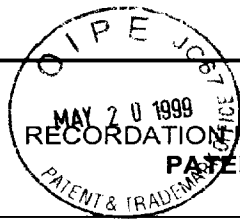


06-02-1999



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mlu 5-20-99

U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office

RECORDATION FORM COVER SHEET
PATENTS ONLY

PD-980075

To the Honorable Commissioner of Patents and Trademarks. Please record the attached original documents or copy thereof.

Name of conveying party(ies): Yongguang Zhang, Bo Ryu, Son K. Dao, Tayyab Khan, Stanley E. Kay and Sivakumar Kailas 1. Additional Name(s) of conveying party(ies) attached? yes <input type="checkbox"/> no <input checked="" type="checkbox"/>	2. Name and address of receiving party(ies): Name: HUGHES ELECTRONICS CORPORATION Internal Address: Bldg. 001, M/S A109 PO Box 956 200 N. Sepulveda Blvd. El Segundo, CA 90245-0956
---	--

3. Nature of Conveyance: <input checked="" type="checkbox"/> Assignment <input type="checkbox"/> Merger <input type="checkbox"/> Security Agreement <input type="checkbox"/> Change of Name <input type="checkbox"/> Other Execution Date: <u>4/19/99, 4/23/99, 4/28/99 and 5/11/99</u>	Street Address: 200 N. Sepulveda Blvd. P.O. Box 956 El Segundo, California 90245 Additional name(s) & address(es) attached? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no
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4. Application number(s) or patent number(s): PD-980075

If this document is being filed together with a new application, the execution date of the application is:

A. Patent Application No.(s) SERIAL NO.: 09/258,438 FILING DATE: February 26, 1999	B. Patent No.(s)
--	------------------

Additional numbers attached? yes no

5. Name and address of party to whom correspondence concerning document should be mailed: Name: HUGHES ELECTRONICS CORPORATION Internal Address: Corporate Patents & Licensing Bldg. 001, M/S A109 PO Box 956 El Segundo, CA 90245-0956	6. Total number of applications and patents involved: [1] 7. Total fee (37 CFR 3.41): <u>\$40.00</u> <input type="checkbox"/> Enclosed <input checked="" type="checkbox"/> Authorized to be charged to deposit account 8. Deposit account number: <u>50-0383</u> (Attached duplicate copy of this page if paying by deposit account)
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DO NOT USE THIS SPACE

9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

(05/28/1999 VBROWN 00000183 500383 09258438)

(01 FC 581 Vijaya Lakshmi D. Duraiswamy
 Name of Person Signing Vijaya Lakshmi D. Duraiswamy Signature May 17, 1999 Date

Total number of pages comprising cover sheet: [8]

ASSIGNMENT

Page 1 of 2
PD-980075

WHEREAS, I, as below named sole inventor (if only one name is listed below) or joint inventor (if plural names are listed below) of the city and state as stated below next to my name, have invented a(an) **APPARATUS AND METHOD FOR EFFICIENT DELIVERY OF MULTICAST DATA OVER PERSONAL ACCESS COMMUNICATIONS SYSTEM (PACS)** for which application for Letters Patent of the United States has been executed by me on this day, or (if the following is completed) filed on February 26, 1999 as Serial No. **09/258,438**; and

WHEREAS, **HUGHES ELECTRONICS CORPORATION**, (hereinafter referred to as **HUGHES**), a Delaware Corporation, having its principal place of business in El Segundo, California, is desirous of acquiring the entire and exclusive right, title and interest in, to and under said invention, said application and any and all Letters Patent that may be granted therefor in the United States and throughout the world;

NOW, THEREFORE, in consideration of the obligations voluntarily assumed by me and set forth in an invention agreement between me and my employer, effective the date as stated below next to my name, and other good and valuable consideration, receipt of which is hereby acknowledged, I do hereby sell, assign and transfer to **HUGHES**, its successors, assigns or other legal representatives, the entire and exclusive right, title and interest in and to said invention invented by me, to said application and any and all applications which are continuations, continuations-in- part, divisions or substitutes of said application and any and all Letters Patent that may be granted therefor in the United States and throughout the world on any of said applications and to any and all reexaminations, reissues, renewals or extensions of said Letters Patent in the United States and throughout the world for the full term or terms for which said Letters patent may be granted in the United States and throughout the world; authorize and request The Commissioner of Patents and Trademarks of the United States and all foreign countries to issue all such Letters Patent to said **HUGHES**, its successors, assigns or other legal representatives; covenant that no assignment, sale, agreement, transfer or encumbrance has been, or will be, made or entered into which would conflict with this assignment, sale and transfer; and agree to communicate to **HUGHES**, its successors, assigns or other legal representatives, upon request and at no cost or expense to me, any facts known by me respecting said invention, do all lawful acts, including the execution and delivery of all papers and proper oaths and giving of testimony that is deemed necessary or desirable by **HUGHES**, its successors, assigns or other legal representatives with regard to said invention for protecting, obtaining, maintaining and enforcing any and all of said Letters Patent in the United States and throughout the world for said invention and for perfecting, affirming, recording and maintaining the title of **HUGHES**, its successors, assigns or other legal representatives, and generally cooperate to the fullest extent in all matters pertaining to said invention, and any and all of said Letters Patent and the title thereto in **HUGHES**, its successors, assigns or other legal representatives.

PATENT
REEL: 009984 FRAME: 0932

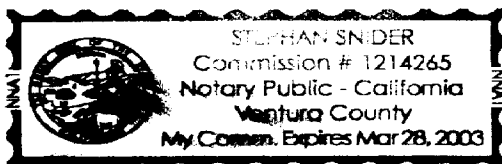
IN WITNESS WHEREOF, I have executed this instrument.

FULL NAME OF SOLE OR JOINT INVENTOR Yongguang Zhong	INVENTOR'S SIGNATURE	DATE
RESIDENCE (CITY AND STATE) Moorpark, California 93021		INVENTION AGREEMENT DATE September 12, 1994
FULL NAME OF SOLE OR JOINT INVENTOR Bo Ryu	INVENTOR'S SIGNATURE <i>[Signature]</i>	DATE 4/23/99
RESIDENCE (CITY AND STATE) Moorpark, California 93021		INVENTION AGREEMENT DATE June 17, 1996
FULL NAME OF SOLE OR JOINT INVENTOR Son K. Dao	INVENTOR'S SIGNATURE	DATE
RESIDENCE (CITY AND STATE) Northridge, CA 91324		INVENTION AGREEMENT DATE April 17, 1989
FULL NAME OF SOLE OR JOINT INVENTOR Tayyab Khan	INVENTOR'S SIGNATURE	DATE
RESIDENCE (CITY AND STATE) Montgomery Villa, MD 20886		INVENTION AGREEMENT DATE
FULL NAME OF SOLE OR JOINT INVENTOR Stanley E. Kay	INVENTOR'S SIGNATURE	DATE
RESIDENCE (CITY AND STATE) Rockville, MD 20853		INVENTION AGREEMENT DATE
FULL NAME OF SOLE OR JOINT INVENTOR Sivakumar Kailas	INVENTOR'S SIGNATURE	DATE
RESIDENCE (CITY AND STATE)		INVENTION AGREEMENT DATE

STATE OF CALIF.
COUNTY OF Ventura)
On April 23, 1999 before me, Stephan SNIDER)
SS:

a Notary Public in and for said State, personally appeared BONG K. RYU
~~personally known to me~~ or proved to me on the basis of satisfactory evidence to be the person whose
name is subscribed to the within instrument and acknowledged to me that ~~he~~ she they executed the same
in ~~his~~ her their authorized capacity , and that by ~~his~~ her their signature on the instrument the person , or
the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.



[Signature]
Notary Public

ASSIGNMENT

Page 1 of 2
PD-980075

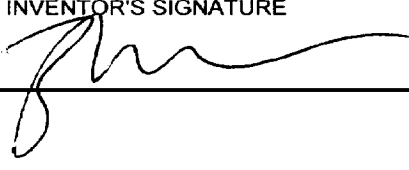

WHEREAS, I, as below named sole inventor (if only one name is listed below) or joint inventor (if plural names are listed below) of the city and state as stated below next to my name, have invented a(an) **APPARATUS AND METHOD FOR EFFICIENT DELIVERY OF MULTICAST DATA OVER PERSONAL ACCESS COMMUNICATIONS SYSTEM (PACS)** for which application for Letters Patent of the United States has been executed by me on this day, or (if the following is completed) filed on February 26, 1999 as Serial No. **09/258,438**; and

WHEREAS, **HUGHES ELECTRONICS CORPORATION**, (hereinafter referred to as **HUGHES**), a Delaware Corporation, having its principal place of business in El Segundo, California, is desirous of acquiring the entire and exclusive right, title and interest in, to and under said invention, said application and any and all Letters Patent that may be granted therefor in the United States and throughout the world;

NOW, THEREFORE, in consideration of the obligations voluntarily assumed by me and set forth in an invention agreement between me and my employer, effective the date as stated below next to my name, and other good and valuable consideration, receipt of which is hereby acknowledged, I do hereby sell, assign and transfer to **HUGHES**, its successors, assigns or other legal representatives, the entire and exclusive right, title and interest in and to said invention invented by me, to said application and any and all applications which are continuations, continuations-in- part, divisions or substitutes of said application and any and all Letters Patent that may be granted therefor in the United States and throughout the world on any of said applications and to any and all reexaminations, reissues, renewals or extensions of said Letters Patent in the United States and throughout the world for the full term or terms for which said Letters patent may be granted in the United States and throughout the world; authorize and request The Commissioner of Patents and Trademarks of the United States and all foreign countries to issue all such Letters Patent to said **HUGHES**, its successors, assigns or other legal representatives; covenant that no assignment, sale, agreement, transfer or encumbrance has been, or will be, made or entered into which would conflict with this assignment, sale and transfer; and agree to communicate to **HUGHES**, its successors, assigns or other legal representatives, upon request and at no cost or expense to me, any facts known by me respecting said invention, do all lawful acts, including the execution and delivery of all papers and proper oaths and giving of testimony that is deemed necessary or desirable by **HUGHES**, its successors, assigns or other legal representatives with regard to said invention for protecting, obtaining, maintaining and enforcing any and all of said Letters Patent in the United States and throughout the world for said invention and for perfecting, affirming, recording and maintaining the title of **HUGHES**, its successors, assigns or other legal representatives, and generally cooperate to the fullest extent in all matters pertaining to said invention, and any and all of said Letters Patent and the title thereto in **HUGHES**, its successors, assigns or other legal representatives.

PATENT
REEL: 009984 FRAME: 0934

IN WITNESS WHEREOF, I have executed this instrument.

FULL NAME OF SOLE OR JOINT INVENTOR Yongguang Zhong	INVENTOR'S SIGNATURE 	DATE Apr 28, 1999
RESIDENCE (CITY AND STATE) Moorpark, California 93021		INVENTION AGREEMENT DATE September 12, 1994
FULL NAME OF SOLE OR JOINT INVENTOR Bo Ryu	INVENTOR'S SIGNATURE	DATE
RESIDENCE (CITY AND STATE) Moorpark, California 93021		INVENTION AGREEMENT DATE June 17, 1996
FULL NAME OF SOLE OR JOINT INVENTOR Son K. Dao	INVENTOR'S SIGNATURE 	DATE 4/28/99
RESIDENCE (CITY AND STATE) Northridge, CA 91324		INVENTION AGREEMENT DATE April 17, 1989
FULL NAME OF SOLE OR JOINT INVENTOR Tayyab Khan	INVENTOR'S SIGNATURE	DATE
RESIDENCE (CITY AND STATE) Montgomery Villa, MD 20886		INVENTION AGREEMENT DATE
FULL NAME OF SOLE OR JOINT INVENTOR Stanley E. Kay	INVENTOR'S SIGNATURE	DATE
RESIDENCE (CITY AND STATE) Rockville, MD 20853		INVENTION AGREEMENT DATE
FULL NAME OF SOLE OR JOINT INVENTOR Sivakumar Kailas	INVENTOR'S SIGNATURE	DATE
RESIDENCE (CITY AND STATE)		INVENTION AGREEMENT DATE

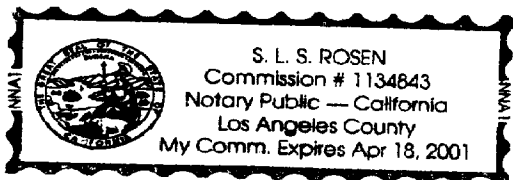
STATE OF Calif.)
COUNTY OF LOS ANGELES)

SS:

On 4-28-99 before me, SLS ROSEN

a Notary Public in and for said State, personally appeared YONGGUANG ZHONG & SON K DAO personally known to me or proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) ~~is/are~~ subscribed to the within instrument and acknowledged to me that ~~he/she/they~~ executed the same in his/~~her~~~~their~~ authorized capacity(ies), and that by his/~~her~~~~their~~ signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.



SLS ROSEN
Notary Public

ASSIGNMENT

Page 1 of 2
PD-980075

WHEREAS, I, as below named sole inventor (if only one name is listed below) or joint inventor (if plural names are listed below) of the city and state as stated below next to my name, have invented a(an) **APPARATUS AND METHOD FOR EFFICIENT DELIVERY OF MULTICAST DATA OVER PERSONAL ACCESS COMMUNICATIONS SYSTEM (PACS)** for which application for Letters Patent of the United States has been executed by me on this day, or (if the following is completed) filed on February 26, 1999 as Serial No. **09/258,438**; and

WHEREAS, **HUGHES ELECTRONICS CORPORATION**, (hereinafter referred to as **HUGHES**), a Delaware Corporation, having its principal place of business in El Segundo, California, is desirous of acquiring the entire and exclusive right, title and interest in, to and under said invention, said application and any and all Letters Patent that may be granted therefor in the United States and throughout the world;

NOW, THEREFORE, in consideration of the obligations voluntarily assumed by me and set forth in an invention agreement between me and my employer, effective the date as stated below next to my name, and other good and valuable consideration, receipt of which is hereby acknowledged, I do hereby sell, assign and transfer to **HUGHES**, its successors, assigns or other legal representatives, the entire and exclusive right, title and interest in and to said invention invented by me, to said application and any and all applications which are continuations, continuations-in- part, divisions or substitutes of said application and any and all Letters Patent that may be granted therefor in the United States and throughout the world on any of said applications and to any and all reexaminations, reissues, renewals or extensions of said Letters Patent in the United States and throughout the world for the full term or terms for which said Letters patent may be granted in the United States and throughout the world; authorize and request The Commissioner of Patents and Trademarks of the United States and all foreign countries to issue all such Letters Patent to said **HUGHES**, its successors, assigns or other legal representatives; covenant that no assignment, sale, agreement, transfer or encumbrance has been, or will be, made or entered into which would conflict with this assignment, sale and transfer; and agree to communicate to **HUGHES**, its successors, assigns or other legal representatives, upon request and at no cost or expense to me, any facts known by me respecting said invention, do all lawful acts, including the execution and delivery of all papers and proper oaths and giving of testimony that is deemed necessary or desirable by **HUGHES**, its successors, assigns or other legal representatives with regard to said invention for protecting, obtaining, maintaining and enforcing any and all of said Letters Patent in the United States and throughout the world for said invention and for perfecting, affirming, recording and maintaining the title of **HUGHES**, its successors, assigns or other legal representatives, and generally cooperate to the fullest extent in all matters pertaining to said invention, and any and all of said Letters Patent and the title thereto in **HUGHES**, its successors, assigns or other legal representatives.

PATENT
REEL: 009984 FRAME: 0936

IN WITNESS WHEREOF, I have executed this instrument.

FULL NAME OF SOLE OR JOINT INVENTOR Yongguang Zhong	INVENTOR'S SIGNATURE	DATE
RESIDENCE (CITY AND STATE) Moorpark, California 93021	INVENTION AGREEMENT DATE September 12, 1994	
FULL NAME OF SOLE OR JOINT INVENTOR Bo Ryu	INVENTOR'S SIGNATURE	DATE
RESIDENCE (CITY AND STATE) Moorpark, California 93021	INVENTION AGREEMENT DATE June 17, 1996	
FULL NAME OF SOLE OR JOINT INVENTOR Son K. Dao	INVENTOR'S SIGNATURE	DATE
RESIDENCE (CITY AND STATE) Northridge, CA 91324	INVENTION AGREEMENT DATE April 17, 1989	
FULL NAME OF SOLE OR JOINT INVENTOR Tayyab Khan	INVENTOR'S SIGNATURE <i>T. Alankha</i>	DATE 4/19/99
RESIDENCE (CITY AND STATE) Montgomery Villa, MD 20886	INVENTION AGREEMENT DATE	
FULL NAME OF SOLE OR JOINT INVENTOR Stanley E. Kay	INVENTOR'S SIGNATURE <i>Stanley E Kay</i>	DATE 4/28/99
RESIDENCE (CITY AND STATE) Rockville, MD 20853	INVENTION AGREEMENT DATE	
FULL NAME OF SOLE OR JOINT INVENTOR Sival Kumar Kailas	INVENTOR'S SIGNATURE <i>S. Kailas</i>	DATE 05/11/99
RESIDENCE (CITY AND STATE) sunnyvale, CA-94086	INVENTION AGREEMENT DATE	

STATE OF Maryland)
COUNTY OF Frederick) SS:
On 4/19/99 & 4/28/99 before me, Crystal L. Brooks

a Notary Public in and for said State, personally appeared Tayyab Khan and Stanley E Kay,
personally known to me or proved to me on the basis of satisfactory evidence to be the person(s) whose
name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same
in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or
the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Crystal L. Brooks
Notary Public **CRYSTAL L. BROOKS**
Notary Public
Frederick County
Maryland
My Commission Expires **JULY 31, 2002**

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

State of California

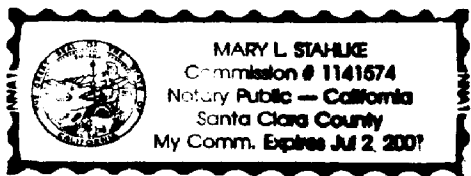
County of SANTA CLARA } ss.

On MAY 11, before me, MARY L. STAHLKE, Notary Public
Date Name and Title of Officer (e.g., "Jane Doe, Notary Public")

personally appeared SIVA KUMAR KAIRAS
Name(s) of Signer(s)

personally known to me
 proved to me on the basis of satisfactory evidence

to be the person(s) whose name(s) is are subscribed to the within instrument and acknowledged to me that he she they executed the same in his her their authorized capacity(ies), and that by his her their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.



WITNESS my hand and official seal.

Mary L. Stahlke
Signature of Notary Public

Place Notary Seal Above

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

Description of Attached Document

Title or Type of Document: Patent Application

Document Date: Feb 29, 1999 Number of Pages: 5

Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer

Signer's Name: _____

- Individual
- Corporate Officer — Title(s): _____
- Partner — Limited General
- Attorney in Fact
- Trustee
- Guardian or Conservator
- Other: _____

Signer Is Representing: _____

