation to a particular preferred embodiment, it should not be considered so limited. Rather, the present invention is limited only by the scope of the appended claims.

What is claimed is:

1. A system, comprising:

a Web server, including a processor and a memory, for offering one or more Web applications as respective point-of-service applications in a point-of-service application list on a Web page;

each Web application of the one or more Web applications for requesting a real-time Web transaction;

a value-added network (VAN) switch running on top of a facilities network selected from a group consisting of the World Wide Web, the Internet and an e-mail network, the VAN switch for enabling the real-time Web transactions from the one or more Web applications;

a service network running on top of the facilities network for connecting through the Web server to a back-end transactional application; and

a computer system executing the Back-end transactional application for processing the transaction request in real-time.

2. The system of claim **1**, wherein the VAN switch is an application layer switch in the application layer of the OSI model.

3. The system of claim **1**, wherein the VAN switch enables the switching to Web merchant services in response to a Web server's receipt of a selection of one of the point-of-service Web applications corresponding to the Web merchant services from the point-of-service application list on the Web page.

4. The system of claim **1**, wherein each Web merchant service includes one of the one or more Web applications offered as a VAN service, utilizing the VAN switch.

5. The system of claim **1**, wherein each Web application of the one or more Web applications is a value-added network (VAN) service or online service atop the Web, utilizing the VAN switch.

6. The system of claim **1**, wherein the service network includes the one or more Web applications and wherein the service network manages the flow of real-time Web transactions from the one or more Web applications and includes the VAN switch.

7. The system of claim **1**, wherein the Web server is configured to receive a Web transaction request and wherein the Web transaction request is a request to perform one of the real-time Web transactions from one of the one or more Web applications, utilizing the VAN switch.

8. The system of claim **1**, further comprising:

a computer system executing a back-end transactional application for processing the transaction request in real-time, wherein said computer system includes a data repository, wherein the data repository is a data repository to store banking data, and wherein retrieving data includes retrieving banking data to complete a real-time Web banking transaction as one of the real-time Web transactions from a banking Web application as one of the one or more Web applications.

9. The system of claim **1**, further comprising the one or more Web applications offered as software-as-a-service atop the Web.

10. A method for performing real-time Web transactions from a Web application, comprising:

receiving a request at a Web server, including a processor and a memory, for a real-time Web transaction from a Web application on a Web page, wherein the Web server is configured to hand over the request to a Value Added Network (VAN) switch;

offering a plurality of Web applications including the Web application on a Web page, upon receipt from a Web server a selection of the Web application from the offered Web applications, the Web application corresponding to a respective back-end transactional application, wherein the back-end transactional application is an application running at the back-office server of one or more Web merchants or at the back-end;

receiving a request for Web merchant services upon receipt by a Web server a selection of the Web application, wherein the request for Web merchant services is a request to connect to the selected back-end transactional application to perform an interactive real-time Web transaction from the Web application, wherein the transactional application is an on-line service provided by one or more Web merchants or the back-end;

switching utilizing the VAN switch to the back-end transactional application in response to receiving the request from the Web server;

providing distributed control of a service network, operating within the boundaries of an IP-based facilities network;

connecting to specified ones of the Web merchant services or to back-end services, wherein the connection to the Web merchant services or back-end transactional services is managed;

accessing data from a host or data repository coupled to the back office server of one or more Web merchants or to the back-end transactional application, wherein the back office server or back-end is coupled to legacy databases and other data repositories that are utilized by the one or more of the Web merchants or the back-end transactional application to store data; and

completing the real-time Web transactions from the Web application.

11. The method of claim **10**, wherein the real-time Web transactions are Web transactions from the Web application accessing a value-added network service.

12. A computer-implemented system, operated by a business entity comprising:

a Web application network portal, wherein the portal includes memory and a processor and one or more Web applications offered respectively by one or more Web merchants or other service providers, or by multiple sub-entities of the business entity who have agreed to cooperate to provide on-line Value Added Network (VAN) services atop the Web for access by employees of the business entity;

a list of one or more point-of-service employee Web applications on a Web page offered by the business entity that operates the portal, said portal allowing access to the one or more point-of-service applications on the Web page from said list, and wherein the portal offers the one or more point-of-service applications as on-line services on the Web page, and further wherein the portal is operated by the business entity over a service network running on top of a facilities network, the facilities network being selected from a group consisting of: the World Wide Web, the Internet and email networks, said service network including a VAN Switch;

one or more back-end transactional applications running at one or more back-end host computers, corresponding, respectively to the one or more point-of-service applications accessed, to complete a real-time Web transaction from the Web application on the Web page.

13. The portal of claim **12**, wherein the one or more Web applications include a plurality of point-of-service applications on the Web page, wherein the business entity and the sub-entities offer Web applications which are selected from a group consisting of payroll Web applications, human resources Web applications, expense report Web applications, time card Web applications, travel Web applications, vacation Web applications, financial Web applications and sales commission Web applications.

* * * * *

Exhibit D

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

PI-NET INTERNATIONAL INC.,	)	
	)	
Plaintiff,	)	
	)	
v.	)	Civ. No. 12-282-SLR
	)	
JPMORGAN CHASE & CO.,	)	
	)	
Defendant.	)	

George Pazuniak, Esquire of O'Kelly Ernst & Bielli, LLC, Wilmington, Delaware. Counsel for Plaintiff.

Robert Scott Saunders, Esquire and Jessica Raatz, Esquire of Skadden, Arps, Slate, Meagher & Flom LLP, Wilmington, Delaware. Counsel for Defendant. Of Counsel: Danie A. DeVito, Esquire, Douglas R. Nemec, Esquire, Edward L. Tulin, Esquire and Andrew Gish, Esquire of Skadden, Arps, Slate, Meagher & Flom LLP.

MEMORANDUM OPINION

Dated: May 14, 2014
Wilmington, Delaware

ROBINSON, District Judge

At Wilmington this day of May, 2014, having heard argument on, and having reviewed the papers submitted in connection with, the parties' proposed claim construction; the court issues its claim construction decision as to the disputed claim language of U.S. Patent Nos. 8,108,492 (the '"492 patent"), 5,987,500 (the '"500 patent"), and 8,037,158 (the "'158 patent"), consistent with the tenets of claim construction set forth by the United States Court of Appeals for the Federal Circuit in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005).

1. Limitations Found in Multiple Patents

a. "[R]eal-time:"[1] "In a complete and non-deferred manner, without assembling, disassembling, formatting, or reformatting the transaction information."[2] The specification describes, for example, e-mail capabilities, which are not real-time transactions but, rather, exemplify "'deferred transactions' because the consumer's request is not processed until the e-mail is received, read, and the person or system reading the e-mail executes the transaction." (1:44-58)[3] The specification describes that

> typical user interactions on the [world wide web ("web")] today [include] . . . two-way services . . . via Common Gateway Interface (CGI) applications. CGI is a standard interface for running external programs on a Web server. It allows Web servers to create documents dynamically when the server receives a request from the Web browser. When the Web server receives a request for a document, the Web server

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[1]Claims 1 and 10 of the '492 patent; claims 1 and 10 of the '500 patent; and independent claim 1 (not asserted) and dependent claim 4 of the '158 patent.

[2]This construction of "real-time" applies to the use of the limitation in subsequent constructions for the patents-in-suit.

[3]All citations are to the '492 specification unless otherwise indicated.

> dynamically executes the appropriate CGI script and transmits the output of the execution back to the requesting Web browser. This interaction can thus be termed a "two-way" transaction. It is a severely limited transaction, however, because each CGI application is customized for a particular type of application or service.

(1:49-2:11) In comparison, "[a] true real-time, bi-directional transaction would allow a user to connect to a variety of services on the Web, and perform real-time transactions on those services, . . . with two-way interaction capabilities." (2:26-38) For example, a financial "transaction will be performed in real-time, in the same manner the transaction would have been performed by a live teller at the bank or an ATM machine." (7:16-19)

During prosecution, the applicant argued that her invention's "real-time" transactions were different from the prior art's deferred two-way transactions, as "[e]ven if [the prior art reference] taught of completing a transaction, it was through the use of CGI, which strips field-by-field from a Web form and sends it as standard I/O to the application that is local to the [b]ack-[e]nd, and that must assemble/disassemble the information again," therefore, "[t]he transaction is not completed in real-time." (D.I. 75, ex. E at 188)[4] The applicant also argued that a different prior art reference

> deals with processing documents using CGI scripts, which the [a]pplicant has clearly described in this present [a]pplication as well as in the parent patents that CGI involves standard I/O and formatting and reformatting at both ends so as to be compatible with HTML files is [a] 'deferred transaction,' . . . not with true two-way or N-way, real-time transactional capabilities . . . . [The prior art reference] discloses deferred transactional capabilities utilizing CGI, not real[-]time Web transactions from a World Wide Web application, as in [a]pplicant's specification . . . nor as in Figs 5C or 5D of the subject application.

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[4]Prosecution history of the '158 patent, hereinafter "ex. E."

(D.I. 75, ex. H at 19)[5] Therefore, the construction describes "real-time" (in a way helpful to a jury) by distinguishing the limitation from the prior art deferred transactions, as argued by the applicant during patent prosecution.

b. "[V]alue-added network switch." "Because claims delineate the patentee's right to exclude, the patent statute requires that the scope of the claims be sufficiently definite to inform the public of the bounds of the protected invention, i.e., what subject matter is covered by the exclusive rights of the patent. Otherwise, competitors cannot avoid infringement, defeating the public notice function of patent claims." *Halliburton Energy Svcs. v. M-ILLC*, 514 F.3d 1244, 1249 (Fed. Cir. 2008) (citation omitted). The definiteness requirement does not compel absolute clarity. Only claims "not amenable to construction" or "insolubly ambiguous" are indefinite. *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1348 (Fed. Cir. 2005) (citations omitted).

Figure 7 represents the value added network switch ("VAN switch") as having four components - "switching service 702," "management service 703," "boundary service 701," and "application service 704." (Fig 7) The "boundary service 701 provides the interface[] between VAN switch 520, the Internet and the Web, and multi-media end user devices such as PCs, televisions or telephones. Boundary service 701 also provides the interface to the on-line service provider." (8:41-48) "Switching service 702 is an OSI application layer switch, . . . represents the core of the VAN switch . . . [and] performs a number of tasks including the routing of user

[5]Arguments made during the prosecution of application no. 12/628,066.

connections to remote VAN switches, . . . multiplexing and prioritization of requests, and flow control, . . . [as well as] facilitat[ing] open systems' connectivity with both the [i]nternet (a public switched network) and private networks including back office networks, such as banking networks." (8:52-60) "Management service 703 contains tools . . .used by the end users to manage network resources, including VAN switches. Management service 703 also provides applications that perform . . . functions includ[ing] security management, fault management, configuration management, performance management and billing management." (8:64-9:6) "[A]pplication service 704 contains application programs that deliver customer services. Application service 704 includes [point-of-service] applications . . . ." (9:9-11)

The specification further provides that the "[e]xchange 501 also conceptually includes a switching component" (6:20-21) and the "exchange 501 and management agent 601 . . . together constitute a [VAN] switch" (7:52-54, 8:41-42). The specification describes "management agent" as one of the components interacting to provide service network functionality. (6:1-5) The "exchange and a management agent component . . . together perform the switching, object routing, application and service management functions according to one embodiment of the present invention." (6:35-38) The specification offers no explanation or examples as to what the management agent does nor how it works to perform the listed functions.

Claim 1 of the '492 patent recites that the VAN switch is "running on top of the facilities network." The specification discloses only one embodiment of the VAN switch: "VAN switch 520 provides multi-protocol object routing, depending upon the specific VAN services chosen . . . provided via a proprietary protocol, TransWeb™

Management Protocol (TMP)." (7:62-65) The inventor testified that "there never had been any proprietary protocol, and TMP was intended to refer to the protocols as described in the patents." (D.I. 150, ex. AB at 14) Bardash avers TMP "is merely a shorthand for the general protocol that is described in the patent." (D.I. 150, ex. AC at 9) JP Morgan's expert, Spielman, responds that

> a person of ordinary skill in the art would have had no guidance regarding what constitutes TMP or how to use that protocol within the context of the invention. TMP is defined strictly in terms of its function, without any description of how it can be used. Thus, a person of skill in the art would essentially had to have developed her own protocol to implement and operate the claimed VAN Switch, with no description from the patents-in-suit themselves to aid in that effort.

(D.I. 150, ex. AJ at ¶ 53) Spielman opined that the "patents-in-suit provide no algorithms, source code, or any other descriptive language offering any guidance as to how to configure a VAN Switch so as to perform 'real-time' transactions using TMP or any other protocol." (*Id.* at ¶ 48) Bardash agrees that figures 6A and 7 "explain more abstract concepts," but argues that these and other concepts would be "very understandable to one of ordinary skill in the art." (D.I. 141, ex. BE at ¶¶ 37-38)

Turning to the plain and ordinary meaning of the limitation, a 1997 computer dictionary defines "switch" as "[i]n communications, a computer or electromechanical device that controls routing and operation of a signal path;" "[i]n operating systems such as MS-DOS, an argument used to control the execution of a command or an application, typically starting with a slash character (/)."[6] A 2001 dictionary offers a similar definition of "switch:" "[a] mechanical or electronic device that directs the flow of

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[6]*Computer Dictionary* (Microsoft Press, 3d ed. 1997).

electrical or optical signals from one side to the other. Switches with multiple input and output ports such as a PBX are able to route traffic;" "[i]n programming, a bit or byte used to keep track of something. Sometimes refers to a branch in a program."[7] These definitions[8] are not helpful in the context of the patents-in-suit, which contemplate the VAN switch as a software type component.

The court concludes that the VAN switch is described in several different ways in the patent specification. The abstract drawings do not illustrate the VAN switch or its protocol, so as to allow it to be implemented. While the "invention relates to a method and apparatus for configurable value-added network switching and object routing," the specification does not describe this switch as to allow one of ordinary skill in the art to identify the scope of the invention. The specification offers overlapping and competing definitions for the VAN switch and its four components. Therefore, the limitation is indefinite.

c. "[S]witching."[9] The claims of the patents-in-suit describe "switching" as done by the VAN switch: "[T]he VAN switch enables the switching" (claim 3 of the '492 patent); "switching utilizing the VAN switch" (claim 10 of the '492 patent); and a method for configuring a VAN switch comprising "switching" (claim 10 of the '500 patent). As discussed above, the VAN switch is made up of four components, including

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[7] *The Computer Glossary, The Complete Illustrated Dictionary* (AMACOM, American Management Association, 9th ed. 2001).

[8] The dictionary does not define "network switch." A google search for "network switch" reveals that it is understood to be a computer networking device used to connect devices together on a computer network.

[9] Claims 3 (dependent) and 10 of the '492 patent and claim 10 of the '500 patent.

a "switching service," which is "the core of the VAN switch." (8:52-63) The court concluded that the limitation "VAN switch" is indefinite. The specification does not disclose how the VAN switch or the switching service (within the VAN switch) accomplishes "switching," therefore, the court concludes that this limitation is similarly indefinite.[10]

d. "[S]ervice network."[11] The specification describes an "embodiment includ[ing] a service network running on top of a facilities network, namely the Internet, the Web or e-mail networks . . . , [with] [f]ive components interact[ing] to provide this service network functionality, namely an exchange, an operator agent, a management agent, a management manager and a graphical user interface." (5:55-6:5) The "[e]xchange 501 creates and allows for the management (or distributed control) of a service network, operating within the boundaries of an IP-based facilities network." (6:30-33)

During prosecution, the applicant argued that the prior art did not disclose "a transactional Web application, offered as an online service atop the Web, with an "object" or transactional data structure, that connects to a transactional application across a service network atop the World Wide Web, as these terms would be understood by one skilled in the art after reading the subject application" or a "service network across the Web." (D.I. 75, ex. E at 186) "[T]he service network atop the web has access to OSI application layer services that are not available" in the prior art. (D.I.

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[10]This analysis is informed by the discussion below of the limitation "means for switching" which is also indefinite. *See infra* part 3a.

[11]Claims 1 and 10 of the '492 patent and claim 1 of the '158 patent.

75, ex F at 68)[12] Moreover, the applicant emphasized that "[t]here is a significant difference between a physical network or 'a facilities network' on the one hand, and the 'service network' 'atop a facilities network' (such as the physical Internet, Web, 'email networks' or 'other IP-based facilities networks') . . . ." (*Id.* at 48)

The language of claim 1 of the '492 patent describes:

> A system comprising
> . . .
> a [VAN] switch running on top of a facilities network selected from a group consisting of the World Wide Web, the Internet and an e-mail network, the VAN switch for enabling the real-time Web transactions from the one or more Web applications;
> a service network running on top of the facilities network for connecting through the Web server to a back-end transactional application; . . . .

(9:49-67) This claim distinguishes the "service network" from a "facilities network," as well as the "VAN switch" from a "service network." As discussed above, the specification describes that the "exchange 501 and management agent 601 . . . together constitute a [VAN] switch." (7:52-54, 8:41-42) These two components also are two of five components involved in the service network functionality.

Pi-Net's proposed construction, "an online network," does not differentiate "facilities networks" which, according to the specification, are the internet, Web or e-mail networks (and, thus, "online"), from "service network." The court cannot discern the meaning of "service network," the components of which overlap those used to describe the VAN switch. As the specification provides no clarity to this limitation, the limitation is indefinite.

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[12]Prosecution history of the '492 patent, hereinafter "ex. F."

e. "[T]ransactional services:"[13] "Services from a merchant available on the web." This construction finds support in the specification which states "a true 'Web merchant' [is] a merchant capable of providing complete transactional services on the Web." (5-51-54)

f. "[W]eb transaction:"[14] "Any type of commercial or other type of interaction performed by a user over the world wide web." The parties agree that a "transaction" is "any type of commercial or other type of interaction that a user may want to perform." (D.I. 64 at 3) The specification defines "the World Wide Web ('the Web')." (1:33)

2. Application Limitations

a. "[P]oint-of-service application[s]"[15] and "transactional application[s]:"[16] "A software program that transmits a user's request for a service." The specification describes "point-of-service applications"[17] as "transactional applications, namely applications that are designed to incorporate and take advantage of the capabilities provided by the present invention." (6:22-25) The figures represent point-of-service applications as being those available from merchants (on the "front-end"), i.e. "Bank 510(1), Car Dealer 510(2) or Pizzeria 510(3)." (Fig 5C, 6:51-55) For

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[13]Claim 10 of the '492 patent and claims 1 and 10 of the '500 patent.

[14]Claims 1 and 10 of the '492 patent and claim 1 of the '158 patent.

[15]Claim 1 of the '492 patent and claims 1 and 4 of the '158 patent.

[16]Claim 1 of the '500 patent.

[17]The specification also uses "POSvc application."

example, "[i]f user 100 desires to perform a number of banking transactions, and selects the Bank application, a Bank POSvc application will be activated and presented to user 100 . . . ." (6:55-57)

In the prosecution history, the applicant described that "[e]ach transactional application is capable of providing the user with a complete set of transactional services offered by a certain network merchant . . . . For example, if the user selects a Bank transactional application, the Bank application is activated and the user is connected to a variety of Bank services." (D.I. 75, ex. D at 21)[18]

This construction is also consistent with the claim language. For example, claim 1 of the '492 patent describes the point-of-service application as listed on a web page, i.e., at the front-end, and "a computer system executing the [b]ack-end transactional application for processing the transaction request in real-time." (10:49-67; *see also* claim 1 of the '500 patent, 10:44-57)

b. "[W]eb application"[19] and "network application:"[20] "A software program running on a facilities network." The claim language, specification and prosecution history describe a "point-of-service application" or "transactional application" as a type of "web application." This supports a broader construction of the present limitations. The claim language recites "offering one or more Web applications as respective point-of-service applications." (Claim 1 of the '492 patent, 10:49-54) The

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[18]Prosecution history of the '500 patent, hereinafter "ex. D."

[19]Claims 1 and 10 of the '492 patent and claim 4 of the '158 patent.

[20]Claims 1, 10 and 35 of the '500 patent.

specification differentiates the present limitations from "point-of-service applications" or "transactional applications," namely "[t]he configurable value added network switch comprises means for switching to a transactional application in response to a user specification from a World Wide Web application . . . ." (2:54-59)

Moreover, applicant explained in the prosecution history that the "'point[-]of[-]service application' is a Web application running atop the Web" and that the prior art did not disclose "a Web application or a [p]oint-of-[s]ervice application provided on a Web page as an on-line service on a Web page." (D.I. 75, ex. F at 48, 51) The limitation "web application" was used by persons of ordinary skill in the art prior to the filing of the provisional patent application. For example, an article regarding the World Wide Web in 1994 describes a "prototype World-Wide Web application," which software program allowed users to click on links to certain research departments.[21]

c. "[S]aid user application:"[22] "A network application." There are two applications identified in the claim language ("transactional application" and "network application") and the claim refers to a "link between said user application and said transactional application." ('500 patent, 12:47-49) By default, this limitation must refer to the network application to make grammatical sense.

d. "[B]ack-end transactional application[s],"[23] and "the selected

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[21]Tim Berners-Lee, et al., *The World-Wide Web*, 37 Communications of the ACM No. 8, 76, 76 & 79 fig. 1 (1994).

[22]Claim 35 of the '500 patent.

[23]Claims 1 and 10 of the '492 patent.

back-end transactional application:"[24] "A software program that executes a user's request for a service." The claims distinguish between point-of-service applications, which are front-end applications as described above, and back-end transactional applications. For example, claim 1 of the '492 patent recites "a computer system executing the [b]ack-end transactional application for processing the transaction request in real-time." (9:65-67) Claim 10 of the '492 patent describes "switching . . . to the back-end transactional application in response to receiving the request from the Web server." (10:65-67) Figure 4B represents an embodiment of the invention and depicts a "back office" with an operating system and applications.

3. Means Plus Function Limitations

Generally, "in a means-plus-function claim 'in which the disclosed structure is a computer, or microprocessor, programmed to carry out an algorithm, the disclosed structure is not the general purpose computer, but rather the special purpose computer programmed to perform the disclosed algorithm.'" *Aristocrat Techs. Australia Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008) (quoting *WMS Gaming, Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999)). The specification can express the algorithm "in any understandable terms including as a mathematical formula, in prose, or as a flow chart, or in any other manner that provides sufficient structure." *Finisar Corp. v. DirecTV Grp., Inc.*, 523 F.3d 1323, 1340 (Fed. Cir. 2008) (internal citation omitted).

The description of the algorithm must do more than describe the function to be

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[24]Claim 10 of the '492 patent.

performed, it must describe how the function is to be performed. *Blackboard, Inc. v. Desire2Learn, Inc.*, 574 F.3d 1371, 1382-83 (Fed. Cir. 2009) (finding "[t]he specification contains no description of the structure or the process that the access control manager uses to perform the "assigning" function."). It is insufficient to aver that a disclosure has enough structure for a person of ordinary skill to devise some method or write some software to perform the desired function. *Function Media, L.L.C. v. Google, Inc.*, 708 F.3d 1310, 1319 (Fed. Cir. 2013) (citing *Blackboard*, 574 F.3d at 1385).

In *Ergo Licensing, LLC v. CareFusion 303, Inc.*, 673 F.3d 1361 (Fed. Cir. 2012), the Federal Circuit explained that a narrow exception to the requirement for an algorithm exists.

> [A] general-purpose computer is sufficient structure if the function of a term such as 'means for processing' requires no more than merely 'processing,' which any general-purpose computer may do without any special programming. If special programming is required for a general-purpose computer to perform the corresponding claimed function, then the default rule requiring disclosure of an algorithm applies. It is only in the rare circumstances where any general-purpose computer without any special programming can perform the function that an algorithm need not be disclosed.

Id. at 1364 (citing *In re Katz*, 639 F.3d 1303, 1316 (Fed. Cir. 2011)).

a. "[M]eans for switching to a transactional application in response to a user specification from a network application."[25] According to Pi-Net, the function recited by the claim is to "switch to a transactional application in response to a user specification from a network application" and the structure is a "switching service."

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[25]Claims 1 and 35 of the '500 patent.

The patent specification describes a "switching service" as "an OSI application layer switch." (8:52) The switching service

> performs a number of tasks including the routing of user connections to remote VAN switches, . . . , multiplexing and prioritization of requests, and flow control. Switching service 702 also facilitates open systems' connectivity with both the [i]nternet (a public switched network) and private networks including back office networks, such as banking networks. Interconnected application layer switches form the application network backbone. These switches are one significant aspect of the present invention.

(8:52-63) Moreover, "users are described as utilizing PC's to access the Web via Web server 'switching' sites." (5:61-63)

Relying on the specification, Bardash opined that, "a person skilled in the art reading the patent would understand the term and could apply it." (D.I. 150, ex. AA at 42) Bardash also opined[26] that figure 8, specifically "the algorithm shown in block 806 through block 818" and the supporting description, showed the transaction flow. (D.I. 66 at ¶ 37) Spielman opined that, "at the time of the alleged invention, an algorithm would be required for a computer processor to carry out the functions of [the means plus function limitations]."[27] (D.I. 150, ex. AJ at ¶¶ 75-79) In her opinion, "the specification of the patents-in-suit discloses no algorithm at all. There are no step-by-step instructions for how to carry out any of the claimed processing steps—and

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[26]This opinion was directed to the limitation "keeping the transaction flow captive," but also referenced the specification's description of "switching means."

[27]This opinion is directed to each of the means plus function claims discussed below. Moreover, "an algorithm would be required for the computer system required in claim 1 of the '492 patent to process the claimed transaction request." (D.I. 150, ex. AJ at ¶ 75)

no instructions for how to carry out any steps in 'real time.'" (*Id.* at ¶ 76) Nor do the figures disclose algorithms. Spielman explained that figure 8 is a flow diagram, which "provides a list of functions, but omits any discussion or depiction of the underlying steps that would be needed in order to achieve the functional results." (*Id.* at ¶ 78)

The court concludes that the specification does not provide an algorithm or other structure which discloses how the "switching service" performs the claimed function of "switching to a transactional application," which may involve one of a "number of tasks," including "routing user connections," "multiplexing and prioritizing requests," "flow control," and "facilitating connectivity." *Function Media, L.L.C. v. Google, Inc.*, 708 F.3d 1310, 1319 (Fed. Cir. 2013) (citing *Blackboard*, 574 F.3d at 1385) (It is insufficient to aver that a disclosure has enough structure for a person of ordinary skill to devise some method or write some software to perform the desired function.). Without algorithms to show how a switch would accomplish the claimed function (and is able to perform one or all of the tasks), the limitation is indefinite.

i. Dependent claim 2

Claim 2 of the '500 patent is a dependent claim which recites:

> The configurable value-added network switch as claimed in claim 1 wherein **said means for switching to a transactional application further comprises**:
> means for receiving said user specification;
> means for enabling a switch to said transactional application; and
> means for activating said transactional application.

('500 patent, 9:58-65 (emphasis added)) The parties have submitted the component

limitations "means for receiving said user specification,"[28] "means for enabling a switch to said transactional application,"[29] and "means for activating said transactional application"[30] for construction. Dependent claim 2 adds these components to the "means for switching" limitation, which is indefinite. The added components do not clarify the structure of the "means for switching" limitation, i.e., how the "means for switching" would accomplish the claimed function of "switching to a transactional application," or any of the tasks ("routing user connections," "multiplexing and prioritizing requests," "flow control," and "facilitating connectivity") recited in the specification. Therefore, the "means for switching" limitation is indefinite in claim 2.

Moreover, each of the component limitations recites a "means" by which a certain function is accomplished. Pi-Net asserts that the corresponding structures are: "web server" for the "means for receiving;"[31] the "boundary service" in the VAN switch for the "means for enabling;"[32] and the "selected point-of-service application" for the

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[28]Claims 2 and 4 of the '500 patent.

[29]Claim 2 of the '500 patent.

[30]Claims 2 and 3 of the '500 patent.

[31] As illustrated in FIG. 5A, user 100 accesses Web server 104. Having accessed Web server 104, user 100 can decide that he desires to perform real-time transactions. When Web server 104 receives user 100's indication that he desires to perform real-time transactions, the request is handed over to an exchange component.

(6:6-10; *see also* 9:26-28)

[32]See discussion of the VAN switch limitation. *Supra* part 1(b) (citing 8:43-48).

"means for activating."[33] Each of the claimed functions (respectively, "receiving said user specification," "enabling a switch to the transactional application," and "activating the transactional application") is more complex than the type of function that can be performed by a general purpose computer with no special programming. As previously discussed, the patent specification does not provide any algorithms or other structure for any of the "means" limitations. The cited passages of the specifications describe the functions, but not how the alleged structures perform those functions. *Blackboard, Inc. v. Desire2Learn, Inc.*, 574 F.3d 1371, 1382-83 (Fed. Cir. 2009) (The specification must contain a description of how the function is to be performed by the structure.). As such, each of these component limitations is indefinite.

ii. Dependent claim 3

Claim 3 is dependent of claim 2 and recites:

> The configurable value-added network switch as claimed in claim 2 wherein **said means for activating said transactional application further includes** means for creating a transaction link between said network application and said transactional application.

(9:67-10:3 (emphasis added)) The "means for activating said transactional application" limitation is indefinite as discussed above. The inclusion of a "means for creating a transaction link"[34] further defines the function of the "means for activating" limitation, but does not further describe the structure. Therefore, this limitation remains indefinite in claim 3.

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[33]See discussion of the point-of-service application limitation. *Supra* part 1(a) (citing 6:55-58); (*see also* figs. 5C, 5D & 8, 6:22-25, 6:39-7:38, 9:24-37)

[34]Claim 3 of the '500 patent.

Pi-Net avers that the structure for the "means for creating a transition link" limitation is the "the object data structure (with information entries and attributes) displayed (e.g. checking account object in POSvc application 510 in Fig. 5D) in the selected [p]oint-of-[s]ervice application as displayed by Web server on web page." The specification describes that "[o]nce Bank POSvc application 510 has been activated," the user may connect to the bank services and use the application to perform transactions, "thus accessing data from a host or data repository" in the bank's back office. (6:65-7:2) The specification does not define or use the term "object data structure," or "transaction link."[35] Nor does the specification provide an algorithm or explain how this alleged structure could perform the claimed function (creating a transaction link between said network application and said transactional application). Therefore, the "means for creating" limitation is indefinite.

iii. Dependent claim 4

Claim 4 is dependent of claim 2 and further defines the components of the "means for receiving said user specification" limitation, which limitation is indefinite. The parties have submitted the component limitations "means for presenting said user with a list of transactional applications"[36] and "means for submitting said user specification according to a user's selection of said transactional application from said list of transactional applications"[37] for construction. Claim 4 recites:

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[35]This limitation is discussed *infra* at part 5(d).

[36]Claim 4 of the '500 patent.

[37]Claim 4 of the '500 patent.

> The configurable value-added network switch as claimed in claim 2 wherein **said means for receiving said user specification further comprises**:
> means for presenting said user with a list of transactional applications, each of said transactional application[s] being associated with a particular value-added network service provider; and
> means for submitting said user specification according to a user's selection of said transactional application from said list of transactional applications.

('500 patent, 10:4-13) The court concluded above that the limitation "means for receiving said user specification" is indefinite. While the component limitations further define the function performed by the "means for receiving said user specification" limitation, they do not elucidate its structure. Therefore, this limitation remains indefinite in dependent claim 4.

Pi-Net avers that the structure of the "means for presenting" is "the webpage that includes POSvc Applications, as depicted in Figures 5C and 5D,"[38] and the structure of the "means for submitting" is "the interactive data structure displayed on a Web page that includes information entries and attributes in a Web application displayed via the graphical user interface component."[39] As above, the functions of these means limitations (presenting said user with a list of transactional applications and submitting said user specification according to certain criteria) go beyond the type of function that

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[38]Figures 5C and 5D are box illustrations and do not illuminate the relationship of the parts shown or the structure of the limitation.

[39] The exchange activates a graphical user interface to present user with a list of POSvc application options in step 808. In step 810, the user makes a selection from the POSvc application list.

(9:28-33; *see also* 6:41-50)

can be performed by a general purpose computer with no special programming. The patent specification offers no algorithm or explanation for how either of the proposed structures would perform the claimed functions. Therefore, each of the component limitations is indefinite.

b. "Means for transmitting a transaction request from said transactional application."[40] Pi-Net proposes that the structure for this limitation is the exchange, which the specification describes for a preferred embodiment "as a software module . . . executed on a computer system." (4:49-52) The exchange may reside either on a web server or "on a separate computer system that resides on the [i]nternet." (6:14-16) The specification describes the exchange in functional language. The exchange "creates and allows for the management (or distributed control) of a service network" and, together with the management agent component, "perform[s] the switching, object routing, application and service management functions." (6:30-38) It works with other components to provide "service network functionality." (6:1-5) It also "processes the consumer's request and displays an exchange Web page . . . ." (6:39-40) However, the specification is devoid of any disclosure regarding **how** the exchange performs these various functions.

The specification identifies commercially available computers and brands of processors for use with the invention. (3:60-67, 4:20-25) The specification then refers to "instructions for the processor," "processing instructions," and "execut[ing] an instruction stream," but does not explain or illustrate these instructions or provide an

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[40]Claims 1 and 35 of the '500 patent.

algorithm for the processor to "process" or "execute." (4:7, 4:37-48)

Nor does the specification describe "transmitting a transactional request." Pi-Net's expert, Bardash, explains the "request" term of this limitation:

> [A]s shown [in figures 5C and 5D], a list of available POSvc Applications are presented to the user on the web page. When the user selects a particular POSvc application, a web server request activates the selected POSvc application (Web application) and that POSv Application in turn connects to Bank or other Web merchant services, and user 100 will be able to access data from a host or data repository 575 in the Bank Back-Office and thus perform Web banking transactions using the Web application. This connection between user 100 and Bank services is managed by Exchange 501. The critical point is that, as shown in Figure 5D, the POSvc Application displays the "object" data structure with its attributes and it provides a mechanism to retrieve (or send) information entries from (or to) the service provider's system corresponding to the Web transaction request. Thus, with the webpage and POSvc Application (collectively the Exchange 501), the user can transmit a transaction request from the transactional application.

(D.I. 66 at ¶ 15)

Based on Bardash's explanation, the transmission of the request "activates an application" and "connects to merchant services," to allow a user to access data and perform web transactions. While Pi-Net argues that "exchange 501" performs the "transmitting" function (or alternatively that a "web server 104," a "well known structure," performs the function), the specification does not provide an algorithm for performing this function, which is more than a simple "transmission." Therefore, this limitation is indefinite.

c. "[M]eans for processing said transaction request."[41] Bardash avers that the structures for this limitation include "the 'computer system 200' connecting to the 'host or data repository 575 in the Bank 'Back Office,'" and the "Web server 104." Bardash opines that a person of ordinary skill could also consult figure 4B, which includes the "components that would be viewed as parts of the 'computer system 200'" and, therefore, "a person skilled in the art would be able to implement the function of 'processing said transaction request' based on the disclosure of the [p]atent, and utilizing the structures depicted . . . ." (D.I. 66 at ¶¶ 21-22) As discussed above, Spielman opined that each of the means limitations would necessitate an algorithm.

The specification provides examples of transaction requests including "banking transactions," which may access "data from a host or data repository 575 in the Bank Back Office.' The Bank Back Office comprises legacy databases and other data repositories that are utilized by the Bank to store its data. This connection between user 100 and [b]ank services is managed by exchange 501." (6:67-7:5)

Bardash opines that the "claims are directed to the 'front-end'" and that "[t]he [p]atent recognizes that merchants will have a variety of 'back office' systems, but these systems are not in any way part of the invention. The invention requires only an [e]xchange which can make calls to or otherwise obtain information from the back office . . . ." (D.I. 66 at ¶ 18; D.I. 150, ex. AA at 23)

The court concludes that these transactions would necessitate processing using an algorithm and no such algorithm is disclosed. Indeed, figure 4B shows the back

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[41]Claims 1 and 35 of the '500 patent.

office computer system as including a number of "applications," but provides no explanations on processing. Therefore, this limitation is indefinite.

i. Dependent claim 5

Dependent claim 5 recites:

> The configurable value-added network switch as claimed in claim 1 wherein **said means for processing said transaction request** further comprises means for coupling **said means for transmitting** to a host means.

('500 patent, 10:14-18) The court concluded that the "means for processing" and "means for transmitting" limitations in claim 1 are indefinite. The additional means language in claim 5 does not provide further detail on the structure of these limitations and they are thus indefinite in this claim as well.

Pi-Net proposes that the structure for the "means for coupling"[42] limitation is the "POSvc application 510 on a web page." This proposed structure does not find support in the specification. Indeed, the specification does not use the term "coupling" outside of the claim at issue. This limitation is also indefinite.

d. "[M]eans for activating an agent to create a transaction link between said user application and said transactional application."[43] Pi-Net proposes that the structure for this limitation is "information entries in an object in a [p]oint-of-[s]ervice (POSvc) application on a Web page." Pi-Net explains that "[t]he transaction link is the object. The transactional application creates the objects, which includes attributes such as "Name" and "Password" shown in figure 5D. The users input

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[42]Claim 5 of the '500 patent.

[43]Claim 35 of the '500 patent.

their information, and the objects are routed to the back-end transactional applications for processing. Therefore, the structured data of the objects creates the link, because that structured data is passed between the front-end and the back-end."[44] (D.I. 74 at 128)

The claim limitation at issue also includes the term "agent." The specification uses "operator agent" and "management agent." (Figs. 5B, 5D, 6:3) The exchange "may also include operator agent 503 that interacts with a management manager." (6:28-30; 7:59-60) The specification describes "management agent" as one of the components interacting to provide service network functionality. (6:1-5) The "exchange and a management agent component . . . together perform the switching, object routing, application and service management functions according to one embodiment of the present invention." (6:35-38) Pi-Net argues that this limitation should be accorded its ordinary meaning, as there are "recognized protocols or programs through which online services can be managed, data can be retrieved, and data can be manipulated and delivered." (D.I. 74 at 104) However, the management agent with the exchange (a term coined by the inventor) together constitute a VAN switch. (7:52-53, 8:41-42) The specification offers no explanation or examples as to what the management agent does nor how it works to perform the listed functions.

The limitation "activates an agent" does not indicate to what "agent" the claim refers. Moreover, the claimed function (activating an agent to create a transition link) would involve more than "merely processing" as the agent would be required to create

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[44]Pi-Net also avers that the analysis of the "means for creating a transition link" discussed *supra* at part 3(a)(ii), informs the current analysis. (6:65-7:2)

said transition link between two specific applications. As discussed above, both agents are described as able to perform multiple functions, with no indication of how the agents perform the functions. Therefore, the court concludes that this limitation requires disclosure of an algorithm, which the specification does not disclose. The specification offers no definition or explanation for "activating an agent" or linking applications. Therefore, this limitation is indefinite.

e. "[C]omputer system executing the back-end transactional application for processing the transaction request in real-time."[45]

i. Applicability of § 112, ¶ 6

A claim limitation that "contains the word 'means' and recites a function is presumed to be drafted in means-plus-function format under 35 U.S.C. § 112, ¶ 6." *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1366 (Fed. Cir. 2008). To avoid the application of § 112, ¶ 6 when a claim recites the term "means," it must "specif[y] the exact structure that performs the functions in question." *TriMed, Inc. v. Stryker Corp.*, 514 F.3d 1256, 1259-60 (Fed. Cir. 2008).

Where the claim language does not recite the term "means," there is a presumption that the limitation does not invoke § 112, ¶ 6. *Personalized Media Commc'ns, LLC v. ITC*, 161 F.3d 696, 702 (Fed. Cir. 1998). This presumption can be overcome if the challenger demonstrates that "the claim term fails to 'recite sufficiently definite structure' or else recites 'function without reciting sufficient structure for performing that function.'" *CCS Fitness v. Brunswick Corp.*, 288 F.3d 1359, 1369 (Fed.

[45]Claims 1 and 8 of the '492 patent.

Cir. 2002) (internal citations omitted). To determine whether a claim term that lacks the word "means" is subject to § 112, ¶ 6, the court must consider the words of the claims themselves, the written description, the prosecution history, and any relevant intrinsic evidence. *Inventio AG v. ThyssenKrupp Elevator Americas Corp.*, 649 F.3d 1350, 1356 (Fed. Cir. 2011) (citing *Personalized Media*, 161 F.3d at 704 (The presumption that a claim lacking the term "means" recites sufficiently definite structure can be rebutted "if the evidence intrinsic to the patent and any relevant extrinsic evidence so warrant[s].")).

In *Inventio*, the Federal Circuit considered the terms "modernizing device" and "computing unit." 649 F.3d at 1357-60. The Court held that § 112, ¶ 6 was not applicable because the claimed "modernizing device" connoted sufficiently definite structure. *Id.* at 1359. "[T]he claims recite[d] a 'modernizing device,' delineate[d] the components that the modernizing device is connected to, describe[d] how the modernizing device interacts with those components, and describe[d] the processing that the modernizing device performs. The written descriptions additionally show[ed] that the modernizing device convey[ed] structure to skilled artisans." *Id.* With respect to the "computing unit," the Court again found that the limitation connoted sufficiently definite structure based upon a reading of the claims[46] and the written description."[47] *Id.*

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[46] The claims recite that the computing unit is connected to the modernizing device and generates a destination signal for transmission to the modernizing device. . . . The claims elaborate that the computing unit is connected to the floor terminals of the elevator system, and evaluates incoming call reports, destination floors, and identification codes to generate the destination signal for processing by the modernizing device.

Inventio AG v. ThyssenKrupp Elevator Americas Corp., 649 F.3d 1350, 1359 (Fed. Cir.

at 1359-60.

The claims in dispute require a "computer system executing the back-end transactional application for processing the transaction request in real-time." However, the specification provides no details on the type of application being executed, nor how the transaction request is processed in real time. As discussed above regarding the "means for processing said transaction request,"[48] the specification offers no details about the back office computer system or its "applications." Moreover, the specification does not discuss how the applications would process the transaction requests. In contrast to the disputed terms in *Inventio*, where the Federal Circuit found that the claims and specification recited the connections made by the "computing unit" and detailed how the "computing unit" performed its required function, *see Inventio* at 1359-60, the present claims and written description fail to provide any detail regarding the

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2011).

[47] As the claim term implies, the written descriptions refer to the computing unit as a computer, where one of its functions is to store and execute a computer program product. . . . stating that the "computing unit" is a commercially available personal computer or workstation" and that the "computing unit" includes "at least one processor and at least one data memory"; . . . "it is entirely possible to perform the computer program product on any computer, for example on the computing unit of the system or on a remote server." The written descriptions also explain the steps that the computer program product performs, . . . , as well as the interaction between the computing unit and modernizing device, . . . , and the computing unit and the floor terminals.

Id. at 1359-60.

[48] *Supra* at part 3(c).

"computer system" limitation, including its interaction with any other components of the claimed system. This limitation, therefore, is subject to analysis under § 112, ¶ 6.

ii. Indefiniteness

Using the same analysis as presented above, the specification does not provide any structure for the computer system under § 112, ¶ 6. The function "executing . . . a back-end application" is more complex than merely processing and, therefore, requires an algorithm. *Ergo Licensing,* 673 F.3d at 1364. The specification does not provide an algorithm for the "computing system," identify the "back-end applications," or describe how requests are processed," therefore, the limitation is indefinite.

4. The '158 patent

a. "[O]bject routing:"[49] "System for transmitting data on a network using the TransWeb Management Protocol in which a unique IP address is hierarchically assigned to each object, e.g., each bank account." The specification states that the "VAN switch 520 provides multi-protocol object routing, depending upon the specific VAN services chosen. This multi-protocol object routing is provided via a proprietary protocol, TransWeb™ Management Protocol (TMP)." (7:62-65) All of the disclosed embodiments use TMP. (8:3-7, fig. 8, 9:24-37) The specification further provides that "[a]ll networked object[s] associated with Web server 104 will therefore be assigned an Internet address based on the Web server 104's IP address." (8:18-20; *see also* 2:63-67 ("assigning a unique network address to each of the object identities")) Figure 6B shows each object with an assigned IP address. The patent prosecution history also

[49]Claim 4 of the '158 patent.

explains that the "object" is what is being routed. (D.I. 75, ex. E at 93-94; *see also* ex. D at 23-24 (objects are assigned unique IP addresses))

b. "[A] routed transactional data structure that is both complete and non-deferred, in addition to being specific to the point-of-service application:"[50] "Back-end real-time response to a user's request for a service." The limitation "routed transactional data structure" does not appear in the patent specification. The limitation was added to overcome rejection. The applicant argued that the "object" is the "transactional data structure," and "the routing of the transactional data structure and subsequent providing of requested multimedia online services atop the Web from the point-of-service application occur in a service network atop the World Wide Web, and as part of a complete, non-deferred, and realtime Web transaction from a Web application." (D.I. 75, ex. E at 93, 116) The limitation appears in claim 1, which describes the back-end operations, "transferring funds from the checking account to the savings account in real-time utilizing a routed transactional data structure that is both complete and non-deferred, in addition to being specific to the point-of-service application, the routing occurring in response to the subsequent signals." ('158 patent, 10:10-15)

5. The '500 Patent

a. "[K]eeping a transaction flow captive:"[51] "Maintaining continuous control over a real-time transaction." This limitation does not appear in the

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[50]Claim 1 of the '158 patent.

[51]Claims 1, 10, and 35 of the '500 patent.

specification. In distinguishing CGI in a prior art reference, the applicant argued during prosecution that:

> The CGI application does not allow a user to connect to a variety of services on the Web and to perform real-time transactions on those services nor does it allow the value-added network service provider to keep the transaction flow captive at the network entry point. Instead, the CGI application can only allow a user to interact with a single service. As described in the . . . present application . . ., a CGI application is not a viable solution for merchants with a large number of services because such an application does not provide true real-time, bi-directional capabilities on the Web.

(D.I. 75, ex. D at 21) From this prosecution history, Bardash defines the limitation as "maintain continuous control (over a real-time Web transaction)" and explains that "the term was introduced by the inventor as a readily understandable shorthand for maintaining continuous control of a transaction at the network entry point, to distinguish the prior art's CGI." (D.I. 66 at ¶¶ 35-37)

b. "[V]alue-added network service provider:"[52] "Provider of a point-of-service application." This construction finds support in the specification, which is directed to "a configurable value-added network switching and object routing method and apparatus" (9:48-49), and discloses the following providers: "merchants or other service providers who have agreed to cooperate to provide services to users" and "on-line service provider[s]." (7:34-35, 8:48) The applicant argued during prosecution that "[e]ach transactional application is capable of providing the user with a complete set of transactional services offered by a certain network merchant (i.e., a certain network service provider)." (D.I. 75, ex. D at 21)

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[52]Claims 1, 10, and 35 of the '500 patent.

c. "[V]alue-added network system:"[53] The limitation does not appear in the specification, apart from the patent title "Value-Added Network System for Enabling Real-Time, By-Directional Transactions on a Network." Claim 35 recites "[a] configurable value-added network system for enabling real-time transactions on a network, said configurable value-added network system comprising . . . ." ('500 patent, 12:35-37) Each of the means limitations which comprise the system are indefinite as discussed above. The court concludes that this limitation is indefinite as a person of ordinary skill would not be able to determine the bounds of the invention.

d. "[T]ransaction link:"[54] "A link between two applications." This limitation is not found in the specification, but is only used in the claim language, which describes creating a link between two applications.

An appropriate order shall issue.

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[53]Claim 35 of the '500 patent.

[54]Claims 3, 12, and 35 of the '500 patent.

Exhibit E

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

PI-NET INTERNATIONAL INC.,	)	
	)	
Plaintiff,	)	
	)	
v.	)	Civ. No. 12-282-SLR
	)	
JPMORGAN CHASE & CO.,	)	
	)	
Defendant.	)	

ORDER

At Wilmington this 14th day of May, 2014,

IT IS ORDERED that the disputed claim language of U.S. Patent Nos. 8,108,492 (the '"492 patent"), 5,987,500 (the '"500 patent"), and 8,037,158 (the "'158 patent") shall be construed consistent with the memorandum opinion issued this same date.

United States District Judge

Exhibit F

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

PI-NET INTERNATIONAL INC.,	)	
	)	
Plaintiff,	)	
	)	
v.	)	Civ. No. 12-282-SLR
	)	
JPMORGAN CHASE & CO.,	)	
	)	
Defendant.	)	

George Pazuniak, Esquire of O'Kelly Ernst & Bielli, LLC, Wilmington, Delaware. Counsel for Plaintiff.

Robert Scott Saunders, Esquire and Jessica Raatz, Esquire of Skadden, Arps, Slate, Meagher & Flom LLP, Wilmington, Delaware. Counsel for Defendant. Of Counsel: Danie A. DeVito, Esquire, Douglas R. Nemec, Esquire, Edward L. Tulin, Esquire and Andrew Gish, Esquire of Skadden, Arps, Slate, Meagher & Flom LLP.

MEMORANDUM OPINION

Dated: May 14, 2014
Wilmington, Delaware

ROBINSON, District Judge

I. INTRODUCTION

Plaintiff Pi-Net International, Inc. ("plaintiff") filed a complaint alleging patent infringement against JPMorgan Chase & Co. ("defendant") on March 1, 2012 alleging infringement of three patents: U.S. Patent Nos. 5,987,500 ("the '500 patent"), 8,037,158 ("the '158 patent"), and 8,108,492 ("the '492 patent") (collectively, the "patents-in-suit"). (D.I. 1) Defendant answered the complaint, asserting affirmative defenses of invalidity and non-infringement, on May 23, 2012. (D.I. 11)

Presently before the court are several motions for summary judgment: defendant's motion for summary judgment of non-infringement (D.I. 113) and for invalidity of the patents-in-suit (D.I. 121), as well as defendant's motion for partial summary judgment of laches for the '500 patent (D.I. 111). Plaintiff moved to strike defendant's opening brief in support of its partial summary judgment of laches for the '500 patent. (D.I. 132) The parties also filed motions to exclude testimony: defendant's motion to exclude certain testimony of Stevan Porter (D.I. 109) and plaintiff's motions to exclude the expert testimony of Susan Spielman (D.I. 115), certain testimony by Michael Siegel (D.I. 117), and certain testimony by Dawn Hall (D.I. 119). The court has jurisdiction over this matter pursuant to 28 U.S.C. §§ 1331 and 1338(a).

II. BACKGROUND

A. The Parties

Plaintiff is a California corporation with a principal place of business in Menlo Park, California. (D.I. 1 at ¶ 1) Plaintiff provides innovative software products, services

and solutions that enable distributed transaction processing and control over public and private networks, including (without limitation) the Internet and the World-Wide Web. Plaintiff owns the patents-in-suit. (*Id.*) Defendant is a Delaware corporation with a registered agent in Wilmington, Delaware and an office in New York, New York. (D.I. 11 at ¶ 3) Defendant is a global financial services firm that operates in various locations, including the United States of America, conducting business in the fields of investment banking, financial services for consumers and small businesses, commercial banking, financial transaction processing, asset management, and private equity. (*Id.*)

B. Technology Overview

The patents-in-suit generally claim a system and method for online transactions, wherein a user takes an action at the "front-end" that causes data to be routed through a system and used as a basis to execute a transaction at the "back-end," thereby completing a non-deferred (or "real time") transaction. Plaintiff accuses six online banking instrumentalities of infringing the '500 patent and the '492 patent: Account Transfers; Payments; Customer Center; Account Activity (Business Card); Wire Transfers; and Chase Mobile Application, QuickPaysm ("Mobile QuickPay"). Only the Account Transfers instrumentality is accused of infringing the '158 patent. With the exception of Mobile QuickPay, all of the accused instrumentalities are accessible to defendant's customers through its website. (D.I. 114 at 4-5)

III. STANDARDS OF REVIEW

A. Summary Judgment

"The court shall grant summary judgment if the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(a). The moving party bears the burden of demonstrating the absence of a genuine issue of material fact. *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 415 U.S. 574, 586 n.10 (1986). A party asserting that a fact cannot be—or, alternatively, is—genuinely disputed must support the assertion either by citing to "particular parts of materials in the record, including depositions, documents, electronically stored information, affidavits or declarations, stipulations (including those made for the purposes of the motions only), admissions, interrogatory answers, or other materials," or by "showing that the materials cited do not establish the absence or presence of a genuine dispute, or that an adverse party cannot produce admissible evidence to support the fact." Fed. R. Civ. P. 56(c)(1)(A) & (B). If the moving party has carried its burden, the nonmovant must then "come forward with specific facts showing that there is a genuine issue for trial." *Matsushita*, 415 U.S. at 587 (internal quotation marks omitted). The court will "draw all reasonable inferences in favor of the nonmoving party, and it may not make credibility determinations or weigh the evidence." *Reeves v. Sanderson Plumbing Prods., Inc.*, 530 U.S. 133, 150 (2000).

To defeat a motion for summary judgment, the non-moving party must "do more than simply show that there is some metaphysical doubt as to the material facts." *Matsushita*, 475 U.S. at 586-87; *see also Podohnik v. U.S. Postal Service*, 409 F.3d 584, 594 (3d Cir. 2005) (stating party opposing summary judgment "must present more than just bare assertions, conclusory allegations or suspicions to show the existence of a genuine issue") (internal quotation marks omitted). Although the "mere existence of

some alleged factual dispute between the parties will not defeat an otherwise properly supported motion for summary judgment," a factual dispute is genuine where "the evidence is such that a reasonable jury could return a verdict for the nonmoving party." *Anderson v. Liberty Lobby, Inc.*, 411 U.S. 242, 247-48 (1986). "If the evidence is merely colorable, or is not significantly probative, summary judgment may be granted." *Id.* at 249-50 (internal citations omitted); *see also Celotex Corp. v. Catrett*, 411 U.S. 317, 322 (1986) (stating entry of summary judgment is mandated "against a party who fails to make a showing sufficient to establish the existence of an element essential to that party's case, and on which that party will bear the burden of proof at trial").

B. Infringement

A patent is infringed when a person "without authority makes, uses or sells any patented invention, within the United States . . . during the term of the patent." 35 U.S.C. § 271(a). A two-step analysis is employed in making an infringement determination. *See Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995). First, the court must construe the asserted claims to ascertain their meaning and scope. *See id.* Construction of the claims is a question of law subject to de novo review. *See Cybor Corp. v. FAS Techs.*, 138 F.3d 1448, 1454 (Fed. Cir. 1998). The trier of fact must then compare the properly construed claims with the accused infringing product. *See Markman*, 52 F.3d at 976. This second step is a question of fact. *See Bai v. L & L Wings, Inc.*, 160 F.3d 1350, 1353 (Fed. Cir. 1998).

"Direct infringement requires a party to perform each and every step or element of a claimed method or product." *BMC Res., Inc. v. Paymentech, L.P.*, 498 F.3d 1373,

1378 (Fed. Cir. 2007), *overruled on other grounds by* 692 F.3d 1301 (Fed. Cir. 2012). "If any claim limitation is absent from the accused device, there is no literal infringement as a matter of law." *Bayer AG v. Elan Pharm. Research Corp.*, 212 F.3d 1241, 1247 (Fed. Cir. 2000). If an accused product does not infringe an independent claim, it also does not infringe any claim depending thereon. *See Wahpeton Canvas Co. v. Frontier, Inc.*, 870 F.2d 1546, 1553 (Fed. Cir. 1989). However, "[o]ne may infringe an independent claim and not infringe a claim dependent on that claim." *Monsanto Co. v. Syngenta Seeds, Inc.*, 503 F.3d 1352, 1359 (Fed. Cir. 2007) (quoting *Wahpeton Canvas*, 870 F.2d at 1552) (internal quotations omitted). A product that does not literally infringe a patent claim may still infringe under the doctrine of equivalents if the differences between an individual limitation of the claimed invention and an element of the accused product are insubstantial. *See Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 24 (1997). The patent owner has the burden of proving infringement and must meet its burden by a preponderance of the evidence. *See SmithKline Diagnostics, Inc. v. Helena Lab. Corp.*, 859 F.2d 878, 889 (Fed. Cir. 1988) (citations omitted).

When an accused infringer moves for summary judgment of non-infringement, such relief may be granted only if one or more limitations of the claim in question does not read on an element of the accused product, either literally or under the doctrine of equivalents. *See Chimie v. PPG Indus., Inc.*, 402 F.3d 1371, 1376 (Fed. Cir. 2005); *see also TechSearch, L.L.C. v. Intel Corp.*, 286 F.3d 1360, 1369 (Fed. Cir. 2002) ("Summary judgment of noninfringement is ... appropriate where the patent owner's

proof is deficient in meeting an essential part of the legal standard for infringement, because such failure will render all other facts immaterial."). Thus, summary judgment of non-infringement can only be granted if, after viewing the facts in the light most favorable to the non-movant, there is no genuine issue as to whether the accused product is covered by the claims (as construed by the court). *See Pitney Bowes, Inc. v. Hewlett–Packard Co.*, 182 F.3d 1298, 1304 (Fed. Cir. 1999).

C. Invalidity

1. Indefiniteness

The definiteness requirement is rooted in § 112, ¶ 2, which provides that "the specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." "A determination of claim indefiniteness is a legal conclusion that is drawn from the court's performance of its duty as the construer of patent claims." *Personalized Media Comm., LLC v. Int'l Trade Com'n*, 161 F.3d 696, 705 (Fed. Cir. 1998).

> Determining whether a claim is definite requires an analysis of whether one skilled in the art would understand the bounds of the claim when read in light of the specification . . . If the claims read in light of the specification reasonably apprise those skilled in the art of the scope of the invention, § 112 demands no more.

Id. (citing *Miles Lab., Inc. v. Shandon, Inc.*, 997 F.2d 870, 875 (Fed. Cir. 1993)).

Under 35 U.S.C. § 112 ¶ 6, "[a]n element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure ... in support thereof, and such claim shall be construed to cover the corresponding structure ... described in the specification and equivalents thereof." This

allows "the use of means expressions in patent claims without requiring the patentee to recite in the claims all possible structures that could be used as means in the claimed apparatus." *Medical Instrumentation and Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1211 (Fed. Cir. 2003) (citing *O.I. Corp. v. Tekmar Co.*, 115 F.3d 1576, 1583 (Fed. Cir. 1997)). The quid pro quo is the "duty [of the patentee] to clearly link or associate structure to the claimed function." *Budde v. Harley-Davidson, Inc.*, 250 F.3d 1369, 1377 (Fed. Cir. 2001) (citations omitted). "The price that must be paid for use of that convenience is limitation of the claim to the means specified in the written description and equivalents thereof." *O.I. Corp.*, 115 F.3d at 1583.

Whether the written description adequately sets forth the structure corresponding to the claimed function must be considered from the perspective of a person skilled in the art. *Telcordia Techs., Inc. v. Cisco Sys.*, 612 F.3d 1365, 1376 (Fed. Cir. 2010) (citing *Intel Corp. v. VIA Techs., Inc.*, 319 F.3d 1357, 1365–66 (Fed. Cir. 2003)). "The question is not whether one of skill in the art would be capable of implementing a structure to perform the function, but whether that person would understand the written description itself to disclose such a structure." *Id.* (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1338 (Fed. Cir. 2008). Ultimately, if no corresponding structure is disclosed in the specification, the claim term must be construed as indefinite. *See Biomedino, LLC v. Waters Techs. Corp.*, 490 F.3d 946, 950 (Fed. Cir. 2007) ("If there is no structure in the specification corresponding to the means-plus-function limitation in the claims, the claim will be found invalid as indefinite.").

2. Enablement and written description

The statutory basis for the enablement and written description requirements, 35 U.S.C. § 112 ¶1, provides in relevant part:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same . . . .

"The enablement requirement is met where one skilled in the art, having read the specification, could practice the invention without 'undue experimentation.'" *Streck, Inc. v. Research & Diagnostic Systems, Inc.*, 665 F.3d 1269, 1288 (Fed. Cir. 2012) (citation omitted). "While every aspect of a generic claim certainly need not have been carried out by the inventor, or exemplified in the specification, reasonable detail must be provided in order to enable members of the public to understand and carry out the invention." *Genentech, Inc. v. Novo Nordisk A/S*, 108 F.3d 1361, 1366 (Fed. Cir. 1997). The specification need not teach what is well known in the art. *Id.* (citing *Hybritech v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384 (Fed. Cir. 1986)). A reasonable amount of experimentation may be required, so long as such experimentation is not "undue." *ALZA Corp. v. Andrx Pharms., Inc.*, 603 F.3d 935, 940 (Fed. Cir. 2010).

"Whether undue experimentation is needed is not a single, simple factual determination, but rather is a conclusion reached by weighing many factual considerations." *Martek Biosciences Corp. v. Nutrinova, Inc.*, 579 F.3d 1363, 1378 (Fed. Cir. 2009) (citing *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988). The Federal Circuit has provided several factors that may be utilized in determining whether a

disclosure would require undue experimentation: (1) the quantity of experimentation necessary; (2) the amount of direction or guidance disclosed in the patent; (3) the presence or absence of working examples in the patent; (4) the nature of the invention; (5) the state of the prior art; (6) the relative skill of those in the art; (7) the predictability of the art; and (8) the breadth of the claims. *In re Wands*, 858 F.2d at 737. These factors are sometimes referred to as the "*Wands* factors." A court need not consider every one of the *Wands* factors in its analysis, rather, a court is only required to consider those factors relevant to the facts of the case. *See Streck, Inc.*, 655 F.3d at 1288 (citing *Amgen, Inc. v. Chugai Pharm. Co., Ltd.*, 927 F.2d 1200, 1213 (Fed. Cir. 1991)).

The enablement requirement is a question of law based on underlying factual inquiries. *See Green Edge Enters., LLC v. Rubber Mulch Etc., LLC*, 620 F.3d 1287, 1298-99 (Fed. Cir. 2010) (citation omitted); *Wands*, 858 F.2d at 737. Enablement is determined as of the filing date of the patent application. *In re '318 Patent Infringement Litigation*, 583 F.3d 1317, 1323 (Fed. Cir. 2009) (citation omitted). The burden is on one challenging validity to show, by clear and convincing evidence, that the specification is not enabling. *See Streck, Inc.*, 665 F.3d at 1288 (citation omitted).

A patent must also contain a written description of the invention. 35 U.S.C. § 112, ¶ 1. The written description requirement is separate and distinct from the enablement requirement. *See Ariad Pharms., Inc. v. Eli Lilly and Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2011). It ensures that "the patentee had possession of the claimed invention at the time of the application, i.e., that the patentee invented what is claimed."

LizardTech, Inc. v. Earth Resource Mapping, Inc., 424 F.3d 1336, 1344-45 (Fed. Cir. 2005). The Federal Circuit has stated that the relevant inquiry – "possession as shown in the disclosure" – is an "objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art. Based on that inquiry, the specification must describe an invention understandable to that skilled artisan and show that the inventor actually invented the invention claimed." *Ariad*, 598 F.3d at 1351.

This inquiry is a question of fact: "the level of detail required to satisfy the written description requirement varies depending on the nature and scope of the claims and on the complexity and predictability of the relevant technology." *Id.* (citation omitted). While compliance with the written description requirement is a question of fact, the issue is "amenable to summary judgment in cases where no reasonable fact finder could return a verdict for the non-moving party." *Id.* at 1307 (citing *Invitrogen Corp. v. Clontech Labs., Inc.*, 429 F.3d 1052, 1072-73 (Fed. Cir. 2005)).

IV. DISCUSSION

A. Indefiniteness

1. The '492 patent

The claims and specification of a patent serve an important public notice function, apprising others of what is available to them. *See, e.g., Johnson & Johnston Associates Inc. v. R.E. Service Co., Inc.*, 285 F.3d 1046, 1052 (Fed. Cir. 2002) (citing *Mahn v. Harwood*, 112 U.S. 354, 361 (1884)) (claims give notice to the public of the scope of the patent); *Superior Fireplace Co. v. Majestic Prods. Co.*, 270 F.3d 1358, 1371 (Fed. Cir. 2001). "Because claims delineate the patentee's right to exclude, the

patent statute requires that the scope of the claims be sufficiently definite to inform the public of the bounds of the protected invention, i.e., what subject matter is covered by the exclusive rights of the patent. Otherwise, competitors cannot avoid infringement, defeating the public notice function of patent claims." *Halliburton Energy Svcs. v. M-ILLC*, 514 F.3d 1244, 1249 (Fed. Cir. 2008) (citing *Athletic Alternatives, Inc. v. Prince Mfg., Inc.*, 73 F.3d 1573, 1581 (Fed. Cir. 1996)).

Plaintiff asserted independent claims 1 and 10 and dependent claims 2-8 and 11. Independent claim 1 of the '492 patent recites:

> A system, comprising:
> a Web server, including a processor and a memory, for offering one or more Web applications as respective point-of-service applications in a point-of-service application list on a Web page;
> each Web application of the one or more Web applications for requesting a real-time Web transaction;
> a value-added network (VAN) switch running on top of a facilities network selected from a group consisting of the World Wide Web, the Internet and an e-mail network, the
> VAN switch for enabling the real-time Web transactions from the one or more Web applications;
> a service network running on top of the facilities network for connecting through the Web server to a back-end transactional application; and
> a computer system executing the Back-end transactional application for processing the transaction request in real-time

('492 patent, 9:50-67)

The limitations "value-added network ('VAN') switch," "switching," "service network," and "computer system executing the back-end transactional application for processing the transaction request in real-time" are indefinite for the reasons set forth in the claim construction order. The court concludes, therefore, that independent claims 1 and 10 (which each contain three of these limitations) are invalid for indefiniteness.

Claims 2-8 are dependent on claim 1 and each recites the limitation "VAN switch." Claim 3 additionally recites the limitation "switching," claim 6 the limitation "service network," and claim 8 the limitation "computer system." Therefore, each of these dependent claims is invalid. Claim 11 depends on claim 10 and further describes that "the real-time Web transactions are Web transactions from the Web application accessing a value-added network service." This description does not illuminate the meaning of the indefinite limitations "VAN switch," "switching," and "service network," found in independent claim 10. Claim 11 is invalid. The court grants defendant's motion for summary judgment of invalidity as to the asserted claims of the '492 patent.

2. The '500 patent

Plaintiff asserted independent claims 1, 10, and 35, as well as dependent claims 2-6, 12, 14-16 of the '500 patent. Independent claim 1 recites:

> A configurable value-added network switch for enabling real-time transactions on a network, said configurable value-added network switch compromising:
> means for switching to a transactional application in response to a user specification from a network application, said transactional application providing a user with a plurality of transactional services managed by at least one value-added network service provider, said value-added network service provider keeping a transaction flow captive, said plurality of transactional services being performed interactively and in real time;
> means for transmitting a transaction request from said transactional application; and
> means for processing said transaction request.

('500 patent, 9:44-58)

The court concluded that certain limitations of the asserted claims, "VAN switch," "switching," "value-added network system," and each of the "means" limitations were indefinite for the reasons set forth in the claim construction order. Independent claim 1

and 35 each require the "means for switching," "means for transmitting," and "means for processing" limitations. Claim 1 additionally recites the "VAN switch" limitation and claim 35 the "value-added network system" limitation. Independent claim 10 recites the limitations "VAN switch" and "switching." Therefore, independent claims 1, 10, and 35 are invalid for indefiniteness. Dependent claims 2-5 each recite the limitation "VAN switch" and add additional indefinite "means" limitations as discussed in the claim construction order. Each of dependent claims 2-5 is likewise invalid.

Dependent claim 6 recites: "The configurable value-added network switch as claimed in claim 5 wherein said host means contains data corresponding to said transaction request." ('500 patent, 10:17-20) The court concluded that dependent claim 5's limitation "means for coupling said means for transmitting to a host means" was indefinite as discussed in the claim construction order. The claim language of dependent claim 6 further defines the "host means,"[1] but does not clarify the meaning of "VAN switch," therefore, claim 6 is invalid for indefiniteness.

Dependent claim 11 recites:

> The method for configuring said value-added network switch as claimed in claim 10 wherein said step of switching to a transactional application further comprises the steps of:
> receiving said user specification;
> enabling a switch to said transactional application; and
> activating said transactional application.

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[1]The limitation "host means" is a means-plus-function claim and, as discussed in the claim construction order, the specification provides insufficient structure. Claim 35 recites "a host means for processing." (12:52) The limitation "host means" is indefinite.

('500 patent 10:49-54) The court analyzed the limitation "switching" in the claim construction order, concluding that the specification does not disclose how the VAN switch or the switching service (within the VAN switch) accomplishes "switching." Dependent claim 11 adds details to the limitation "switching to a transactional application in response to a user specification from a network application," however, these details do not further describe how the "receiving," "enabling," and "activating" would be accomplished. Therefore, the dependent claim does not provide definiteness to the limitations "VAN switch" or "switching," and dependent claim 11 is invalid for indefiniteness.

Dependent claim 12 recites:

> The method for configuring said value-added network switch as claimed in claim 11 wherein said step of activating said transactional application further includes a step of creating a transaction link between said network application and said transactional application.

('500 patent, 10:55-60) This dependent claim adds the step of "creating a transaction link," but again does not provide any information on how this step would be accomplished by the invention. Therefore, dependent claim 12 does not supply definiteness to the limitations "VAN switch" or "switching," and is invalid for indefiniteness.

Similarly, dependent claim 14 provides information on the "step of receiving said user specification" in claim 11:

> The method for configuring said value-added network switch as claimed in claim 11 wherein said step of receiving said user specification further comprises steps of:
> presenting said user with a list of transactional applications, each of said transactional application being associated with a particular Internet service provider; and

> submitting said user specification according to a user's selection of said transactional application from said list of transactional applications.

('500 patent, 11:2-12) The additional steps of "presenting said user with a list of transactional applications" and "submitting said user specification" do not illustrate how the "switching" is accomplished by the VAN switch (or the switching service) and, therefore, claim 14 is indefinite.

Dependent claim 15 further defines the "step of processing said transaction request" of claim 10 as " compris[ing] the step of transmitting said transaction request to a host means." (11:12-16) Dependent claim 16 further defines the "host means" of claim 15, as "contain[ing] data corresponding to said transaction request." Neither of these dependent claims clarify the indefinite limitations "VAN switch" or "switching;" these dependent claims (15 and 16) are invalid as indefinite. Based on the above analysis of each of the asserted claims, the court grants defendant's motion for summary judgment of invalidity as to each of the asserted claims of the '500 patent.

3. The '158 patent

Plaintiff asserted dependent claim 4 of the '158 patent, which claim depends from independent claim 1. Independent claim 1 of the'158 patent recites:

> A method for performing a real time Web transaction from a Web application over a digital network atop the Web, the method comprising:
> providing a Web page for display on a computer system coupled to an input device;
> providing a point-of-service application as a selection within the Web page, wherein the point-of-service application provides access to both a checking and savings account, the point-of-service application operating in a service network atop the World Wide Web;
> accepting a first signal from the Web user input device to select the point-of-service application;
> accepting subsequent signals from the Web user input device; and

> transferring funds from the checking account to the savings account in real-time utilizing a routed transactional data structure that is both complete and non-deferred, in addition to being specific to the point-of-service application, the routing occurring in response to the subsequent signals.

('158 patent, 9:40-10:15) Dependent claim 4 recites "[t]he method of claim 1, wherein object routing is used to complete the transfer of funds in a Web application." ('158 patent, 10:21-22)

The court concluded that the "service network" limitation, found in claim 1, is indefinite as detailed in the claim construction order. Claim 4's further limitation of "object routing," construed by the court as "system for transmitting data on a network using the TransWeb Management Protocol in which a unique IP address is hierarchically assigned to each object, e.g., each bank account," does not further describe the indefinite limitation "service network." Therefore, claim 4 is invalid for indefiniteness, and defendant's motion for summary judgment is granted in this regard.

B. Enablement

"To be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'" *ALZA Corp. v. Andrx Pharm., LLC*, 603 F.3d 935, 940 (Fed. Cir. 2010) (citations omitted). The specification need not disclose what is well-known in the art. *Genentech*, 108 F.3d at 1366. "[T]he rule that a specification need not disclose what is well known in the art is 'merely a rule of supplementation, not a substitute for a basic enabling disclosure.'" *ALZA*, 603 F.3d at 940-41 (quoting *Auto. Techs. Int'l, Inc. v. BMW of N. Am., Inc.*, 501 F.3d 1274, 1282 (Fed. Cir. 2007)).

The three patents-in-suit share a specification, which purports to present "a configurable value-added network switching and object routing method and apparatus . . ." ('492 patent, 9:38-39) The specification distinguishes the invention from Common Gateway Interface ("CGI"), a standard interface for running external programs on a web server, stating that "CGI scripts provide only limited two-way capabilities," while the invention allows web merchants to "provide real-time transactional capabilities to users." (*Id.*, 5:49-58) The specification presents the concept of a "VAN switch," which allows "multi-protocol object routing." (*Id.*, 7:62-63) However, the specification does not actually define, in language that would allow a person of ordinary skill in the art to make and use the invention, what a "VAN switch" is and how it accomplishes "object routing" or real-time transactions. Instead, the specification presents an abstract concept of real-time transactions, in which a merchant and a user interact. *Genentech*, 108 F.3d at 1366 ("Patent protection is granted in return for an enabling disclosure of an invention, not for vague intimations of general ideas that may or may not be workable.").

The specification discloses a proprietary protocol, TransWeb™ Management Protocol (TMP), which the VAN switch may use to perform object routing. ('492 patent, 7:62-65) Plaintiff does not dispute that the protocol was never implemented. Plaintiff's expert, Bardash, asserts that the patent describes a general protocol (D.I. 150, ex. AC at 9) and that

> persons skilled in the art who could write the CGI code, having knowledge of the Pi-Net patents would have sufficient information to write a web server code implementing web applications. . . . Spielman's complaint that development would take the work of dozens of software engineers, and several months of trial and error, assumes the development of a commercial-level product. The system can be implemented with far less

> effort by a skilled artisan who knew web servers, CGI and similar basic skill sets.

(D.I. 150, ex. AB at 19) In contrast, Spielman[2] opines that "a person of skill in the art would essentially had to have developed her own protocol to implement and operate the claimed VAN Switch," as the specification provides no description or guidance. (D.I. 150, ex. AJ at ¶ 53) Indeed, Bardash admits that a person of ordinary skill would need to write such a protocol, but argues that the patents provide guidance. The court agrees with Spielman that the implementation of the invention would require undue experimentation. (D.I. 150, ex. AJ) Spielman describes as an example that "TMP is described as incorporating, in the alternative, 's-HTTP, JavaTM, the WinSock API or ORB with DOLSIBs to perform object routing,'" which "is counterintuitive," and the specification does not offer any examples of how this can be accomplished. (D.I. 150, ex. AJ at ¶ 50)

In discussing the point-of-service application,[3] Spielman opined that,

> [a]lthough this portion of the specification describes what a Web [a]pplication, upon activation, should be able to do, there is no description as to how to perform the contemplated transactions. Again, the person of ordinary skill in the art would be entirely on her own when it comes to attempting to make and use the claimed Web application.

This opinion applies to any of the applications disclosed by the specification, i.e., the specification implicates, but does not describe, how to make or use point-of-service

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[2]As discussed below in part V, plaintiff's motion to exclude Spielman's report is denied.

[3]According to the patents-in-suit, point-of-service applications allow a user "to connect to [b]ank services and utilize the application to perform banking transactions, thus accessing data from a host or data repository 575 in the Bank 'Back Office.'" ('492 patent, 6:65-7:9)

applications and transactional applications (construed as "a software program that transmits a user's request for a service") or back-end transactional applications[4] (construed as "a software program that executes a user's request for a service"). The specification offers no explanation or information on any software programs. Figure 8, which Bardash contends provides an "algorithm," only discloses, as explained by Spielman, a flowchart with boxes listing functions. (D.I. 66 at ¶ 37; D.I. 150, ex. AJ at ¶ 78) As previously discussed in the claim construction order, each of the means-plus-function limitations and the "computer system" limitation require algorithms or other analogous structure, which the specification does not provide.

For the foregoing reasons, the court concludes that the specification does not enable one of skill in the art to make or use the invention without "undue experimentation." "It is the specification, not the knowledge of one skilled in the art, that must supply the novel aspects of an invention in order to constitute adequate enablement." *Genentech*, 108 F.3d at 1366. The specification distinguishes the prior CGI art, but is devoid of direction, guidance, and/or working examples of how the supposed superior invention is to be implemented. The claims are written in broad language, but the specification lacks any disclosures of how to practice the "real-time" transactions contemplated by the invention. Therefore, the asserted claims are invalid for lack of enablement.

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[4]Each of the asserted claims implicates this limitation. Independent claim 1 of the '492 patent requires that a computer system process the transaction request in real time, and independent claim 10 requires using the VAN switch to switch to the back-end transactional application. The independent claims of the '500 patent require processing the transaction request. The asserted claim of the '158 patent requires using object routing to transfer funds.

C. Written description

"[T]he hallmark of written description is disclosure." *Ariad*, 598 F.3d at 1351. A disclosure satisfies the written description requirement when it "allow[s] one skilled in the art to visualize or recognize the identity of the subject matter purportedly described." *Enzo Biochem, Inc. v. Gen–Probe Inc.*, 323 F.3d 956, 968 (Fed. Cir. 2002). The disclosure does not have to "contain 'either examples or an actual reduction to practice;' rather, the critical inquiry is whether the patentee has provided a description that 'in a definite way identifies the claimed invention' in sufficient detail that a person of ordinary skill would understand that the inventor was in possession of it at the time of filing." *Alcon Research Ltd. v. Barr Laboratories, Inc.*, 745 F.3d 1180, 1190-91 (Fed. Cir. 2014) (citing *Ariad*, 598 F.3d at 1350, 1352; *Koito Mfg. Co. v. Turn–Key–Tech, LLC*, 381 F.3d 1142, 1154 (Fed. Cir. 2004)).

The patented invention sets forth terms coined by the inventor: "VAN switch" and "point-of-service application." The specification describes the "VAN switch" in conflicting and overlapping ways as discussed in the claim construction order. Figure 7 represents the VAN switch as having four components - "switching service 702," "management service 703," "boundary service 701," and "application service 704." ('492 patent, fig 7) The specification provides no usable description or structure for any of these components. In this regard, Spielman opined that the specification offers "no context for where [the boundary service and switching service] begin and end, or how they relate to one another." (D.I. 150, ex. AJ at ¶ 44) Moreover, the specification discloses TMP as a protocol used by the VAN switch to perform "object routing," but

such a protocol was never implemented. Indeed, as discussed by Spielman, the specification "provide[s] no algorithms, source code, or any other descriptive language offering any guidance as to how to configure a VAN Switch so as to perform 'realtime' transactions using TMP or any other protocol." (*Id.* at ¶ 48)

The court construed the "point-of-service application" as "a software program that transmits a user's request for a service." The specification describes these "point-of-service applications" by block diagrams denoting "Bank 510(1), Car Dealer 510(2) or Pizzeria 510(3)," but offers no further description of any of the requests for service available to a user. ('492 patent, fig 5C, 6:51-55) The specification similarly lacks any details as to how the VAN switch would accomplish allowing a user to connect to a point-of-service application.

Each of the asserted claims implicates the back-end transactional application, which processes the user's request. However, the specification only offers a block diagram of a "back-office," generally identifying a system and applications. (*Id.*, fig. 4B) Nowhere in the specification does the inventor indicate that she had possession of such a system or the applications that process the user's request. The crux of the invention is "real-time" transactions for the user; there is no disclosure of how these occur. The court concludes that the patents-in-suit are invalid for lack of written description.

D. Infringement

As the court finds certain claim limitations indefinite for each of the patents-in-suit, the court cannot complete a meaningful infringement analysis. *See Markman*, 52 F.3d at 976. Additionally, all the asserted claims are invalid, therefore, by operation of

law they are not infringed. *Exergen Corp. v. Wal–Mart Stores, Inc.*, 575 F.3d 1312, 1320 (Fed. Cir. 2009) ("invalid claim[s] cannot give rise to liability for infringement") (citation omitted). Moreover, "[o]ne who does not infringe an independent claim cannot infringe a claim dependent on (and thus containing all the limitations of) that claim." *Wahpeton Canvas.*, 870 F.2d at 1553 & n.9. For these reasons, the court grants defendant's motion for non-infringement of all asserted claims of the patents-in-suit.

V. MOTION TO EXCLUDE

Plaintiff moves to exclude Spielman's testimony and strike her reports[5] based on the fact that she did not apply "any construction of any claim limitation in any of her invalidity analyses."[6] (D.I. 116 at 5) The court addresses the motion as it relates to excluding the reports.[7] As to the indefiniteness of the asserted claims, Spielman focused on the limitations "VAN switch," "routed transactional data structure," "keeping a transaction flow captive," the application limitations, and the means-plus-function limitations, including the "computer system" required in claim 1 of the '492 patent. Defendant did not propose a construction for these limitations, instead arguing that each limitation was indefinite, which position was explained by Spielman for each limitation. Spielman did not provide a complete analysis of whether plaintiff's proposed

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[5]Plaintiff's motion refers to Spielman's initial report (D.I. 150, ex. AJ) and reply report (D.I. 150, ex. AK), but does not indicate which report plaintiff requests that the court strike. (D.I. 116 at 2) The court's decision applies to both reports.

[6]Plaintiff also argues that Spielman did not analyze the PTO constructions. However, Spielman was not required to address such. Plaintiff's references to the "court's constructions" are premature as the court had not yet issued constructions.

[7]As no issues remain for trial, plaintiff's motion as it relates to Spielman's trial testimony is moot.

construction for each of these limitations would also render the claims indefinite. Spielman's reports are properly considered for the analysis contained therein, including Spielman's opinions regarding how the indefiniteness of the limitations affect the indefiniteness of the claim.

Plaintiff faults Spielman's opinions regarding written description and enablement for not considering any construction of claims, or addressing specific claims. Spielman opines that "all asserted claims in the '500 patent and the '492 patent require a VAN switch or VAN system," and then explains why the VAN switch is not adequately described or enabled. Moreover, defendant argued that the term was indefinite, thus not amenable to construction. Spielman's explanations comport with this argument. As to enablement, Spielman opines that several of the *Wands* factors are not met, including the quantity of experimentation necessary, the amount of direction or guidance presented, the absence of working examples, and the nature of the invention. She then uses these factors to conclude that "the patents-in-suit failed to enable one skilled in the art to understand, make, and use the full scope of the subject-matter of the asserted claims." (D.I. 150, ex. AJ at ¶ 79)

As to written description, Spielman opined, for example, that "a person of skill in the art as of the date of the alleged invention would not have understood from the specification of the patents-in-suit that the patentee had possession of a VAN [s]witch configurable to perform 'real-time' transactions." (D.I. 150, ex. AJ at ¶ 46) Spielman supported her conclusion with explanations as to why the specification did not "describe an invention understandable to that skilled artisan." While plaintiff may disagree with

these conclusions, this disagreement does not make the reports inadmissible. Plaintiff's motion to strike the reports is denied.

VI. CONCLUSION

For the foregoing reasons, the court grants defendant's motion for summary judgment of non-infringement (D.I. 113) and defendant's motion for summary judgment of invalidity of the patents-in-suit (D.I. 121). The court denies plaintiff's motion to exclude the testimony of Susan Spielman.[8] (D.I. 115) An appropriate order shall issue.

[8]The remaining motions, defendant's motion for partial summary judgment of laches for the '500 patent (D.I. 111) and plaintiff's motion to strike defendant's opening brief in support of its partial summary judgment of laches for the '500 patent (D.I. 132), as well as the parties' motions to exclude testimony (D.I. 109; D.I. 117; D.I. 119), are denied as moot as no issues remain for trial.

Exhibit G

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

PI-NET INTERNATIONAL INC.,	)	
	)	
Plaintiff,	)	
	)	
v.	)	Civ. No. 12-282-SLR
	)	
JPMORGAN CHASE & CO.,	)	
	)	
Defendant.	)	

ORDER

At Wilmington this 14th day of May 2014, consistent with the memorandum opinion issued this same date;

IT IS ORDERED that:

1. Defendant's motion for summary judgment of invalidity of the patents-in-suit (D.I. 121) is granted.

2. Defendant's motion for summary judgment of non-infringement (D.I. 113) is granted.

3. Plaintiff's motion to exclude the expert testimony of Susan Spielman (D.I. 115) is denied.

4. Defendant's motion for partial summary judgment of laches for the '500 patent (D.I. 111) is denied as moot.

5. Plaintiff's motion to strike defendant's opening brief in support of its partial summary judgment of laches for the '500 patent (D.I. 132) is denied as moot.

6. Defendant's motion to exclude certain testimony of Stevan Porter (D.I. 109) is denied as moot.

7. Plaintiff's motion to exclude certain testimony by Dr. Michael Siegel (D.I. 117) is denied as moot.

8. Plaintiff's motion to exclude certain testimony by Dawn Hall (D.I. 119) is denied as moot.

United States District Judge

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

PI-NET INTERNATIONAL INC.,	)	
	)	
Plaintiff,	)	
	)	
v.	)	Civ. No. 12-282-SLR
	)	
JPMORGAN CHASE & CO.,	)	
	)	
Defendant.	)	

JUDGMENT IN A CIVIL CASE

For reasons stated in the court's memorandum opinion and order of May 14, 2014;

IT IS ORDERED AND ADJUDGED that judgment be and is hereby entered in favor of defendant and against plaintiff.

United States District Judge

Dated: 5/19/2014

(By) Deputy Clerk