PTO/SB/123 (04-15)
Approved for use through 01/31/2018. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

CHANGE OF CORRESPONDENCE ADDRESS
Patent

Address to:
Mail Stop Post Issue
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Patent Number	6,629,163
Issue Date	09-30-2003
Application Number	09/474,664
Filing Date	1999-12-29
First Named Inventor	EDWARD BALASSANIAN
Attorney Docket Number	6743-00100

Please change the Correspondence Address for the above-identified patent to:

☒ The address associated with Customer Number: **35690**

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I am the:

☐ Patentee.

☐ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

☒ Attorney or agent of record. Registration Number 42914.

Signature	/Dean M. Munyon/
Typed or Printed Name	Dean M. Munyon
Date	2019-01-22
Telephone	512-853-8800

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	34916377
Application Number:	09474664
International Application Number:	
Confirmation Number:	2537
Title of Invention:	METHOD AND SYSTEM FOR DEMULTIPLIEXING A FIRST SEQUENCE OF PACKET COMPONENTS TO IDENTIFY SPECIFIC COMPONENTS WHEREIN SUSBSEQUENT COMPONENTS ARE PROCESSED WITHOUT RE-IDENTIFYING COMPONENTS
First Named Inventor/Applicant Name:	EDWARD BALASSANIAN
Correspondence Address:	Heim, Payne & Chorush, L.L. P. - 600 Travis Street Suite 6710 Houston TX 77002 US 713/221-2000 -
Filer:	Dean M. Munyon/Danielle Kramer
Filer Authorized By:	Dean M. Munyon
Attorney Docket Number:	6743-00100
Receipt Date:	22-JAN-2019
Filing Date:	29-DEC-1999
Time Stamp:	11:15:39
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Change of Address	sb0123_fill.pdf	77680 2a895d82e316ccbc0d6c4e0ffe9f77d9978d310d	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	77680		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Bib Data Sheet

CONFIRMATION NO. 2537

SERIAL NUMBER	FILING OR 371(c) DATE / RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
09/474,664	12/29/1999	710	2182	6743-00100

AIA (First Inventor to File): NO

INVENTORS

EDWARD BALASSANIAN, KIRKLAND, WA;

APPLICANTS

EDWARD BALASSANIAN, KIRKLAND, WA;

**** CONTINUING DATA ***************************

**** FOREIGN APPLICATIONS *********************

IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 02/07/2000

Foreign Priority claimed	STATE OR COUNTRY	SHEETS DRAWING	TOTAL CLAIMS	INDEPENDENT CLAIMS
☐ yes ☐ no	WA	18	34	6
35 USC 119 (a-d) conditions met ☐ yes ☐ no ☐ Met after Allowance				
Verified and Acknowledged Examiner's Signature Initials				

ADDRESS
35690

TITLE
METHOD AND SYSTEM FOR DEMULTIPLIEXING A FIRST SEQUENCE OF PACKET COMPONENTS TO IDENTIFY SPECIFIC COMPONENTS WHEREIN SUSBSEQUENT COMPONENTS ARE PROCESSED WITHOUT RE-IDENTIFYING COMPONENTS

FILING FEE RECEIVED		
743	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

PTO/SB/123 (11-08)
Approved for use through 11/30/2011. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

CHANGE OF CORRESPONDENCE ADDRESS
Patent

Address to:
Mail Stop Post Issue
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Patent Number	6,629,163
Issue Date	09-30-2003
Application Number	09/474,664
Filing Date	12-29-1999
First Named Inventor	Edward Balassanian
Attorney Docket Number	6743-00100

Please change the Correspondence Address for the above-identified patent to:

☐ The address associated with Customer Number: [ ]

OR

☑ **Firm *or* Individual Name** Heim, Payne & Chorush, L.L.P

600 Travis Street
Suite 6710

Address

City Houston	**State** TX	**ZIP** 77002
Country US		
Telephone 713.221.2000	**Email** lpayne@hpcllp.com	

This form cannot be used to change the data associated with a Customer Number. To change the data associated with an existing Customer Number use "Request for Customer Number Data Change" (PTO/SB/124).

This form will not affect any "fee address" provided for the above-identified patent. To change a "fee address" use the "Fee Address Indication Form" (PTO/SB/47).

I am the:

☐ Patentee.

☐ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

☑ Attorney or agent of record. Registration Number 42,914.

Signature	/Dean M. Munyon/
Typed or Printed Name	Dean M. Munyon
Date August 21, 2013	Telephone 512-853-8800

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
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Electronic Acknowledgement Receipt

EFS ID:	16646955
Application Number:	09474664
International Application Number:	
Confirmation Number:	2537
Title of Invention:	METHOD AND SYSTEM FOR DEMULTIPLIEXING A FIRST SEQUENCE OF PACKET COMPONENTS TO IDENTIFY SPECIFIC COMPONENTS WHEREIN SUSBSEQUENT COMPONENTS ARE PROCESSED WITHOUT RE-IDENTIFYING COMPONENTS
First Named Inventor/Applicant Name:	EDWARD BALASSANIAN
Customer Number:	35690
Filer:	Dean M. Munyon
Filer Authorized By:	
Attorney Docket Number:	6743-00100
Receipt Date:	21-AUG-2013
Filing Date:	29-DEC-1999
Time Stamp:	14:47:25
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Change of Address	Change_of_Correspondence.pdf	1062232 9ae359c23082a9b60d41a974d3532cc82b2af0d9	no	2

Warnings:	
Information:	

Total Files Size (in bytes):	1062232

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New Applications Under 35 U.S.C. 111

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New International Application Filed with the USPTO as a Receiving Office

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AO 120 (Rev. 2/99)

TO: Mail Stop 8 Director of the U.S. Patent & Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	**REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK**

In Compliance with 35 § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Northern District of California on the following X Patents or ☐ Trademarks:

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
CV 10-04234 SI	9/20/10	Northern District of California

PLAINTIFF	DEFENDANT
IMPLICIT NETWORKS	JUNIPER NETWORKS

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	6,629,163		
2	7,711,857		
3			
4			
5			

In the above—entitled case, the following patent(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT
Order/Judgment attached.

CLERK	(BY) DEPUTY CLERK	DATE
Richard W. Wieking	Yumiko Saito	June 25, 2013

Copy 1—Upon initiation of action, mail this copy to Commissioner **Copy 3—Upon termination of action, mail this copy to Commissioner**
Copy 2—Upon filing document adding patent(s), mail this copy to Commissioner **Copy 4—Case file copy**

AO 120 (Rev. 2/99)

TO: Mail Stop 8 Director of the U.S. Patent & Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	**REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK**

In Compliance with 35 § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Northern District of California on the following X Patents or ☐ Trademarks:

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
CV 10-03365 SI	7/30/10	450 Golden Gate Avenue, SF, CA 94102

PLAINTIFF	DEFENDANT
IMPLICIT NETWORKS INC	F5 NETWORKS INC

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	6,629,163		See Attached Complaint
2	7,711,857		
3			
4			
5			

In the above—entitled case, the following patent(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT
Please refer to Order/Judgment

CLERK	(BY) DEPUTY CLERK	DATE
Richard W. Wieking	Yumiko Saito	April 18, 2013

Copy 1—Upon initiation of action, mail this copy to Commissioner **Copy 3—Upon termination of action, mail this copy to Commissioner**
Copy 2—Upon filing document adding patent(s), mail this copy to Commissioner **Copy 4—Case file copy**

AO 120 (Rev. 2/99)

TO: Mail Stop 8 Director of the U.S. Patent & Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK

In Compliance with 35 § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Northern District of California on the following X Patents or ☐ Trademarks:

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
CV 10-04234 SI	9/20/10	450 Golden Gate Avenue, San Francisco, CA 94102

PLAINTIFF	DEFENDANT
IMPLICIT NETWORKS	JUNIPER NETWORKS

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	6,629,163		See Attached Complaint
2	7,711,857		
3	6,651,099		
4			
5			

In the above—entitled case, the following patent(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT
Please refer to Order/Judgment

CLERK	(BY) DEPUTY CLERK	DATE
Richard W. Wieking	Yumiko Saito	April 18, 2013

Copy 1—Upon initiation of action, mail this copy to Commissioner **Copy 3—Upon termination of action, mail this copy to Commissioner**
Copy 2—Upon filing document adding patent(s), mail this copy to Commissioner **Copy 4—Case file copy**

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/474,664	12/29/1999	EDWARD BALASSANIAN	

CONFIRMATION NO. 2537

POA ACCEPTANCE LETTER

35690
MEYERTONS, HOOD, KIVLIN, KOWERT & GOETZEL, P.C.
P.O. BOX 398
AUSTIN, TX 78767-0398

OC000000060839293

Date Mailed: 05/01/2013

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 04/04/2013.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/rmturner myles/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/474,664	12/29/1999	EDWARD BALASSANIAN	1048-0030

CONFIRMATION NO. 2537

POWER OF ATTORNEY NOTICE

Edward Balassanian
Heim, Payne & Chorush
600 Travis Street
Suite 6710
Houston, TX 77002

OC000000060839261

Date Mailed: 05/01/2013

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 04/04/2013.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/rmturner myles/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Doc Code: PA..

Document Description: Power of Attorney

PTO/AIA/82A (07-12)

Approved for use through 11/30/2014. OMB 0651-0035

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B or equivalent) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5. If the Power of Attorney by Applicant form is not accompanied by this transmittal form or an equivalent, the Power of Attorney will not be recognized in the application.

Application Number	09/474664
Filing Date	12-29-1999
First Named Inventor	Edward Balassanian
Title	METHOD AND SYSTEM FOR DEMULTIPLEXING A FIRST SEQUENCE OF PACKET COMPONENTS TO IDENTIFY SPECIFIC COMPONENTS WHEREIN SUBSEQUENT COMPONENTS ARE PR
Art Unit	2182
Examiner Name	PEYTON, TAMMARA R
Attorney Docket Number	6743-00100

SIGNATURE of Applicant or Patent Practitioner

Signature	/Dean M. Munyon/	Date	2013-04-04
Name	Dean M. Munyon	Telephone	512-853-8800
Registration Number	42,914		

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications.

☐ *Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Doc Code: PA..

Document Description: Power of Attorney

PTO/AIA/82B(07-12)
Approved for use through 11/30/2014. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in the attached transmittal letter.

☒ I hereby appoint Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A or equivalent):

35690

OR

☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A or equivalent):

Name	Registration Number	Name	Registration Number

Please recognize or change the correspondence address for the application identified in the attached transmittal letter to:

☒ The address associated with the above-mentioned Customer Number.

OR

☐ The address associated with Customer Number:

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant:

☐ Inventor or Joint Inventor

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor

☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (*e.g.,* a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document)

SIGNATURE of Applicant for Patent

Signature		Date	3/29/13
Name	Edward Balassanian	Telephone	
Title and Company	President & CEO, Implicit Networks, Inc.		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms for more than one signature, see below *.

☐ *Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	15434379
Application Number:	09474664
International Application Number:	
Confirmation Number:	2537
Title of Invention:	METHOD AND SYSTEM FOR DEMULTIPLIEXING A FIRST SEQUENCE OF PACKET COMPONENTS TO IDENTIFY SPECIFIC COMPONENTS WHEREIN SUSBSEQUENT COMPONENTS ARE PROCESSED WITHOUT RE-IDENTIFYING COMPONENTS
First Named Inventor/Applicant Name:	EDWARD BALASSANIAN
Correspondence Address:	Edward Balassanian Heim, Payne & Chorush 600 Travis Street Suite 6710 Houston TX 77002 US (713)221-2000 lpayne@hpclip.com
Filer:	Dean M. Munyon/Danielle Kramer
Filer Authorized By:	Dean M. Munyon
Attorney Docket Number:	1048-0030
Receipt Date:	04-APR-2013
Filing Date:	29-DEC-1999
Time Stamp:	15:10:14
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	POA.pdf	71167 67496bd15e68b57521c2875773a484019075a54e	no	3

Warnings:	
Information:	
Total Files Size (in bytes):	71167

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/123 (11-08)
Approved for use through 11/30/2011. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

CHANGE OF CORRESPONDENCE ADDRESS
Patent

Address to:
Mail Stop Post Issue
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Patent Number	6,629,163
Issue Date	09/30/2003
Application Number	09/474,664
Filing Date	12/29/1999
First Named Inventor	Edward Balassanian
Attorney Docket Number	1048-0030

Please change the Correspondence Address for the above-identified patent to:

☐ The address associated with Customer Number: [ ]

OR

☑ **Firm *or* Individual Name** Heim, Payne & Chorush

600 Travis Street
Suite 6710

Address

City Houston	**State** Texas	**ZIP** 77002
Country USA		
Telephone 713.221.2000	**Email** lpayne@hpcllp.com	

This form cannot be used to change the data associated with a Customer Number. To change the data associated with an existing Customer Number use "Request for Customer Number Data Change" (PTO/SB/124).

This form will not affect any "fee address" provided for the above-identified patent. To change a "fee address" use the "Fee Address Indication Form" (PTO/SB/47).

I am the:

☑ Patentee.

☐ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

☐ Attorney or agent of record. Registration Number _____.

Signature

Typed or Printed Name Edward Balassanian

Date August 2, 2012	Telephone 206-390-1946

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

Privacy Act Statement

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Electronic Acknowledgement Receipt

EFS ID:	13407687
Application Number:	09474664
International Application Number:	
Confirmation Number:	2537
Title of Invention:	METHOD AND SYSTEM FOR DEMULTIPLIEXING A FIRST SEQUENCE OF PACKET COMPONENTS TO IDENTIFY SPECIFIC COMPONENTS WHEREIN SUSBSEQUENT COMPONENTS ARE PROCESSED WITHOUT RE-IDENTIFYING COMPONENTS
First Named Inventor/Applicant Name:	EDWARD BALASSANIAN
Customer Number:	55959
Filer:	Leslie V. Payne/Amber Branum
Filer Authorized By:	Leslie V. Payne
Attorney Docket Number:	PA1041US
Receipt Date:	02-AUG-2012
Filing Date:	29-DEC-1999
Time Stamp:	17:47:15
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Change of Address	20120802OriginalProsecutionChangeofCorrespondenceAddress.pdf	187533 e75e2949dd1850830c4702130dbd5e46d1128cbe	no	2

Warnings:	
Information:	

Total Files Size (in bytes):	187533

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

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New International Application Filed with the USPTO as a Receiving Office

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/474,664	12/29/1999	EDWARD BALASSANIAN	PA1041US

CONFIRMATION NO. 2537

55959
NEWMAN & NEWMAN, ATTORNEYS AT LAW, LLP
505 FIFTH AVENUE SOUTH
SUITE 610
SEATTLE, WA 98104

POA ACCEPTANCE LETTER

OC000000047882025

Date Mailed: 05/27/2011

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 05/20/2011.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/agizaw/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/474,664	12/29/1999	EDWARD BALASSANIAN	PA1041US

CONFIRMATION NO. 2537

POWER OF ATTORNEY NOTICE

80641
Gard and Kaslow LLP
4 Main Street, Suite 120
Los Altos, CA 94022

OC000000047881993

Date Mailed: 05/27/2011

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 05/20/2011.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/agizaw/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

PTO/SB/80 (01-06)
Approved for use through 12/31/2008. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).

I hereby appoint:

☑ Practitioners associated with the Customer Number: 55959

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(b) to:

☑ The address associated with Customer Number: 55959

OR

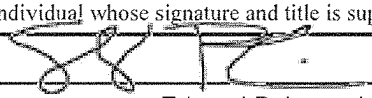
☐ Firm or Individual Name			
Address			
City		State	Zip
Country			
Telephone		Email	

Assignee Name and Address:
Implicit Networks
218 Main Street, Suite 494
Kirkland, WA 98033

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	May 19, 2011
Name	Edward Balassanian	Telephone	206-390-1946
Title	President & CEO		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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PTO/SB/96 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Implicit Networks, Inc.

Application No./Patent No.: 09/474,664 Filed/Issue Date: September 30, 1999

Titled: Method and System for Demultiplexing a First Sequence of Packet Components to Identify Specific Components

Implicit Networks, Inc. , a corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.

states that it is:

1. ☒ the assignee of the entire right, title, and interest in;

2. ☐ an assignee of less than the entire right, title, and interest in (The extent (by percentage) of its ownership interest is _____ %); or

3. ☐ the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

the patent application/patent identified above, by virtue of either:

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy therefore is attached.

OR

B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Balassanian, Edward To: Becomm Corporation

The document was recorded in the United States Patent and Trademark Office at
Reel 010697, Frame 0036, or for which a copy thereof is attached.

2. From: Becomm Corporation To: Implicit Networks, Inc.

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (*i.e.*, a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Randall Moeller/ May 20, 2011

Signature Date

Randall Moeller, Reg. No. 39,776 Attorney

Printed or Typed Name Title

Privacy Act Statement

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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	10137481
Application Number:	09474664
International Application Number:	
Confirmation Number:	2537
Title of Invention:	METHOD AND SYSTEM FOR DEMULTIPLIEXING A FIRST SEQUENCE OF PACKET COMPONENTS TO IDENTIFY SPECIFIC COMPONENTS WHEREIN SUSBSEQUENT COMPONENTS ARE PROCESSED WITHOUT RE-IDENTIFYING COMPONENTS
First Named Inventor/Applicant Name:	EDWARD BALASSANIAN
Customer Number:	80641
Filer:	Randall H. Moeller/Michael Spain
Filer Authorized By:	Randall H. Moeller
Attorney Docket Number:	PA1041US
Receipt Date:	20-MAY-2011
Filing Date:	29-DEC-1999
Time Stamp:	15:22:21
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	POA_as_filed_2011-05-20.pdf	385320 e559f5140bcdd5dc7bf9ba1f0f01d1da547cf7ff	no	4

Warnings:	
Information:	

Total Files Size (in bytes):	385320

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
09/474,664	12/29/1999	2182	743	PA1041US	34	6

CONFIRMATION NO. 2537

CORRECTED FILING RECEIPT

80641
Gard and Kaslow LLP
4 Main Street, Suite 120
Los Altos, CA 94022

OC000000047180988

Date Mailed: 04/19/2011

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

EDWARD BALASSANIAN, KIRKLAND, WA;

Power of Attorney: The patent practitioners associated with Customer Number 80641

Domestic Priority data as claimed by applicant

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)

If Required, Foreign Filing License Granted: 02/07/2000

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 09/474,664**

Projected Publication Date: None, application is not eligible for pre-grant publication

Non-Publication Request: No

Early Publication Request: No

Title

METHOD AND SYSTEM FOR DEMULTIPLIEXING A FIRST SEQUENCE OF PACKET COMPONENTS TO IDENTIFY SPECIFIC COMPONENTS WHEREIN SUSBSEQUENT COMPONENTS ARE PROCESSED WITHOUT RE-IDENTIFYING COMPONENTS

Preliminary Class

710

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/474,664	12/29/1999	EDWARD BALASSANIAN	PA1041US

CONFIRMATION NO. 2537

POA ACCEPTANCE LETTER

80641
Gard and Kaslow LLP
4 Main Street, Suite 120
Los Altos, CA 94022

OC000000046918842

Date Mailed: 04/14/2011

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 03/29/2011.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/ddinh/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/474,664	12/29/1999	EDWARD BALASSANIAN	IMPL-1-1003

CONFIRMATION NO. 2537

POWER OF ATTORNEY NOTICE

IMPLICIT NETWORKS, INC.
INTELLECTUAL PROPERTY DEPT.
218 Main Street
Suite 498
Kirkland, WA 98033

OC000000046918832

Date Mailed: 04/14/2011

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 03/29/2011.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/ddinh/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

PTO/SB/80 (01-06)
Approved for use through 12/31/2008. OMB 0651-0035
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).

I hereby appoint:

☑ Practitioners associated with the Customer Number: 80641

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(b) to:

☑ The address associated with Customer Number: 80641

OR

☐ Firm or individual Name			
Address			
City		State	Zip
Country			
Telephone		Email	

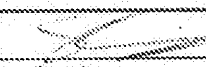
Assignee Name and Address:

Implicit Networks, Inc.
218 Main Street, Suite 466
Kirkland, WA 98033

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	2/25/10
Name	Edward Balassanian	Telephone	206-390-1946
Title	President & CEO		

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	9763532
Application Number:	09474664
International Application Number:	
Confirmation Number:	2537
Title of Invention:	METHOD AND SYSTEM FOR DEMULTIPLIEXING A FIRST SEQUENCE OF PACKET COMPONENTS TO IDENTIFY SPECIFIC COMPONENTS WHEREIN SUBSBEQUENT COMPONENTS ARE PROCESSED WITHOUT RE-IDENTIFYING COMPONENTS
First Named Inventor/Applicant Name:	EDWARD BALASSANIAN
Correspondence Address:	IMPLICIT NETWORKS, INC. INTELLECTUAL PROPERTY DEPT. 218 Main Street Suite 498 Kirkland WA 98033 US 206-583-8888 -
Filer:	Kenneth M. Kaslow
Filer Authorized By:	
Attorney Docket Number:	IMPL-1-1003
Receipt Date:	29-MAR-2011
Filing Date:	29-DEC-1999
Time Stamp:	15:09:23
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	PA1041US_Change_Status.pdf	161753 ac1b1985848c3bf2fb13450eddc1a6bc0bc541bd	no	2
Warnings:					
Information:					
2	Assignee showing of ownership per 37 CFR 3.73(b).	PA1041US_373b.pdf	186063 f25e3ec2b7ca5a7cae3270c55f5fa94222655bff	no	2
Warnings:					
Information:					
3	Power of Attorney	Implicit_Networks_POA.pdf	1326635 2c7207c0a478783a5398e02c556b710cdc2e8795	no	1
Warnings:					
Information:					
		Total Files Size (in bytes):	1674451		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES

PATENT AND TRADEMARK OFFICE

APPLICANT:	Edward Balassanian
SERIAL NO.:	09/474,664
CONF. NO.:	2537
FILING DATE:	December 29, 1999
TITLE:	Method and System for Demultiplexing a First Sequence of Packet Components to Identify Specific Components Wherein Subsequent Components Are Processed Without Re-Identifying Components
EXAMINER:	Peyton, Tammara R.
ART UNIT NO.:	2182
ATTY DKT NO.:	PA1041US

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Notice of Change in Status

Sir:

Pursuant to 37 CFR §§ 1.27(g)(2) and 1.28(c)(2), Implicit Networks, Inc., the Assignee of the present application, represents that it no longer claims small entity status in the above-referenced application, now issued as U.S. Patent No. 6,629,163. Payment for the Maintenance Fee currently due is being submitted simultaneously herewith in the appropriate amount for a large entity.

This Notice has also been filed electronically via EFS-Web.

Respectfully submitted,
Edward Balassanian

Date: March 29, 2011

/Kenneth M. Kaslow/
Kenneth M. Kaslow
Reg. No. 32,246

Gard & Kaslow *LLP*
Four Main Street, Suite 120
Los Altos, CA 94022
Phone (650) 305-3050
Fax (650) 305-3055

PTO/SB/96 (09-08)
Approved for use through 10/31/2008. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Implicit Networks, Inc.

Application No./Patent No.: 6,629,163 Filed/Issue Date: September 30, 2003

Entitled: Method and System for Demultiplexing a First Sequence of Packet Components to Identify Specific Components Wherein Subsequent Components Are Processed Without Re-Identifying Components

Implicit Networks, Inc. , a corporation
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☑ the assignee of the entire right, title, and interest; or
2. ☐ an assignee of less than the entire right, title and interest
(The extent (by percentage) of its ownership interest is _____ %)

in the patent application/patent identified above by virtue of either:

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy therefore is attached.

OR

B. ☑ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Edward Balassanian To: Becomm Corporation
The document was recorded in the United States Patent and Trademark Office at
Reel 010697 , Frame 0036 , or for which a copy thereof is attached.

2. From: Becomm Corporation To: Implicit Networks, Inc.
The document was recorded in the United States Patent and Trademark Office at
Reel 015765 , Frame 0541 , or for which a copy thereof is attached.

3. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at
Reel _____ , Frame _____ , or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet.

☐ As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (*i.e.*, a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Kenneth M. Kaslow/ March 29, 2011
Signature Date

Kenneth M. Kaslow, Reg. No. 32,246 650-305-3050
Printed or Typed Name Telephone Number

Attorney
Title

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

AO 120 (Rev. 2/99)

TO: **Mail Stop 8** **Director of the U.S. Patent & Trademark Office** **P.O. Box 1450** **Alexandria, VA 22313-1450**	**REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK**

In Compliance with 35 § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Northern District of California on the following X Patents or ☐ Trademarks:

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
C-10-4234-EDL	September 20, 2010	Office of the Clerk, 450 Golden Gate Ave., 16th Floor, San Francisco, CA 94102

PLAINTIFF	DEFENDANT
IMPLICIT NETWORKS, INC.	JUNIPER NETWORKS, INC.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	7,711857		
2	6,629163		
3			*"PLS. SEE ATTACHED COPY OF COMPLAINT".*
4		E-filing	
5			

In the above—entitled case, the following patent(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
Richard W. Wieking	Thelma Nudo	September 20, 2010

Copy 1—Upon initiation of action, mail this copy to Commissioner Copy 3—Upon termination of action, mail this copy to Commissioner
Copy 2—Upon filing document adding patent(s), mail this copy to Commissioner Copy 4—Case file copy

AO 120 (Rev. 2/99)

TO: **Mail Stop 8** **Director of the U.S. Patent & Trademark Office** **P.O. Box 1450** **Alexandria, VA 22313-1450**	**REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK**

In Compliance with 35 § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Northern District California on the ✔ Patents or ☐ Trademarks:

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
CV 10-03746 JCS	8/23/2010	450 Golden Gate Avenue, 16th Floor, San Francisco CA 94102

PLAINTIFF	DEFENDANT
IMPLICIT NETWORKS INC	HEWLETT-PACKARD COMPANY

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	6629163		***See Attach Complaint***
2	6324685		
3	6976248		
4	7774740		
5			

In the above—entitled case, the following patent(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
Richard W. Wieking	Gina Agustine-Rivas	August 24, 2010

Copy 1—Upon initiation of action, mail this copy to Commissioner Copy 3—Upon termination of action, mail this copy to Commissioner
Copy 2—Upon filing document adding patent(s), mail this copy to Commissioner Copy 4—Case file copy

AO 120 (Rev. 2/99)

TO: Mail Stop 8 Director of the U.S. Patent & Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	**REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK**

In Compliance with 35 § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Northern District of California on the following X Patents or ☐ Trademarks:

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
CV 10-03766 JL	8/24/10	Northern District of California, San Francisco Division

PLAINTIFF	DEFENDANT
IMPLICIT NETWORKS INC	CITRIX SYSTEMS INC

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	6629163		
2	7711857		
3			
4			
5			

In the above—entitled case, the following patent(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading		
	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1			
2			
3			
4			
5			

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
Richard W. Wieking	Gloria Acevedo	August 26, 2010

Copy 1—Upon initiation of action, mail this copy to Commissioner Copy 3—Upon termination of action, mail this copy to Commissioner
Copy 2—Upon filing document adding patent(s), mail this copy to Commissioner Copy 4—Case file copy

AO 120 (Rev. 2/99)

TO: Mail Stop 8 Director of the U.S. Patent & Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK

In Compliance with 35 § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Northern District of California on the following x Patents or ☐ Trademarks:

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
CV 10-03606 HRL	8/16/2010	280 South First Street, Rm 2112, San Jose, CA 95121

PLAINTIFF	DEFENDANT
IMPLICIT NETWORKS INC	CISCO SYSTEMS INC

PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 6629163		SEE ATTACHED COMPLAINT
2 7711857		
3		
4		
5		

In the above—entitled case, the following patent(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
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3		
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5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
Richard W. Wieking	Betty Walton	August 19, 2010

Copy 1—Upon initiation of action, mail this copy to Commissioner **Copy 3—Upon termination of action, mail this copy to Commissioner**
Copy 2—Upon filing document adding patent(s), mail this copy to Commissioner **Copy 4—Case file copy**

AO 120 (Rev. 2/99)

TO: Mail Stop 8 Director of the U.S. Patent & Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK

In Compliance with 35 § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Northern District California on the ✔ Patents or ☐ Trademarks:

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
CV 10-03365 JCS	7/30/10	450 Golden Gate Avenue, 16th Floor, San Francisco, CA 94102

PLAINTIFF	DEFENDANT
IMPLICIT NETWORKS INC	F5 NETWORKS INC

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	6629163		***SEE ATTACH COMPLAINT***
2	7711857		
3			
4			
5			

In the above—entitled case, the following patent(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
Richard W. Wieking	Gina Agustine-Rivas	July 30, 2010

Copy 1—Upon initiation of action, mail this copy to Commissioner Copy 3—Upon termination of action, mail this copy to Commissioner
Copy 2—Upon filing document adding patent(s), mail this copy to Commissioner Copy 4—Case file copy

AO 120 (Rev. 2/99)

TO: Mail Stop 8 Director of the U.S. Patent & Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK

In Compliance with 35 § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Northern District California on the ✔ Patents or ☐ Trademarks:

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
CV 09-05628 JCS	11/30/09	450 Golden Gate Avenue, 16th Floor, Box 36060, SF CA 94102

PLAINTIFF	DEFENDANT
IMPLICIT NETWORKS INC.	MICROSOFT CORPORATION

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	6629163		*SEE ATTACH COMPLAINT*
2			
3			
4			
5			

In the above—entitled case, the following patent(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
Richard W. Wieking	Gina Agustine-Rivas	December 1, 2009

Copy 1—Upon initiation of action, mail this copy to Commissioner Copy 3—Upon termination of action, mail this copy to Commissioner
Copy 2—Upon filing document adding patent(s), mail this copy to Commissioner Copy 4—Case file copy

SPENCER HOSIE (CA Bar No. 101777)
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BRUCE WECKER (CA Bar No. 078530)
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(415) 247-6001 Fax

Attorneys for Plaintiff
IMPLICIT NETWORKS, INC.

JCS

UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

CV 09 5628

IMPLICIT NETWORKS, INC.,

Plaintiff,

v.

MICROSOFT CORPORATION,

Defendants.

Case No. _____

ORIGINAL COMPLAINT AND DEMAND FOR JURY TRIAL

Plaintiff Implicit Networks, Inc. ("Implicit" or "Plaintiff") hereby files its complaint against defendants Microsoft Corporation ("Microsoft") and ("Defendant"), for patent infringement. For its complaint, Plaintiff alleges, on personal knowledge as to its own acts and on information and belief as to all other matters, as follows:

PARTIES

1. Implicit is a corporation organized under the laws of the State of Washington, with its principal place of business in Seattle, Washington.

2. Microsoft is a corporation organized under the laws of the State of Washington, with its principal place of business in Redmond, Washington.

JURISDICTION AND VENUE

3. This complaint asserts a cause of action for patent infringement under the Patent Act, 35 U.S.C. § 271. This Court has subject matter jurisdiction over this matter by virtue of 28 U.S.C. § 1338(a). Venue is proper in this Court by virtue of 28 U.S.C. § 1391(b) and (c) and 28 U.S.C. § 1400(b), in that Defendant Microsoft may be found in this district, have committed acts of infringement in this district, and a substantial part of the events or omissions giving rise to the claim occurred and a substantial part of property that is the subject of the action is situated in this district.

4. This Court has personal jurisdiction over Defendant Microsoft because Defendant has a place of business in, and provides infringing products and services in, the Northern District of California.

INTRADISTRICT ASSIGNMENT

5. Pursuant to Civil LR 3-2(c), this case should be subject to district-wide assignment because it is an Intellectual Property Action.

COUNT I

PATENT INTRINGEMENT

6. On September 30, 2003, United States Patent No. 6,629,163 ("the '163 patent") entitled "Method and System for Demultiplexing a First Sequence of Packet Components to Identify Specific Components Wherein Subsequent Components are Processed Without Re-Identifying Components" was duly and legally issued. A true and correct copy of the '163 patent is attached as Exhibit A.

7. Edward Balassanian is the sole inventor of the '163 patent. The '163 patent has been assigned to Plaintiff. Plaintiff Implicit is the sole legal and rightful owner of the '163 patent.

8. Microsoft makes, uses, and sells products that infringe the '163 patent, such products including without limitation, its Windows Filtering Platform, an integral aspect of Microsoft's Vista Windows 7 and Windows Server 2008 releases. In addition, Microsoft has infringed and is still infringing the '163 patents in this country, through, *inter alia*, its active inducement of others to make, use, and/or sell the systems, products and methods claimed in one or more claims of the patents. In addition, Microsoft has infringed and is still infringing these patents in this country through, *inter alia*, providing and selling goods and services including products designed for use in practicing one or more claims of the patents, where the goods and services constitute a material part of the invention and are not staple articles of commerce, and which have no use other than infringing one or more claims of the patents. Microsoft has committed these acts with knowledge that the goods and services it provides are specially made for use in a manner that directly infringes these patents.

9. As a result of the infringement by Microsoft, Plaintiff has been damaged, and will continue to be damaged, until these defendants are enjoined from further acts of infringement.

10. Microsoft will continue to infringe unless enjoined by this Court. Plaintiff faces real, substantial and irreparable damage and injury of a continuing nature from infringement for which Plaintiff has no adequate remedy at law.

WHEREFORE, Plaintiff prays for entry of judgment:

A. that the '163 patent is valid and enforceable;

B. that Microsoft has infringed one or more claims of the '163 patent;

C. that Microsoft account for and pay to Plaintiff all damages caused by the infringement of the '163 patents, which by statute can be no less than a reasonable royalty;

D. that Plaintiff be granted pre-judgment and post-judgment interest on the damages caused to them by reason of Defendants' infringement of the '163 patent;

E. that this Court require Defendant to file with this Court, within thirty (30) days after entry of final judgment, a written statement under oath setting forth in detail the manner in which Defendant has complied with the injunction;

F. that this be adjudged an exceptional case and the Plaintiff be awarded its attorney's fees in this action pursuant to 35 U.S.C. § 285;

G. that this Court award Plaintiff its costs and disbursements in this civil action, including reasonable attorney's fees; and

H. that Plaintiff be granted such other and further relief as the Court may deem just and proper under the current circumstances.

Dated: November 30, 2009

Respectfully submitted,

SPENCER HOSIE (CA Bar No. 101777)
shosie@hosielaw.com
BRUCE WECKER (CA Bar No. 078530)
bwecker@hosielaw.com
GEORGE F. BISHOP (CA Bar No. 89205)
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188 The Embarcadero, Suite 750
San Francisco, CA 94105
(415) 247-6000 Tel.
(415) 247-6001 Fax

Attorneys for Plaintiff
IMPLICIT NETWORKS, INC.

DEMAND FOR JURY TRIAL

Plaintiff, by its undersigned attorneys, demands a trial by jury on all issues so triable.

Dated: November 30, 2009

Respectfully submitted,

SPENCER HOSIE (CA Bar No. 101777)
shosie@hosielaw.com
BRUCE WECKER (CA Bar No. 078530)
bwecker@hosielaw.com
GEORGE F. BISHOP (CA Bar No. 89205)
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HOSIE RICE LLP
188 The Embarcadero, Suite 750
San Francisco, CA 94105
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(415) 247-6001 Fax

Attorneys for Plaintiff
IMPLICIT NETWORKS, INC.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/474,664	12/29/1999	EDWARD BALASSANIAN	IMPL-1-1003

CONFIRMATION NO. 2537

POWER OF ATTORNEY NOTICE

25315
BLACK LOWE & GRAHAM, PLLC
701 FIFTH AVENUE
SUITE 4800
SEATTLE, WA 98104

OC000000037149925

Date Mailed: 07/31/2009

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/27/2009.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/ttkim/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/474,664	12/29/1999	EDWARD BALASSANIAN	IMPL-1-1003

CONFIRMATION NO. 2537

POA ACCEPTANCE LETTER

22504
DAVIS WRIGHT TREMAINE, LLP/Seattle
1201 Third Avenue, Suite 2200
SEATTLE, WA 98101-3045

OC000000037149985

Date Mailed: 07/31/2009

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/27/2009.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/ttkim/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

PTO/SB/80 (11-08)
Approved for use through 11/30/2011. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).

I hereby appoint:

☑ Practitioners associated with the Customer Number: 22504

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(b) to:

☐ The address associated with Customer Number:

OR

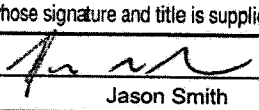
☑ Firm or Individual Name	Implicit Networks, Inc. - Intellectual Property Department				
Address	218 Main Street, Suite 498				
City	Kirkland	State	WA	Zip	98033
Country	US				
Telephone	425-503-5044	Email	docketing@implicitnetworks.com		

Assignee Name and Address:

Implicit Networks, Inc.
218 Main Street, Suite 498
Kirkland, WA 98033

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record
The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	7-23-2009
Name	Jason Smith	Telephone	425-503-5044
Title	Authorized Person for Implicit Networks, Inc.		

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/SB/96 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Implicit Networks, Inc.

Application No./Patent No.: 6,629,163 Filed/Issue Date: 30-Sep-2003

Titled: METHOD AND SYSTEM FOR DEMULTIPLIEXING A FIRST SEQUENCE OF PACKET COMPONENTS TO IDENTIFY SPECIFIC COMPONENTS WHEREIN SUSBSEQUENT COMPONENTS ARE PROCESSED WITHOUT RE-IDENTIFYING COMPONENTS

Implicit Networks, Inc. , a corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.

states that it is:

1. ☒ the assignee of the entire right, title, and interest in;

2. ☐ an assignee of less than the entire right, title, and interest in (The extent (by percentage) of its ownership interest is _____ %); or

3. ☐ the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

the patent application/patent identified above, by virtue of either:

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy therefore is attached.

OR

B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: BALASSANIAN, EDWARD To: BECOMM CORPORATION

The document was recorded in the United States Patent and Trademark Office at
Reel 010697 , Frame 0036 , or for which a copy thereof is attached.

2. From: BECOMM CORPORATION To: IMPLICIT NETWORKS, INC.

The document was recorded in the United States Patent and Trademark Office at
Reel 015765 , Frame 0541 , or for which a copy thereof is attached.

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____ , Frame _____ , or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (*i.e.*, a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Michael J. Donohue, Reg No. 35859/ July 27, 2009

Signature Date

Michael J. Donohue, Reg No. 35859 Attorney of record

Printed or Typed Name Title

Electronic Acknowledgement Receipt

EFS ID:	5773671
Application Number:	09474664
International Application Number:	
Confirmation Number:	2537
Title of Invention:	METHOD AND SYSTEM FOR DEMULTIPLIEXING A FIRST SEQUENCE OF PACKET COMPONENTS TO IDENTIFY SPECIFIC COMPONENTS WHEREIN SUSBSEQUENT COMPONENTS ARE PROCESSED WITHOUT RE-IDENTIFYING COMPONENTS
First Named Inventor/Applicant Name:	EDWARD BALASSANIAN
Customer Number:	25315
Filer:	Michael J. Donohue/Selah Brown
Filer Authorized By:	Michael J. Donohue
Attorney Docket Number:	IMPL-1-1003
Receipt Date:	27-JUL-2009
Filing Date:	29-DEC-1999
Time Stamp:	14:35:26
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	POA.pdf	109827 6af103c8c0da16619d34a7735338adb655ae5abb	no	1

Warnings:	
Information:	

2	Assignee showing of ownership per 37 CFR 3.73(b).	003US0.pdf	28477 f3d15fd9a40ce910a897f4af8a0c2d937313406c	no	1

Warnings:	
Information:	
Total Files Size (in bytes):	138304

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/474,664	12/29/1999	EDWARD BALASSANIAN	IMPL-1-1003

CONFIRMATION NO. 2537

POA ACCEPTANCE LETTER

25315
BLACK LOWE & GRAHAM, PLLC
701 FIFTH AVENUE
SUITE 4800
SEATTLE, WA 98104

OC000000033904330

Date Mailed: 01/08/2009

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 12/30/2008.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/atesfai/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/474,664	12/29/1999	EDWARD BALASSANIAN	294518007US

CONFIRMATION NO. 2537

POWER OF ATTORNEY NOTICE

25096
PERKINS COIE LLP
PATENT-SEA
P.O. BOX 1247
SEATTLE, WA 98111-1247

OC000000033904299

Date Mailed: 01/08/2009

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 12/30/2008.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/atesfai/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Print Form

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POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS

Application Number	09/474,664
Filing Date	December 29, 1999
First Named Inventor	Edward Balassanian
Title	METHOD AND SYSTEM FOR DEMULTIPLEXING A FIRST SEQU
Art Unit	2182
Examiner Name	Tammara R. Peyton
Attorney Docket Number	IMPL-1-1003

I hereby revoke all previous powers of attorney given in the above-identified application.

☐ A Power of Attorney is submitted herewith.

OR

☒ I hereby appoint Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith: 25315

OR

☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number

Please recognize or change the correspondence address for the above-identified application to:

☒ The address associated with the above-mentioned Customer Number.

OR

☐ The address associated with Customer Number:

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the:

☒ Applicant/Inventor.

OR

☐ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) (Form PTO/SB/96) submitted herewith or filed on _____

SIGNATURE of Applicant or Assignee of Record

Signature		Date	12/16/08
Name	Edward Balassanian	Telephone	
Title and Company			

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☒ *Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	4536159
Application Number:	09474664
International Application Number:	
Confirmation Number:	2537
Title of Invention:	METHOD AND SYSTEM FOR DEMULTIPLIEXING A FIRST SEQUENCE OF PACKET COMPONENTS TO IDENTIFY SPECIFIC COMPONENTS WHEREIN SUSBSEQUENT COMPONENTS ARE PROCESSED WITHOUT RE-IDENTIFYING COMPONENTS
First Named Inventor/Applicant Name:	EDWARD BALASSANIAN
Customer Number:	25096
Filer:	Richard Thomas Black/Tricia Walker
Filer Authorized By:	Richard Thomas Black
Attorney Docket Number:	294518007US
Receipt Date:	30-DEC-2008
Filing Date:	29-DEC-1999
Time Stamp:	14:32:22
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	IMPL-1-1003RPOAsigned.pdf	43702 513ae5c80cbe009fccd4995f11942caf10371da8	no	1

Warnings:	
Information:	

Total Files Size (in bytes):	43702

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

To:	Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	***REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK***

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court United States District Court for the Western District of Washington on the following: _X_ ***Patents*** or ___ Trademarks:

DOCKET NO. 2:08-cv-00184-JLR	***DATE FILED*** 2/4/08	***US District Court*** United States District Court for the Western District of Washington
PLAINTIFF Implicit Networks Inc		DEFENDANT Advanced Micro Devices Inc , et al.
PATENT OR TRADEMARK NO.	***PATENT OR TRADEMARK NO.***	***PATENT OR TRADEMARK NO.***
1. 6,629,163	6.	11.
2.	7.	12.
3.	8.	13.
4.	9.	14.
5.	10.	15.

In the above-entitled case, the following patents(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY __Amendment __Answer __Cross Bill __Other Pleading	
PATENT OR TRADEMARK NO.	***PATENT OR TRADEMARK NO.***	***PATENT OR TRADEMARK NO.***
1.	6.	11.
2.	7.	12.
3.	8.	13.
4.	9.	14.
5.	10.	15.

In the above-entitled case, the following decision has been rendered or judgment issued:

DECISION/JUDGMENT

CLERK	(BY) DEPUTY CLERK	DATE
Bruce Rifkin	DJ	2/8/08

08-CV-00184-CMP

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WASHINGTON
SEATTLE DIVISION

IMPLICIT NETWORKS, INC. Plaintiff, v. ADVANCED MICRO DEVICES, INC., INTEL CORPORATION, NVIDIA CORPORATION, RAZA MICROELECTRONICS, REALNETWORKS, INC., and SUN MICROSYSTEMS, INC., Defendants.	§	NO. C08-0184 JLR **PLAINTIFF'S ORIGINAL COMPLAINT** **JURY TRIAL DEMANDED**

Plaintiff, Implicit Networks, Inc. ("Plaintiff"), files this Original Complaint against Defendants, Advanced Micro Devices, Inc. ("AMD"), Intel Corporation ("Intel"), NVIDIA Corporation("NVIDIA"), Raza Microelectronics ("Raza"), RealNetworks, Inc. ("Real"), and Sun Microsystems, Inc. ("Sun"), and alleges as follows:

THE PARTIES

1. Plaintiff is a Washington corporation with its principal place of business in Seattle, Washington.

LAW OFFICES OF JAMES S. ROGERS
1500 Fourth Avenue, Suite 500
Seattle WA 98101
Ph: 206/621-8525 Fax: 206/223-8224

2. Advanced Micro Devices, Inc., on information and belief, is a corporation organized under the laws of the State of Delaware. AMD is doing business in Washington, and, on information and belief, has a principal place of business at One AMD Place (P. O. Box 3453), Sunnyvale, CA 94088-3453. AMD may be served with process by serving its registered agent, CT Corporation System, 1801 West Bay Drive NW, Suite 206, Olympia, WA 98502.

3. Intel Corporation, on information and belief, is a corporation organized under the laws of the State of Delaware. Intel is doing business in Washington, and, on information and belief, has a principal place of business at 2200 Mission College Blvd., Santa Clara, CA 95052-8119. Intel may be served with process by serving its registered agent, Mr. David Jay Thomsen, 315 East D Street, Tacoma, Washington 98421-1803.

4. NVIDIA Corporation, on information and belief, is a corporation organized under the laws of the State of Delaware. NVIDIA is doing business in Washington, and, on information and belief, has a principal place of business at 2701 San Tomas Expressway, Santa Clara, CA 95050. NVIDIA may be served with process by serving its registered agent, CT Corporation System, 1801 West Bay Drive NW, Suite 206, Olympia, WA 98502.

5. Raza Microelectronics, on information and belief, is a corporation organized under the laws of the State of California. Raza is doing business in Washington, and, on information and belief, has a principal place of business at 18920 Forge Drive, Cupertino, CA 95014-0701. Raza may be served with process by serving its registered agent, GKL Corporate Search, Inc., 915 L. Street, Suite 1250, Sacramento, CA 95814.

6. RealNetworks, Inc., on information and belief, is a corporation organized under the laws of the State of Washington. Real is doing business in Washington, and, on information and

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Ph: 206/621-8525 Fax: 206/223-8224

belief, has a principal place of business at 2601 Elliott Avenue, Seattle, WA 98121. Real may be served with process by serving its registered agent, Mr. Robert R. Kimball, 2601 Elliott Ave., #1000, Seattle, WA 98111-9223.

7. Sun Microsystems, Inc., on information and belief, is a corporation organized under the laws of the State of Delaware. Sun is doing business in Washington, and, on information and belief, has a principal place of business at 4150 Network Circle, Santa Clara, CA 95054. Sun may be served with process by serving its registered agent, Corporation Service Company, 6500 Harbour Heights Parkway, Mukileto, WA 98275.

JURISDICTION & VENUE

8. This is an action for infringement of a United States patent, among other actions. Accordingly, this action arises under the patent laws of the United States of America, 35 U.S.C. § 1 et. seq. and jurisdiction is properly based on Title 35 United States Code, particularly § 271, and title 28 United States Code, particularly § 1338(a).

9. AMD, upon information and belief, transacts business in this judicial district by manufacturing, selling, offering to sell, or using products and/or systems as described and claimed in United States Patent No. 6,629,163, the patent at issue in this lawsuit, and/or by conducting other business in this judicial district.

10. Intel, upon information and belief, transacts business in this judicial district by manufacturing, selling, offering to sell, or using products and/or systems as described and claimed in United States Patent No. 6,629,163, the patent at issue in this lawsuit, and/or by conducting other business in this judicial district.

11. NVIDIA, upon information and belief, transacts business in this judicial district by manufacturing, selling, offering to sell, or using products and/or systems as described and

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1500 Fourth Avenue, Suite 500
Seattle WA 98101
Ph: 206/621-8525 Fax: 206/223-8224

claimed in United States Patent No. 6,629,163, the patent at issue in this lawsuit, and/or by conducting other business in this judicial district.

12. Raza, upon information and belief, transacts business in this judicial district by manufacturing, selling, offering to sell, or using products and/or systems as described and claimed in United States Patent No. 6,629,163, the patent at issue in this lawsuit, and/or by conducting other business in this judicial district.

13. Real, upon information and belief, transacts business in this judicial district by manufacturing, selling, offering to sell, or using products and/or systems as described and claimed in United States Patent No. 6,629,163, the patent at issue in this lawsuit, and/or by conducting other business in this judicial district.

14. Sun, upon information and belief, transacts business in this judicial district by manufacturing, selling, offering to sell, or using products and/or systems as described and claimed in United States Patent No. 6,629,163, the patent at issue in this lawsuit, and/or by conducting other business in this judicial district.

15. Venue is proper in this court under Title 28 United States Code § 1391(b) and 1400(b).

COUNT I

PATENT INFRINGEMENT AGAINST ALL DEFENDANTS

16. On September 30, 2003, United States Patent No. 6,629,163 ("the '163 patent") entitled "Methods and System for Demultiplexing a First Sequence of Packet Components to Identify Specific Components Wherein Subsequent Components are Processed Without Re-Identifying Components" was duly and legally issued. A true and correct copy of the '163 patent is attached as Exhibit A.

17. Pursuant to 35 U.S.C. § 282, the above-listed United States Patent is presumed valid.

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Seattle WA 98101
Ph: 206/621-8525 Fax: 206/223-8224

18. Edward Balassanian is the sole inventor of the '163 patent. The '163 patent has been assigned to Plaintiff.

19. Intel, on information and belief, manufactures, uses, and sells products that infringe the '163 patent, including without limitation, products incorporating its Viiv Technology.

20. Raza, formerly Amersham Biosciences, on information and belief, manufactures, uses, and sells products that infringe the '163 patent, including without limitation, its Alchemy family of processors.

21. AMD, on information and belief, manufactures, uses, and sells products that infringe the '163 patent, including without limitation, its Alchemy and ATI Radeon lines of products.

22. Sun, on information and belief, manufactures, uses, and sells products that infringe the '163 patent, including without limitation, its Java Media Framework.

23. NVIDIA, on information and belief, manufactures, uses, and sells products that infringe the '163 patent, including without limitation, products incorporating its Stant Media software.

24. Real, on information and belief, manufactures, uses, and sells products that infringe the '163 patent, including without limitation, its Helix DNA Client.

25. The infringement of the '163 patent alleged above has injured the Plaintiff and thus, it is entitled to recover damages adequate to compensate for Intel, Raza, AMD, Sun, NVIDIA, Real's infringement, which in no event can be less than a reasonable royalty.

DEMAND FOR JURY TRIAL

26. Plaintiff hereby demands a jury trial on all claims and issues.

PRAYER FOR RELIEF

Wherefore, Plaintiff prays for entry of judgment:

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1500 Fourth Avenue, Suite 500
Seattle WA 98101
Ph: 206/621-8525 Fax: 206/223-8224

A. that Defendants, Intel, Raza, AMD, Sun, NVIDIA, and Real have infringed one or more claims of the '163 patent;

B. that Defendants, Intel, Raza, AMD, Sun, NVIDIA, and Real account for and pay to Plaintiff all damages caused by the infringement of the '163 patent, which by statute can be no less than a reasonable royalty;

C. that Plaintiff be granted pre-judgment and post-judgment interest on the damages caused to them by reason of Defendants, Intel, Raza, AMD, Sun, NVIDIA, and Real's infringement of the '163 patent;

D. that Plaintiff be granted its attorneys' fees in this action;

E. that costs be awarded to Plaintiff;

F. that Plaintiff be granted such other and further relief as the Court may deem just and proper under the current circumstances.

DATED this 4 day of February, 2008.

Respectfully submitted,

LAW OFFICES OF JAMES S. ROGERS

James S. Rogers, WSBA #5335
Law Offices of James S. Rogers
1500 Fourth Avenue, Suite 500
Seattle, Washington 98101
Telephone: 206/621-8525
Fax: 206/223-8224

LAW OFFICES OF JAMES S. ROGERS
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Of Counsel:

Edward W. Goldstein
Corby R. Vowell
Matthew J.M. Prebeg
Stephen W. Abbott
GOLDSTEIN, FAUCETT & PREBEG, L.L.P.
1177 West Loop South, Suite 400
Houston, Texas 77027
Telephone: 713/877-1515
Fax: 713/877-1737

Attorneys for Plaintiff

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1500 Fourth Avenue, Suite 500
Seattle WA 98101
Ph: 206/621-8525 Fax: 206/223-8224

#13 Copy C

Attorney Docket No.: 29451-8007 US

I hereby certify that this correspondence is being deposited with the U.S. Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on:

Date: October 31, 2003 By: Sandy Reisman

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:	EDWARD BALASSANIAN
PATENT NO.:	6,629,163
ISSUED:	SEPTEMBER 30, 2003
FOR:	**METHOD AND SYSTEM FOR DEMULTIPLEXING A FIRST SEQUENCE OF PACKET COMPONENTS TO IDENTIFY SPECIFIC COMPONENTS WHEREIN SUBSEQUENT COMPONENTS ARE PROCESSED WITHOUT RE-IDENTIFYING COMPONENTS**
EXAMINER:	TAMMARA PEYTON
ART UNIT:	2182
CONF. NO.:	2537

Request for Certificate of Correction under 37 C.F.R. §1.322 or §1.323

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

1. The applicant(s) requests a Certificate of Correction to correct errors in the above-identified patent, which are listed on the enclosed Form PTO/SB/44.

2. Any errors on the part of the applicant are of a clerical or typographical nature or are otherwise minor in character. None of the requested corrections would constitute new matter or require reexamination of the patent.

3. Source of Error(s) and Payment of Fee:

   ☒ All of the errors listed on Form PTO/SB/44 are believed to be due to mistake on the part of the USPTO (37 C.F.R. §1.322). Accordingly, no fees are believed to be due.

   ☐ At least one of the errors occurred due to applicant's mistake made in good faith (37 C.F.R. §1.323).

☐ A check covering the fee under 37 C.F.R. §1.20(a) ($100.00) is enclosed herewith.

☐ Please charge the fee under 37 C.F.R. §1.20(a) to Deposit Account No. 50-0665. This paper is provided in triplicate.

☒ Please charge any underpayment necessary for consideration of this paper to Deposit Account No. 50-0665.

4. Please send the Certificate of Correction to the undersigned at the address shown below.

Respectfully submitted,
Perkins Coie LLP

Date: October 31, 2003

Maurice J. Pirio
Registration No. 33,273

Correspondence Address:
Customer No. 25096
Perkins Coie LLP
P.O. Box 1247
Seattle, Washington 98111-1247
(206) 359-8000

PTO/SB/ 44 (02-01)
Approved for use through 01/31/2004. OMB 0651-0033
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

(Also Form PTO-1050)

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO : 6,629,163 B1

DATED : September 30, 2003

INVENTOR(S) : Balassanian

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 9
Line 60, delete comma between "was" and "postponed";

Column 12
Line 63, "1469" should be –1409–;

MAILING ADDRESS OF SENDER: Perkins Coie LLP
PATENT-SEA
PO Box 1247
Seattle, WA 98111-1247

PATENT NO. 6,629,163

No. of additional copies
1

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 6,629,163 B1
DATED : September 30, 2003
INVENTOR(S) : Balassanian

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 9,
Line 60, delete comma between "was" and "postponed";

Column 12,
Line 63, "1469" should be -- 1409 --;

Signed and Sealed this

Second Day of December, 2003

JAMES E. ROGAN
Director of the United States Patent and Trademark Office

PTO/SB/ 44 (02-01)
Approved for use through 01/31/2004. OMB 0651-0033
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

(Also Form PTO-1050)

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO : 6,629,163

DATED : September 30, 2003

INVENTOR(S) : Balassanian

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Line 60, delete comma between "was" and "postponed";

Column 12
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MAILING ADDRESS OF SENDER: Perkins Coie LLP
PATENT-SEA
PO Box 1247
Seattle, WA 98111-1247

PATENT NO. 6,629,163

No. of additional copies

⇒ 1

AUG 0 8 2003

B #

PART B - FEE(S) TRANSMITTAL

EXPRESS MAIL NO. EV343556187US

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
Alexandria, Virginia 22313-1450
Fax **(703)746-4000**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or use Block 1)

25096 7590 05/20/2003

PERKINS COIE LLP
PATENT-SEA
P.O. BOX 1247
SEATTLE, WA 98111-1247

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102

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Certificate of Mailing or Transmission Express

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for ~~first class~~ mail in an envelope addressed to the Box Issue Fee address above, or being facsimile transmitted to the USPTO, on the date indicated below.

Sandy Reisman (Depositor's name)
(Signature)
August 6, 2003 (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/474,664	12/29/1999	EDWARD BALASSANIAN	294518007US	2537

TITLE OF INVENTION: METHOD AND SYSTEM FOR DEMULTIPLEXING A FIRST SEQUENCE OF PACKET COMPONENTS TO IDENTIFY SPECIFIC COMPONENTS WHEREIN SUSBSEQUENT COMPONENTS ARE PROCESSED WITHOUT RE-IDENTIFYING COMPONENTS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	$650	$0	$650	08/20/2003

EXAMINER	ART UNIT	CLASS-SUBCLASS
PEYTON, TAMMARA R	2182	710-050000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Perkins Coie LLP
2 www.perkinscoie.com
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the USPTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Implicit Networks, Inc.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Bellevue, Washington

Please check the appropriate assignee category or categories (will not be printed on the patent) ☐ individual ☒ corporation or other private group entity ☐ government

4a. The following fee(s) are enclosed:

☒ Issue Fee
☐ Publication Fee
☒ Advance Order - # of Copies 2

4b. Payment of Fee(s):

☒ A check in the amount of the fee(s) is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☒ The Commissioner is hereby authorized by charge ~~the required fee(s)~~, or credit any overpayment, to Deposit Account Number 50-0665 (enclose an extra copy of this form). any deficiency

Commissioner for Patents is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

(Authorized Signature) Maurice J. Pirio (Date) 8/6/2003

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

08/12/2003 MBERHE1 00000024 09474664
01 FC:252 650.00 OP
02 FC:251 3.00 OP

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMIT THIS FORM WITH FEE(S)

AUG 0 6 2003

PART B - FEE(S) TRANSMITTAL EXPRESS MAIL NO. EV343556187US

Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
Alexandria, Virginia 22313-1450
Fax (703)746-4000

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or use Block 1)

25096 7590 05/20/2003

PERKINS COIE LLP
PATENT-SEA
P.O. BOX 1247
SEATTLE, WA 98111-1247

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PATENT & TRADEMARK OFFICE

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission Express

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for ~~first class~~ mail in an envelope addressed to the Box Issue Fee address above, or being facsimile transmitted to the USPTO, on the date indicated below.

Sandy Reisman (Depositor's name)
(Signature)
August 6, 2003 (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/474,664	12/29/1999	EDWARD BALASSANIAN	294518007US	2537

TITLE OF INVENTION: METHOD AND SYSTEM FOR DEMULTIPLEXING A FIRST SEQUENCE OF PACKET COMPONENTS TO IDENTIFY SPECIFIC COMPONENTS WHEREIN SUSBSEQUENT COMPONENTS ARE PROCESSED WITHOUT RE-IDENTIFYING COMPONENTS

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nonprovisional	YES	$650	$0	$650	08/20/2003

EXAMINER	ART UNIT	CLASS-SUBCLASS
PEYTON, TAMMARA R	2182	710-050000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Perkins Coie LLP
2 www.perkinscoie.com
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the USPTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Implicit Networks, Inc.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Bellevue, Washington

Please check the appropriate assignee category or categories (will not be printed on the patent) ☐ individual ☒ corporation or other private group entity ☐ government

4a. The following fee(s) are enclosed:

☒ Issue Fee
☐ Publication Fee
☒ Advance Order - # of Copies 2

4b. Payment of Fee(s):

☒ A check in the amount of the fee(s) is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☒ The Commissioner is hereby authorized by charge ~~the required fee(s)~~, or credit any overpayment, to any deficiency Deposit Account Number 50-0665 (enclose an extra copy of this form).

Commissioner for Patents is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

(Authorized Signature) (Date) 8/6/2003

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

08/12/2003 EBERTI 00000024 09474664
01 FC:1251 630.00 OP
02 FC:1401 20.00 OP

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Alexandria, Virginia 22313-1450.

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RAM Fee History Query

Revenue Accounting and Management

Name/Number: 09474664 Total Records Found: 9

Start Date: Any Date End Date: Any Date

Accounting Date	Sequence Num.	Tran Type	Fee Code	Fee Amount	Mailroom Date	Payment Method
04/13/2000	00000248	1	581	$40.00	04/10/2000	CK
04/13/2000	00000244	1	201	$345.00	04/10/2000	CK
04/13/2000	00000245	1	202	$117.00	04/10/2000	CK
04/13/2000	00000246	1	203	$126.00	04/10/2000	CK
04/13/2000	00000247	1	205	$65.00	04/10/2000	CK
03/03/2003	00000074	1	2202	$90.00	02/24/2003	CK
03/03/2003	00000075	1	2252	$205.00	02/24/2003	CK
08/12/2003	00000053	1	2501	$650.00	08/06/2003	CK
08/12/2003	00000054	1	8001	$6.00	08/06/2003	CK

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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NOTICE OF ALLOWANCE AND FEE(S) DUE

25096 7590 05/20/2003

PERKINS COIE LLP
PATENT-SEA
P.O. BOX 1247
SEATTLE, WA 98111-1247

EXAMINER	
PEYTON, TAMMARA R	
ART UNIT	**CLASS-SUBCLASS**
2182	710-050000

DATE MAILED: 05/20/2003

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/474,664	12/29/1999	EDWARD BALASSANIAN	294518007US	2537

TITLE OF INVENTION: METHOD AND SYSTEM FOR DEMULTIPLIEXING A FIRST SEQUENCE OF PACKET COMPONENTS TO IDENTIFY SPECIFIC COMPONENTS WHEREIN SUSBSEQUENT COMPONENTS ARE PROCESSED WITHOUT RE-IDENTIFYING COMPONENTS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	$650	$0	$650	08/20/2003

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status is changed, pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above and notify the United States Patent and Trademark Office of the change in status, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check the box below and enclose the PUBLICATION FEE and 1/2 the ISSUE FEE shown above.

☐ Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Box ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PTOL-85 (REV. 05-03) Approved for use through 04/30/2004.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
Alexandria, Virginia 22313-1450
Fax (703)746-4000

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or use Block 1)

25096 7590 05/20/2003

PERKINS COIE LLP
PATENT-SEA
P.O. BOX 1247
SEATTLE, WA 98111-1247

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Box Issue Fee address above, or being facsimile transmitted to the USPTO, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/474,664	12/29/1999	EDWARD BALASSANIAN	294518007US	2537

TITLE OF INVENTION: METHOD AND SYSTEM FOR DEMULTIPLIEXING A FIRST SEQUENCE OF PACKET COMPONENTS TO IDENTIFY SPECIFIC COMPONENTS WHEREIN SUSBSEQUENT COMPONENTS ARE PROCESSED WITHOUT RE-IDENTIFYING COMPONENTS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	$650	$0	$650	08/20/2003

EXAMINER	ART UNIT	CLASS-SUBCLASS
PEYTON, TAMMARA R	2182	710-050000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the USPTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) ❑ individual ❑ corporation or other private group entity ❑ government

4a. The following fee(s) are enclosed:

❑ Issue Fee

❑ Publication Fee

❑ Advance Order - # of Copies _____

4b. Payment of Fee(s):

❑ A check in the amount of the fee(s) is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The Commissioner is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number _____(enclose an extra copy of this form).

Commissioner for Patents is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

(Authorized Signature) (Date)

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/474,664	12/29/1999	EDWARD BALASSANIAN	294518007US	2537

25096 7590 05/20/2003

PERKINS COIE LLP
PATENT-SEA
P.O. BOX 1247
SEATTLE, WA 98111-1247
UNITED STATES

EXAMINER	
PEYTON, TAMMARA R	
ART UNIT	**PAPER NUMBER**
2182	

DATE MAILED: 05/20/2003

Determination of Patent Term Extension under 35 U.S.C. 154 (b)

(application filed after June 7, 1995 but prior to May 29, 2000)

The patent term extension is 0 days. Any patent to issue from the above identified application will include an indication of the 0 day extension on the front page.

If a continued prosecution application (CPA) was filed in the above-identified application, the filing date that determines patent term extension is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) system. (http://pair.uspto.gov)

Any questions regarding the patent term extension or adjustment determination should be directed to the Office of Patent Legal Administration at (703)305-1383.

PTOL-85 (REV. 05-03) Approved for use through 04/30/2004.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/474,664	12/29/1999	EDWARD BALASSANIAN	294518007US	2537

25096 7590 05/20/2003

PERKINS COIE LLP
PATENT-SEA
P.O. BOX 1247
SEATTLE, WA 98111-1247
UNITED STATES

EXAMINER	
PEYTON, TAMMARA R	
ART UNIT	**PAPER NUMBER**
2182	12

DATE MAILED: 05/20/2003

Notice of Fee Increase on January 1, 2003

If a reply to a "Notice of Allowance and Fee(s) Due" is filed in the Office on or after January 1, 2003, then the amount due will be higher than that set forth in the "Notice of Allowance and Fee(s) Due" since there will be an increase in fees effective on January 1, 2003. See Revision of Patent and Trademark Fees for Fiscal Year 2003; Final Rule, 67 Fed. Reg. 70847, 70849 (November 27, 2002).

The current fee schedule is accessible from: http://www.uspto.gov/main/howtofees.htm.

If the issue fee paid is the amount shown on the "Notice of Allowance and Fee(s) Due," but not the correct amount in view of the fee increase, a "Notice to Pay Balance of Issue Fee" will be mailed to applicant. In order to avoid processing delays associated with mailing of a "Notice to Pay Balance of Issue Fee," if the response to the Notice of Allowance and Fee(s) due form is to be filed on or after January 1, 2003 (or mailed with a certificate of mailing on or after January 1, 2003), the issue fee paid should be the fee that is required at the time the fee is paid. If the issue fee was previously paid, and the response to the "Notice of Allowance and Fee(s) Due" includes a request to apply a previously-paid issue fee to the issue fee now due, then the difference between the issue fee amount at the time the response is filed and the previously paid issue fee should be paid. See Manual of Patent Examining Procedure, Section 1308.01 (Eighth Edition, August 2001).

Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

PTOL-85 (REV. 05-03) Approved for use through 04/30/2004.

Notice of Allowability	Application No. 09/474,664	Applicant(s) BALASSANIAN, EDWARD
	Examiner Tammara R Peyton	Art Unit 2182

4/12/13

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Amendment A filed on 3/6/03*.
2. ☒ The allowed claim(s) is/are *35-78*.
3. ☒ The drawings filed on _____ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.
5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
   (a) ☐ The translation of the foreign language provisional application has been received.
6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

8. ☐ CORRECTED DRAWINGS must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No. ____.
   (b) ☐ including changes required by the proposed drawing correction filed _____, which has been approved by the Examiner.
   (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet.

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1☒ Notice of References Cited (PTO-892)
2☐ Notice of Informal Patent Application (PTO-152)
3☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
4☐ Interview Summary (PTO-413), Paper No.____ .
5☐ Information Disclosure Statements (PTO-1449), Paper No. ____.
6☒ Examiner's Amendment/Comment
7☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
8☐ Examiner's Statement of Reasons for Allowance
9☐ Other .

JEFFREY GAFFIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

Pursuant to MPEP 606.01, the title has been changed to read:

--METHOD AND SYSTEM FOR DEMULTIPLIEXING A FIRST SEQUENCE OF PACKET COMPONENTS TO IDENTIFY SPECIFIC COMPONENTS WHEREIN SUBSEQUENT COMPONENTS ARE PROCESSED WITHOUT RE-IDENTIFYING COMPONENTS--

2. The following is an examiner's statement of reasons for allowance:

The prior art of record does not teach or suggest individually or in combination the limitation of a computer system demultiplexing packets by identifying a sequence of components for processing each message based on the first packet of the message so that subsequent packets of the message can be processed without re-identifying the components, wherein different sequences of components can be identified for different messages, each components being a software routine; and for each packet of each message, performing the processing of the identified sequence of components of the message wherein state information generated by performing the processing of a

component for a packet is available to the component when the component processes the next packet of the message.

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tammara Peyton whose telephone number is (703) 306-5508. The examiner can normally be reached between 6:30 - 4:00 from Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey A. Gaffin, can be reached on (703) 308-3301. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3718.

Any inquiry of a general nature of relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Mailed responses to this action should be sent to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231.Faxes for Official/formal communications intended for entry should be sent to: (703) 746-7238, After Final (703) 746-7239

or, for informal or draft communications, to:

(703) 746-7240 (please label "PROPOSED" or "DRAFT").

Hand-delivered responses should be brought to:

Crystal Park II, 2121 Crystal Drive, Arlington, VA, Fourth Floor (Receptionist).

Tammara Peyton

May 19, 2002

Notice of References Cited	Application/Control No. 09/474,664	Applicant(s)/Patent Under Reexamination BALASSANIAN, EDWARD	
	Examiner Tammara R Peyton	Art Unit 2182	Page 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,359,911	03-2002	Movshovich et al.	370/536
*	B	US-6,275,507	08-2001	Anderson et al.	370/487
*	C	US-6,101,189	08-2000	Tsuruoka, Tetsumei	370/401
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

L Number	Hits	Search Text	DB	Time stamp
1	0	(linked near6 (packet%1 or message%1 or component%1))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/19 07:10
2	0	(linked same (packet%1 or message%1 or component%1))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/19 07:10
3	13164	(linked near6 (packet$ or message$ or component$))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/19 07:18
4	111	((linked near6 (packet$ or message$ or component$))) same (demux or demultiplex$ or mux or multiplex$)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/19 08:10
5	404	(real near2 time) same (id or identif$) same (demux or demultiplex$ or mux or multiplex$)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/19 08:44
6	107	((real near2 time) same (id or identif$) same (demux or demultiplex$ or mux or multiplex$)) same (packet$ or components or component or message$)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/19 08:36
7	9	(((real near2 time) same (id or identif$) same (demux or demultiplex$ or mux or multiplex$)) same (packet$ or components or component or message$)) same new	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/19 08:25
9	0	(((real near2 time) same (id or identif$) same (demux or demultiplex$ or mux or multiplex$)) same (packet$ or components or component or message$)) same ((re near1 identif$) or reidentif$)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/19 08:37
8	4	(((real near2 time) same (id or identif$) same (demux or demultiplex$ or mux or multiplex$)) same (packet$ or components or component or message$)) same (update or updating)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/19 08:26
10	1	(((real near2 time) same (id or identif$) same (demux or demultiplex$ or mux or multiplex$)) same (packet$ or components or component or message$)) same fly	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/19 08:36
11	2	(((real near2 time) same (id or identif$) same (demux or demultiplex$ or mux or multiplex$)) same (packet$ or components or component or message$)) and ((re near1 identif$) or reidentif$)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/19 08:40
12	12	(((real near2 time) same (id or identif$) same (demux or demultiplex$ or mux or multiplex$)) same (packet$ or components or component or message$)) same (add or added)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/19 08:43
13	0	(((real near2 time) same (id or identif$) same (demux or demultiplex$ or mux or multiplex$)) same (packet$ or components or component or message$)) same reinitializ$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/19 08:43
14	0	((real near2 time) same (id or identif$) same (demux or demultiplex$ or mux or multiplex$)) same update same table	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/19 08:44

15	6	((real near2 time) same (id or identif$) same (demux or demultiplex$ or mux or multiplex$)) same update	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/19 08:45
16	1	(((real near2 time) same (id or identif$) same (demux or demultiplex$ or mux or multiplex$)) same (packet$ or components or component or message$)) same remap$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/19 08:46
17	23	((real near2 time) same (id or identif$) same (demux or demultiplex$ or mux or multiplex$)) same table	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/19 08:48

L Number	Hits	Search Text	DB	Time stamp
1	0	(identify$ or id) same sequence same message same (subsequent or next) same reidentif$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 21:18
2	889	(identify$ or id) same sequence same message same (subsequent or next)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 20:59
3	149	((identify$ or id) same sequence same message same (subsequent or next)) same packet$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 20:47
4	6	((identify$ or id) same sequence same message same (subsequent or next)) same demultiplex$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 20:44
5	78	((identify$ or id) same sequence same message same (subsequent or next)) same previous	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 20:47
6	15	(((identify$ or id) same sequence same message same (subsequent or next)) same packet$) same match	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 20:47
7	11	(identify$ or id) same component$ same (subsequent or next) same match same previous	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 20:53
8	237	((identify$ or id) near3 (sequence or message or string$)) same (subsequent or next) same packet	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 21:06
9	0	(identify$ or id) same packet same reidentif$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 20:59
10	2	(identify$ or id) same packet same re-identif$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 21:00
11	20	(identify$ or id) same (sequence or string or component or message) same re-identif$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 21:51
12	291	(identify$ or id) same (sequence or string or component or message) same match same previous	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 21:12
13	12	(((identify$ or id) near3 (sequence or message or string$)) same (subsequent or next) same packet) same previous	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 21:06
14	9	(identify$ or id) same (sequence or string or component or message or packet) same convert same protocol same previous	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 21:29

15	20	convert$ same protocol same previous same packet	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 21:44
16	24	(identify$ or id) same (previous$ near3 (received or transmit$)) same packet same protocol	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 21:30
17	26	(identify$ or id) same conver$ same protocol same previous	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 21:32
18	593	conver$ same protocol same packet same identif$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 21:52
19	315	((identify$ or id) near4 (sequence or string or component or message or packet)) same conver$ same protocol	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 22:02
20	53	conver$ same protocol same packet same identif$	EPO; JPO; DERWENT	2003/05/17 21:55
21	35	(((identify$ or id) near4 (sequence or string or component or message or packet)) same conver$ same protocol) same table	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 22:10
22	343	(conversion near3 table) same packet	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 22:17
23	11	((conversion near3 table) same packet) same subsequent	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 22:12
24	0	((conversion near3 table) same packet) same idenif$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 22:17
25	71	((conversion near3 table) same packet) same identif$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 22:20
26	21	((conversion near3 table) same packet) same new	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 22:49
27	2	("5568478").PN.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 22:58
28	7	demux$ same (message or packet) same conver$ same (single or individual$)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 23:05

30	0	demux$ same (email) same conver$ same table	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 23:09
29	2	demux$ same (message or packet) same conver$ same table	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 23:08
31	0	demux$ same (email) same conversion	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 23:09
32	151	(string near2 (message or packet)) same (convert or conversion)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 23:17
33	5	(string near2 (message or packet)) same (convert or conversion) same multiplex$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 23:19
34	1	(string near2 (message or packet)) same (convert or conversion) same demultiplex$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 23:23
35	14	((string near2 (message or packet)) same (convert or conversion)) same table	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 23:20
36	44	(string near5 packet) same (convert or conversion)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/05/17 23:23

2182

Attorney Docket No. 294518007US

#9 03/5/03

I hereby certify that this correspondence is being deposited with the U.S. Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C., 20231, on:

Date: February 25, 2003 By: Sandy Reisman

Sandy Reisman

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:	Edward Balassanian	EXAMINER:	Tammara R. Peyton
APPLICATION NO.:	09/474,664	ART UNIT:	2182
FILED:	December 29, 1999	CONF. NO:	2537

FOR: **METHOD AND SYSTEM FOR DATA DEMULTIPLEXING**

Transmittal of Formal Drawings

Attention: Official Draftsperson
Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Enclosed are 16 sheets of formal drawings (Figures 1-16).

No fees are believed due in connection with this transmittal. However, if fees are due, the Commissioner is requested to charge them to Deposit Account No. 50-0665.

Respectfully submitted,
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Maurice J. Pirio
Registration No. 33,273

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(206) 583-8888

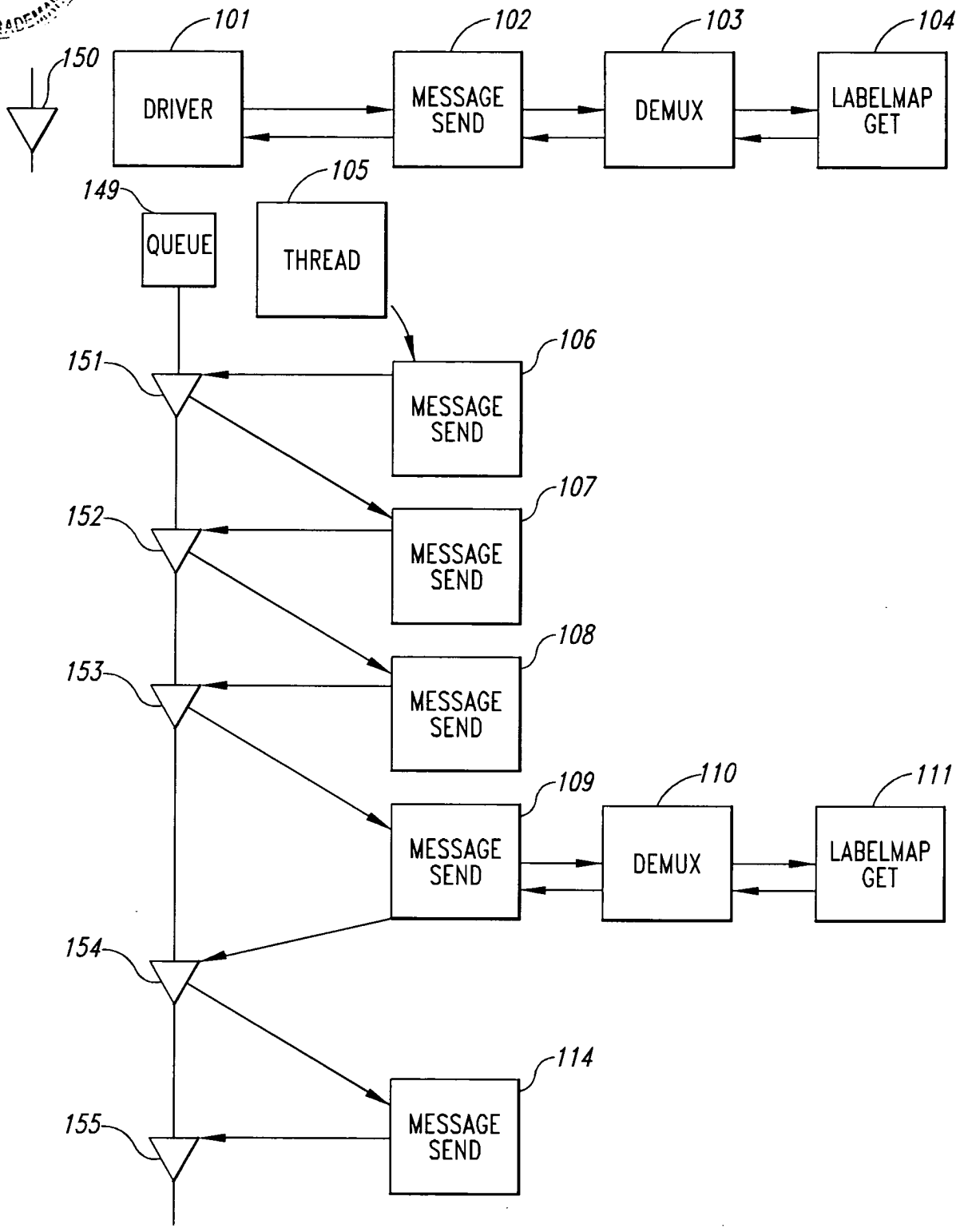

Fig. 1

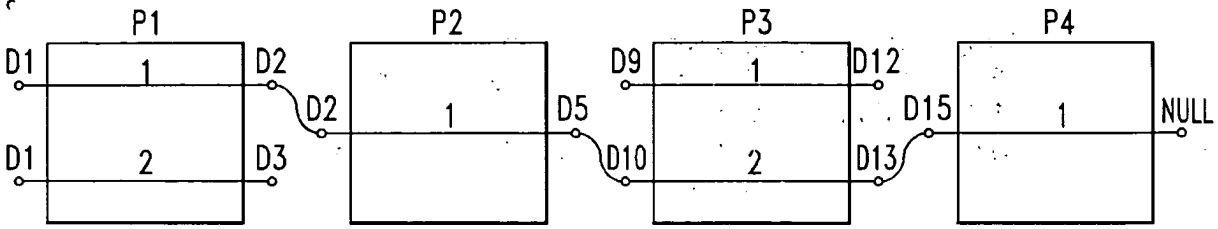

Fig. 2

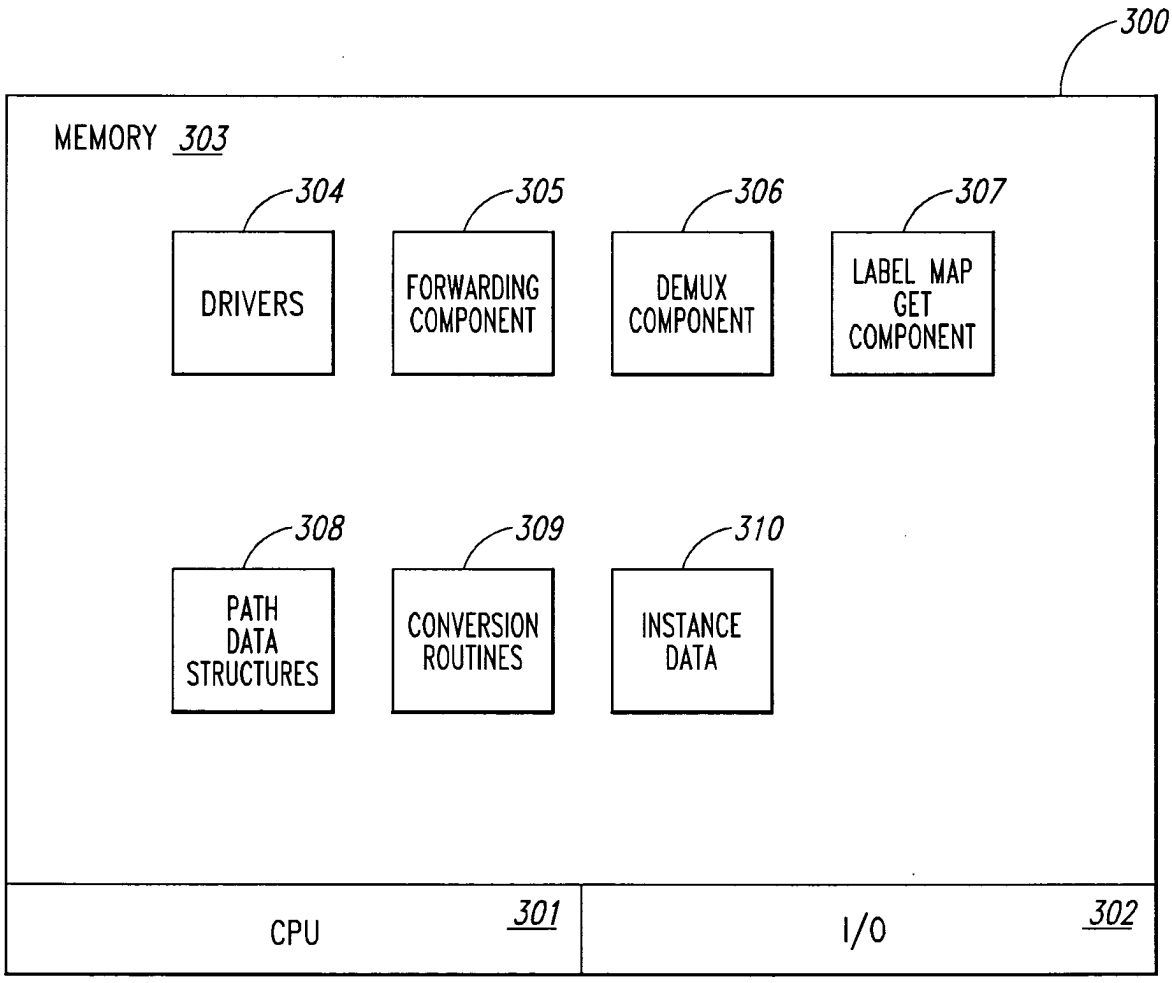

Fig. 3

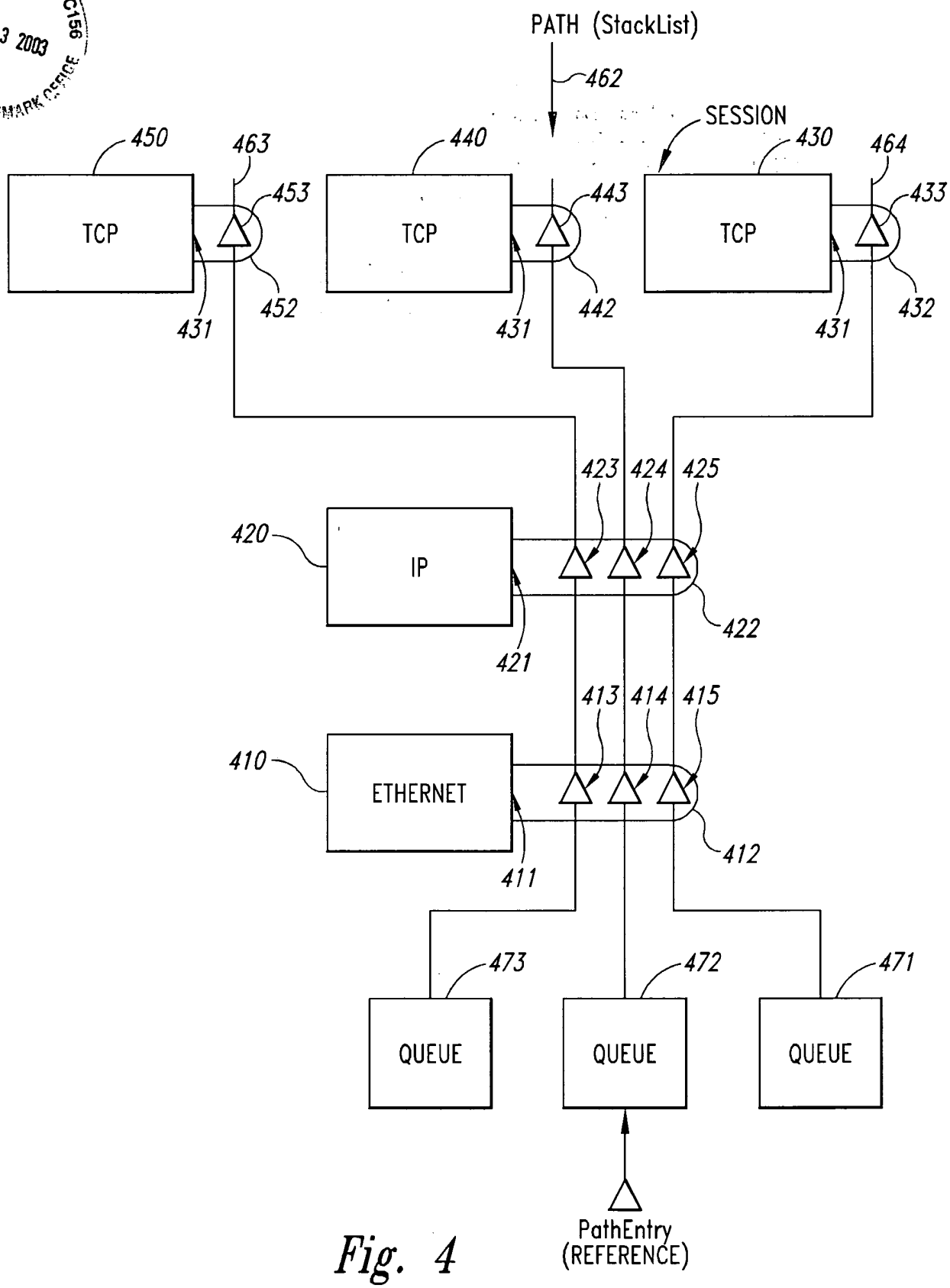

Fig. 4

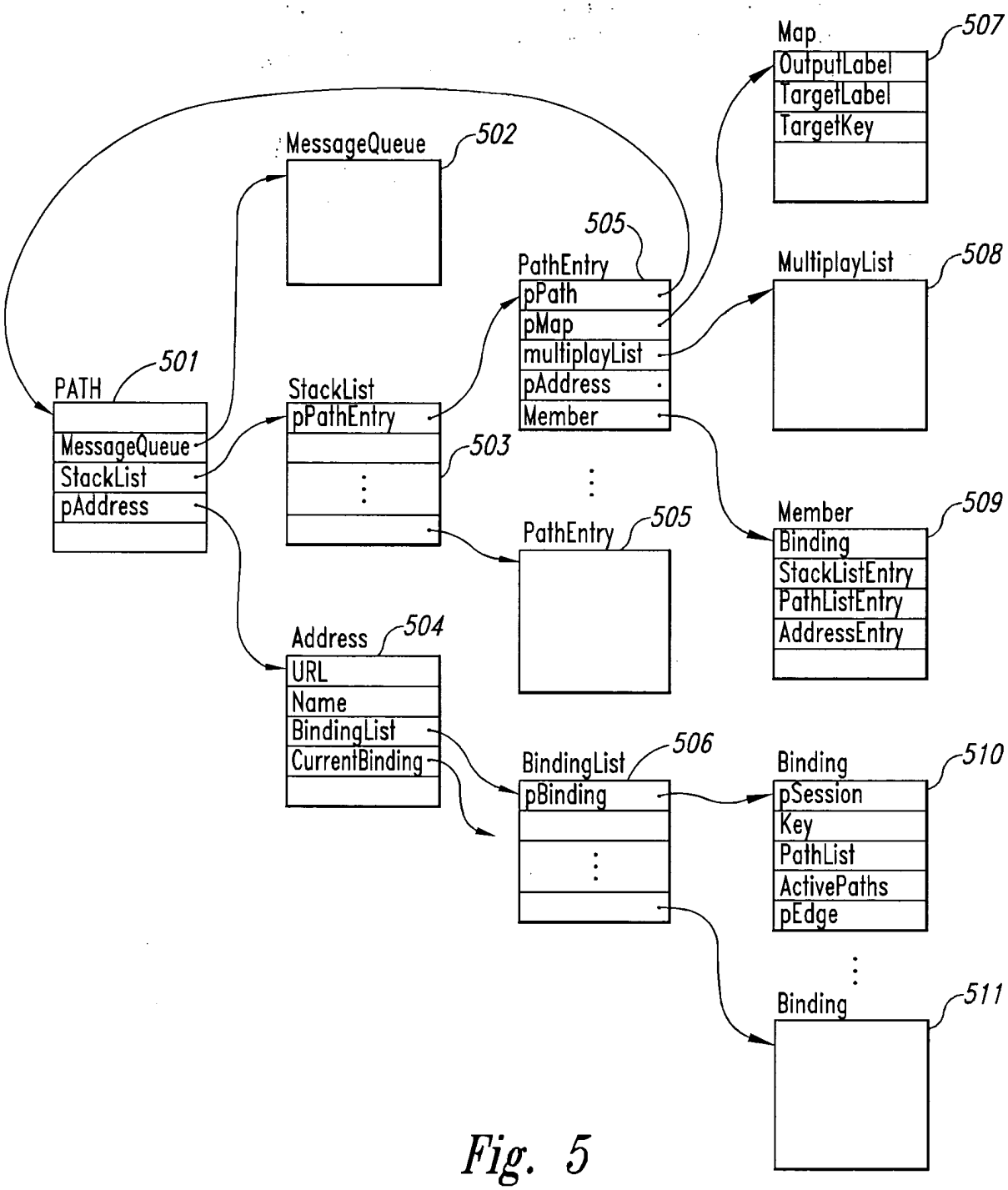

Fig. 5

09/474,664

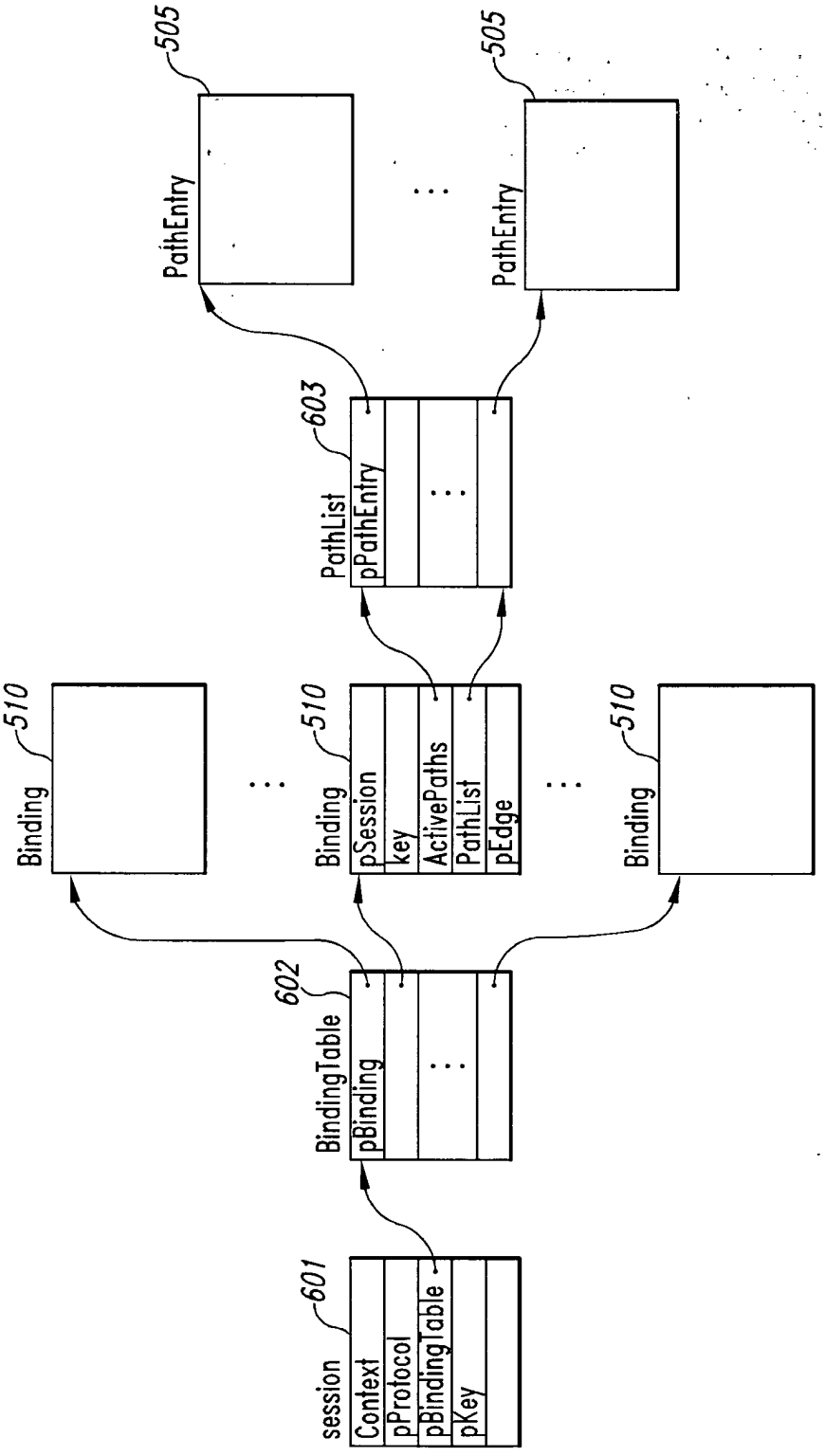

Fig. 6

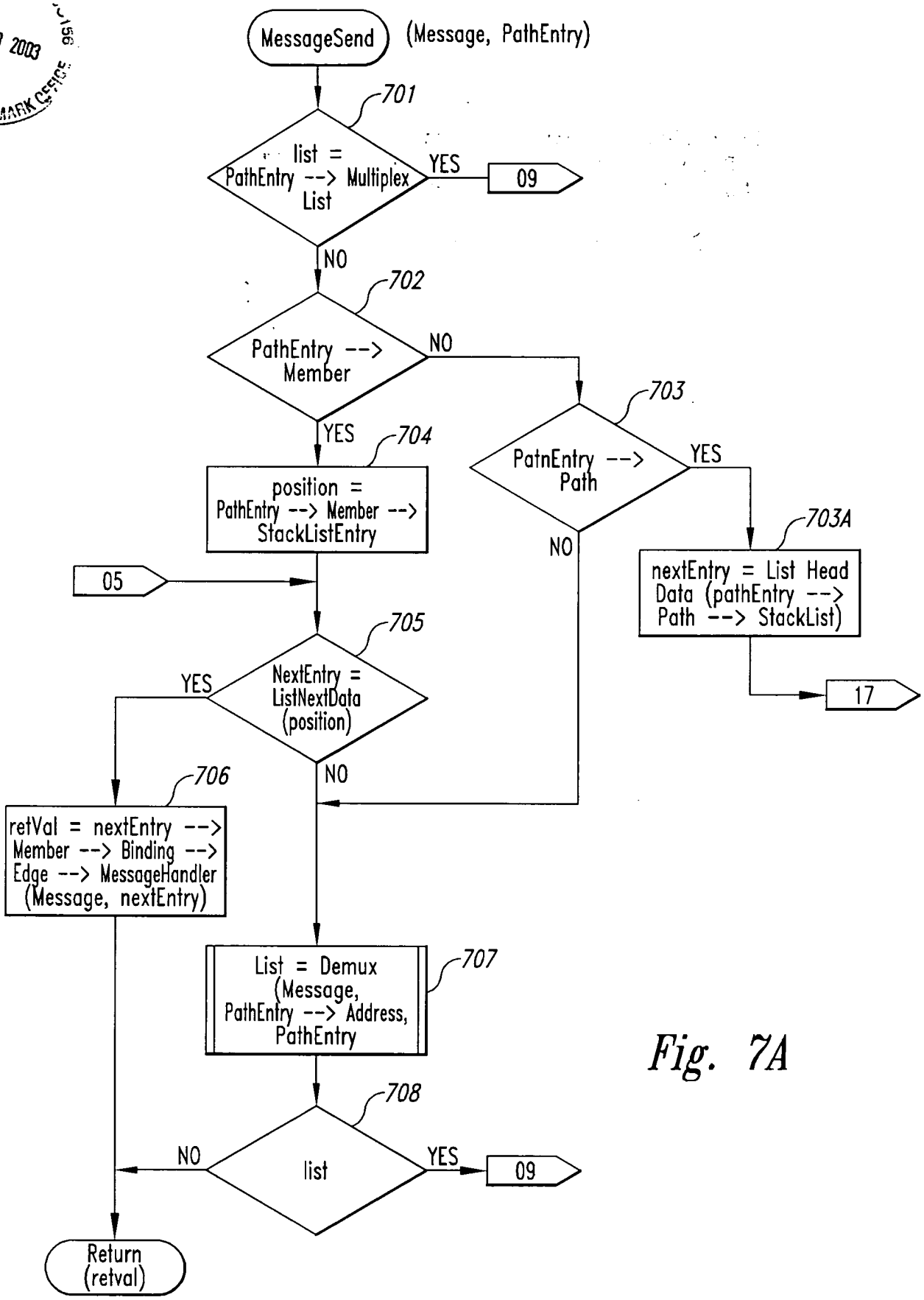

Fig. 7A

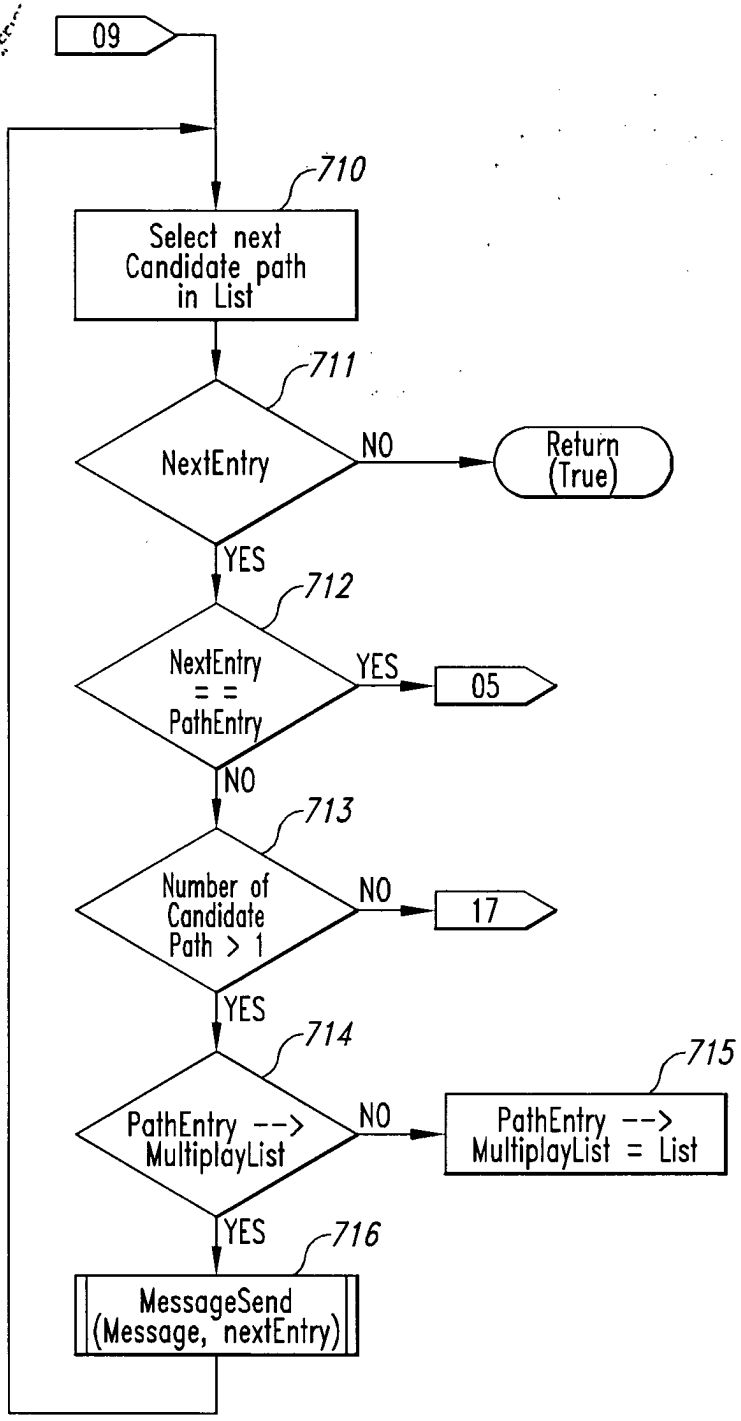

Fig. 7B

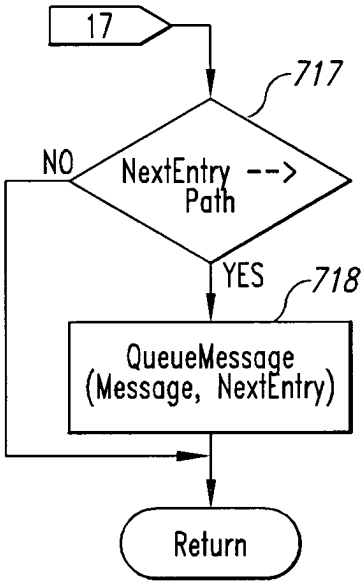

Fig. 7C

09/474,664

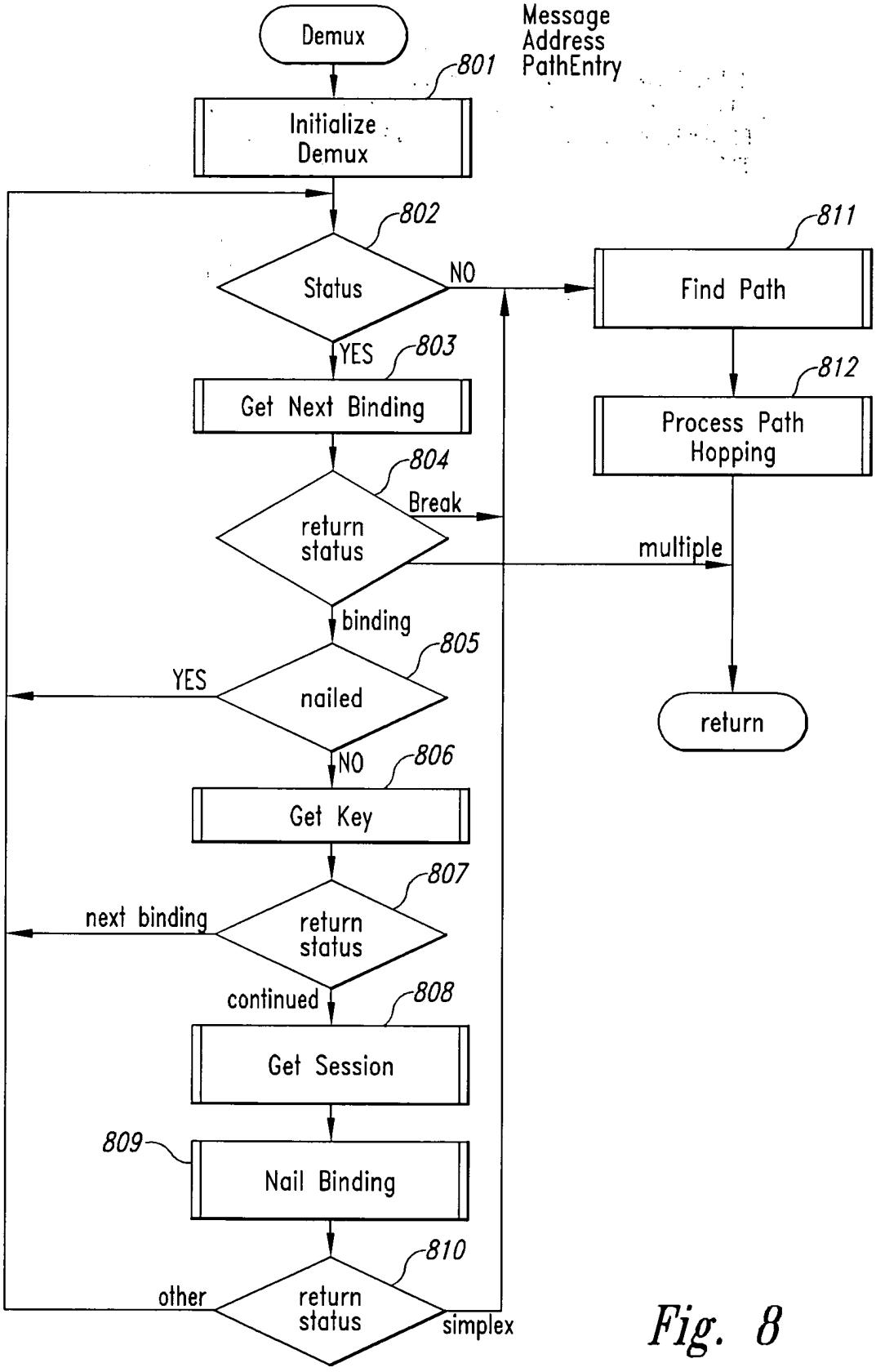

Fig. 8

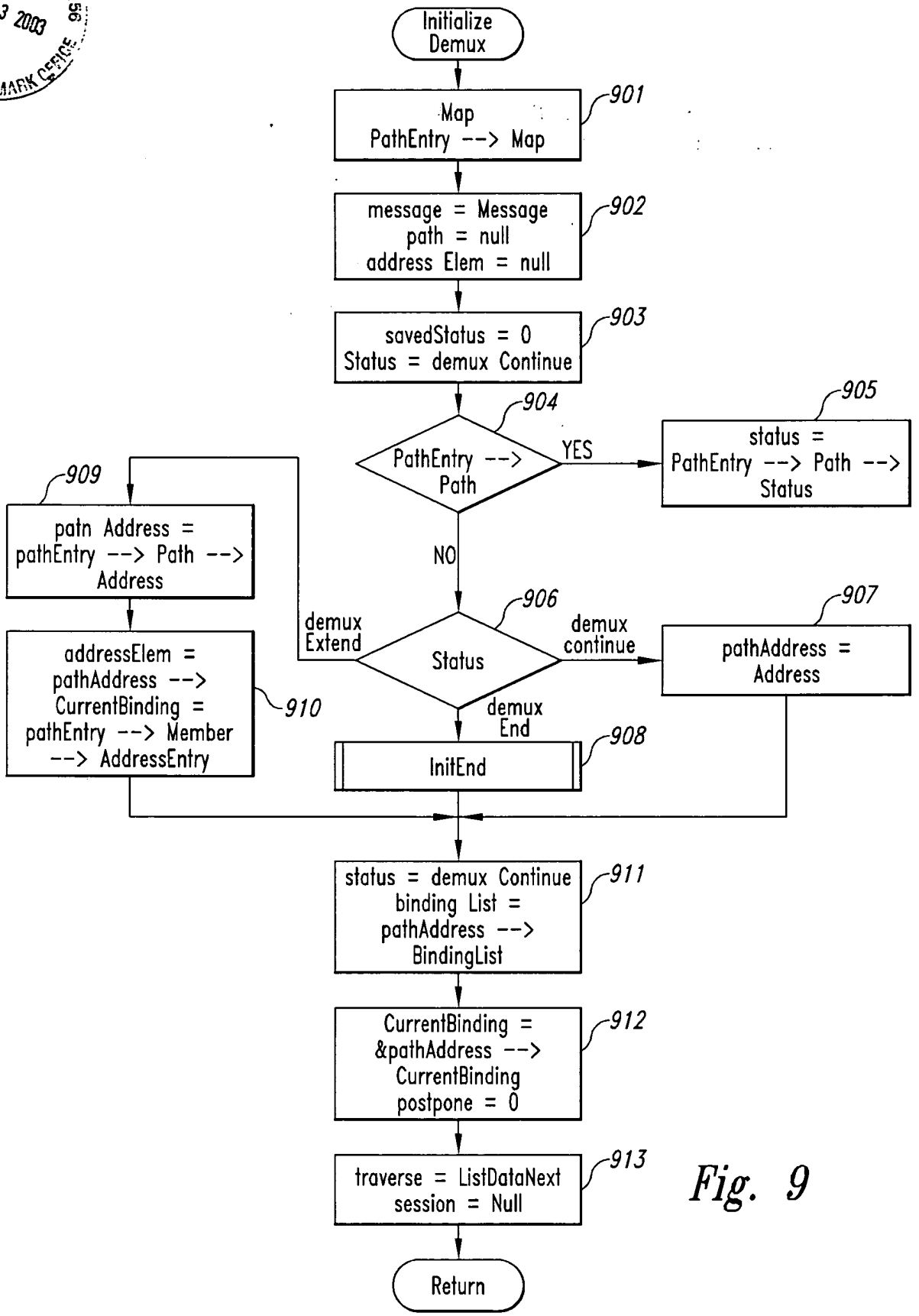

Fig. 9

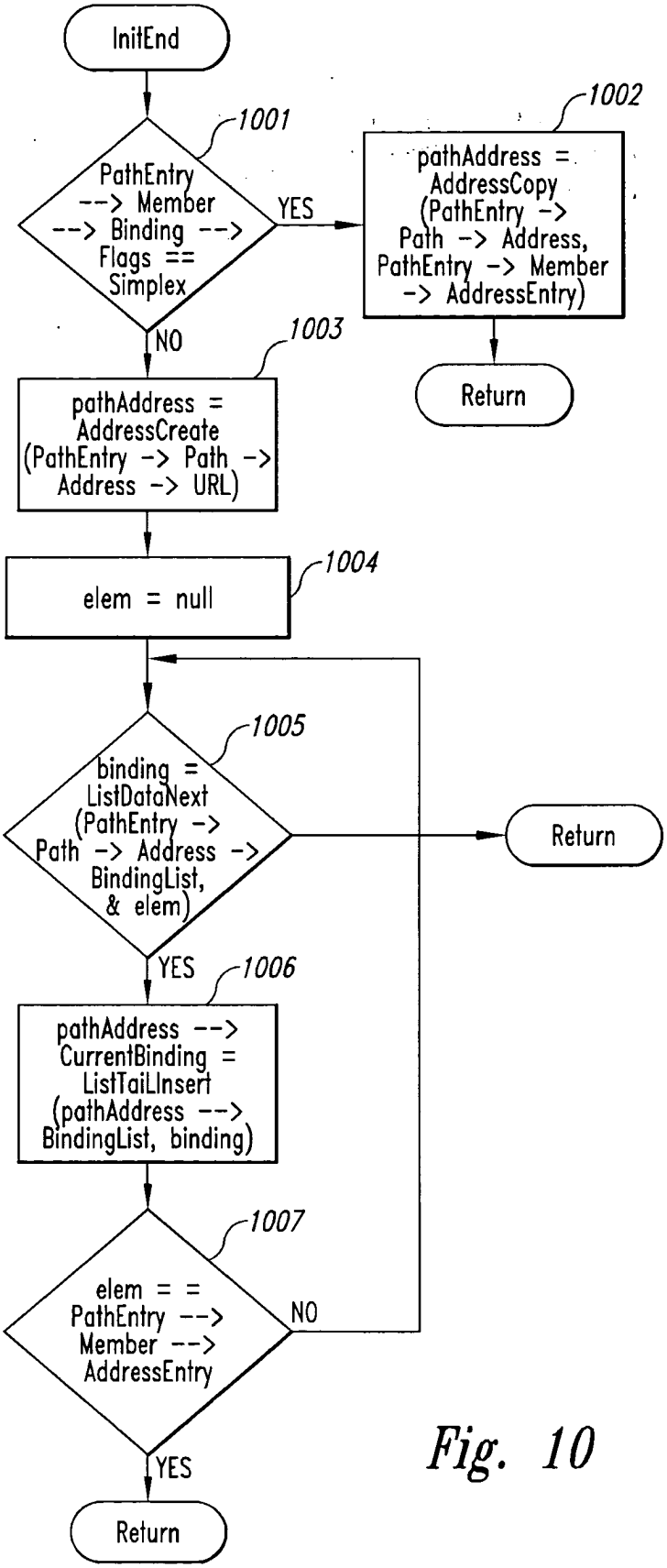

Fig. 10

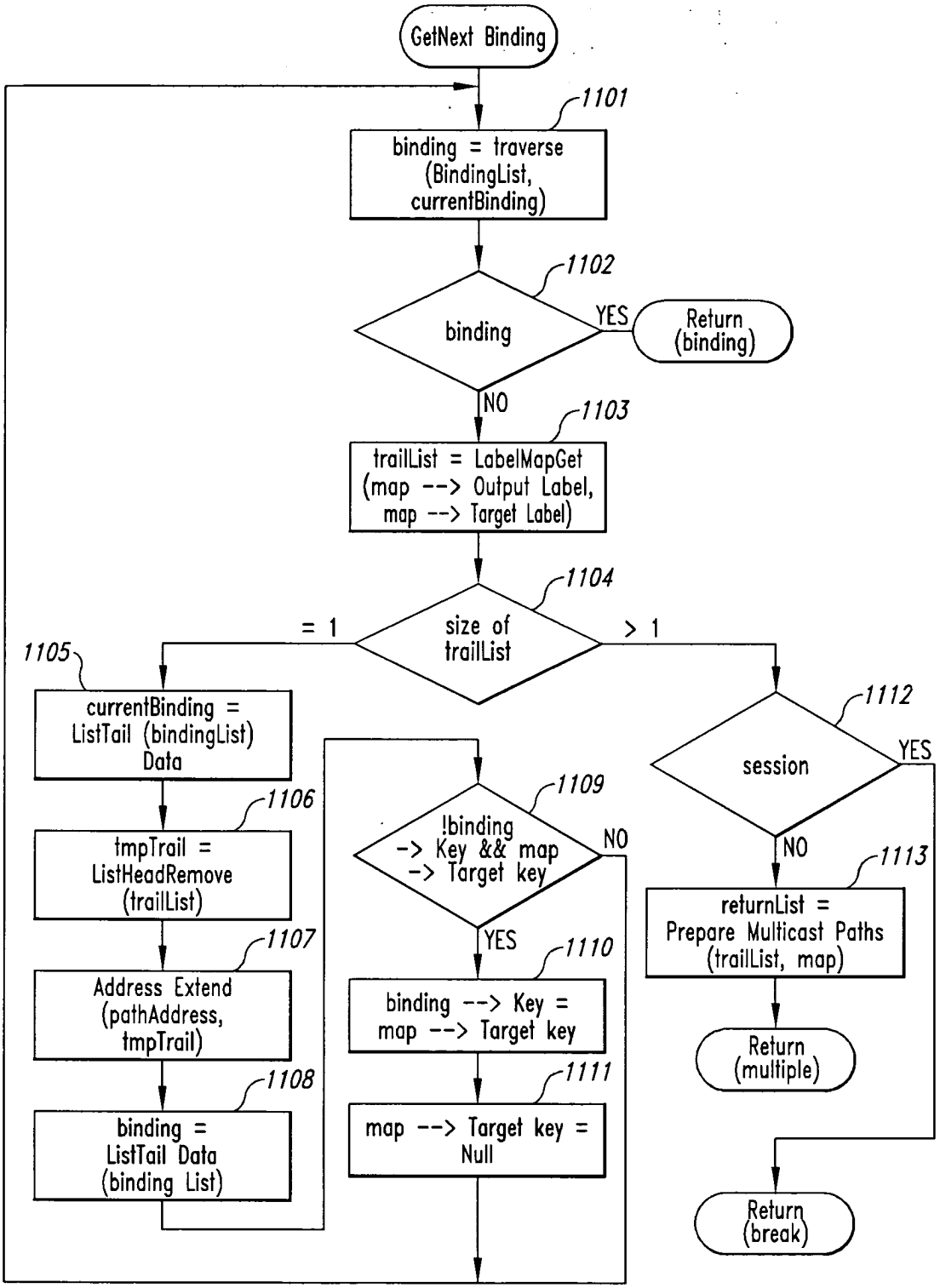

Fig. 11

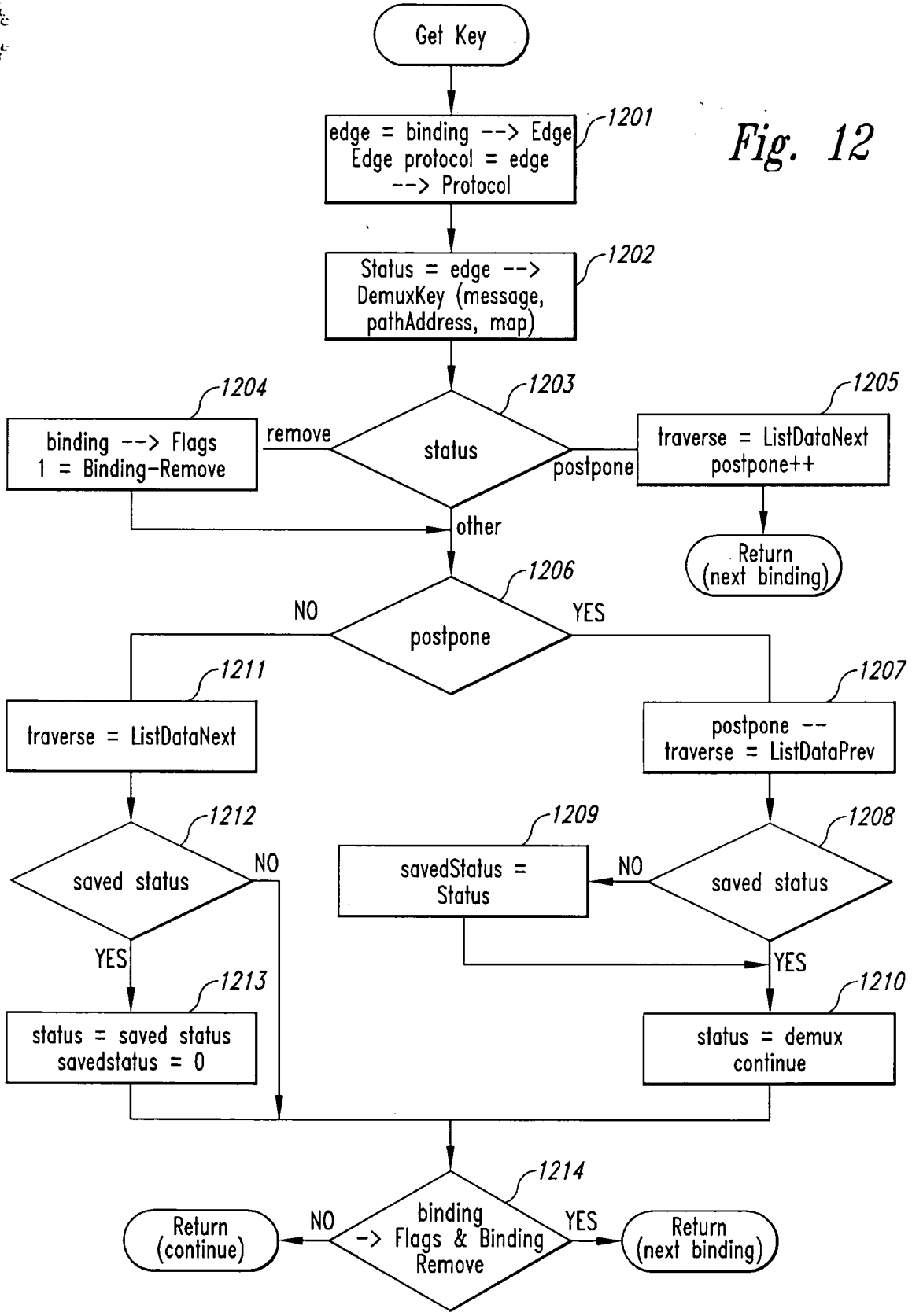

Fig. 12

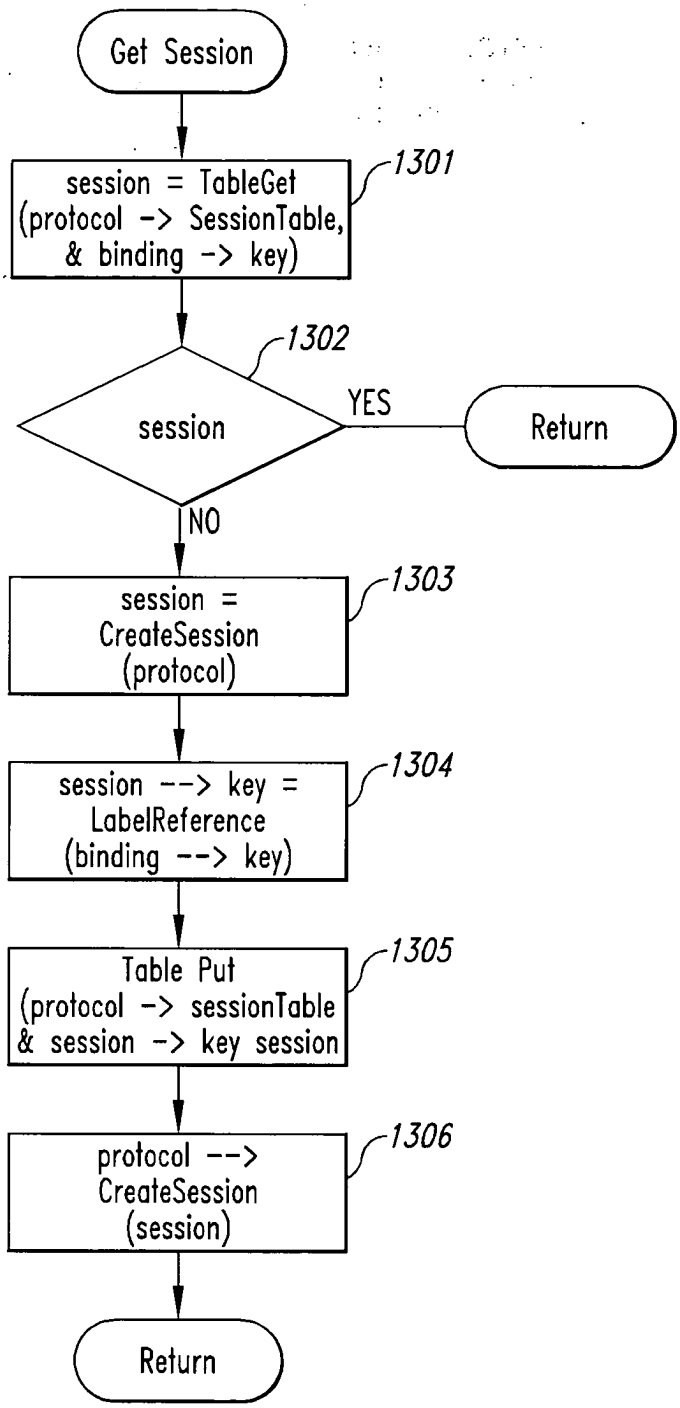

Fig. 13

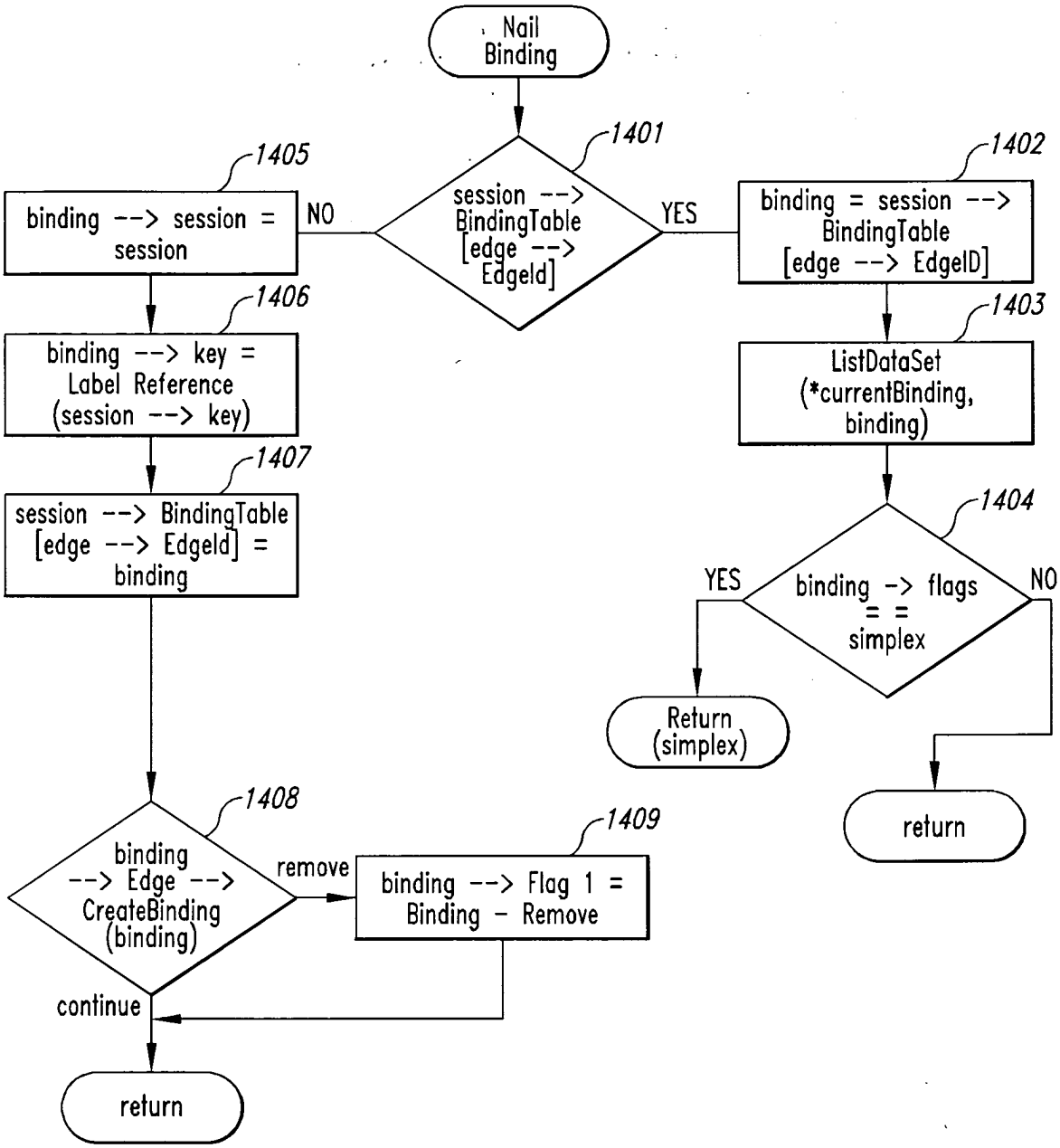

Fig. 14

09/474,664

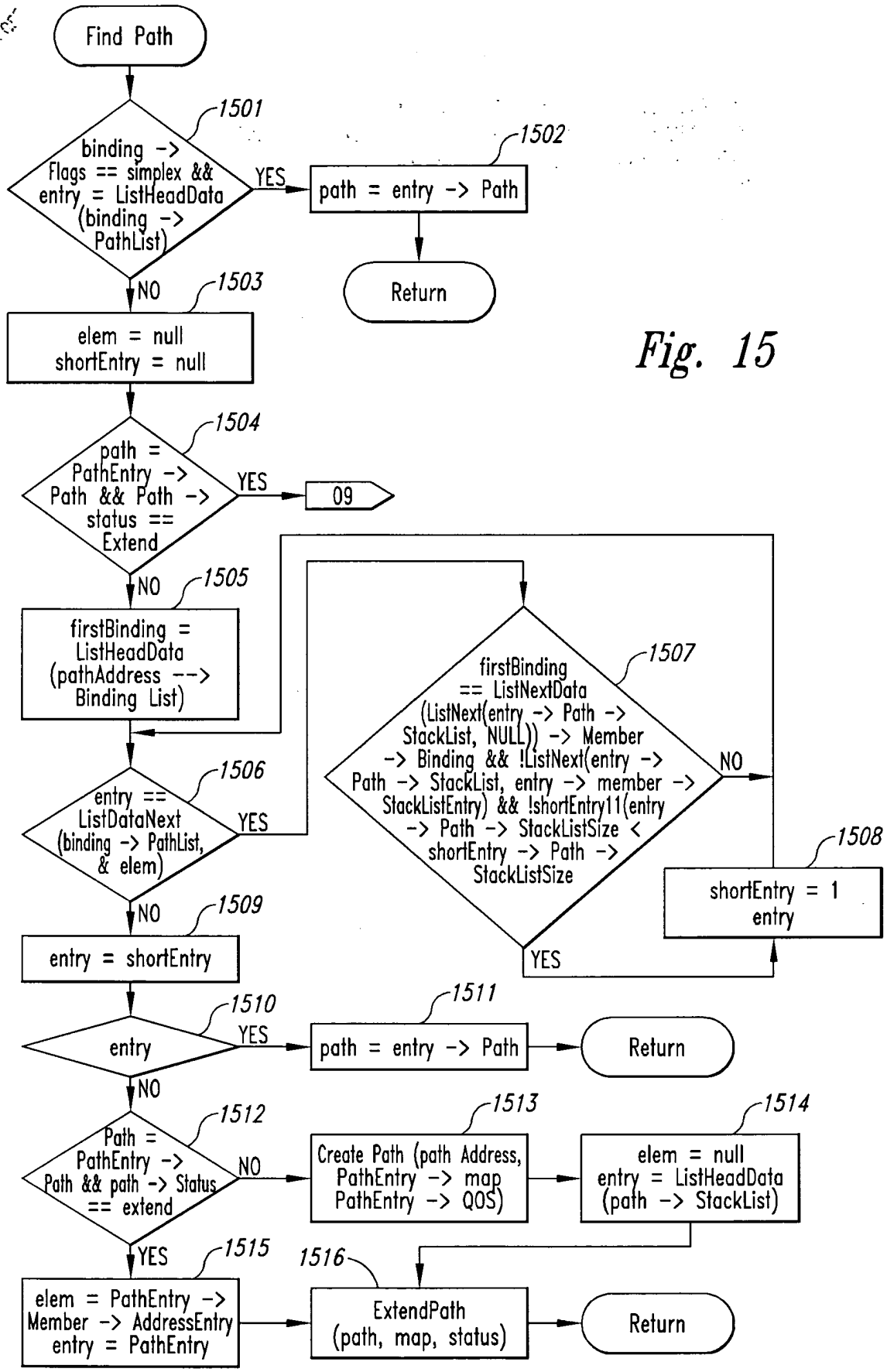

Fig. 15

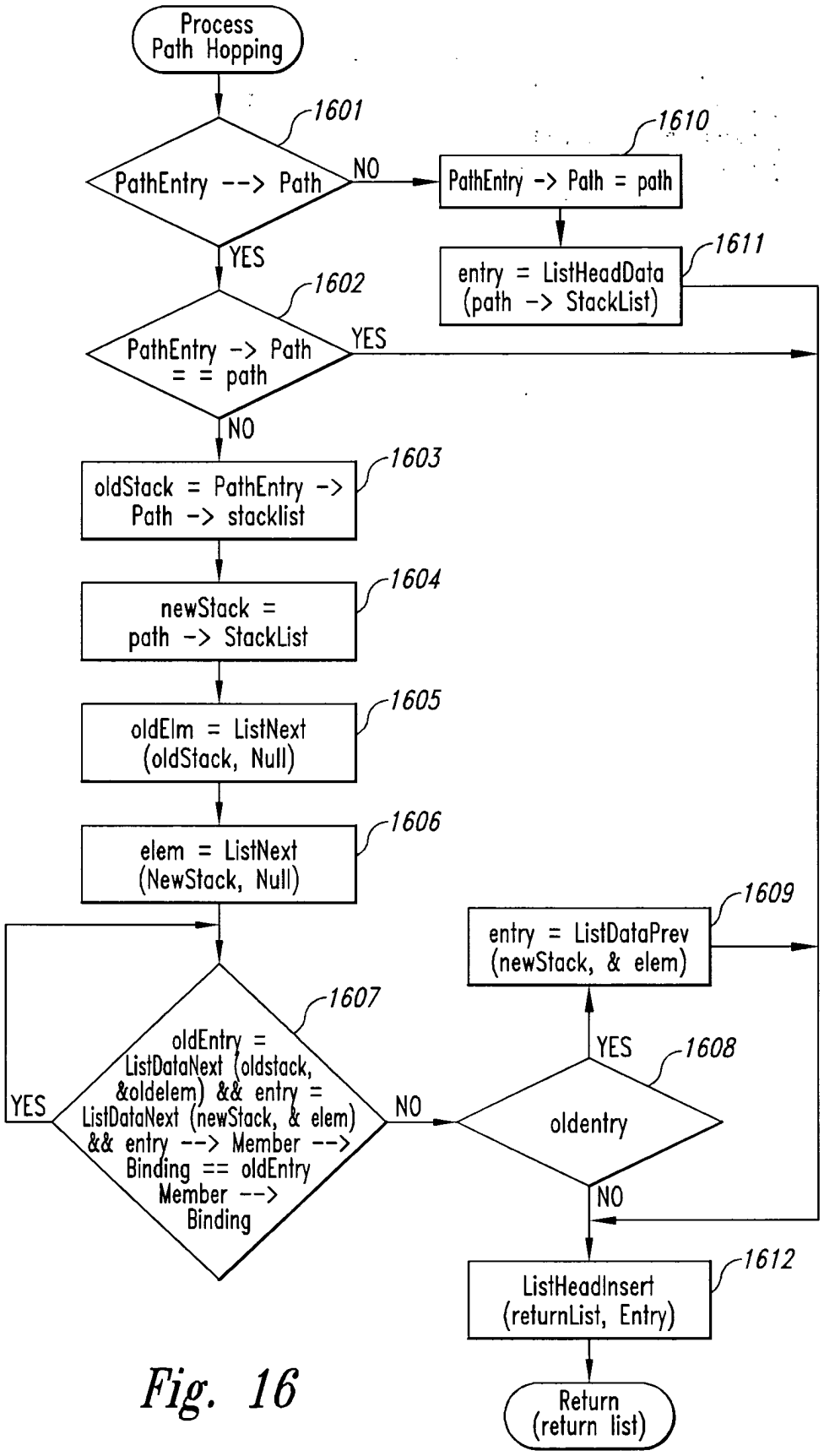

Fig. 16

Express Mail Label EV254121912US

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:	Edward Balassanian	EXAMINER:	Tammara R. Peyton
APPLICATION NO.:	09/474,664	ART UNIT:	2182
FILED:	December 29, 1999	CONF. NO:	2537

FOR: **METHOD AND SYSTEM FOR DATA DEMULTIPLEXING**

Amendment Under 37 C.F.R. § 1.111

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

The present communication responds to the Office Action dated September 23, 2002, in the above-identified application. Please amend the application as follows.

In the Claims:

Following is a complete listing of the claims pending in the application, as amended:

1-34. (Canceled)

35. (New) A method in a computer system for processing a message having a sequence of packets, the method comprising:

providing a plurality of components, each component being a software routine for converting data with an input format into data with an output format;

for the first packet of the message,

identifying a sequence of components for processing the packets of the message such that the output format of the components of the sequence match the input format of the next component in the sequence; and

storing an indication of each of the identified components so that the sequence does not need to be re-identified for subsequent packets of the message; and

for each of a plurality of packets of the message in sequence,

for each of a plurality of components in the identified sequence,

retrieving state information relating to performing the processing of the component with the previous packet of the message;

performing the processing of the identified component with the packet and the retrieved state information; and

storing state information relating to the processing of the component with the packet for use when processing the next packet of the message.

36. (New) The method of claim 35 wherein the storing of an indication of each of the identified components includes storing a key for use in retrieving state information relating to the message.

37. (New) The method of claim 35 wherein a second component of the sequence of components that are identified is identified after the processing of the first packet by a first component is performed.

38. (New) The method of claim 35 wherein the packet may be transformed by each component of an identified sequence.

39. (New) The method of claim 35 wherein the identified sequence of components for two messages are different.

40. (New) The method of claim 35 including creating a separate thread for each message.

41. (New) The method of claim 40 wherein the identified sequence of components for a message are executed by the thread for the message.

8 42. (New) The method of claim 35 wherein the retrieving of state information includes requesting the component to provide the state information.

9 43. (New) The method of claim 35 wherein the performing of the processing of the component includes deferring performing of the next component in the identified sequence until multiple packets are processed by the component.

10 44. (New) The method of claim 35 wherein the identifying of a sequence of components includes deferring identification of the next component of the sequence until processing of the last component identified so far in the sequence is performed.

11 45. (New) The method of claim 35 wherein two messages share one or more components and associated state information.

12 46. (New) The method of claim 35 wherein an output format of a component in the identified sequence for a message matches an input format of the next component in the identified sequence for the message.

13 47. (New) The method of claim 35 wherein a component has multiple output formats.

14 48. (New) The method of claim 35 wherein a plurality of sequences of components are identified for a message.

15 49. (New) A method in a computer system demultiplexing packets of messages, the method comprising:

identifying a sequence of components for processing each message based on the first packet of the message so that subsequent packets of the message can be processed without re-identifying the components, wherein different sequences of components can be identified for different messages, each component being a software routine; and

for each packet of each message, performing the processing of the identified sequence of components of the message wherein state information generated by performing the processing of a component for a packet is available to the component when the component processes the next packet of the message.

16 50. (New) The method of claim 15 wherein the sequence of components is identified as the first packet of the message is processed.

17 51. (New) The method of claim 15 wherein a packet of a message as processed by a component of the identified sequence for the message is available to the next component in the identified sequence.

18 52. (New) The method of claim 15 wherein the components of an identified sequence for a message are executed within a thread associate with a single message.

19 53. (New) The method of claim 15 wherein the state information includes requesting the component that generated the state information to provide the state information.

20 54. (New) The method of claim 15 wherein the performing of the processing of the component includes deferring performing of the next component in the identified sequence until multiple packets are processed by the component.

21 55. (New) The method of claim 15 wherein the identifying of a sequence of components includes deferring identification of the next component of the sequence until processing of the last component identified so far in the sequence is complete.

22 56. (New) The method of claim 15 wherein two messages share one or more components and associated state information.

23 15
57. (New) The method of claim 49 wherein an output format of a component in the identified sequence for a message matches an input format of the next component in the identified sequence for the message.

24 15
58. (New) The method of claim 49 wherein a component has multiple output formats.

25 15
59. (New) The method of claim 49 wherein a plurality of sequences of components are identified for a message.

26
60. (New) A computer system for processing packets of messages, the method comprising:

a plurality of components, each component having an input format and an output format;

identification means that identifies a sequence of components for each message after a packet of the message has been received, such that the output format of a component in an identified sequence matches the input format of the next component in the identified sequence;

receiving means that receives packets of the messages; and

demultiplexing means that routes packets of messages to the sequence of components identified for each message for performing the processing of the components on the packets.

27 26
61. (New) The computer system of claim 60 including means that stores and retrieves state information for each component of the identified sequence of components for each message.

28 26
62. (New) The computer system of claim 60 wherein a packet of a message as processed by a component of the identified sequence for the message is available to the next component in the identified sequence.

24 26
63. (New) The computer system of claim 60 wherein the performing of the processing of the component includes deferring performing of the next component in the identified sequence until multiple packets are processed by the component.

30 26
64. (New) The computer system of claim 60 wherein identification means deferring identification of the next component of the sequence until processing of the last component identified so far in the sequence is complete.

31 26
65. (New) The computer system of claim 60 wherein two messages share one or more components and associated state information.

32 26
66. (New) The computer system of claim 60 wherein an output format of a component in the identified sequence for a message matches an input format of the next component in the identified sequence for the message.

33 26
67. (New) The computer system of claim 60 wherein a component has multiple output formats.

34 26
68. (New) The computer system of claim 60 wherein the identification means identifies a plurality of sequences of components for a message.

35
69. (New) A computer-readable medium containing instruction demultiplexing packets of messages, by method comprising:

identifying a message-specific sequence of components for processing the packets of each message upon receiving the first packet of the message wherein subsequent packets of the message can use the message-specific sequence identified when the first packet was received; and

for each packet of the message, invoking the identified sequence of components in sequence to perform the processing of each component for the packet wherein each component saves message-specific state information so that that

component can use the save message-specific state information when that component performs its processing on the next packet of the message.

36 35
~~70~~. (New) The computer-readable medium of claim ~~69~~ wherein a second component of the message-specific sequence is identified after the first packet is processed by a first component of the message-specific sequence.

37 35
~~71~~. (New) The computer-readable medium of claim ~~69~~ wherein a packet may be transformed by each component of an identified sequence.

38 35
~~72~~. (New) The computer-readable medium of claim ~~69~~ including creating a separate thread for each message.

39 38
~~73~~. (New) The computer-readable medium of claim ~~72~~ wherein the identified sequence of components for a message is executed by the thread for the message.

40 35
~~74~~. (New) The computer-readable medium of claim ~~69~~ wherein the performing of the processing of the component includes deferring performing of the next component in the identified sequence until multiple packets are processed by the component.

41 35
~~75~~. (New) The computer-readable medium of claim ~~69~~ wherein the identifying of a sequence of components includes deferring identification of the next component of the sequence until processing of the last component identified so far in the sequence is performed.

42 35
~~76~~. (New) The computer-readable medium of claim ~~69~~ wherein two messages share one or more components and associated state information.

A1

77. (New) The computer-readable medium of claim 69 wherein an output format of a component in the identified sequence for a message matches an input format of the next component in the identified sequence for the message.

78. (New) The computer-readable medium of claim 69 wherein a plurality of sequences of components are identified for a message.

REMARKS/ARGUMENTS

Claims 35-78 are now pending. Applicant has canceled claims 1-34 and added claims 35-78 to clarify the subject matter of the invention.

The newly added claims recite that a sequence of components are identified when the first packet of a message is processed. Subsequently received packets of a message are processed by those components without having to re-identify the sequence of components. For example, claim 35 recites "for the first packet of the message, . . . storing an indication of each of the identified components so that the sequence does not need to be regarding-identified for subsequent packets of the message."

The Examiner has rejected claims 1-4, 6, 7, 10, 14, 22, 29, and 30 under 35 U.S.C. § 102(e) as being anticipated by the Feiken reference. The Feiken reference does not teach or suggest the identification of a sequence of components when a first packet of a message is received as recited by claims 35-78. Moreover, the Feiken reference teaches that packets of a message are processing in the same manner (e.g., decrypted) at each packet processing device. Thus, the Feiken reference does not disclose identifying a "sequence of components" as recited by the claims, since only one component is used, albeit in multiple processing devices, by the packets of a message.

The Examiner has rejected claims 1-34 under 35 U.S.C. § 102(b) as being anticipated by the Hluchyj reference. The Hluchyj reference neither teaches nor suggests that state information is stored when one packet is processed for use when a subsequent packet of the same message is processed as recited by claims 35-78. Moreover, the Hluchyj reference neither teaches nor suggests identifying a sequence of components. Applicant notes that the inter-networking nodes (e.g., 218) convert from one type of network packet to another type of network packet. Since these nodes perform a fixed conversion, there is no need to "identify a sequence of components."

The Examiner rejected claims 19-21, 31, and 33 under 35 U.S.C. § 102(b) as being anticipated by the Van Loo reference. These claims were directed to a data structure. None of the pending claims are directed to a data structure.

Reconsideration and withdrawal of the rejections set forth in the Office Action dated September 23, 2002, are respectfully requested. If the Examiner has any questions or believes a telephone conference would expedite prosecution of this application, the Examiner is encouraged to call the undersigned at (206) 583-8548.

Respectfully submitted,

Perkins Coie LLP

Date: February 24, 2003

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#11

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Phone (206) 583-8888
Fax (206) 583-8500

Docket No.: **29451-8007US**
Date: **February 24, 2003**

In re application of: **Edward Balassanian**
Application No.: **09/474,664** Conf. No.: **2537**
Filed: **December 29, 1999**
For: **METHOD AND SYSTEM FOR DATA DEMULTIPLEXING**

COMMISSIONER FOR PATENTS
WASHINGTON DC 20231

Sir:

Transmitted herewith is an Amendment Under 37 C.F.R. 1.111 in the above-identified application.

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Technology Center 2100

[ ] Applicant claims small entity status. See 37 C.F.R. 1.27.
[X] Applicant has previously claimed small entity status. See 37 CFR 1.27.
[X] A Petition for an Extension of Time for two months is enclosed.
[ ] A General Authorization Under 37 C.F.R. § 1.136(a)(3) is enclosed.
[ ] No additional claim fee is required.
[X] The fee has been calculated as shown.

	(Col. 1)		(Col. 2)	(Col. 3)	SMALL ENTITY			OTHER THAN A SMALL ENTITY	
	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST PREV. PAID FOR	PRESENT EXTRA	RATE	ADDITIONAL FEE	OR	RATE	ADDITIONAL FEE
TOTAL	* 44	-	** 34	10	x 9	$ 90.00		x 18	$
IND.	* 4	-	*** 6	0	x 42	$ 0.00		x 84	$
[ ] FIRST PRESENTATION OF MULT. DEP. CLAIMS					+140	$ 0.00	OR	+280	$
EXTENSION OF TIME FEE						$205.00			$
TOTAL ADDITIONAL FEE						$295.00	TOTAL		$

* If the entry in Col. 1 is less than the entry in Col. 2, write "0" in Col. 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, write "20" in this space.
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, write "3" in this space.
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found from the equivalent box in Col. 1 of a prior amendment or the number of claims originally filed.

[ ] Please charge my Deposit Account No. 50-0665 in the amount of $_. A duplicate copy of this sheet is enclosed.
[X] A check in the amount of $295.00 is attached.
[X] The Commissioner is hereby authorized to charge payment of the following additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-0665. A duplicate copy of this sheet is enclosed.
[X] Any filing fees under 37 CFR 1.16 for the presentation of extra claims.
[X] Any patent application processing fees under 37 CFR 1.17.

Respectfully submitted,
PERKINS COIE LLP

03/03/2003 SFELEKE1 00000057 09474664
01 FC:2202 90.00 OP

Maurice J. Pirio
Registration No. 33,273

1083

EXPRESS MAIL NO. EV254121912US

Perkins Coie LLP
P.O. Box 1247
Seattle, Washington 98111-1247
Phone (206) 583-8888
Fax (206) 583-8500

Docket No.: **29451-8007US**
Date: **February 24, 2003**

In re application of: **Edward Balassanian**
Application No.: **09/474,664** Conf. No.: **2537**
Filed: **December 29, 1999**
For: **METHOD AND SYSTEM FOR DATA DEMULTIPLEXING**

COMMISSIONER FOR PATENTS
WASHINGTON DC 20231

Sir:

Transmitted herewith is an Amendment Under 37 C.F.R. 1.111 in the above-identified application.

[ ] Applicant claims small entity status. See 37 C.F.R. 1.27.
[X] Applicant has previously claimed small entity status. See 37 CFR 1.27.
[X] A Petition for an Extension of Time for two months is enclosed.
[ ] A General Authorization Under 37 C.F.R. § 1.136(a)(3) is enclosed.
[ ] No additional claim fee is required.
[X] The fee has been calculated as shown.

	(Col. 1)		(Col. 2)	(Col. 3)	SMALL ENTITY		OR	OTHER THAN A SMALL ENTITY	
	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST PREV. PAID FOR	PRESENT EXTRA	RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
TOTAL	* 44	-	** 34	10	x 9	$ 90.00		x 18	$
IND.	* 4	-	*** 6	0	x 42	$ 0.00		x 84	$
[ ] FIRST PRESENTATION OF MULT. DEP. CLAIMS					+140	$ 0.00	OR	+280	$
EXTENSION OF TIME FEE						$205.00			$
TOTAL ADDITIONAL FEE						$295.00	TOTAL		$

* If the entry in Col. 1 is less than the entry in Col. 2, write "0" in Col. 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, write "20" in this space.
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, write "3" in this space.
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found from the equivalent box in Col. 1 of a prior amendment or the number of claims originally filed.

[ ] Please charge my Deposit Account No. 50-0665 in the amount of $_. A duplicate copy of this sheet is enclosed.
[X] A check in the amount of $295.00 is attached.
[X] The Commissioner is hereby authorized to charge payment of the following additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-0665. A duplicate copy of this sheet is enclosed.
[X] Any filing fees under 37 CFR 1.16 for the presentation of extra claims.
[X] Any patent application processing fees under 37 CFR 1.17.

Respectfully submitted,
PERKINS COIE LLP

Maurice J. Pirio
Registration No. 33,273

Attorney Docket No. 29451-8007US

10 3-6-03 OW

Express Mail Label EV254121912US

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:	Edward Balassanian *et al.*	EXAMINER:	TAMMARA R. PEYTON
APPLICATION NO.:	09/474,664	ART UNIT:	2182
FILED:	December 29, 1999	CONF. NO.:	2537

FOR: **METHOD AND SYSTEM FOR DATA DEMULTIPLEXING**

Petition for 2-Month Extension of Time

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Applicant petitions for a 2-Month Extension of Time in which to respond to the outstanding Office Action, extending the period for response to February 23, 2003.

☒ Fee (37 CFR 1.17(a) (2)): ☒ Small Entity: $205.00
☐ Large Entity: $410.00

☒ A check including the above fee is enclosed.

☐ Please charge the above fee(s) to Deposit Account No. 50-0665; this paper is provided in triplicate.

☒ Applicant petitions for an additional Extension of Time if necessary for timely filing of this petition and enclosures.

☒ Please charge any underpayment for timely consideration of this paper to Deposit Account No. 50-0665.

Respectfully submitted,
Perkins Coie LLP

Date: February 24, 2003

Maurice J. Pirio
Registration No. 33,273

Correspondence Address:
Customer No. 25096
Perkins Coie LLP
P.O. Box 1247
Seattle, Washington 98111-1247
(206) 583-8888

03/03/2003 SFELEKE1 00000057 09474664

02 FC:2252 205.00 OP

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/474,664	12/29/1999	EDWARD BALASSANIAN	294518007US	2537

25096 7590 09/23/2002

PERKINS COIE LLP
PATENT-SEA
P.O. BOX 1247
SEATTLE, WA 98111-1247

EXAMINER	
PEYTON, TAMMARA R	

ART UNIT	PAPER NUMBER
2182	8

DATE MAILED: 09/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/474,664	BALASSANIAN, EDWARD	
	Examiner	Art Unit	
	Tammara R Peyton	2182	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 December 1999* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5,7* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

1. Claims 1-4, 6, 7, 10, 14, 22, 29, and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by *Feiken et al.,* (US 5,870,479).

2. As per claims 1, 3, 6, 10, 22, 29, and 30, *Feiken* teaches a method in a computer system for processing packets of a message, the method comprising:

- receiving a packet of the message (col. 3, line 66);
- identifying a component an identifier of state information associated with the message; (col. 3, line 67-col. 4, lines 1-5)

- retrieving state information associated with the received identifier; and
- providing the retrieved state information and the received packet to the identified component for processing of the received packet. (Abstract, col. 2, lines 37-col. 3, lines 1-20, col. 5, lines 37-col. 7, lines 2)

3. As per claims 2, 7, and 23, *Feiken* inherently teaches including requesting that the identified component provide an identifier of state information.

4. As per claim 4, *Feiken* inherently teaches wherein the receiving of the identifier is in response to invoking a routine of the component.

5. As per claim 14, *Feiken* teaches wherein multiple messages share the same state information.

6. As per claim 24, *Feiken* teaches including locating state information based on information in a header.

7. Claims 1-34 are rejected under 35 U.S.C. 102(e) as being anticipated by *Hluchyj et al.*, (US 5,425,029).

8. As per claims 1, 3, 6, 10, 22, 29, and 30, *Hluchyj* teaches a method in a computer system for processing packets of a message, the method comprising:

- receiving a packet of the message;

- identifying a component an identifier of state information associated with the message;
- retrieving state information associated with the received identifier; and
- providing the retrieved state information and the received packet to the identified component for processing of the received packet. (Abstract, col. 2, lines 41-col.8)

9. As per claims 2, 7, and 23, *Hluchyj* inherently teaches including requesting that the identified component provide an identifier of state information.

10. As per claims 4, 5, 9, and 11, *Hluchyj* inherently teaches wherein the receiving of the identifier is in response to invoking a routine of the component, and wherein the component is a protocol with an edge.

11. As per claim 8, *Hluchyj* teaches wherein the receiving of the data type includes requesting the data type from a component that previously processed the packet.

12. As per claims 12 and 13, *Hluchyj* inherently teaches wherein the message handler function updates the state information.

13. As per claims 14 and 15, *Hluchyj* teaches wherein multiple messages share the same state information.

14. As per claims 16 and 28, *Hluchyj* teaches wherein the message handler function is passed state information.

15. As per claim 17, *Hluchyj* teaches wherein the state information is stored in a table.

16. As per claim 18, *Hluchyj* teaches wherein the message handler converts data of a packet.

17. As per claim 24, *Hluchyj* teaches including locating state information based on information in a header.

18. As per claim 25, *Hluchyj* teaches wherein analyzing includes identifying a state indicator/locating routine and passing the message.

19. As per claim 26, *Hluchyj* inherently teaches wherein the invoking step is under control of a single thread of execution.

20. As per claim 27, *Hluchyj* teaches wherein analyzing includes identifying multiple sequences of message handlers.

21. As per claims 19-21, 31 and 33, *Hluchyj* teaches a computer readable medium containing a data structure that includes:

a plurality of item fields, each item field identifying a conversion routine for processing a message in sequence; and

a type field specifying that each item field contains the identifier of a conversion routine.

22. As per claim 32, *Hluchyj* inherently teaches wherein an item field identifies a protocol with an edge.

23. As per claim 33, *Hluchyj* inherently teaches wherein the data structure is a URL.

24. Claims 19-21, 31, and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by *Van Loo, Jr. et al.*, (US 5,568,478).

> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

25. As per claims 19-21,31, and 33, *Van Loo* teaches a computer-readable medium containing a data structure comprising a sequence of path entries, each path entry having a reference to state information for a message and a reference to a message handler for processing a message wherein the message handlers are to be invoked in the order of the sequence. (Abstract, col. 3, lines 10-col. 4, lines 1-40, Figs.1-3)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tammara Peyton whose telephone number is (703) 306-5508. The examiner can normally be reached between 6:30 - 4:00 from Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey A. Gaffin, can be reached on (703) 308-3301. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3718.

Any inquiry of a general nature of relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Mailed responses to this action should be sent to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231.Faxes for Official/formal communications intended for entry should be sent to: (703) 746-7238, After Final (703) 746-7239

or, for informal or draft communications, to:

(703) 746-7240 (please label "PROPOSED" or "DRAFT").

Hand-delivered responses should be brought to:

Crystal Park II, 2121 Crystal Drive, Arlington, VA, Fourth Floor (Receptionist).

Tammara Peyton

September 18, 2002

JEFFREY GAFFIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

Notice of References Cited	Application/Control No. 09/474,664	Applicant(s)/Patent Under Reexamination BALASSANIAN, EDWARD	
	Examiner Tammara R Peyton	Art Unit 2182	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,157,622	12-2000	Tanaka et al.	340/7.46
	B	US-5,425,029	06-1995	Hluchyj et al.	370/235
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Please type a plus sign (+) inside this box → [+]

PTO/SB/08A
Approved for use through 10/31/99. OMB 0651-0031
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

COMPLETE IF KNOWN	
Application Number	09/474,664
Confirmation Number	2537
Filing Date	December 29, 1999
First Named Inventor	Edward Balassanian
Group Art Unit	2182
Examiner Name	Thomas C. Lee
Attorney Docket No.	29451-8007US

Sheet	1	of	1

U.S. PATENT DOCUMENTS

EXAMINER INITIALS	Cite No.	U.S. Patent Document NUMBER	Kind Code (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
JLP	AA	5,568,478		van Loo, Jr. et al.	10/22/96	370/392
✓	AB	5,870,479		Feiken et al.	2/9/99	713/160
	AC					
	AD					
	AE					
	AF					
	AG					
	AH					
	AI					
	AJ					

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FOREIGN PATENT DOCUMENTS

EXAMINER INITIALS	Cite No.	Foreign Patent Document Office	Number	Kind Code (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T
	AK							
	AL							
	AM							
	AN							
	AO							

OTHER PRIOR ART-NON PATENT LITERATURE DOCUMENTS

EXAMINER INITIALS	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume0issue number(s), publisher, city and/or country where published.	T
✓	AP	International Search Report, International Application No. PCT/US00/33634, September 10, 2001	
	AQ		
	AR		

EXAMINER	DATE CONSIDERED
	09/18/02

* EXAMINER: Initial if reference considered, whether or not criteria is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant(s).

Please type a plus sign (+) inside this box → [+]

PTO/SB/08A

Approved for use through 10/31/99. OMB 0651-0031
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet	1	of	1

COMPLETE IF KNOWN	
Application Number	09/474,664
Filing Date	December 29, 1999
First Named Inventor	Edward Balassanian
Group Art Unit	2739
Examiner Name	
Attorney Docket No.	29451-8007US

U.S. PATENT DOCUMENTS

EXAMINER INITIALS	Cite No.	U.S. Patent Document NUMBER	Kind Code (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
JWP	AA	5,710,917		Musa et al.	1/20/98	707/201
	AB					
	AC					
	AD					
	AE					
	AF					
	AG					

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FOREIGN PATENT DOCUMENTS

EXAMINER INITIALS	Cite No.	Foreign Patent Document Office	Number	Kind Code (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T
JWP	AH	EP	0408132A1		Océ-Nederland B.V.	1/16/91		
	AI							

OTHER PRIOR ART-NON PATENT LITERATURE DOCUMENTS

EXAMINER INITIALS	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume/issue number(s), publisher, city and/or country where published.	T
JWP	AJ	Bhatti, Nina T., et al., "Coyote: A System for Constructing Fine-Grain Configurable Communication Services," The University of Arizona at Tucson, ACM Transactions on Computer Systems, Vol. 16, No. 4, November 1998, pages 321-366.	
	AK	O'Malley, Sean W. and Larry L. Peterson, "A Dynamic Network Architecture," University of Arizona, ACM Transactions on Computer Systems (TOCS), Volume 10, No. 2, May 1992, pages 110-143.	
	AM	Fiuczynski, Marc E. and Brian N. Bershad, "An Extensible Protocol Architecture for Application-Specific Networking," University of Washington at Seattle, Proceedings of the 1996 Winter USENIX Technical Conference.	
	AN	Pardyak, Przemyslaw and Brian N. Bershad, "Dynamic Binding for an Extensible System," University of Washington at Seattle, Proceedings of the Second USENIX Symposium on Operating Systems Design and Implementation (OSDI) 1996.	
	AO	Bailey, Mary L. et al., "PathFinder: A Pattern-Based Packet Classifier," University of Arizona at Tucson, Proceedings of the First Symposium on Operating Systems Design and Implementation, USENIX Association, November 1994.	
	AR	Mosberger, David, "Scout: A Path-Based Operating System," A Dissertation Submitted to the Faculty of the Department of Computer Science, The University of Arizona, pages 87-97, 1997.	

EXAMINER	DATE CONSIDERED
	09/17/02

* EXAMINER: Initial if reference considered, whether or not criteria is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant(s).

PATENT

I hereby certify that on the date specified below, this correspondence is being deposited with the United States Postal Service as first-class mail in an envelope addressed to the Commissioner for Patents, Washington, DC 20231.

October 10, 2001 — Sandy Reisman
Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Edward Balassanian
Application No.	:	09/474,664 Confirmation No.: 2537
Filed	:	December 29, 1999
For	:	METHOD AND SYSTEM FOR DATA DEMULTIPLEXING
Examiner	:	Thomas C. Lee
Art Unit	:	2182
Docket No.	:	29451-8007US
Date	:	October 8, 2001

Commissioner for Patents
Washington, DC 20231

TRANSMITTAL OF SUPPLEMENTAL
INFORMATION DISCLOSURE STATEMENT

Sir:

In accordance with 37 C.F.R. §§ 1.56 and 1.97 through 1.98, applicant wishes to make known to the Patent and Trademark Office the references set forth on the attached form PTO/SB/08A (copies of the cited references, as required under 37 C.F.R. § 1.98, are enclosed). Although the aforesaid references are made known to the Patent and Trademark Office in compliance with applicant's duty to disclose all information of which he is aware that is believed relevant to the patentability of the above-identified application, applicant believes that his invention is patentable. As to any document

supplied, applicant does not admit that it is "prior art" under 35 U.S.C. §§ 102 or 103, and specifically reserves the right to antedate any such document, as by a showing under 35 C.F.R. § 1.131 or other method.

Please acknowledge receipt of this Information Disclosure Statement and kindly make the cited references of record in the above-identified application.

Respectfully submitted,
Perkins Coie LLP

Maurice J. Pirio
Registration No. 33,273

MJP:SBR
Enclosures:
Postcard
Form PTO/SB/08A
Cited References (3)

P.O. Box 1247
Seattle, Washington 98111-1247
(206) 583-8888
Fax: (206) 583-8500

#6

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

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CHANGE OF ADDRESS/POWER OF ATTORNEY

FILE LOCATION 21C1 SERIAL NUMBER 09474664 PATENT NUMBER

THE CORRESPONDENCE ADDRESS HAS BEEN CHANGED TO CUSTOMER # 25096

THE PRACTITIONERS OF RECORD HAVE BEEN CHANGED TO CUSTOMER # 25096

THE FEE ADDRESS HAS BEEN CHANGED TO CUSTOMER # 25096

ON 04/12/01 THE ADDRESS OF RECORD FOR CUSTOMER NUMBER 25096 IS:

PERKINS COIE LLP
1201 3RD AVENUE , SUITE 4800
SEATTLE WA 98101-3099

AND THE PRACTITIONERS OF RECORD FOR CUSTOMER NUMBER 25096 ARE:

30582 33273 33904 34807 37263 37376 38264 40188 41637 41989
42216 43960 43985 46140

PTO INSTRUCTIONS: PLEASE TAKE THE FOLLOWING ACTION WHEN THE CORRESPONDENCE ADDRESS HAS BEEN CHANGED TO CUSTOMER NUMBER: RECORD, ON THE NEXT AVAILABLE CONTENTS LINE OF THE FILE JACKET, 'ADDRESS CHANGE TO CUSTOMER NUMBER'. LINE THROUGH THE OLD ADDRESS ON THE FILE JACKET LABEL AND ENTER ONLY THE 'CUSTOMER NUMBER' AS THE NEW ADDRESS. FILE THIS LETTER IN THE FILE JACKET. WHEN ABOVE CHANGES ARE ONLY TO FEE ADDRESS AND/OR PRACTITIONERS OF RECORD, FILE LETTER IN THE FILE JACKET.
THIS FILE IS ASSIGNED TO GAU 2182.

#5
2-27-01
GAU 2663

PATENT

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February 8, 2001 — Sandy Reisman
Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Edward Balassanian
Application No.	:	09/474,664
Filed	:	December 29, 1999
For	:	METHOD AND SYSTEM FOR DATA DEMULTIPLEXING
Art Unit	:	2739
Docket No.	:	29451-8007US
Date	:	February 7, 2001

Commissioner for Patents
Washington, DC 20231

TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT

Sir:

In accordance with 37 C.F.R. §§ 1.56 and 1.97 through 1.98, applicant wishes to make known to the Patent and Trademark Office the references set forth on the attached form PTO/SB/08A (copies of the cited references, as required under 37 C.F.R. § 1.98, are enclosed).

Applicant also wishes to have considered and officially cited the following co-pending application:

Application No.	Filed	Entitled
09/304,973	May 4, 1999	METHOD AND SYSTEM FOR GENERATING A MAPPING BETWEEN TYPES OF DATA

Although the aforesaid references are made known to the Patent and Trademark Office in compliance with applicant's duty to disclose all information of which he is aware that is

believed relevant to the patentability of the above-identified application, applicant believes that his invention is patentable. As to any document supplied, applicant does not admit that it is "prior art" under 35 U.S.C. §§ 102 or 103, and specifically reserves the right to antedate any such document, as by a showing under 35 C.F.R. § 1.131 or other method.

Please acknowledge receipt of this Information Disclosure Statement and kindly make the cited references of record in the above-identified application.

Respectfully submitted,
Perkins Coie LLP

Maurice J. Pirio
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MJP:SBR
Enclosures:
Postcard
Form PTO/SB/08A
Cited References (8)

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(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 408 132 A1**

(12) EUROPEAN PATENT APPLICATION

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(54) A system for processing data organized in files and a control module for use therein.

(57) The system comprises conversion means for translating the format in which data are stored in the memory. These conversion means are of modular design with a control module (10) and separate converters (15a-15n), each adapted to perform a specific conversion. To perform a conversion, the control module (10) searches for the converter (15a) adapted thereto and starts the same. The control module (10) is provided with a transformer (10d) which transforms the signals delivered to the converter (15a) by the control module (10) into signals comprehensible to the converter (15a), and vice versa. The translation table required for this is stored in the configuration file (12) of the system, together with the translation tables of the other converters.

New converters can be easily added by loading the program in the system memory and including the associated translation table in the configuration file (12).

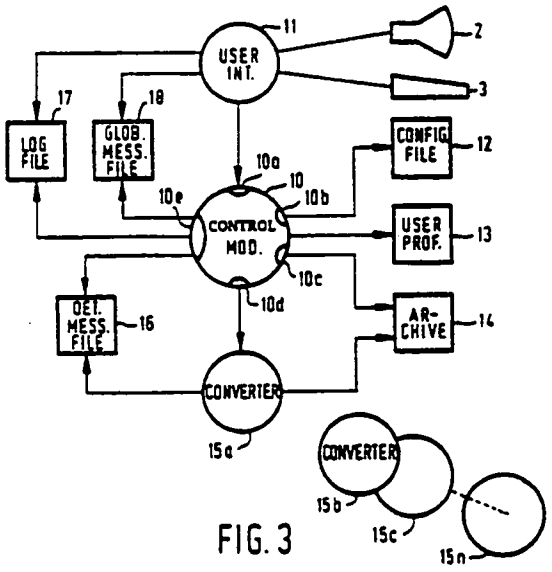


FIG. 3

EP 0 408 132 A1

A SYSTEM FOR PROCESSING DATA ORGANIZED IN FILES AND A CONTROL MODULE FOR USE THEREIN

The invention relates to a system for processing data organized in files, the data being stored in a file in accordance with one of various possible formats, comprising a memory and a process stage having an operating module for maintaining contact with a user and conversion means whereby, on a command for the purpose, the data in a file are converted from a first format (source format) into a second different format (target format). The invention also relates to a control module for use in such a system.

Systems of this kind are generally known. They are provided with processing modules which are lodged in the process stage and, at the user's command, can carry out processing operations on data stored in the memory. The data are represented in a specific way by binary codes. The way in which data are coded is based on agreements, known as formats, which are implemented in the system. There are many such formats all differing from one another to a greater or lesser degree. As a rule, a processing module can only process data if the latter are in a specific format.

Consequently, it may be necessary to convert data from one format to another because they cannot be processed in the form in which they are available. Systems of this kind are frequently equipped with conversion means for this purpose. A survey of the prior art in this area is given in "Document interchange systems", International Datapro reports on wordprocessing, Febr. 1989, McGraw-Hill, page, WPO9-100-101 ... WPO9-100-115.

The known conversion means are either program modules which form an integral part of the application package of the system or separate packages specially written for use in a specific system. Expanding the conversion means by a new conversion is therefore a complex affair requiring considerable knowledge of the system and involving considerable work because adjustments have to be made at various places in the package.

The object of the invention is to provide a system provided with conversion means which can be readily expanded with new conversions. This object is attained in that in a system according to the invention, the conversion means comprise converters each adapted to execute a specific conversion, a list of all the available converters, and a control module, the latter being provided with input and output means, connected to the operating module, for receiving commands therefrom and sending data relating to a conversion thereto, selection means for selecting a converter or a series of converters from the list on the basis of a received conversion command, and communication means for starting up and then communicating with a selected converter.

As a result of this, the conversion functionality in the system is divided up into a control stage which forms part of the application package of the system, and a number of separate converters which do not belong thereto. These converters are completely shielded from the rest of the system by the control stage. In this way it is possbile to add or remove converters without having to carry out any operations on the software of the system itself.

In one embodiment of the system according to the invention, to further improve the flexibility of this system, data specific to each converter and specifying the commands to and the messages from such converter are stored in the said list, and the communication means are provided with a transformer which regulates the communication with a selected converter by reference to the specific data.

In this way it is possible to add various converters without the converter operating specifications having to satisfy great requirements. When the commands specified for the converter operation differ from those generated by the control module, they are "translated" by the transformer in accordance with the specifications in the list. Conversely, messages delivered by the converter during its operation are transformed by the same transformer into messages comprehensible to the control module. Installation of a new converter is greatly simplified as a result and simply comprises loading the converter software into the memory and storing the name and translation specifications of the converter in the list.

According to another embodiment of the system according to the invention, also stored in the said list are data relating to conversions available by a combination of converters, together with the con verters required and the sequence in which they have to be combined. This further enhances the utility of the conversion functionality.

According to another embodiment of the systems according to the invention, the selection means are adapted to inventorise and present to the user for selection all the available target formats on a conversion command, starting from the source format of the data in the file to be converted. This increases the operating convenience for the user, since he simply has to indicate the required conversion, and it is also immediately clear what conversions are possible and hence what ar not possible.

In order to inform the user conveniently of any

problems occurring in the conversion, the control module is provided with diagnostic means whereby certain messages from those relating to the progress of a conversion as generated during the same are selected on the basis of an importance level preselected by the user and are collected in a file for presentation to the user. In this way the user receives information at his own level and is therefore, for example, not overloaded with information which he does not understand or with which he cannot do anything.

Other features and advantages will be apparent from the following description and the accompanying drawings in which like references denote like parts. In the drawings:

Fig. 1 illustrates a system according to the invention,

Fig. 2 is a schematic of various parts of the system according to the invention,

Fig. 3 is a schematic of various parts of the system according to the invention during a conversion,

Fig. 4 shows an operating field on the system screen.

Fig. 1 illustrates a system according to the invention. It comprises a central process stage 1 having a microprocessor and a memory, operating means such as a screen 2, a keyboard 3 and a mouse 4, and storage and connecting means for storing or inputting or outputting data, such as a disk station 5 and a connection 6 to a network of data-processing systems. By means of the mouse 4 it is possible to move an indicator element or cursor 7 over the screen 2.

Programs for processing data are available in the process stage, for example for the makeup of a document from data input via the keyboard 3 or from the storage and connecting means 5, 6.

Fig. 2 schematically illustrates that stage of the system of Fig. 1 which is relevant to format conversion.

Central to the implementation of the conversion function is the conversion control module 10. It is connected via an interface 10a to the operating module 11 which by means of the screen 2 and the keyboard 3 provides communication with an operator. The control module is also connected to a number of data files in the system memory, namely the configuration file 12 (via a selection function 10b), the file 13 containing user data (user profile), and the archive 14 (via a connecting function 10c). These three files all belong to the general part of the system and are not intended exclusively for the conversion function. The configuration file 12 contains a list of all the functions available in the system, both hardware and software, with the data for the operation thereof. The user data file 13 contains a list of system options specific to each user permitted to use the system, such as permits and defaults for alternative system functions. Finally, the archive 14 contains data files which have been or are required to be processed by means of the system, e.g. the content of documents made with the system. These files are stored in the archive 14 by name, i.e. each data file in the archive is identified by a unique name and the archive function regulates the physical location of the data of a file itself. Finally, the control module 10 also contains a communication function 10d and a diagnostic function 10e, the operation of which will become clear in the following description.

The system also comprises a number of converters 15a to 15n each adapted for the conversion of a file with data in a specific first format to a file with data in a specific second format. All the converters available in the system are contained in the configuration file.

The converters are programs which are required to be started in a specific way, convert a designated data file, and deliver the converted file under a previously given name to the archive, after which they give a readiness message and stop. During conversion they report problems that they encounter, such as if they meet in the file to be converted data for which there is no equivalent available in the target format. In some cases the converter will then terminate the conversion but in other cases it will simply make a less satisfactory conversion and give a warning.

The set of commands and messages does not have to be the same for each converter in the system described. In fact the configuration file 12 contains for each converter a list of command and messages with the translations comprehensible to the control module.

The complete procedure in the case of a conversion will now be described with reference to Fig. 3 where necessary.

The user selects a specific data file (the "source file", stored in the archive in the "source format") that he wishes to have converted into another format (the "target format"). Selection can be done, for example, by indicating with the cursor on the screen an icon representing the source file.

The user gives the conversion command, e.g. by indicating with the cursor on the screen a menu area representing such command.

The control module searches the source file in the archive via its connecting function 10c and determines the source format. This format may, for example, be indicated in the name of the source file, by a file extension. If the control module is not able to detect the source format, then the control module itself selects a previously prepared and programmed-in default which, for example, comprises the ASCII format, since this is very much

used.

By means of the data in the configuration file, the selection function 10b of the control module then searches all the target formats available from the source format, both with single converters and with combinations of converters, and transmits these to the operating module 11 for presentation to the screen. By means of the cursor the user can now select one of these, provided that the target format last used with that source format has already been preselected as target format by the control module. The reason for this is that if the user is involved with a specific processing package, he will probably always want to convert to the specific format of that package, and this preselection is labour-saving for the user.

The user now confirms the target format default or changes the selection. The user can now also input a name for the converted file. If he does not do so, the control module itself gives a name to this file, e.g. by providing the source file name with an extension containing a code for the target format.

An example of an operating field on the screen 2 with which the above-described operation of the conversion function can be carried out is given in Fig. 4. The field contains at the top a space 100 for any messages and queries to the user. It also contains a space 101 for the name of the source file. A series 102 of short names for the formats that can be converted by the system then follows. In the example illustrated, the source format is "wp", which denotes the Wordperfect format. This is indicated in the operating field by the blackened frame around the option "wp" in the series 102. For the sake of clarity, the format name is also indicated in full therebeneath. If the source format cannot be derived from the file name, the control module asks the user, by means of a message in the space 100, to indicate the source format in the series 102.

Beneath the name of the source format there follows a series 103 with all the target formats possible with the said source format. Since the user in this example had carried out a conversion from Wordperfect format to ASCII format prior to the conversion now described, this format is selected as the default, but the user can change this setting by indicating another format in the series 103. The full name of the target format is again written out beneath the series 103.

Finally, a space 104 for the name of the converted file follows in the operating field. Here again the control module has a default, namely the name of the source file with an extension indicating the target format, but the user can amend this name as he wishes, simply by typing the new name over it.

Once the source and target formats are known, the selection function 10b of the control module determines the conversion path, i.e. determines what converter or converters have to be activated successively. The data for this are in the configuration file. The list with commands and messages of the intended converter or, in the case of a combination of converters, of the first converter, are read out of the configuration file by the control module and prepared for communication with the converter. The following files are then created in the memory by the diagnostic function 10e of the control module: a detailed message file 16, a logbook file 17 and a global message file 18. The control module also brings up from the operating module 11 an identification (name) for a file in which the converted data are to be stored (the "destination file").

The communication function 10d of the control module now starts up the converter 15a and in so doing passes the following data to the converter: the identification of the source file, the name of the destination file and the identification of the detailed message file 16, and also a number of control parameters. The control module also itself writes the starting up of the converter in the detailed message file 16.

The converter 15a fetches the source file form the archive 14, converts it, creates a destination file under the indicated name in the archive 14, writes the result in the destination file and writes any messages in the detailed message file 16. Finally the converter stops its activity, either because the conversion is finished or because a fatal error has occurred, and give its final message at the control module communication function 10d.

On the final message from convertor 15a the diagnostic function 10e of the control module reads the detailed message file 16 out and transfers all the messages therein or part thereof to the logbook file 17. The user data in the file 13 play a part in this respect. The reason for this is that they contain a qualification of the intended user in respect of the extent to which the messages are to be transmitted to him. In the case of the qualification "normal" only a limited selection of messages is transmitted, i.e. those which relate to the conversion as a total process but not, for example, messages from an intermediate step in a combination of converters. This is sufficient information for most users because after all they cannot do anything with messages from the intermediate steps; they have in fact no knowledge that intermediate steps have been performed, because the control module has arranged this. For expert users there is also a qualification "extensive", with which all messages from the detailed message file 16 are transferred to the logbook file 17.

If the target format has been reached, the

control module then transfers a simple message to the global message file 18. This is a final message containing the final result of the conversion e.g.: "conversion successful", "conversion successful, but some errors pre sent in result", or "conversion unsuccessful, see logbook file". The control module then reports itself ready at the operating module 11.

If the target format has not yet been reached, and at least one following conversion is still to be performed, the control module repeats the described procedure completely for the next converter, unless the finished conversion has been terminated by a fatal error. In the latter case the control module terminates the conversion procedure, writes a message on this in the global message file 18 and reports the termination to the operating module 11.

The operating module 11 reads out the global message file 18 and presents its contents on the screen 2. If necessary, the user can now display the logbook file 17 on the screen 2 by means of the operating module in order to inspect this file. The user can also bring up the contents of the converted file from the archive 14 and display it on the screen. In the event of non-fatal conversion errors occurring, they are indicated on the screen, e.g. in displaying them in reverse video. The user can then correct them if necessary. This terminates the conversion procedure.

The system described also offers the possibility of converting a number of files to a specific target format by a simple command. For this purpose the user simply has to indicate all the files to be converted in his conversion command. Interactive processing or batch processing can be selected. In the batch mode the control module 10 performs all the required conversions and reports back with all the results after completion. If a fatal error occurs during one of the conversions, such conversion is interrupted and the control module starts on the next. In the interactive mode, however, the control module 10 reports back with its results after each conversion and awaits the user's reaction in the event of an error.

The addition of a new converter is very simple with the system described. A translation table is made once and for all for the new converter and contains all the commands and messages required for communication between the converter and the control module 10. On installation, the converter program is stored in the system memory and the name of the converter together with the translation table is written into the configuration file 12. Starting from the newly added converter it is also possible to make up different conversions by combining the new converter with existing converters. These are also included in the configuration file 12 with a reference to the constituent converters. It would also be possible for this to be carried out automatically by arranging for an installation program present for the purpose in the system to check immediately on installation of a new converter what extra conversions are possible by combination of the new converter with existing converters, and writing this into the configuration file 12. When new conversions have been installed in this way, the control module can immediately identify and use them without the system having to be newly compiled or started.

It will be seen from the above that the system described enables very different converters to be used without their having to satisfy stringent requirements.

Al though the invention has been described with reference to the above example, it is not restricted thereto. Numerous alternative embodiments within the scope of the claims will be obvious to the skilled addressee. Communication with the user can be arranged in some other way. A successful conversion, for example, need not necessary be reported in a separate message on the screen.

Claims

1. A system for processing data organized in files, the data being stored in a file in accordance with one of various possible formats, comprising a memory and a process stage having an operating module for maintaining contact with a user and conversion means whereby, on a command for the purpose, the data in a file are converted from a first format (source format) into a second different format (target format), characterised in that the conversion means comprise converters each adapted to execute a specific conversion, a list of all the available converters, and an control module, the latter being provided with input and output means, connected to the operating module, for receiving commands therefrom and sending data relating to a conversion thereto, selection means for selecting a converter or a series of converters from the list on the basis of a received conversion command, and communication means for starting up and then communicating with a selected converter.
2. A system according to claim 1, characterised in that data specific to each converter and specifying the commands to and the messages from such converter are stored in the list of all available converters, and in that the communication means are provided with a transformer which regulates the communication with a selected converter by reference to the specific data.
3. A system according to claim 1 or 2, charac-

terised in that also stored in the said list are data relating to conversions available by a combination of converters, together with the converters required and the sequence in which they have to be combined.

4. A system according to claim 1, 2 or 3, characterised in that the selection means are adapted to inventorise and present to the user for selection all the available target formats on a conversion command, starting from the source format of the data in the file to be converted.

5. A system according to any one of the preceding claims, characterised in that the control module is provided with means whereby identification data relating to a data file to be converted stored in the merry and an identifcation for a destination file for the storage of converted data resulting from a conversion are made known to a started converter via the communication means.

6. A system according to any one of the preceding claims, characterised in that the control module is provided with diagnostic means whereby certain messages from those relating to the progress of a conversion as generated during the same are selected on the basis of an importance level preselected by the user and are collected in a file for presentation to the user.

7. A system according to claim 6, characterised in that the diagnostic means are adapted to create at least one file in the memory for messages relating to the progress of a conversion and to make known to a started converter via the communication means identification data of a first file of this kind.

8. A system according to claim 7, characterised in that the diagnostic means are also adapted to select certain messages from those stored in the said first message file and to store the same in a second message file.

9. A control module for use in a system according to any one of the preceding claims.

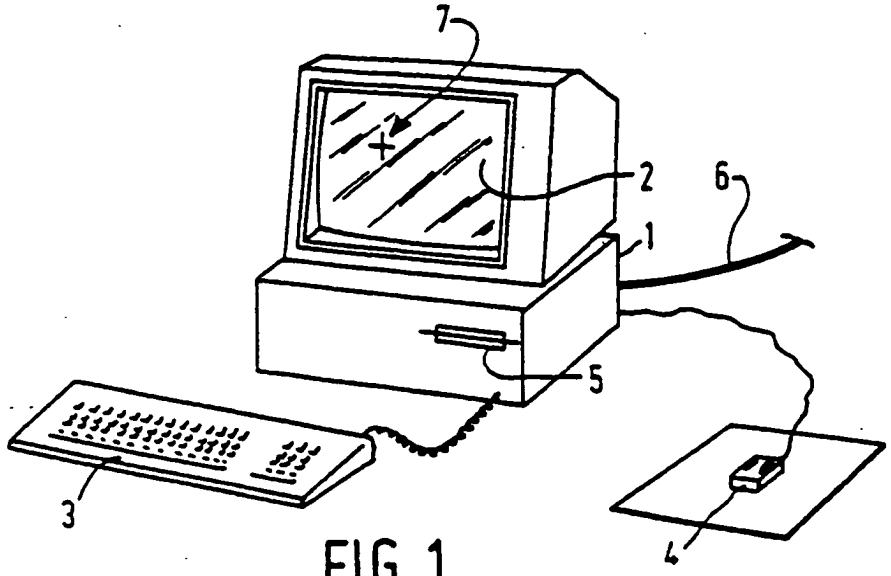


FIG. 1

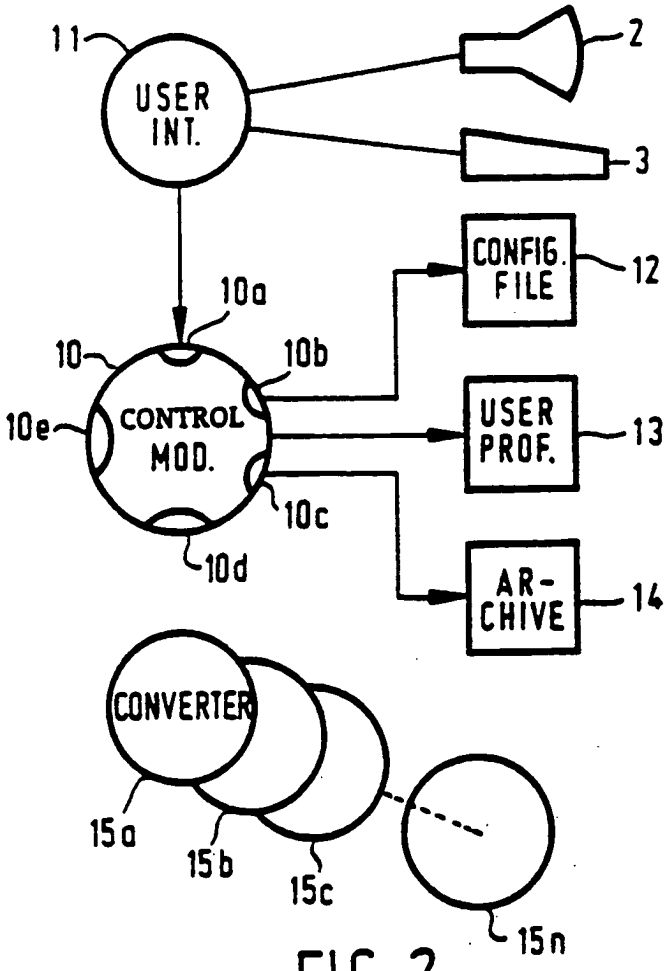


FIG. 2

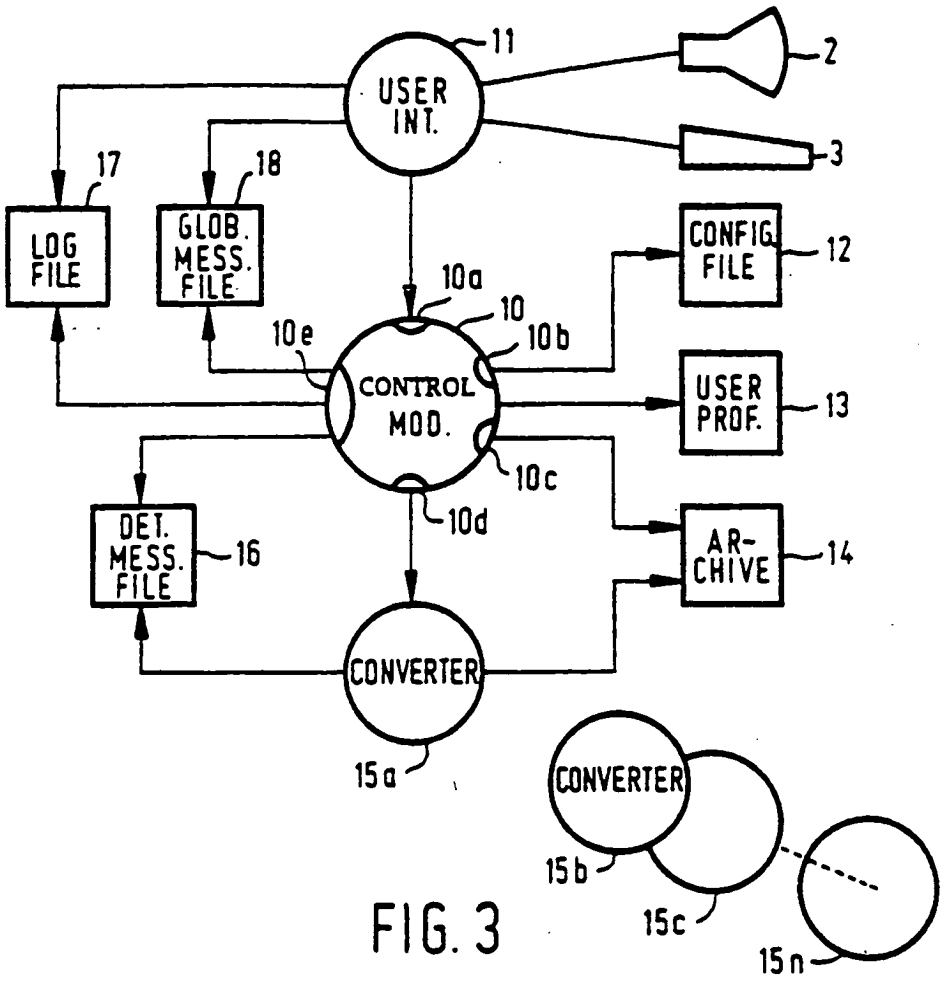
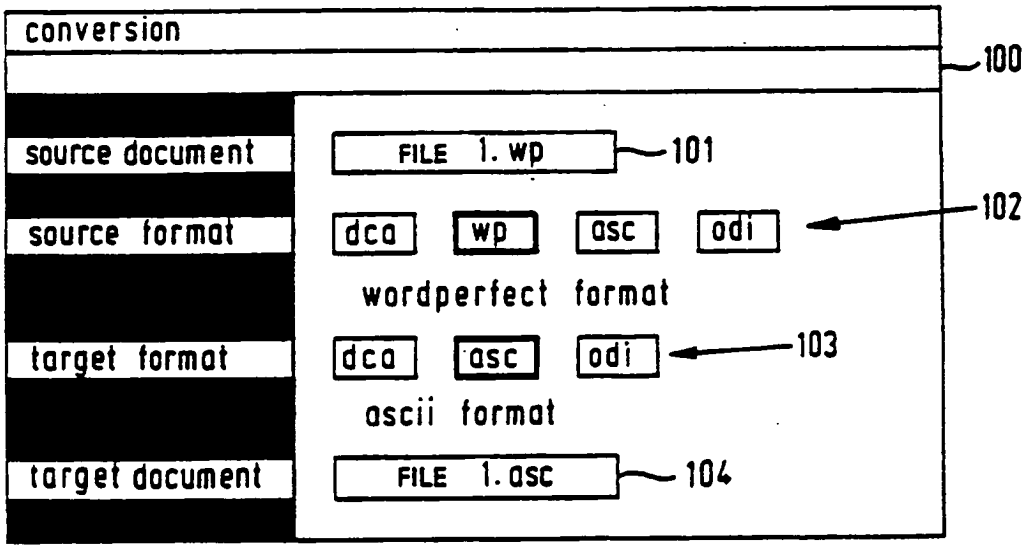

USER INT.
11
2
3
17
18
LOG FILE
GLOB. MESS. FILE
CONFIG FILE
12
10a
10
10b
10e
CONTROL MOD.
USER PROF.
13
10c
10d
DET. MESS. FILE
16
AR-CHIVE
14
CONVERTER
15a
CONVERTER
15b
15c
15n

FIG. 3


conversion
100
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101
source format
dca
wp
asc
odi
102
wordperfect format
target format
dca
asc
odi
103
ascii format
target document
FILE 1. asc
104

FIG. 4

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 90 20 1823

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	EP-A-0 130 375 (IBM) * Abstract; page 7, lines 11-32; page 12, lines 7-19,25-35; page 20, line 8 - page 21, line 3 *	1,2	G 06 F 15/403
Y		3	
A		5	

Y	EP-A-0 216 480 (TEKNOWLEDGE) * Column 13, line 50 - column 14, line 53; column 141, lines 35-43 *	3	

A	ELECTRONIQUE APPLICATIONS, no. 58, February/March 1988, pages 61-64, Paris, FR; P. SOTO: "Transfert de fichiers IBM-Apple" * Page 63, left-hand column, lines 20-51 *	6	

A	SYSTEMS AND COMPUTERS IN JAPAN, vol. 19, no. 10, 1988, pages 80-86, Scripta Technica, Inc.; M. NAGATA et al.: "A method for generating messages of the interactive software based on the individual user model" * Sections 2.2,2.2.1,2.2.2,2.3; figures 1,4,5 *	6	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

G 06 F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	31-08-1990	WILTINK J.G.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P0401)

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO./TITLE
09/474,664	12/29/99	BALASSANIAN E	294518007US

0242/0211

PATENT SEA
PERKINS COIE LLP
1201 THRID AVENUE SUITE 4800
SEATTLE WA 98101

Mog Pts Due 4/11/00

2739

DATE MAILED: 02/11/00

NOTICE TO FILE MISSING PARTS OF APPLICATION
Filing Date Granted

An Application Number and Filing Date have been assigned to this application. The items indicated below, however, are missing. Applicant is given TWO MONTHS FROM THE DATE OF THIS NOTICE within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a). **If any of items 1 or 3 through 5 are indicated as missing, the SURCHARGE set forth in 37 CFR 1.16(e) of ☐ $65.00 for a small entity in compliance with 37 CFR 1.27, or ☑ $130.00 for a non-small entity, must also be timely submitted in reply to this NOTICE to avoid abandonment.**

If all required items on this form are filed within the period set above, the total amount owed by applicant as a ☐ small entity (statement filed) ☑ non-small entity is $ 1301.00 .

☑ 1. The statutory basic filing fee is:
- ☑ missing.
- ☐ insufficient.

Applicant must submit $ 690.00 to complete the basic filing fee and/or file a small entity statement claiming such status (37 CFR 1.27).

☐ 2. The following additional claims fees are due:

$ 252.00 for 14 total claims over 20.

$ 234.00 for 3 independent claims over 3.

$ _____ for multiple dependent claim surcharge.

Applicant must either submit the additional claim fees or cancel additional claims for which fees are due.

☑ 3. The oath or declaration:
- ☑ is missing or unsigned.
- ☐ does not cover the newly submitted items.

An oath or declaration in compliance with 37 CFR 1. 63, including residence information and identifying the application by the above Application Number and Filing Date is required.

☐ 4. The signature(s) to the oath or declaration is/are by a person other than inventor or person qualified under 37 CFR 1.42, 1.43 or 1.47.

A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.

☐ 5. The signature of the following joint inventor(s) is missing from the oath or declaration:

_____

An oath or declaration in compliance with 37 CFR 1.63 listing the names of all inventors and signed by the omitted inventor(s), identifying this application by the above Application Number and Filing Date, is required.

☐ 6. **A $50.00 processing fee is required since your check was returned without payment (37 CFR 1.21(m)).**

☐ 7. Your filing receipt was mailed in error because your check was returned without payment.

☐ 8. The application was filed in a language other than English.

Applicant must file a verified English translation of the application, the $130.00 set forth in 37 CFR 1.17(k), unless previously submitted, and a statement that the translation is accurate (37 CFR 1.52(d)).

☐ 9. OTHER: _____

Direct the reply and any questions about this notice to "Attention: Box Missing Parts."

A copy of this notice MUST be returned with the reply.

Customer Service Center
Initial Patent Examination Division (703) 308-1202

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Edward Balassanian
Application No.	:	09/474,664
Filed	:	December 29, 1999
For	:	**METHOD AND SYSTEM FOR DATA DEMULTIPLEXING**

Docket No. : 291508007US

Assistant Commissioner for Patents
Washington, DC 20231

ELECTION UNDER 37 C.F.R. §§ 3.71 AND 3.73
AND POWER OF ATTORNEY

Sir:

The undersigned, being Assignee of the entire interest in the above-identified application by virtue of an Assignment filed concurrently herewith, a copy of which is enclosed, hereby elects under 37 C.F.R. § 3.71, to prosecute the application to the exclusion of the inventors.

Assignee hereby appoints JERRY A. RIEDINGER, Registration No. 30,582; MAURICE J. PIRIO, Registration No. 33,273; JOHN C. STEWART, Registration No. 40,188; MICHAEL D. BROADDUS, Registration No. 41,637; BRIAN P. MCQUILLEN, Registration No. 41,989; TARANEH MAGHAME, Registration No. 43,768; CATHERINE HONG TRAN, Registration No. 43,960; ROBERT G. WOOLSTON, Registration No. 37,263; PAUL T. PARKER, Registration No. 38,264; JOHN M. WECHKIN, Registration No. 42,216; BRIAN G. BODINE, Registration No. 40,520; CHRISTOPHER DALEY-WATSON, Registration No. 34,807, STEVEN D. LAWRENZ, Registration No. 37,376; JAMES A.D. WHITE, Registration No. 43,985; and FRANK ABRAMONTE, Registration No. 38,066, as the principal

attorneys with full power of substitution, association, and revocation to prosecute said application, to transact all business in the Patent and Trademark Office connected therewith, and to receive the letters patent therefor. Please direct all direct all telephone calls to Maurice J. Pirio at (206) 583-8888 and telecopies to (206) 583-8500.

Please direct all correspondence to:

Patent-SEA
Perkins Coie LLP
1201 Third Avenue, Suite 4800
Seattle, Washington 98101-3099
Attn: Maurice J. Pirio

Pursuant to 37 C.F.R. § 3.73, the undersigned duly authorized designee of Assignee certifies that the evidentiary documents have been reviewed, specifically the Assignment to BeComm Corporation filed concurrently herewith for recording, a copy of which is attached hereto, and certifies that to the best of my knowledge and belief, title remains in the name of the Assignee.

BeComm Corporation

Feb 29, 2000
Date

Edward Balassanian
President

MJP:jc

Enclosure:
Copy of Assignment

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Edward Balassanian
Application No.	:	09/474,664
Filed	:	December 29, 1999
For	:	METHOD AND SYSTEM FOR DATA DEMULTIPLEXING
	Art Unit	: 2739
	Docket No.	: 294518007US
	Date	: April 6, 2000

Assistant Commissioner for Patents
Washington, DC 20231

AUTHORIZATION FOR EXTENSIONS OF TIME UNDER 37 C.F.R. § 1.136(A)(3)

Sir:

With respect to the above-identified application, the Assistant Commissioner is authorized to treat any concurrent or future reply requiring a petition for an extension of time under 37 C.F.R. § 1.136(a)(3) for its timely submission as incorporating a petition therefor for the appropriate length of time. The Assistant Commissioner is also authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account No. 50-0665.

Date April 6, 2000

Maurice J. Pirio

Maurice J. Pirio
Registration No. 33,273

PERKINS COIE LLP
1201 Third Avenue, Suite 4800
Seattle, Washington 98101-3009
(206) 583-8888
FAX: (206) 583-8500

DECLARATION

As the below-named inventor, I declare that:

My residence, post office address, and citizenship are as stated below under my name.

I believe I am the original, first, and sole inventor of the subject matter claimed and for which a patent is sought on the invention entitled "METHOD AND SYSTEM FOR DATA DEMULTIPLEXING," the specification of which was filed in the U.S. Patent and Trademark Office on December 29, 1999 and assigned Application No. 09/474,664.

I have reviewed and understand the contents of the above-identified specification and claims, as amended by any amendment specifically referred to above.

I acknowledge my duty to disclose information which is material to the patentability of this application in accordance with 37 C.F.R. § 1.56(a).

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that the making of willfully false statements and the like is punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and may jeopardize the validity of any patent issuing from this patent application.

Edward Balassanian

Date Feb 29, 2000

Residence	:	City of Kirkland State of Washington
Citizenship	:	United States of America
P.O. Address	:	12724 N.E. 94th Court Kirkland, Washington 98033

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant or Patentee: Edward Balassanian
Attorney's Docket No: 291508007US
Application /Patent No.: 09/474,664
Filed or Issued: December 29, 1999
For: METHOD AND SYSTEM FOR DATA DEMULTIPLEXING

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS (37 CFR §§ 1.9(f) AND 1.27(c)) -- SMALL BUSINESS CONCERN

I declare that I am:

[ ] the owner of the small business concern identified below.

[X] an official of the small business concern empowered to act on behalf of the concern identified below.

NAME OF ORGANIZATION: BeComm Corporation
ADDRESS OF ORGANIZATION: 4160 148th N.E.
Redmond, Washington 98052

I hereby declare that the above-identified small business concern qualified as a small business concern as defined in 13 CFR §§ 121.3-18 and reproduced in 37 CFR § 1.9(d) for purposes of paying reduced fees under 35 USC §§ 41(a) and 41(b) in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time, or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that the small business concern identified above qualifies as a small business concern as defined in 37 CFR § 1.9(d) for purposes of pa ying reduced fees under 35 USC §§ 41(1) and 41(b), with regard to the invention entitled:

METHOD AND SYSTEM FOR DATA DEMULTIPLEXING

by inventor(s): Edward Balassanian
as described in:

[ ] the specification filed herewith.

[X] Application No. 09/474,664, filed December 29, 1999.

[ ] Patent No. _____, issued _____.

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights to the invention is listed below* and no rights to the invention are held by any person, other than the inventor, who could not qualify as an independent inventor under 37 CFR § 1.9(c) if that person made the invention, or by any concern that would not qualify as a small business concern under 37 CFR § 1.9(d), or a nonprofit organization under 37 CFR § 1.9(e).*

*NOTE: Separate verified statements are required from each named person, concern and organization having rights to the invention averring to their status as small entities. (37 CFR § 1.27)

FULL NAME_____

ADDRESS_____

[ ] individual [ ] small business concern [ ] nonprofit organization

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earlier of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 C.F.R. § 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING: Edward Balassanian

TITLE IN ORGANIZATION: President

ADDRESS OF PERSON SIGNING: 12724 N.E. 94th Court

Kirkland, Washington 98033

SIGNATURE: _____

DATE: Feb 29, 2000

SECTOR #3

PATENT

I hereby certify that on the date specified below, this correspondence is being deposited with the United States Postal Service as first-class mail in an envelope addressed to Box Missing Parts, Assistant Commissioner for Patents, Washington, DC 20231.

April 6, 2000 — Date

Jeanne Connelly

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Edward Balassanian
Application No.	:	09/474,664
Filed	:	December 29, 1999
For	:	METHOD AND SYSTEM FOR DATA DEMULTIPLEXING
	Docket No. :	294518007US
	Date :	April 6, 2000

Box Missing Parts
Assistant Commissioner for Patents
Washington, DC 20231

RESPONSE TO NOTICE TO FILE MISSING PARTS OF APPLICATION

Sir:

In response to the Notice to File Missing Parts dated February 11, 2000, please find enclosed a Declaration, Power of Attorney, Authorization for Extensions of Time Under 37 CFR § 1.136(a)(3), and Form PTO-1533 for the above-identified application.

Also enclosed is a Verified Statement Claiming Small Entity Status, the fees below have been calculated taking into consideration the small entity status.

The fees have been calculated as follows:

Basic Fee	$	345.00
Total Claims (34, 14 extra)		126.00
Independent Claims (6, 3 extra)		117.00
Missing Parts Surcharge		65.00
TOTAL	$	653.00

Enclosed is a check in the amount of $653.00 for the requisite fees. The Assistant Commissioner is hereby authorized to charge any additional filing fees or to credit any overpayment to Deposit Account No. 50-0665. A duplicate copy of this response is enclosed.

Respectfully submitted,

Perkins Coie LLP

Maurice J. Pirio
Registration No. 33,273

MJP:jc

Enclosures:
- Postcard
- Check
- Copy of this Response
- Declaration
- Verified Statement Claiming Small Entity Statu
- Power of Attorney
- Authorization for Extensions of Time Under 37 CFR § 1.136(a)(3)
- Copy of Form PTO-1533

PERKINS COIE LLP
1201 Third Avenue, Suite 4800
Seattle, Washington 98101-3009
(206) 583-8888
FAX: (206) 583-8500

PATENT

I hereby certify that on the date specified below, this correspondence is being deposited with the United States Postal Service as first-class mail in an envelope addressed to Box Missing Parts, Assistant Commissioner for Patents, Washington, DC 20231.

April 6, 2000 — Jeanne Connelly

Date — Jeanne Connelly

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Edward Balassanian
Application No.	:	09/474,664
Filed	:	December 29, 1999
For	:	METHOD AND SYSTEM FOR DATA DEMULTIPLEXING
	Docket No.	: 294518007US
	Date	: April 6, 2000

Box Missing Parts
Assistant Commissioner for Patents
Washington, DC 20231

RESPONSE TO NOTICE TO FILE MISSING PARTS OF APPLICATION

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Respectfully submitted,

Perkins Coie LLP

Maurice J. Pirio
Registration No. 33,273

MJP:jc

Enclosures:
- Postcard
- Check
- Copy of this Response
- Declaration
- Verified Statement Claiming Small Entity Statu
- Power of Attorney
- Authorization for Extensions of Time Under 37 CFR § 1.136(a)(3)
- Copy of Form PTO-1533

PERKINS COIE LLP
1201 Third Avenue, Suite 4800
Seattle, Washington 98101-3009
(206) 583-8888
FAX: (206) 583-8500

#2

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO./TITLE
09/474,664	12/29/99	BALASSANIAN E	294518007US

0242/0211

PATENT SEA
PERKINS COIE LLP
1201 THRID AVENUE SUITE 4800
SEATTLE WA 98101

2739

DATE MAILED: 02/11/00

NOTICE TO FILE MISSING PARTS OF APPLICATION
Filing Date Granted

An Application Number and Filing Date have been assigned to this application. The items indicated below, however, are missing. Applicant is given TWO MONTHS FROM THE DATE OF THIS NOTICE within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a). **If any of items 1 or 3 through 5 are indicated as missing, the SURCHARGE set forth in 37 CFR 1.16(e) of ☐ $65.00 for a small entity in compliance with 37 CFR 1.27, or ☑ $130.00 for a non-small entity, must also be timely submitted in reply to this NOTICE to avoid abandonment.**

If all required items on this form are filed within the period set above, the total amount owed by applicant as a ☐ small entity (statement filed) ☑ non-small entity is $ 1306.00.

☑ 1. The statutory basic filing fee is:
☑ missing.
☐ insufficient.
Applicant must submit $ 690.00 to complete the basic filing fee and/or file a small entity statement claiming such status (37 CFR 1.27).

☐ 2. The following additional claims fees are due:
$ 252.00 for 14 total claims over 20.
$ 234.00 for 3 independent claims over 3.
$ _____ for multiple dependent claim surcharge.
Applicant must either submit the additional claim fees or cancel additional claims for which fees are due.

☑ 3. The oath or declaration:
☑ is missing or unsigned.
☐ does not cover the newly submitted items.
An oath or declaration in compliance with 37 CFR 1. 63, including residence information and identifying the application by the above Application Number and Filing Date is required.

☐ 4. The signature(s) to the oath or declaration is/are by a person other than inventor or person qualified under 37 CFR 1.42, 1.43 or 1.47.
A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.

☐ 5. The signature of the following joint inventor(s) is missing from the oath or declaration:

_____

An oath or declaration in compliance with 37 CFR 1.63 listing the names of all inventors and signed by the omitted inventor(s), identifying this application by the above Application Number and Filing Date, is required.

☐ 6. **A $50.00 processing fee is required since your check was returned without payment (37 CFR 1.21(m)).**

☐ 7. Your filing receipt was mailed in error because your check was returned without payment.

☐ 8. The application was filed in a language other than English.
Applicant must file a verified English translation of the application, the $130.00 set forth in 37 CFR 1.17(k), unless previously submitted, and a statement that the translation is accurate (37 CFR 1.52(d)).

☐ 9. OTHER: _____

Direct the reply and any questions about this notice to "Attention: Box Missing Parts."

A copy of this notice MUST be returned with the reply.

Customer Service Center
Initial Patent Examination Division (703) 308-1202

FORM PTO-1533 (REV. 8/98)
U.S. GPO 1999 450-587

Please type a plus sign (+) inside this box [+]

01-03-00

A

PTO/SB/05 (4/98)

UTILITY PATENT APPLICATION TRANSMITTAL

(Only for nonprovisional applications under 37 CFR § 1.53(b))

Attorney Docket No.	294518007US
First Inventor or Application Identifier	Edward Balassanian
Title	METHOD AND SYSTEM FOR DATA MULTIPLEXING
Express Mail Label No.	EL404931246US

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO: Box Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

1. [ ] Authorization for Extensions & Fee Transmittal *(Submit an original and a duplicate for fee processing)*

2. [X] Specification [Total Pages] 26 *(preferred arrangement set forth below)*
   - Descriptive Title of the Invention
   - Cross References to Related Applications
   - Statement Regarding Fed sponsored R & D
   - Reference to Microfiche Appendix
   - Background of the Invention
   - Brief Summary of the Invention
   - Brief Description of the Drawings *(if filed)*
   - Detailed Description
   - Claim(s)
   - Abstract of the Disclosure

3. [X] Drawing(s) *(35 USC 113)* [Total Sheets] 18

4. Oath or Declaration [Total Pages]
   a. [ ] Newly executed (original or copy)
   b. [ ] Copy from a prior application (37 CFR 1.63(d)) *(for continuation/divisional with Box 16 completed)*
      i. [ ] DELETION OF INVENTOR(S) Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b)

**NOTE FOR ITEMS 1 & 13: IN ORDER TO BE ENTITLED TO PAY SMALL ENTITY FEES, A SMALL ENTITY STATEMENT IS REQUIRED (37 C.F.R. § 1.27), EXCEPT IF ONE FILED IN A PRIOR APPLICATION IS RELIED UPON (37 C.F.R. § 1.28).*

5. [ ] Microfiche Computer Program *(Appendix)*

6. Nucleotide and/or Amino Acid Sequence Submission *(if applicable, all necessary)*
   a. [ ] Computer-Readable Copy
   b. [ ] Paper Copy (identical to computer copy)
   c. [ ] Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

7. [ ] Assignment Papers (cover sheet & document(s))
8. [ ] 37 CFR 3.73(b) Statement *(when there is an assignee)* [ ] Power of Attorney
9. [ ] English Translation Document *(if applicable)*
10. [ ] Information Disclosure Statement (IDS)/PTO-1449 [ ] Copies of IDS Citations
11. [ ] Preliminary Amendment
12. [X] Return Receipt Postcard
12. [ ] Small Entity Statement(s) [ ] Statement filed in prior application, Status still proper and desired
14. [ ] Certified Copy of Priority Document(s) *(if foreign priority is claimed)*
15. [ ] Other: _____

16. **If a CONTINUING APPLICATION,** *check appropriate box and supply the requisite information below and in a preliminary amendment*

[ ] Continuation [ ] Divisional [ ] Continuation-In-Part (CIP) of prior Application No.: _____

Prior application information: Examiner _____ *Group / Art Unit* _____

For CONTINUATION or DIVISIONAL apps only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 4b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

[ ] Claims the benefit of Provisional Application No. _____

17. CORRESPONDENCE ADDRESS

Patent-SEA
Perkins Coie LLP
1201 Third Avenue, Suite 4800
Seattle, Washington 98101-3099
(206) 583-8888 *phone*
(206) 583-8500 *facsimile*
Attn: Maurice J. Pirio

Respectfully submitted,

TYPED or PRINTED NAME Maurice J. Pirio REGISTRATION NO. 33,273

SIGNATURE Maurice J. Pirio Date 12/29/99

Q:\Clients\BeComm (29451)\8007 (Demux)\COVER.DOC

METHOD AND SYSTEM FOR DATA DEMULTIPLEXING

TECHNICAL FIELD

The present invention relates generally to a computer system for data demultiplexing.

BACKGROUND

Computer systems, which are becoming increasingly pervasive, generate data in a wide variety of formats. The Internet is an example of interconnected computer systems that generate data in many different formats. Indeed, when data is generated on one computer system and is transmitted to another computer system to be displayed, the data may be converted in many different intermediate formats before it is eventually displayed. For example, the generating computer system may initially store the data in a bitmap format. To send the data to another computer system, the computer system may first compress the bitmap data and then encrypt the compressed data. The computer system may then convert that compressed data into a TCP format and then into an IP format. The IP formatted data may be converted into a transmission format, such as an ethernet format. The data in the transmission format is then sent to a receiving computer system. The receiving computer system would need to perform each of these conversions in reverse order to convert the data in the bitmap format. In addition, the receiving computer system may need to convert the bitmap data into a format that is appropriate for rendering on output device.

In order to process data in such a wide variety of formats, both sending and receiving computer systems need to have many conversion routines available to support the various formats. These computer systems typically use predefined configuration information to load the correct combination of conversion routines for processing data. These computer systems also use a process-oriented approach when processing data with these conversion routines. When using a process-oriented approach, a computer system may create a separate process for each conversion that needs to take place. A computer system in certain situations, however, can be expected to receive data and to provide data in many different formats that may not be known until the data is received. The overhead

of statically providing each possible series of conversion routines is very high. For example, a computer system that serves as a central controller for data received within a home would be expected to process data received via telephone lines, cable TV lines, and satellite connections in many different formats. The central controller would be expected to output the data to computer displays, television displays, entertainment centers, speakers, recording devices, and so on in many different formats. Moreover, since the various conversion routines may be developed by different organizations, it may not be easy to identify that the output format of one conversion routine is compatible with the input format of another conversion routine.

It would be desirable to have a technique for dynamically identifying a series of conversion routines for processing data. In addition, it would be desirable to have a technique in which the output format of one conversion routine can be identified as being compatible with the input format of another conversion routine. It would also be desirable to store the identification of a series of conversion routines so that the series can be quickly identified when data is received.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a block diagram illustrating example processing of a message by the conversion system.

Figure 2 is a block diagram illustrating a sequence of edges.

Figure 3 is a block diagram illustrating components of the conversion system in one embodiment.

Figure 4 is a block diagram illustrating example path data structures in one embodiment.

Figure 5 is a block diagram that illustrates the interrelationship of the data structures of a path.

Figure 6 is a block diagram that illustrates the interrelationship of the data structures associated with a session.

Figures 7A, 7B, and 7C comprise a flow diagram illustrating the processing of the message send routine.

Figure 8 is a flow diagram of the demux routine.

Figure 9 is a flow diagram of the initialize demux routine.

Figure 10 is a flow diagram of the init end routine.

Figure 11 is a flow diagram of a routine to get the next binding.

Figure 12 is a flow diagram of the get key routine.

Figure 13 is a flow diagram of the get session routine.

Figure 14 is a flow diagram of the nail binding routine.

Figure 15 is a flow diagram of the find path routine.

Figure 16 is a flow diagram of the process of path hopping routine.

DETAILED DESCRIPTION

A method and system for converting a message that may contain multiple packets from an source format into a target format. When a packet of a message is received, the conversion system in one embodiment searches for and identifies a sequence of conversion routines (or more generally message handlers) for processing the packets of the message by comparing the input and output formats of the conversion routines. (A message is a collection of data that is related in some way, such as stream of video or audio data or an email message.) The identified sequence of conversion routines is used to convert the message from the source format to the target format using various intermediate formats. The conversion system then queues the packet for processing by the identified sequence of conversion routines. The conversion system stores the identified sequence so that the sequence can be quickly found (without searching) when the next packet in the message is received. When subsequent packets of the message are received, the conversion system identifies the sequence and queues the packets for pressing by the sequence. Because the conversion system receives multiple messages with different source and target formats and identifies a sequence of conversion routines for each message, the conversion systems effectively "demultiplexes" the messages. That is, the conversion system demultiplexes the messages by receiving the message,

identifying the sequence of conversion routines, and controlling the processing of each message by the identified sequence. Moreover, since the conversion routines may need to retain state information between the receipt of one packet of a message and the next packet of that message, the conversion system maintains state information as an instance or session of the conversion routine. The conversion system routes all packets for a message through the same session of each conversion routine so that the same state or instance information can be used by all packets of the message. A sequence of sessions of conversion routines is referred to as a "path." In one embodiment, each path has a path thread associated with it for processing of each packet destined for that path.

In one embodiment, the packets of the messages are initially received by "drivers," such as an Ethernet driver. When a driver receives a packet, it forwards the packet to a forwarding component of the conversion system. The forwarding component is responsible for identifying the session of the conversion routine that should next process the packet and invoking that conversion routine. When invoked by a driver, the forwarding component may use a demultiplexing ("demux") component to identify the session of the first conversion routine of the path that is to process the packet and then queues the packet for processing by the path. A path thread is associated with each path. Each path thread is responsible for retrieving packets from the queue of its path and forwarding the packets to the forwarding component. When the forwarding component is invoked by a path thread, it initially invokes the first conversion routine in the path. That conversion routine processes the packet and forwards the processed packet to the forwarding component, which then invokes the second conversion routine in the path. The process of invoking the conversion routines and forwarding the processed packet to the next conversion routine continues until the last conversion routine in the path is invoked. A conversion routine may defer invocation of the forwarding component until it aggregates multiple packets or may invoke the forwarding component multiple times for a packet once for each sub-packet.

The forwarding component identifies the next conversion routine in the path using the demux component and stores that identification so that the forwarding component can quickly identify the conversion routine when subsequent packets of the same message are received. The demux component searches for the conversion routine and session that is to next process a packet. The demux component then stores the

identification of the session and conversion routine as part of a path data structure so that the conversion system does not need to search for the session and conversion routine when requested to demultiplex subsequent packets of the same message. When searching for the next conversion routine, the demux component invokes a label map get component that identifies the next conversion routine. Once the conversion routine is found, the demux component identifies the session associated with that message by, in one embodiment, invoking code associated with the conversion routine. In general, the code of the conversion routine determines what session should be associated with a message. In certain situations, multiple messages may share the same session. The demux component then extends the path for processing that packet to include that session and conversion routine. The sessions are identified so that each packet is associated with the appropriate state information. The dynamic identification of conversion routines is described in U.S. Patent Application No. 09/304,973, filed on May 4, 1999, entitled "Method and System for Generating a Mapping Between Types of Data," which is hereby incorporated by reference.

Figure 1 is a block diagram illustrating example processing of a message by the conversion system. The driver 101 receives the packets of the message from a network. The driver performs any appropriate processing of the packet and invokes a message send routine passing the processed packet along with a reference path entry 150. The message send routine is an embodiment of the forwarding component. A path is represented by a series of path entries, which are represented by triangles . Each member path entry represents a session and conversion routine of the path, and a reference path entry represents the overall path. The passed reference path entry 150 indicates to the message send routine that it is being invoked by a driver. The message send routine invokes the demux routine 102 to search for and identify the path of sessions that is to process the packet. The demux routine may in turn invoke the label map get routine 104 to identify a sequence of conversion routines for processing the packet. In this example, the label map get routine identifies the first three conversion routines, and the demux routine creates the member path entries 151, 152, 153 of the path for these conversion routines. Each path entry identifies a session for a conversion routine, and the sequence of path entries 151-155 identifies a path. The message send routine then queues the packet on the queue 149 for the path that is to process the packets of the message. The

path thread 105 for the path retrieves the packet from the queue and invokes the message send routine 106 passing the packet and an indication of the path. The message send routine determines that the next session and conversion routine as indicated by path entry 151 has already been found. The message send routine then invokes the instance of the conversion routine for the session. The conversion routine processes the packet and then invokes the message send routine 107. This processing continues until the message send routine invokes the demux routine 110 after the packet is processed by the conversion routine represented by path entry 153. The demux routine examines the path and determines that it has no more path entries. The demux routine then invokes the label map get routine 111 to identify the conversion routines for further processing of the packet. When the conversion routines are identified, the demux routine adds path entries 154, 155 to the path. The messages send routine invokes the conversion routine associated with path entry 154. Eventually, the conversion routine associated with path entry 155 performs the final processing for the path.

The label map get routine identifies a sequence of "edges" for converting data in one format into another format. Each edge corresponds to a conversion routine for converting data from one format to another. Each edge is part of a "protocol" (or more generally a component) that may include multiple related edges. For example, a protocol may have edges that each convert data in one format into several different formats. Each edge has an input format and an output format. The label map get routine identifies a sequence of edges such that the output format of each edge is compatible with the input format of another edge in the sequence, except for the input format of the first edge in the sequence and the output format of the last edge in the sequence. Figure 2 is a block diagram illustrating a sequence of edges. Protocol P1 includes an edge for converting format D1 to format D2 and an edge for converting format D1 to format D3; protocol P2 includes an edge for converting format D2 to format D5, and so on. A sequence for converting format D1 to format D15 is shown by the curved lines and is defined by the address "P1:1, P2:1, P3:2, P4:7." When a packet of data in format D1 is processed by this sequence, it is converted to format D15. During the process, the packet of data is sequentially converted to format D2, D5, and D13. The output format of protocol P2, edge 1 (*i.e.*, P2:1) is format D5, but the input format of P3:2 is format D10. The label map get routine uses an aliasing mechanism by which two formats, such as D5

and D10 are identified as being compatible. The use of aliasing allows different names of the same format or compatible formats to be correlated.

Figure 3 is a block diagram illustrating components of the conversion system in one embodiment. The conversion system 300 can operate on a computer system with a central processing unit 301, I/O devices 302, and memory 303. The I/O devices may include an Internet connection, a connection to various output devices such as a television, and a connection to various input devices such as a television receiver. The media mapping system may be stored as instructions on a computer-readable medium, such as a disk drive, memory, or data transmission medium. The data structures of the media mapping system may also be stored on a computer-readable medium. The conversion system includes drivers 304, a forwarding component 305, a demux component 306, a label map get component 307, path data structures 308, conversion routines 309, and instance data 310. Each driver receives data in a source format and forwards the data to the forwarding component. The forwarding component identifies the next conversion routine in the path and invokes that conversion routine to process a packet. The forwarding component may invoke the demux component to search for the next conversion routine and add that conversion routine to the path. The demux component may invoke the label map get component to identify the next conversion routine to process the packet. The demux component stores information defining the paths in the path structures. The conversion routines store their state information in the instance data.

Figure 4 is a block diagram illustrating example path data structures in one embodiment. The demux component identifies a sequence of "edges" for converting data in one format into another format by invoking the label map get component. Each edge corresponds to a conversion routine for converting data from one format to another. As discussed above, each edge is part of a "protocol" that may include multiple related edges. For example, a protocol may have edges that each convert data in one format into several different formats. Each edge has as an input format ("input label") and an output format ("output label"). Each rectangle represents a session 410, 420, 430, 440, 450 for a protocol. A session corresponds to an instance of a protocol. That is, the session includes the protocol and state information associated with that instance of the protocol. Session 410 corresponds to a session for an Ethernet protocol; session 420 corresponds to

a session for an IP protocol; and sessions 430, 440, 450 correspond to sessions for a TCP protocol. Figure 4 illustrates three paths 461, 462, 463. Each path includes edges 411, 421, 431. The paths share the same Ethernet session 410 and IP session 420, but each path has a unique TCP session 430, 440, 450. Thus, path 461 includes sessions 410, 420, and 430; path 462 includes sessions 410, 420, and 440; and path 463 includes sessions 410, 420, and 450. The conversion system represents each path by a sequence of path entry structures. Each path entry structure is represented by a triangle. Thus, path 461 is represented by path entries 415, 425, and 433. The conversion system represents the path entries of a path by a stack list. Each path also has a queue 471, 472, 473 associated with it. Each queue stores the messages that are to be processed by the conversion routines of the edges of the path. Each session includes a binding 412, 422, 432, 442, 452 that is represented by an oblong shape adjacent to the corresponding edge. A binding for an edge of a session represents those paths that include the edge. The binding 412 indicates that three paths are bound (or "nailed") to edge 411 of the Ethernet session 410. The conversion system uses a path list to track the paths that are bound to a binding. The path list of binding 412 identifies path entries 413, 414, and 415.

Figure 5 is a block diagram that illustrates the interrelationship of the data structures of a path. Each path has a corresponding path structure 501 that contains status information and pointers to a message queue structure 502, a stack list structure 503, and a path address structure 504. The status of a path can be extend, continue, or end. Each message handler returns a status for the path. The status of extend means that additional path entries should be added to the path. The status of end means that this path should end at this point and subsequent processing should continue at a new path. The status of continue means that the protocol does not care how the path is handled. In one embodiment, when a path has a status of continue, the system creates a copy of the path and extends the copy. The message queue structure identifies the messages (or packets of a message) that are queued up for processing by the path and identifies the path entry at where the processing should start. The stack list structure contains a list of pointers to the path entry structures 505 that comprise the path. Each path entry structure contains a pointer to the corresponding path data structure, a pointer to a map structure 507, a pointer to a multiplex list 508, a pointer to the corresponding path address structure, and a pointer to a member structure 509. A map structure identifies the output label of the edge

of the path entry and optionally a target label and a target key. A target key identifies the session associated with the protocol that converts the packet to the target label. (The terms "media," "label," and "format" are used interchangeably to refer to the output of a protocol.) The multiplex list is used during the demux process to track possible next edges when a path is being identified as having more than one next edge. The member structure indicates that the path entry represents an edge of a path and contains a pointer to a binding structure to which the path entry is associated (or "nailed"), a stack list entry is the position of the path entry within the associated stack list, a path list entry is the position of the path entry within the associated path list of a binding and an address entry is the position of the binding within the associated path address. A path address of a path identifies the bindings to which the path entries are bound. The path address structure contains a URL for the path, the name of the path identified by the address, a pointer to a binding list structure 506, and the identification of the current binding within the binding list. The URL *(e.g.,* "protocol://tcp(0)/ip(0)/eth(0)") identifies conversion routines *(e.g.,* protocols and edges) of a path in a human-readable format. The URL (universal resource locator) includes a type field *(e.g.,* "protocol") followed by a sequence of items *(e.g.,* "tcp(0)"). The type field specifies the format of the following information in the URL, that specifies that the type field is followed by a sequence of items. Each item identifies a protocol and an edge *(e.g.,* the protocol is "tcp" and the edge is "0"). In one embodiment, the items of a URL may also contain an identifier of state information that is to be used when processing a message. These URLs can be used to illustrate to a user various paths that are available for processing a message. The current binding is the last binding in the path as the path is being built. The binding list structure contains a list of pointers to the binding structures associated with the path. Each binding structure 510 contains a pointer to a session structure, a pointer to an edge structure, a key, a path list structure, and a list of active paths through the binding. The key identifies the state information for a session of a protocol. A path list structure contains pointers to the path entry structures associated with the binding.

Figure 6 is a block diagram that illustrates the interrelationship of the data structures associated with a session. A session structure 601 contains the context for the session, a pointer to a protocol structure for the session, a pointer to a binding table structure 602 for the bindings associated with the session, and the key. The binding table

structure contains a list of pointers to the binding structures 510 for the session. The binding structure is described above with reference to Figure 5. The path list structure 603 of the binding structure contains a list of pointers to path entry structures 505. The path entry structures are described with reference to Figure 5.

Figures 7A, 7B, and 7C comprise a flow diagram illustrating the processing of the message send routine. The message send routine is passed a message along with the path entry associated with the session that last processed the message. The message send routine invokes the message handler of the next edge in the path or queues the message for processing by a path. The message handler invokes the demux routine to identify the next path entry of the path. When a driver receives a message, it invokes the message send routine passing a reference path entry. The message send routine examines the passed path entry to determine (1) whether multiple paths branch from the path of the passed path entry, (2) whether the passed path entry is a reference with an associated path, or (3) whether the passed path entry is a member with a next path entry. If multiple paths branch from the path of the passed path entry, then the routine recursively invokes the message send routine for each path. If the path entry is a reference with an associated path, then the driver previously invoked the message send routine, which associated a path with the reference path entry, and the routine places the message on the queue for the path. If the passed path entry is a member with a next path entry, then the routine invokes the message handler (*i.e.*, conversion routine of the edge) associated with the next path entry. If the passed path entry is a reference without an associated path or is a member without a next path entry, then the routine invokes the demux routine to identify the next path entry. The routine then recursively invokes the messages send routine passing that next path entry. In decision block 701, if the passed path entry has a multiplex list, then the path branches off into multiple paths and the routine continues at block 709, else the routine continues at block 702. A packet may be processed by several different paths. For example, if a certain message is directed to two different output devices, then the message is processed by two different paths. Also, a message may need to be processed by multiple partial paths when searching for a complete path. In decision block 702, if the passed path entry is a member, then either the next path entry indicates a nailed binding or the path needs to be extended and the routine continues at block 704, else the routine continues at block 703. A nailed binding is a binding (e.g., edge and

protocol) is associated with a session. In decision block 703, the passed path entry is a reference and if the passed path entry has an associated path, then the routine can queue the message for the associated path and the routine continues at block 703A, else the routine needs to identify a path and the routine continues at block 707. In block 703A, the routine sets the entry to the first path entry in the path and continues at block 717. In block 704, the routine sets the variable position to the stack list entry of the passed path entry. In decision block 705, the routine sets the variable next entry to the next path entry in the path. If there is a next entry in the path, then the next session and edge of the protocol have been identified and the routine continues at block 706, else the routine continues at block 707. In block 706, the routine passes the message to the message handler of the edge associated with the next entry and then returns. In block 706, the routine invokes the demux routine passing the passed message, the address of the passed path entry, and the passed path entry. The demux routine returns a list of candidate paths for processing of the message. In decision block 708, if at least one candidate path is returned, then the routine continues at block 709, else the routine returns.

Blocks 709-716 illustrate the processing of a list of candidate paths that extend from the passed path entry. In blocks 710-716, the routine loops selecting each candidate path and sending the message to be process by each candidate path. In block 710, the routine sets the next entry to the first path entry of the next candidate path. In decision block 711, if all the candidate paths have not yet been processed, then the routine continues at block 712, else the routine returns. In decision block 712, if the next entry is equal to the passed path entry , then the path is to be extended and the routine continues at block 705, else the routine continues at block 713. The candidate paths include a first path entry that is a reference path entry for new paths or that is the last path entry of a path being extended. In decision block 713, if the number of candidate paths is greater than one, then the routine continues at block 714, else the routine continues at block 718. In decision block 714, if the passed path entry has a multiplex list associated with it, then the routine continues at block 716, else the routine continues at block 715. In block 715, the routine associates the list of candidate path with the multiplex list of the passed path entry and continues at block 716. In block 716, the routine sends the message to the next entry by recursively invoking the message send routine. The routine then loops to block 710 to select the next entry associated with the next candidate path.

Blocks 717-718 are performed when the passed path entry is a reference path entry that has a path associated with it. In block 717, if there is a path associated with the next entry, then the routine continues at block 718, else the routine returns. In block 718, the routine queues the message for the path of the next entry and then returns.

Figure 8 is a flow diagram of the demux routine. This routine is passed the packet (message) that is received, an address structure, and a path entry structure. The demux routine extends a path, creating one if necessary. The routine loops identifying the next binding (edge and protocol) that is to process the message and "nailing" the binding to a session for the message, if not already nailed. After identifying the nailed binding, the routine searches for the shortest path through the nailed binding, creating a path if none exists. In block 801, the routine invokes the initialize demux routine. In blocks 802-810, the routine loops identifying a path or portion of a path for processing the passed message. In decision block 802, if there is a current status, which was returned by the demuxkey routine that was last invoked (*e.g.*, continue, extend, end, or postpone), then the routine continues at block 803, else the routine continues at block 811. In block 803, the routine invokes the get next binding routine. The get next binding routine returns the next binding in the path. The binding is the edge of a protocol. That routine extends the path as appropriate to include the binding. The routine returns a return status of break, binding, or multiple. The return status of binding indicates that the next binding in the path was found by extending the path as appropriate and the routine continues to "nail" the binding to a session as appropriate. The return status of multiple means that multiple trails (*e.g.*, candidate paths) were identified as possible extensions of the path. In a decision block 804, if the return status is break, then the routine continues at block 811. If the return status is multiple, then the routine returns. If the return status is binding, then the routine continues at block 805. In decision block 805, if the retrieved binding is nailed as indicated by being assigned to a session, then the routine loops to block 802, else the routine continues at block 806. In block 806, the routine invokes the get key routine of the edge associated with the binding. The get key routine creates the key for the session associated with the message. If a key cannot be created until subsequent bindings are processed or because the current binding is to be removed, then the get key routine returns a next binding status, else it returns a continue status. In decision block 807, if the return status of the get key routine is next binding, then the

routine loops to block 802 to get the next binding, else the routine continues at block 808. In block 808, the routine invokes the routine get session. The routine get session returns the session associated with the key, creating a new session if necessary. In block 809, the routine invokes the routine nail binding. The routine nail binding retrieves the binding if one is already nailed to the session. Otherwise, that routine nails the binding to the session. In decision block 810, if the nail binding routine returns a status of simplex, then the routine continues at block 811 because only one path can use the session, else the routine loops to block 802. Immediately upon return from the nail binding routine, the routine may invoke a set map routine of the edge passing the session and a map to allow the edge to set its map. In block 811, the routine invokes the find path routine, which finds the shortest path through the binding list and creates a path if necessary. In block 812, the routine invokes the process path hopping routine, which determines whether the identified path is part of a different path. Path hopping occurs when, for example, IP fragments are built up along separate paths, but once the fragments are built up they can be processed by the same subsequent path.

Figure 9 is a flow diagram of the initialize demux routine. This routine is invoked to initialize the local data structures that are used in the demux process and to identify the initial binding. The demux routine finds the shortest path from the initial binding to the final binding. If the current status is demux extend, then the routine is to extend the path of the passed path entry by adding additional path entries. If the current status is demux end, then the demux routine is ending the current path. If the current status is demux continue, then the demux routine is in the process of continuing to extend or in the process of starting a path identified by the passed address. In block 901, the routine sets the local map structure to the map structure in the passed path entry structure. The map structure identifies the output label, the target label, and the target key. In the block 902, the routine initializes the local message structure to the passed message structure and initializes the pointers path and address element to null. In block 903, the routine sets of the variable saved status to 0 and the variable status to demux continue. The variable saved status is used to track the status of the demux process when backtracking to nail a binding whose nail was postponed. In decision block 904, if the passed path entry is associated with a path, then the routine continues at block 905, else the routine continues at block 906. In block 905, the routine sets the variable status to the

status of that path. In block 906, if the variable status is demux continue, then the routine continues at block 907. If the variable status is demux end, then the routine continues at block 908. If the variable status is demux extend, then the routine continues at block 909. In block 907, the status is demux continue, and the routine sets the local pointer path address to the passed address and continues at block 911. In block 908, the status is demux end, and the routine invokes the init end routine and continues at block 911. In block 909, the status is demux extend, and the routine sets the local path address to the address of the path that contains the passed path entry. In block 910, the routine sets the address element and the current binding of the path address pointed to by the local pointer path address to the address entry of the member structure of the passed path entry. In the block 911, the routine sets the local variable status to demux continue and sets the local binding list structure to the binding list structure from the local path address structure. In block 912, the routine sets the local pointer current binding to the address of the current binding pointed to by local pointer path address and sets the local variable postpone to 0. In block 913, the routine sets the function traverse to the function that retrieves the next data in a list and sets the local pointer session to null. The routine then returns.

Figure 10 is a flow diagram of the init end routine. If the path is simplex, then the routine creates a new path from where the other one ended, else the routine creates a copy of the path. In block 1001, if the binding of the passed path entry is simplex (*i.e.*, only one path can be bound to this binding), then the routine continues at block 1002, else the routine continues at block 1003. In block 1002, the routine sets the local pointer path address to point to an address structure that is a copy of the address structure associated with the passed path entry structure with its current binding to the address entry associated with the passed path entry structure, and then returns. In block 1003, the routine sets the local pointer path address to point to an address structure that contains the URL of the path that contains the passed path entry. In block 1004, the routine sets the local pointer element to null to initialize the selection of the bindings. In blocks 1005 through 1007, the routine loops adding all the bindings for the address of the passed path entry that include and are before the passed path entry to the address pointed to by the local path address. In block 1005, the routine retrieves the next binding from the binding list starting with the first. If there is no such binding, then the routine returns,

else the routine continues at block 1006. In block 1006, the routine adds the binding to the binding list of the local path address structure and sets the current binding of the local variable path address. In the block 1007, if the local pointer element is equal to the address entry of the passed path entry, then the routine returns, else the routine loops to block 1005 to select the next binding.

Figure 11 is a flow diagram of a routine to get the next binding. This routine returns the next binding from the local binding list. If there is no next binding, then the routine invokes the routine label map get to identify the list of edges ("trails") that will map the output label to the target label. If only one trail is identified, then the binding list of path address is extended by the edges of the trail. If multiple trails are identified, then a path is created for each trail and the routine returns so that the demux process can be invoked for each created path. In block 1101, the routine sets the local pointer binding to point to the next or previous (as indicated by the traverse function) binding in the local binding list. In block 1102, if a binding was found, then the routine returns an indication that a binding was found, else the routine continues at block 1103. In block 1103, the routine invokes the label map get function passing the output label and target label of the local map structure. The label map get function returns a trail list. A trail is a list of edges from the output label to the target label. In decision block 1104, if the size of the trail list is one, then the routine continues at block 1105, else the routine continues at block 1112. In blocks 1105-1111, the routine extends the binding list by adding a binding data structure for each edge in the trail. The routine then sets the local binding to the last binding in the binding list. In block 1105, the routine sets the local pointer current binding to point to the last binding in the local binding list. In block 1106, the routine sets the local variable temp trail to the trail in the trail list. In block 1107, the routine extends the binding list by temp trail by adding a binding for each edge in the trail. These bindings are not yet nailed. In block 1108, the routine sets the local binding to point to the last binding in the local binding list. In decision block 1109, if the local binding does not have a key for a session and the local map has a target key for a session, then the routine sets the key for the binding to the target key of the local map and continues at block 1110, else the routine loops to block 1101 to retrieve the next binding in path. In block 1110, the routine sets the key of the local binding to the target key of the local map. In block 1111, the routine sets the target key of the local map to null and

then loop to block 1101 to return the next binding. In decision block 1112, if the local session is set, then the demultiplexing is already in progress and the routine returns a break status. In block 1113, the routine invokes a prepare multicast paths routine to prepare a path entry for each trail in the trail list. The routine then returns a multiple status.

Figure 12 is a flow diagram of the get key routine. The get key routine invokes an edge's demux-key routine to retrieve a key for the session associated with the message. The key identifies the session of a protocol. The demux key routine creates the appropriate key for the message. The demux key routine returns a status of remove, postpone, or other. The status of remove indicates that the current binding should be removed from the path. The status of postpone indicates that the demux key routine cannot create the key because it needs information provided by subsequent protocols in the path. For example, a TCP session is defined by a combination of a remote and local port address and an IP address. Thus, the TCP protocol postpones the creating of a key until the IP protocol identifies the IP address. The get key routine returns a next binding status to continue at the next binding in the path. Otherwise, the routine returns a continue status. In block 1201, the routine sets the local edge to the edge of the local binding (current binding) and sets the local protocol to the protocol of the local edge. In block 1202, the routine invokes the demux key routine of the local edge passing the local message, local path address, and local map. The demux key routine sets the key in the local binding. In decision block 1203, if the demux key routine returns a status of remove, then the routine continues at block 1204. If the demux key routine returns a status of postpone, then the routine continues at block 1205, else the routine continues at block 1206. In block 1204, the routine sets the flag of the local binding to indicate that the binding is to be removed and continues at block 1206. In block 1205, the routine sets the variable traverse to the function to list the next data, increments the variable postpone, and then returns a next binding status. In blocks 1206-1214, the routine processes the postponing of the creating of a key. In blocks 1207-1210, if the creating of a key has been postponed, then the routine indicates to backtrack on the path, save the demux status, and set the demux status to demux continue. In blocks 1211-1213, if the creating of a key has not been postponed, then the routine indicates to continue forward in the path and to restore any saved demux status. The save demux status is the status

associated by the binding where the backtrack started. In decision block 1206, if the variable postpone is set, then the routine continues at block 1207, else the routine continues at block 1211. In block 1207, the routine decrements the variable postpone and sets the variable traverse to the list previous data function. In decision block 1208, if the variable saved status is set, then the routine continues at block 1210, else the routine continues at block 1209. The variable saved status contains the status of the demux process when the demux process started to backtrack. In block 1209, the routine sets the variable saved status to the variable status. In block 1210, the routine sets the variable status to demux continue and continues at block 1214. In block 1211, the routine sets the variable traverse to the list next data function. In decision block 1212, if the variable saved status in set, then the routine continues at block 1213, else the routine continues at block 1214. In block 1213, the routine sets the variable status to the variable saved status and sets the variable saved status to 0. In decision block 1214, if the local binding indicates that it is to be removed, then the routine returns a next binding status, else the routine returns a continue status.

Figure 13 is a flow diagram of the get session routine. This routine retrieves the session data structure, creating a data structure session if necessary, for the key indicated by the binding. In block 1301, the routine retrieves the session from the session table of the local protocol indicated by the key of the local binding. Each protocol maintains a mapping from each key to the session associated with the key. In decision block 1302, if there is no session, then the routine continues at block 1303, else the routine returns. In block 1303, the routine creates a session for the local protocol. In block 1304, the routine initializes the key for the local session based on the key of the local binding. In block 1305, the routine puts the session into the session table of the local protocol. In block 1306, the routine invokes the create session function of the protocol to allow the protocol to initialize its context and then returns.

Figure 14 is a flow diagram of the nail binding routine. This routine determines whether a binding is already associated with ("nailed to") the session. If so, the routine returns that binding. If not, the routine associates the binding with the session. The routine returns a status of simplex to indicate that only one path can extend through the nailed binding. In decision block 1401, if the binding table of the session contains an entry for the edge, then the routine continues at block 1402, else the routine

continues at block 1405. In block 1402, the routine sets the binding to the entry from the binding table of the local session for the edge. In block 1403, the routine sets the current binding to point to the binding from the session. In block 1404, if the binding is simplex, then the routine returns a simplex status, else the routine returns. Blocks 1405 through 1410 are performed when there is no binding in the session for the edge. In block 1405, the routine sets the session of the binding to the variable session. In block 1406, the routine sets the key of the binding to the key from the session. In block 1407, the routine sets the entry for the edge in the binding table of the local session to the binding. In block 1408, the routine invokes the create binding function of the edge of the binding passing the binding so the edge can initialize the binding. If that function returns a status of remove, the routine continues at block 1409. In block 1409, the routine sets the binding to be removed and then returns.

Figure 15 is a flow diagram of the find path routine. The find path routine identifies the shortest path through the binding list. If no such path exists, then the routine extends a path to include the binding list. In decision block 1501, if the binding is simplex and a path already goes through this binding (returned as an entry), then the routine continues at block 1502, else the routine continues at block 1503. In block 1502, the routine sets the path to the path of the entry and returns. In block 1503, the routine initializes the pointers element and short entry to null. In block 1504, the routine sets the path to the path of the passed path entry. If the local path is not null and its status is demux extend, then the routine continues at block 1509, else the routine continues at block 1505. In blocks 1505-1508, the routine loops identifying the shortest path through the bindings in the binding list. The routine loops selecting each path through the binding. The selected path is eligible if it starts at the first binding in the binding list and the path ends at the binding. The routine loops setting the short entry to the shortest eligible path found so far. In block 1505, the routine sets the variable first binding to the first binding in the binding list of the path address. In block 1506, the routine selects the next path (entry) in the path list of the binding starting with the first. If a path is selected (indicating that there are more paths in the binding), then the routine continues at block 1507, else the routine continues at block 1509. In block 1507, the routine determines whether the selected path starts at the first binding in the binding list, whether the selected path ends at the last binding in the binding list, and whether the number of path

entries in the selected path is less than the number of path entries in the shortest path selected so far. If these conditions are all satisfied, then the routine continues at block 1508, else the routine loops to block 1506 to select the next path (entry). In block 1508, the routine sets the shortest path (short entry) to the selected path and loops to block 1506 to select the next path through the binding. In block 1509, the routine sets the selected path (entry) to the shortest path. In decision block 1510, if a path has been found, then the routine continues at block 1511, else the routine continues at block 1512. In block 1511, the routine sets the path to the path of the selected path entry and returns. Blocks 1512-1516 are performed when no paths have been found. In block 1512, the routine sets the path to the path of the passed path entry. If the passed path entry has a path and its status is demux extend, then the routine continues at block 1515, else the routine continues at block 1513. In block 1513, the routine creates a path for the path address. In block 1514, the routine sets the variable element to null and sets the path entry to the first element in the stack list of the path. In block 1515, the routine sets the variable element to be address entry of the member of the passed path entry and sets the path entry to the passed path entry. In block 1516, the routine invokes the extend path routine to extend the path and then returns. The extend path routine creates a path through the bindings of the binding list and sets the path status to the current demux status.

Figure 16 is a flow diagram of the process of path hopping routine. Path hopping occurs when the path through the binding list is not the same path as that of the passed path entry. In decision block 1601, if the path of the passed path entry is set, then the routine continues at block 1602, else the routine continues at block 1609. In decision block 1602, if the path of the passed path entry is equal to the local path, then the routine continues at 1612, else path hopping is occurring and the routine continues at block 1603. In blocks 1603-1607, the routine loops positioning pointers at the first path entries of the paths that are not at the same binding. In block 1603, the routine sets the variable old stack to the stack list of the path of the passed path entry. In block 1604, the routine sets the variable new stack to the stack list of the local path. In block 1605, the routine sets the variable old element to the next element in the old stack. In block 1606, the routine sets the variable element to the next element in the new stack. In decision block 1607, the routine loops until the path entry that is not in the same binding is located. In decision block 1608, if the variable old entry is set, then the routine is not at the end of

the hopped-from path and the routine continues at block 1609, else routine continues at block 1612. In block 1609, the routine sets the variable entry to the previous entry in the hopped-to path. In block 1610, the routine sets the path of the passed path entry to the local path. In block 1611, the routine sets the local entry to the first path entry of the stack list of the local path. In block 1612, the routine inserts an entry into return list and then returns.

Although the conversion system has been described in terms of various embodiments, the invention is not limited to these embodiments. Modification within the spirit of the invention will be apparent to those skilled in the art. For example, a conversion routine may be used for routing a message and may perform no conversion of the message. Also, a reference to a single copy of the message can be passed to each conversion routine or demuxkey routine. These routines can advance the reference past the header information for the protocol so that the reference is positioned at the next header. After the demux process, the reference can be reset to point to the first header for processing by the conversion routines in sequence. The scope of the invention is defined by the claims that follow.

CLAIMS

1. A method in a computer system for processing packets of a message, the method comprising:

receiving a packet of the message;

identifying a component for processing the received packet;

receiving from the identified component an identifier of state information associated with the message;

retrieving state information associated with the received identifier; and

providing the retrieved state information and the received packet to the identified component for processing of the received packet.

2. The method of claim 1 including requesting that the identified component provide an identifier of state information.

3. The method of claim 1 wherein the providing includes invoking a message handler of the component.

4. The method of claim 1 wherein the receiving of the identifier is in response to invoking a routine of the component.

5. The method of claim 1 wherein the component is a protocol.

6. A method in a computer system for processing packets of a message, the method comprising:

receiving a packet of the message and a data type of the message;

identifying a component that is capable of processing a packet of the indicated data type; and

providing the received packet to the identified component for processing.

7. The method of claim 6 including

receiving from the identified component an identifier of state information associated with the message;

retrieving state information associated with the received identifier; and

providing the retrieved state information along with the received packet to the identified component for processing.

8. The method of claim 6 wherein the receiving of the data type includes requesting the data type from a component that previously processed the packet.

9. The method of claim 6 wherein the component is a protocol with an edge.

10. A component in a computer system for message handling, the message having packets, comprising:

for each of a plurality of processing sub-components,

a state key function for generating an identifier of state information based on a packet; and

a message handler function for processing a packet of the message using state information identified by the identifier; and

a session function for generating initial state information for a message that is associated with a generated identifier; and

11. The component of claim 10 wherein the component is a protocol and the sub-components are edges of the protocol.

12. The component of claim 10 wherein the message handler function updates the state information.

13. The component of claim 10 wherein each sub-component is for processing messages of different data types.

14. The component of claim 10 wherein multiple messages share the same state information.

15. The component of claim 10 wherein multiple sub-components share the same state information.

16. The component of claim 10 wherein the message handler function is passed state information.

17. The component of claim 10 wherein the state information is stored external to the component.

18. The component of claim 10 wherein the message handler converts data of a packet.

19. A computer-readable medium containing a data structure comprising a sequence of path entries, each path entry having a reference to state information for a message and a reference to a message handler for processing a message wherein the message handlers are to be invoked in the order of the sequence.

20. The computer-readable medium of claim 19 wherein the data structure includes an indication of type of data to be output by the sequence of message handlers.

21. The computer-readable medium of claim 19 wherein a path entry includes an indication of type of data output by the message handler.

22. A method in a computer system for processing a message, the message having a plurality of headers, the method comprising:

analyzing the headers of the message to identify a sequence of message handlers for processing the message; and

invoking some of the identified message handlers passing the message.

23. The method of claim 22 wherein the analyzing includes identifying a data type associated with a header.

24. The method of claim 22 including locating state information based on information in a header.

25. The method of claim 24 wherein the analyzing includes identifying a state indicator routine for each message handler and the locating of state information includes invoking the identified state indicator routine passing the message wherein the state indicator routine advances a reference past the header associated with the state indicator routine.

26. The method of claim 22 wherein the invoking is under control of a single thread of execution.

27. The method of claim 22 wherein analyzing includes identifying multiple sequences of message handlers.

28. The method of claim 22 wherein each invoked message handler advances a reference past its header in the message.

29. A computer-readable medium that implements the method of claim 1.

30. A computer-readable medium that implements the method of claim 6.

31. A computer-readable medium containing a data structure that includes:

a plurality of item fields, each item field identifying a conversion routine for processing a message in sequence; and

a type field specifying that each item field contains the identifier of a conversion routine.

32. The computer-readable medium of claim 31 wherein an item field identifies a protocol and edge.

33. The computer-readable medium of claim 31 wherein an item field includes an identifier of state information for the conversion routine.

34. The computer-readable medium of claim 31 wherein the data structure is a URL.

METHOD AND SYSTEM FOR DATA DEMULTIPLEXING

ABSTRACT

A method and system for demultiplexing packets of a message is provided. The demultiplexing system receives packets of a message, identifies a sequence of message handlers for processing the message, identifies state information associated with the message for each message handler, and invokes the message handlers passing the message and the associated state information. The system identifies the message handlers based on the initial data type of the message and a target data type. The identified message handlers effect the conversion of the data to the target data type through various intermediate data types.

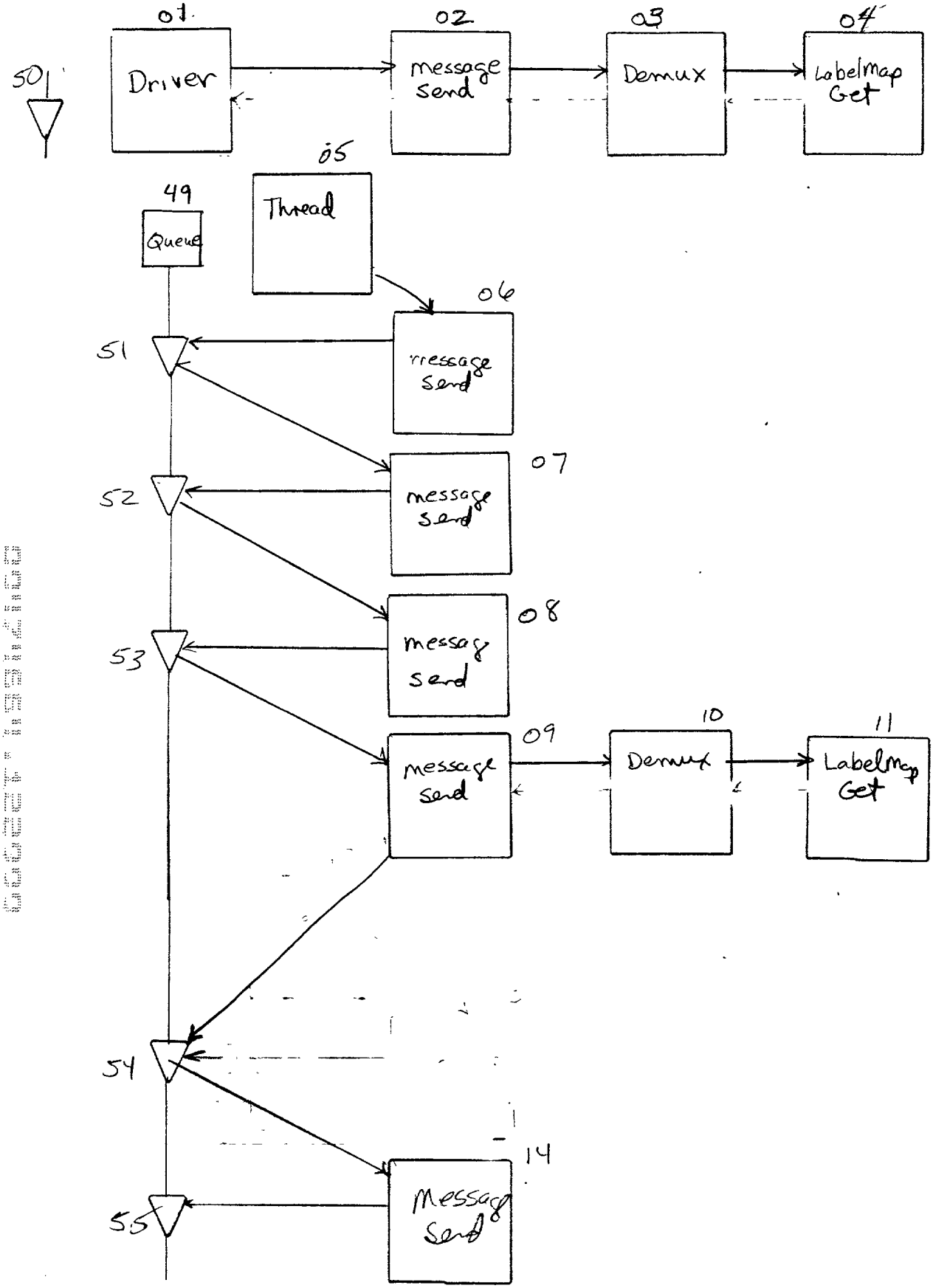


Fig 1

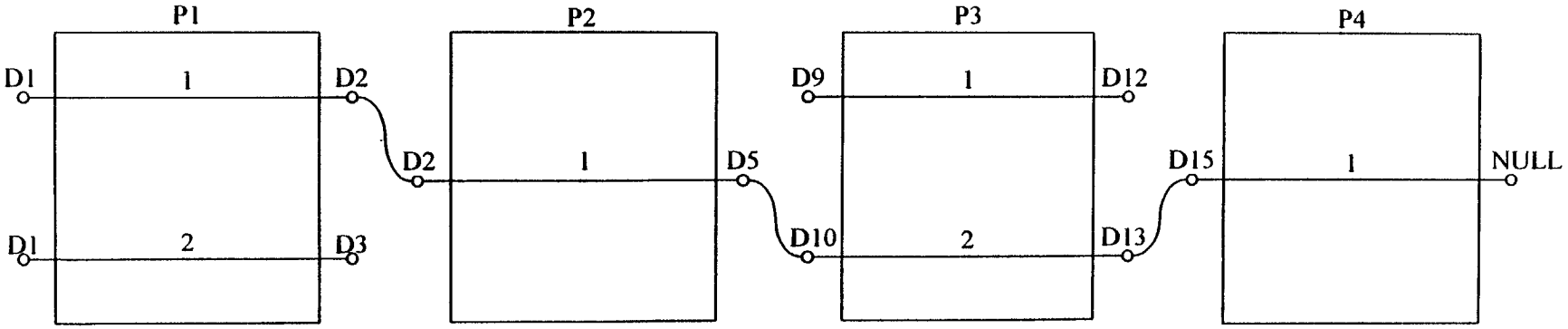


Fig. 2

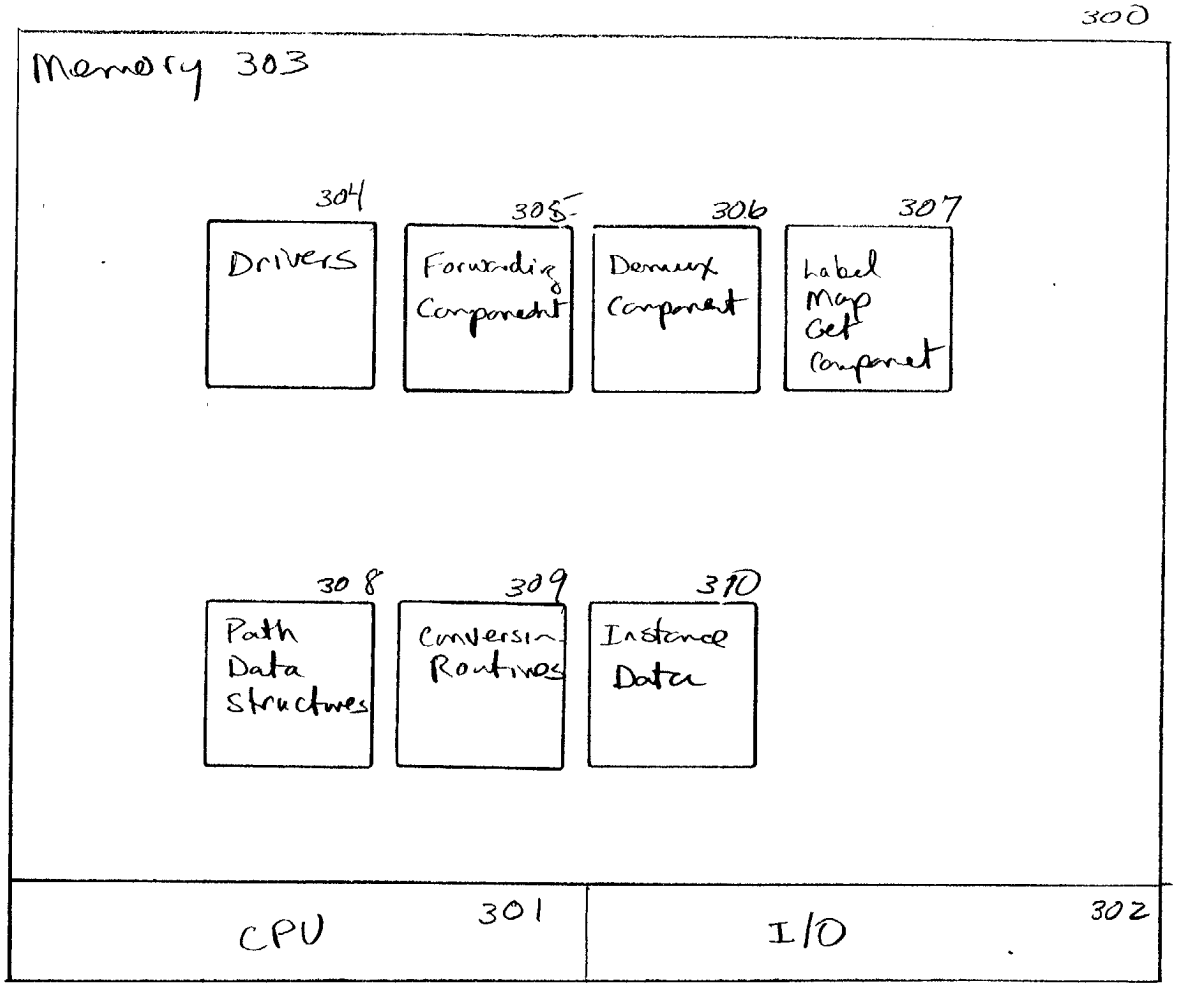


Figure 3

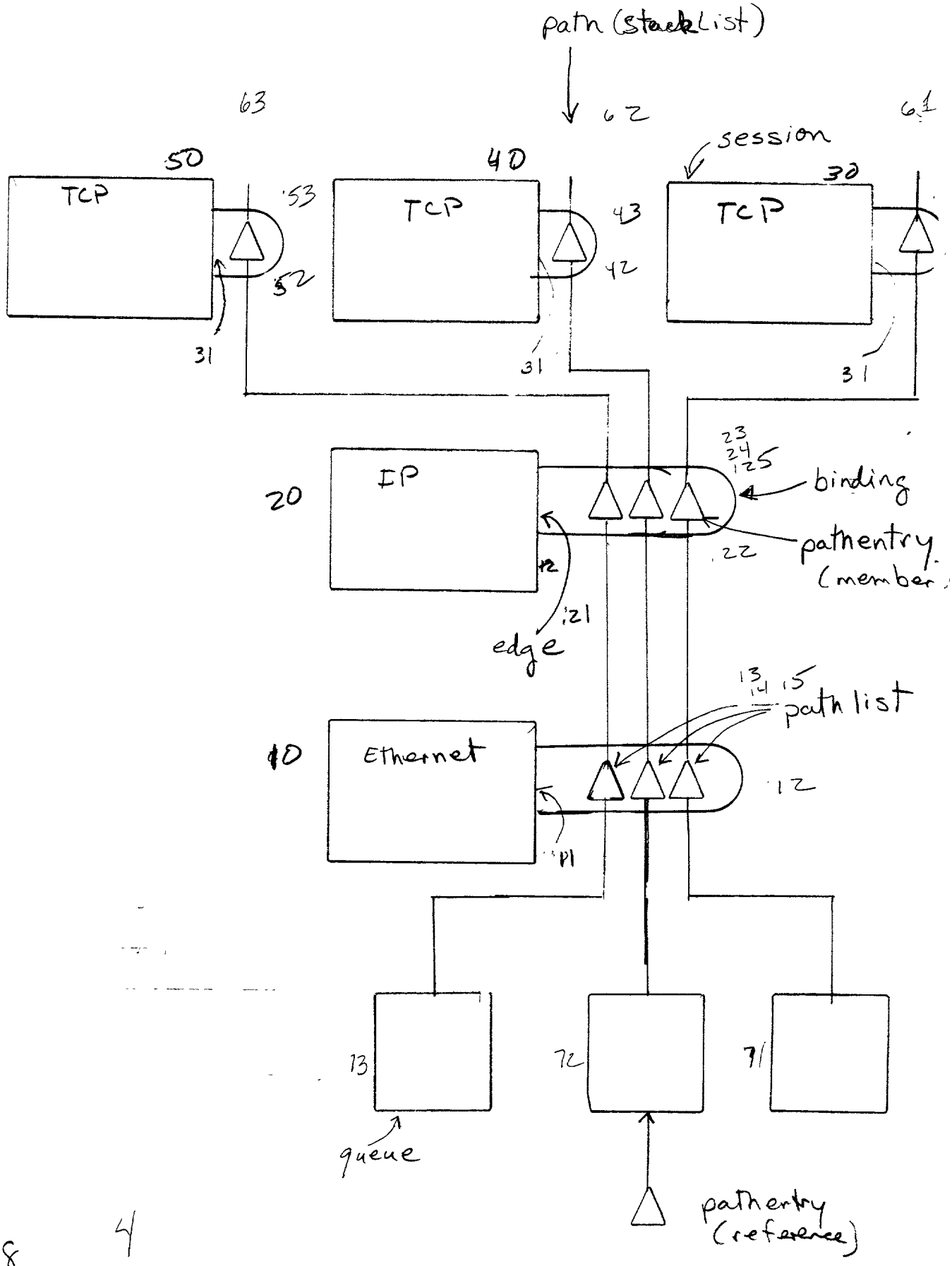


Fig 4

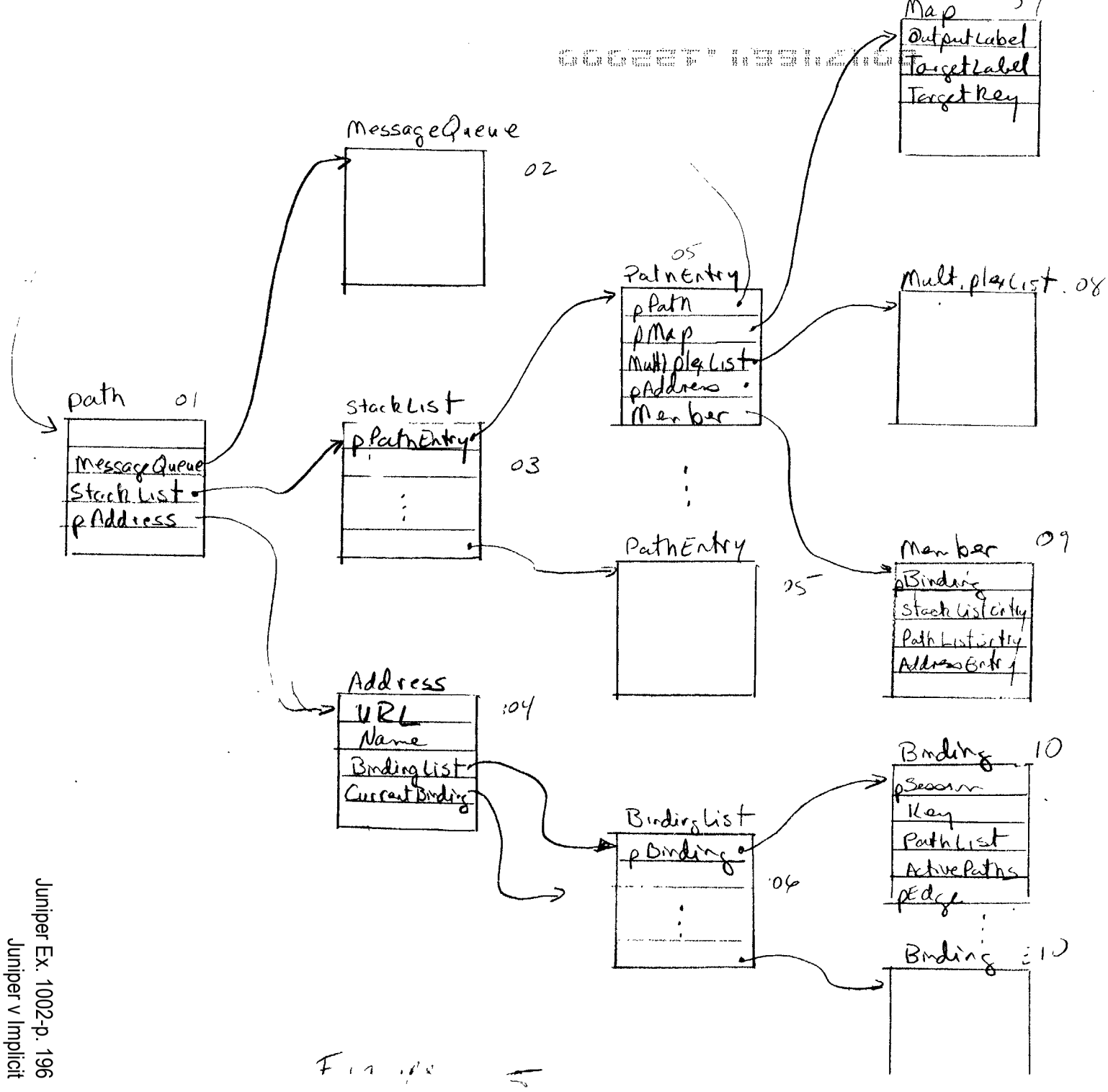


Fig. 5

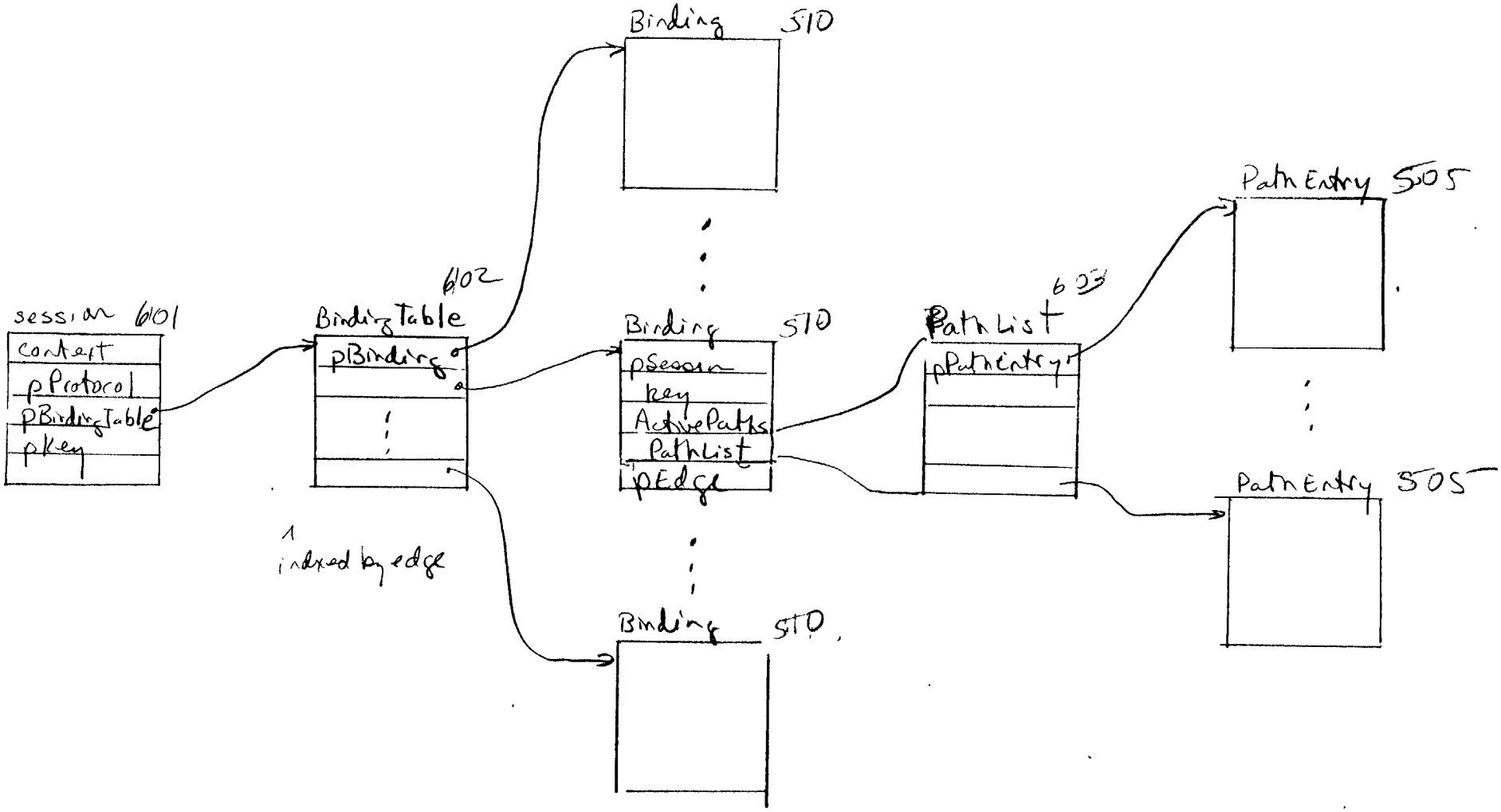


Figure 6

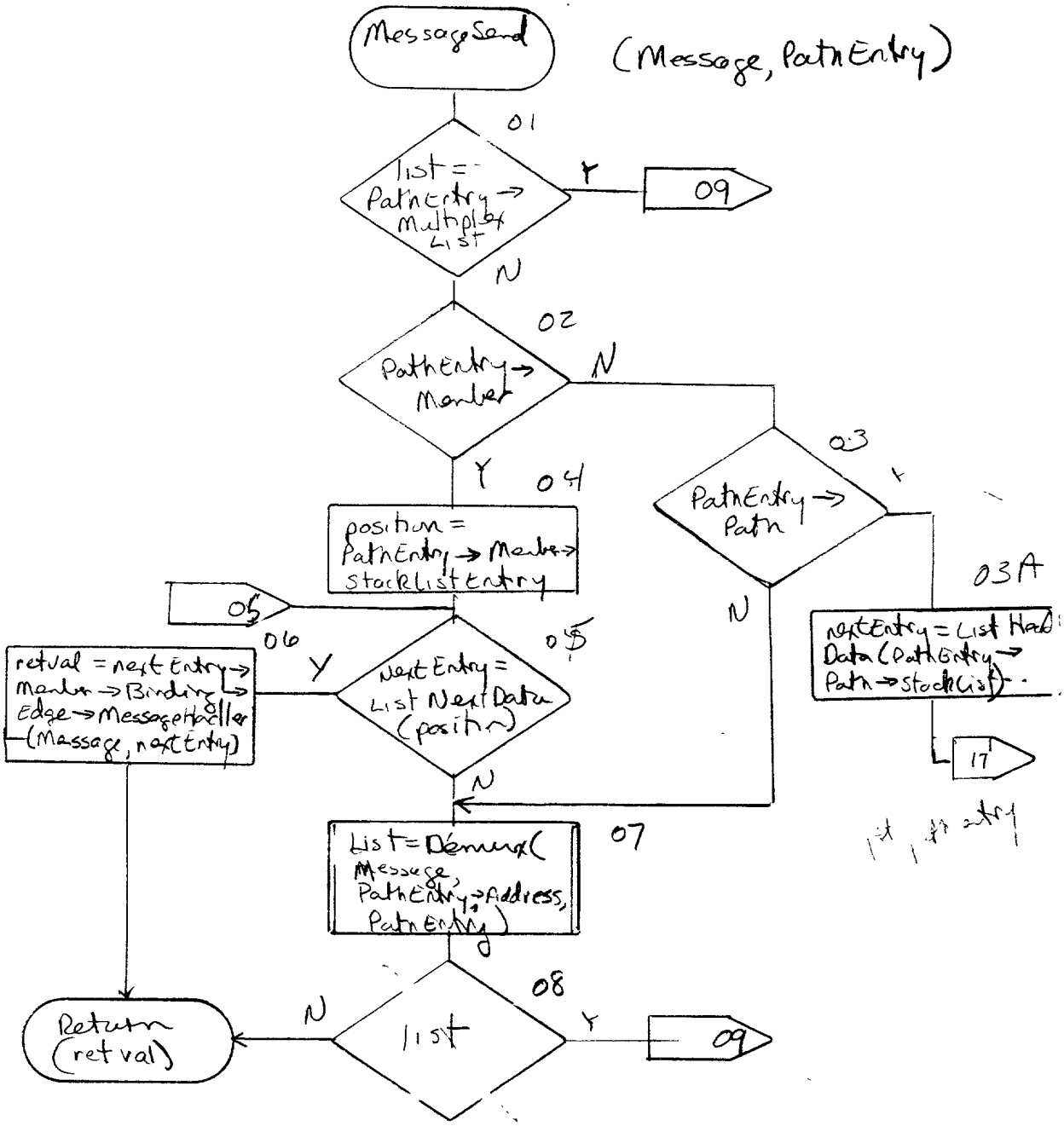

MessageSend
(Message, PathEntry)
01
list = PathEntry → Multiplex List
Y
09
N
02
PathEntry → Member
N
Y
04
position = PathEntry → Member → StackListEntry
03
PathEntry → Path
Y
03A
nextEntry = List Head Data (PathEntry → Path → StackList)
17
N
05
06
retval = nextEntry → Member → Binding → Edge → MessageHandler (Message, nextEntry)
Y
05
NextEntry = List NextData (position)
N
List = Demux(Message, PathEntry → Address, PathEntry)
07
08
list
N
Y
09
Return (retval)

Figure 7A

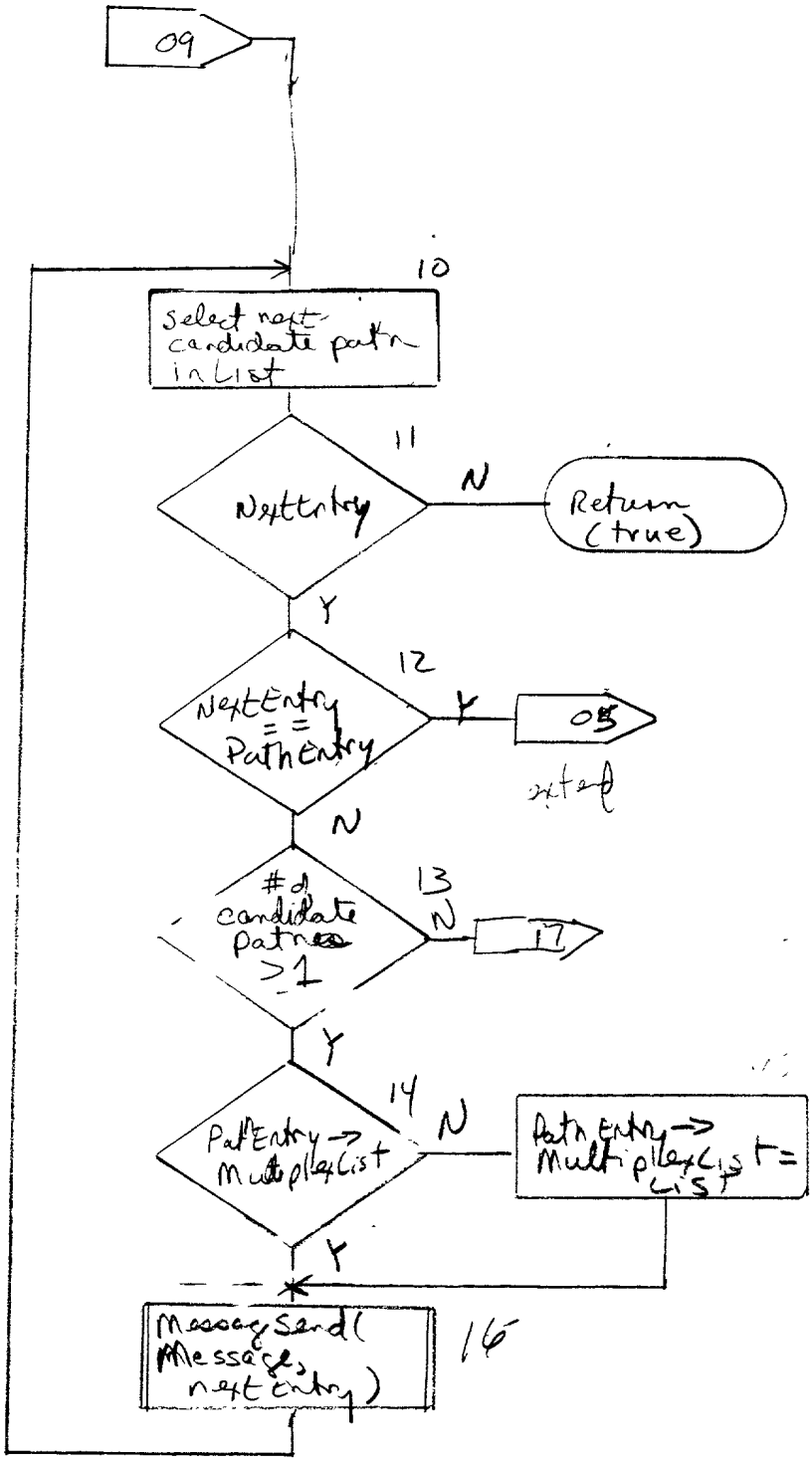


Figure 7B

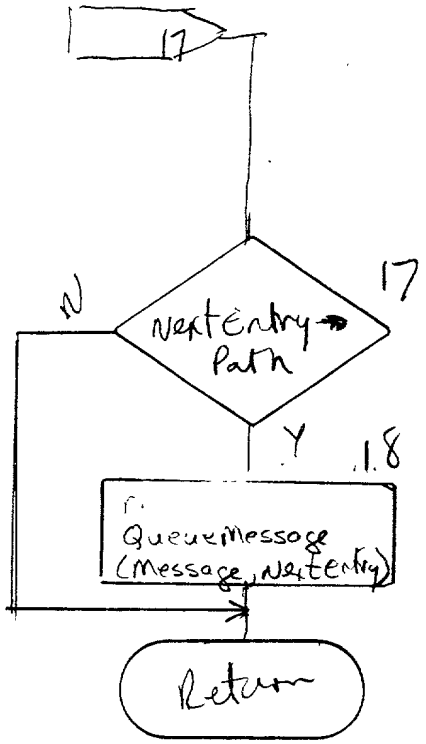


Figure 7C

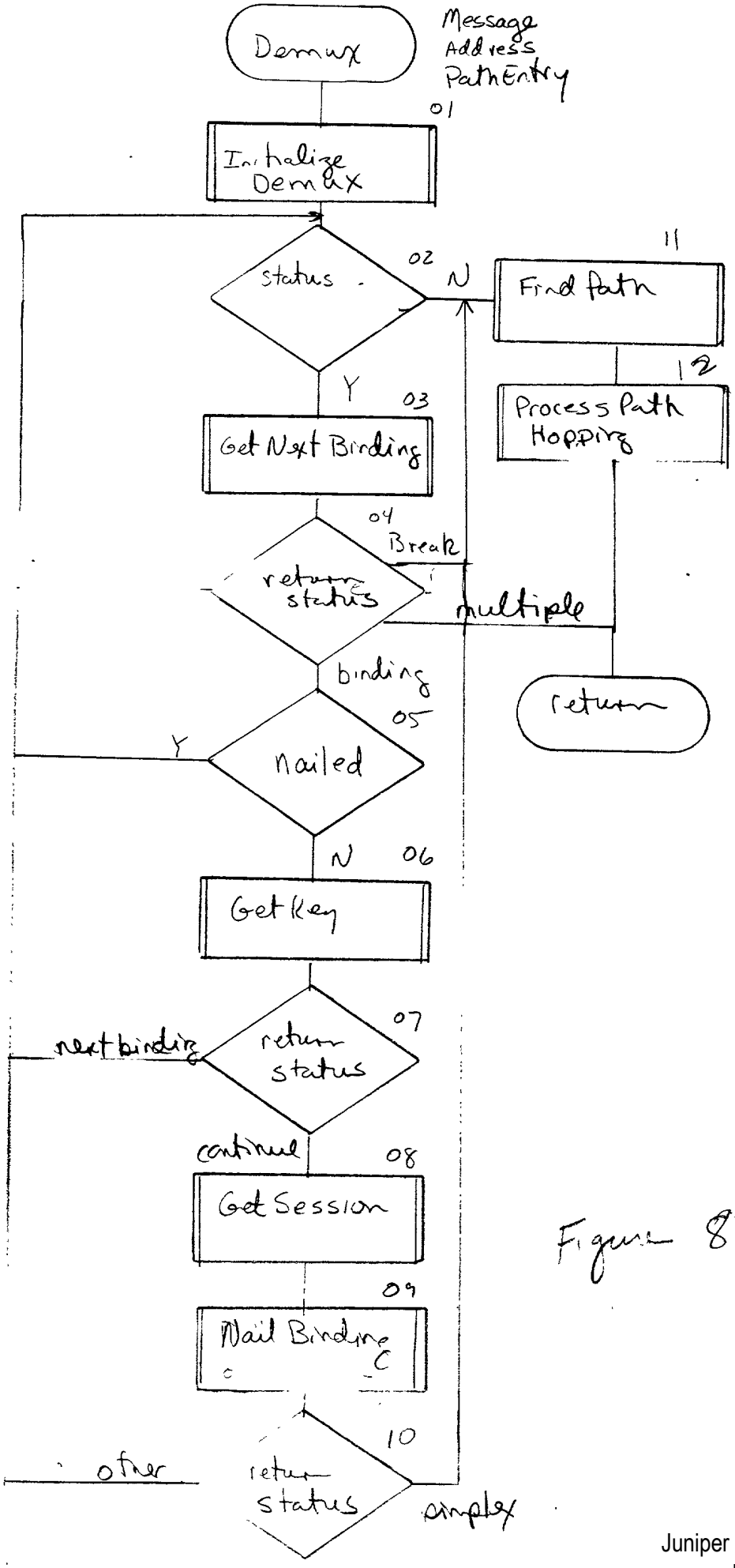


Figure 8

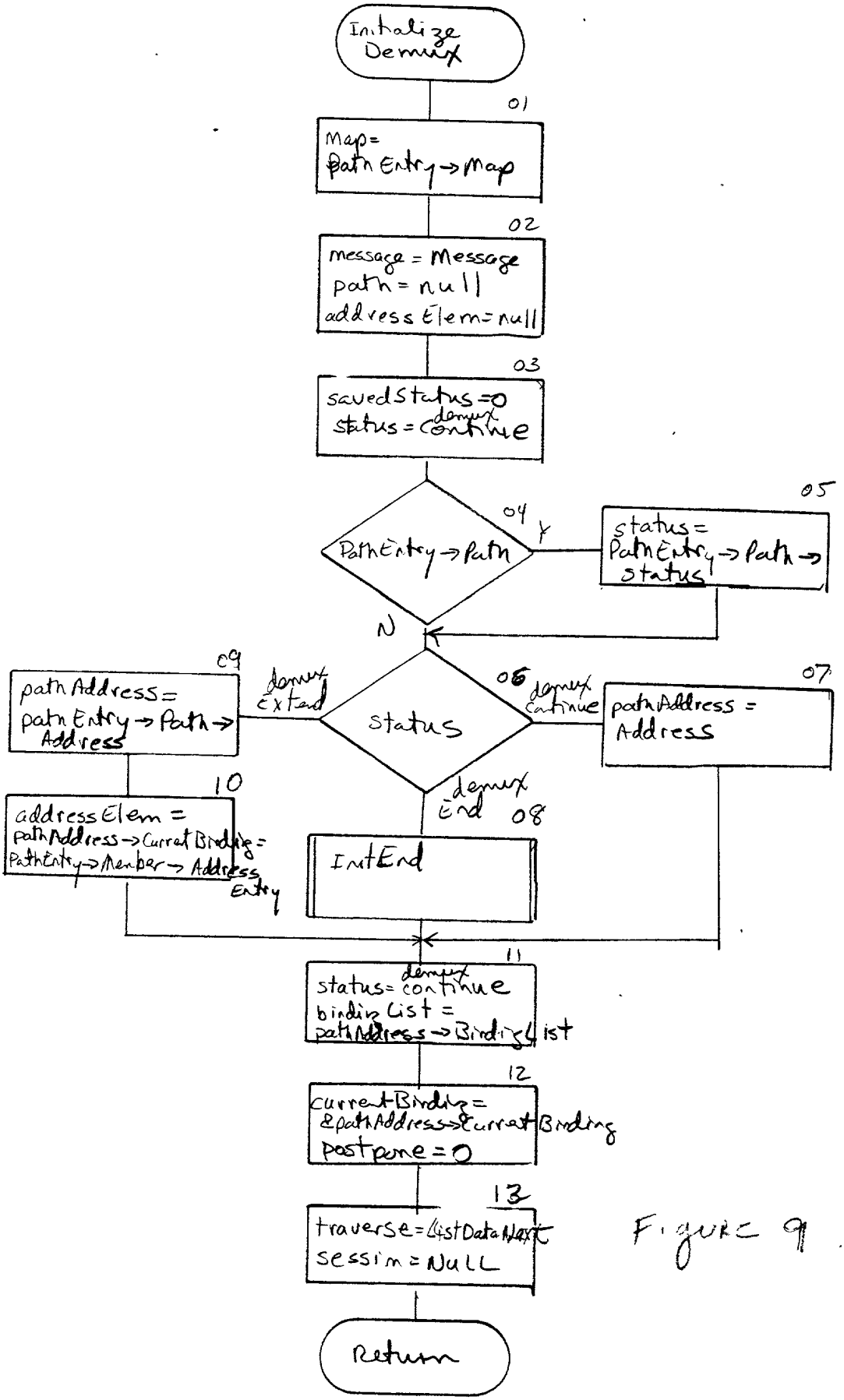


FIGURE 9

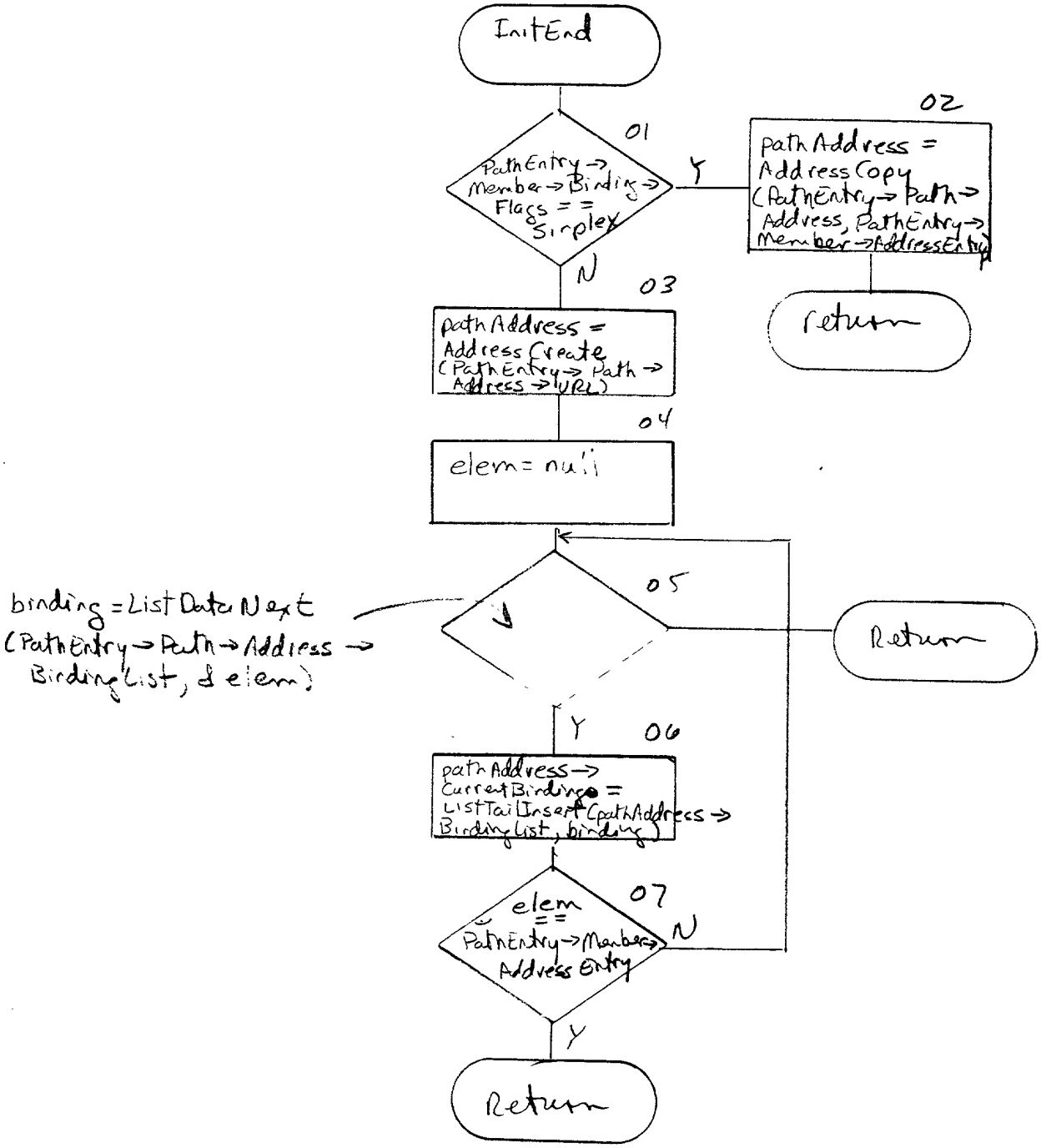


Figure 10

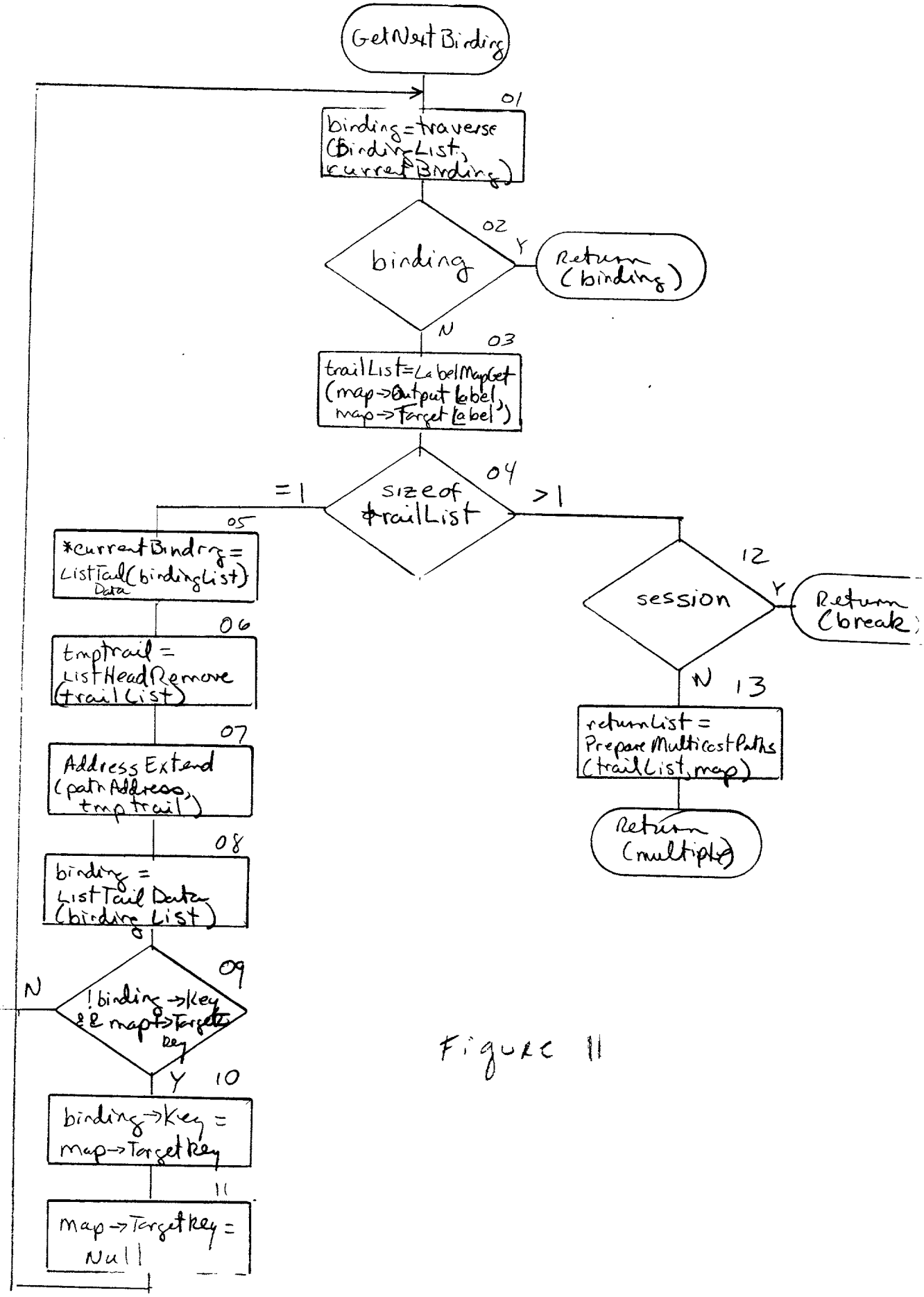


Figure 11

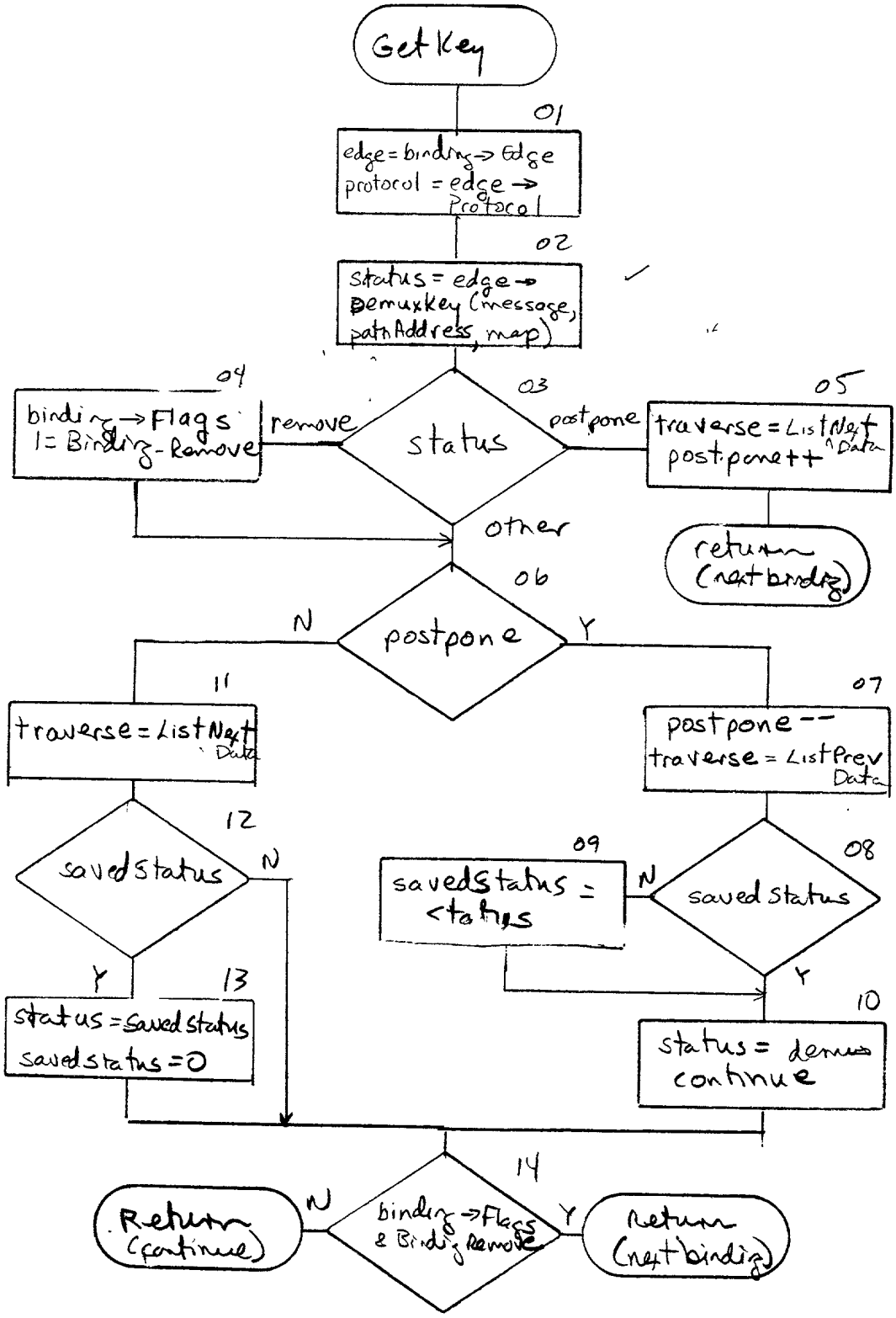


Figure 12

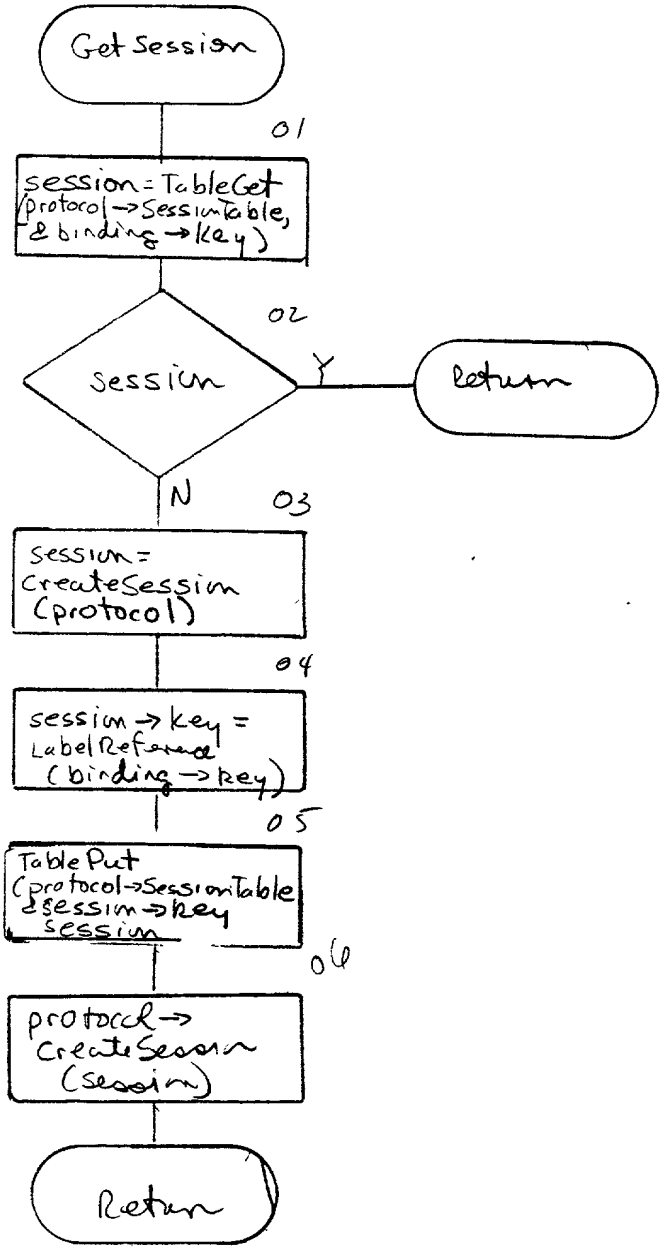


Figure 13

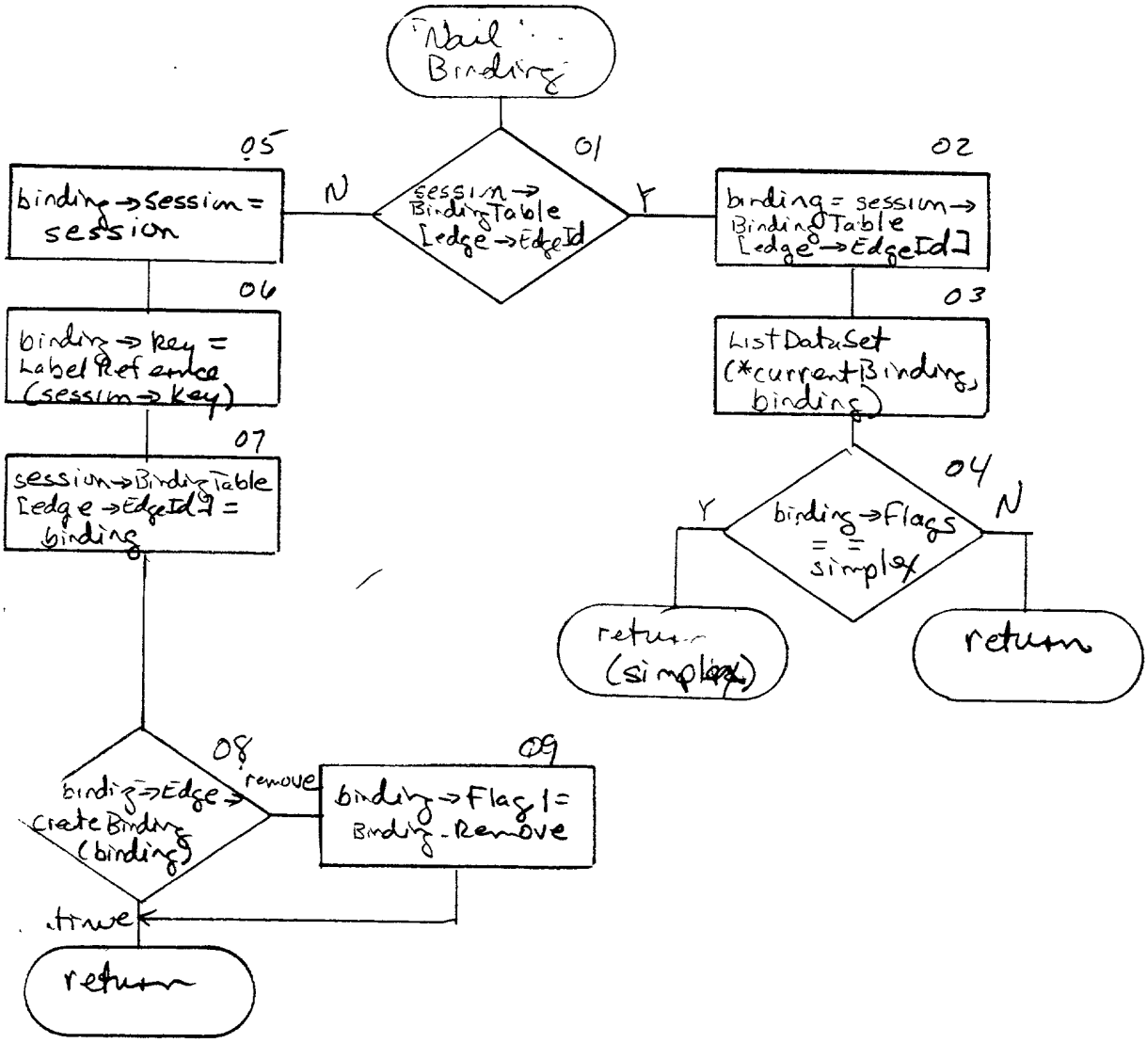
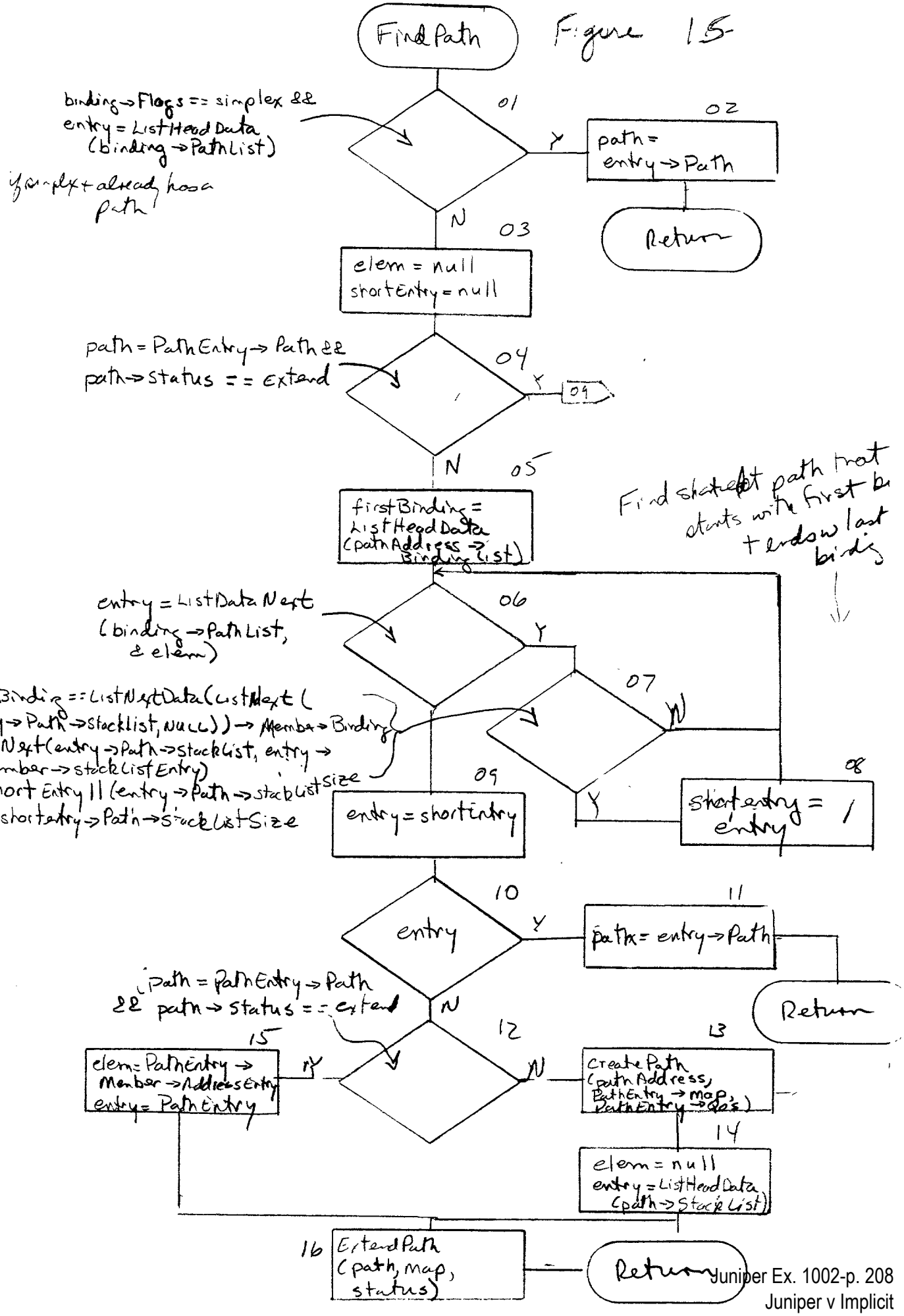
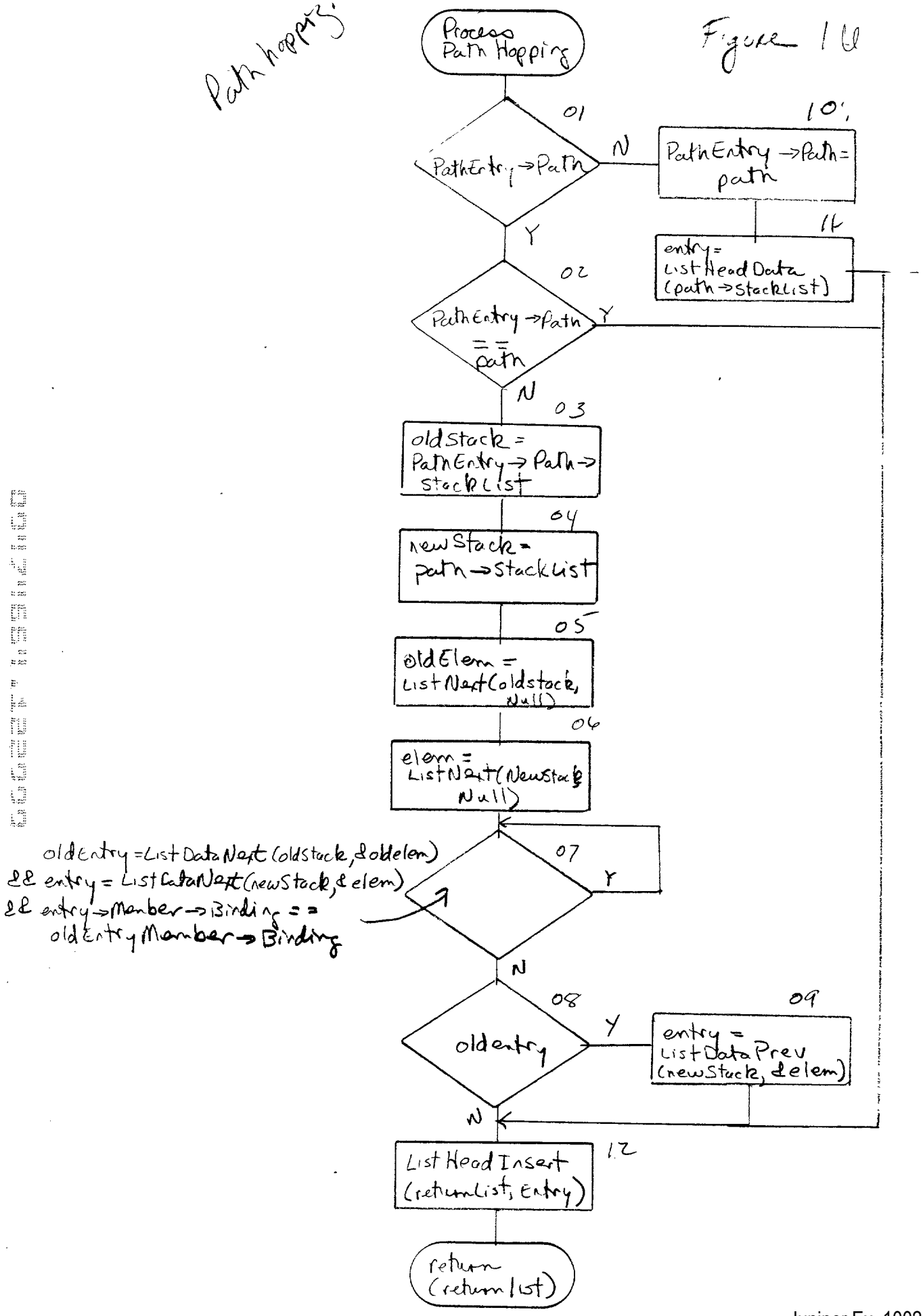


Figure 14



Path hopping

Figure 16



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01-03-00 A

PTO/SB/05 (4/98)

UTILITY PATENT APPLICATION TRANSMITTAL

(Only for nonprovisional applications under 37 CFR § 1.53(b))

Attorney Docket No.	294518007US
First Inventor or Application Identifier	Edward Balassanian
Title	METHOD AND SYSTEM FOR DATA MULTIPLEXING
Express Mail Label No.	EL404931246US

09/474,964 U.S. PTO 12/29/99

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO: Box Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

1. [ ] Authorization for Extensions & Fee Transmittal *(Submit an original and a duplicate for fee processing)*
2. [X] Specification [Total Pages] 26 *(preferred arrangement set forth below)*
   - Descriptive Title of the Invention
   - Cross References to Related Applications
   - Statement Regarding Fed sponsored R & D
   - Reference to Microfiche Appendix
   - Background of the Invention
   - Brief Summary of the Invention
   - Brief Description of the Drawings *(if filed)*
   - Detailed Description
   - Claim(s)
   - Abstract of the Disclosure
3. [X] Drawing(s) *(35 USC 113)* [Total Sheets] 18
4. Oath or Declaration [Total Pages]
   a. [ ] Newly executed (original or copy)
   b. [ ] Copy from a prior application (37 CFR 1.63(d)) *(for continuation/divisional with Box 16 completed)*
      i. [ ] DELETION OF INVENTOR(S) Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b)

**NOTE FOR ITEMS 1 & 13: IN ORDER TO BE ENTITLED TO PAY SMALL ENTITY FEES, A SMALL ENTITY STATEMENT IS REQUIRED (37 C.F.R. § 1.27), EXCEPT IF ONE FILED IN A PRIOR APPLICATION IS RELIED UPON (37 C.F.R. § 1.28).*

5. [ ] Microfiche Computer Program *(Appendix)*
6. Nucleotide and/or Amino Acid Sequence Submission *(if applicable, all necessary)*
   a. [ ] Computer-Readable Copy
   b. [ ] Paper Copy (identical to computer copy)
   c. [ ] Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

7. [ ] Assignment Papers (cover sheet & document(s))
8. [ ] 37 CFR 3.73(b) Statement *(when there is an assignee)* [ ] Power of Attorney
9. [ ] English Translation Document *(if applicable)*
10. [ ] Information Disclosure Statement (IDS)/PTO-1449 [ ] Copies of IDS Citations
11. [ ] Preliminary Amendment
12. [X] Return Receipt Postcard
12. [ ] Small Entity Statement(s) [ ] Statement filed in prior application, Status still proper and desired
14. [ ] Certified Copy of Priority Document(s) *(if foreign priority is claimed)*
15. [ ] Other: _____

16. **If a CONTINUING APPLICATION,** *check appropriate box and supply the requisite information below and in a preliminary amendment*

[ ] Continuation [ ] Divisional [ ] Continuation-In-Part (CIP) of prior Application No.: _____

Prior application information: Examiner _____ *Group / Art Unit* _____

For CONTINUATION or DIVISIONAL apps only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 4b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

[ ] Claims the benefit of Provisional Application No. _____

17. CORRESPONDENCE ADDRESS

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Attn: Maurice J. Pirio

Respectfully submitted,

TYPED or PRINTED NAME Maurice J. Pirio REGISTRATION NO. 33,273

SIGNATURE Maurice J Pirio Date 12/29/99

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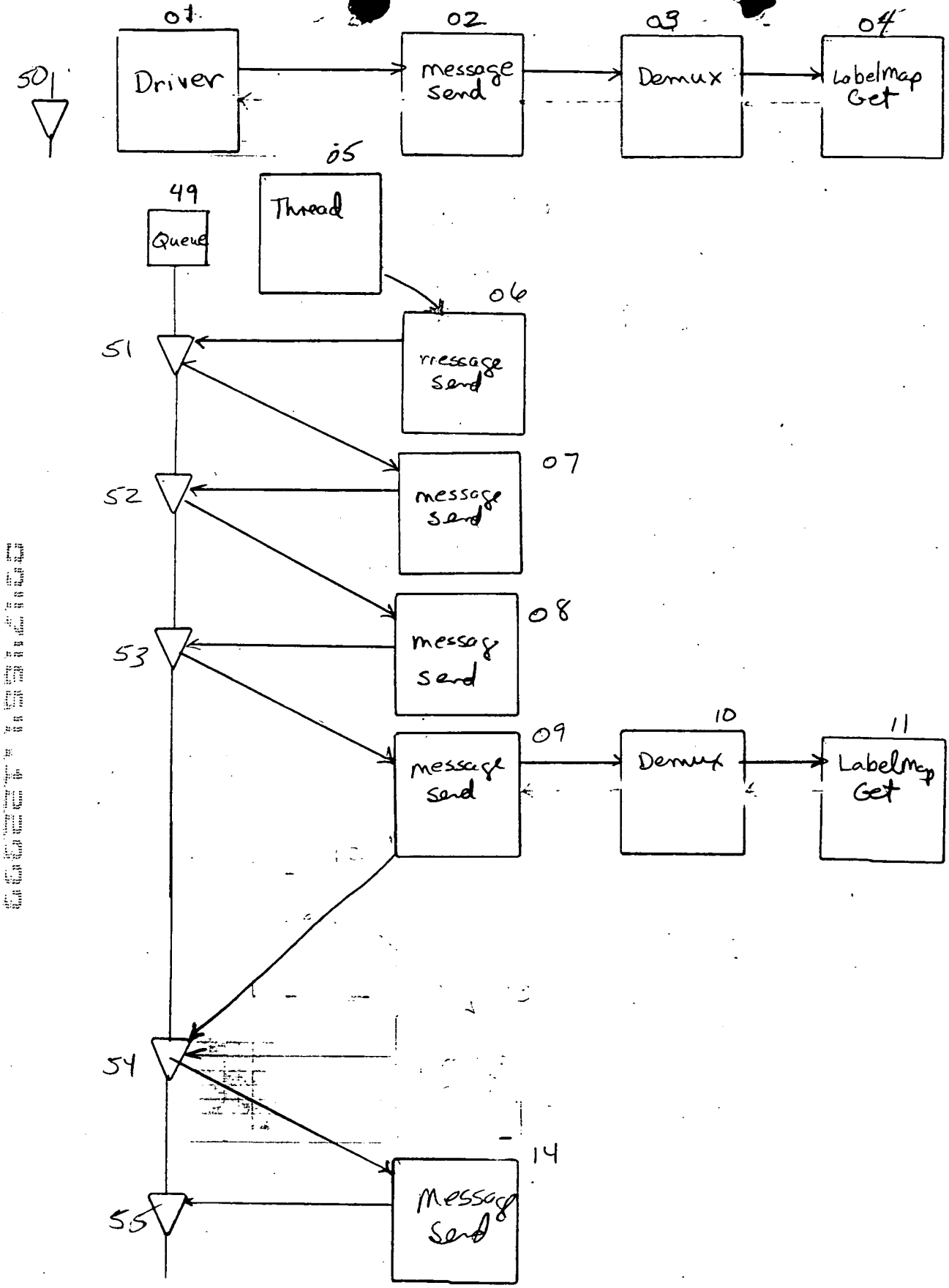


Fig 1

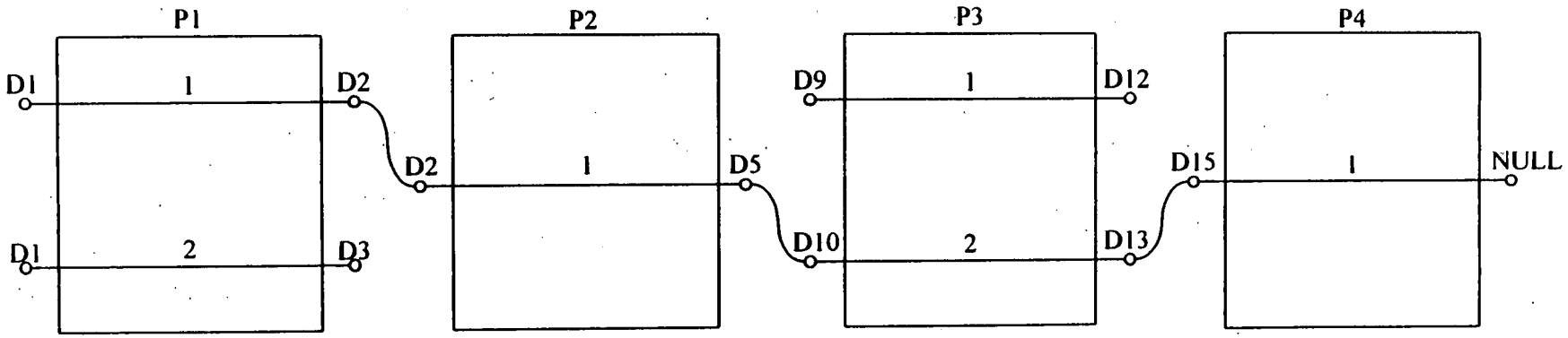


Fig. 2

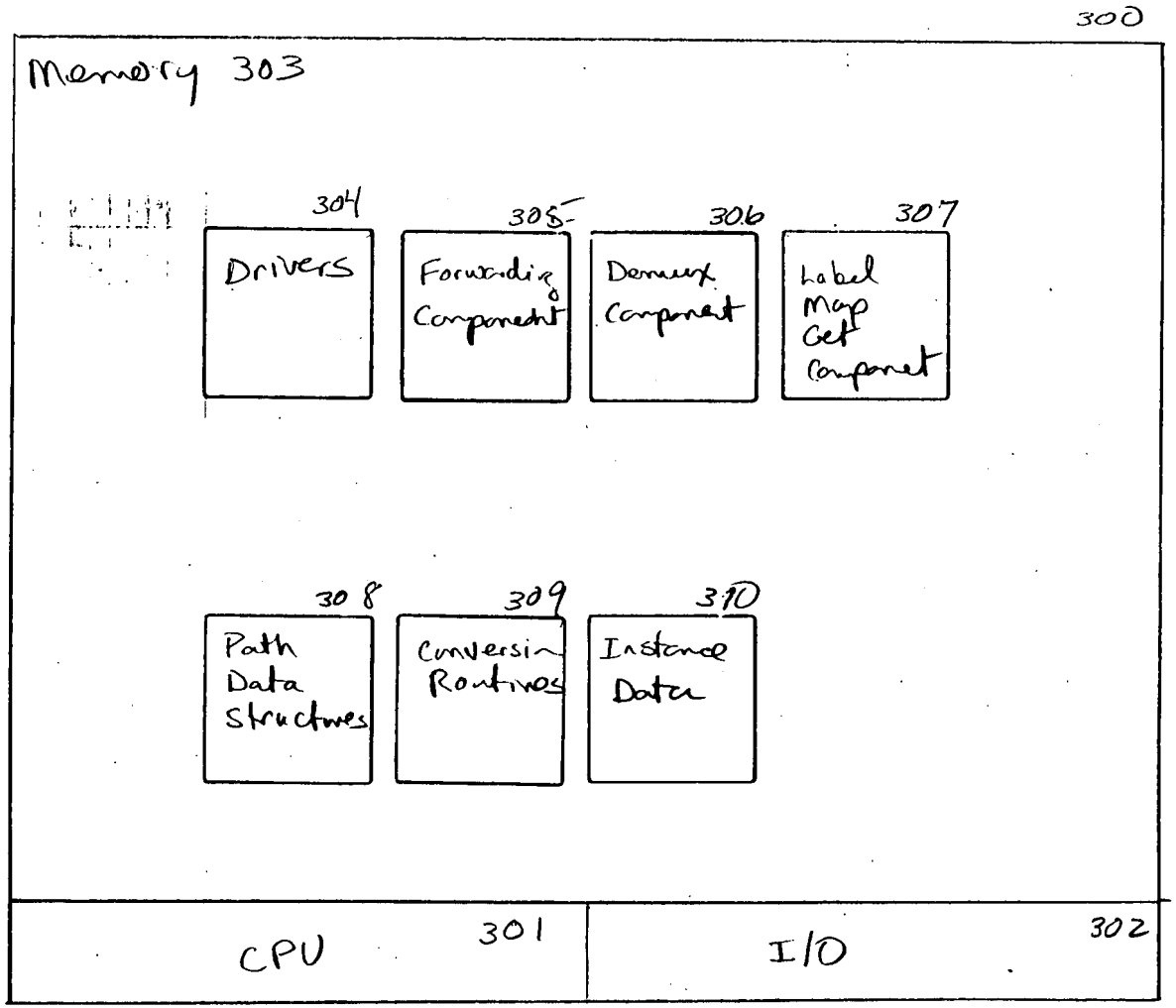


Figure 3

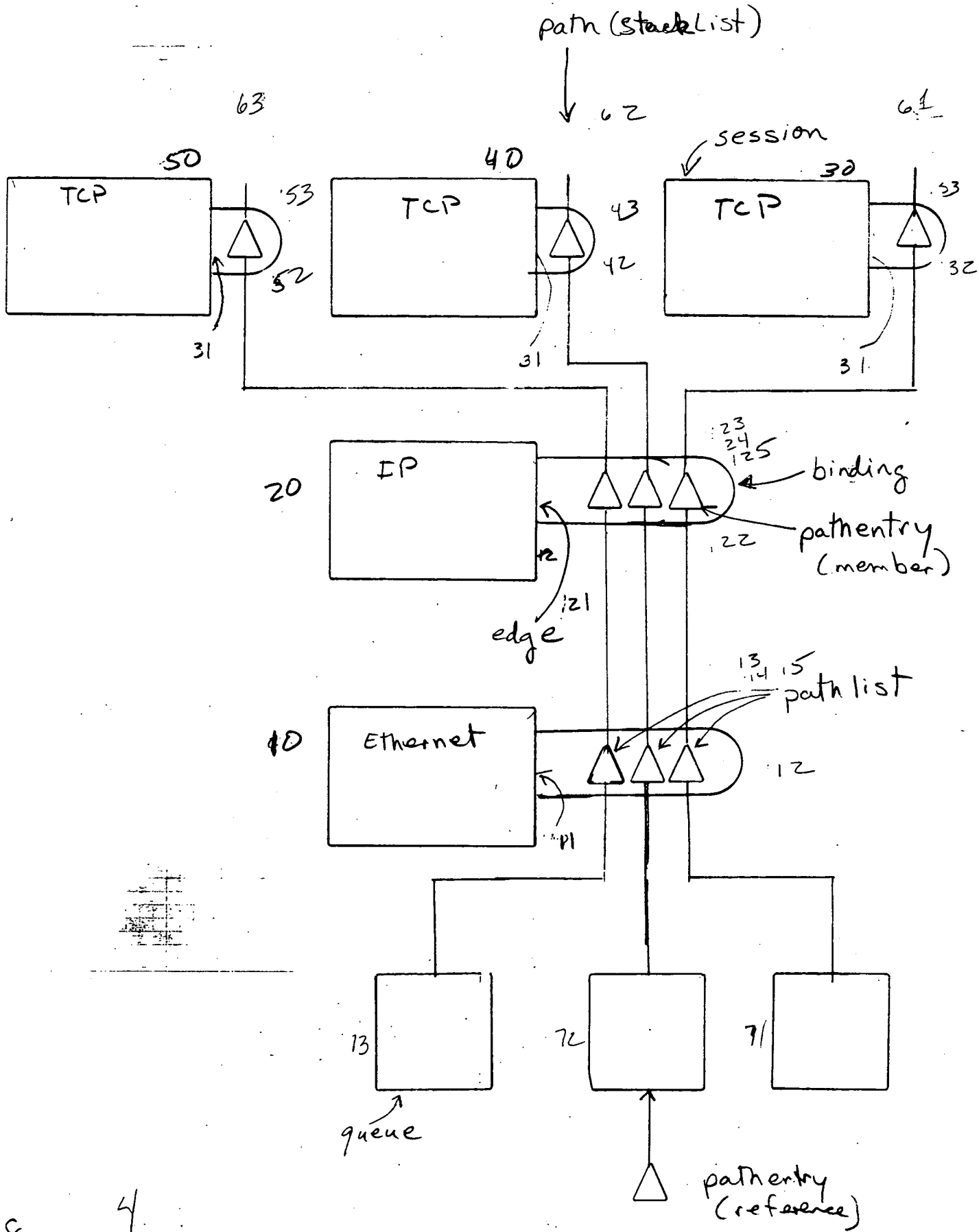


Fig 4

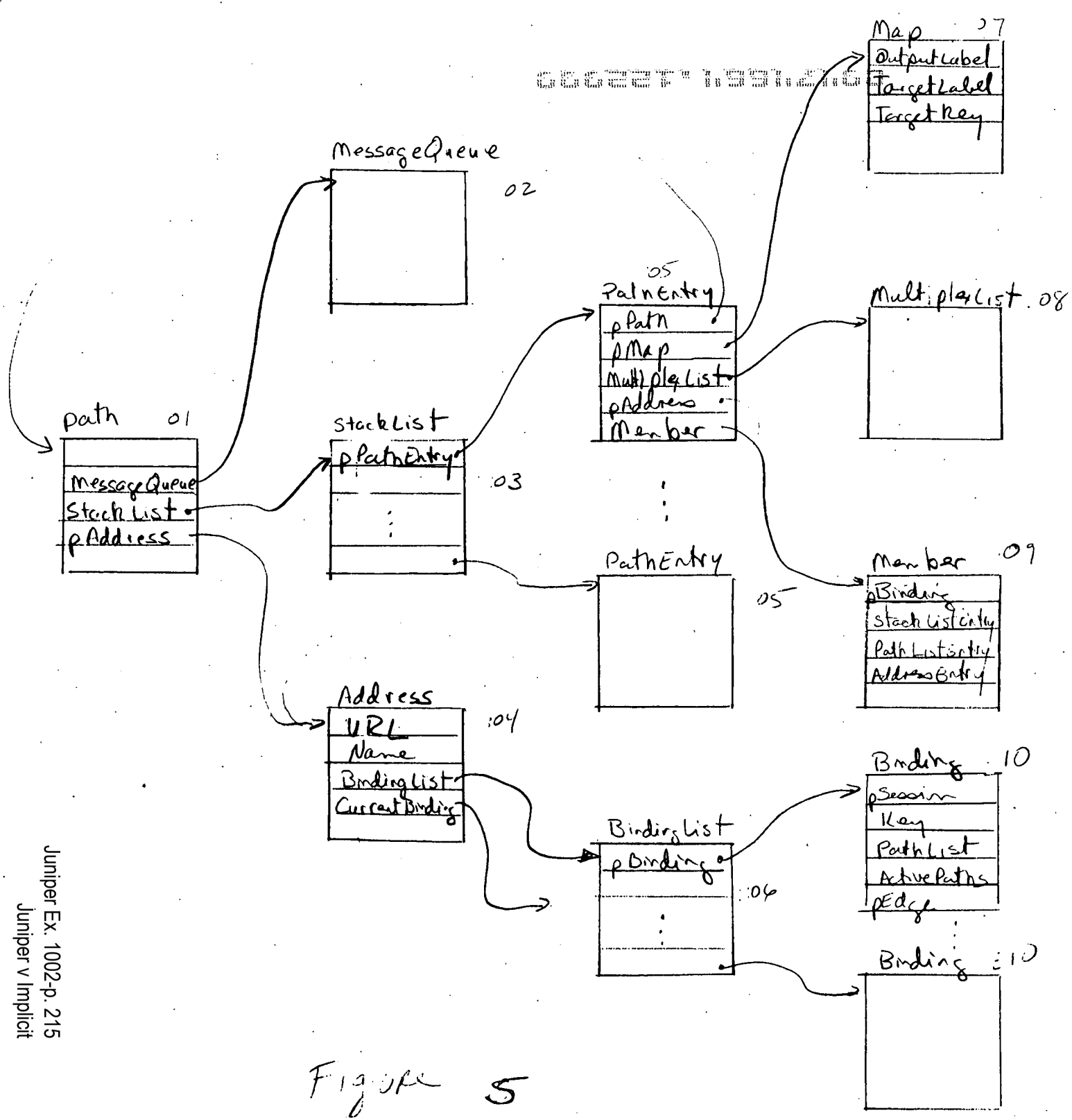


Figure 5

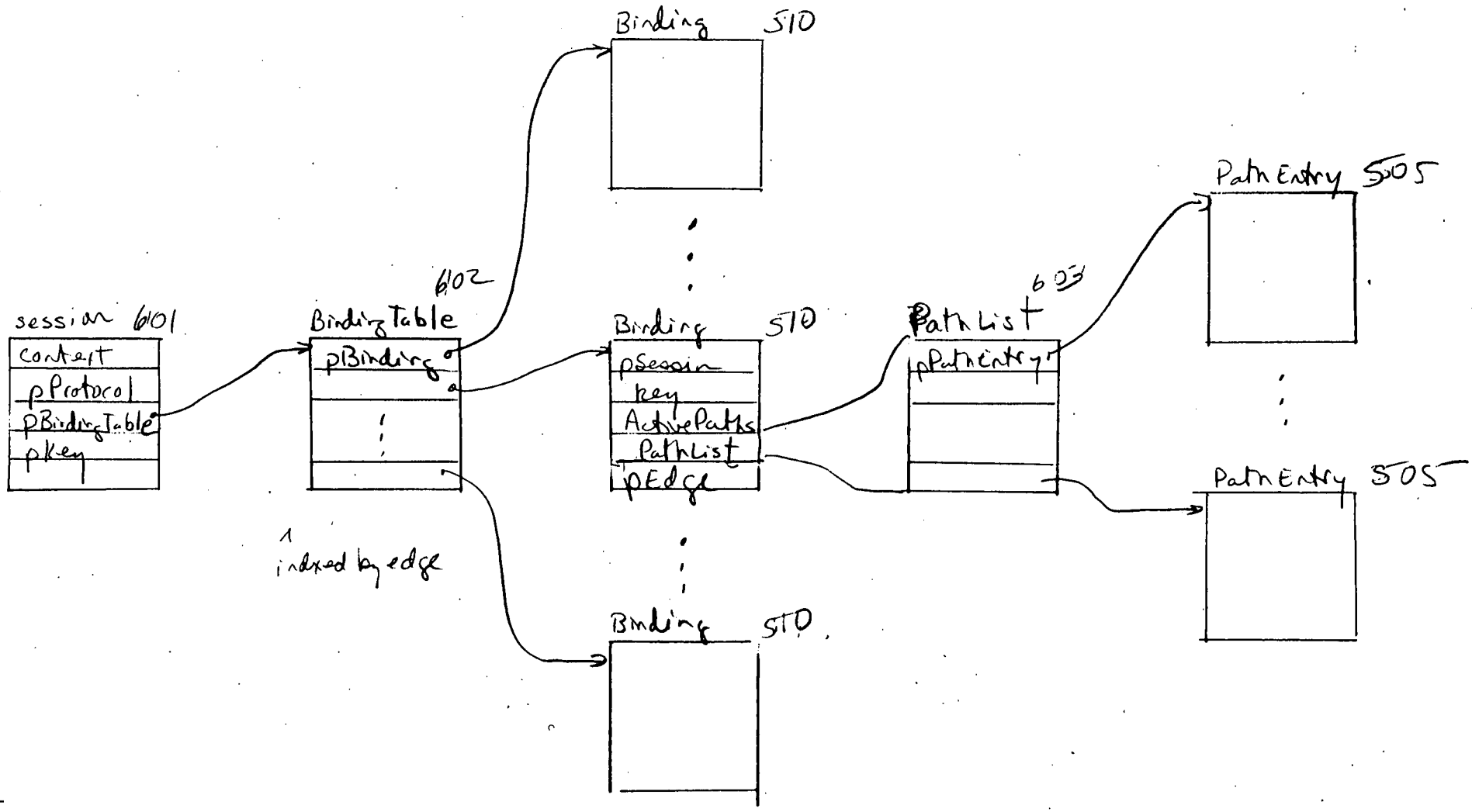


Figure 6

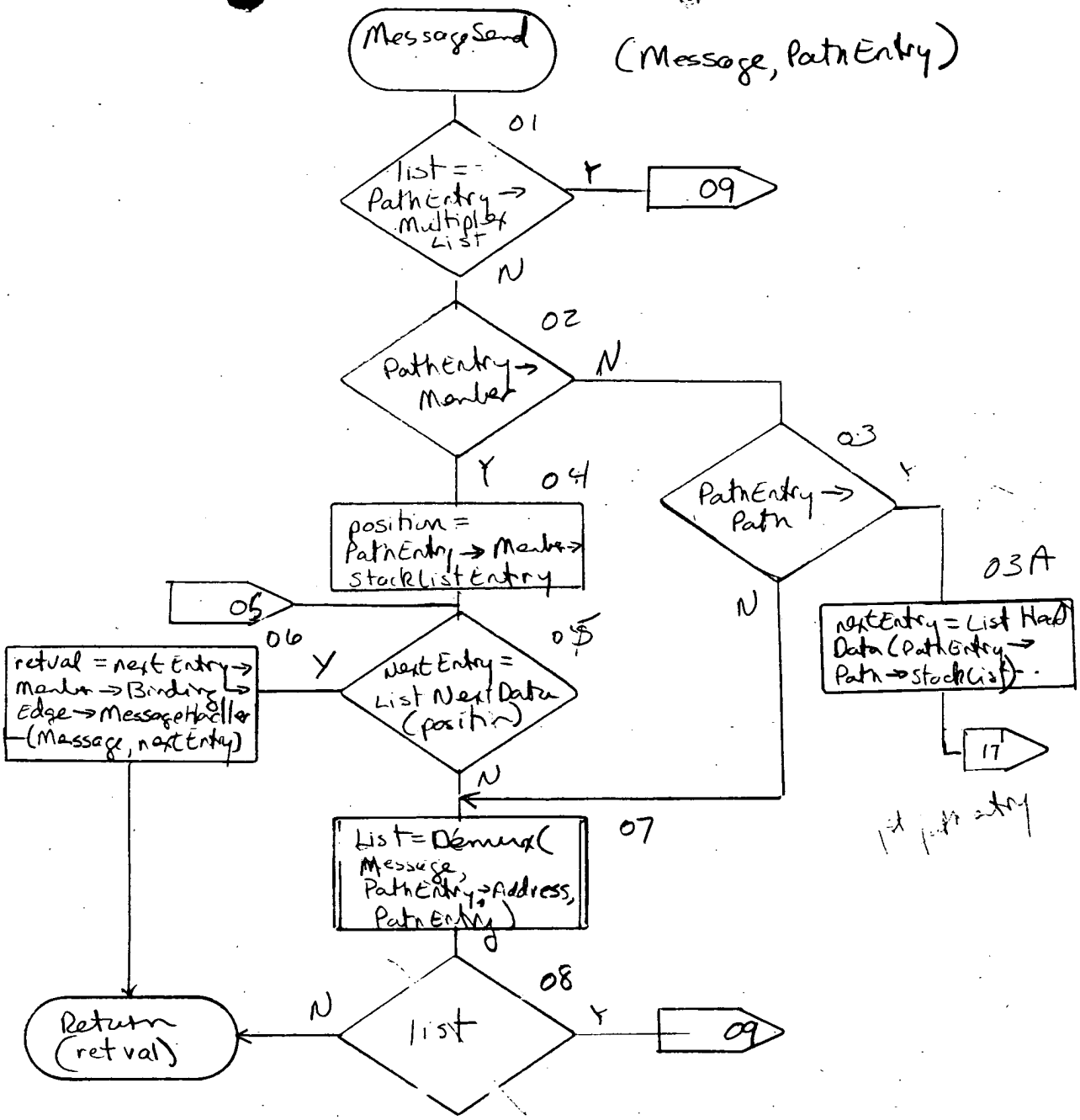

MessageSend
(Message, PathEntry)
01
list = PathEntry -> multiplex List
Y
09
N
02
PathEntry -> Marker
N
Y
04
position = PathEntry -> Marker -> StackListEntry
03
PathEntry -> Path
Y
03A
nextEntry = List Head Data (PathEntry -> Path -> StackList)
17
N
05
06
retval = nextEntry -> Marker -> Binding -> Edge -> MessageHandler (Message, nextEntry)
Y
05
NextEntry = List NextData (position)
N
07
List = Demux(Message, PathEntry -> Address, PathEntry)
08
Return (retval)
N
list
Y
09

Figure 7A

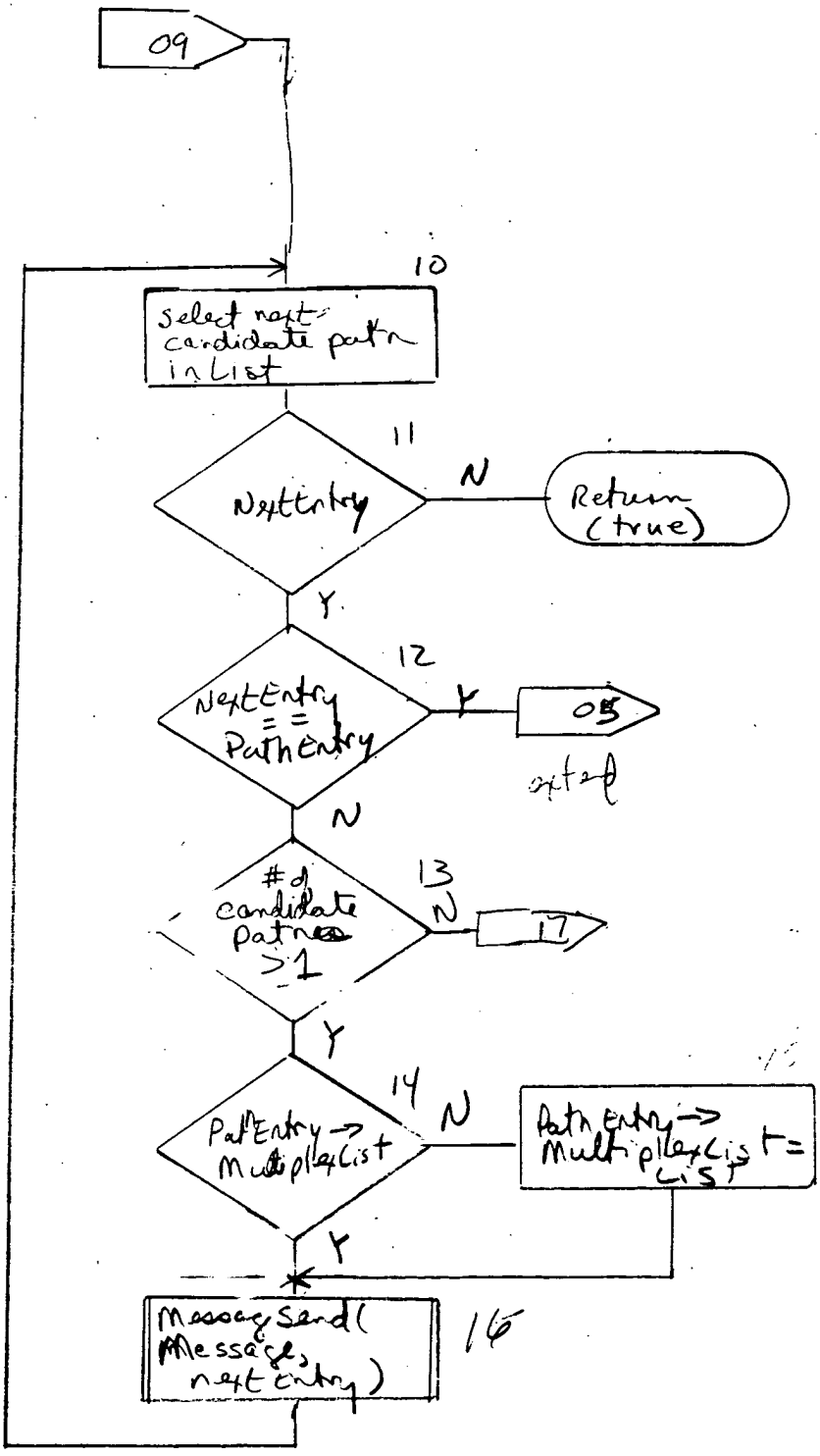


Figure 7B

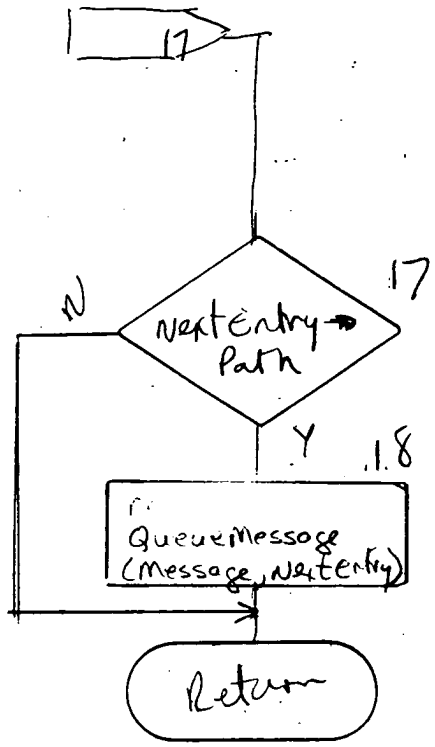


Figure 7C

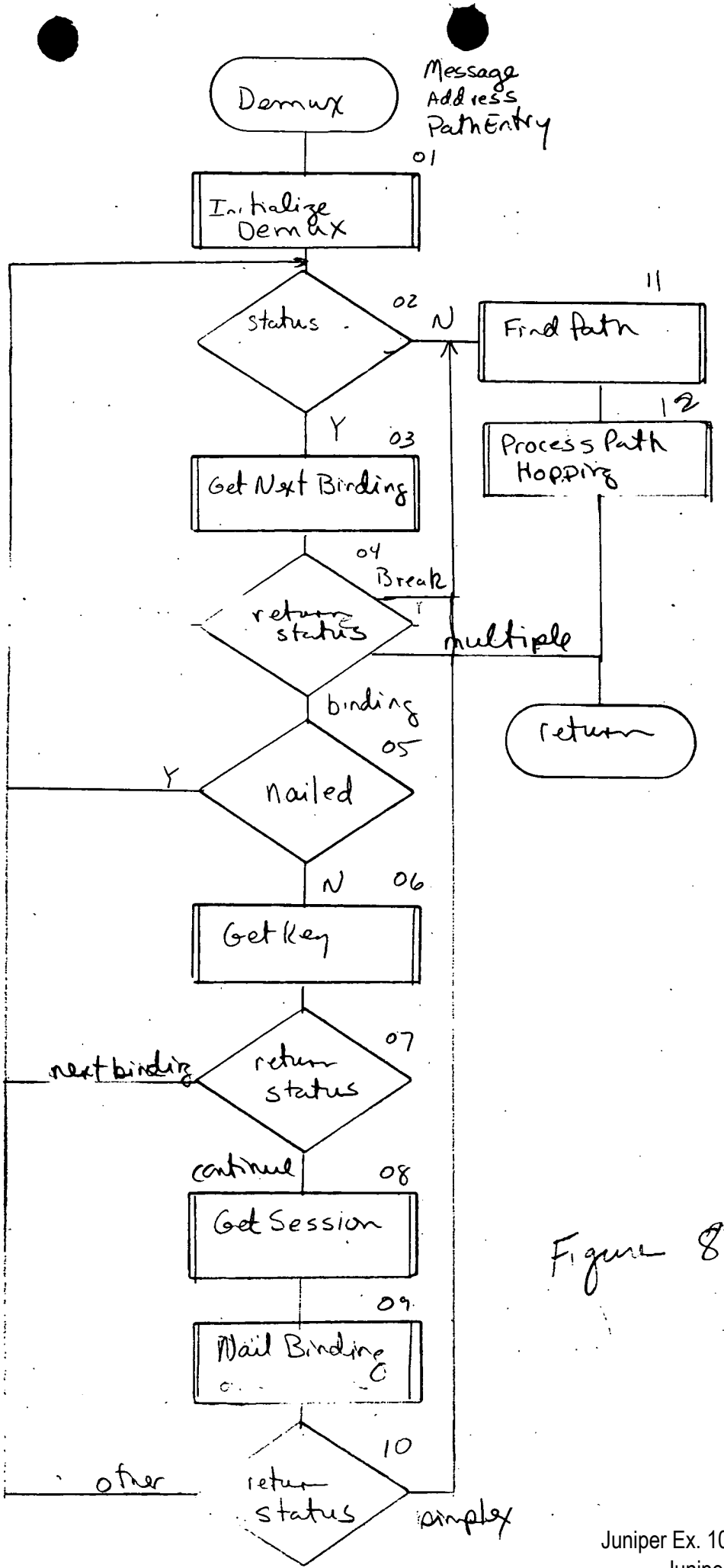


Figure 8

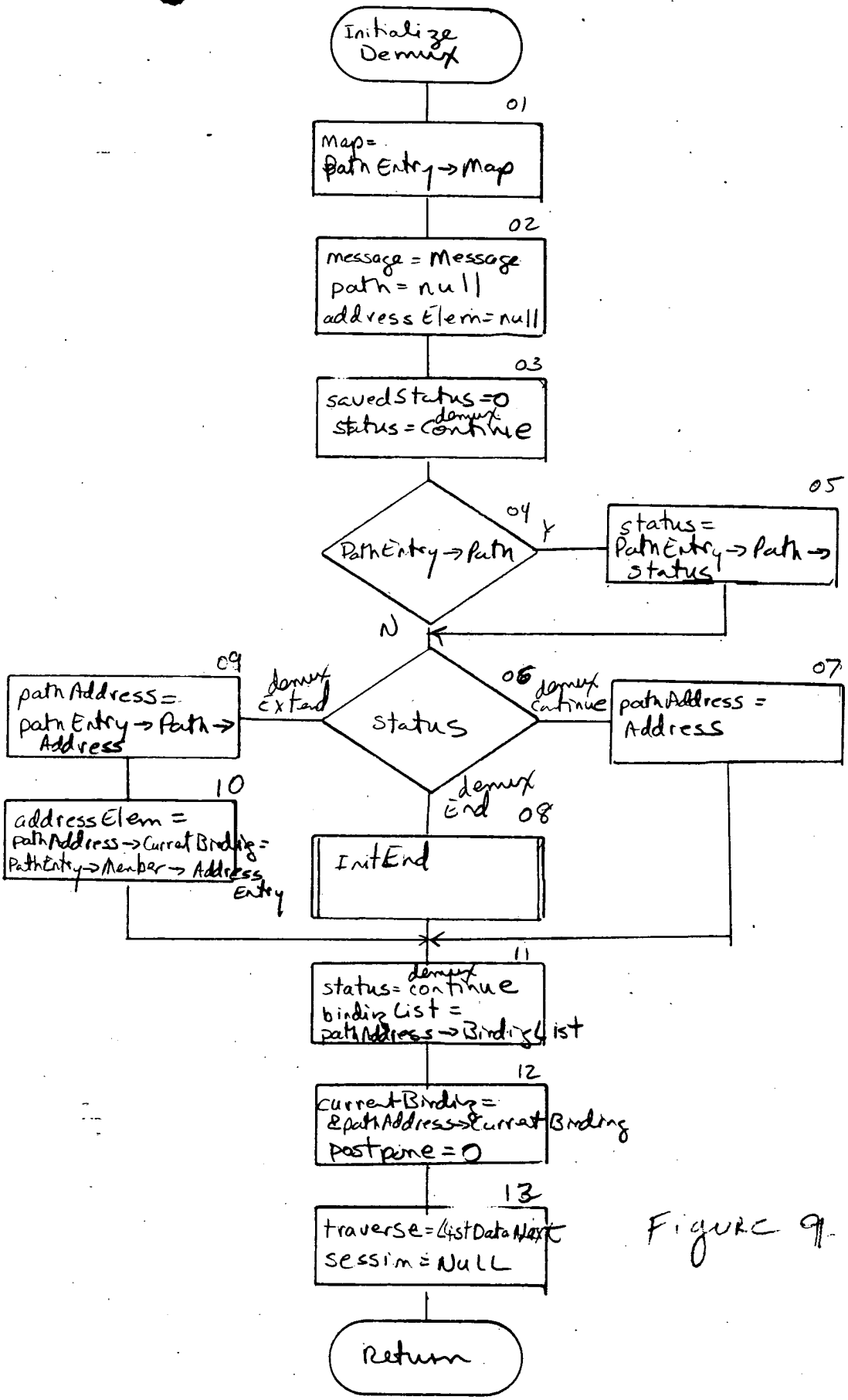


FIGURE 9

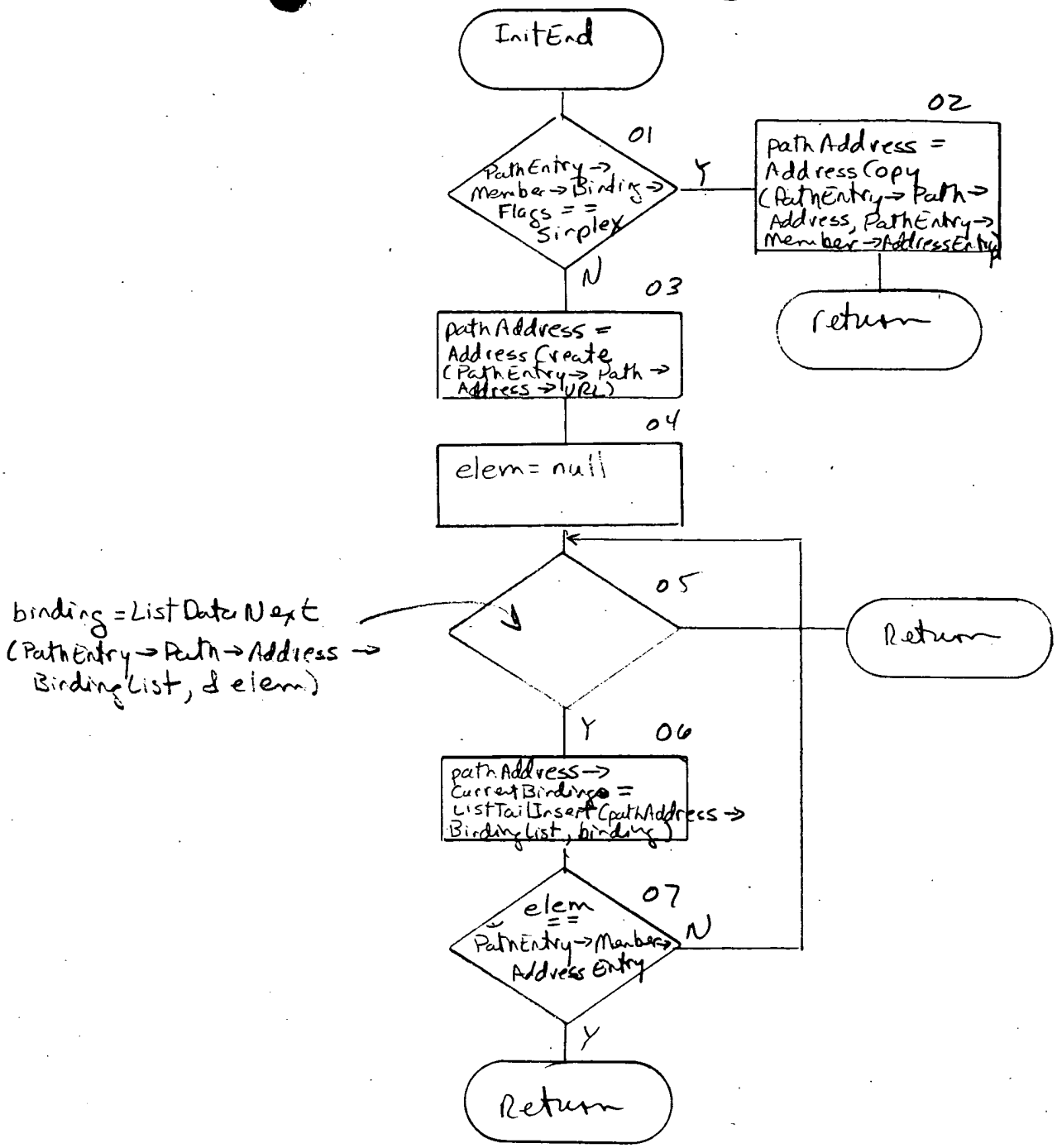

InitEnd
01
PathEntry->Member->Binding->Flags == Simplex
Y
02
pathAddress = AddressCopy(PathEntry->Path->Address, PathEntry->Member->AddressEntry)
return
N
03
pathAddress = AddressCreate(PathEntry->Path->Address->URL)
04
elem = null
05
binding = ListDataNext(PathEntry->Path->Address->BindingList, &elem)
Return
Y
06
pathAddress->CurrentBinding = ListTailInsert(pathAddress->BindingList, binding)
07
elem == PathEntry->Member->AddressEntry
N
Y
Return

Figure 10

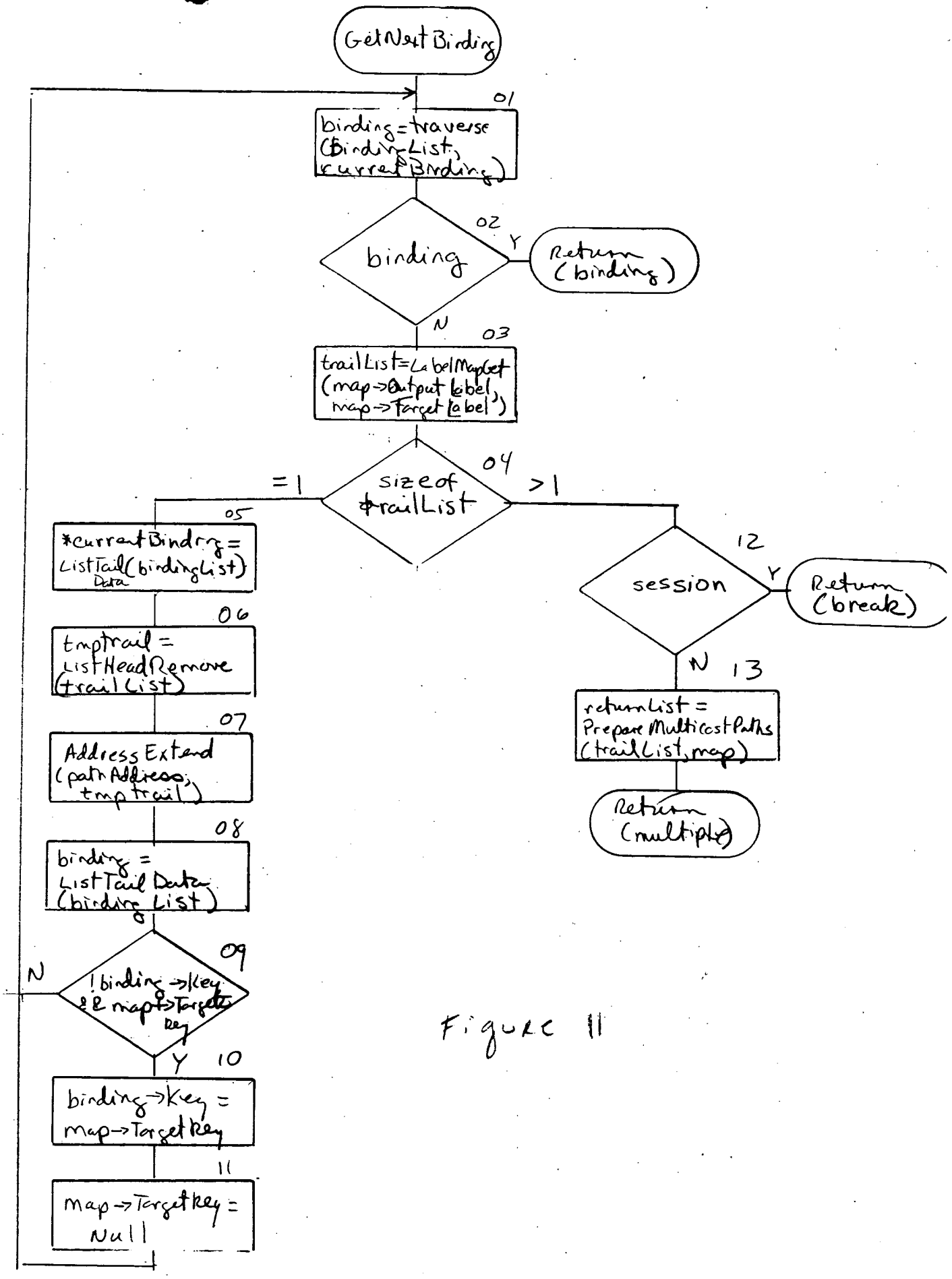


Figure 11

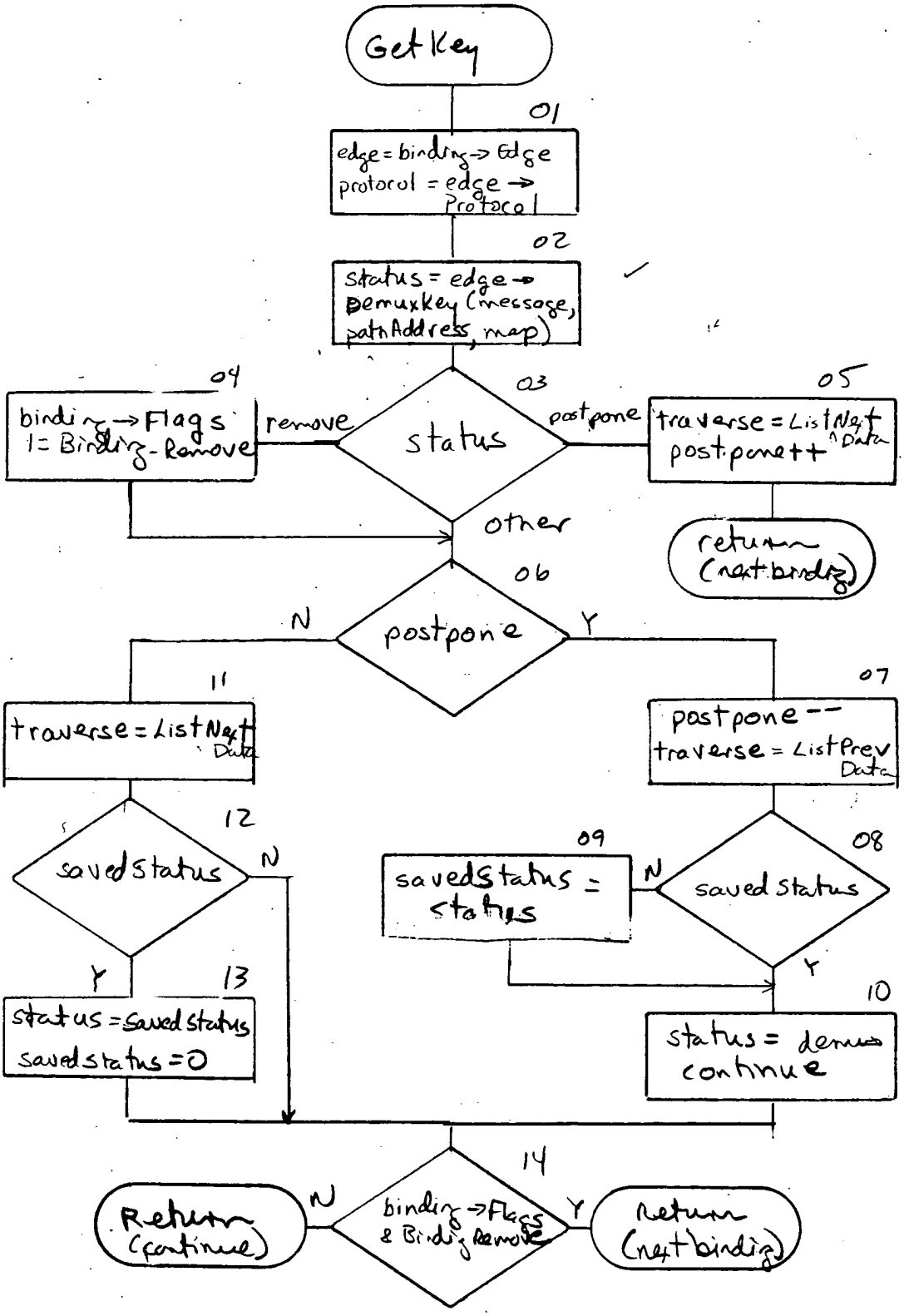


Figure 12

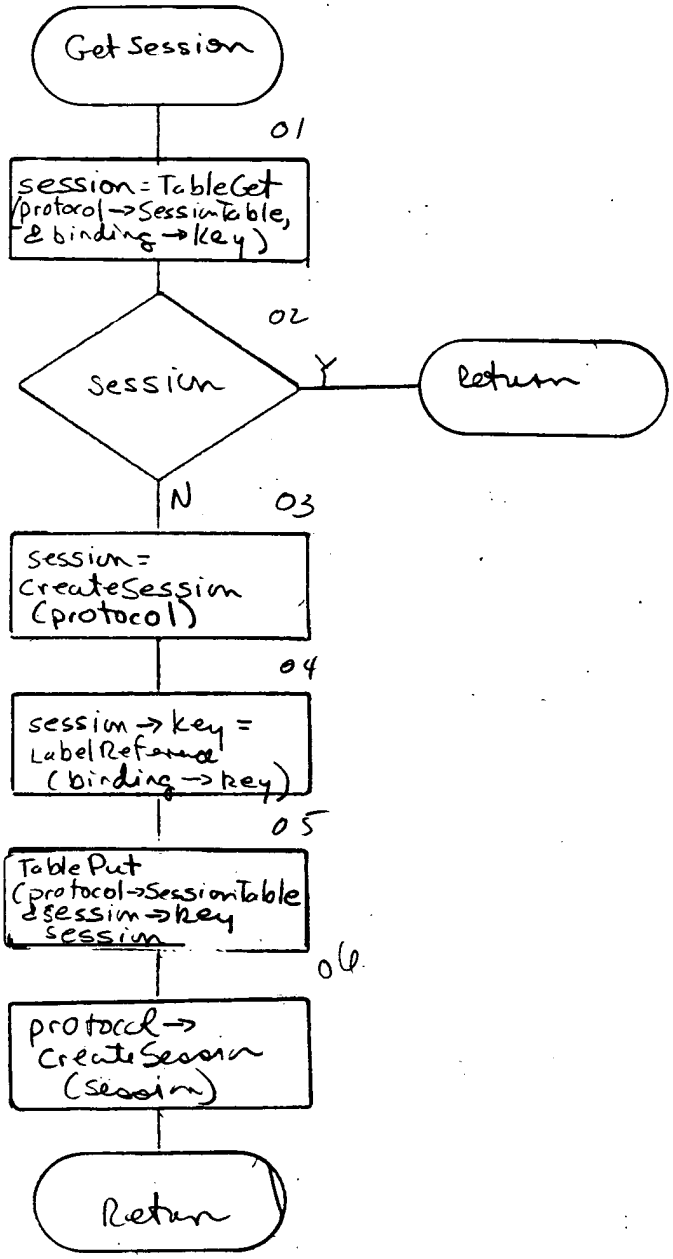

Get Session
01
session = TableGet (protocol->SessionTable, &binding->key)
02
session
Y
Return
N
03
session = CreateSession (protocol)
04
session->key = LabelReference (binding->key)
05
TablePut (protocol->SessionTable, &session->key, session)
06
protocol->CreateSession (session)
Return

Figure 13

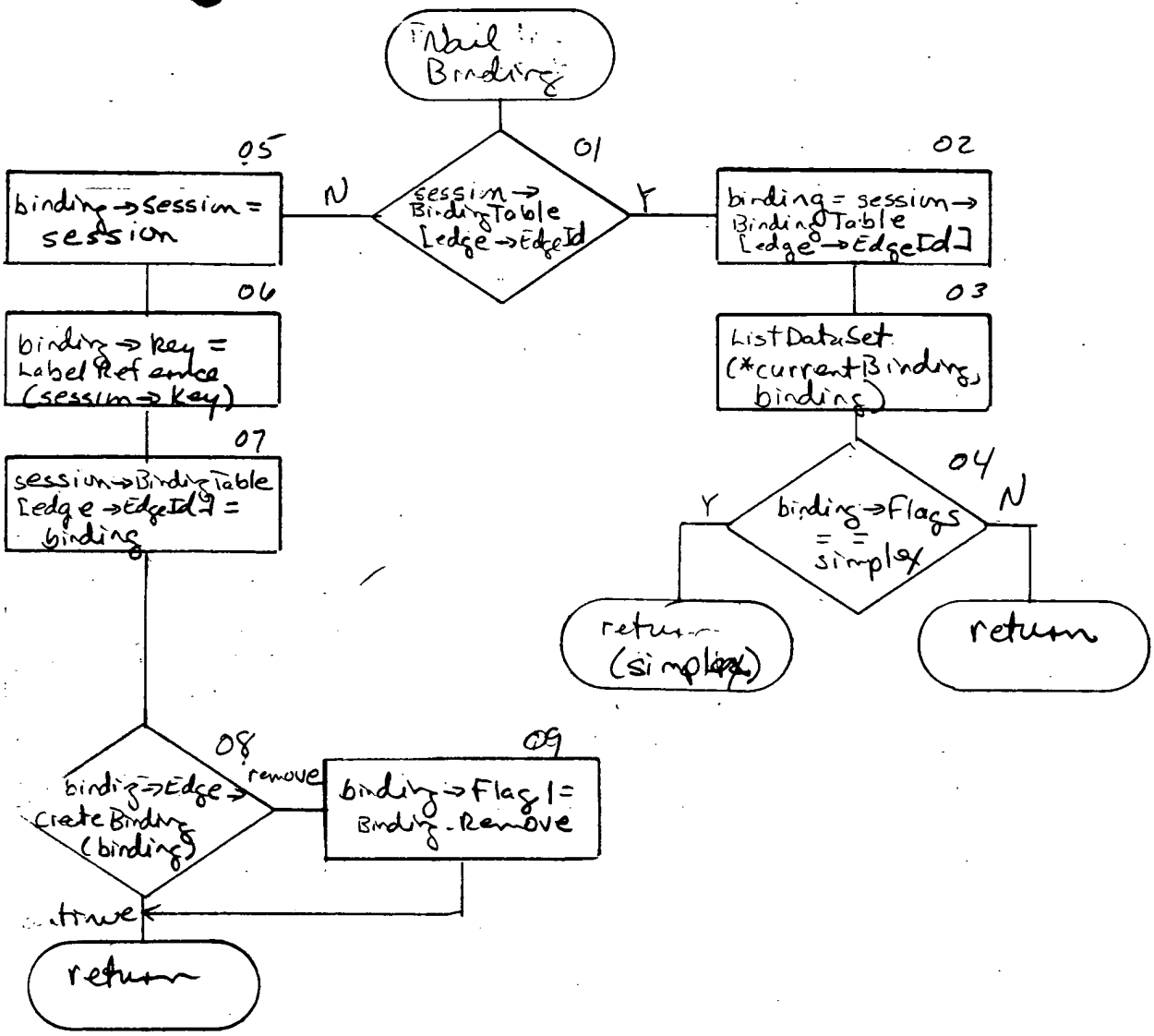
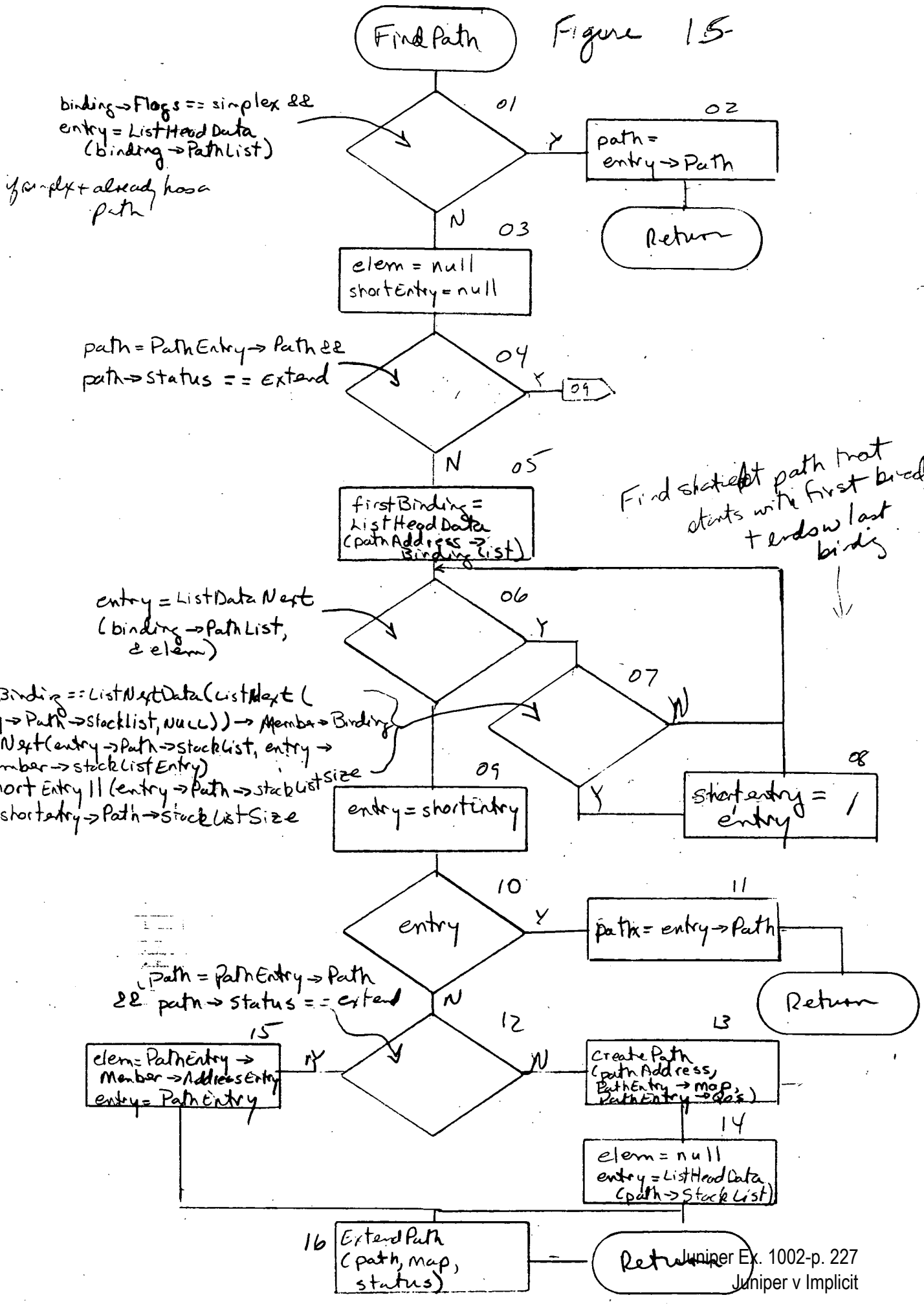
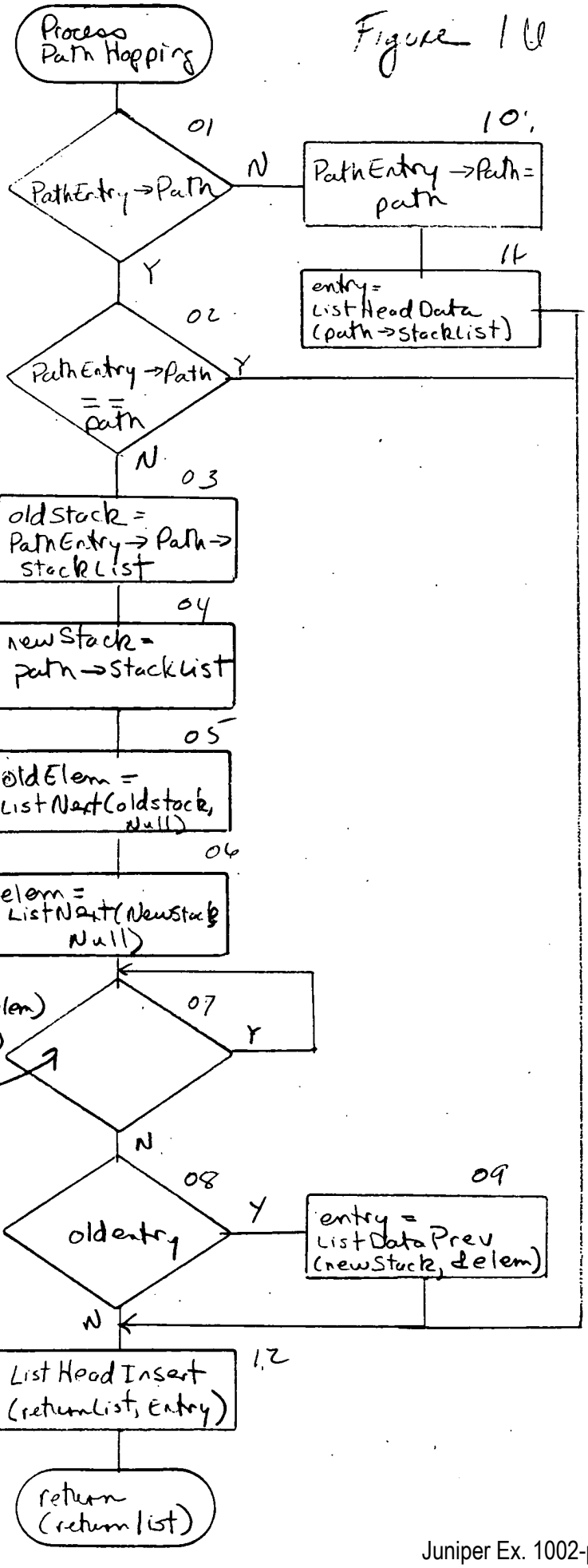


Figure 14



Path hopping

Figure 10



oldEntry = ListDataNext(oldstack, &oldelem)
&& entry = ListDataNext(newStack, &elem)
&& entry->Member->Binding ==
oldEntry Member->Binding

~~METHOD AND SYSTEM FOR DATA DEMULTIPLEXING~~

TECHNICAL FIELD

The present invention relates generally to a computer system for data demultiplexing.

BACKGROUND

Computer systems, which are becoming increasingly pervasive, generate data in a wide variety of formats. The Internet is an example of interconnected computer systems that generate data in many different formats. Indeed, when data is generated on one computer system and is transmitted to another computer system to be displayed, the data may be converted in many different intermediate formats before it is eventually displayed. For example, the generating computer system may initially store the data in a bitmap format. To send the data to another computer system, the computer system may first compress the bitmap data and then encrypt the compressed data. The computer system may then convert that compressed data into a TCP format and then into an IP format. The IP formatted data may be converted into a transmission format, such as an ethernet format. The data in the transmission format is then sent to a receiving computer system. The receiving computer system would need to perform each of these conversions in reverse order to convert the data in the bitmap format. In addition, the receiving computer system may need to convert the bitmap data into a format that is appropriate for rendering on output device.

In order to process data in such a wide variety of formats, both sending and receiving computer systems need to have many conversion routines available to support the various formats. These computer systems typically use predefined configuration information to load the correct combination of conversion routines for processing data. These computer systems also use a process-oriented approach when processing data with these conversion routines. When using a process-oriented approach, a computer system may create a separate process for each conversion that needs to take place. A computer system in certain situations, however, can be expected to receive data and to provide data in many different formats that may not be known until the data is received. The overhead

of statically providing each possible series of conversion routines is very high. For example, a computer system that serves as a central controller for data received within a home would be expected to process data received via telephone lines, cable TV lines, and satellite connections in many different formats. The central controller would be expected to output the data to computer displays, television displays, entertainment centers, speakers, recording devices, and so on in many different formats. Moreover, since the various conversion routines may be developed by different organizations, it may not be easy to identify that the output format of one conversion routine is compatible with the input format of another conversion routine.

It would be desirable to have a technique for dynamically identifying a series of conversion routines for processing data. In addition, it would be desirable to have a technique in which the output format of one conversion routine can be identified as being compatible with the input format of another conversion routine. It would also be desirable to store the identification of a series of conversion routines so that the series can be quickly identified when data is received.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a block diagram illustrating example processing of a message by the conversion system.

Figure 2 is a block diagram illustrating a sequence of edges.

Figure 3 is a block diagram illustrating components of the conversion system in one embodiment.

Figure 4 is a block diagram illustrating example path data structures in one embodiment.

Figure 5 is a block diagram that illustrates the interrelationship of the data structures of a path.

Figure 6 is a block diagram that illustrates the interrelationship of the data structures associated with a session.

Figures 7A, 7B, and 7C comprise a flow diagram illustrating the processing of the message send routine.

Figure 8 is a flow diagram of the demux routine.

Figure 9 is a flow diagram of the initialize demux routine.

Figure 10 is a flow diagram of the init end routine.

Figure 11 is a flow diagram of a routine to get the next binding.

Figure 12 is a flow diagram of the get key routine.

Figure 13 is a flow diagram of the get session routine.

Figure 14 is a flow diagram of the nail binding routine.

Figure 15 is a flow diagram of the find path routine.

Figure 16 is a flow diagram of the process of path hopping routine.

DETAILED DESCRIPTION

A method and system for converting a message that may contain multiple packets from an source format into a target format. When a packet of a message is received, the conversion system in one embodiment searches for and identifies a sequence of conversion routines (or more generally message handlers) for processing the packets of the message by comparing the input and output formats of the conversion routines. (A message is a collection of data that is related in some way, such as stream of video or audio data or an email message.) The identified sequence of conversion routines is used to convert the message from the source format to the target format using various intermediate formats. The conversion system then queues the packet for processing by the identified sequence of conversion routines. The conversion system stores the identified sequence so that the sequence can be quickly found (without searching) when the next packet in the message is received. When subsequent packets of the message are received, the conversion system identifies the sequence and queues the packets for pressing by the sequence. Because the conversion system receives multiple messages with different source and target formats and identifies a sequence of conversion routines for each message, the conversion systems effectively "demultiplexes" the messages. That is, the conversion system demultiplexes the messages by receiving the message,

identifying the sequence of conversion routines, and controlling the processing of each message by the identified sequence. Moreover, since the conversion routines may need to retain state information between the receipt of one packet of a message and the next packet of that message, the conversion system maintains state information as an instance or session of the conversion routine. The conversion system routes all packets for a message through the same session of each conversion routine so that the same state or instance information can be used by all packets of the message. A sequence of sessions of conversion routines is referred to as a "path." In one embodiment, each path has a path thread associated with it for processing of each packet destined for that path.

In one embodiment, the packets of the messages are initially received by "drivers," such as an Ethernet driver. When a driver receives a packet, it forwards the packet to a forwarding component of the conversion system. The forwarding component is responsible for identifying the session of the conversion routine that should next process the packet and invoking that conversion routine. When invoked by a driver, the forwarding component may use a demultiplexing ("demux") component to identify the session of the first conversion routine of the path that is to process the packet and then queues the packet for processing by the path. A path thread is associated with each path. Each path thread is responsible for retrieving packets from the queue of its path and forwarding the packets to the forwarding component. When the forwarding component is invoked by a path thread, it initially invokes the first conversion routine in the path. That conversion routine processes the packet and forwards the processed packet to the forwarding component, which then invokes the second conversion routine in the path. The process of invoking the conversion routines and forwarding the processed packet to the next conversion routine continues until the last conversion routine in the path is invoked. A conversion routine may defer invocation of the forwarding component until it aggregates multiple packets or may invoke the forwarding component multiple times for a packet once for each sub-packet.

The forwarding component identifies the next conversion routine in the path using the demux component and stores that identification so that the forwarding component can quickly identify the conversion routine when subsequent packets of the same message are received. The demux component searches for the conversion routine and session that is to next process a packet. The demux component then stores the

identification of the session and conversion routine as part of a path data structure so that the conversion system does not need to search for the session and conversion routine when requested to demultiplex subsequent packets of the same message. When searching for the next conversion routine, the demux component invokes a label map get component that identifies the next conversion routine. Once the conversion routine is found, the demux component identifies the session associated with that message by, in one embodiment, invoking code associated with the conversion routine. In general, the code of the conversion routine determines what session should be associated with a message. In certain situations, multiple messages may share the same session. The demux component then extends the path for processing that packet to include that session and conversion routine. The sessions are identified so that each packet is associated with the appropriate state information. The dynamic identification of conversion routines is described in U.S. Patent Application No. 09/304,973, filed on May 4, 1999, entitled "Method and System for Generating a Mapping Between Types of Data," which is hereby incorporated by reference.

Figure 1 is a block diagram illustrating example processing of a message by the conversion system. The driver 101 receives the packets of the message from a network. The driver performs any appropriate processing of the packet and invokes a message send routine passing the processed packet along with a reference path entry 150. The message send routine is an embodiment of the forwarding component. A path is represented by a series of path entries, which are represented by triangles . Each member path entry represents a session and conversion routine of the path, and a reference path entry represents the overall path. The passed reference path entry 150 indicates to the message send routine that it is being invoked by a driver. The message send routine invokes the demux routine 102 to search for and identify the path of sessions that is to process the packet. The demux routine may in turn invoke the label map get routine 104 to identify a sequence of conversion routines for processing the packet. In this example, the label map get routine identifies the first three conversion routines, and the demux routine creates the member path entries 151, 152, 153 of the path for these conversion routines. Each path entry identifies a session for a conversion routine, and the sequence of path entries 151-155 identifies a path. The message send routine then queues the packet on the queue 149 for the path that is to process the packets of the message. The

path thread 105 for the path retrieves the packet from the queue and invokes the message send routine 106 passing the packet and an indication of the path. The message send routine determines that the next session and conversion routine as indicated by path entry 151 has already been found. The message send routine then invokes the instance of the conversion routine for the session. The conversion routine processes the packet and then invokes the message send routine 107. This processing continues until the message send routine invokes the demux routine 110 after the packet is processed by the conversion routine represented by path entry 153. The demux routine examines the path and determines that it has no more path entries. The demux routine then invokes the label map get routine 111 to identify the conversion routines for further processing of the packet. When the conversion routines are identified, the demux routine adds path entries 154, 155 to the path. The messages send routine invokes the conversion routine associated with path entry 154. Eventually, the conversion routine associated with path entry 155 performs the final processing for the path.

The label map get routine identifies a sequence of "edges" for converting data in one format into another format. Each edge corresponds to a conversion routine for converting data from one format to another. Each edge is part of a "protocol" (or more generally a component) that may include multiple related edges. For example, a protocol may have edges that each convert data in one format into several different formats. Each edge has an input format and an output format. The label map get routine identifies a sequence of edges such that the output format of each edge is compatible with the input format of another edge in the sequence, except for the input format of the first edge in the sequence and the output format of the last edge in the sequence. Figure 2 is a block diagram illustrating a sequence of edges. Protocol P1 includes an edge for converting format D1 to format D2 and an edge for converting format D1 to format D3; protocol P2 includes an edge for converting format D2 to format D5, and so on. A sequence for converting format D1 to format D15 is shown by the curved lines and is defined by the address "P1:1, P2:1, P3:2, P4:7." When a packet of data in format D1 is processed by this sequence, it is converted to format D15. During the process, the packet of data is sequentially converted to format D2, D5, and D13. The output format of protocol P2, edge 1 (*i.e.*, P2:1) is format D5, but the input format of P3:2 is format D10. The label map get routine uses an aliasing mechanism by which two formats, such as D5

and D10 are identified as being compatible. The use of aliasing allows different names of the same format or compatible formats to be correlated.

Figure 3 is a block diagram illustrating components of the conversion system in one embodiment. The conversion system 300 can operate on a computer system with a central processing unit 301, I/O devices 302, and memory 303. The I/O devices may include an Internet connection, a connection to various output devices such as a television, and a connection to various input devices such as a television receiver. The media mapping system may be stored as instructions on a computer-readable medium, such as a disk drive, memory, or data transmission medium. The data structures of the media mapping system may also be stored on a computer-readable medium. The conversion system includes drivers 304, a forwarding component 305, a demux component 306, a label map get component 307, path data structures 308, conversion routines 309, and instance data 310. Each driver receives data in a source format and forwards the data to the forwarding component. The forwarding component identifies the next conversion routine in the path and invokes that conversion routine to process a packet. The forwarding component may invoke the demux component to search for the next conversion routine and add that conversion routine to the path. The demux component may invoke the label map get component to identify the next conversion routine to process the packet. The demux component stores information defining the paths in the path structures. The conversion routines store their state information in the instance data.

Figure 4 is a block diagram illustrating example path data structures in one embodiment. The demux component identifies a sequence of "edges" for converting data in one format into another format by invoking the label map get component. Each edge corresponds to a conversion routine for converting data from one format to another. As discussed above, each edge is part of a "protocol" that may include multiple related edges. For example, a protocol may have edges that each convert data in one format into several different formats. Each edge has as an input format ("input label") and an output format ("output label"). Each rectangle represents a session 410, 420, 430, 440, 450 for a protocol. A session corresponds to an instance of a protocol. That is, the session includes the protocol and state information associated with that instance of the protocol. Session 410 corresponds to a session for an Ethernet protocol; session 420 corresponds to

a session for an IP protocol; and sessions 430, 440, 450 correspond to sessions for a TCP protocol. Figure 4 illustrates three paths 461, 462, 463. Each path includes edges 411, 421, 431. The paths share the same Ethernet session 410 and IP session 420, but each path has a unique TCP session 430, 440, 450. Thus, path 461 includes sessions 410, 420, and 430; path 462 includes sessions 410, 420, and 440; and path 463 includes sessions 410, 420, and 450. The conversion system represents each path by a sequence of path entry structures. Each path entry structure is represented by a triangle. Thus, path 461 is represented by path entries 415, 425, and 433. The conversion system represents the path entries of a path by a stack list. Each path also has a queue 471, 472, 473 associated with it. Each queue stores the messages that are to be processed by the conversion routines of the edges of the path. Each session includes a binding 412, 422, 432, 442, 452 that is represented by an oblong shape adjacent to the corresponding edge. A binding for an edge of a session represents those paths that include the edge. The binding 412 indicates that three paths are bound (or "nailed") to edge 411 of the Ethernet session 410. The conversion system uses a path list to track the paths that are bound to a binding. The path list of binding 412 identifies path entries 413, 414, and 415.

Figure 5 is a block diagram that illustrates the interrelationship of the data structures of a path. Each path has a corresponding path structure 501 that contains status information and pointers to a message queue structure 502, a stack list structure 503, and a path address structure 504. The status of a path can be extend, continue, or end. Each message handler returns a status for the path. The status of extend means that additional path entries should be added to the path. The status of end means that this path should end at this point and subsequent processing should continue at a new path. The status of continue means that the protocol does not care how the path is handled. In one embodiment, when a path has a status of continue, the system creates a copy of the path and extends the copy. The message queue structure identifies the messages (or packets of a message) that are queued up for processing by the path and identifies the path entry at where the processing should start. The stack list structure contains a list of pointers to the path entry structures 505 that comprise the path. Each path entry structure contains a pointer to the corresponding path data structure, a pointer to a map structure 507, a pointer to a multiplex list 508, a pointer to the corresponding path address structure, and a pointer to a member structure 509. A map structure identifies the output label of the edge

of the path entry and optionally a target label and a target key. A target key identifies the session associated with the protocol that converts the packet to the target label. (The terms "media," "label," and "format" are used interchangeably to refer to the output of a protocol.) The multiplex list is used during the demux process to track possible next edges when a path is being identified as having more than one next edge. The member structure indicates that the path entry represents an edge of a path and contains a pointer to a binding structure to which the path entry is associated (or "nailed"), a stack list entry is the position of the path entry within the associated stack list, a path list entry is the position of the path entry within the associated path list of a binding and an address entry is the position of the binding within the associated path address. A path address of a path identifies the bindings to which the path entries are bound. The path address structure contains a URL for the path, the name of the path identified by the address, a pointer to a binding list structure 506, and the identification of the current binding within the binding list. The URL *(e.g.,* "protocol://tcp(0)/ip(0)/eth(0)") identifies conversion routines *(e.g.,* protocols and edges) of a path in a human-readable format. The URL (universal resource locator) includes a type field *(e.g.,* "protocol") followed by a sequence of items *(e.g.,* "tcp(0)"). The type field specifies the format of the following information in the URL, that specifies that the type field is followed by a sequence of items. Each item identifies a protocol and an edge *(e.g.,* the protocol is "tcp" and the edge is "0"). In one embodiment, the items of a URL may also contain an identifier of state information that is to be used when processing a message. These URLs can be used to illustrate to a user various paths that are available for processing a message. The current binding is the last binding in the path as the path is being built. The binding list structure contains a list of pointers to the binding structures associated with the path. Each binding structure 510 contains a pointer to a session structure, a pointer to an edge structure, a key, a path list structure, and a list of active paths through the binding. The key identifies the state information for a session of a protocol. A path list structure contains pointers to the path entry structures associated with the binding.

Figure 6 is a block diagram that illustrates the interrelationship of the data structures associated with a session. A session structure 601 contains the context for the session, a pointer to a protocol structure for the session, a pointer to a binding table structure 602 for the bindings associated with the session, and the key. The binding table

structure contains a list of pointers to the binding structures 510 for the session. The binding structure is described above with reference to Figure 5. The path list structure 603 of the binding structure contains a list of pointers to path entry structures 505. The path entry structures are described with reference to Figure 5.

Figures 7A, 7B, and 7C comprise a flow diagram illustrating the processing of the message send routine. The message send routine is passed a message along with the path entry associated with the session that last processed the message. The message send routine invokes the message handler of the next edge in the path or queues the message for processing by a path. The message handler invokes the demux routine to identify the next path entry of the path. When a driver receives a message, it invokes the message send routine passing a reference path entry. The message send routine examines the passed path entry to determine (1) whether multiple paths branch from the path of the passed path entry, (2) whether the passed path entry is a reference with an associated path, or (3) whether the passed path entry is a member with a next path entry. If multiple paths branch from the path of the passed path entry, then the routine recursively invokes the message send routine for each path. If the path entry is a reference with an associated path, then the driver previously invoked the message send routine, which associated a path with the reference path entry, and the routine places the message on the queue for the path. If the passed path entry is a member with a next path entry, then the routine invokes the message handler (*i.e.*, conversion routine of the edge) associated with the next path entry. If the passed path entry is a reference without an associated path or is a member without a next path entry, then the routine invokes the demux routine to identify the next path entry. The routine then recursively invokes the messages send routine passing that next path entry. In decision block 701, if the passed path entry has a multiplex list, then the path branches off into multiple paths and the routine continues at block 709, else the routine continues at block 702. A packet may be processed by several different paths. For example, if a certain message is directed to two different output devices, then the message is processed by two different paths. Also, a message may need to be processed by multiple partial paths when searching for a complete path. In decision block 702, if the passed path entry is a member, then either the next path entry indicates a nailed binding or the path needs to be extended and the routine continues at block 704, else the routine continues at block 703. A nailed binding is a binding (e.g., edge and

protocol) is associated with a session. In decision block 703, the passed path entry is a reference and if the passed path entry has an associated path, then the routine can queue the message for the associated path and the routine continues at block 703A, else the routine needs to identify a path and the routine continues at block 707. In block 703A, the routine sets the entry to the first path entry in the path and continues at block 717. In block 704, the routine sets the variable position to the stack list entry of the passed path entry. In decision block 705, the routine sets the variable next entry to the next path entry in the path. If there is a next entry in the path, then the next session and edge of the protocol have been identified and the routine continues at block 706, else the routine continues at block 707. In block 706, the routine passes the message to the message handler of the edge associated with the next entry and then returns. In block 706, the routine invokes the demux routine passing the passed message, the address of the passed path entry, and the passed path entry. The demux routine returns a list of candidate paths for processing of the message. In decision block 708, if at least one candidate path is returned, then the routine continues at block 709, else the routine returns.

Blocks 709-716 illustrate the processing of a list of candidate paths that extend from the passed path entry. In blocks 710-716, the routine loops selecting each candidate path and sending the message to be process by each candidate path. In block 710, the routine sets the next entry to the first path entry of the next candidate path. In decision block 711, if all the candidate paths have not yet been processed, then the routine continues at block 712, else the routine returns. In decision block 712, if the next entry is equal to the passed path entry , then the path is to be extended and the routine continues at block 705, else the routine continues at block 713. The candidate paths include a first path entry that is a reference path entry for new paths or that is the last path entry of a path being extended. In decision block 713, if the number of candidate paths is greater than one, then the routine continues at block 714, else the routine continues at block 718. In decision block 714, if the passed path entry has a multiplex list associated with it, then the routine continues at block 716, else the routine continues at block 715. In block 715, the routine associates the list of candidate path with the multiplex list of the passed path entry and continues at block 716. In block 716, the routine sends the message to the next entry by recursively invoking the message send routine. The routine then loops to block 710 to select the next entry associated with the next candidate path.

Blocks 717-718 are performed when the passed path entry is a reference path entry that has a path associated with it. In block 717, if there is a path associated with the next entry, then the routine continues at block 718, else the routine returns. In block 718, the routine queues the message for the path of the next entry and then returns.

Figure 8 is a flow diagram of the demux routine. This routine is passed the packet (message) that is received, an address structure, and a path entry structure. The demux routine extends a path, creating one if necessary. The routine loops identifying the next binding (edge and protocol) that is to process the message and "nailing" the binding to a session for the message, if not already nailed. After identifying the nailed binding, the routine searches for the shortest path through the nailed binding, creating a path if none exists. In block 801, the routine invokes the initialize demux routine. In blocks 802-810, the routine loops identifying a path or portion of a path for processing the passed message. In decision block 802, if there is a current status, which was returned by the demuxkey routine that was last invoked (*e.g.*, continue, extend, end, or postpone), then the routine continues at block 803, else the routine continues at block 811. In block 803, the routine invokes the get next binding routine. The get next binding routine returns the next binding in the path. The binding is the edge of a protocol. That routine extends the path as appropriate to include the binding. The routine returns a return status of break, binding, or multiple. The return status of binding indicates that the next binding in the path was found by extending the path as appropriate and the routine continues to "nail" the binding to a session as appropriate. The return status of multiple means that multiple trails (*e.g.*, candidate paths) were identified as possible extensions of the path. In a decision block 804, if the return status is break, then the routine continues at block 811. If the return status is multiple, then the routine returns. If the return status is binding, then the routine continues at block 805. In decision block 805, if the retrieved binding is nailed as indicated by being assigned to a session, then the routine loops to block 802, else the routine continues at block 806. In block 806, the routine invokes the get key routine of the edge associated with the binding. The get key routine creates the key for the session associated with the message. If a key cannot be created until subsequent bindings are processed or because the current binding is to be removed, then the get key routine returns a next binding status, else it returns a continue status. In decision block 807, if the return status of the get key routine is next binding, then the

routine loops to block 802 to get the next binding, else the routine continues at block 808. In block 808, the routine invokes the routine get session. The routine get session returns the session associated with the key, creating a new session if necessary. In block 809, the routine invokes the routine nail binding. The routine nail binding retrieves the binding if one is already nailed to the session. Otherwise, that routine nails the binding to the session. In decision block 810, if the nail binding routine returns a status of simplex, then the routine continues at block 811 because only one path can use the session, else the routine loops to block 802. Immediately upon return from the nail binding routine, the routine may invoke a set map routine of the edge passing the session and a map to allow the edge to set its map. In block 811, the routine invokes the find path routine, which finds the shortest path through the binding list and creates a path if necessary. In block 812, the routine invokes the process path hopping routine, which determines whether the identified path is part of a different path. Path hopping occurs when, for example, IP fragments are built up along separate paths, but once the fragments are built up they can be processed by the same subsequent path.

Figure 9 is a flow diagram of the initialize demux routine. This routine is invoked to initialize the local data structures that are used in the demux process and to identify the initial binding. The demux routine finds the shortest path from the initial binding to the final binding. If the current status is demux extend, then the routine is to extend the path of the passed path entry by adding additional path entries. If the current status is demux end, then the demux routine is ending the current path. If the current status is demux continue, then the demux routine is in the process of continuing to extend or in the process of starting a path identified by the passed address. In block 901, the routine sets the local map structure to the map structure in the passed path entry structure. The map structure identifies the output label, the target label, and the target key. In the block 902, the routine initializes the local message structure to the passed message structure and initializes the pointers path and address element to null. In block 903, the routine sets of the variable saved status to 0 and the variable status to demux continue. The variable saved status is used to track the status of the demux process when backtracking to nail a binding whose nail was postponed. In decision block 904, if the passed path entry is associated with a path, then the routine continues at block 905, else the routine continues at block 906. In block 905, the routine sets the variable status to the

status of that path. In block 906, if the variable status is demux continue, then the routine continues at block 907. If the variable status is demux end, then the routine continues at block 908. If the variable status is demux extend, then the routine continues at block 909. In block 907, the status is demux continue, and the routine sets the local pointer path address to the passed address and continues at block 911. In block 908, the status is demux end, and the routine invokes the init end routine and continues at block 911. In block 909, the status is demux extend, and the routine sets the local path address to the address of the path that contains the passed path entry. In block 910, the routine sets the address element and the current binding of the path address pointed to by the local pointer path address to the address entry of the member structure of the passed path entry. In the block 911, the routine sets the local variable status to demux continue and sets the local binding list structure to the binding list structure from the local path address structure. In block 912, the routine sets the local pointer current binding to the address of the current binding pointed to by local pointer path address and sets the local variable postpone to 0. In block 913, the routine sets the function traverse to the function that retrieves the next data in a list and sets the local pointer session to null. The routine then returns.

Figure 10 is a flow diagram of the init end routine. If the path is simplex, then the routine creates a new path from where the other one ended, else the routine creates a copy of the path. In block 1001, if the binding of the passed path entry is simplex (*i.e.*, only one path can be bound to this binding), then the routine continues at block 1002, else the routine continues at block 1003. In block 1002, the routine sets the local pointer path address to point to an address structure that is a copy of the address structure associated with the passed path entry structure with its current binding to the address entry associated with the passed path entry structure, and then returns. In block 1003, the routine sets the local pointer path address to point to an address structure that contains the URL of the path that contains the passed path entry. In block 1004, the routine sets the local pointer element to null to initialize the selection of the bindings. In blocks 1005 through 1007, the routine loops adding all the bindings for the address of the passed path entry that include and are before the passed path entry to the address pointed to by the local path address. In block 1005, the routine retrieves the next binding from the binding list starting with the first. If there is no such binding, then the routine returns,

else the routine continues at block 1006. In block 1006, the routine adds the binding to the binding list of the local path address structure and sets the current binding of the local variable path address. In the block 1007, if the local pointer element is equal to the address entry of the passed path entry, then the routine returns, else the routine loops to block 1005 to select the next binding.

Figure 11 is a flow diagram of a routine to get the next binding. This routine returns the next binding from the local binding list. If there is no next binding, then the routine invokes the routine label map get to identify the list of edges ("trails") that will map the output label to the target label. If only one trail is identified, then the binding list of path address is extended by the edges of the trail. If multiple trails are identified, then a path is created for each trail and the routine returns so that the demux process can be invoked for each created path. In block 1101, the routine sets the local pointer binding to point to the next or previous (as indicated by the traverse function) binding in the local binding list. In block 1102, if a binding was found, then the routine returns an indication that a binding was found, else the routine continues at block 1103. In block 1103, the routine invokes the label map get function passing the output label and target label of the local map structure. The label map get function returns a trail list. A trail is a list of edges from the output label to the target label. In decision block 1104, if the size of the trail list is one, then the routine continues at block 1105, else the routine continues at block 1112. In blocks 1105-1111, the routine extends the binding list by adding a binding data structure for each edge in the trail. The routine then sets the local binding to the last binding in the binding list. In block 1105, the routine sets the local pointer current binding to point to the last binding in the local binding list. In block 1106, the routine sets the local variable temp trail to the trail in the trail list. In block 1107, the routine extends the binding list by temp trail by adding a binding for each edge in the trail. These bindings are not yet nailed. In block 1108, the routine sets the local binding to point to the last binding in the local binding list. In decision block 1109, if the local binding does not have a key for a session and the local map has a target key for a session, then the routine sets the key for the binding to the target key of the local map and continues at block 1110, else the routine loops to block 1101 to retrieve the next binding in path. In block 1110, the routine sets the key of the local binding to the target key of the local map. In block 1111, the routine sets the target key of the local map to null and

then loop to block 1101 to return the next binding. In decision block 1112, if the local session is set, then the demultiplexing is already in progress and the routine returns a break status. In block 1113, the routine invokes a prepare multicast paths routine to prepare a path entry for each trail in the trail list. The routine then returns a multiple status.

Figure 12 is a flow diagram of the get key routine. The get key routine invokes an edge's demux-key routine to retrieve a key for the session associated with the message. The key identifies the session of a protocol. The demux key routine creates the appropriate key for the message. The demux key routine returns a status of remove, postpone, or other. The status of remove indicates that the current binding should be removed from the path. The status of postpone indicates that the demux key routine cannot create the key because it needs information provided by subsequent protocols in the path. For example, a TCP session is defined by a combination of a remote and local port address and an IP address. Thus, the TCP protocol postpones the creating of a key until the IP protocol identifies the IP address. The get key routine returns a next binding status to continue at the next binding in the path. Otherwise, the routine returns a continue status. In block 1201, the routine sets the local edge to the edge of the local binding (current binding) and sets the local protocol to the protocol of the local edge. In block 1202, the routine invokes the demux key routine of the local edge passing the local message, local path address, and local map. The demux key routine sets the key in the local binding. In decision block 1203, if the demux key routine returns a status of remove, then the routine continues at block 1204. If the demux key routine returns a status of postpone, then the routine continues at block 1205, else the routine continues at block 1206. In block 1204, the routine sets the flag of the local binding to indicate that the binding is to be removed and continues at block 1206. In block 1205, the routine sets the variable traverse to the function to list the next data, increments the variable postpone, and then returns a next binding status. In blocks 1206-1214, the routine processes the postponing of the creating of a key. In blocks 1207-1210, if the creating of a key has been postponed, then the routine indicates to backtrack on the path, save the demux status, and set the demux status to demux continue. In blocks 1211-1213, if the creating of a key has not been postponed, then the routine indicates to continue forward in the path and to restore any saved demux status. The save demux status is the status

associated by the binding where the backtrack started. In decision block 1206, if the variable postpone is set, then the routine continues at block 1207, else the routine continues at block 1211. In block 1207, the routine decrements the variable postpone and sets the variable traverse to the list previous data function. In decision block 1208, if the variable saved status is set, then the routine continues at block 1210, else the routine continues at block 1209. The variable saved status contains the status of the demux process when the demux process started to backtrack. In block 1209, the routine sets the variable saved status to the variable status. In block 1210, the routine sets the variable status to demux continue and continues at block 1214. In block 1211, the routine sets the variable traverse to the list next data function. In decision block 1212, if the variable saved status in set, then the routine continues at block 1213, else the routine continues at block 1214. In block 1213, the routine sets the variable status to the variable saved status and sets the variable saved status to 0. In decision block 1214, if the local binding indicates that it is to be removed, then the routine returns a next binding status, else the routine returns a continue status.

Figure 13 is a flow diagram of the get session routine. This routine retrieves the session data structure, creating a data structure session if necessary, for the key indicated by the binding. In block 1301, the routine retrieves the session from the session table of the local protocol indicated by the key of the local binding. Each protocol maintains a mapping from each key to the session associated with the key. In decision block 1302, if there is no session, then the routine continues at block 1303, else the routine returns. In block 1303, the routine creates a session for the local protocol. In block 1304, the routine initializes the key for the local session based on the key of the local binding. In block 1305, the routine puts the session into the session table of the local protocol. In block 1306, the routine invokes the create session function of the protocol to allow the protocol to initialize its context and then returns.

Figure 14 is a flow diagram of the nail binding routine. This routine determines whether a binding is already associated with ("nailed to") the session. If so, the routine returns that binding. If not, the routine associates the binding with the session. The routine returns a status of simplex to indicate that only one path can extend through the nailed binding. In decision block 1401, if the binding table of the session contains an entry for the edge, then the routine continues at block 1402, else the routine

continues at block 1405. In block 1402, the routine sets the binding to the entry from the binding table of the local session for the edge. In block 1403, the routine sets the current binding to point to the binding from the session. In block 1404, if the binding is simplex, then the routine returns a simplex status, else the routine returns. Blocks 1405 through 1410 are performed when there is no binding in the session for the edge. In block 1405, the routine sets the session of the binding to the variable session. In block 1406, the routine sets the key of the binding to the key from the session. In block 1407, the routine sets the entry for the edge in the binding table of the local session to the binding. In block 1408, the routine invokes the create binding function of the edge of the binding passing the binding so the edge can initialize the binding. If that function returns a status of remove, the routine continues at block 1409. In block 1409, the routine sets the binding to be removed and then returns.

Figure 15 is a flow diagram of the find path routine. The find path routine identifies the shortest path through the binding list. If no such path exists, then the routine extends a path to include the binding list. In decision block 1501, if the binding is simplex and a path already goes through this binding (returned as an entry), then the routine continues at block 1502, else the routine continues at block 1503. In block 1502, the routine sets the path to the path of the entry and returns. In block 1503, the routine initializes the pointers element and short entry to null. In block 1504, the routine sets the path to the path of the passed path entry. If the local path is not null and its status is demux extend, then the routine continues at block 1509, else the routine continues at block 1505. In blocks 1505-1508, the routine loops identifying the shortest path through the bindings in the binding list. The routine loops selecting each path through the binding. The selected path is eligible if it starts at the first binding in the binding list and the path ends at the binding. The routine loops setting the short entry to the shortest eligible path found so far. In block 1505, the routine sets the variable first binding to the first binding in the binding list of the path address. In block 1506, the routine selects the next path (entry) in the path list of the binding starting with the first. If a path is selected (indicating that there are more paths in the binding), then the routine continues at block 1507, else the routine continues at block 1509. In block 1507, the routine determines whether the selected path starts at the first binding in the binding list, whether the selected path ends at the last binding in the binding list, and whether the number of path

entries in the selected path is less than the number of path entries in the shortest path selected so far. If these conditions are all satisfied, then the routine continues at block 1508, else the routine loops to block 1506 to select the next path (entry). In block 1508, the routine sets the shortest path (short entry) to the selected path and loops to block 1506 to select the next path through the binding. In block 1509, the routine sets the selected path (entry) to the shortest path. In decision block 1510, if a path has been found, then the routine continues at block 1511, else the routine continues at block 1512. In block 1511, the routine sets the path to the path of the selected path entry and returns. Blocks 1512-1516 are performed when no paths have been found. In block 1512, the routine sets the path to the path of the passed path entry. If the passed path entry has a path and its status is demux extend, then the routine continues at block 1515, else the routine continues at block 1513. In block 1513, the routine creates a path for the path address. In block 1514, the routine sets the variable element to null and sets the path entry to the first element in the stack list of the path. In block 1515, the routine sets the variable element to be address entry of the member of the passed path entry and sets the path entry to the passed path entry. In block 1516, the routine invokes the extend path routine to extend the path and then returns. The extend path routine creates a path through the bindings of the binding list and sets the path status to the current demux status.

Figure 16 is a flow diagram of the process of path hopping routine. Path hopping occurs when the path through the binding list is not the same path as that of the passed path entry. In decision block 1601, if the path of the passed path entry is set, then the routine continues at block 1602, else the routine continues at block 1609. In decision block 1602, if the path of the passed path entry is equal to the local path, then the routine continues at 1612, else path hopping is occurring and the routine continues at block 1603. In blocks 1603-1607, the routine loops positioning pointers at the first path entries of the paths that are not at the same binding. In block 1603, the routine sets the variable old stack to the stack list of the path of the passed path entry. In block 1604, the routine sets the variable new stack to the stack list of the local path. In block 1605, the routine sets the variable old element to the next element in the old stack. In block 1606, the routine sets the variable element to the next element in the new stack. In decision block 1607, the routine loops until the path entry that is not in the same binding is located. In decision block 1608, if the variable old entry is set, then the routine is not at the end of

the hopped-from path and the routine continues at block 1609, else routine continues at block 1612. In block 1609, the routine sets the variable entry to the previous entry in the hopped-to path. In block 1610, the routine sets the path of the passed path entry to the local path. In block 1611, the routine sets the local entry to the first path entry of the stack list of the local path. In block 1612, the routine inserts an entry into return list and then returns.

Although the conversion system has been described in terms of various embodiments, the invention is not limited to these embodiments. Modification within the spirit of the invention will be apparent to those skilled in the art. For example, a conversion routine may be used for routing a message and may perform no conversion of the message. Also, a reference to a single copy of the message can be passed to each conversion routine or demuxkey routine. These routines can advance the reference past the header information for the protocol so that the reference is positioned at the next header. After the demux process, the reference can be reset to point to the first header for processing by the conversion routines in sequence. The scope of the invention is defined by the claims that follow.

CLAIMS

1. A method in a computer system for processing packets of a message, the method comprising:

receiving a packet of the message;

identifying a component for processing the received packet;

receiving from the identified component an identifier of state information associated with the message;

retrieving state information associated with the received identifier; and

providing the retrieved state information and the received packet to the identified component for processing of the received packet.

2. The method of claim 1 including requesting that the identified component provide an identifier of state information.

3. The method of claim 1 wherein the providing includes invoking a message handler of the component.

4. The method of claim 1 wherein the receiving of the identifier is in response to invoking a routine of the component.

5. The method of claim 1 wherein the component is a protocol.

6. A method in a computer system for processing packets of a message, the method comprising:

receiving a packet of the message and a data type of the message;

identifying a component that is capable of processing a packet of the indicated data type; and

providing the received packet to the identified component for processing.

7. The method of claim 6 including

receiving from the identified component an identifier of state information associated with the message;

retrieving state information associated with the received identifier; and

providing the retrieved state information along with the received packet to the identified component for processing.

8. The method of claim 6 wherein the receiving of the data type includes requesting the data type from a component that previously processed the packet.

9. The method of claim 6 wherein the component is a protocol with an edge.

10. A component in a computer system for message handling, the message having packets, comprising:

for each of a plurality of processing sub-components,

a state key function for generating an identifier of state information based on a packet; and

a message handler function for processing a packet of the message using state information identified by the identifier; and

a session function for generating initial state information for a message that is associated with a generated identifier; and

11. The component of claim 10 wherein the component is a protocol and the sub-components are edges of the protocol.

12. The component of claim 10 wherein the message handler function updates the state information.

13. The component of claim 10 wherein each sub-component is for processing messages of different data types.

14. The component of claim 10 wherein multiple messages share the same state information.

15. The component of claim 10 wherein multiple sub-components share the same state information.

16. The component of claim 10 wherein the message handler function is passed state information.

17. The component of claim 10 wherein the state information is stored external to the component.

18. The component of claim 10 wherein the message handler converts data of a packet.

19. A computer-readable medium containing a data structure comprising a sequence of path entries, each path entry having a reference to state information for a message and a reference to a message handler for processing a message wherein the message handlers are to be invoked in the order of the sequence.

20. The computer-readable medium of claim 19 wherein the data structure includes an indication of type of data to be output by the sequence of message handlers.

21. The computer-readable medium of claim 19 wherein a path entry includes an indication of type of data output by the message handler.

22. A method in a computer system for processing a message, the message having a plurality of headers, the method comprising:

analyzing the headers of the message to identify a sequence of message handlers for processing the message; and

invoking some of the identified message handlers passing the message.

23. The method of claim 22 wherein the analyzing includes identifying a data type associated with a header.

24. The method of claim 22 including locating state information based on information in a header.

25. The method of claim 24 wherein the analyzing includes identifying a state indicator routine for each message handler and the locating of state information includes invoking the identified state indicator routine passing the message wherein the state indicator routine advances a reference past the header associated with the state indicator routine.

26. The method of claim 22 wherein the invoking is under control of a single thread of execution.

27. The method of claim 22 wherein analyzing includes identifying multiple sequences of message handlers.

28. The method of claim 22 wherein each invoked message handler advances a reference past its header in the message.

29. A computer-readable medium that implements the method of claim 1.

30. A computer-readable medium that implements the method of claim 6.

31. A computer-readable medium containing a data structure that includes:

a plurality of item fields, each item field identifying a conversion routine for processing a message in sequence; and

a type field specifying that each item field contains the identifier of a conversion routine.

32. The computer-readable medium of claim 31 wherein an item field identifies a protocol and edge.

33. The computer-readable medium of claim 31 wherein an item field includes an identifier of state information for the conversion routine.

34. The computer-readable medium of claim 31 wherein the data structure is a URL.

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METHOD AND SYSTEM FOR DATA DEMULTIPLEXING

ABSTRACT

A method and system for demultiplexing packets of a message is provided. The demultiplexing system receives packets of a message, identifies a sequence of message handlers for processing the message, identifies state information associated with the message for each message handler, and invokes the message handlers passing the message and the associated state information. The system identifies the message handlers based on the initial data type of the message and a target data type. The identified message handlers effect the conversion of the data to the target data type through various intermediate data types.

Bib Data Sheet

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SERIAL NUMBER	FILING DATE	CLASS	GROUP ART UNIT	ATTO DOCKE
09/474,664	12/29/1999 RULE _	370	2739	29451800

APPLICANTS
EDWARD BALASSANIAN, KIRKLAND, WA ;

** CONTINUING DATA ********** NONE

** FOREIGN APPLICATIONS ********** NONE

IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** SMALL ENTITY **
** 02/07/2000

		STATE OR COUNTRY	SHEETS DRAWING	TOTAL CLAIMS	INDEPENDENT CLAIMS
Foreign Priority claimed	☐ yes ☑ no	WA	18	34	6
35 USC 119 (a-d) conditions met	☐ yes ☑ no ☐ Met after Allowance				
Verified and Acknowledged	Examiner's Signature / Initials				

ADDRESS

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~~METHOD AND SYSTEM FOR DATA DEMULTIPLEXING~~

FILING FEE RECEIVED	FEES: Authority has been given in Paper	
653	No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

PATENT APPLICATION FEE DETERMINATION RECORD
Effective December 29, 1999

Application or Docket Number
09/474,604

CLAIMS AS FILED - PART I

(31, 4, 10, 19, 22)

	(Column 1)	(Column 2)
FOR	NUMBER FILED	NUMBER EXTRA
BASIC FEE		
TOTAL CLAIMS	34 minus 20=	* 14
INDEPENDENT CLAIMS	6 minus 3 =	* 3
MULTIPLE DEPENDENT CLAIM PRESENT		

* If the difference in column 1 is less than zero, enter "0" in column 2

SMALL ENTITY TYPE ☐		OR	OTHER THAN SMALL ENTITY	
RATE	FEE		RATE	FEE
	345.00	OR		690.00
X$ 9=		OR	X$18=	252
X39=		OR	X78=	234
+130=		OR	+260=	
TOTAL		OR	TOTAL	1176

CLAIMS AS AMENDED - PART II

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
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Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
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X39=		OR	X78=	
+130=		OR	+260=	
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AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
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AMENDMENT C

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
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Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

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* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
***If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

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CLAIMS

	AS FILED		AFTER 1st AMENDMENT		AFTER 2nd AMENDMENT	
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PTO-1360 (3-76)

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jc690 U.S. PTO
09/474664
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ISSUE CLASSIFICATION	
Class	Subclass
712	33

PATENT NUMBER
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U.S. **UTILITY** Patent Application

O.I.P.E. SCANNED BM Q.A.	PATENT DATE
	SEP 30 2003

APPLICATION NO.	CONT/PRIOR	CLASS	SUBCLASS	ART UNIT	EXAMINER
09/474664		~~370~~	5	~~2729~~ 3782	Peyton N

APPLICANTS
Do Bu

TITLE

PTO-2040
12/99

ISSUING CLASSIFICATION

ORIGINAL CLASS	ORIGINAL SUBCLASS	CROSS REFERENCE(S) CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					
710	33	710	1	3	~~4~~ 5	33	51	131
INTERNATIONAL CLASSIFICATION		370	401	497	445	233	236	242
G	06	F	13/00					
H	04	L	12/56					
H	04	L	12/54					

☐ Continued on Issue Slip Inside File Jacket

3/22/03 Formal Drawings (14 shts) rec'd 3/3/03 BC

☐ TERMINAL DISCLAIMER	DRAWINGS			CLAIMS ALLOWED	
	Sheets Drwg.	Figs. Drwg.	Print Fig.	Total Claims	Print Claim for O.G.
	16	16	1	44	1

☐ The term of this patent subsequent to _____ (date) has been disclaimed.

Nathan J. Peyton (Assistant Examiner) 5/19/03 (Date)

NOTICE OF ALLOWANCE MAILED

5-20-03

☐ The term of this patent shall not extend beyond the expiration date of U.S Patent. No. _____

JEFFREY GAFFIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

(Primary Examiner) 5/19/03 (Date)

ISSUE FEE 1h

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☐ The terminal ____ months of this patent have been disclaimed.

(Legal Instruments Examiner) 5/22/03 (Date)

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Form PTO-436A
(Rev. 6/99)

FILED WITH: ☐ DISK (CRF) ☐ FICHE ☐ CD-ROM
(Attached in pocket on right inside flap)

ISSUE FEE IN FILE

(FACE)

SEARCHED

Class	Sub.	Date	Exmr.
710	1 3 33 38 131 132	9/18	JKP
713	1 3 20 33 38 51 131	5/19	JKP
370	401 497 498 535 536 542		

INTERFERENCE SEARCHED

Class	Sub.	Date	Exmr.
710	1 3 20 33 38 51 131	9/1	
370	401 497 498 535 536 542		

SEARCH NOTES
(INCLUDING SEARCH STRATEGY)

	Date	Exmr.
idest 2.1 Search Notes (protocol or command) same (packet or message) same edge same id# ... domain#;	9/17 9/18	JKP
Exact search Search Notes (1)	5/17	JKP
Int. search	5/19	JKP
See search notes		

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ISSUE SLIP STAPLE AREA (for additional cross references)

POSITION	INITIALS	ID NO.	DATE
FEE DETERMINATION	JB		11-3-00
O.I.P.E. CLASSIFIER		20	2-7
FORMALITY REVIEW			
RESPONSE FORMALITY REVIEW	VK	64149	2-7 5-12

INDEX OF CLAIMS

✔	Rejected	N	Non-elected
=	Allowed	I	Interference
– (Through numeral)	Canceled	A	Appeal
÷	Restricted	O	Objected

Claim		Date
Final	Original	
	1	4/11/02 5/11/03
	2	✓
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Claim		Date
Final	Original	
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Claim		Date
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If more than 150 claims or 10 actions staple additional sheet here

(LEFT INSIDE)

JC690 U.S. PTO 09/474664 12/29/99

APPLICATION NO. 09/474664

APPLICANTS EDWARD B

TITLE

ORIGINA

CLASS 710

INTERNATIONAL

TERMINA DISCLAIM

☐ The term of this subsequent to ___ has been disclaimed

☐ The term of this not extend beyond t of U.S Patent. No. ___

☐ The terminal ___ this patent have bee

WARNING: The information disclos Possession outside the

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