

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail

Mail Stop ISSUE FEE
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 or Fax (703) 746-4000

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All other correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated on the label 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: Use Block 1 for any change of address)

7590

05/17/2005

Barton E. Showalter
 Baker Botts L.L.P.
 Suite 600
 2001 Ross Avenue
 Dallas, TX 75201-2980

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 Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (703) 746-4000, on the date indicated below.

See attached Certificate of (Depositor's name)
 Mailing via Express mail (Signature)
 (Date)

08/18/2005 MBELETE2 00000100 09935528

01 FC:1501

1400.00 DP

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/935,528	08/23/2001	William Patrick Hann	062891.0627	8683

TITLE OF INVENTION: METHOD AND SYSTEM FOR PROTECTING A NETWORK INTERFACE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1400	\$0	\$1400	08/17/2005

EXAMINER	ART UNIT	CLASS-SUBCLAS
NGUYEN, BINH QUOC	2664	370-216000

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.

Baker Botts L.L.P.

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. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Cisco Technology, Inc.

San Jose, California

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 (No small entity discount permitted)
☐ 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 Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number 02-0384 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

The Director of the USPTO 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. 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.

Authorized Signature

Date

Typed or printed name Barton E. Showalter

Registration No. 38,302

This collection of information is required by 37 CFR 1.31. 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, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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ATTORNEY DOCKET NO.
062891.0627

1

PATENT APPLICATION
09/935,528

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: William Patrick Hann
Serial No.: 09/935,528
Filed: August 23, 2001
Group No.: 2664
Examiner: Binh Quoc Nguyen
Notice of Allowance Mailed: May 17, 2005
Confirmation No.: 8683
Title: METHOD AND SYSTEM FOR PROTECTING A NETWORK
INTERFACE

Mail Stop Issue Fee
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

RESPONSE TO REASONS FOR ALLOWANCE

Applicant appreciates the Examiner's allowance of Claims 1-28. Pursuant to 37 C.F.R. § 1.104, Applicant respectfully issues a statement commenting on the Examiner's reasons for allowance. Applicant respectfully disagrees with the Examiner's reasons for allowance to the extent that they are inconsistent with applicable case law, statutes, and regulations. Furthermore, Applicant does not admit to any characterization or limitation of the claims or to any characterization of a reference by the Examiner, particularly any that are inconsistent with the language of the claims considered in their entirety and including all of their constituent limitations.

Respectfully submitted,
BAKER BOTTS L.L.P.
Attorneys for Applicant

Barton E. Shawalter
Registration No. 68,302

Date: Aug 16, 2005
CUSTOMER NO. 05073

DAL01:866267.1

ATTORNEY DOCKET NO.:
062891.0627

SERIAL NO.
09/935,528



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: William Patrick Hann
Serial No.: 09/935,528
Filed: August 23, 2001
Group No.: 2664
Examiner: Binh Quoc Nguyen
Notice of Allowance Mailed: May 17, 2005
Confirmation No.: 8683
Title: METHOD AND SYSTEM FOR PROTECTING A NETWORK
INTERFACE

Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

CERTIFICATE OF MAILING BY EXPRESS MAIL

I hereby certify that the attached Issue Fee Transmittal (PTOL-85) (one (1) page) and Comments on Allowance are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. 1.10 on this 16th day of August 2005 addressed to Mail Stop ISSUE FEE, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Willie Jiles

Willie Jiles

Express Mail Receipt
No. EV 322273295 US

DAL01:866266.1



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

NOTICE OF ALLOWANCE AND FEE(S) DUE

7590 05/17/2005
Barton E. Showalter
Baker Botts L.L.P.
Suite 600
2001 Ross Avenue
Dallas, TX 75201-2980

EXAMINER

NGUYEN, BINH QUOC

ART UNIT

PAPER NUMBER

2664

DATE MAILED: 05/17/2005

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/935,528	08/23/2001	William Patrick Hann	062891.0627	8683

TITLE OF INVENTION: METHOD AND SYSTEM FOR PROTECTING A NETWORK INTERFACE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1400	\$0	\$1400	08/17/2005

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 above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, 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 box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

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 Mail Stop 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.

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05/17/2005

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/935,528	08/23/2001	William Patrick Hann	062891.0627	8683

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nonprovisional	NO	\$1400	\$0	\$1400	08/17/2005

EXAMINER	ART UNIT	CLASS-SUBCLAS
NGUYEN, BINH QUOC	2664	370-216000

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. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. 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 (No small entity discount permitted)
☐ 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 Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

The Director of the USPTO 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. 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.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

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, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/935,528	08/23/2001	William Patrick Hann	062891.0627	8683
7590 05/17/2005				
Barton E. Showalter Baker Botts L.L.P. Suite 600 2001 Ross Avenue Dallas, TX 75201-2980			EXAMINER NGUYEN, BINH QUOC	
			ART UNIT 2664	PAPER NUMBER

DATE MAILED: 05/17/2005

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 937 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 937 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment 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) WEB site (<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 (571) 272-7702. 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.

Notice of Allowability	Application No.	Applicant(s)	
	09/935,528	HANN, WILLIAM PATRICK	
	Examiner	Art Unit	
	Binh Q. Nguyen	2664	

– 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 08/23/2001.
2. ☒ The allowed claim(s) is/are 1-28.
3. ☒ The drawings filed on 08/23/2001 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: _____

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.

5. ☐ 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.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") 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./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

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. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ 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) | 5. ☐ Notice of Informal Patent Application (PTO-152) |
| 2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. ☐ Examiner's Amendment/Comment |
| 4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. ☒ Examiner's Statement of Reasons for Allowance |
| | 9. ☐ Other _____ |


KENNETH VANDERPUYE
 PRIMARY EXAMINER

DETAILED ACTION

Allowable Subject Matter

1. **Claims 1-28** are allowed over the prior art.

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

Claims 1-28 are allowable because the prior art of record fails to teach, in combination with other claim limitation, a system for protecting data transfers between a switch and a physical network, the system comprising: a timer to detect failure of the master network interface for initiating protection with the slave network interface; and a protection first in first out circuit associated with the slave network interface, the first in first out circuit reading data transferred from the master network interface synchronized to the master reference clock and writing data synchronized to the slave reference clock.

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 submission should be clearly labeled "Comments on Statement of Reasons for Allowance".

Contact Information

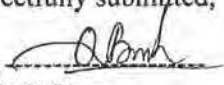
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Binh Q. Nguyen whose telephone number is 571-272-8563. The examiner can normally be reached on M-F: 9:00 AM - 5:30 PM.

Application/Control Number: 09/935,528
Art Unit: 2664

Page 3

2. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.
3. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Respectfully submitted,

By: 

Binh Q. Nguyen
Patent Examiner
04/28/2005


KENNETH VANDERPUYE
PRIMARY EXAMINER

Notice of References Cited	Application/Control No. 09/935,528	Applicant(s)/Patent Under Reexamination HANN, WILLIAM PATRICK	
	Examiner Binh Q. Nguyen	Art Unit 2664	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,680,904	01-2004	Kaplan et al.	370/217
	B	US-6,834,038	12-2004	Zelig et al.	370/217
	C	US-2003/0076839	04-2003	Li et al.	370/395.6
	D	US-6,047,001	04-2000	Kuo et al.	370/428
	E	US-5,745,684	04-1998	Oskouy et al.	709/250
	F	US-6,173,411	01-2001	Hirst et al.	714/4
	G	US-5,968,185	10-1999	Bressoud et al.	714/10
	H	US-6,073,249	06-2000	Watabe et al.	714/4
	I	US-6,621,828	09-2003	Field et al.	370/466
	J	US-6,370,155	04-2002	Cantwell et al.	370/465
	K	US-6,473,397	10-2002	Au, How-Kee	370/223
	L	US-2001/0002199	05-2001	Hershey et al.	370/505
	M	US-6,078,733	06-2000	Osborne, Randy B.	709/250

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	DL3000-CMX MODBUS Slave Interface, www.protocolconverter.com/products/dl3000cmxmsp.html
	V	Profibus Newsletter, PROFIBUS DP Multi-Slave Interface Card, http://us.profibus.com/www/q
	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.



UNITED STATES PATENT AND TRADEMARK OFFICE

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WASHINGTON, D.C. 20231
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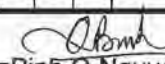
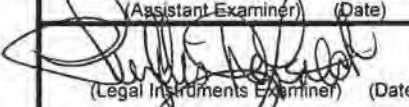


Bib Data Sheet

CONFIRMATION NO. 8683

SERIAL NUMBER 09/935,528	FILING DATE 08/23/2001 RULE	CLASS 709	GROUP ART UNIT 2152	ATTORNEY DOCKET NO. 062891.0627
APPLICANTS William Patrick Hann, Round Rock, TX; ** CONTINUING DATA ** <i>NONE BQN</i> ** FOREIGN APPLICATIONS ** <i>NONE BQN</i>				
IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 09/27/2001				
Foreign Priority claimed ☐ yes ☒ no 35 USC 119 (a-d) conditions met ☐ yes ☒ no ☐ Met after Allowance <i>BQN</i> Verified and Acknowledged <i>BQN</i> Examiner's Signature <i>BQN</i> Initials		STATE OR COUNTRY TX	SHEETS DRAWING 2	TOTAL CLAIMS 28
				INDEPENDENT CLAIMS 3
ADDRESS Barton E. Showalter Baker Botts L.L.P. Suite 600 2001 Ross Avenue Dallas, TX 75201-2980				
TITLE Method and system for protecting a network interface				
FILING FEE RECEIVED 854	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	

Issue Classification 	Application/Control No.	Applicant(s)/Patent under Reexamination	
	09/935,528	HANN, WILLIAM PATRICK	
	Examiner	Art Unit	
	Binh Q. Nguyen	2664	

ISSUE CLASSIFICATION													
ORIGINAL			CROSS REFERENCE(S)										
CLASS	SUBCLASS		CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)									
370	216		370	395.1	503								
INTERNATIONAL CLASSIFICATION			709	250	208								
4	0	4 L											
 Binh Q. Nguyen 04/28/2005 (Assistant Examiner) (Date)			 KENNETH VANDERPUYE PRIMARY EXAMINER Ken Vanderpuye 04/28/2005 (Primary Examiner) (Date)			Total Claims Allowed: 28 <table border="1"> <tr> <td>O.G. Print Claim(s)</td> <td>O.G. Print Fig.</td> </tr> <tr> <td>1</td> <td>2</td> </tr> </table>				O.G. Print Claim(s)	O.G. Print Fig.	1	2
O.G. Print Claim(s)	O.G. Print Fig.												
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 (Legal Instruments Examiner) (Date)													

☐ Claims renumbered in the same order as presented by applicant		☐ CPA		☐ T.D.		☐ R.1.47	
Final	Original	Final	Original	Final	Original	Final	Original
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Index of Claims



Application/Control No.

09/935,528

Examiner

Binh Q. Nguyen

Applicant(s)/Patent under Reexamination

HANN, WILLIAM PATRICK

Art Unit

2664

√	Rejected
=	Allowed

—	(Through numeral) Cancelled
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N	Non-Elected
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A	Appeal
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Claim	Date
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Search Notes

Application/Control No.

09/935,528

Applicant(s)/Patent under
Reexamination

HANN, WILLIAM PATRICK

Examiner

Binh Q. Nguyen

Art Unit

2664

SEARCHED

Class	Subclass	Date	Examiner
370	395.1 503	4/19/2005	BQN
370	216	4/20/2005	BQN
714	10	4/22/2005	BQN
370	356	4/27/2005	BQN
370	219	4/27/2005	BQN
370	220	4/27/2005	BQN
709	250	4/27/2005	BQN
370	392	4/27/2005	BQN
710	110	4/27/2005	BQN
712	31	4/27/2005	BQN
709	208	4/27/2005	BQN
370	465	4/27/2005	BQN
370	219	4/28/2005	BQN
370	215	4/28/2005	BQN

INTERFERENCE SEARCHED

Class	Subclass	Date	Examiner
370	216 395.1	4/19/2005	BQN
370	503	4/19/2005	BQN
709	250 208	4/27/2005	BQN

**SEARCH NOTES
(INCLUDING SEARCH STRATEGY)**

	DATE	EXMR
EAST, consulted with Duc Ho	4/19/2005	BQN
EAST, consulted with Ken Vanderpuye	4/26/2005	BQN
Google.com, Multi-Slave Interface Card	4/27/2005	BQN
EAST, update search, consulted with Ken Vanderpuye	4/28/ 2005	BQN

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	22325	network\$3 adj interface	USPAT	OR	OFF	2005/04/19 09:22
S2	3	network\$3 adj interface with switch\$3 with physical adj network\$3	USPAT	OR	OFF	2005/04/19 09:36
S3	93	network\$3 adj interface with transfer\$3 and switch\$3 and physical adj network\$3	USPAT	OR	OFF	2005/04/19 18:25
S4	19	network\$3 adj interface with transfer\$3 and switch\$3 same physical adj network\$3	USPAT	OR	OFF	2005/04/19 09:42
S5	177	network\$3 adj interface same transfer\$3 and switch\$3 and physical adj network\$3	USPAT	OR	OFF	2005/04/20 17:30
S6	1	network\$3 adj interface same transfer\$3 and switch\$3 and physical adj network\$3 and reference adj clock\$3	USPAT	OR	OFF	2005/04/20 17:28
S7	2	network\$3 adj interface same transfer\$3 and switch\$3 and physical adj network\$3 and ATM adj card\$1	USPAT	OR	OFF	2005/04/20 17:29
S8	2	network\$3 adj interface same transfer\$3 and switch\$3 and physical adj network\$3 and ATM\$1 adj card\$3	USPAT	OR	OFF	2005/04/20 17:29
S9	38	network\$3 adj interface same transfer\$3 and switch\$3 same physical adj network\$3	USPAT	OR	OFF	2005/04/26 10:37
S10	0	"09637758"	USPAT	OR	OFF	2005/04/26 10:37
S11	1	09/637758	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 10:39
S12	5	09/472,683	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 11:33
S13	78	(master adj1 interface or primary adj1 interface or active adj S10 interface) and (backup or redundant or standby) adj1 interface and synchroniz\$5	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 14:24

S14	17	"5968185"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 12:54
S15	3	"6724756"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 12:57
S16	10	H1,882	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 13:01
S17	0	"Oct." "3,2000".PD.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 13:01
S18	0	"10032000".PD.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 13:02
S19	3	"6073249"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 13:20
S20	13	"5899582"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 13:22
S21	14	"6181,715"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 13:23
S22	8	("5899582" "6181715" "6215863" "6219354" "6317415" "6345051" "6404861" "6424657").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2005/04/26 13:27

S23	3	("6680904").URPN.	USPAT	OR	OFF	2005/04/26 13:50
S24	5	09/472,683	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 13:51
S25	12	("5283782" "5436886" "5663949" "5796717" "6075767" "6314102" "6351452" "6438144" "6466576" "6597689" "6680904" "6687231").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2005/04/26 14:05
S26	6	"6370155"	US-PGPUB; USPAT; USOCR	OR	OFF	2005/04/26 14:12
S27	9	"5983371"	US-PGPUB; USPAT; USOCR	OR	OFF	2005/04/26 14:20
S28	1	"6874147"	US-PGPUB; USPAT; USOCR	OR	OFF	2005/04/26 14:23
S29	8	(master adj1 interface or primary adj1 interface or active adj S10 interface) and (backup or redundant or standby) adj1 interface and synchroniz\$5 and clock and FIFO	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 14:56
S30	9898	(master active first) and (slave standby secondary backup redundant) near5 interface	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 15:00
S31	3450	(master active first) and (slave standby secondary backup redundant) near5 interface and synchroniz\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 15:01
S32	1069	(master active first) and (slave standby secondary backup redundant) near5 interface and synchroniz\$7 and (clock clk timer) and FIFO	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 15:02
S33	315	(master active first) and (slave standby secondary backup redundant) near5 interface and synchroniz\$7 and (clock clk timer) and FIFO and protection	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 15:03

S34	38	(master active first) and (slave standby secondary backup redundant) near5 interface and synchroniz\$7 and (clock clk timer) and FIFO and protection and MU	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 15:03
S35	149	(master active first) and (slave standby secondary backup redundant) near5 interface and synchroniz\$7 and (clock clk timer) and FIFO and protection and mux	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 15:04
S36	145	(master active first) and (slave standby secondary backup redundant) near5 interface and synchroniz\$7 and (clock clk timer) and FIFO and protection and mux and (store RAM sav\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 15:06
S37	1729	(master active first) and (slave standby secondary backup redundant) near5 interface and synchroniz\$7 and (clock clk timer) and FIFO a3nd protection and mux and (store RAM sav\$3) and bidirectional	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 17:17
S38	3608	(master active first) and (slave standby secondary backup redundant) near5 interface and synchroniz\$7 and (clock clk timer) and FIFO a3nd protection and mux and (store RAM sav\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 17:17
S39	2983	(master active first) and (slave standby secondary backup redundant) adj interface and synchroniz\$7 and (clock clk timer) and FIFO a3nd protection and mux and (store RAM sav\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 17:18
S40	2840	(master active first) adj interface and (slave standby secondary backup redundant) adj interface and synchroniz\$7 and (clock clk timer) and FIFO a3nd protection and mux and (store RAM sav\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 17:19
S41	2840	(master active first) adj interface and (slave standby secondary backup redundant) adj interface and synchroniz\$5 and (clock clk timer) and FIFO a3nd protection and mux and (store RAM sav\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 17:19

S42	5	(master active first) adj interface and (slave standby secondary backup redundant) adj interface and synchroniz\$5 and (clock clk timer) and FIFO and protection and mux and (store RAM sav\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 17:29
S43	6	(master active first primary) adj interface and (slave standby secondary backup redundant) adj interface and synchroniz\$5 and (clock clk timer) and FIFO and protection and mux and (store RAM sav\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 18:13
S44	62	(slave standby secondary backup redundant) adj interface and synchroniz\$5 and (clock clk timer) and FIFO and protection and mux and (store RAM sav\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 18:46
S45	41	interface adj network near5 (backup secondary slave redund\$5)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 18:52
S46	6	interface adj network near5 (backup secondary slave redund\$5) and FIFO	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 18:59
S47	41	interface adj network near5 (backup secondary slave redund\$5)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/26 19:06
S48	20	interface adj network near5 (standby backup secondary slave redund\$5) and synch\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 09:20
S49	347	interface near5 network near5 (standby backup secondary slave redund\$5) and synch\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 09:21

S50	219	interface near5 network near5 (standby backup secondary slave redund\$5) and synch\$7 and (clock clk timer)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 09:21
S51	59	interface near5 network near5 (standby backup secondary slave redund\$5) and synch\$7 and (clock clk timer) and FIFO	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 11:30
S52	3	09/443157	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 11:30
S53	12	("5283782" "5436886" "5663949" "5796717" "6075767" "6314102" "6351452" "6438144" "6466576" "6597689" "6680904" "6687231").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2005/04/27 11:32
S54	0	("6834038").URPN.	USPAT	OR	OFF	2005/04/27 11:40
S55	1922	709/250	USPAT	OR	OFF	2005/04/27 11:40
S56	1330	709/250.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 11:41
S57	21	709/250.ccls. and (slave standby secondary inactive backup redundant) adj interface	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 12:31
S58	0	709/400.ccls. and (slave standby secondary inactive backup redundant) adj interface	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 12:32
S59	0	709/400.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 12:32

S60	3	370/216.ccls. and (slave standby secondary inactive backup redundant) adj interface	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 12:34
S61	5	370/219.ccls. and (slave standby secondary inactive backup redundant) adj interface	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 13:34
S62	4	370/220.ccls. and (slave standby secondary inactive backup redundant) adj interface	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 13:36
S63	23	370/220.ccls. and (slave standby secondary inactive backup redundant) near5 interface	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 13:51
S64	58	370/217.ccls. and (slave standby secondary inactive backup redundant) near5 interface	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 15:15
S65	20	370/221.ccls. and (slave standby secondary inactive backup redundant) near5 interface	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 15:27
S66	53	370/352.ccls. and (slave standby secondary inactive backup redundant) near5 interface	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 15:43
S67	0	370/356.ccls. and (slave standby secondary inactive backup redundant) near5 interface and synchon\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 15:44

S68	0	370/355.ccls. and (slave standby secondary inactive backup redundant) near5 interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 15:45
S69	3	370/355.ccls. and (slave standby secondary inactive backup redundant) near5 interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 15:46
S70	7	370/354.ccls. and (slave standby secondary inactive backup redundant) near5 interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 15:59
S71	10	370/353.ccls. and (slave standby secondary inactive backup redundant) near5 interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 16:01
S72	54	370/389.ccls. and (slave standby secondary inactive backup redundant) near5 interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 16:02
S73	28	370/389.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 16:10
S74	23	370/392.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 16:16
S75	20	710/110.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 16:21

S76	0	710/129.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 16:21
S77	0	710/131.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 16:22
S78	0	710/132.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 16:22
S79	4	712/31.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 16:24
S80	0	712/39.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 16:24
S81	9	709/208.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 16:28
S82	7	370/395.1.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 16:51
S83	8	370/465.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 17:06

S84	23	370/392.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 17:39
S85	6	370/466.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 17:57
S86	0	370/228.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 17:58
S87	2	370/535.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 18:00
S88	0	370/536.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 18:00
S89	3	370/536-542.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 18:05
S90	50	370/389-392.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 18:29
S91	8	370/351-356.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 18:31

S92	405	(master active primary first) adj interface and (slave standby secondary inactive backup redundant) adj interface and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 18:35
S93	186	(master active primary first) adj interface and (slave standby secondary inactive backup redundant) adj interface and synchron\$7 and (timer clock clk) and FIFO	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 18:36
S94	186	(master active primary first) adj interface and (slave standby secondary inactive backup redundant) adj interface and synchron\$7 and (timer clock clk) and FIFO	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 19:10
S95	28	network near5 (slave standby secondary inactive backup redundant) adj interface and synchron\$7 and (timer clock clk) and FIFO	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 19:17
S96	447	(slave standby secondary inactive backup redundant) adj interface and synchron\$7 and (timer clock clk) and FIFO	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 19:18
S97	218	(slave standby secondary inactive backup redundant) adj interface and synchron\$7 and (timer clock clk) same FIFO	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/27 19:19
S98	95	(slave standby secondary inactive backup redundant) adj interface and synchron\$7 with (timer clock clk) same FIFO	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/28 09:11
S99	0	370/220.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7 with (timer clock clk) same FIFO	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/28 09:12

S10 0	0	370/219.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7 with (timer clock clk) same FIFO	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/28 09:12
S10 1	0	370/219-225.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7 with (timer clock clk) same FIFO	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/28 09:13
S10 2	2	709/250.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7 with (timer clock clk) same FIFO	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/28 09:18
S10 3	0	370/215-220.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7 with (timer clock clk) and FIFO	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/28 09:19
S10 4	1	370/215-220.ccls. and (slave standby secondary inactive backup redundant) adj interface and synchron\$7 and (timer clock clk) and FIFO	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/28 09:58
S10 5	448	(slave standby secondary inactive backup redundant) adj interface and synchron\$7 and (timer clock clk) and FIFO	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/28 09:59
S10 6	4	(slave standby secondary inactive backup redundant) adj interface near5 network and synchron\$7 and (timer clock clk) and FIFO	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/28 10:00
S10 7	59	(slave standby secondary inactive backup redundant) adj interface same network and synchron\$7 and (timer clock clk) and FIFO	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/28 10:41

S10 8	0	370/395\$.ccls. and (slave standby secondary inactive backup redundant) adj interface same network and synchron\$7 and (timer clock clk) and FIFO	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/28 10:43
S10 9	4077	370/395\$.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/28 10:43
S11 0	1	370/395\$.ccls. and (slave standby secondary inactive backup redundant) adj interface same network and synchron\$7 and (timer clock clk)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/28 10:45
S11 1	4	370/395\$.ccls. and (slave standby secondary inactive backup redundant) adj interface same network and synchron\$7	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/28 10:46
S11 2	38	370/395\$.ccls. and (slave standby secondary inactive backup redundant) adj interface	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/28 14:47
S11 3	1640	(slave standby secondary inactive backup redundant) adj interface	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/28 14:48
S11 4	1047	(FIFO buffer\$3 queue) and (slave standby secondary inactive backup redundant) adj interface	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/28 14:50
S11 5	887	(clock clk timer) and (FIFO buffer\$3 queue) and (slave standby secondary inactive backup redundant) adj interface	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/28 14:50

S11 6	69	(clock clk timer) near5 network and (FIFO buffer\$3 queue) and (slave standby secondary inactive backup redundant) adj interface	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/28 14:51
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2700 INTERNAL TRANSFER REQUEST FOR S.N.

09/735,558

DATE: 10/11/91 FROM: Edelman (2153) (print name)

FORWARD TO:

A. Art Unit: 2662

B. Class: 370

C Subclass: 395

REASON(S):

A. You had Parent

B. See Title

C. See Abstract

D. See Claim(s):

☐	(check box)
☒	(check box)
☒	(check box)

All see 4-9

FURTHER EXPLANATION IF NEEDED:

ATM, switching, synchronization, multiplexing, timing, etc., failure detection

DATE: FROM: (print name)

FORWARD TO:

A. Art Unit:

B. Class:

C Subclass:

REASON(S):

A. You had Parent

B. See Title

C. See Abstract

D. See Claim(s):

☐	(check box)
☐	(check box)
☐	(check box)

FURTHER EXPLANATION IF NEEDED:

DATE: FROM: (print name)

FORWARD TO CLASSIFIER

REASON(S):

A. You had Parent

B. See Title

C. See Abstract

D. See Claim(s):

☐	(check box)
☐	(check box)
☐	(check box)

FURTHER EXPLANATION IF NEEDED:

DISPOSITION BY 2700 CLASSIFICATION

DATE: CLASSIFIER:

FORWARD TO:

A. Art Unit: 32

B. Class:

C Subclass:

REASON(S):

A. You had Parent

B. See Title

C. See Abstract

D. See Claim(s):

☐	(check box)
☐	(check box)
☐	(check box)

FURTHER EXPLANATION IF NEEDED:

8-24-01

7

JC490 U.S. PTO
08/23/01

Attorney's Docket No. 062891.0627

PATENT APPLICATION

TRANSMITTAL FOR U.S. PATENT APPLICATION
UNDER 37 CFR §1.53(b)

J1040 U.S. PTO
09/935528
08/23/01

Box Patent Application
ASSISTANT COMMISSIONER
OF PATENTS
Washington, D.C. 20231

Attorney's Docket: 062891.0627

Sir:

Transmitted herewith for filing is the original patent application of:

Inventors: William Patrick Hann, et al.

For: METHOD AND SYSTEM FOR PROTECTING A NETWORK
INTERFACE

Pursuant to 37 C.F.R. § 1.213(a), Applicants respectfully request that the above-identified patent application not be published under 35 U.S.C. § 122(b). Applicants hereby certify that the invention disclosed in the above-identified application has not been and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Enclosed are:

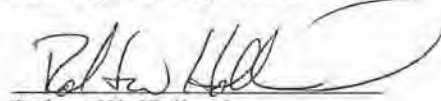
- (1) 22 pages of Specification, Claims and Abstract;
- (2) 4 pages of Executed Declaration and Power of Attorney;
- (3) 2 pages of Formal Drawings;
- (4) 2 pages of an Assignment of the invention to Cisco Technology, Inc.;
- (5) 1 page of separate cover sheet in compliance with 37 C.F.R. § 3.28 and § 3.31 is included with an Assignment recordal fee of \$40.00 pursuant to 37 C.F.R. § 1.21(h);
- (6) 1 page Certificate of Mailing by Express Mail;
- (7) Nonpublication Request Under 35 U.S.C. § 122(b)(2)(B)(i); and
- (9) This Transmittal Form with attached patent application filing fee in the amount of \$854.00.

FEE CALCULATION					FEE
	Number		Number Extra	Rate	Basic Fee \$710.00
Total Claims	28	20	8	X \$18 =	144.00
Independent Claims	3	3	0	X \$80 =	0.00
TOTAL FILING FEE =					\$854.00

AUS01:253387.1

Enclosed is a check in the amount of \$854.00 for filing fee. Please charge any additional fees or credit any overpayment to Deposit Account No. 02-0384 of Baker Botts L.L.P.

BAKER BOTTS L.L.P.
Attorneys for Applicants



Robert W. Holland
Registration No 40,020

Date: 23 Aug 2001

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: William Patrick Hann
Date Filed: August 23, 2001
Title: METHOD AND SYSTEM FOR PROTECTING A
NETWORK INTERFACE

BOX PATENT APPLICATION

Honorable Assistant Commissioner
For Patents
Washington, D.C. 20231

Dear Sir:

CERTIFICATE OF MAILING BY EXPRESS MAIL

I hereby certify that the attached Patent Application (22 pages, including Specification, Claims, and Abstract), Declaration and Power of Attorney, 2 sheets of Formal Drawings, Fee Transmittal, a check in the amount of \$854.00 to cover the application filing fee, Assignment, Assignment Cover Sheet, a check in the amount of \$40.00 to cover the cost of recording the assignment, Nonpublication Request, and this Certificate of Mailing are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. § 1.10 on this 23rd day of August, 2001 and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.


Amy Rueff

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No. EL740054037US
Attorney's Docket: 062891.0627

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.

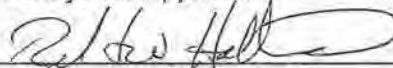
NONPUBLICATION REQUEST UNDER 35 U.S.C. 122(b)(2)(B)(i)		First Named Inventor	William Patrick Hann
		Title	Method and System for Protecting a Network Interface
		Atty Docket Number	062891.0627

I hereby certify that the invention disclosed in the attached application **has not and will not be** the subject of an application filed in another country, or under a multilateral agreement, that requires publication at eighteen months after filing.

I hereby request that the attached application not be published under 35 U.S.C. 122(b).

23 Aug 2001
Date

BAKER BOTTS L.L.P.
Attorneys for Applicants


Signature

Robert W. Holland
Typed or printed name
Reg No. 40,020

This request must be signed in compliance with 37 CFR 1.33(b) and submitted with the application **upon filing**.

Applicant may rescind this nonpublication request at any time. If applicant rescinds a request that an application not be published under 35 U.S.C. 122(b), the application will be scheduled for publication at eighteen months from the earliest claimed filing date for which a benefit is claimed.

If applicant subsequently files an application directed to the invention disclosed in the attached application in another country, or under a multilateral international agreement, that requires publication of applications eighteen months after filing, the applicant must notify the United States Patent and Trademark Office of such filing within forty-five (45) days after the date of the filing of such foreign or international application. **Failure to do so will result in abandonment of this application (35 U.S.C. 122(b)(2)(B)(iii)).**

Burden Hour Statement: This collection of information is required by 37 CFR 1.213(a). The information is used by the public to request that an application not be published under 35 U.S.C. 122(b) (and the PTO to process that request). Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This form is estimated to take 6 minutes to complete. This time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

ATTORNEY'S DOCKET:
062891.0627

PATENT APPLICATION

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METHOD AND SYSTEM FOR PROTECTING
A NETWORK INTERFACE

TECHNICAL FIELD OF THE INVENTION

This invention relates generally to network communications, and more specifically relates to a method and system for protecting a network interface.

5

AUS01-252407.1

BACKGROUND OF THE INVENTION

Digital subscriber line access multiplexers (DSLAM) typically interface a bank of modems with a broadband network. For instance, an asynchronous transfer mode (ATM) switch card in a DSLAM communicates with optical interfaces, such as trunks that interface with OC-3 fiber to a regional data center or subtends that interface with OC-3 fiber to other DSLAMs. If a network interface fails, then communication with the DSLAM is typically not possible. To improve reliability, redundant network interfaces are typically used.

One difficulty with protecting network communications through redundant network interfaces is the synchronization of data transfers when a failed network interface is protected by a backup network interface. Without synchronization, switching to a backup network interface is more difficult. For instance, failure of a network interface leads to complete switching to another network interface so that each network interface typically only supports a single type of physical port.

SUMMARY OF THE INVENTION

Therefore a need has arisen for a method and system which synchronizes network interface data transfer for protection upon failure of a network interface with a backup network interface.

A further need has arisen for a method and system which protects from a network interface failure on a physical network trunk and subtend basis.

In accordance with teachings of the present invention, a method and system is provided that substantially eliminates disadvantages and problems associated with previously developed methods and systems for protecting network interfaces. Synchronization of a backup network interface to protect from failure of a master network interface is provided by slaving the backup network interface to the master and transferring data through a first in first out circuit.

More specifically, data transfers between a switch and a physical network are protected from failure with master and slave network interfaces. Data provided to the master network interface is communicated to the slave network interface through a first in first out circuit associated with the slave network interface. Data transfers with the master network interface are made through the protection first in first out circuit of the slave network interface based on a master clock synchronization. The protection first in first out circuit transfers data with the switch and physical network based on a slave clock synchronization. A timer detects failure of the master network interface.

In one embodiment, the master and slave network interfaces transfer data between an Asynchronous Transfer Mode (ATM) switch card inserted in a digital subscriber line access multiplexer (DSLAM) and optical networks for trunks and subtends. ATM cells are transferred from the master network interface to the protection first in first out circuit through a bi-directional bus. The timer detects failure of an interface by monitoring the time between cell available (CLAV) signals. Redundancy is provided on a physical network interface basis when plural physical networks communicate with the switch, such as trunk and subtend networks. For instance, if the master network interface fails to an optical trunk, then the slave network interface provides protection for the trunk while the master network interface maintains data transfers with an optical subtend.

The present invention provides a number of important technical advantages. One important technical advantage is that the master and slave network interface architecture allows multiple ports to feed an ATM switchcard, thus allowing greater bandwidth into the switchcard. If one port fails to a master network interface, the slave network interface provides data transfer to the network associated with the failed port while the master network interface continues to support operable ports.

Another important technical advantage of the present invention is that it allows optical interface redundancy on an ATM switch. The network interfaces share a substantially similar architecture so that either may

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PATENT APPLICATION

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function as master or slave, reducing complexity and
improving flexibility.

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BRIEF DESCRIPTION OF THE DRAWINGS

A more complete understanding of the present invention and advantages thereof may be acquired by referring to the following description taken in
5 conjunction with the accompanying drawings, in which like reference numbers indicate like features, and wherein:

FIGURE 1 depicts a block diagram of a DSLAM having trunk and subtend redundant network interfaces;

FIGURE 2 depicts a block diagram of communications
10 between a master and slave network interface; and

FIGURE 3 depicts a block diagram of first in first out circuits for a master and slave network interface.

DETAILED DESCRIPTION OF THE INVENTION

Preferred embodiments of the present invention are illustrated in the figures, like numerals being used to refer to like and corresponding parts of the various
5 drawings.

ATM switch cards provide bandwidth capacity for modem banks, such as DSL modems deployed in a DSLAM, to communicate at high data rates with regional data centers over optical trunks, such as OC-3 trunks. Similarly, ATM
10 switch cards allow subtend connections so that a series of DSLAMs may communicate with each other over optical interfaces, thus allowing the DSLAMs to use a common trunk. To ensure reliability, redundant network interfaces allow a back-up network interface to maintain
15 data transfers of ATM cells between the ATM switch card and the optical trunks and subtends in the case of a failure of the main network interface.

Referring now to FIGURE 1, a block diagram depicts a digital subscriber line access multiplexer (DSLAM) 10
20 that provides DSL service to end users 12 through DSL modem cards 14. The DSL modem cards 14 transfer data from end users 12 to ATM cards 16 through a bus 18. ATM cards 16 provide broadband communication through network interfaces 20 and optical communication pipelines 22 to
25 either a trunk 24 or subtend 26. Trunk 24 provides access for DSLAM 10 to a regional data center, the internet or other public network. Subtend 26 allows the daisy chaining of a series of DSLAMS 10, such as to create a DSL modem bank. Although Figure 1 depicts a
30 single trunk and multiple subtends interfaced with the ATM card, in alternative embodiments, different

configurations of trunks and subtends may be interfaced with the ATM card depending upon the available bandwidth, each trunk or subtend associated with both a master network interface 20 and a slave network interface 20 to transfer data with the ATM card.

Each network interface 20 supports an optical fiber interface, such as with a trunk 24 and two subtends 26. The network interface 20 provides redundancy for both trunk and subtend optical fiber interfaces, such as OC-3 interfaces. In case of failure of a network interface 20, a 16 bit, 50 MHz bi-directional bus allows a second network interface on an ATM card 16 to provide redundant communication for either or both of the OC-3 trunk port and an OC-3 subtend ports with full rates for the trunk and subtend interfaces. The number of trunks and subtends supported depend upon the bandwidth of the physical optical interface, e.g., OC-3, OC-12, etc...

Referring now to FIGURE 2, a block diagram depicts the interface between two network interfaces 20 that provide protection for ATM card 16. Although the network interfaces 20 are architecturally identical, one network interface is configured as a master network interface 30 and the backup network interface is configured as a slave network interface 32. Master network interface 30 provides a clock reference to slave network interface 32 and a synch pulse to synchronize slave network interface 32 with master network interface 30. Clock 34 provides a local clock reference for each network interface 20 and provides a clock reference through clock interface 36 from a master network interface 30 to a slave network interface 32.

Each network interface 20 has a 128-state state machine that runs by reference to the clock 34 of the master network interface 30. A synch interface 40 provides a synch pulse from master network interface 30 to slave network interface 32 to synchronize state machine 38 to the clock 34 of master network interface 30. For instance a synch pulse occurs at the beginning of a cell time, which is every 2.56 microseconds for a 128-state state machine on a 50 MHz clock.

10 Synchronization of state machine 38 on slave network interface 32 by the clock 34 of master network interface 30 allows cells to be sent from slave network interface 32 to master network interface 30 at the appropriate time.

15 Each network interface 20 also has a 128-state local state machine 42 that runs on the clock 34 for that network interface 20. For instance, slave network interface 32 has a clock 34 that provides a clock reference to local state machine 42 that is not synched to the clock 34 of master network interface 30. A first in first out synch circuit 44 between the master network interface 30 and slave network interface 32 provides data synching by reference to the clock of master network interface 30. A cell available (CLAV) timer 46 tracks the operational status of each network interface 20 so that if an interface is declared inactive, protection is provided. For instance, cell available timer 46 determines that an optical interface is down when a cell available signal is not received for ten microseconds.

30 Master network interface 30 and slave network interface 32 communicate through a bi-directional bus 50,

which includes a clock line 36, a synch line 40, a data path 52, a parity line 54, a start of cell line 56 and a cell available line 58. Bi-directional bus 50 is a 16 bit, 50 MHz bus that will support full data transfer rates for OC-3 trunk and subtend ports supported by a network interface 20. The data and parity signals are driven by the transmit interface of master network interface 30 and the slave received interface of slave network interface 32. Data transferred through data path 52 includes trunk and subtend cells sent in the following order: transfer master trunk, receive slave trunk, receive slave subtend, and transfer master subtend. The parity, master to slave start of cell, and slave to master cell available signals accompany the data transfers.

The slave to master cell available signal is also used for transfer back pressure status for master to slave and data flows in the direction of slave to master. When transmitting transfer cells to the optical interface of the trunk or subtend, a cell is not transmitted until both the master and slave transfer cell available are received. An optical interface is considered down if a cell available signal is not received for ten microseconds, resulting in a time out period. When a time out occurs, the cell available for the timed out interface is ignored when reading from that interface's cell dual port RAM (CDPRAM) but cells will continue to be passed to the optical interface if the cell available is active. A software monitor monitors the framer state and k-bytes of the receive optical interface to select the

appropriate interface through a register of the network interfaces 20.

Referring now to FIGURE 3, a block diagram depicts circuitry for synchronizing transmission and receive
5 cells between a network interface master 30 and network interface slave 32 with first in first out circuits. Cells for transmission from and to the ATM card 16 are stored in CDPRAM 60, and cells transferred to and from fiber optic interface 22 are provided to physical
10 interface 62, such as a utopia bus. Network interface slave 32 provides protection for both transmitted and received cells. The upper portion of FIGURE 3 depicts the transmit path and the lower portion of FIGURE 3 depicts the receive path. Each trunk and/or subtend
15 interface support by the ATM card will have a transmit or receive path as depicted by Figure 3, with the number of trunks and/or subtends limited by the bandwidth of the associated physical network 62.

Cells sent through the transmit path to the physical
20 interface 62 originate in CDPRAM 60 and are sent to transmit port first in first out circuit 64. Cells are read from transmit port first in first out circuit 64 through a transmit multiplexer 66 and transmit de-multiplexer 68 when the trunk or subtend physical
25 interface 62 can accept the cell.

To provide transmit protection, master network interface 30 transfers CDPRAM cells across bi-directional bus 50 to a transmit protect first in first out circuit 70. To avoid collisions on bi-directional bus 50, cells
30 from CDPRAM 60 are delayed in delay first in first out circuit 72 before transfer to transmit protect first in

first out circuit 70. The slave network interface 32
writes the cells into the transmit protect first in first
out circuit for transfer to the slave network interface
32's physical interface 62 through transmit multiplexer
5 66 and transmit de-multiplexer 68. Timers associated
with the physical devices for trunks and subtends provide
cell available signals to read the cells so that if no
cell available signal is received from a device for ten
microseconds, a timeout occurs and the interface becomes
10 inactive. Transmit protect first in first out circuit 70
writes cells with reference to the clock of the master
network interface 30 and reads cells with reference to
the clock of the slave network interface 32. Since the
master network interface 30 and slave network interface
15 32 have identical transmit path architectures, either
network interface may be selected as master or slave.

The receive path of the master interface provides
protection through the slave interface in a manner
similar to the transmit path, using first in first out
20 circuits to synchronize received data cells. Cells are
received from the physical interface 62 through a
physical multiplexer 74 and a receive port first in first
out circuit 76. The cells are read from the receive port
first in first out circuit 76 and written to CDPRAM 60
25 through receive multiplexer 78 for storage in cell buffer
random access memory of ATM card 16. To provide
protection, cells read into the master network interface
30 are stored in a receive protect first in first out
circuit 80 of slave network interface 32 and read out
30 based on a synch signal received from master network
interface 30. The synch pulse from master network

interface 30 synchronizes the local state machine 42 of
the slave network interface 32 to the clock reference of
the master network interface 30. Thus, the synch pulse
allows the slave network interface 32 to know when the
5 master network interface 30 can accept cells and reads
the cells from the receive protect first in first out
circuit 80 at the appropriate time.

Protection software associated with master network
interface 30 selects trunk or subtend cells from the
10 slave network interface 32 or the master network
interface 30's receive port first in first out circuit 76
based on the OC-3 framer states and k-bytes. Receive
protect first in first out circuit 80 synchronizes cells
sent from slave network interface 32 by using the slave
15 reference clock to write the cells and the master
reference clock to read cells. If a network interface
goes down, the operative interface is selected by the
protection software. For example, if the master network
interface 30 subtend interface times out, the master
20 network interface 30 will switch to accepting cells from
the slave subtend physical interface 62 while still
accepting cells from the master trunk physical interface
62.

The master network interface 30 and slave network
25 interface 32 have substantially similar architectures so
that either may function as master or slave. Each
physical network port has a receive and transmit protect
first in first out circuit associated with it. By having
the ability to interface both subtends and trunks with
30 redundancy through separate protect first in first out
circuits, the present invention helps use available

WHAT IS CLAIMED IS:

1. A method for protecting data transfers between a switch and a physical network, the method comprising:
providing data to a first network interface for
5 transfer between the switch and the physical network, the first network interface having a first reference clock;
transferring the data from the first network interface to a second network interface, the second network interface operable to transfer data between the
10 switch and the physical network, the second network interface having a second clock reference; and
synchronizing the transfer of data from the second network interface with a first in first out circuit that writes transfers of data from the first network interface
15 using the first reference clock and reads data using the second clock reference.
2. The method of Claim 1 wherein the data is provided to the first network interface from the switch
20 for transfer to the physical network.
3. The method of Claim 1 wherein the data is provided to the first network interface from the physical network for transfer to the switch.
25
4. The method of Claim 1 further comprising:
detecting a failure of the first network interface;
and
using the second network interface to transfer the
30 data between the switch and the physical network.

5. The method of Claim 1 wherein the data comprises ATM cells.

6. The method of Claim 5 wherein the switch
5 comprises an ATM card for transferring data from a digital subscriber line access multiplexer to a trunk.

7. The method of Claim 5 wherein the switch
comprises an ATM card for transferring data from a
10 digital subscriber line access multiplexer to a subtend.

8. The method of Claim 1 wherein the physical network comprises an optical interface.

9. The method of Claim 8 wherein the optical
15 interface comprises an OC-3 interface.

10. The method of Claim 1 wherein the physical
network interface comprises a trunk interface and a
20 subtend interface.

11. The method of Claim 10 further comprising:
detecting a failure of data transfer between the
trunk and the switch; and
25 using the second network interface to transfer data between the trunk and the switch.

12. The method of Claim 11 further comprising:
using the first network interface to transfer data
30 between the subtend and the switch.

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PATENT APPLICATION

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13. The method of claim 1 further comprising:
detecting failure of the first network interface by
monitoring cell available signals.

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14. A system for protecting data transfers between
a switch and a physical network, the system comprising:
a master network interface having a reference clock;
a slave network interface having a reference clock,
5 the slave network interface in communication with the
master network interface;
a timer to detect failure of the master network
interface for initiating protection with the slave
network interface; and
10 a protection first in first out circuit associated
with the slave network interface, the first in first out
circuit reading data transferred from the master network
interface synchronized to the master reference clock and
writing data synchronized to the slave reference clock.

15 15. The system of Claim 14 wherein the switch
comprises an ATM switch.

16. The system of Claim 15 wherein the timer
20 detects failure by timing cell available signals.

17. The system of Claim 14 wherein the physical
network comprises a trunk.

25 18. The system of Claim 14 wherein the physical
network comprises a subtrunk.

19. The system of Claim 14 wherein the physical network comprises at least one trunk and one subtend, the system further comprising:

plural protection first in first out circuits
5 associated with the slave network interface, each protection first in first out circuit associated with one of the trunk or subtend.

20. The system of Claim 19 wherein upon detection
10 of a failure of data transfer between the trunk and switch with the master network interface, the slave network interface maintains data transfers between the trunk and the switch and the master network interface maintains data transfers between the subtend and the
15 switch.

21. The system of Claim 19 wherein upon detection of a failure of data transfer between the subtend and the switch with the master network interface, the slave
20 network interface maintains data transfers between the subtend and the switch and the master network interface maintains data transfers between the trunk and the switch.

22. The system of Claim 19 wherein the switch
25 comprises an ATM card installed in a digital subscriber line access multiplexer.

23. The system of Claim 14 wherein the physical
30 network comprises plural optical interfaces.

24. The system of Claim 14 wherein the master and
slave network interfaces have substantially similar
architectures so that either the slave or the master
network interface may perform the function of the master
5 network interface.

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25. A digital subscriber line access multiplexer comprising:

plural card slots;

an ATM switch card installed in one of the card
5 slots; and

first and second network interfaces in communication
with each other, each network interface having a clock
reference and operable to interface the ATM switch card
with plural physical networks, wherein the first network
10 interface functions as a master and the second network
interface functions as a slave to provide protection upon
failure of the master, the second network interface
having first in first out circuits that synchronize data
transfers with the master network interface using the
15 master clock reference and the slave clock reference.

26. The digital subscriber line access multiplexer
of Claim 25 wherein one of the plural physical networks
comprises a trunk and another of the plural physical
20 networks comprises a subtend.

27. The digital subscriber line access multiplexer
of Claim 25 wherein the physical networks comprise
optical networks.

25

28. The digital subscriber line access multiplexer
of Claim 25 further comprising a cell available timer
associated with each network interface, the cell
available timer for detecting network interface failure.

30

METHOD AND SYSTEM FOR PROTECTING
A NETWORK INTERFACE

ABSTRACT OF THE DISCLOSURE

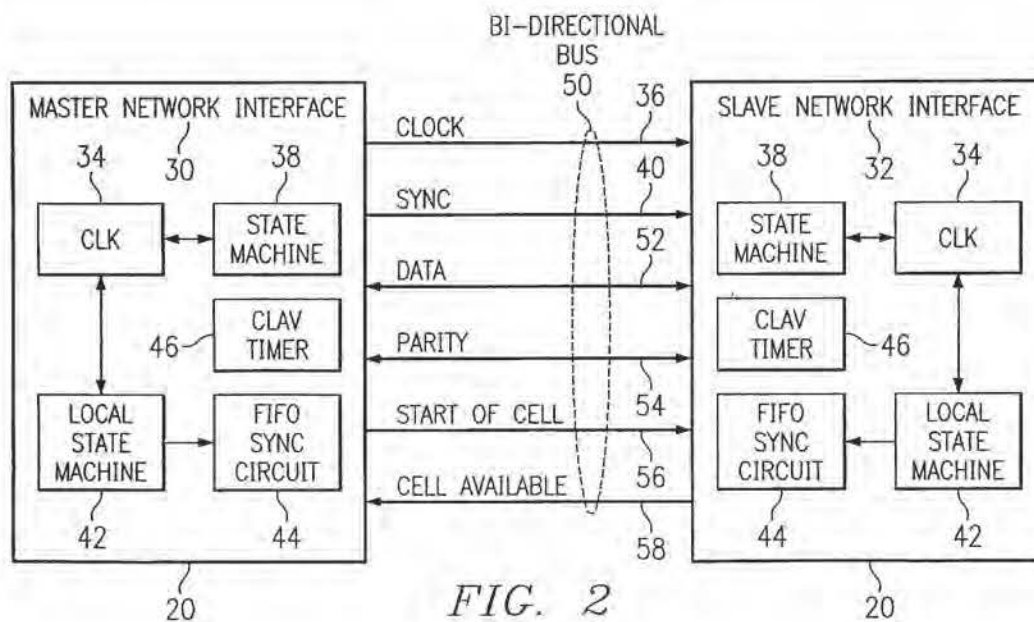
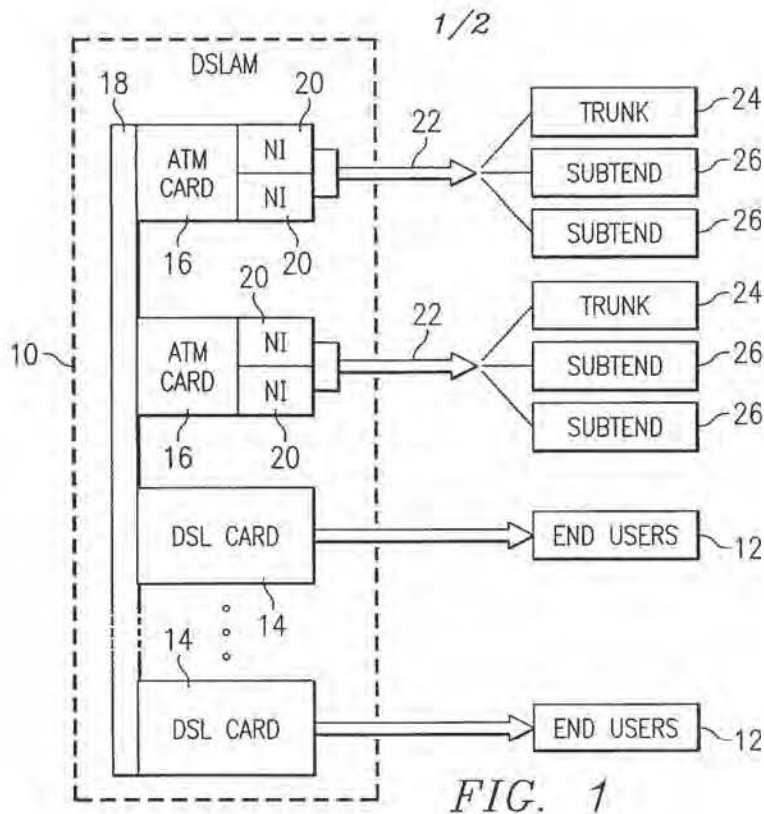
5 A method and system for protecting data transfers
between a switch and physical network ports transfers
data from a master network interface to a slave network
interface, synchronizing the data transfer through a
protection first in first out circuit that references the
master clock and the slave clock. The master network
interface improves ATM switch efficiency by supporting
optical trunk and subtend ports for a digital subscriber
10 line access multiplexer. The slave network interface
provides back-up protection on a port basis so that a
failed trunk port of the master network interface is
backed up by the slave network interface even while the
master network interface maintains a subtend port.

15

METHOD AND SYSTEM FOR PROTECTING A NETWORK INTERFACE

Inventor: William Patrick Hann

Attorney Docket No.: 062891.0627



102280-02352000

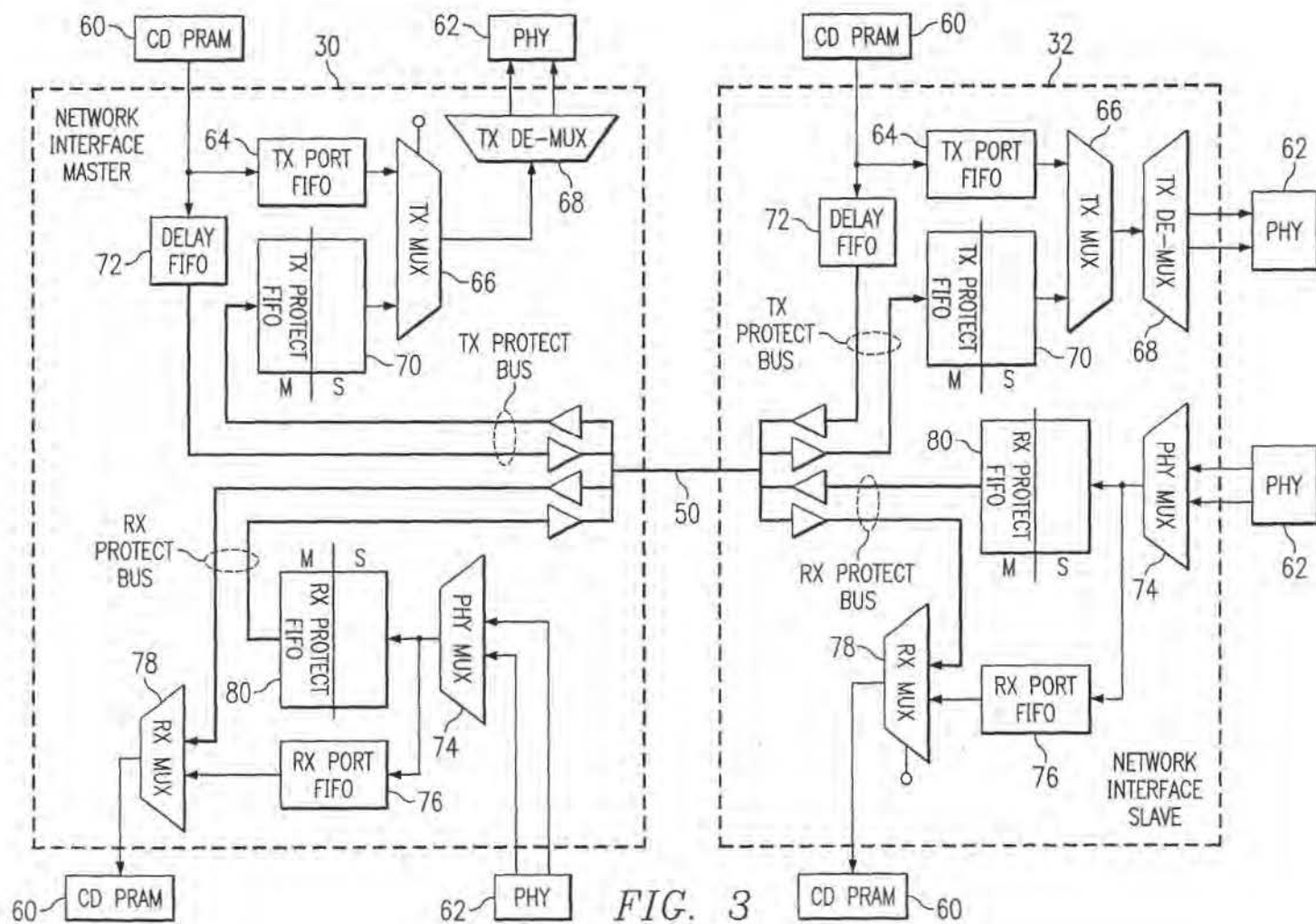


FIG. 3

2/2

METHOD AND SYSTEM FOR PROTECTING A
NETWORK INTERFACE
Inventor: William Patrick Hann
Attorney Docket No.: 062891.0627

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name, that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention, design or discovery entitled METHOD AND SYSTEM FOR PROTECTING A NETWORK INTERFACE, the specification of which is attached hereto;

That I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above; that I do not know and do not believe that said invention, design or discovery was ever known or used in the United States of America before my invention or discovery thereof, or patented or described in any printed publication in any country before my invention or discovery thereof, or more than one year prior to this application, or in public use or on sale in the United States of America more than one year prior to this application; that said invention, design or discovery has not been patented or made the subject of an inventor's certificate issued prior to the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns; and that I acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information known to me to be material to patentability as defined in 37 C.F.R. § 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application(s) for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Number	Country	Date Filed	Priority Claimed (Yes) (No)
-----NONE-----			

I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not

disclosed in the prior United States application(s) in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information known to me to be material to patentability as defined in 37 C.F.R. § 1.56 which became available between the filing date of the prior application(s) and the national or PCT international filing date of this application:

<u>Application Serial Number</u>	<u>Date Filed</u>	<u>Status</u>
-----NONE-----		

I hereby appoint:

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------------------	-----------------

all of the firm of Baker Botts L.L.P., my attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith, and to file and prosecute any international patent applications filed thereon before any international authorities.

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Barton E. Showalter
at 214.953.6509
Atty. Docket No. 062891.0627

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 or any patent issuing thereon.

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062891.0627

DECLARATION AND
POWER OF ATTORNEY

4

Full name of the sole inventor:

William Patrick Hann

Inventor's signature



Date

8/23/01

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062891.0627



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Bib Data Sheet

CONFIRMATION NO. 8683

SERIAL NUMBER 09/935,528	FILING DATE 08/23/2001 RULE	CLASS 709	GROUP ART UNIT 2152	ATTORNEY DOCKET NO. 062891.0627	
APPLICANTS William Patrick Hann, Round Rock, TX; ** CONTINUING DATA ***** ** FOREIGN APPLICATIONS ***** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 09/27/2001					
Foreign Priority claimed ☐ yes ☐ no 35 USC 119 (a-d) conditions ☐ yes ☐ no ☐ Met after met Allowance Verified and Acknowledged <u>Examiner's Signature</u> <u>Initials</u>		STATE OR COUNTRY TX	SHEETS DRAWING 2	TOTAL CLAIMS 28	INDEPENDENT CLAIMS 3
ADDRESS Barton E. Showalter Baker Botts L.L.P Suite 600 2001 Ross Avenue Dallas, TX 75201-2980					
TITLE Method and system for protecting a network interface					
FILING FEE RECEIVED 854	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		

PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

08/27/2001 TGEDAMU1 00000033 09935528

01 FC:101	710.00	OP
02 FC:103	144.00	OP

PTO-1556
(5/87)

*U.S. GPO: 2000-468-987/39595

PATENT APPLICATION FEE DETERMINATION RECORD

Effective October 1, 2000

Application or Docket Number

09935528

CLAIMS AS FILED - PART I

(Column 1) (Column 2)

TOTAL CLAIMS	28	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	28 - minus 20 =	8
INDEPENDENT CLAIMS	3 - minus 3 =	X
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
BASIC FEE	355.00
X\$ 9=	
X40=	
+135=	
TOTAL	

RATE	FEE
BASIC FEE	710.00
X\$18=	144
X80=	
+270=	
TOTAL	854

CLAIMS AS AMENDED - PART II

(Column 1) (Column 2) (Column 3)

AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	+	Minus	**
	Independent	+	Minus	***
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

SMALL ENTITY OR

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
X\$ 9=	
X40=	
+135=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X80=	
+270=	
TOTAL ADDIT. FEE	

(Column 1) (Column 2) (Column 3)

AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	+	Minus	**
	Independent	+	Minus	***
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

RATE	ADDITIONAL FEE
X\$ 9=	
X40=	
+135=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X80=	
+270=	
TOTAL ADDIT. FEE	

(Column 1) (Column 2) (Column 3)

AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	+	Minus	**
	Independent	+	Minus	***
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

RATE	ADDITIONAL FEE
X\$ 9=	
X40=	
+135=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X80=	
+270=	
TOTAL ADDIT. FEE	

* 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.

CLAIMS ONLY							SERIAL NO.	FILING DATE
							APPLICANT(S)	
CLAIMS								
	AS FILED		AFTER 1st AMENDMENT		AFTER 2nd AMENDMENT		*	
	IND.	DEP.	IND.	DEP.	IND.	DEP.	IND.	DEP.
1	1							
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TOTAL IND.	3							
TOTAL DEP.	25							
TOTAL CLAIMS	28							

* MAY BE USED FOR ADDITIONAL CLAIMS OR ADMENDMENTS

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