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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/697,697	10/31/2003	Chandrakant D. Patel	100111090-3

CONFIRMATION NO. 9800

192641
Botos Churchill IP Law LLP - Malik
430 Mountain Avenue
Suite 401
New Providence, NJ 07974

POA ACCEPTANCE LETTER

OC000000073207969

Date Mailed: 05/30/2024

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 05/24/2024.

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

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/vostuart/

Vertiv Ex. 1003
Vertiv v. Valtrus

PTO/AIA/80 (07-17)
Approved for use through 01/31/2018. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

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

I hereby appoint:

[X] Practitioners associated with Customer Number: 192641

OR

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

Name	Registration Number

Name	Registration Number

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

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

[X] The address associated with Customer Number: 192641

OR

[ ]

Firm or individual name		
Address		
City	State	Zip
Country		
Telephone	Email	

Assignee name and address: VALTRUS INNOVATIONS LIMITED THE GLASS HOUSES 92 GEORGES STREET LOWER, DUN LAOGHAIRE DUBLIN, IRELAND A96 VR66

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

SIGNATURE of Assignee of Record

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

Signature /Angela Quinlan/	Date 5/22/2024
Name Angela Quinlan	Telephone +353 87 9171202
Title Managing Director	

This collection of information is required by 37 CFR 1.31, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public, which is to update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 18 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

Privacy Act Statement

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

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

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

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
10/697,697	**05/24/2024 11:01:35 AM Z ET**	**100111090-3**

Title of Invention

COOLING SYSTEM

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	6854287
CONFIRMATION #	9800	FILED BY	Gaby Hecht
PATENT CENTER #	65660597	FILING DATE	10/31/2003
CUSTOMER #	–	FIRST NAMED INVENTOR	Chandrakant D. Patel
CORRESPONDENCE ADDRESS	HEWLETT-PACKARD COMPANY, Intellectual Property Administration P. O. Box 272400, - Fort Collins, COLORADO 80527-2400 UNITED STATES	AUTHORIZED BY	Richard Botos

Documents

TOTAL DOCUMENTS: 4

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
6854287 Change of Correspondence Address Patent.pdf	2	Change of Address	265 KB
6854287_statement_373c.pdf	3	Assignee showing of ownership per 37 CFR 3.73	113 KB
Warning: The attached file contains comments or annotations. Comments are not recommended and may cause processing problems with the document.			
6854287 POA Transmittal.pdf	1	Power of Attorney	153 KB
Valtrus Power of Attorney -	2	Power of Attorney	2368 KB

Post AIA General.pdf

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
6854287 Change of Correspondence Address Patent.pdf	43903E8DBB3B2676272776B6D574680DD800688769C5880A0B6B0F46D328D840FE33BCDEC3FC8DE077CE770BF1571C325E12DA1450CC5C4B71BC24D95B561E76
6854287_statement_373c.pdf	9889A2FBD9292AD7608D526A94B479C255EA4F6CDD211EE68B0CE84D2AE60D0B1A00299BD4862EF10E8EE0F15DA71EC332513839336D466CFC4691B39D94FEB7
6854287 POA Transmittal.pdf	3F17D6C89D40DC81D6CB16C5F371F8206F0E2EBAEBD4E66997D2255A61E0C113C7F1057ECA3157F2FACD81662B07C51EE5902A33350775EDB2DEA046B2535CC1
Valtrus Power of Attorney - Post AIA General.pdf	193CAD07AFE8B9A537D40B3967A58851DCC29CEA84877CE15E6050E4B8A3F7D3F8672BD0A327006D203071F6F37D69B0FF5708A4EDAEBDB6463AD8EB5FE7EA64

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

PTO/AIA/123 (08-12)
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CHANGE OF CORRESPONDENCE ADDRESS
Patent

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P.O. Box 1450
Alexandria, VA 22313-1450

Patent Number	6,854,287
Issue Date	02/15/2005
Application Number	10/697,697
Filing Date	10/31/2003
First Named Inventor	Chandrakant D. Patel
Attorney Docket Number	100111090-3

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

☑ The address associated with Customer Number: 192641

OR

☐ **Firm *or* Individual Name**

Address

City | **State** | **ZIP**

Country

Telephone | **Email**

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

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

I am the:

☐ Patentee.

☐ If the Patentee was not the applicant for patent (37 CFR 1.42), then a Statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is enclosed or was filed on _____. See 37 CFR 3.71.

☑ Attorney or agent of record. Registration Number 32,016.

☐ Patent practitioner acting in a representative capacity whose correspondence address is the correspondence address of record. Notice has been given to the patentee or owner. Registration Number 32,016.

Signature /Richard J. Botos/

Typed or Printed Name Richard J. Botos

Date May 24, 2024 | Telephone (908) 738-1770

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☑ *Total of 1 forms are submitted.

A Federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with an information collection subject to the requirements of the Paperwork Reduction Act of 1995, unless the information collection has a currently valid OMB Control Number. The OMB Control Number for this information collection is 0651-00**. Public burden for this form is estimated to average ** hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. Send comments regarding this burden estimate or any other aspect of this information collection, including suggestions for reducing this burden to the Chief Administrative Officer, United States Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450 or email InformationCollection@uspto.gov. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **If filing this completed form by mail, send to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

Vertiv Ex. 1003
Vertiv v. Valtrus

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. The United States Patent and Trademark Office (USPTO) collects the information in this record under authority of 35 U.S.C. 2. The USPTO's system of records is used to manage all applicant and owner information including name, citizenship, residence, post office address, and other information with respect to inventors and their legal representatives pertaining to the applicant's/owner's activities in connection with the invention for which a patent is sought or has been granted. The applicable Privacy Act System of Records Notice for the information collected in this form is COMMERCE/PAT-TM-7 Patent Application Files, available in the Federal Register at 78 FR 19243 (March 29, 2013). https://www.govinfo.gov/content/pkg/FR-2013-03-29/pdf/2013-07341.pdf

Routine uses of the information in this record may include disclosure to: 1) law enforcement, in the event that the system of records indicates a violation or potential violation of law; 2) a Federal, state, local, or international agency, in response to its request; 3) a contractor of the USPTO having need for the information in order to perform a contract; 4) the Department of Justice for determination of whether the Freedom of Information Act (FOIA) requires disclosure of the record; 5) a Member of Congress submitting a request involving an individual to whom the record pertains, when the individual has requested the Member's assistance with respect to the subject matter of the record; 6) a court, magistrate, or administrative tribunal, in the course of presenting evidence, including disclosures to opposing counsel in the course of settlement negotiations; 7) the Administrator, General Services Administration (GSA), or their designee, during an inspection of records conducted by GSA under authority of 44 U.S.C. 2904 and 2906, in accordance with the GSA regulations and any other relevant (i.e., GSA or Commerce) directive, where such disclosure shall not be used to make determinations about individuals; 8) another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)); 9) the Office of Personnel Management (OPM) for personnel research purposes; and 9) the Office of Management and Budget (OMB) for legislative coordination and clearance.

If you do not furnish the information requested on this form, the USPTO may not be able to process and/or examine your submission, which may result in termination of proceedings, abandonment of the application, and/or expiration of the patent.

Additional Uses

Additional USPTO uses of the information in this record may include disclosure to: 1) the International Bureau of the World Intellectual Property Organization, if the record is related to an international application filed under the Patent Cooperation Treaty; 2) the public i) after publication of the application pursuant to 35 U.S.C. 122(b), ii) after issuance of a patent pursuant to 35 U.S.C. 151, iii) if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections, or an issued patent, or iv) without publication of the application or patent under the specific circumstances provided for by 37 CFR 1.14(a)(1)(v)-(vii); and/or 3) the National Archives and Records Administration, for inspection of records.

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82A (07-13)
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TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	10/697,697
Filing Date	October 31, 2003
First Named Inventor	Chandrakant D. Patel
Title	COOLING SYSTEM
Art Unit	3744
Examiner Name	MARC E NORMAN
Attorney Docket Number	100111090-3

SIGNATURE of Applicant or Patent Practitioner

Signature	/Richard J. Botos/	Date (Optional)	May 24, 2024
Name	Richard J. Botos	Registration Number	32,016
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☑ *Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Vertiv Ex. 1003
Vertiv v. Valtrus

PTO/AIA/96 (08-12)
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STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: VALTRUS INNOVATIONS LIMITED

Application No./Patent No.: 10/697,697/6,854,287 Filed/Issue Date: October 31, 2003/February 15, 2005

Titled: ATMOSPHERIC CONTROL WITHIN A BUILDING

VALTRUS INNOVATIONS LIMITED, a a Corporation

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

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

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

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

1. From: HEWLETT-PACKARD DEVELOPMENT COMPANY, L.P. To: HEWLETT PACKARD ENTERPRISE DEVELOPMENT LP

   The document was recorded in the United States Patent and Trademark Office at
   Reel 037079, Frame 0001, or for which a copy thereof is attached.

2. From: HEWLETT PACKARD ENTERPRISE DEVELOPMENT LP and HEWLETT PACKARD ENTERPRISE COMPANY To: OT PATENT ESCROW, LLC

   The document was recorded in the United States Patent and Trademark Office at
   Reel 055269, Frame 0001, or for which a copy thereof is attached.

This collectionof information is required by 37CFR 3.73(b). The informationis required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application.Confidentiality isgoverned by 35U.S.C. 122 and37 CFR 1.11and 1.14.This collection is estimated to take 12 minutes to complete, including gathering,preparing, and submitting the completed applicationform 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 besent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETEDFORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA22313-1450** .

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

Vertiv Ex. 1003
Vertiv v. Valtrus

PTO/AIA/96 (08-12)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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STATEMENT UNDER 37 CFR 3.73(c)

3. From: OT PATENT ESCROW, LLC To: VALTRUS INNOVATIONS LIMITED

The document was recorded in the United States Patent and Trademark Office at
Reel 059058, Frame 0720, or for which a copy thereof is attached.

4. From: _____ To: _____

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

5. From: _____ To: _____

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

6. From: _____ To: _____

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

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

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

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

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

/Richard J. Botos/	5/24/2024
Signature	Date
Richard J. Botos	32,016
Printed or Typed Name	Title or Registration Number

Vertiv Ex. 1003
Vertiv v. Valtrus

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requiresthat you begiven certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirementsof the Act, please be advised that: (1)the general authority for the collectionof this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary;and (3) the principalpurpose for whichthe informationis used by the U.S. Patent and Trademark Office is to process and/or examine your submission related toa patent application or patent. If you do not furnishthe requested information, the U.S. Patent and Trademark Officemay not be able to process and/or examine yoursubmission, which may result in termination of proceedings orabandonment of the application or expiration of the patent.

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

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

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT6516770

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	PATENT ASSIGNMENT, SECURITY INTEREST, AND LIEN AGREEMENT

CONVEYING PARTY DATA

Name	Execution Date
HEWLETT PACKARD ENTERPRISE DEVELOPMENT LP	01/15/2021
HEWLETT PACKARD ENTERPRISE COMPANY	01/15/2021

RECEIVING PARTY DATA

Name:	OT PATENT ESCROW, LLC
Street Address:	200 WEST MADISON - 37TH FLOOR
City:	CHICAGO
State/Country:	ILLINOIS
Postal Code:	60606

PROPERTY NUMBERS Total: 1328

Property Type	Number
Patent Number:	6880153
Patent Number:	7103639
Patent Number:	6832181
Patent Number:	6668294
Patent Number:	7043586
Patent Number:	6684381
Patent Number:	6757849
Patent Number:	7003559
Patent Number:	6684218
Patent Number:	6661748
Patent Number:	6663003
Patent Number:	7440360
Patent Number:	6539527
Patent Number:	6907603
Patent Number:	6738783
Patent Number:	7251780
Patent Number:	6853835
Patent Number:	6842754
Patent Number:	6889244

Property Type	Number
Patent Number:	6910271
Patent Number:	7131199
Patent Number:	7246101
Patent Number:	6935419
Patent Number:	6832303
Patent Number:	6665166
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Patent Number:	6711021
Patent Number:	6862185
Patent Number:	7039736
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Patent Number:	7027309
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Patent Number:	7853825
Patent Number:	7519822
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Patent Number:	7044362
Patent Number:	7051166
Patent Number:	6938259
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Patent Number:	7509657
Patent Number:	7120717
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Property Type	Number
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Patent Number:	7650275
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Patent Number:	9411657
Patent Number:	8810780
Patent Number:	9408050
Patent Number:	9195727

CORRESPONDENCE DATA

Fax Number: (203)542-7220

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 2035427219
Email: jlutzker@oceantomo.com
Correspondent Name: JOEL E LUTZKER
Address Line 1: 500 WEST PUTNAM AVE. #500
Address Line 4: GREENWICH, CONNECTICUT 06830

NAME OF SUBMITTER:	JOEL E. LUTZKER
SIGNATURE:	/Joel E. Lutzker/
DATE SIGNED:	01/26/2021
	This document serves as an Oath/Declaration (37 CFR 1.63).

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Patent Assignment, Security Interest, and Lien Agreement

This Patent Assignment, Security Interest, and Lien Agreement ("Agreement"), dated as of January 15, 2021 ("***Effective Date***"), is made by and among Hewlett Packard Enterprise Development LP, a Texas limited partnership having its principal place of business at 11445 Compaq Drive West, Houston, Texas 77070-1443 ("***HPED***"), and Hewlett Packard Enterprise Company, a Delaware corporation having its principal place of business at 6280 America Center Drive, San Jose, California 95002, U.S.A. ("***HPECO***") (HPED and HPECO are collectively referred to herein as "***Assignor***"); and OT Patent Escrow, LLC, aDelaware limited liability company having its principal place of business at 200 West Madison, 37th Floor, Chicago, IL 60606 ("***Assignee***").

WHEREAS, Assignor and Assignee, as well as Valtrus Innovations Limited, a company incorporated in Ireland under company number 669289 and having its principal place of business at The Glasshouses GH2, 92 Georges Street Lower, Dun Laoghaire, Dublin, Ireland A96 VR66 ("***Purchaser***") are parties to a Patent Escrow Agreement dated as of January 15, 2021, pursuant to which the Patents identified in the attached Exhibit A-2 (collectively, "***Assigned Patents***") are to be assigned to Assignee to hold in escrow for later assignment to Purchaser subject to the terms and conditions of the Patent Escrow Agreement;

NOW THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree as follows:

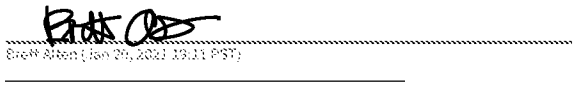
1. Assignment to Assignee. Assignor hereby grants and assigns to Assignee all of Assignor's right, title and interest in and to the Assigned Patents, to have and to hold the same, for Assignee's own use and enjoyment and for the use and enjoyment of its successors and assigns, and the right to sue for damages for infringement of such Assigned Patents accruing at any time prior to, on, and/or after the date hereof, for the full term or terms of all such Assigned Patents, subject to all rights granted under the Assigned Patents to any and all parties (including Assignor) prior to or concurrent with January 15, 2021.

2. Security Interest and Lien. Assignee hereby grants Assignor a security interest and lien in and to all of Assignee's right, title and interest in and to the Assigned Patents (the "Security Interest"). The Security Interest is granted by Assignee's to secure Assignee's performance of, and compliance with, its obligations under the Patent Escrow Agreement.

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IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their duly authorized representatives as of the Effective Date as set forth below:

Hewlett Packard Enterprise Company

By: 
Brett Alten (Jan 20, 2021 19:11 PST)

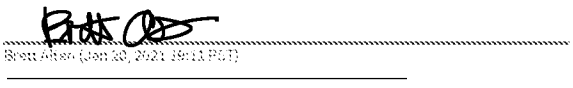
Name: Brett Alten

Title: SVP, DGC, Chief IP Counsel

Date: Jan 20, 2021

Hewlett Packard Enterprise Development LP

By: Enterprise DC Holdings LLC, its General Partner

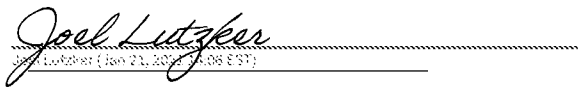
By: 
Brett Alten (Jan 20, 2021 19:11 PST)

Name: Brett Alten

Title: Chief Intellectual Property Counsel

Date: Jan 20, 2021

OT Patent Escrow, LLC

By: 
Joel Lutzker (Jan 21, 2021 08:06 EST)

Name: Joel Lutzker

Title: General Counsel

Date: 01/21/2021

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Exhibit A-2 – Escrow Patents

List of Escrow Patents:

Tranche 2:

Patent ID Tranche 2	Patent Family Id	CC	Patent Number	Patent Status	Application Number if not Granted	Filed Date	Annuity Due Date	Annuity Cost (Est. USD)	Application Title
81966449	F10001152	US	US6880153	Granted		21-Nov-2000	N/A	N/A	METHOD AND APPARATUS FOR VARYING THE LEVEL OF CORRECTNESS CHECKS EXECUTED WHEN PEFORMING CORRECTNESS CHECKS OPPORTUNISTICALLY USING SPARE INSTRUCTION SLOTS
81968165	F10001626	US	US7103639	Granted		5-Dec-2000	N/A	N/A	METHOD AND APPARATUS FOR PROCESSING UNIT SYNCHRONIZATION FOR SCALABLE PARALLEL PROCESSING

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Patent ID Tranche 2	Patent Family Id	CC	Patent Number	Patent Status	Application Number if not Granted	Filed Date	Annuity Due Date	Annuity Cost (Est. USD)	Application Title
81968168	F10001626	JP	JP3947381	Granted		19-Oct-2001	20-Apr-2021	934.20	METHOD FOR PROCESSING UNIT SYNCHRONIZATION FOR SCALABLE PARALLEL PROCESSING
81972728	F10003154	US	US6832181	Granted		3-Nov-2000	N/A	N/A	METHOD TO DISTINGUISH BETWEEN PHYSICAL HARDWARE AND SIMULATED HARDWARE
81973646	F10003436	US	US6668294	Granted		17-Mar-2001	N/A	N/A	DATA CORRUPTION AVOIDANCE ON A BACKPLANE BUS ADAPTED TO RECEIVE BUS CONTROLLER CARDS OF DIFFERENT TYPES

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Patent ID Tranche 2	Patent Family Id	CC	Patent Number	Patent Status	Application Number if not Granted	Filed Date	Annuity Due Date	Annuity Cost (Est. USD)	Application Title
81973649	F10003436	US	US7043586	Granted		19-Nov-2003	N/A	N/A	DATA CORRUPTION AVOIDANCE ON A BACKPLANE BUS ADAPTED TO RECEIVE BUS CONTROLLER CARDS OF DIFFERENT TYPES
81976343	F10004126	US	US6684381	Granted		29-Sep-2000	N/A	N/A	HARDWARE DESCRIPTION LANGUAGE-EMBEDDED REGULAR EXPRESSION SUPPORT FOR MODULE ITERATION AND INTERCONNECTIO N
81976415	F10004177	US	US6757849	Granted		3-Aug-2001	N/A	N/A	SYSTEM AND METHOD FOR DEVELOPING CUSTOMIZED INTEGRATION TESTS AND NETWORK PERIPHERAL DEVICE EVALUATIONS
81977366	F10004526	US	US7003559	Granted		23-Oct-2000	N/A	N/A	SYSTEM AND METHOD FOR DETERMINING PROBABLE NETWORK PATHS BETWEEN NODES IN A NETWORK TOPOLOGY
81977369	F10004526	GB	GB2370720	Granted		17-Oct-2001	17-Oct-2020	882.85	SYSTEM AND METHOD FOR DETERMINING PROBABLE NETWORK PATHS BETWEEN NODES IN A NETWORK TOPOLOGY
81977879	F10004727	US	US6684218	Granted		21-Nov-2000	N/A	N/A	STANDARD SPECIFIC URL

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Patent ID Tranche 2	Patent Family Id	CC	Patent Number	Patent Status	Application Number if not Granted	Filed Date	Annuity Due Date	Annuity Cost (Est. USD)	Application Title
81978845	F10004960	US	US6661748	Granted		5-Mar-2001	N/A	N/A	POSITION CONTROL FOR PLUNGE MECHANISM
81978959	F10004966	US	US6663003	Granted		22-Feb-2001	N/A	N/A	APPARATUS AND METHOD FOR RETRIEVING DATA RELATED TO A DATA CARTRIDGE IN A MEDIA STORAGE SYSTEM
81978968	F10004966	US	US7440360	Granted		13-Aug-2003	N/A	N/A	APPARATUS AND METHOD FOR RETRIEVING DATA RELATED TO A DATA CARTRIDGE IN A MEDIA STORAGE SYSTEM
81980636	F10005848	US	US6539527	Granted		19-Mar-2001	N/A	N/A	SYSTEM AND METHOD OF DETERMINING THE NOISE SENSITIVITY OF AN INTEGRATED CIRCUIT
81983471	F10006882	US	US6907603	Granted		29-Sep-2003	N/A	N/A	SOFTWARE UPDATE MANAGEMENT SYSTEM WITH UPDATE CHRONOLOGY GENERATOR
81984224	F10007224	US	US6738783	Granted		9-Feb-2001	N/A	N/A	DYNAMICALLY CONFIGURABLE GENERIC CONTAINER
81984374	F10007278	US	US7251780	Granted		1-Jun-2005	N/A	N/A	DYNAMIC WEB CONTENT UNFOLDING IN WIRELESS INFORMATION GATEWAYS

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Patent ID Tranche 2	Patent Family Id	CC	Patent Number	Patent Status	Application Number if not Granted	Filed Date	Annuity Due Date	Annuity Cost (Est. USD)	Application Title
81986504	F10007956	US	US6853835	Granted		13-Aug-2001	N/A	N/A	ASYMMETRIC WIRELESS COMMUNICATION SYSTEM USING TWO DIFFERENT RADIO TECHNOLOGIES
81986516	F10007956	DE	DE60202618.0	Granted		13-Aug-2002	13-Aug-2020	2,108.66	ASYMMETRIC WIRELESS CELLULAR COMMUNICATION SYSTEM USING A CARRIER WAVE DOWNLINK AND AN ULTRAWIDEBAND UPLINK
81986522	F10007956	GB	GB1417783	Granted		13-Aug-2002	13-Aug-2020	826.86	ASYMMETRIC WIRELESS CELLULAR COMMUNICATION SYSTEM USING A CARRIER WAVE DOWNLINK AND AN ULTRAWIDEBAND UPLINK
81987053	F10008127	US	US6842754	Granted		17-Apr-2001	N/A	N/A	LEASE ENFORCEMENT IN A DISTRIBUTED FILE SYSTEM
81987509	F10008316	US	US6889244	Granted		31-Oct-2000	N/A	N/A	METHOD AND APPARATUS FOR PASSING MESSAGES USING A FAULT TOLERANT STORAGE SYSTEM
82079381	F100110249	US	US6910271	Granted		29-Oct-2002	N/A	N/A	MECHANICAL HIGHLY COMPLIANT THERMAL INTERFACE PAD
82079387	F100110249	US	US7131199	Granted		1-Feb-2005	N/A	N/A	MECHANICAL HIGHLY COMPLIANT THERMAL INTERFACE PAD

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Patent ID Tranche 2	Patent Family Id	CC	Patent Number	Patent Status	Application Number if not Granted	Filed Date	Annuity Due Date	Annuity Cost (Est. USD)	Application Title
82081496	F100111334	US	US7246101	Granted		16-May-2002	N/A	N/A	KNOWLEDGE-BASED SYSTEM AND METHOD FOR RECONSTRUCTIN G CLIENT WEB PAGE ACCESSES FROM CAPTURED NETWORK PACKETS
82081724	F100111445	US	US6935419	Granted		20-Feb-2002	N/A	N/A	HEAT SINK APPARATUS WITH AIR DUCT
81991499	F10011625	US	US6832303	Granted		3-Jan-2002	N/A	N/A	METHOD AND SYSTEM FOR MANAGING AN ALLOCATION OF A PORTION OF A MEMORY
81992498	F10012052	US	US6665166	Granted		15-Mar-2001	N/A	N/A	SYSTEMS WITH ENHANCED ELECTROSTATIC DISCHARGE PROTECTION
81993035	F10012236	US	US6832927	Granted		3-Oct-2001	N/A	N/A	LOW PROFILE PCI HOT PLUG ACTUATOR ASSEMBLY
81993038	F10012236	GB	GB2385205	Granted		24-Sep-2002	24-Sep-2021	896.07	LOW PROFILE PCI HOT PLUG ACTUATOR ASSEMBLY
81995060	F10013088	US	US6848114	Granted		23-Aug-2001	N/A	N/A	BULK ACCESS SYSTEM FOR A DATA STORAGE SYSTEM
81995123	F10013110	US	US6961716	Granted		31-Jul-2001	N/A	N/A	NETWORK USAGE ANALYSIS SYSTEM AND METHOD FOR DETERMINING EXCESS USAGE
81998876	F10014427	US	US6952689	Granted		21-Feb-2003	N/A	N/A	AUTOMATING EXPERT KNOWLEDGE WITH ANALYZER HARNESS

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Patent ID Tranche 2	Patent Family Id	CC	Patent Number	Patent Status	Application Number if not Granted	Filed Date	Annuity Due Date	Annuity Cost (Est. USD)	Application Title
81998279	F10014777	US	US7002801	Granted		16-Oct-2003	N/A	N/A	METHOD OF COOLING SEMICONDUCTOR DIE USING MICROCHANNEL THERMOSYPHON
82186076	F10014777	US	US7120022	Granted		24-Mar-2004	N/A	N/A	LOOP THERMOSYPHON WITH WICKING STRUCTURE AND SEMICONDUCTOR DIE AS EVAPORATOR
81998489	F10015052	US	US6826675	Granted		9-Oct-2001	N/A	N/A	STACK UTILIZATION MANAGEMENT SYSTEM AND METHOD FOR A SINGLE-STACK ARRANGEMENT
81998492	F10015052	US	US6904513	Granted		2-Jul-2004	N/A	N/A	STACK UTILIZATION MANAGEMENT SYSTEM AND METHOD FOR A SINGLE-STACK ARRANGEMENT
82000850	F10016665	US	US6941489	Granted		27-Feb-2002	N/A	N/A	CHECKPOINTING OF REGISTER FILE
82000862	F10016668	US	US6832300	Granted		20-Mar-2002	N/A	N/A	METHODS AND APPARATUS FOR CONTROL OF ASYNCHRONOUS CACHE
82183202	F10018060	US	US6867976	Granted		21-Oct-2003	N/A	N/A	PIN RETENTION FOR THERMAL TRANSFER INTERFACES, AND ASSOCIATED METHODS
82006229	F10019555	US	US6882536	Granted		25-Apr-2002	N/A	N/A	WRAP- AROUND COOLING ARRANGEMENT FOR PRINTED CIRCUIT BOARD

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Patent ID Tranche 2	Patent Family Id	CC	Patent Number	Patent Status	Application Number if not Granted	Filed Date	Annuity Due Date	Annuity Cost (Est. USD)	Application Title
82006235	F10019555	GB	GB2387974	Granted		22-Apr-2003	22-Apr-2021	837.70	WRAP-AROUND COOLING ARRANGEMENT FOR PRINTED CIRCUIT BOARD
82006994	F10019865	US	US6874070	Granted		22-Feb-2002	N/A	N/A	SYSTEM AND METHOD FOR MEMORY INTERLEAVING USING CELL MAP WITH ENTRY GROUPING FOR HIGHER-WAY INTERLEAVING
82006997	F10019865	JP	JP4348093	Granted		21-Feb-2003	24-Jul-2021	753.97	METHOD OF ACCESSING MEMORY IN INTERLEAVED MANNER USING MAP TABLE
82084961	F100201063	US	US6816809	Granted		23-Jul-2002	N/A	N/A	HARDWARE BASED UTILIZATION METERING
82084970	F100201063	GB	GB2393292	Granted		17-Jul-2003	17-Jul-2021	781.44	HARDWARE BASED UTILIZATION METERING
82084973	F100201063	US	US8463578	Granted		16-Jul-2004	11-Dec-2020	3,606.00	HARDWARE BASED UTILIZATION METERING
82086311	F100201656	US	US7225118	Granted		31-Oct-2002	N/A	N/A	GLOBAL DATA PLACEMENT
82086503	F100201702	US	US6952358	Granted		5-May-2003	N/A	N/A	MOLECULAR WIRE CONTENT ADDRESSABLE MEMORY
82086653	F100201725	US	US6977927	Granted		18-Sep-2000	N/A	N/A	METHOD AND SYSTEM OF ALLOCATING STORAGE RESOURCES IN A STORAGE AREA NETWORK

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Patent ID Tranche 2	Patent Family Id	CC	Patent Number	Patent Status	Application Number if not Granted	Filed Date	Annuity Due Date	Annuity Cost (Est. USD)	Application Title
82087187	F100201874	US	US6873190	Granted		18-Mar-2003	N/A	N/A	APPARATUS FOR SENSING THE PRESENCE OF AN INDUCTIVE LOAD DRIVEN BY A PULSE WIDTH MODULATED SIGNAL
82087190	F100201874	JP	JP4059859	Granted		11-Mar-2004	28-Dec-2020	1,050.55	DEVICE FOR DETECTING PRESENCE OF INDUCTIVE LOAD DRIVEN BY PULSE-WIDTH MODULATED SIGNAL
82644401	F100201874	FR	FR1460440	Granted		9-Oct-2003	9-Oct-2021	946.25	APPARATUS FOR SENSING THE PRESENCE OF AN INDUCTIVE LOAD DRIVEN BY A PULSE WIDTH MODULATED SIGNAL
82644403	F100201874	DE	DE60335237.5	Granted		9-Oct-2003	9-Oct-2021	2,272.89	APPARATUS FOR SENSING THE PRESENCE OF AN INDUCTIVE LOAD DRIVEN BY A PULSE WIDTH MODULATED SIGNAL
82644405	F100201874	GB	GB1460440	Granted		9-Oct-2003	9-Oct-2021	837.70	APPARATUS FOR SENSING THE PRESENCE OF AN INDUCTIVE LOAD DRIVEN BY A PULSE WIDTH MODULATED SIGNAL
82092221	F100204926	US	US6862179	Granted		26-Nov-2002	N/A	N/A	PARTITION FOR VARYING THE SUPPLY OF COOLING FLUID

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Patent ID Tranche 2	Patent Family Id	CC	Patent Number	Patent Status	Application Number if not Granted	Filed Date	Annuity Due Date	Annuity Cost (Est. USD)	Application Title
82030946	F10971169	US	US6910122	Granted		18-Feb-2000	N/A	N/A	METHOD AND APPARATUS FOR PRESERVING PIPELINE DATA DURING A PIPELINE STALL AND FOR RECOVERING FROM THE PIPELINE STALL
82035506	F10972013	US	US6961768	Granted		13-Jul-2001	N/A	N/A	STATUS POLLING FAILOVER OF DEVICES IN A DISTRIBUTED NETWORK MANAGEMENT HIERARCHY
82050626	F10990826	US	US6766435	Granted		31-May-2000	N/A	N/A	ADDRESS TRANSLATION REGISTERS IN A PROCESSOR
82058069	F10992475	US	US6442552	Granted		30-Jun-2000	N/A	N/A	METHOD AND APPARATUS FOR IMPLEMENTING THREE TIER CLIENT ASYNCHRONOUS TRANSPARENCY
82578805	F12151	US	US6657868	Granted		21-Nov-2001	N/A	N/A	ELECTRONIC DEVICE MOUNT ASSEMBLY
82093034	F200205338	US	US6895489	Granted		7-Aug-2002	N/A	N/A	SYSTEM AND METHOD FOR OPERATING IN ENDIAN INDEPENDENT MODE
82098413	F200207885	US	US7474229	Granted		13-Sep-2006	6-Jul-2020	7,406.00	COMPUTER SYSTEM INDICATOR PANEL WITH EXPOSED INDICATOR EDGE
82098422	F200207885	JP	JP5011490	Granted		28-Aug-2007	15-Jun-2021	753.97	COMPUTER SYSTEM INDICATOR PANEL WITH EXPOSED INDICATOR EDGE

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82098428	F200207885	GB	GB2455452	Granted		28-Aug-2007	28-Aug-2020	438.03	COMPUTER SYSTEM INDICATOR PANEL WITH EXPOSED INDICATOR EDGE
82098431	F200207885	DE	DE112007002130	Granted		28-Aug-2007	28-Aug-2020	1,093.17	COMPUTER SYSTEM INDICATOR PANEL WITH EXPOSED INDICATOR EDGE
82098434	F200207885	GB	GB2469953	Granted		28-Aug-2007	28-Aug-2020	438.03	COMPUTER SYSTEM INDICATOR PANEL WITH EXPOSED INDICATOR EDGE
82098761	F200207985	US	US6889169	Granted		31-Jan-2003	N/A	N/A	COLLECTION OF SESSION-RELATED INFORMATION USING AN EXTENDABLE SAMPLING PERIOD
82098764	F200207985	GB	GB2397913	Granted		12-Jan-2004	12-Jan-2021	753.48	COLLECTION OF SESSION-RELATED INFORMATION USING AN EXTENDABLE SAMPLING PERIOD
82101809	F200209078	US	US7075788	Granted		11-Jun-2003	N/A	N/A	COMPUTER COOLING SYSTEM AND METHOD
82102184	F200209214	US	US7543291	Granted		1-Aug-2003	N/A	N/A	PROCESSOR PURGING SYSTEM AND METHOD
82103258	F200209471	US	US7299331	Granted		21-Jan-2003	N/A	N/A	METHOD AND APPARATUS FOR ADDING MAIN MEMORY IN COMPUTER SYSTEMS OPERATING WITH MIRRORED MAIN MEMORY

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82105175	F200300007	US	US7149945	Granted		9-May-2003	N/A	N/A	SYSTEMS AND METHODS FOR PROVIDING ERROR CORRECTION CODE TESTING FUNCTIONALITY
82105178	F200300007	TW	TWI308760	Granted		25-Nov-2003	10-Apr-2021	686.40	SYSTEMS AND METHODS FOR PROVIDING ERROR CORRECTION CODE TESTING FUNCTIONALITY
82105817	F200300253	US	US7191380	Granted		10-Sep-2003	N/A	N/A	DEFECT-TOLERANT AND FAULT-TOLERANT CIRCUIT INTERCONNECTIONS
82195838	F200300253	US	US7350132	Granted		26-Apr-2005	N/A	N/A	NANOSCALE INTERCONNECTION INTERFACE
82195847	F200300253	JP	JP4685159	Granted		26-Apr-2006	18-Feb-2021	979.26	NANOSCALE INTERCONNECTION INTERFACE
82195850	F200300253	CN	CN200680022900.X	Granted		26-Apr-2006	26-Apr-2021	1,367.42	NANOSCALE INTERCONNECTION INTERFACE
82195853	F200300253	KR	KR1012242950000	Granted		26-Apr-2006	14-Jan-2021	463.28	NANOSCALE INTERCONNECTION INTERFACE
82195856	F200300253	IN	IN261309	Granted		26-Apr-2006	26-Apr-2021	644.00	NANOSCALE INTERCONNECTION INTERFACE
82195859	F200300253	US	US8112700	Granted		23-Jan-2008	7-Aug-2023	7,706.00	NANOSCALE INTERCONNECTION INTERFACE
90458834	F200300253	FR	FR1875352	Granted			26-Apr-2021	675.76	NANOSCALE INTERCONNECTION INTERFACE
90458836	F200300253	DE	DE602006053277.6	Granted			26-Apr-2021	1,590.25	NANOSCALE INTERCONNECTION INTERFACE

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90458838	F200300253	GB	GB1875352	Granted			26-Apr-2021	618.83	NANOSCALE INTERCONNECTION INTERFACE
82106237	F200300477	US	US7521264	Granted		5-Jan-2007	N/A	N/A	SPIN INJECTION CONTROL USING ELECTRIC CURRENT
82106732	F200300477	US	US6879013	Granted		30-Jul-2003	N/A	N/A	AMPLIFIERS USING SPIN INJECTION AND MAGNETIC CONTROL OF ELECTRON SPINS
82106567	F200300610	US	US7184933	Granted		28-Feb-2003	N/A	N/A	PERFORMANCE ESTIMATION TOOL FOR DATA STORAGE SYSTEMS
82117211	F200301682	US	US6980063	Granted		3-Aug-2004	N/A	N/A	TRANSMISSION LINE PARASITIC ELEMENT DISCONTINUITY CANCELLATION
82117688	F200301789	US	US7076597	Granted		14-Oct-2003	N/A	N/A	BROADCAST INVALIDATE SCHEME
82117877	F200301842	US	US6704817	Granted		31-Aug-2000	N/A	N/A	COMPUTER ARCHITECTURE AND SYSTEM FOR EFFICIENT MANAGEMENT OF BI-DIRECTIONAL BUS
82117880	F200301842	US	US6920512	Expired		17-Feb-2004	N/A	N/A	COMPUTER ARCHITECTURE AND SYSTEM FOR EFFICIENT MANAGEMENT OF BI-DIRECTIONAL BUS
82117904	F200301844	US	US6665763	Granted		31-Jul-2000	N/A	N/A	HOT-PLUG STORAGE DRIVE

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82117937	F200301852	US	US7079615	Granted		20-Nov-2001	N/A	N/A	EXPANDED COMPARATOR FOR CONTROL OF DIGITAL DELAY LINES IN A DELAY LOCKED LOOP OR PHASE LOCKED LOOP
82118069	F200301890	US	US6976184	Granted		27-Aug-2003	N/A	N/A	CLOCK FORWARD INITIALIZATION AND RESET SIGNALING TECHNIQUE
82118276	F200301945	US	US6895585	Granted		30-Mar-2001	N/A	N/A	METHOD OF MIXED WORKLOAD HIGH PERFORMANCE SCHEDULING
82119680	F200302135	US	US6978345	Granted		15-May-2001	N/A	N/A	SELF-MIRRORING HIGH PERFORMANCE DISK DRIVE
82119857	F200302179	US	US6823409	Granted		28-Sep-2001	N/A	N/A	COHERENCY CONTROL MODULE FOR MAINTAINING CACHE COHERENCY IN A MULTI-PROCESSOR-BUS SYSTEM
82119893	F200302186	US	US6884101	Granted		17-Oct-2001	N/A	N/A	INTERPOSER ONE-STEP LOAD AND SELF-LOCK SOCKET
82120106	F200302240	US	US6830394	Granted		4-Jun-2001	N/A	N/A	KEYBOARD HAVING A TRACK BALL MECHANISM AND A SCROLL MECHANISM
82120226	F200302273	US	US6667879	Granted		13-Dec-2001	N/A	N/A	SYSTEM FOR LATCHING AND EJECTING A MODULAR COMPONENT FROM AN ELECTRONIC DEVICE

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82120262	F200302284	US	US6650537	Granted		31-Oct-2001	N/A	N/A	LOW PROFILE DC DISTRIBUTION MODULE FOR A POWER SUPPLY UNIT
82120493	F200302342	US	US6657867	Granted		14-Dec-2001	N/A	N/A	HINGED DOOR FOR ACCESS TO ADD-IN CARDS
82120496	F200302343	US	US6669423	Granted		14-Dec-2001	N/A	N/A	TOOLLESS THUMB SCREW WITH ADJUSTABLE HEIGHT KNOB
82120499	F200302343	US	US6856514	Granted		27-Oct-2003	N/A	N/A	TOOLLESS THUMB SCREW WITH ADJUSTABLE HEIGHT KNOB
82121699	F200302536	US	US6898060	Granted		27-May-2003	N/A	N/A	GATED DIODE OVERVOLTAGE PROTECTION
82121840	F200302579	US	US7502895	Granted		13-Sep-2005	N/A	N/A	TECHNIQUES FOR REDUCING CASTOUTS IN A SNOOP FILTER
82133207	F200304304	US	US7076629	Granted		26-Dec-2001	N/A	N/A	METHOD FOR PROVIDING CONCURRENT NON-BLOCKING HEAP MEMORY MANAGEMENT FOR FIXED SIZED BLOCKS
82137005	F200305040	US	US6757330	Granted		1-Jun-2000	N/A	N/A	EFFICIENT IMPLEMENTATIO N OF HALF-PIXEL MOTION PREDICTION
82165532	F200308161	US	US7043516	Granted		13-Mar-1998	N/A	N/A	REDUCTION OF ADD-PIPE LOGIC BY OPERAND OFFSET SHIFT
82166030	F200308257	US	US6701387	Granted		31-Aug-2000	N/A	N/A	ADAPTIVE DATA FETCH PREDICTION ALGORITHM

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82166285	F200308323	US	US6609208	Granted		7-Jul-2000	N/A	N/A	ENERGY-BASED SAMPLING FOR PERFORMANCE MONITORING
82168928	F200309021	US	US7142647	Granted		3-Sep-2003	N/A	N/A	DATABASE FOR USE IN TELEPHONE COMMUNICATIONS
82168931	F200309021	US	US7483521	Granted		23-Oct-2006	N/A	N/A	DATABASE FOR USE IN TELEPHONE COMMUNICATIONS
82168994	F200309074	US	US7543113	Granted		2-Jul-2004	2-Dec-2020	7,406.00	CACHE MEMORY SYSTEM AND METHOD CAPABLE OF ADAPTIVELY ACCOMMODATING VARIOUS MEMORY LINE SIZES
82173998	F200311045	US	US7310681	Granted		23-Jun-2003	N/A	N/A	SYSTEM AND METHOD FOR MODELING THE MEMORY STATE OF A STREAMING MEDIA SERVER
82177961	F200312685	US	US7065697	Granted		29-Jul-2003	N/A	N/A	SYSTEMS AND METHODS OF PARTITIONING DATA TO FACILITATE ERROR CORRECTION
82177967	F200312685	US	US7051265	Granted		29-Jul-2003	N/A	N/A	SYSTEMS AND METHODS OF ROUTING DATA TO FACILITATE ERROR CORRECTION
82180217	F200313648	US	US7484237	Granted		13-May-2004	N/A	N/A	METHOD AND APPARATUS FOR ROLE-BASED SECURITY POLICY MANAGEMENT

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82184297	F200315344	US	US7269753	Granted		27-Aug-2004	N/A	N/A	MAPPING POWER SYSTEM COMPONENTS
82184303	F200315344	JP	JP4897685	Granted		18-Aug-2005	6-Jan-2021	1,006.29	MAPPING POWER SYSTEM COMPONETS
82184306	F200315344	CN	CN200580036905.3	Granted		18-Aug-2005	18-Aug-2020	1,304.37	MAPPING POWER SYSTEM COMPONETS
82206791	F200315640	US	US7330942	Granted		29-Dec-2004	N/A	N/A	METHOD FOR EFFICIENT VIRTUALIZATION OF PHYSICAL MEMORY IN A VIRTUAL-MACHINE MONITOR
82188452	F200400591	US	US7774457	Granted		25-Mar-2005	10-Feb-2022	7,406.00	RESOURCE EVALUATION FOR A BATCH JOB AND AN INTERACTIVE SESSION CONCURRENTLY EXECUTED IN A GRID COMPUTING ENVIRONMENT
82202708	F200400591	US	US7870256	Granted		12-Oct-2005	11-Jul-2022	7,706.00	REMOTE DESKTOP PERFORMANCE MODEL FOR ASSIGNING RESOURCES
82190660	F200401769	US	US7392172	Granted		28-Apr-2005	N/A	N/A	PROVIDING VIRTUAL DEVICE ACCESS VIA FIRMWARE
82190666	F200401769	TW	TWI421766	Granted		30-Mar-2006	31-Dec-2021	359.56	PROVIDING VIRTUAL DEVICE ACCESS VIA FIRMWARE
82191407	F200402006	US	US8374175	Granted		27-Apr-2005	12-Aug-2024	7,706.00	SYSTEM AND METHOD FOR REMOTE DIRECT MEMORY ACCESS OVER A NETWORK SWITCH FABRIC

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82191737	F200402148	US	US7376799	Granted		21-Jul-2005	N/A	N/A	SYSTEM FOR REDUCING THE LATENCY OF EXCLUSIVE READ REQUESTS IN A SYMMETRIC MULTI-PROCESSING SYSTEM
82192109	F200402377	US	US7262964	Granted		27-Apr-2005	N/A	N/A	AIRFLOW CONTROL BAFFLE
82194716	F200403261	US	US7650386	Granted		29-Jul-2004	19-Jul-2021	7,406.00	COMMUNICATION AMONG PARTITIONED DEVICES
82196147	F200403794	US	US7262495	Granted		7-Oct-2004	N/A	N/A	3D INTERCONNECT WITH PROTRUDING CONTACTS
82197314	F200404382	US	US7480836	Granted		25-Apr-2005	20-Jul-2020	7,406.00	MONITORING ERROR-HANDLER VECTOR IN ARCHITECTED MEMORY
82200530	F200405992	US	US7734622	Granted		25-Mar-2005	8-Dec-2021	7,706.00	MEDIA-DRIVEN BROWSING
82200926	F200406195	US	US7995339	Granted		1-Nov-2004	9-Feb-2023	7,706.00	CONTROL OF VENT TILLES CORRELATED WITH A RACK
82203158	F200406195	US	US7251547	Granted		8-Oct-2004	N/A	N/A	CORRELATION OF VENT TILE SETTINGS AND RACK TEMPERATURES
82202732	F200407050	US	US7533303	Granted		15-Apr-2005	12-Nov-2020	7,406.00	METHOD AND SYSTEM FOR PERFORMING SYSTEM-LEVEL CORRECTION OF MEMORY ERRORS
82204136	F200407697	US	US7433935	Granted		29-Apr-2005	N/A	N/A	SELF-ADAPTING PLUG-IN SERVICE

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82207985	F200501020	US	US7877803	Granted		27-Jun-2005	25-Jul-2022	7,406.00	AUTOMATED IMMUNE RESPONSE FOR A COMPUTER
82209869	F200502033	US	US7624234	Granted		31-Aug-2006	24-May-2021	7,706.00	DIRECTORY CACHES, AND METHODS FOR OPERATION THEREOF
82209872	F200502033	GB	GB2441435	Granted		29-Aug-2007	29-Aug-2021	531.28	DIRECTORY CACHES, AND METHODS FOR OPERATION THEREOF
82210976	F200502524	US	US7651871	Granted		30-Nov-2005	26-Jul-2021	7,706.00	DEVICE FOR FORMING MAGNETIC WELL FOR NANOPARTICLES
82211804	F200502942	US	US8205146	Granted		21-Jul-2005	19-Dec-2023	7,706.00	PERSISTENT ERROR DETECTION IN DIGITAL MEMORY
82218587	F200506782	US	US8370416	Granted		26-Apr-2006	5-Aug-2024	7,706.00	COMPATIBILITY ENFORCEMENT IN CLUSTERED COMPUTING SYSTEMS
82218590	F200506782	GB	GB2437649	Granted		26-Apr-2007	26-Apr-2021	531.28	COMPATIBILITY ENFORCEMENT IN CLUSTERED COMPUTING SYSTEMS
82218593	F200506782	JP	JP4726852	Granted		25-Apr-2007	22-Apr-2021	708.91	COMPATIBILITY ENFORCEMENT IN CLUSTERED COMPUTING SYSTEMS
82218863	F200506953	CN	CN200710137000.6	Granted		26-Jul-2007	26-Jul-2020	985.42	MEMORY-MAPPED BUFFERS FOR NETWORK INTERFACE CONTROLLERS

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82218860	F200506953	US	US9137179	Granted		26-Jul-2006	15-Mar-2023	3,766.00	MEMORY-MAPPED BUFFERS FOR NETWORK INTERFACE CONTROLLERS
82219073	F200507081	US	US7592679	Granted		19-Oct-2006	22-Mar-2021	7,706.00	SENSOR AND METHOD FOR MAKING THE SAME
82227227	F200507081	US	US7582975	Granted		27-Apr-2007	1-Mar-2021	7,706.00	NANOWIRE DEVICE AND METHOD OF MAKING THE SAME
82219634	F200507364	US	US7930486	Granted		30-Apr-2007	19-Oct-2022	7,406.00	CACHE CHUNKED LIST CONCRETE DATA TYPE
82219664	F200507395	US	US7376805	Granted		21-Apr-2006	N/A	N/A	DISTRIBUTED STORAGE ARRAY
82219667	F200507395	US	US7487311	Granted		14-Mar-2008	3-Aug-2020	7,406.00	SYSTEM AND METHOD FOR ASYNCHRONOUS BACKUP OF VIRTUAL DISKS IN A DISTRIBUTED STORAGE ARRAY
82220339	F200600100	US	US8390086	Granted		19-Jul-2010	5-Sep-2024	7,706.00	A SOLAR CELL EMPLOYING A NANOWIRE
82225544	F200602330	US	US8045562	Granted		31-Oct-2006	25-Apr-2023	7,706.00	ESTIMATING LINK INTERFERENCE AND BANDWIDTH
82227581	F200603189	US	US8799547	Granted		7-Jul-2008	5-Feb-2022	3,766.00	DATA PACKET PROCESSING METHOD FOR A MULTI CORE PROCESSOR
82227584	F200603189	CN	CN200880016822.1	Granted		7-Jul-2008	7-Jul-2021	1,032.98	DATA PACKET PROCESSING METHOD FOR A MULTI CORE PROCESSOR

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90037712	F200603189	FR	FR2176773	Granted		7-Jul-2008	7-Jul-2021	521.20	DATA PACKET PROCESSING METHOD FOR A MULTI CORE PROCESSOR
90037714	F200603189	DE	DE602008039979.6	Granted		7-Jul-2008	7-Jul-2021	1,178.09	DATA PACKET PROCESSING METHOD FOR A MULTI CORE PROCESSOR
90037716	F200603189	GB	GB2176773	Granted		7-Jul-2008	7-Jul-2021	443.74	DATA PACKET PROCESSING METHOD FOR A MULTI CORE PROCESSOR
82241552	F200703647	CN	CN200880128265.2	Granted		25-Mar-2008	25-Mar-2021	1,032.98	SYSTEM AND METHOD FOR TRANSFORMING PCIE SR-IOV FUNCTIONS TO APPEAR AS LEGACY FUNCTIONS
82241564	F200703647	KR	KR10-1324844	Granted		25-Mar-2008	28-Oct-2021	732.64	SYSTEM AND METHOD FOR TRANSFORMING PCIE SR-IOV FUNCTIONS TO APPEAR AS LEGACY FUNCTIONS
82241567	F200703647	US	US8386654	Granted		25-Mar-2008	26-Aug-2024	7,706.00	SYSTEM AND METHOD FOR TRANSFORMING PCIE SR-IOV FUNCTIONS TO APPEAR AS LEGACY FUNCTIONS
83240742	F200703647	DE	DE602008024431.8	Granted		25-Mar-2008	25-Mar-2021	1,178.09	SYSTEM AND METHOD FOR TRANSFORMING PCIE SR-IOV FUNCTIONS TO APPEAR AS LEGACY FUNCTIONS

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83240744	F200703647	GB	GB2257880	Granted		25-Mar-2008	25-Mar-2021	443.74	SYSTEM AND METHOD FOR TRANSFORMING PCIE SR-IOV FUNCTIONS TO APPEAR AS LEGACY FUNCTIONS
82242728	F200704017	GB	GB2458157	Granted		7-Mar-2008	7-Mar-2021	443.74	VIRTUAL MACHINE LIVENESS CHECK
82242731	F200704017	US	US8627313	Granted		9-Mar-2009	7-Jul-2021	3,766.00	VIRTUAL MACHINE LIVENESS CHECK
82243406	F200704228	GB	GB2459433	Granted		7-Mar-2008	7-Mar-2021	443.74	DISTRIBUTED NETWORK CONNECTION POLICY MANAGEMENT
82243409	F200704228	US	US9178850	Granted		9-Mar-2009	3-May-2023	3,766.00	DISTRIBUTED NETWORK CONNECTION POLICY MANAGEMENT
90046408	F200704228	US	US10165009	Granted		11-Sep-2015	25-Jun-2022	2,006.00	DISTRIBUTED NETWORK CONNECTION POLICY MANAGEMENT
82249295	F200802685	US	US9031876	Granted		19-Jun-2009	12-Nov-2022	3,606.00	MANAGING KEYS FOR ENCRYPTED SHARED DOCUMENTS
82631729	F200802734	CN	CN200980139998.0	Granted		4-Aug-2009	4-Aug-2021	1,032.98	END-TO-END NETWORK ACCESS ANALYSIS
82631733	F200802734	US	US9253038	Granted		4-Aug-2009	2-Aug-2023	3,766.00	END-TO-END NETWORK ACCESS ANALYSIS
82249913	F200803253	US	US8417954	Granted		11-Feb-2009	9-Oct-2024	7,706.00	INSTALLATION IMAGE INCLUDING DIGITAL SIGNATURE

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82852246	F200803703	US	US9094317	Granted		18-Jun-2009	28-Jan-2023	3,766.00	PROCESSOR TOPOLOGY SWITCHES
82885912	F200803703	CN	CN200980159933.2	Granted		18-Jun-2009	18-Jun-2021	1,032.98	PROCESSOR TOPOLOGY SWITCHES
82844854	F200900015	US	US9098276	Granted		21-Sep-2011	4-Feb-2023	3,766.00	REDUNDANT POWER SUPPLY SYSTEMS AND METHODS
82252169	F200900607	US	US7302399	Granted		10-Nov-1999	N/A	N/A	METHOD AND SYSTEM FOR PROCESSING TRAVEL RESERVATION DATA
82253540	F200900812	US	US7100197	Granted		10-Dec-2001	N/A	N/A	NETWORK USER AUTHENTICATIO N SYSTEM AND METHOD
82253546	F200900812	JP	JP4864289	Granted		6-Dec-2002	18-Nov-2020	2,068.54	NETWORK USER AUTHENTICATIO N SYSTEM AND METHOD
82253558	F200900812	MX	MX250877	Granted		6-Dec-2002	N/A	N/A	NETWORK USER AUTHENTICATIO N SYSTEM AND METHOD
82253561	F200900812	NZ	NZ533457	Granted		6-Dec-2002	6-Dec-2020	723.01	NETWORK USER AUTHENTICATIO N SYSTEM AND METHOD
82901625	F200900812	DE	DE60241169.6	Granted		6-Dec-2002	6-Dec-2020	2,257.04	NETWORK USER AUTHENTICATIO N SYSTEM AND METHOD
82253696	F200900854	US	US6850866	Granted		12-Sep-2002	N/A	N/A	MANAGING PERFORMANCE METRICS DESCRIBING A RELATIONSHIP BETWEEN A PROVIDER AND A CLIENT

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82255841	F200901260	US	US7680590	Granted		2-Dec-2003	16-Sep-2021	7,706.00	BOUNDARY DETECTION ALGORITHM FOR EMBEDDED DEVICES
82256702	F200901260	US	US6983202	Granted		12-Apr-2004	N/A	N/A	IMPLEMENTING GEO-FENCING ON MOBILE DEVICES
82256420	F200901682	US	US8756682	Granted		20-Dec-2004	17-Dec-2021	3,766.00	METHOD AND SYSTEM FOR NETWORK INTRUSION PREVENTION
82257263	F200901908	US	US9191989	Granted		19-Dec-2006	17-May-2023	3,766.00	APPARATUS, AND ASSOCIATED METHOD, FOR CONTROLLING CONNECTIVITY OF A COMPUTER DEVICE WITH A COMPUTER NETWORK
90095936	F200901908	US	US9584519	Granted		27-Oct-2015	28-Aug-2024	3,766.00	APPARATUS, AND ASSOCIATED METHOD, FOR CONTROLLING CONNECTIVITY OF A COMPUTER DEVICE WITH A COMPUTER NETWORK
82257851	F200902190	US	US6839706	Granted		6-Aug-2001	N/A	N/A	BLOCK DATA STORAGE WITHIN A COMPUTER NETWORK
82895030	F200903397	CN	CN200980160899.0	Granted		11-Aug-2009	11-Aug-2020	666.46	ENCLOSURE AIRFLOW CONTROLLER
90064660	F200903397	FR	FR2465030	Granted		11-Aug-2009	11-Aug-2020	364.41	ENCLOSURE AIRFLOW CONTROLLER
90064662	F200903397	DE	DE602009034106.5	Granted		11-Aug-2009	11-Aug-2020	746.71	ENCLOSURE AIRFLOW CONTROLLER
90064664	F200903397	GB	GB2465030	Granted		11-Aug-2009	11-Aug-2020	322.82	ENCLOSURE AIRFLOW CONTROLLER

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82895034	F200903397	US	US9354678	Granted		11-Aug-2009	30-Nov-2023	3,766.00	ENCLOSURE AIRFLOW CONTROLLER
82938265	F200903900	CN	CN201080064762.8	Granted		26-Feb-2010	26-Feb-2021	698.53	RESTORING STABILITY TO AN UNSTABLE BUS
82938271	F200903900	US	US8799545	Granted		26-Feb-2010	5-Feb-2022	3,766.00	RESTORING STABILITY TO AN UNSTABLE BUS
82261814	F200904727	US	US8943328	Granted		29-Jan-2010	27-Jul-2022	3,606.00	KEY ROTATION FOR ENCRYPTED STORAGE MEDIA
82262789	F200904727	US	US8489893	Granted		9-Apr-2010	16-Jan-2021	3,606.00	ENCRYPTION KEY ROTATION MESSAGES WRITTEN AND OBSERVED BY STORAGE CONTROLLERS VIA STORAGE MEDIA
82261817	F200904730	US	US9032218	Granted		29-Jan-2010	12-Nov-2022	3,606.00	KEY ROTATION FOR ENCRYPTED STORAGE MEDIA USING A MIRRORED VOLUME REVIVE OPERATION
83137890	F201000198	GB	GB2503965	Granted		12-Jul-2010	12-Jul-2021	327.01	FLEXIBLE DATA CENTER AND METHODS FOR DEPLOYMENT
83137892	F201000198	US	US9310855	Granted		12-Jul-2010	12-Oct-2023	3,766.00	FLEXIBLE DATA CENTER AND METHODS FOR DEPLOYMENT
82263854	F201000919	US	US9184382	Granted		28-Oct-2010	10-May-2023	3,766.00	MEMRISTIVE DEVICES WITH LAYERED JUNCTIONS AND METHODS FOR FABRICATING THE SAME
83168702	F201001144	KR	KR10-1448412	Granted		30-Aug-2010	30-Sep-2020	500.23	MULTILAYER MEMORY ARRAY

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83168704	F201001144	US	US9293200	Granted		30-Aug-2010	22-Sep-2023	3,766.00	MULTILAYER MEMORY ARRAY
83168698	F201001144	CN	CN201080068814.9	Granted		30-Aug-2010	30-Aug-2020	666.46	MULTILAYER MEMORY ARRAY
83681482	F201001773	US	US9223821	Granted		21-Mar-2011	29-Jun-2023	3,766.00	DATA BACKUP PRIORITIZATION
90185183	F201001773	FR	FR2689329	Granted		21-Mar-2011	21-Mar-2021	340.88	DATA BACKUP PRIORITIZATION
90185185	F201001773	DE	DE602011021284.2	Granted		21-Mar-2011	21-Mar-2021	611.36	DATA BACKUP PRIORITIZATION
90185187	F201001773	GB	GB2689329	Granted		21-Mar-2011	21-Mar-2021	283.23	DATA BACKUP PRIORITIZATION
82267325	F201002266	GB	GB2054390	Granted		23-Feb-1996	N/A	N/A	ENCLOSURE FOR ELECTRONIC CIRCUITRY
82267331	F201002266	FR	FR964814	Granted		22-Aug-1996	N/A	N/A	ENCLOSURE FOR ELECTRONIC CIRCUITRY
82270946	F201002423	US	US7299301	Granted		8-Sep-2003	N/A	N/A	METHOD AND ARCHITECTURE FOR LOGICAL AGGREGATION OF MULTIPLE SERVERS
82269671	F201002872	US	US7453815	Granted		15-Dec-2003	N/A	N/A	METHOD AND SYSTEM FOR MONITORING AND MANAGEMENT OF THE PERFORMANCE OF REAL-TIME NETWORKS
82269695	F201002879	US	US7386119	Granted		13-May-2004	N/A	N/A	FILTERED TRANSMIT CANCELLATION IN A FULL-DUPLEX MODEM DATA ACCESS ARRANGEMENT (DAA)

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82270031	F201002986	US	US6771288	Granted		8-Mar-2001	N/A	N/A	METHODS AND APPARATUS FOR UPDATING INFORMATION IN A DISPLAY CONTAINING FIXED AND VARIABLE INFORMATION
82270109	F201003023	US	US6633277	Granted		30-May-2000	N/A	N/A	COMPACT 3-STATE DATA ENTRY DEVICE
82270580	F201003193	US	US6934740	Granted		19-Sep-2000	N/A	N/A	METHOD AND APPARATUS FOR SHARING COMMON DATA OBJECTS AMONG MULTIPLE APPLICATIONS IN A CLIENT DEVICE
82271003	F201003329	US	US6874047	Granted		9-Jun-2000	N/A	N/A	SYSTEM AND METHOD FOR IMPLEMENTING AN SMBUS/I2C INTERFACE ON A NETWORK INTERFACE CARD
82271342	F201003398	US	US6614350	Granted		8-Nov-2000	N/A	N/A	METHOD AND SYSTEM FOR EFFECTING A SECURITY SYSTEM UPON MULTIPLE PORTABLE INFORMATION DEVICES
82271756	F201003538	US	US6701140	Granted		14-Sep-2000	N/A	N/A	DIGITAL RECEIVE PHASE LOCK LOOP WITH CUMULATIVE PHASE ERROR CORRECTION AND DYNAMICALLY PROGRAMMABLE CORRECTION RATE
82272137	F201003672	US	US6882622	Granted		2-Aug-2000	N/A	N/A	FLOW CONTROL SYSTEM FOR NETWORK DEVICES

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82272302	F201003754	US	US7480939	Granted		6-Jul-2001	N/A	N/A	ENHANCEMENT TO AUTHENTICATIO N PROTOCOL THAT USES A KEY LEASE
82272299	F201003754	US	US6920559	Expired		28-Apr-2000	N/A	N/A	USING A KEY LEASE IN A SECONDARY AUTHENTICATIO N PROTOCOL AFTER A PRIMARY AUTHENTICATIO N PROTOCOL HAS BEEN PERFORMED
82272392	F201003777	US	US6662332	Granted		1-Nov-2000	N/A	N/A	INTERLEAVER FOR BURST ERROR CORRECTION
82272455	F201003805	US	US6766377	Granted		24-Aug-2000	N/A	N/A	MEDIA GATEWAY PROXY
82272458	F201003805	US	US7634577	Granted		19-Apr-2004	15-Jun-2021	7,706.00	MEDIA GATEWAY PROXY
82272611	F201003858	US	US6741586	Granted		31-May-2000	N/A	N/A	SYSTEM AND METHOD FOR SHARING COMPUTER SCREENS OVER A TELEPHONY NETWORK
82272650	F201003874	US	US6965577	Granted		24-Oct-2000	N/A	N/A	IDENTIFYING AN EDGE SWITCH AND PORT TO WHICH A NETWORK USER IS ATTACHED
82272728	F201003925	US	US6966003	Granted		12-Jan-2001	N/A	N/A	SYSTEM AND METHOD FOR SWITCHING SECURITY ASSOCIATIONS

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82272782	F201003944	US	US7039049	Granted		22-Dec-2000	N/A	N/A	METHOD AND APPARATUS FOR PPPOE BRIDGING IN A ROUTING CMTS
82272836	F201003967	US	US6763348	Granted		8-Dec-2000	N/A	N/A	METHOD AND APPARATUS FOR SEARCHING DATABASES EMPLOYING A TRIE SEARCH STRUCTURE
82272899	F201004011	US	US6577500	Granted		28-Feb-2001	N/A	N/A	WIRELESS PC CARD
82272926	F201004020	US	US6938079	Granted		19-Sep-2000	N/A	N/A	SYSTEM AND METHOD FOR AUTOMATICALLY CONFIGURING A CLIENT DEVICE
82273091	F201004100	US	US6842797	Granted		10-Oct-2000	N/A	N/A	USB ADAPTER FOR BURST MODE COMMUNICATIONS
82273283	F201004220	US	US6771745	Granted		22-May-2001	N/A	N/A	METHOD AND APPARATUS FOR TELEPHONE DIALLING USING A NETWORK DEVICE
82273484	F201004324	US	US7577857	Granted		29-Aug-2001	18-Feb-2021	7,706.00	HIGH SPEED NETWORK INTERFACE WITH AUTOMATIC POWER MANAGEMENT WITH AUTO-NEGOTIATION
82273487	F201004324	US	US8046614	Granted		20-Jul-2009	N/A	N/A	AN INTEGRATED CIRCUIT HAVING A NETWORKING INTERFACE MODULE SUPPORTING A PLURALITY OF PROTOCOLS

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82861414	F201004324	US	US8291246	Granted		20-Oct-2011	16-Apr-2024	7,400.00	HIGH SPEED NETWORK INTERFACE WITH AUTOMATIC POWER MANAGEMENT WITH AUTO-NEGOTIATION
82273562	F201004343	US	US6745333	Granted		31-Jan-2002	N/A	N/A	METHOD FOR DETECTING UNAUTHORIZED NETWORK ACCESS BY HAVING A NIC MONITOR FOR PACKETS PURPORTING TO BE FROM ITSELF
82273571	F201004345	US	US7194004	Granted		28-Jan-2002	N/A	N/A	METHOD FOR MANAGING NETWORK ACCESS
82273634	F201004373	US	US6996110	Granted		31-Aug-2001	N/A	N/A	DISTRIBUTED MPLS ARCHITECTURE
82273676	F201004392	US	US7085364	Granted		20-Aug-2001	N/A	N/A	ADVANCED CONFERENCE DROP
82273709	F201004409	US	US7350076	Granted		6-Dec-2001	N/A	N/A	SCHEME FOR DEVICE AND USER AUTHENTICATIO N WITH KEY DISTRIBUTION IN A WIRELESS NETWORK
82273712	F201004409	CN	CN02812705.6	Granted		16-May-2002	16-May-2021	1,367.42	AUTHENTICATIO N METHOD
90826600	F201004409	DE	DE602500656	Granted		16-May-2002	16-May-2021	2,504.74	AUTHENTICATIO N METHOD
90826603	F201004409	GB	GB1391077	Granted		16-May-2002	16-May-2021	896.07	AUTHENTICATIO N METHOD
82273889	F201004461	US	US6674652	Granted		29-Jan-2002	N/A	N/A	INTEGRATED SHIELD WRAP

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82273958	F201004494	US	US7624434	Granted		1-Mar-2002	24-May-2021	7,706.00	SYSTEM FOR PROVIDING FIREWALL CAPABILITIES TO A COMMUNICATION DEVICE
82274012	F201004514	US	US7298834	Granted		22-Nov-2002	N/A	N/A	SYSTEM AND METHOD FOR LARGE CAPACITY CONFERENCE CALLS
82274108	F201004540	US	US7603486	Granted		26-Nov-2002	13-Apr-2021	7,706.00	NETWORK MANAGEMENT SYSTEM PROVIDING LOGIC SIGNALS OVER COMMUNICATION LINES FOR DETECTING PERIPHERAL DEVICES
82274132	F201004549	US	US7130625	Granted		1-Jul-2002	N/A	N/A	SYSTEM AND METHOD FOR A UNIVERSAL WIRELESS ACCESS GATEWAY
82274135	F201004549	CN	CN03815527.3	Granted		30-Jun-2003	30-Jun-2021	1,367.42	SYSTEM AND METHOD FOR A UNIVERSAL WIRELESS ACCESS GATEWAY
82274138	F201004549	DE	DE60332838.5	Granted		30-Jun-2003	30-Jun-2021	2,272.89	SYSTEM AND METHOD FOR A UNIVERSAL WIRELESS ACCESS GATEWAY
82274144	F201004549	FR	FR1527626	Granted		30-Jun-2003	30-Jun-2021	946.25	SYSTEM AND METHOD FOR A UNIVERSAL WIRELESS ACCESS GATEWAY

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82274147	F201004549	GB	GB1527626	Granted		30-Jun-2003	30-Jun-2021	837.70	SYSTEM AND METHOD FOR A UNIVERSAL WIRELESS ACCESS GATEWAY
82274240	F201004570	DE	DE60317155.9	Granted		4-Jan-2003	4-Jan-2021	2,272.89	NETWORK UNITS FOR USE IN AND ORGANISATION OF CASCADE SYSTEMS
82274255	F201004570	US	US7522589	Granted		7-Jan-2003	N/A	N/A	NETWORK UNITS FOR USE IN AND ORGANISATION OF CASCADE SYSTEMS
82576655	F201004570	FR	FR1760968	Granted		4-Jan-2003	4-Jan-2021	946.25	NETWORK UNIT FOR USE IN A CASCADE SYSTEM
82576658	F201004570	DE	DE603347487	Granted		4-Jan-2003	4-Jan-2021	2,272.89	NETWORK UNIT FOR USE IN A CASCADE SYSTEM
82274504	F201004631	US	US7596614	Granted		29-Jul-2005	29-Mar-2021	7,706.00	NETWORK INCLUDING SNOOPING
82274507	F201004631	US	US7975048	Granted		18-Aug-2009	5-Jan-2023	7,706.00	NETWORK INCLUDING SNOOPING
82743829	F201004631	US	US8055768	Granted		27-May-2011	8-May-2023	7,706.00	NETWORK INCLUDING SNOOPING
82274573	F201004645	US	US7802094	Granted		22-Feb-2005	21-Mar-2022	7,706.00	REDUCTION OF FALSE POSITIVE DETECTION OF SIGNATURE MATCHES IN INTRUSION DETECTION SYSTEMS
82274591	F201004649	US	US7957390	Granted		18-May-2005	7-Dec-2022	7,706.00	DETECTION OF SIGNATURES IN DISORDERED MESSAGE SEGMENTS

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83693683	F201005236	US	US9292392	Granted		30-Jun-2011	22-Sep-2023	3,766.00	MEMORY MODULE THAT INCLUDES A MEMORY MODULE COPY ENGINE FOR COPYING DATA FROM AN ACTIVE MEMORY DIE TO A SPARE MEMORY DIE
82064201	F30010410	US	US7634656	Granted		12-Sep-2002	15-Jun-2021	7,706.00	METHOD AND APPARATUS FOR IDENTIFYING A VOICE CALLER
82064207	F30010410	DE	DE60207500.9	Granted		10-Sep-2002	10-Sep-2021	2,504.74	METHOD AND APPARATUS FOR IDENTIFYING A VOICE CALLER
82064213	F30010410	GB	GB1294157	Granted		10-Sep-2002	10-Sep-2021	896.07	METHOD AND APPARATUS FOR IDENTIFYING A VOICE CALLER
82070699	F50006065	US	US6951023	Granted		29-Oct-2001	N/A	N/A	MESSAGE-BASED SOFTWARE SYSTEM
83004398	F50006065	FR	FR1202176	Expired		31-Oct-2000	N/A	N/A	MESSAGE-BASED SOFTWARE SYSTEM
83004404	F50006065	DE	DE60047121.7	Expired		31-Oct-2000	N/A	N/A	MESSAGE-BASED SOFTWARE SYSTEM
83004410	F50006065	GB	GB1202176	Expired		31-Oct-2000	N/A	N/A	MESSAGE-BASED SOFTWARE SYSTEM
82071116	F50012953	US	US6943683	Granted		21-Jan-2003	N/A	N/A	LOCATION DEVICE
83014991	F700209927	US	US8929236	Granted		30-Jul-2012	6-Jul-2022	3,766.00	NETWORK FLOW ANALYSIS
83098424	F700211111	US	US8929225	Granted		7-Dec-2012	6-Jul-2022	3,766.00	CUSTOMER EDGE DEVICE PROBLEM IDENTIFICATION

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90068832	F700213273	CN	CN201380076263.4	Granted		3-Apr-2013	3-Apr-2021	364.09	METHOD AND PRODUCT FOR MODIFYING A FLOW OF OPERATIONS TO BE EXECUTED IN PLURALITY OF EXECUTION ENVIRONMENTS
90068840	F700213273	US	US9846598	Granted		3-Apr-2013	19-Jun-2021	2,006.00	MODIFYING A FLOW OF OPERATIONS TO BE EXECUTED IN A PLURALITY OF EXECUTION ENVIRONMENTS
82578801	F9949	US	US6833634	Granted		4-Jan-2001	N/A	N/A	DISK ENCLOSURE WITH MULTIPLE POWER DOMAINS
82579241	FP007	US	US7650638	Granted		2-Dec-2002	19-Jul-2021	7,706.00	NETWORK SECURITY MONITORING SYSTEM EMPLOYING BI-DIRECTIONAL COMMUNICATION
90404678	FSGI00359	US	US9547882	Granted		10-Nov-2014	17-Jul-2024	3,766.00	SHARED MEMORY EIGENSOLVER
90404680	FSGI00359	US	US9262799	Granted		7-Nov-2014	16-Aug-2023	3,766.00	SHARED MEMORY EIGENSOLVER
90444833	FSGI00359	US	US9798594	Granted		17-Jan-2017	24-Apr-2021	2,006.00	SHARED MEMORY EIGENSOLVER

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81966803	F10001220	US	US7000151	Granted		18-Jul-2002	N/A	N/A	SYSTEM AND METHOD FOR PROVIDING RUN-TIME TYPE CHECKING
81967499	F10001459	US	US6950961	Granted		13-Feb-2001	N/A	N/A	HIGHLY AVAILABLE, MONOTONIC INCREASING SEQUENCE NUMBER GENERATION
81967625	F10001491	US	US6687872	Granted		14-Mar-2001	N/A	N/A	METHODS AND SYSTEMS OF USING RESULT BUFFERS IN PARITY OPERATIONS
81967634	F10001491	US	US7111227	Granted		4-Dec-2003	N/A	N/A	METHODS AND SYSTEMS OF USING RESULT BUFFERS IN PARITY OPERATIONS
82051124	F10002032	US	US6813705	Granted		5-Jan-2001	N/A	N/A	MEMORY DISAMBIGUATION SCHEME FOR PARTIALLY REDUNDANT LOAD REMOVAL
81970013	F10002170	US	US7263719	Granted		29-Nov-2000	N/A	N/A	SYSTEM AND METHOD FOR IMPLEMENTING NETWORK SECURITY POLICIES ON A COMMON NETWORK INFRASTRUCTURE
81970046	F10002170	US	US7376965	Granted		14-May-2001	N/A	N/A	SYSTEM AND METHOD FOR IMPLEMENTING A BUBBLE POLICY TO ACHIEVE HOST AND NETWORK SECURITY

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81970055	F10002170	US	US7400591	Granted		1-Jun-2005	N/A	N/A	METHOD OF CREATING AN ADDRESS AND A DISCONTIGUOUS MASK FOR A NETWORK SECURITY POLICY AREA
81971792	F10002673	US	US7376953	Granted		29-Oct-2001	N/A	N/A	APPARATUS AND METHOD FOR ROUTING A TRANSACTION TO A SERVER
81971828	F10002691	US	US6704687	Granted		31-Jan-2001	N/A	N/A	HISTORICAL RESULTS BASED METHOD FOR AUTOMATICALL Y IMPROVING COMPUTER SYSTEM PERFORMANCE
81971849	F10002695	US	US7607135	Granted		15-Jun-2001	20-Apr-2021	7,406.00	APPARATUS AND METHOD FOR ENHANCING PERFORMANCE OF A COMPUTER SYSTEM
81974126	F10003509	US	US6851074	Granted		30-Apr-2001	N/A	N/A	SYSTEM AND METHOD FOR RECOVERING FROM MEMORY FAILURES IN COMPUTER SYSTEMS
81976325	F10004121	US	US6889335	Granted		7-Apr-2001	N/A	N/A	MEMORY CONTROLLER RECEIVER CIRCUITRY WITH TRI-STATE NOISE IMMUNITY

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81977141	F10004392	US	US6944807	Granted		25-Mar-2002	N/A	N/A	METHOD AND APPARATUS FOR ACHIEVING HIGHER PRODUCT YIELDS BY USING FRACTIONAL PORTIONS OF IMBEDDED MEMORY ARRAYS
81977306	F10004466	US	US7076647	Granted		7-Jun-2001	N/A	N/A	DYNAMIC KERNEL TUNABLES
81977471	F10004560	US	US7216184	Granted		1-May-2001	N/A	N/A	SYSTEM AND METHOD FOR IDENTIFICATION OF DEVICES ASSOCIATED WITH INPUT/OUTPUT PATHS
81978071	F10004801	US	US8621480	Granted		16-Dec-2004	30-Jun-2021	3,606.00	LOAD BALANCER WITH STARVATION AVOIDANCE
81978998	F10004983	US	US7058860	Granted		29-Jun-2001	N/A	N/A	SYSTEM AND METHOD OF AUTOMATIC PARAMETER COLLECTION AND PROBLEM SOLUTION GENERATION FOR COMPUTER STORAGE DEVICES
81980063	F10005461	US	US6918110	Granted		11-Apr-2001	N/A	N/A	DYNAMIC INSTRUMENTATION OF AN EXECUTABLE PROGAM BY MEANS OF CAUSING A BREAKPOINT AT THE ENTRY POINT OF A FUNCTION AND PROVIDING INSTRUMENTATION CODE

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81980882	F10006054	US	US6915520	Granted		6-Apr-2001	N/A	N/A	JAVA C++ PROXY OBJECTS
81982520	F10006527	US	US7236939	Granted		31-Mar-2001	N/A	N/A	A PEER-TO-PEER INTER-ENTERPRISE COLLABORATIVE PROCESS MANAGEMENT METHOD AND SYSTEM
81982832	F10006625	US	US7307962	Granted		2-Mar-2001	N/A	N/A	SYSTEM FOR INFERENCE OF NETWORK INFRASTRUCTURE DEVICES
81982979	F10006728	US	US7120832	Granted		27-Sep-2001	N/A	N/A	STORAGE DEVICE PERFORMANCE MONITOR
81983012	F10006755	US	US6976270	Granted		8-May-2001	N/A	N/A	PROCESS AND COMPONENT FOR INQUIRING ABOUT SECURITY RELATIONSHIPS
81983804	F10007099	US	US6868481	Granted		31-Oct-2000	N/A	N/A	CACHE COHERENCE PROTOCOL FOR A MULTIPLE BUS MULTIPROCESSOR SYSTEM
81983807	F10007099	JP	JP4008224	Granted		15-Oct-2001	7-Sep-2021	1,159.50	CACHE COHERENCE PROTOCOL FOR A MULTIPLE BUS MULTIPROCESSOR SYSTEM
81983810	F10007099	US	US7373457	Granted		1-Feb-2005	N/A	N/A	CACHE COHERENCE PROTOCOL FOR A MULTIPLE BUS MULTIPROCESSOR SYSTEM
81984836	F10007479	US	US6823300	Granted		10-Nov-2000	N/A	N/A	MEMORY EFFICIENT OCCURRENCE MODEL DESIGN FOR VLSI CAD

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81986702	F10008027	US	US6525936	Granted		30-Apr-2001	N/A	N/A	AIR JET COOLING ARRANGEMENT FOR ELECTRONIC SYSTEMS
81998216	F10008027	US	US6904968	Granted		14-Sep-2001	N/A	N/A	METHOD AND APPARATUS FOR INDIVIDUALLY COOLING COMPONENTS OF ELECTRONIC SYSTEMS
81998219	F10008027	US	US6876549	Granted		31-Oct-2003	N/A	N/A	METHOD AND APPARATUS FOR INDIVIDUALLY COOLING COMPONENTS OF ELECTRONIC SYSTEMS
81998222	F10008027	US	US7086459	Granted		31-Oct-2003	N/A	N/A	METHOD AND APPARATUS FOR INDIVIDUALLY COOLING COMPONENTS OF ELECTRONIC SYSTEMS
81998225	F10008027	US	US7013968	Granted		31-Oct-2003	N/A	N/A	METHOD AND APPARATUS FOR INDIVIDUALLY COOLING COMPONENTS OF ELECTRONIC SYSTEMS
81988421	F10010310	US	US6963832	Granted		9-Oct-2001	N/A	N/A	MEANING TOKEN DICTIONARY FOR AUTOMATIC SPEECH RECOGNITION
81989063	F10010654	US	US6928580	Granted		9-Jul-2001	N/A	N/A	DISTRIBUTED DATA CENTER SYSTEM PROTOCOL FOR CONTINUITY OF SERVICE IN THE EVENT OF DISASTER FAILURES

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81989453	F10010857	US	US6931571	Granted		20-Nov-2001	N/A	N/A	METHOD AND APPARATUS FOR HANDLING TRANSIENT MEMORY ERRORS
82079021	F100110160	US	US7765299	Granted		16-Sep-2002	27-Jan-2022	7,406.00	DYNAMIC ADAPTIVE SERVER PROVISIONING FOR BLADE ARCHITECTURES
82079405	F100110262	US	US7236967	Granted		3-Jun-2002	N/A	N/A	METHODS AND SYSTEMS FOR MAINTANING TRANSACTION SEMANTICS IN A COMPUTER SYSTEM
82079738	F100110378	US	US7975043	Granted		25-Feb-2003	5-Jan-2023	7,706.00	METHOD AND APPARATUS FOR MONITORING A NETWORK
82082363	F100111655	US	US7051238	Granted		30-Jul-2002	N/A	N/A	METHOD AND SYSTEM FOR USING MACHINE-ARCHITECTURE SUPPORT TO DISTINGUISH FUNCTION AND ROUTINE RETURN VALUES
81990812	F10011331	US	US6990612	Granted		18-Jul-2002	N/A	N/A	SYSTEM AND METHOD FOR PREVENTING SOFTWARE ERRORS
81991082	F10011514	US	US6928536	Granted		29-Nov-2001	N/A	N/A	DYNAMIC EXECUTION LAYER INTERFACE FOR REPLACING INSTRUCTIONS REQUIRING UNAVAILABLE HARDWARE FUNCTIONALITY WITH PATCH CODE AND CACHING

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81991304	F10011596	US	US7478394	Granted		4-Jun-2001	13-Jul-2020	7,406.00	CONTEXT-CORRUPTING CONTEXT SWITCHING
81992945	F10012198	US	US7577998	Granted		16-Nov-2001	18-Feb-2021	7,406.00	METHOD OF DETECTING CRITICAL FILE CHANGES
81993740	F10012499	US	US7594233	Granted		28-Jun-2002	22-Mar-2021	7,406.00	PROCESSING THREAD LAUNCHING USING VOLUNTEER INFORMATION
81993752	F10012506	US	US7216226	Granted		1-Apr-2002	N/A	N/A	UNIQUE AND SECURE IDENTIFICATION OF A NETWORKED COMPUTING NODE
81994424	F10012767	US	US6851110	Granted		7-Jun-2001	N/A	N/A	OPTIMIZING AN EXECUTABLE COMPUTER PROGRAM HAVING ADDRESS-BRIDGING CODE SEGMENTS
81994538	F10012818	US	US6931632	Granted		8-Nov-2001	N/A	N/A	INSTRUMENTATION OF CODE HAVING PREDICATED BRANCH-CALL AND SHADOW INSTRUCTIONS
81994541	F10012819	US	US6934943	Granted		18-Oct-2001	N/A	N/A	OPTIMIZATION OF CONTROL TRANSFERS TO DYNAMICALLY LOADED MODULES

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81994997	F10013048	US	US7111282	Granted		12-Jun-2001	N/A	N/A	INSTRUMENTING A SOFTWARE PROGRAM AND COLLECTING DATA FROM THE INSTRUMENTED SOFTWARE PROGRAM BY TYPE
81996842	F10014072	US	US6836871	Granted		29-Oct-2002	N/A	N/A	PROCESS AND SYSTEM FOR DEVELOPING DYNAMIC CIRCUIT GUILDELINES
81996848	F10014074	US	US6862694	Granted		5-Oct-2001	N/A	N/A	SYSTEM AND METHOD FOR SETTING AND EXECUTING BREAKPOINTS
81997529	F10014420	US	US7249088	Granted		11-Jul-2001	N/A	N/A	JOINT ESTIMATION OF BIDDERS' RISK ATTITUDES AND PRIVATE INFORMATION
81997724	F10014531	US	US7243368	Granted		29-Mar-2002	N/A	N/A	ACCESS CONTROL SYSTEM AND METHOD FOR A NETWORKED COMPUTER SYSTEM
81998627	F10015123	US	US7200665	Granted		17-Oct-2001	N/A	N/A	ALLOWING REQUESTS OF A SESSION TO BE SERVICED BY DIFFERENT SERVERS IN A MULTI-SERVER DATA SERVICE SYSTEM
81998681	F10015152	US	US7134050	Granted		15-Aug-2003	N/A	N/A	METHOD AND SYSTEM FOR CONTAINING SOFTWARE FAULTS

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81998687	F10015153	US	US7058786	Granted		17-Jan-2002	N/A	N/A	OPERATING SYSTEM DATA COMMUNICATIO N METHOD AND SYSTEM
82000466	F10016439	US	US6944732	Granted		8-May-2002	N/A	N/A	MEHTHOD AND APPARATUS FOR SUPPORTING SNAPSHOTS WITH DIRECT I/O IN A STORAGE AREA NETWORK
82000691	F10016624	US	US6931489	Granted		12-Aug-2002	N/A	N/A	APPARATUS AND METHODS FOR SHARING CACHE AMONG PROCESSORS
82000931	F10016687	US	US7047437	Granted		12-Dec-2001	N/A	N/A	METHOD AND SYSTEM FOR DETECTING DROPPED MICRO-PACKETS
82001030	F10016717	US	US7058702	Granted		4-Jan-2002	N/A	N/A	EFFICIENT VALIDATION OF NETWORK CONFIGURATION CHANGE COMMANDS
82002167	F10017428	US	US7203317	Granted		31-Oct-2001	N/A	N/A	SYSTEM FOR ENABLING LAZY-REVOCATION THROUGH RECURSIVE KEY GENERATION
82002176	F10017432	US	US6848841	Granted		9-Sep-2002	N/A	N/A	OPTICAL COMPONENT CONNECTOR
82002206	F10017447	US	US6967350	Granted		2-Apr-2002	N/A	N/A	MEMORY STRUCTURES
82003364	F10017977	US	US6644481	Granted		11-Feb-2002	N/A	N/A	APPARATUS AND METHOD FOR RACKMOUNTING A CHASSIS

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82004360	F10018557	US	US6718277	Granted		17-Apr-2002	N/A	N/A	ATMOSPHERIC CONTROL WITHIN A BUILDING
82007003	F10019871	US	US6912616	Granted		12-Nov-2002	N/A	N/A	MAPPING ADDRESSES TO MEMORY BANKS BASED ON AT LEAST ONE MATHEMATICAL RELATIONSHIP
82007006	F10019871	JP	JP4771654	Granted		10-Nov-2003	1-Jul-2021	753.97	MAPPING ADDRESSES TO MEMORY BANKS BASED ON AT LEAST ONE MATHEMATICAL RELATIONSHIP
82007021	F10019879	US	US6677778	Granted		23-May-2002	N/A	N/A	DEVICE AND METHOD TO CAUSE A FALSE DATA VALUE TO BE CORRECTLY SEEN AS THE PROPER DATA VALUE
82007393	F10019988	US	US7451073	Granted		25-Jun-2002	N/A	N/A	SYSTEM AND METHOD FOR INCREASING PERFORMANCE IN MULTI-CPU SIMULATION
82082729	F100200080	US	US6868682	Granted		16-Jan-2003	N/A	N/A	AGENT BASED CONTROL METHOD AND SYSTEM FOR ENERGY MANAGEMENT
82083506	F100200402	US	US7249345	Granted		28-Feb-2002	N/A	N/A	METHOD AND SYSTEM FOR AUTOMATICALLY GENERATING SOURCE CODE BASED ON A MARK-UP LANGUAGE MESSAGE DEFINITION

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82083737	F100200475	US	US7577964	Granted		28-Feb-2003	18-Feb-2021	7,706.00	SYSTEM AND METHODS FOR DEFINING A BINDING FOR WEB-SERVICES
82083740	F100200476	US	US7398307	Granted		30-Apr-2003	N/A	N/A	METHOD AND SYSTEM FOR MANAGING A NETWORK
82083773	F100200518	US	US7502803	Granted		28-May-2003	10-Sep-2020	7,406.00	SYSTEM AND METHOD FOR GENERATING ACPI MACHINE LANGUAGE TABLES
82084055	F100200646	US	US6876224	Granted		5-Nov-2002	N/A	N/A	METHOD AND APPARATUS FOR HIGH SPEED BUS HAVING ADJUSTABLE, SYMMETRICAL, EDGE-RATE CONTROLLED, WAVEFORMS
82084058	F100200646	DE	DE10338002.7	Granted		19-Aug-2003	19-Aug-2020	1,905.57	METHOD AND APPARATUS FOR HIGH SPEED BUS HAVING ADJUSTABLE, SYMMETRICAL, EDGE-RATE CONTROLLED, WAVEFORMS
82085771	F100201443	US	US7512066	Granted		30-Mar-2004	N/A	N/A	CONGESTION CONTROL SYSTEM
82088120	F100202262	US	US7310773	Granted		13-Jan-2003	N/A	N/A	REMOVAL OF EXTRANEOUS TEXT FROM ELECTRONIC DOCUMENTS
82089050	F100202807	US	US7577951	Granted		30-May-2002	18-Feb-2021	7,406.00	IMPROVED PERFORMANCE OF COMPUTER PROGRAMS WHILE THEY ARE RUNNING

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82040786	F10980964	US	US7596694	Granted		8-Mar-2004	29-Mar-2021	7,706.00	SYSTEM AND METHOD FOR SAFELY EXECUTING DOWNLOADED CODE ON A COMPUTER SYSTEM
82051859	F10991148	US	US8190554	Granted		1-Jul-2004	29-Nov-2023	7,706.00	OLAP-BASED CUSTOMER BEHAVIOR PROFILING METHOD AND SYSTEM
82093373	F200205659	US	US7512240	Granted		29-Oct-2003	N/A	N/A	MANAGEMENT OF SECURITY KEY DISTRIBUTION
82094570	F200206263	US	US7024583	Granted		31-Oct-2002	N/A	N/A	METHOD AND APPARATUS FOR DETECTING FILE SYSTEM CORRUPTION
82094615	F200206282	US	US6711021	Granted		15-Jan-2003	N/A	N/A	SYSTEMS AND METHODS THAT USE AT LEAST ONE COMPONENT TO REMOVE THE HEAT GENERATED BY AT LEAST ONE OTHER COMPONENT
82094618	F200206282	US	US6862185	Granted		10-Nov-2003	N/A	N/A	SYSTEMS AND METHODS THAT USE AT LEAST ONE COMPONENT TO REMOVE THE HEAT GENERATED BY AT LEAST ONE OTHER COMPONENT
82095152	F200206534	US	US7039736	Granted		15-Jan-2003	N/A	N/A	SYSTEMS AND METHODS FOR ACCESSING BUS-MASTERED SYSTEM RESOURCES

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82095581	F200206729	US	US6819272	Granted		6-Nov-2002	N/A	N/A	SYSTEM, METHOD AND COMPUTER READABLE MEDIUM FOR COMPRESSING A DATA SEQUENCE FOR PARTIAL DECOMPRESSIN G
82096235	F200207033	US	US6889167	Granted		27-Feb-2003	N/A	N/A	DIAGNOSTIC EXERCISER AND METHODS THEREFOR
82096241	F200207033	GB	GB2398897	Granted		6-Feb-2004	6-Feb-2021	764.74	IMPROVED DIAGNOSTIC EXERCISER AND METHODS THEREFOR
82097468	F200207492	US	US7307862	Granted		4-Sep-2003	N/A	N/A	CIRCUIT AND SYSTEM FOR ACCESSING MEMORY MODULES
82098101	F200207492	GB	GB2405715	Granted		27-Aug-2004	27-Aug-2020	682.85	CIRCUIT AND SYSTEM FOR ADDRESSING MEMORY MODULES
82098509	F200207905	US	US7948916	Granted		31-Jan-2003	24-Nov-2022	7,706.00	METHOD AND APPARATUS FOR DISCOVERING TOPOLOGY INFORMATION IN A NETWORK
82100471	F200208701	US	US6946877	Granted		12-Dec-2003	N/A	N/A	CIRCUIT AND ASSOCIATED METHODOLOGY
82100537	F200208728	US	US6954706	Granted		20-Aug-2003	N/A	N/A	METHOD FOR MEASURING INTEGRATED CIRCUIT PROCESSOR POWER DEMAND AND ASSOCIATED SYSTEM

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82101893	F200209117	US	US7088130	Granted		3-Oct-2005	N/A	N/A	PARTIAL TERMINATION VOLTAGE CURRENT SHUNTING
82102025	F200209163	US	US6857897	Granted		29-Apr-2003	N/A	N/A	REMOTE CABLE ASSIST
82103942	F200209743	US	US6940288	Granted		4-Jun-2003	N/A	N/A	APPARATUS AND METHOD FOR MONITORING AND PREDICTING FAILURES IN SYSTEM INTERCONNECT
82103948	F200209745	US	US6895353	Granted		4-Jun-2003	N/A	N/A	APPARATUS AND METHOD FOR MONITORING HIGH IMPEDANCE FAILURES IN CHIP INTERCONNECTS
82105226	F200300027	US	US7447205	Granted		9-May-2003	N/A	N/A	SYSTEMS AND METHODS TO INSERT BROADCAST TRANSACTIONS INTO A FAST DATA STREAM OF TRANSACTIONS
82106294	F200300506	US	US7577670	Granted		8-Mar-2004	18-Feb-2021	7,706.00	METHOD AND APPARATUS FOR INFERRING ADDRESS AND SUBNET RELATIONSHIPS
82106300	F200300512	US	US6837626	Granted		12-Nov-2003	N/A	N/A	ELECTRO-OPTICAL CONNECTOR
82106519	F200300601	US	US8560629	Granted		25-Apr-2003	15-Apr-2021	3,766.00	METHOD OF DELIVERING CONTENT IN A NETWORK

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82110878	F200301299	US	US7468982	Granted		7-Nov-2002	N/A	N/A	METHOD AND APPARATUS FOR CLUSTER INTERCONNECTION USING MULTI-PORT NODES AND MULTIPLE ROUTING FABRICS
82117541	F200301749	US	US6901467	Granted		23-Feb-2001	N/A	N/A	ENHANCING A PCI-X SPLIT COMPLETION TRANSACTION BY ALIGNING CACHELINES WITH AN ALLOWABLE DISCONNECT BOUNDARY'S ENDING ADDRESS
82118192	F200301923	US	US6920052	Granted		26-Sep-2003	N/A	N/A	DYNAMIC ISOLATING MOUNT FOR PROCESSOR PACKAGES
82118201	F200301926	US	US7120248	Granted		26-Mar-2001	N/A	N/A	MULTIPLE PRIME NUMBER GENERATION USING A PARALLEL PRIME NUMBER SEARCH ALGORITHM
82118339	F200301933	US	US6977908	Granted		31-Aug-2001	N/A	N/A	METHOD AND APPARATUS FOR DISCOVERING COMPUTER SYSTEMS IN A DISTRIBUTED MULTI-SYSTEM CLUSTER
82119854	F200302178	US	US6829665	Granted		28-Sep-2001	N/A	N/A	NEXT SNOOP PREDICTOR IN A HOST CONTROLLER

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82119896	F200302187	US	US6886048	Granted		15-Nov-2001	N/A	N/A	TECHNIQUES FOR PROCESSING OUT-OF -ORDER REQUESTS IN A PROCESSOR-BASED SYSTEM
82120022	F200302218	US	US7856420	Granted		7-Dec-2001	21-Jun-2022	7,406.00	ZERO LATENCY ENTERPRISE ENRICHED PUBLISH/SUBSCRIBE
82167797	F200308580	US	US7350109	Granted		14-Nov-2003	N/A	N/A	SYSTEM AND METHOD FOR TESTING A MEMORY USING DMA
82168469	F200308860	US	US7083089	Granted		20-Jan-2004	N/A	N/A	OFF-LINE PIN VERIFICATION USING IDENTITY-BASED SIGNATURES
82171451	F200310021	US	US7650040	Granted		21-Jul-2005	19-Jul-2021	7,406.00	METHOD, APPARATUS AND SYSTEM FOR DATA BLOCK REARRANGEMENT FOR LZ DATA COMPRESSION
82174313	F200310800	US	US6873530	Granted		13-Jul-2004	N/A	N/A	STACK UP ASSEMBLY
82174316	F200310800	US	US6862186	Granted		13-Jul-2004	N/A	N/A	STACK UP ASSEMBLY
82174319	F200310800	US	US6922340	Granted		13-Jul-2004	N/A	N/A	STACK UP ASSEMBLY
82174322	F200310800	US	US6900987	Granted		13-Jul-2004	N/A	N/A	STACK UP ASSEMBLY
82174325	F200310800	US	US6947286	Granted		6-Jan-2005	N/A	N/A	STACK UP ASSEMBLY

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82174070	F200311080	US	US7870188	Granted		30-Jul-2004	11-Jul-2022	7,706.00	SYSTEMS AND METHODS FOR EXPOSING WEB SERVICES
82176482	F200312027	US	US9213609	Granted		16-Dec-2003	15-Jun-2023	3,766.00	PERSISTENT MEMORY DEVICE FOR BACKUP PROCESS CHECKPOINT STATES
82178195	F200312794	US	US7502333	Granted		23-Mar-2004	N/A	N/A	PRE-CONFIGURED TOPOLOGY WITH CONNECTION MANAGEMENT
82178510	F200312917	US	US7228460	Granted		23-Jan-2004	N/A	N/A	MULTI-STATE STATUS REPORTING FOR HIGH-AVAILABILITY CLUSTER NODES
82180418	F200313751	US	US7240165	Granted		15-Jan-2004	N/A	N/A	SYSTEM AND METHOD FOR PROVIDING PARALLEL DATA REQUESTS
82181174	F200314068	US	US7027309	Granted		20-Feb-2004	N/A	N/A	ENGAGING/DISENGAGING MECHANISM
82183112	F200314843	US	US7372820	Granted		29-Oct-2004	N/A	N/A	SYSTEM AND METHOD FOR STRIPING DELAY-SENSITIVE DATA OVER MULTIPLE BURSTY CHANNELS
82185950	F200316139	US	US7853825	Granted		26-Jul-2006	14-Jun-2022	7,406.00	METHODS AND APPARATUS FOR RECOVERING FROM FATAL ERRORS IN A SYSTEM

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82186757	F200316515	US	US7519822	Granted		10-Mar-2004	N/A	N/A	METHOD AND APPARATUS FOR PROCESSING DESCRIPTIVE STATEMENTS
82187813	F200400331	US	US7416128	Granted		22-Mar-2005	N/A	N/A	METHODS AND SYSTEMS FOR DETERMINING THE POSITION OF A HAND-HELD OBJECT FROM THE ACCELERATION OF THE HAND-HELD OBJECT
82188128	F200400468	US	US7792055	Granted		19-Mar-2007	7-Mar-2022	7,706.00	METHOD AND SYSTEM FOR DETERMINING THE TOPOLOGY OF A NETWORK
82188152	F200400478	US	US7607120	Granted		20-Apr-2004	20-Apr-2021	7,706.00	METHOD AND APPARATUS FOR CREATING DATA TRANSFORMATION ROUTINES FOR BINARY DATA
82188158	F200400479	US	US7594221	Granted		20-Apr-2004	22-Mar-2021	7,706.00	METHOD AND APPARATUS FOR TRANSLATING BINARY CODE
82189361	F200401050	US	US7876694	Granted		2-Jul-2004	25-Jul-2022	7,706.00	IDENTIFYING VPN FAULTS BASED ON VIRTUAL ROUTING ADDRESS AND EDGE INTERFACE RELATIONSHIP INFORMATION
82190645	F200401757	US	US7661095	Granted		14-Apr-2005	9-Aug-2021	7,406.00	SYSTEM AND METHOD TO BUILD A CALLGRAPH FOR FUNCTIONS WITH MULTIPLE ENTRY POINTS

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82190894	F200401857	US	US7499286	Granted		31-Aug-2006	3-Sep-2020	7,406.00	MOUNTING ADAPTER FOR ELECTRONIC MODULES
82192031	F200402033	US	US7607014	Granted		30-Jun-2005	20-Apr-2021	7,706.00	AUTHENTICATING MAINTENANCE ACCESS TO AN ELECTRONICS UNIT VIA WIRELESS COMMUNICATION
82192013	F200402351	US	US7298272	Granted		29-Apr-2005	N/A	N/A	REMOTE DETECTION EMPLOYING RFID
82192016	F200402351	GB	GB2425690	Granted		11-Apr-2006	11-Apr-2021	618.83	REMOTE DETECTION EMPLOYING RFID
82194659	F200403238	US	US7548421	Granted		25-Oct-2005	16-Dec-2020	7,406.00	IMPINGEMENT COOLING OF COMPONENTS IN AN ELECTRONIC SYSTEM
82194662	F200403238	GB	GB2431777	Granted		25-Sep-2006	25-Sep-2020	524.44	IMPINGEMENT COOLING OF COMPONENTS IN AN ELECTRONIC SYSTEM
82194665	F200403238	JP	JP4809184	Granted		25-Oct-2006	26-Aug-2020	857.79	IMPINGEMENT COOLING OF COMPONENTS IN ELECTRONIC SYSTEM
82195124	F200403386	US	US8713278	Granted		25-Apr-2005	29-Oct-2021	3,606.00	SYSTEM AND METHOD FOR STRANDED FILE OPENS DURING DISK COMPRESSION UTILITY REQUESTS

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82196951	F200404192	US	US7590885	Granted		26-Apr-2005	15-Mar-2021	7,406.00	METHOD AND SYSTEM OF COPYING MEMORY FROM A SOURCE PROCESSOR TO A TARGET PROCESSOR BY DUPLICATING MEMORY WRITES
82196960	F200404193	US	US7933966	Granted		26-Apr-2005	26-Oct-2022	7,406.00	METHOD AND SYSTEM OF COPYING A MEMORY AREA BETWEEN PROCESSOR ELEMENTS FOR LOCK-STEP EXECUTION
82197773	F200404626	US	US7941569	Granted		24-Feb-2005	10-Nov-2022	7,406.00	INPUT/OUTPUT TRACING IN A PROTOCOL OFFLOAD SYSTEM
82197851	F200404670	US	US7478265	Granted		14-Oct-2004	N/A	N/A	ERROR RECOVERY FOR INPUT/OUTPUT OPERATIONS
82198019	F200404742	US	US7840725	Granted		28-Sep-2004	23-May-2022	7,406.00	CAPTURE OF DATA IN A COMPUTER NETWORK
82198130	F200404811	US	US8713550	Granted		11-Mar-2005	29-Oct-2021	3,606.00	METHODS, DEVICES AND SOFTWARE APPLICATIONS FOR FACILITATING A DEVELOPMENT OF A COMPUTER PROGRAM
82199216	F200405267	US	US7936694	Granted		30-Mar-2007	3-Nov-2022	7,706.00	SNIFFING-BASED NETWORK MONITORING
82200005	F200405671	US	US7380723	Granted		1-Nov-2005	N/A	N/A	MONITORING OBJECT MOVEMENT

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82200353	F200405859	US	US7962789	Granted		28-Jun-2006	14-Dec-2022	7,406.00	METHOD AND APPARATUS FOR AUTOMATED TESTING OF A UTILITY COMPUTING SYSTEM
82200476	F200405943	US	US7818623	Granted		18-Oct-2006	19-Apr-2022	7,406.00	KERNEL DEBUGGING IN A CLUSTER COMPUTING SYSTEM
82201253	F200406358	US	US8836717	Granted		27-Oct-2005	16-Mar-2022	3,606.00	SYSTEM, METHOD AND UTILITY TO FORMAT IMAGES RETREIVED FROM A DEVICE
82204670	F200407921	US	US7724985	Granted		27-Oct-2005	25-Nov-2021	7,406.00	DEVICE STORING VECTOR IMAGE WITH EMBEDDED IMAGE STYLE IDENTIFIER, AND METHODS AND UTILITIES FOR FORMATTING A DEVICE IMAGE WITH IMAGE STYLE ATTRIBUTES
82205024	F200408082	US	US7640332	Granted		20-Dec-2007	29-Jun-2021	7,406.00	SYSTEM AND METHOD FOR HOT DEPLOYMENT/REDEPLOYMENT IN GRID COMPUTING ENVIRONMENT
82205459	F200408376	US	US8561050	Granted		18-Oct-2006	15-Apr-2021	3,606.00	METHOD AND SYSTEM FOR UPDATING AN APPLICATION
82207715	F200500894	US	US7693045	Granted		22-Dec-2005	6-Oct-2021	7,406.00	VERIFYING NETWORK CONNECTIVITY

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82208570	F200501261	US	US8145627	Granted		10-Jun-2005	27-Sep-2023	7,706.00	USE OF CONNECTIVITY ANALYSIS TO ASSIST RULE-BASED OPTIMIZERS
82208873	F200501448	US	US7904686	Granted		13-May-2008	8-Sep-2022	7,406.00	DATA SECURITY FOR USE WITH A FILE SYSTEM
82218614	F200506797	US	US9071506	Granted		29-Jun-2007	30-Dec-2022	3,766.00	ACCESSING WEB SERVICES USING NETWORK MANAGEMENT INFORMATION
82219511	F200507304	US	US7711657	Granted		26-Jun-2006	4-Nov-2021	7,706.00	RESOURCE-RESERVATION PRICING STRUCTURES BASED ON EXPECTED ABILITY TO DELIVER
82223162	F200601205	US	US7145881	Granted		4-Oct-2000	N/A	N/A	METHOD OF DETERMINING THE ROUTE OF PACKETS THROUGH A NETWORK OF COMMUNICATIN G OBJECTS
82227437	F200603085	US	US8526325	Granted		31-Jan-2007	3-Mar-2021	3,766.00	DETECTING AND IDENTIFYING CONNECTIVITY IN A NETWORK
82227602	F200603199	US	US8553573	Granted		4-Apr-2008	8-Apr-2021	3,766.00	APPARATUS AND METHODS FOR ADAPTIVE THROTTLING OF TRAFFIC ACROSS MULTIPLE NETWORK NODES
82227608	F200603199	CN	CN200880019398.6	Granted		4-Apr-2008	4-Apr-2021	1,032.98	APPARATUS AND METHODS FOR ADAPTIVE THROTTLING OF TRAFFIC ACROSS MULTIPLE NETWORK NODES

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82230062	F200700051	US	US7594047	Granted		9-Jul-2007	22-Mar-2021	7,706.00	BUFFER CIRCUIT
82231238	F200700480	US	US8543711	Granted		30-Apr-2007	24-Mar-2021	3,766.00	SYSTEM AND METHOD FOR EVALUATING A PATTERN OF RESOURCE DEMANDS OF A WORKLOAD
82241726	F200703705	US	US8620859	Granted		10-Jun-2008	30-Jun-2021	3,766.00	DATA PROCESSING SYSTEM AND METHOD OF EVALUATING EFFECTIVENESS OF USAGE OF A FILE SYSTEM (AS AMENDED)
82244171	F200704470	US	US8676931	Granted		6-Oct-2006	18-Sep-2021	3,766.00	METHODS FOR MANAGING MANUAL CHANGES TO NETWORK INFRASTRUCTURES THROUGH AUTOMATED SYSTEMS
82244195	F200704474	US	US8762507	Granted		22-Dec-2006	24-Dec-2021	3,766.00	METHOD AND SYSTEM FOR MANAGING AN INFORMATION TECHNOLOGY SYSTEM
82250867	F200900112	US	US8296253	Granted		15-Jun-2009	23-Apr-2024	7,706.00	MANAGING ONLINE CONTENT BASED ON ITS PREDICTED POPULARITY
82585290	F200900907	CN	CN200980140622.1	Granted		12-Oct-2009	12-Oct-2021	1,032.98	SYSTEMS AND PROCESSES FOR SECURING SENSITIVE INFORMATION
82254551	F200901230	US	US7472421	Granted		30-Sep-2002	30-Jun-2020	7,406.00	COMPUTER MODEL OF SECURITY RISKS

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82256600	F200901720	US	US8806061	Granted		14-Sep-2004	12-Feb-2022	3,766.00	SYSTEM, METHOD, AND COMPUTER PROGRAM PRODUCT FOR AUTOMATED CATEGORIZATIO N OF DATA PROCESSING SERVICES AND COMPONENTS
82257182	F200901875	US	US7992002	Granted		7-Jul-2006	2-Feb-2023	7,706.00	DATA DEPOSITORY AND ASSOCIATED METHODOLOGY PROVIDING SECURE ACCESS PURSUANT TO COMPLIANCE STANDARD CONFORMITY
82257338	F200901933	US	US9043589	Granted		14-Nov-2007	26-Nov-2022	3,766.00	SYSTEM AND METHOD FOR SAFEGUARDING AND PROCESSING CONFIDENTIAL INFORMATION
82262333	F200905061	US	US9037843	Granted		10-Mar-2010	19-Nov-2022	3,766.00	MANAGING A TARGET COMPUTING DEVICE (AMENDED)
82262453	F201000006	US	US8532495	Granted		23-Jul-2010	10-Mar-2021	3,766.00	METHOD FOR ENERGY EFFICIENT PULSING OPERATION OF TRANSCEIVERS OF A NETWORKED DEVICE
82262639	F201000102	US	US8391717	Granted		24-May-2010	5-Sep-2024	7,706.00	FLOW-CONTROL METHODS AND SYSTEMS FOR MULTIBUS SYSTEMS

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82272218	F201003701	US	US6760372	Granted		10-Aug-2000	N/A	N/A	ADAPTIVE SIGNAL PROCESSOR USING AN EYE-DIAGRAM METRIC
82272668	F201003882	US	US6999453	Granted		9-Jul-2001	N/A	N/A	DISTRIBUTED SWITCH FABRIC ARBITRATION
82273010	F201004068	US	US7277517	Granted		15-Nov-2002	N/A	N/A	METHOD FOR ACHIEVING SYMBOL ALIGNMENT TO A PRE-EXISTING ADSL DATA EXCHANGE
82273151	F201004138	US	US7701941	Granted		28-Mar-2001	20-Oct-2021	7,706.00	NETWORK SWITCH WITH MUTUALLY COUPLED LOOK-UP ENGINE AND NETWORK PROCESSOR
82273154	F201004138	US	US8194672	Granted		2-Mar-2010	N/A	N/A	NETWORK SWITCH WITH MUTUALLY COUPLED LOOK-UP ENGINE AND NETWORK PROCESSOR
82273340	F201004234	US	US6766020	Granted		23-Feb-2001	N/A	N/A	SYSTEM AND METHOD FOR COMFORT NOISE GENERATION
82273772	F201004422	US	US7460533	Granted		15-Nov-2001	N/A	N/A	SYSTEM AND METHOD FOR MULTI-CASTING ANNOUNCEMENTS
82274021	F201004517	US	US6662119	Granted		2-Aug-2002	N/A	N/A	METHOD AND APPARATUS FOR MONITORING CONNECTOR DEGRADATION

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82274030	F201004520	US	US7522614	Granted		28-Feb-2003	N/A	N/A	MULTI-SERVICE ACCESS PLATFORM FOR TELECOMMUNICATIONS AND DATA NETWORKS
82274048	F201004523	US	US6833712	Granted		27-Sep-2002	N/A	N/A	DIFFERENTIATING BETWEEN BOARD-INSERTION POWER-ON AND CHASSIS POWER-ON
82274066	F201004527	US	US7283543	Granted		27-Nov-2002	N/A	N/A	SYSTEM AND METHOD FOR OPERATING ECHO CANCELLERS WITH NETWORKS HAVING INSUFFICIENT LEVELS OF ECHO RETURN LOSS
82274114	F201004542	US	US7463620	Granted		10-Sep-2002	N/A	N/A	ARCHITECTURE AND METHOD FOR CONTROLLING FEATURES AND SERVICES IN PACKET-BASED NETWORKS
82274168	F201004553	US	US7307998	Granted		27-Aug-2002	N/A	N/A	COMPUTER SYSTEM AND NETWORK INTERFACE SUPPORTING DYNAMICALLY OPTIMIZED RECEIVE BUFFER QUEUES
82651947	F201004683	US	US8422649	Granted		23-Feb-2011	16-Oct-2024	7,406.00	DIGITAL TELEPHONE DATA AND CONTROL SIGNAL TRANSMISSION SYSTEM

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82276151	F201005199	US	US8397302	Granted		29-Oct-2010	12-Sep-2024	7,706.00	SYSTEM AND METHOD FOR ANALYZING A PROCESS
82062713	F30004521	US	US7877799	Granted		1-Aug-2001	25-Jul-2022	7,706.00	PERFORMANCE OF A SERVICE ON A COMPUTING PLATFORM
82062719	F30004521	JP	JP4818542	Granted		9-Aug-2001	N/A	N/A	PERFORMANCE OF A SERVICE ON A COMPUTING PLATFORM
82062773	F30004640	US	US8166173	Granted		16-Oct-2001	24-Oct-2023	7,706.00	INVITING ASSISTANT ENTITY INTO A NETWORK COMMUNICATIO N SESSION
82062770	F30004640	GB	GB2368225	Expired		17-Oct-2000	N/A	N/A	INVITING ASSISTANT ENTITY INTO A NETWORK COMMUNICATIO N SESSION
82065599	F30014518	US	US6845431	Granted		28-Dec-2001	N/A	N/A	SYSTEM AND METHOD FOR INTERMEDIATIN G COMMUNICATIO N WITH A MOVEABLE MEDIA LIBRARY UTILIZING A PLURALITY OF PARTITIONS
82065602	F30014518	JP	JP4667707	Granted		24-Dec-2002	21-Jan-2021	784.98	METHOD FOR INTERMEDIATIN G COMMUNICATIO N WITH MOVABLE MEDIA LIBRARY UTILIZING A PLURALITY OF PARTITIONS

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82065905	F30016994	US	US7096409	Granted		30-Jul-2003	N/A	N/A	REED-SOLOMON DECODER AND DECODING METHOD FOR ERRORS AND ERASURES DECODING
82066025	F30017568	US	US7086052	Granted		3-Jan-2003	N/A	N/A	SOFTWARE INSTALLATION AND OPERATION WITH RANDOM SELECTION
82069286	F30990075	US	US8407092	Granted		30-Oct-2001	26-Sep-2024	7,706.00	METERING IN A DATA PROCESSING SYSTEM
83810416	F700206840	US	US9213842	Granted		17-Aug-2011	15-Jun-2023	3,766.00	TRACING DATA BLOCK OPERATIONS
83969756	F700208369	US	US9514290	Granted		30-Mar-2012	6-Jun-2024	3,766.00	AUTHORIZATION CACHE

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81966890	F10001274	US	US6665671	Granted		4-Apr-2001	N/A	N/A	SYSTEM AND METHOD FOR OPTIMIZATION OF SHARED DATA
81977510	F10004565	US	US6851024	Granted		17-Aug-2000	N/A	N/A	EXCLUSIVE CACHING IN COMPUTER SYSTEMS
81978710	F10004941	US	US7447761	Granted		5-Oct-2000	N/A	N/A	DEVICE DETECTION SYSTEM AND METHOD
81978719	F10004941	DE	DE60131348.8	Granted		5-Apr-2001	N/A	N/A	DEVICE DETECTION SYSTEM AND METHOD
81978722	F10004941	FR	FR1195942	Granted		5-Apr-2001	N/A	N/A	DEVICE DETECTION SYSTEM AND METHOD
81978725	F10004941	GB	GB1195942	Granted		5-Apr-2001	N/A	N/A	DEVICE DETECTION SYSTEM AND METHOD
81978758	F10004950	US	US6741907	Granted		23-Mar-2001	N/A	N/A	INVENTORY CONTROL APPARATUS AND METHOD FOR A DATA STORAGE SYSTEM
81982898	F10006663	US	US7185109	Granted		20-Apr-2001	N/A	N/A	RECURSIVE DISCOVERY OF CDP TYPE OF NODES IN A NETWORK OF VARIOUS NODE TYPES
81988655	F10010480	US	US7035928	Granted		25-Apr-2001	N/A	N/A	ALLOCATING COMPUTER RESOURCES FOR EFFICIENT USE BY A PROGRAM

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81990341	F10011167	US	US7044362	Granted		10-Oct-2001	N/A	N/A	ELECTRONIC TICKETING SYSTEM AND METHOD
81994154	F10012695	US	US7051166	Granted		21-Apr-2003	N/A	N/A	DIRECTORY-BASED CACHE COHERENCY SCHEME FOR REDUCING MEMORY BANDWIDTH LOSS
82001048	F10016749	US	US6938259	Granted		2-Oct-2001	N/A	N/A	API TO ENFORCE INTERNATIONALIZATION
82001261	F10016875	US	US7877607	Granted		30-Aug-2002	25-Jul-2022	7,406.00	TAMPER-EVIDENT DATA MANAGEMENT
82001303	F10016885	DE	DE10306598.9	Granted		17-Feb-2003	17-Feb-2021	2,272.89	METHOD AND SYSTEM FOR ASSESSING AVAILABILITY OF COMPLEX ELECTRONIC SYSTEMS INCLUDING COMPUTER SYSTEMS
82001777	F10017266	US	US7191322	Granted		12-Oct-2001	N/A	N/A	METHOD AND APPARATUS FOR TUNING MULTIPLE INSTANCES OF KERNEL MODULES
82002368	F10017495	US	US7228527	Granted		15-Jul-2003	N/A	N/A	METHOD AND SYSTEM FOR STRUCTURING A PROCEDURE
82002491	F10017566	US	US6950962	Granted		12-Oct-2001	N/A	N/A	METHOD AND APPARATUS FOR KERNEL MODULE TESTING

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82003943	F10018224	US	US7051195	Granted		26-Oct-2001	N/A	N/A	METHOD OF OPTIMIZATION OF CPU AND CHIPSET PERFORMANCE BY SUPPORT OF OPTIONAL READS BY CPU AND CHIPSET
82003994	F10018269	US	US7133933	Granted		28-Aug-2002	N/A	N/A	CONTENT SYNCHRONIZATION FRAMEWORKS USING DYNAMIC ATTRIBUTES AND FILE BUNDLES FOR CONNECTED DEVICES
82004738	F10018772	US	US7028302	Granted		24-Apr-2002	N/A	N/A	SYSTEM AND METHOD FOR AUTOMATICALLY TUNING A MULTIPROCESSOR COMPUTER SYSTEM
82007378	F10019983	US	US6993750	Granted		13-Dec-2001	N/A	N/A	DYNAMIC REGISTRATION OF DYNAMICALLY GENERATED CODE AND CORRESPONDING UNWIND INFORMATION
82007381	F10019983	US	US6996810	Granted		13-Dec-2001	N/A	N/A	LAZY AND PRECISE UPDATE OF UNWIND INFORMATION FOR DYNAMICALLY GENERATED CODE
82085975	F100201501	US	US6820021	Granted		1-Nov-2002	N/A	N/A	SYSTEM AND METHOD FOR GENERATING A SHMOO PLOT BY VARYING THE RESOLUTION THEREOF

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82085981	F100201506	US	US6847909	Granted		1-Nov-2002	N/A	N/A	SYSTEM AND METHOD FOR GENERATING A SHMOO PLOT BY TRACKING THE EDGE OF THE PASSING REGION
82085999	F100201509	US	US6820027	Granted		1-Nov-2002	N/A	N/A	SYSTEM AND METHOD FOR GENERATING A SHMOO PLOT BY AVOIDING TESTING IN FAILING REGIONS
82088162	F100202293	US	US7058838	Granted		17-Dec-2002	N/A	N/A	SYSTEM AND METHOD FOR SYNCHRONIZING A PLURALITY OF PROCESSORS IN A MULTIPROCESSOR COMPUTER PLATFORM EMPLOYING A GLOBAL CLOCK COUNTER
82089131	F100202851	US	US6944552	Granted		25-Jun-2003	N/A	N/A	SYSTEM AND METHOD FOR DETECTING POWER DEFICIENCIES IN A COMPUTER COMPONENT
82089614	F100203069	US	US6993639	Granted		1-Apr-2003	N/A	N/A	PROCESSING INSTRUCTION ADDRESSED BY RECEIVED REMOTE INSTRUCTION AND GENERATING REMOTE INSTRUCTION TO RESPECTIVE OUTPUT PORT FOR ANOTHER CELL

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82090145	F100203410	US	US7222121	Granted		21-Nov-2002	N/A	N/A	PLATFORM AND METHOD FOR MONITORING AND ANALYZING DATA
82091864	F100204840	US	US7055114	Granted		8-Oct-2003	N/A	N/A	SYSTEMS AND PROCESSES FOR ASYMMETRICALLY SHRINKING A VLSI LAYOUT
82092542	F100205126	US	US7254541	Granted		30-Oct-2002	N/A	N/A	SYSTEMS AND METHODS FOR PROVIDING USERS WITH INFORMATION IN AUDIBLE FORM
82092545	F100205127	US	US7136804	Granted		30-Oct-2002	N/A	N/A	SYSTEMS AND METHODS FOR PROVIDING USERS WITH INFORMATION IN AUDIBLE FORM
82093352	F200205639	US	US7360219	Granted		13-Dec-2002	N/A	N/A	SYSTEMS AND METHODS FOR FACILITATING FAIR AND EFFICIENT SCHEDULING OF PROCESSES AMONG MULTIPLE RESOURCES IN A COMPUTER SYSTEM
82093355	F200205639	JP	JP4387174	Granted		11-Dec-2003	9-Oct-2021	1,069.38	METHOD FOR DISTRIBUTING PROCESS ASSOCIATED WITH TWO OR MORE PRIORITY GROUPS AMONG TWO OR MORE RESOURCES

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82095062	F200206508	US	US6883150	Granted		14-Mar-2003	N/A	N/A	AUTOMATIC MANUFACTURING TEST CASE GENERATION METHOD AND SYSTEM
82095548	F200206688	US	US7356574	Granted		25-Feb-2003	N/A	N/A	APPARATUS AND METHOD FOR PROVIDING DYNAMIC AND AUTOMATED ASSIGNMENT OF DATA LOGICAL UNIT NUMBERS
82095560	F200206691	US	US6934711	Granted		1-Oct-2002	N/A	N/A	METHOD AND ARRANGEMENT FOR COMMUNICATING WITH SCSI DEVICES
82095911	F200206894	US	US8452945	Granted		17-Sep-2002	28-Nov-2020	3,606.00	INDIRECT INDEXING INSTRUCTIONS
82097501	F200207515	US	US6930886	Granted		30-Apr-2003	N/A	N/A	ELECTRONIC COMPONENT SECUREMENT SYSTEM
82097576	F200207606	US	US7076488	Granted		29-Jan-2003	N/A	N/A	XML-LDAP ADAPTERS AND METHODS THEREFOR
82097579	F200207608	US	US7818646	Granted		12-Nov-2003	19-Apr-2022	7,706.00	EXPECTATION BASED EVENT VERIFICATION
82097606	F200207619	US	US8862770	Granted		6-Nov-2003	14-Apr-2022	3,766.00	PROCESSOR ARCHITECTURE VERIFICATION
82098401	F200207878	US	US7103756	Granted		30-Sep-2002	N/A	N/A	DATA PROCESSOR WITH INDIVIDUALLY WRITABLE REGISTER SUBWORD LOCATIONS

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82099337	F200208211	US	US7509589	Granted		30-Sep-2003	24-Sep-2020	7,406.00	STORAGE DOMAIN GUI
82099406	F200208248	US	US7562229	Granted		23-Jan-2003	14-Jan-2021	7,406.00	CODEWORD-BASED AUDITING OF COMPUTER SYSTEMS AND METHODS THEREFOR
82099835	F200208458	US	US6861876	Granted		25-Mar-2003	N/A	N/A	PULSE EVALUATE LOGIC-LATCH
82099847	F200208463	US	US7574341	Granted		12-Nov-2003	11-Feb-2021	7,706.00	SPECULATIVE EXPECTATION BASED EVENT VERIFICATION
82101605	F200208674	GB	GB2399434	Granted		10-Mar-2004	10-Mar-2021	764.74	AN INTEGRATED CIRCUIT
82100681	F200208770	US	US6832168	Granted		4-Apr-2003	N/A	N/A	METHOD AND SYSTEM FOR VERIFYING NETWORK DEVICE POWER CABLING CONFIGURATION
82101617	F200209008	US	US6876207	Granted		1-Aug-2003	N/A	N/A	SYSTEM AND METHOD FOR TESTING DEVICES
82102124	F200209185	US	US7340630	Granted		8-Aug-2003	N/A	N/A	MULTIPROCESSOR SYSTEM WITH INTERACTIVE SYNCHRONIZATION OF LOCAL CLOCKS
82102127	F200209185	GB	GB2404761	Granted		5-Aug-2004	5-Aug-2021	764.74	MULTIPROCESSOR SYSTEM WITH INTERACTIVE SYNCHRONIZATION OF LOCAL CLOCKS
82102208	F200209233	US	US7581008	Granted		12-Nov-2003	25-Feb-2021	7,706.00	SYSTEM AND METHOD FOR ALLOCATING SERVER RESOURCES

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82205489	F200209233	US	US7886055	Granted		28-Apr-2005	8-Aug-2022	7,706.00	ALLOCATING RESOURCES IN A SYSTEM HAVING MULTIPLE TIERS
82212719	F200209233	US	US7594016	Granted		16-Jun-2005	22-Mar-2021	7,706.00	CALCULATING NUMBERS OF SERVERS FOR TIERS OF A MULTI-TIERED SYSTEM
82212722	F200209233	US	US9021094	Granted		28-Apr-2005	28-Oct-2022	3,766.00	ALLOCATION OF RESOURCES FOR TIERS OF MULTI-TIERED SYSTEM BASED ON SELECTING ITEMS FROM RESPECTIVE SETS
82103705	F200209646	US	US7523503	Granted		21-Jan-2003	N/A	N/A	METHOD FOR PROTECTING SECURITY OF NETWORK INTRUSION DETECTION SENSORS
82104731	F200210100	US	US7103785	Granted		30-May-2003	N/A	N/A	METHOD AND APPARATUS FOR POWER MANAGEMENT EVENT WAKE UP
82105928	F200300276	US	US7506085	Granted		20-Oct-2006	N/A	N/A	SYSTEM AND METHOD FOR SENDING DATA ACROSS A BUS CABLE HAVING IN-BAND AND SIDE-BAND SIGNAL CONDUCTORS
82106279	F200300497	US	US7849320	Granted		25-Nov-2003	7-Jun-2022	7,406.00	METHOD AND SYSTEM FOR ESTABLISHING A CONSISTENT PASSWORD POLICY

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82117301	F200301703	US	US6817009	Granted		30-Nov-2000	N/A	N/A	METHOD AND APPARATUS FOR VERIFYING DATA LOCAL TO A SINGLE THREAD
82117799	F200301824	US	US6859876	Granted		29-Dec-2000	N/A	N/A	SYSTEM AND METHOD FOR DETECTING AND USING A REPLACEMENT BOOT BLOCK DURING INITIALIZATION BY AN ORIGINAL BOOT BLOCK
82117943	F200301854	US	US6668335	Granted		31-Aug-2000	N/A	N/A	SYSTEM FOR RECOVERING DATA IN A MULITPROCESSOR SYSTEM COMPRISING A CONDUCTION PATH FOR EACH BIT BETWEEN PROCESSORS WHERE THE PATHS ARE GROUPLED INTO SEPARATE BUNDLES ANDROUTED ALONG DIFFERENT PATHS
82118243	F200301937	US	US6931626	Granted		17-Jan-2001	N/A	N/A	METHOD AND APPARATUS FOR VERSIONING STATICALLY BOUND FILES
82118408	F200301971	US	US6901512	Granted		12-Dec-2000	N/A	N/A	CENTRALIZED CRYPTOGRAPHIC KEY ADMINISTRATION SCHEME FOR ENABLING SECURE CONTEXT-FREE APPLICATION OPERATION

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82118465	F200301985	US	US6892259	Granted		29-Sep-2001	N/A	N/A	METHOD AND APPARATUS FOR ALLOCATING COMPUTER BUS DEVICE RESOURCES TO A PRIORITY REQUESTER AND RETRYING REQUESTS FROM NON-PRIORITY REQUESTERS
82119836	F200302174	US	US7055139	Granted		28-Mar-2002	N/A	N/A	MULTIPROCESS DEBUGGING USING MULTIPLE CONVENTIONAL DEBUGGERS
82120241	F200302277	US	US6963869	Granted		7-Jan-2002	N/A	N/A	SYSTEM AND METHOD FOR SEARCH, INDEX, PARSING DOCUMENT DATABASE INCLUDING SUBJECT DOCUMENT HAVING NESTED FIELDS ASSOCIATED START AND END META WORDS WHERE EACH META WORD IDENTIFY LOCATION AND NESTING LEVEL
82120643	F200302377	US	US7099879	Granted		26-Apr-2002	N/A	N/A	REAL-TIME MONITORING OF SERVICE PERFORMANCE THROUGH THE USE OF RELATIONAL DATABASE CALCULATION CLUSTERS

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82588205	F200302529	US	US8144716	Granted		17-Dec-2010	N/A	N/A	METHOD AND SYSTEM FOR PROVIDING TELECOMMUNICATION SUBSCRIBER SERVICES WITHOUT PROVISIONING OR MAINTENANCE
82121753	F200302551	US	US7472283	Granted		30-May-2002	N/A	N/A	METHOD AND APPARATUS FOR SECURED DIGITAL VIDEO AND ACCESS TRACKING
82121762	F200302554	US	US7168001	Granted		6-Feb-2004	N/A	N/A	TRANSACTION PROCESSING APPARATUS AND METHOD
82121792	F200302564	US	US7143275	Granted		1-Aug-2002	N/A	N/A	SYSTEM FIRMWARE BACK-UP USING A BIOS-ACCESSIBLE PRE-BOOT PARTITION
82122008	F200302620	US	US7051175	Granted		17-Jan-2003	N/A	N/A	TECHNIQUES FOR IMPROVED TRANSACTION PROCESSING
82132268	F200304082	US	US6898740	Granted		25-Jan-2001	N/A	N/A	COMPUTER SYSTEM HAVING CONFIGURABLE CORE LOGIC CHIPSET FOR CONNECTION TO A FAULT-TOLERANT ACCELERATED GRAPHICS PORT BUS AND PERIPHERAL COMPONENT INTERCONNECT BUS

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82133216	F200304307	US	US6862646	Granted		28-Dec-2001	N/A	N/A	METHOD AND APPARATUS FOR ELIMINATING THE SOFTWARE GENERATED READY-SIGNAL TO HARDWARE DEVICES THAT ARE NOT PART OF THE MEMORY COHERENCY DOMAIN
82133327	F200304328	US	US6857040	Granted		5-Dec-2001	N/A	N/A	BI-DIRECTIONAL BUS BRIDGE IN WHICH MULTIPLE DEVICES CAN ASSERT BUS CONCURRENTLY
82168619	F200308902	US	US7181575	Granted		29-Sep-2004	N/A	N/A	INSTRUCTION CACHE USING SINGLE-PORTED MEMORIES
82168961	F200309043	US	US7165187	Granted		6-Jun-2003	N/A	N/A	BATCH BASED DISTRIBUTED DATA REDUNDANCY
82169747	F200309399	US	US7509657	Granted		28-Oct-2003	24-Sep-2020	7,406.00	APPLICATION PROGRAMMING INTERFACE FOR A VIRTUAL SWITCH
82169834	F200309444	US	US7120717	Granted		13-Feb-2004	N/A	N/A	METHOD AND APPARATUS FOR CONTROLLING INTERRUPT STORMS
82170167	F200309576	US	US7237084	Granted		27-Oct-2003	N/A	N/A	METHOD AND PROGRAM PRODUCT FOR AVOIDING CACHE CONGESTION BY OFFSETTING ADDRESSES WHILE ALLOCATING MEMORY

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82170170	F200309576	CN	CN200410087955.1	Granted		27-Oct-2004	27-Oct-2021	1,310.50	METHOD FOR AVOIDING CACHE CONGESTION BY OFFSETTING ADDRESSES WHILE ALLOCATING MEMORY
82170326	F200309643	US	US8442058	Granted		30-Apr-2003	14-Nov-2020	3,606.00	LOCATING STATIONS BETWEEN PROTOCOLS
82170329	F200309643	US	US7599379	Granted		30-Apr-2003	6-Apr-2021	7,706.00	REGISTERING STATIONS BETWEEN PROTOCOLS
82170812	F200309832	US	US7936738	Granted		6-Jul-2004	3-Nov-2022	7,706.00	FAULT TOLERANT SYSTEMS
82173188	F200310748	US	US7472398	Granted		17-Nov-2003	N/A	N/A	METHOD AND SYSTEM FOR HOSTING AN APPLICATION WITH A FACADE SERVER
82173518	F200310852	US	US7027950	Granted		19-Nov-2003	N/A	N/A	REGRESSION CLUSTERING AND CLASSIFICATION
82173665	F200310901	US	US7310751	Granted		20-Feb-2004	N/A	N/A	TIMEOUT EVENT TRIGGER GENERATION
82178666	F200312986	US	US7231543	Granted		14-Jan-2004	N/A	N/A	SYSTEMS AND METHODS FOR FAULT-TOLERANT PROCESSING WITH PROCESSOR REGROUPING BASED ON CONNECTIVITY CONDITIONS
82179887	F200313560	US	US7571163	Granted		13-Jul-2004	4-Feb-2021	7,706.00	METHOD FOR SORTING A DATA STRUCTURE

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82181510	F200314221	US	US7536684	Granted		29-Dec-2003	19-Nov-2020	7,406.00	SOFTWARE DOCUMENTATION GENERATION USING DIFFERENTIAL UPGRADE DOCUMENTATION
82182356	F200314535	US	US7650275	Granted		20-Jan-2005	19-Jul-2021	7,406.00	EXTERNAL EMULATION HARDWARE
82182986	F200314774	US	US7346802	Granted		30-Jan-2004	N/A	N/A	ROUTING COMMUNICATIONS TO A STORAGE AREA NETWORK
82183328	F200314943	US	US7149831	Granted		27-Sep-2004	N/A	N/A	BATCH PROCESSING OF INTERRUPTS
82185188	F200315753	US	US7839765	Granted		5-Oct-2004	23-May-2022	7,406.00	ADVERTISING PORT STATE CHANGES IN A NETWORK
82185371	F200315833	US	US7290176	Granted		31-Jul-2004	N/A	N/A	METHOD AND SYSTEM FOR GENERATING STACKED REGISTER DUMPS FROM BACKING-STORE MEMORY
82186622	F200316432	US	US7644146	Granted		2-Jun-2004	5-Jul-2021	7,406.00	SYSTEM AND METHOD FOR DISCOVERING COMMUNITIES IN NETWORKS
82186979	F200316677	US	US7562356	Granted		22-Sep-2004	14-Jan-2021	7,706.00	AUTOMATICALLY RESOLVING PATCH DEPENDENCIES FOR A PATCH BUNDLE
82188284	F200400507	US	US7631251	Granted		16-Feb-2005	8-Jun-2021	7,406.00	METHOD AND APPARATUS FOR CALCULATING CHECKSUMS

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82188425	F200400580	US	US7484221	Granted		20-Oct-2004	27-Jul-2020	7,406.00	METHOD AND APPARATUS FOR LOGGING THE EXECUTION HISTORY OF AN OPERATING SYSTEM KERNEL
82189055	F200400868	US	US7530057	Granted		21-Oct-2004	5-Nov-2020	7,406.00	PROGRAM CODE COVERAGE
82189262	F200401011	IN	IN262409	Granted		4-Jul-2005	4-Jul-2020	644.00	METHOD FOR LATENT ERROR DETECTION
82189256	F200401011	US	US7308605	Granted		20-Jul-2004	N/A	N/A	LATENT ERROR DETECTION
82191929	F200402293	US	US7516297	Granted		10-Nov-2005	N/A	N/A	MEMORY MANAGEMENT
82194287	F200403066	US	US7353375	Granted		7-Oct-2004	N/A	N/A	METHOD AND APPARATUS FOR MANAGING PROCESSOR AVAILABILITY USING A MICROCODE PATCH
82195928	F200403684	US	US7350007	Granted		5-Apr-2005	N/A	N/A	TIME-INTERVAL-BASED SYSTEM AND METHOD TO DETERMINE IF A DEVICE ERROR RATE EQUALS OR EXCEEDS A THRESHOLD ERROR RATE
82196375	F200403900	US	US7493620	Granted		18-Jun-2004	17-Aug-2020	7,406.00	TRANSFER OF WAITING INTERRUPTS
82197896	F200404691	US	US7925841	Granted		10-Sep-2004	12-Oct-2022	7,406.00	MANAGING SHARED MEMORY USAGE WITHIN A MEMORY RESOURCE GROUP INFRASTRUCTURE

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82199510	F200404975	US	US7307902	Granted		30-Aug-2005	N/A	N/A	MEMORY CORRECTION SYSTEM AND METHOD
82199516	F200404975	US	US7599235	Granted		2-Nov-2007	6-Apr-2021	7,706.00	MEMORY CORRECTION SYSTEM AND METHOD
82199375	F200405357	US	US7797505	Granted		25-Apr-2005	14-Mar-2022	7,406.00	PROGRAM STACK HANDLING
82200386	F200405879	US	US7530064	Granted		21-Sep-2004	5-Nov-2020	7,406.00	METHOD AND APPARATUS FOR AUTOMATED REGISTRY CLEAN-UP
82204667	F200406984	US	US7631269	Granted		27-Oct-2005	8-Jun-2021	7,406.00	UTILITY, METHOD AND DEVICE PROVIDING VECTOR IMAGES THAT MAY BE UPDATED TO REFLECT THE PHYSICAL STATES OF CONFIGURABLE COMPONENTS OF A DEVICE
82202693	F200407024	US	US7460470	Granted		18-Mar-2005	N/A	N/A	SYSTEMS AND METHODS OF PRIORITY FAILOVER DETERMINATION
82203044	F200407193	US	US7730350	Granted		3-Feb-2006	1-Dec-2021	7,406.00	METHOD AND SYSTEM OF DETERMINING THE EXECUTION POINT OF PROGRAMS EXECUTED IN LOCK STEP
82203605	F200407428	US	US7822857	Granted		7-Sep-2005	26-Apr-2022	7,406.00	METHODS AND SYSTEMS FOR SHARING REMOTE ACCESS

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82204757	F200407954	US	US7710428	Granted		27-Oct-2005	4-Nov-2021	7,406.00	METHOD AND APPARATUS FOR FILTERING THE DISPLAY OF VECTORS IN A VECTOR IMAGE
82206968	F200500574	US	US7590509	Granted		23-Jun-2005	15-Mar-2021	7,406.00	SYSTEM AND METHOD FOR TESTING A PROCESSOR
82208510	F200501223	US	US7512600	Granted		10-Jun-2005	30-Sep-2020	7,406.00	USE OF MULTI-JOIN OPERATOR AND RULES AS FRAMEWORK FOR JOIN TREE PROCESSING IN DATABASE SYSTEMS
82209035	F200501515	US	US7694123	Granted		28-Mar-2006	6-Oct-2021	7,406.00	STORING FILES FOR OPERATING SYSTEM RESTORATION
82210865	F200502475	US	US7966608	Granted		26-Jul-2006	21-Dec-2022	7,406.00	METHOD AND APPARATUS FOR PROVIDING A COMPILER INTERFACE
82213955	F200504167	US	US7549085	Granted		28-Apr-2006	N/A	N/A	METHOD AND APPARATUS TO INSERT SPECIAL INSTRUCTION
82214363	F200504463	US	US7770056	Granted		17-Oct-2007	3-Feb-2022	7,406.00	SYSTEM AND METHOD FOR DYNAMIC PAGE CLASSIFICATION FOR MEMORY DUMPING
82215125	F200504900	US	US7969969	Granted		5-Jul-2007	28-Dec-2022	7,706.00	SIGNALLING GATEWAY
82215128	F200504900	FR	FR1892907	Granted		31-Jul-2006	31-Jul-2021	675.76	SIGNALLING GATEWAY
82215134	F200504900	GB	GB1892907	Granted		31-Jul-2006	31-Jul-2021	577.38	SIGNALLING GATEWAY

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82215530	F200505157	US	US8190742	Granted		25-Apr-2006	29-Nov-2023	7,706.00	DISTRIBUTED DIFFERENTIAL STORE WITH NON-DISTRIBUTED OBJECTS AND COMPRESSION-ENHANCING DATA-OBJECT ROUTING
83002048	F200505157	US	US8447864	Granted		8-May-2012	21-Nov-2020	3,606.00	DISTRIBUTED DIFFERENTIAL STORE WITH NON-DISTRIBUTED OBJECTS AND COMPRESSION-ENHANCING DATA-OBJECT ROUTING
83721498	F200505157	DE	DE602007033669.4	Granted		25-Apr-2007	25-Apr-2021	1,371.29	DISTRIBUTED DIFFERENTIAL STORE WITH NON-DISTRIBUTED OBJECTS AND COMPRESSION-ENHANCING DATA-OBJECT ROUTING
83721500	F200505157	GB	GB2011042	Granted		25-Apr-2007	25-Apr-2021	531.28	DISTRIBUTED DIFFERENTIAL STORE WITH NON-DISTRIBUTED OBJECTS AND COMPRESSION-ENHANCING DATA-OBJECT ROUTING
82215656	F200505212	US	US7734960	Granted		20-Jul-2007	8-Dec-2021	7,406.00	METHOD OF MANAGING NODES IN COMPUTER CLUSTER
82216964	F200505869	US	US8402172	Granted		10-Dec-2007	19-Sep-2024	7,706.00	PROCESSING AN INPUT/OUTPUT REQUEST ON A MULTIPROCESSOR SYSTEM

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82217411	F200506051	US	US9043465	Granted		10-Jul-2007	26-Nov-2022	3,766.00	METHOD OF PROVIDING SERVICES IN A NETWORK, NETWORK ELEMENT AND COMPUTER PROGRAM PRODUCT
82217687	F200506245	US	US8306911	Granted		31-Jan-2007	6-May-2024	7,706.00	PAYMENT OPTION ANALYZER BASED ON MEASURED UTILIZATION
82218665	F200506834	US	US8639904	Granted		22-Oct-2009	28-Jul-2021	3,606.00	METHOD AND SYSTEM FOR MANAGING HEAP ACROSS PROCESS REPLICATION
82219268	F200507174	US	US7516358	Granted		20-Dec-2005	N/A	N/A	TUNING CORE VOLTAGES OF PROCESSORS
82220312	F200600070	US	US8327389	Granted		10-Jul-2007	4-Jun-2024	7,706.00	INTERFACE MODULE
82220930	F200600397	US	US7606842	Granted		27-Sep-2006	20-Apr-2021	7,406.00	METHOD OF MERGING A CLONE FILE SYSTEM WITH AN ORIGINAL FILE SYSTEM
82224077	F200601602	US	US7610429	Granted		30-Jan-2007	27-Apr-2021	7,706.00	METHOD AND SYSTEM FOR DETERMINING DEVICE CRITICALITY IN A COMPUTER CONFIGURATION
82226375	F200602648	US	US7937565	Granted		21-Feb-2008	3-Nov-2022	7,406.00	METHOD AND SYSTEM FOR DATA SPECULATION ON MULTICORE SYSTEMS

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82227347	F200603027	US	US7929418	Granted		20-Mar-2008	19-Oct-2022	7,406.00	DATA PACKET COMMUNICATION PROTOCOL OFFLOAD METHOD AND SYSTEM
82227539	F200603142	US	US8156496	Granted		29-Jan-2008	10-Oct-2023	7,706.00	DATA PROCESSING SYSTEM AND METHOD
82227545	F200603144	US	US8566467	Granted		17-Jul-2008	22-Apr-2021	3,606.00	DATA PROCESSING SYSTEM AND METHOD
82229765	F200603986	US	US8504018	Granted		29-Jan-2008	6-Feb-2021	3,766.00	SERVICE ROUTING FOR COMMUNICATION SYSTEMS
82230662	F200700296	US	US9405921	Granted		31-Jul-2007	2-Feb-2024	3,766.00	COMPUTER-IMPLEMENTED METHOD FOR ROLE DISCOVERY IN ACCESS CONTROL SYSTEMS
82247039	F200700296	US	US9405922	Granted		5-Jan-2009	2-Feb-2024	3,766.00	COMPUTER-IMPLEMENTED METHOD FOR ROLE DISCOVERY AND SIMPLIFICATION IN ACCESS CONTROL SYSTEMS
82232756	F200701002	US	US7730218	Granted		31-Jul-2007	1-Dec-2021	7,706.00	METHOD AND SYSTEM FOR CONFIGURATION AND MANAGEMENT OF CLIENT ACCESS TO NETWORK-ATTACHED-STORAGE
82233953	F200701315	US	US8359467	Granted		7-Jul-2007	22-Jul-2024	7,706.00	ACCESS CONTROL SYSTEM AND METHOD

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82235369	F200701680	US	US8782655	Granted		1-Jul-2008	15-Jan-2022	3,606.00	CONTROLLING COMPUTING RESOURCE CONSUMPTION
82236776	F200702071	US	US8046529	Granted		25-Sep-2008	25-Apr-2023	7,706.00	UPDATING CONTROL INFORMATION IN NON-VOLATILE MEMORY TO CONTROL SELECTION OF CONTENT
82236902	F200702110	US	US8712035	Granted		31-Jan-2008	29-Oct-2021	3,606.00	ONLINE DATA CONVERSION TECHNIQUE USING A SLIDING WINDOW
82237886	F200702398	US	US8719830	Granted		21-Aug-2008	6-Nov-2021	3,606.00	SYSTEM AND METHOD FOR ALLOWING EXECUTING APPLICATION IN COMPARTMENT THAT ALLOW ACCESS TO RESOURCES
82237922	F200702406	US	US7111197	Granted		20-Sep-2002	N/A	N/A	SYSTEM AND METHOD FOR JOURNAL RECOVERY FOR MULTINODE ENVIRONMENTS
82237925	F200702406	US	US7467330	Granted		4-Aug-2006	N/A	N/A	SYSTEM AND METHOD FOR JOURNAL RECOVERY FOR MULTINODE ENVIRONMENTS
82237988	F200702406	US	US7240057	Granted		20-Sep-2002	N/A	N/A	SYSTEM AND METHOD FOR IMPLEMENTING JOURNALING IN A MULTI-NODE ENVIRONMENT

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82237991	F200702406	CA	CA2460833	Granted		20-Sep-2002	20-Sep-2020	355.98	SYSTEM AND METHOD FOR IMPLEMENTINGJ OURNALING IN A MULTI-NODE ENVIRONMENT
82237994	F200702406	CN	CN02823231.3	Granted		20-Sep-2002	20-Sep-2020	1,304.37	SYSTEM AND METHOD FOR IMPLEMENTING JOURNALING IN A MULTI-NODE ENVIRONMENT
82238009	F200702406	US	US7437386	Granted		20-Sep-2002	N/A	N/A	SYSTEM AND METHOD FOR A MULTI-NODE ENVIRONMENT WITH SHARED STORAGE
82238015	F200702406	CN	CN02823098.1	Granted		20-Sep-2002	20-Sep-2020	1,304.37	SYSTEM AND METHOD FOR A MULTI-NODE ENVIRONMENT WITH SHARED STORAGE
82238021	F200702406	JP	JP4249622	Granted		20-Sep-2002	23-Jan-2021	1,404.63	A SYSTEM AND METHOD FOR EFFICIENT LOCK RECOVERY
82238033	F200702406	US	US7266722	Granted		20-Sep-2002	N/A	N/A	SYSTEM AND METHOD FOR EFFICIENT LOCK RECOVERY
83057023	F200702406	FR	FR1428149	Granted		20-Sep-2002	20-Sep-2020	878.13	A SYSTEM AND METHOD FOR A MULTI-NODE ENVIRONMENT WITH SHARED STORAGE
83057026	F200702406	DE	DE60244008.4	Granted		20-Sep-2002	20-Sep-2020	2,108.66	A SYSTEM AND METHOD FOR A MULTI-NODE ENVIRONMENT WITH SHARED STORAGE

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83057029	F200702406	GB	GB1428149	Granted		20-Sep-2002	20-Sep-2020	826.86	A SYSTEM AND METHOD FOR A MULTI-NODE ENVIRONMENT WITH SHARED STORAGE
82237979	F200702406	US	US7496646	Granted		20-Sep-2002	24-Aug-2020	7,406.00	SYSTEM AND METHOD FOR MANAGEMENT OF A STORAGE AREA NETWORK
82238303	F200702507	US	US8712597	Granted		11-Jun-2008	29-Oct-2021	3,606.00	METHOD OF OPTIMIZING AIR MOVER PERFORMANCE CHARACTERISTICS TO MINIMIZE TEMPERATURE VARIATIONS IN A COMPUTING SYSTEM ENCLOSURE
82238624	F200702591	US	US8495662	Granted		23-Sep-2008	23-Jan-2021	3,606.00	SYSTEM AND METHOD FOR IMPROVING RUN-TIME PERFORMANCE OF APPLICATIONS WITH MULTITHREADED AND SINGLE THREADED ROUTINES
82244252	F200704490	US	US7539769	Granted		30-Apr-2001	26-Nov-2020	7,406.00	AUTOMATED DEPLOYMENT AND MANAGEMENT OF NETWORK DEVICES
82244267	F200704493	US	US7496645	Granted		18-Oct-2001	N/A	N/A	DEPLOYMENT OF BUSINESS LOGIC SOFTWARE AND DATA CONTENT ONTO NETWORK SERVERS

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82246889	F200800989	US	US8875142	Granted		23-Oct-2009	28-Apr-2022	3,606.00	JOB SCHEDULING ON A MULTIPROCESSING SYSTEM BASED ON RELIABILITY AND PERFORMANCE RANKINGS OF PROCESSORS AND WEIGHTED EFFECT OF DETECTED ERRORS (AS AMENDED)
82247372	F200801308	US	US8826138	Granted		28-Jan-2009	2-Mar-2022	3,606.00	VIRTUAL CONNECT DOMAIN GROUPS
82247375	F200801309	US	US8208616	Granted		29-Jan-2009	26-Dec-2023	7,706.00	CONFERENCE-CALL SYSTEM AND CONFERENCE-SPECIFIC ACCESS CODES
82247738	F200801487	US	US8489753	Granted		7-Sep-2009	16-Jan-2021	3,766.00	APPARATUS AND COMPUTER-IMPLEMENTED METHOD FOR CONTROLLING MIGRATION OF A VIRTUAL MACHINE
82248062	F200801728	US	US8615641	Granted		24-Jun-2009	24-Jun-2021	3,606.00	SYSTEM AND METHOD FOR DIFFERENTIAL BACKUP
82249157	F200802553	US	US9032240	Granted		23-Apr-2009	12-Nov-2022	3,606.00	METHOD AND SYSTEM FOR PROVIDING HIGH AVAILABILITY SCTP APPLICATIONS
82249511	F200802897	US	US8650396	Granted		1-Dec-2009	11-Aug-2021	3,606.00	PERMISSION-BASED DYNAMICALLY TUNABLE OPERATING SYSTEM KERNEL

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82249712	F200803029	US	US8484621	Granted		24-Jun-2009	9-Jan-2021	3,606.00	METHOD AND SYSTEM FOR DATA CENTRIC HEAP PROFILING
82250969	F200900211	US	US8769546	Granted		7-Jan-2010	1-Jan-2022	3,606.00	BUSY-WAIT TIME FOR THREADS
82251287	F200900397	US	US7769050	Granted		25-Apr-2008	3-Feb-2022	7,706.00	SYSTEM AND METHOD FOR INTERFERENCE MITIGATION FOR WIRELESS COMMUNICATIO N
82254797	F200901268	US	US7219236	Granted		26-Feb-2003	N/A	N/A	ADMINISTERING A SECURITY SYSTEM
82853154	F200902893	US	US9032517	Granted		31-Oct-2009	12-Nov-2022	3,766.00	MALICIOUS CODE DETECTION
82931336	F200902893	CN	CN200980162264. 4	Granted		31-Oct-2009	31-Oct-2021	990.04	MALICIOUS CODE DETECTION
82259072	F200902994	US	US8694819	Granted		24-Aug-2009	8-Oct-2021	3,606.00	SYSTEM AND METHOD FOR GRADUALLY ADJUSTING A VIRTUAL INTERVAL TIMER COUNTER VALUE TO COMPENSATE THE DIVERGENCE OF A PHYSICAL INTERVAL TIMER COUNTER VALUE AND THE VIRTUAL INTERVAL TIMER COUNTER VALUE
82852274	F200904049	US	US8838765	Granted		14-Dec-2009	16-Mar-2022	3,766.00	MODIFYING COMPUTER MANAGEMENT REQUEST

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82261616	F200904613	US	US7430570	Granted		28-Apr-2004	N/A	N/A	SHADOW DIRECTORY STRUCTURE IN A DISTRIBUTED SEGMENTED FILE SYSTEM
82261604	F200904613	US	US7890529	Granted		16-Feb-2007	15-Aug-2022	7,706.00	DELEGATIONS AND CACHING IN A DISTRIBUTED SEGMENTED FILE SYSTEM
82261619	F200904613	US	US8316066	Granted		20-Aug-2007	20-May-2024	7,400.00	SHADOW DIRECTORY STRUCTURE IN A DISTRIBUTED SEGMENTED FILE SYSTEM
82261622	F200904613	US	US8131782	Granted		29-Sep-2008	6-Sep-2023	7,706.00	SHADOW DIRECTORY STRUCTURE IN A DISTRIBUTED SEGMENTED FILE SYSTEM
82261628	F200904613	US	US7546319	Granted		28-Apr-2004	9-Dec-2020	7,406.00	FILE SYSTEM CONSISTENCY CHECKING IN A DISTRIBUTED SEGMENTED FILE SYSTEM
82261631	F200904613	US	US8103639	Granted		5-May-2009	24-Jul-2023	7,706.00	FILE SYSTEM CONSISTENCY CHECKING IN A DISTRIBUTED SEGMENTED FILE SYSTEM
82261808	F200904724	US	US8997084	Granted		20-Apr-2011	30-Sep-2022	3,606.00	METHOD AND APPARATUS FOR DETERMINING COMPATIBLE VERSIONS OF DEPENDENT ENTITIES IN A COMPUTER SYSTEM

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83200410	F201000810	US	US9166893	Granted		23-Sep-2010	20-Apr-2023	3,766.00	METHODS, APPARATUS AND SYSTEMS FOR MONITORING LOCATIONS OF DATA WITHIN A NETWORK SERVICE
83422495	F201000959	US	US9148430	Granted		17-Aug-2011	29-Mar-2023	3,766.00	METHOD OF MANAGING USAGE RIGHTS IN A SHARE GROUP OF SERVERS
82272038	F201002554	US	US6996621	Granted		6-Dec-2000	N/A	N/A	METHOD FOR SUPPORTING SECONDARY ADDRESS DELIVERY ON REMOTE ACCESS SERVERS
82271006	F201003330	US	US6681244	Granted		9-Jun-2000	N/A	N/A	SYSTEM AND METHOD FOR OPERATING A NETWORK ADAPTER WHEN AN ASSOCIATED NETWORK COMPUTING SYSTEM IS IN A LOW-POWER STATE
82271648	F201003502	US	US7107326	Granted		27-Nov-2000	N/A	N/A	METHOD AND SYSTEM FOR INTEGRATING IP ADDRESS RESERVATIONS WITH POLICY PROVISIONING
82271834	F201003567	US	US7222255	Granted		28-Feb-2001	N/A	N/A	SYSTEM AND METHOD FOR NETWORK PERFORMANCE TESTING

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82272068	F201003648	US	US6597151	Granted		2-Oct-2000	N/A	N/A	PORTABLE AUXILIARY BATTERY PACK FOR EXTENDED USE AND RECHARGING OF PERSONAL DIGITAL ASSISTANTS
82274162	F201004551	US	US7724740	Granted		27-Aug-2002	25-Nov-2021	7,706.00	COMPUTER SYSTEM AND NETWORK INTERFACE SUPPORTING CLASS OF SERVICE QUEUES
82274165	F201004551	US	US8358655	Granted		9-Apr-2010	N/A	N/A	COMPUTER SYSTEM AND NETWORK INTERFACE SUPPORTING CLASS OF SERVICE QUEUES
83137192	F201004551	US	US9348789	Granted		14-Dec-2012	24-Nov-2023	3,766.00	COMPUTER SYSTEM AND NETWORK INTERFACE SUPPORTING CLASS OF SERVICE QUEUES
82274399	F201004602	US	US7657926	Granted		19-Mar-2004	2-Aug-2021	7,706.00	ENABLING NETWORK COMMUNICATIO N FROM ROLE BASED AUTHENTICATIO N
82274402	F201004602	US	US8176543	Granted		17-Dec-2009	8-Nov-2023	7,706.00	ENABLING NETWORK COMMUNICATIO N FROM ROLE BASED AUTHENTICATIO N

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82274444	F201004615	US	US8943241	Granted		9-Sep-2004	27-Jul-2022	3,766.00	COMMUNICATION DEVICE INGRESS INFORMATION MANAGEMENT SYSTEM AND METHOD
84088366	F201004615	US	US9229683	Granted		15-Dec-2014	5-Jul-2023	3,766.00	COMMUNICATION DEVICE INGRESS INFORMATION MANAGEMENT SYSTEM AND METHOD
82756375	F201004987	US	US9355145	Granted		22-Sep-2011	30-Nov-2023	3,766.00	USER DEFINED FUNCTION CLASSIFICATION IN ANALYTICAL DATA PROCESSING SYSTEMS
82756415	F201004987	US	US8856151	Granted		30-Sep-2011	7-Apr-2022	3,766.00	OUTPUT FIELD MAPPING OF USER DEFINED FUNCTIONS IN DATABASES
82756427	F201004987	US	US9229984	Granted		13-Oct-2011	5-Jul-2023	3,766.00	PARAMETER EXPRESSIONS FOR MODELING USER DEFINED FUNCTION EXECUTION IN ANALYTICAL DATA PROCESSING SYSTEMS
82850182	F201004987	US	US8538954	Granted		25-Jan-2011	17-Mar-2021	3,766.00	AGGREGATE FUNCTION PARTITIONS FOR DISTRIBUTED PROCESSING
82671992	F201005823	US	US8515916	Granted		28-Sep-2011	20-Feb-2021	3,766.00	DATA ARCHIVING METHODS AND DATA ARCHIVING APPARATUS

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82062791	F30004647	US	US6996605	Granted		16-Oct-2001	N/A	N/A	OVERVIEW SUBSYSTEM FOR INFORMATION PAGE SERVER
82062788	F30004647	GB	GB2368246	Expired		17-Oct-2000	N/A	N/A	OVERVIEW SUBSYSTEM FOR INFORMATION PAGE SERVER
82062872	F30004693	US	US7113911	Granted		21-Nov-2001	N/A	N/A	VOICE COMMUNICATIO N CONCERNING A LOCAL ENTITY
82065566	F30014515	US	US7000085	Granted		28-Dec-2001	N/A	N/A	SYSTEM AND METHOD FOR SECURING DRIVE ACCESS TO DATA STORAGE MEDIA BASED ON MEDIUM IDENTIFIERS
82065569	F30014515	JP	JP4579492	Granted		24-Dec-2002	3-Sep-2021	1,024.32	SYSTEM AND METHOD FOR SECURING DRIVE ACCESS TO DATA STORAGE MEDIA BASED ON MEDIUM IDENTIFIERS
82065575	F30014515	US	US7472245	Granted		30-Dec-2005	N/A	N/A	SYSTEM AND METHOD FOR SECURING DRIVE ACCESS TO DATA STORAGE MEDIA BASED ON MEDIUM IDENTIFIERS
82070522	F50002136	US	US7150023	Granted		27-Jul-2001	N/A	N/A	DYNAMIC RESOURCE CONTROL IN A PROCESSING SYSTEM
82281425	F700203771	US	US7840850	Granted		11-Apr-2005	23-May-2022	7,406.00	DATA PROCESSING SYSTEM FOR LOGGING MEMORY ACCESS DATA

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82863311	F700205556	US	US8923837	Granted		13-Oct-2011	30-Jun-2022	3,766.00	PROVISIONING A TELEPHONY NETWORK IN RESPONSE TO AN ELECTRONIC DEVICE ATTACHING TO THE NETWORK
82670355	F700205632	US	US9069470	Granted		1-Apr-2011	30-Dec-2022	3,606.00	ZONE GROUP REASSIGNMENT USING STORAGE DEVICE SIGNATURES
83998863	F700207271	KR	KR10-1660611	Granted		30-Jan-2012	21-Sep-2021	383.94	WORD SHIFT STATIC RANDOM ACCESS MEMORY (WS-SRAM)
83998868	F700207271	US	US9589623	Granted		30-Jan-2012	7-Sep-2024	3,766.00	WORD SHIFT STATIC RANDOM ACCESS MEMORY (WS-SRAM)
83998911	F700207271	KR	KR10-1564524	Granted		30-Jan-2012	23-Oct-2021	631.63	DYNAMIC/STATIC RANDOM ACCESS MEMORY (D/SRAM)
83998916	F700207271	US	US9466352	Granted		30-Jan-2012	11-Apr-2024	3,766.00	DYNAMIC/STATIC RANDOM ACCESS MEMORY (D/SRAM)
84077872	F700207271	CN	CN201280072828.7	Granted		10-Jul-2012	10-Jul-2021	698.53	LIST SORT STATIC RANDOM ACCESS MEMORY
84077882	F700207271	US	US9384824	Granted		10-Jul-2012	5-Jan-2024	3,766.00	LIST SORT STATIC RANDOM ACCESS MEMORY
83096196	F700210418	US	US8789139	Granted		11-Jan-2013	22-Jan-2022	3,766.00	AUTOMATED TEST TO TELL COMPUTERS AND HUMANS APART

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83213710	F700213039	US	US9235639	Granted		10-May-2013	12-Jul-2023	3,766.00	FILTER REGULAR EXPRESSION
84299324	FCTXM0006	US	US9344369	Granted		12-Mar-2013	17-Nov-2023	3,766.00	SYSTEM AND METHODS FOR DISTRIBUTED QUALITY OF SERVICE ENFORCEMENT

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81986348	F10007858	US	US7240324	Granted		28-Feb-2001	N/A	N/A	EVENT-BASED SCHEDULING METHOD AND SYSTEM FOR WORKFLOW ACTIVITIES
81989396	F10010812	US	US7831731	Granted		12-Jun-2001	9-May-2022	7,706.00	METHOD AND SYSTEM FOR A MODULAR TRANSMISSION CONTROL PROTOCOL (TCP) RARE-HANDOFF DESIGN IN A STREAMS BASED TRANSMISSION CONTROL PROTOCOL/INTERNET PROTOCOL (TCP/IP) IMPLEMENTATION
82079603	F100110346	US	US6910057	Granted		17-Oct-2001	N/A	N/A	TRUTH TABLE CANDIDATE REDUCTION FOR CELLULAR AUTOMATA BASED RANDOM NUMBER GENERATORS
81992846	F10012172	US	US7099866	Granted		16-Nov-2001	N/A	N/A	METHOD OF GENERATING AND PRESENTING KERNEL DATA
81998501	F10015055	US	US7466668	Granted		24-Aug-2001	N/A	N/A	REDUCED PIN-COUNT SYSTEM INTERFACE FOR GIGABIT ETHERNET PHYSICAL LAYER DEVICES
82723764	F10015055	FR	FR1303100	Granted		13-Aug-2002	13-Aug-2021	1,036.41	REDUCED PIN-COUNT SYSTEM INTERFACE FOR GIGABIT ETHERNET PHYSICAL LAYER DEVICES

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82723766	F10015055	DE	DE60240383.9	Granted		13-Aug-2002	13-Aug-2021	2,504.74	REDUCED PIN-COUNT SYSTEM INTERFACE FOR GIGABIT ETHERNET PHYSICAL LAYER DEVICES
82723768	F10015055	GB	GB1303100	Granted		13-Aug-2002	13-Aug-2021	896.07	REDUCED PIN-COUNT SYSTEM INTERFACE FOR GIGABIT ETHERNET PHYSICAL LAYER DEVICES
82000952	F10016691	US	US7028167	Granted		4-Mar-2002	N/A	N/A	CORE PARALLEL EXECUTION WITH DIFFERENT OPTIMIZATION CHARACTERISTICS TO DECREASE DYNAMIC EXECUTION PATH
82000964	F10016693	US	US6871264	Granted		6-Mar-2002	N/A	N/A	SYSTEM AND METHOD FOR DYNAMIC PROCESSOR CORE AND CACHE PARTITIONING ON LARGE-SCALE MULTITHREADED, MULTIPROCESSOR INTEGRATED CIRCUITS
82003742	F10018138	US	US7523455	Granted		3-May-2002	21-Oct-2020	7,406.00	METHOD AND SYSTEM FOR APPLICATION MANAGED CONTEXT SWITCHING
82003964	F10018228	US	US6781858	Granted		29-Aug-2003	N/A	N/A	CUBIC MEMORY ARRAY
82087979	F100202161	US	US6889295	Granted		5-Mar-2002	N/A	N/A	RE-ORDERING REQUESTS FOR SHARED RESOURCES

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82089101	F100202822	US	US8463940	Granted		31-Jan-2003	11-Dec-2020	3,606.00	METHOD OF INDICATING A PATH IN A COMPUTER NETWORK
82090349	F100203592	US	US7325170	Granted		19-Mar-2004	N/A	N/A	METHOD AND SYSTEM FOR PROVIDING INFORMATION FOR REMOTE DEVICE SUPPORT
82058708	F10992668	US	US7069434	Granted		13-Jun-2000	N/A	N/A	SECURE DATA TRANSFER METHOD AND SYSTEM
82098827	F200208006	US	US7003591	Granted		20-Aug-2003	N/A	N/A	CONFIGURABLE MAPPING OF DEVICES TO BUS FUNCTIONS
82100006	F200208555	US	US7081684	Granted		6-Oct-2003	N/A	N/A	CONVERTING HEAT GENERATED BY A COMPONENT TO ELECTRICAL ENERGY
82100675	F200208766	US	US7533285	Granted		22-Apr-2004	12-Nov-2020	7,406.00	SYNCHRONIZING LINK DELAY MEASUREMENT OVER SERIAL LINKS
82106108	F200300376	US	US7890999	Granted		7-Aug-2003	15-Aug-2022	7,406.00	RPC PORT MAPPER INTEGRITY CHECKER TO IMPROVE SECURITY OF A PROVISIONABLE NETWORK
82110842	F200301290	US	US6765922	Granted		27-Sep-2000	N/A	N/A	SPECULATIVE TRANSMIT FOR SYSTEM AREA NETWORK LATENCY REDUCTION

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82110845	F200301290	US	US6882656	Expired		13-Apr-2004	N/A	N/A	SPECULATIVE TRANSMIT FOR SYSTEM AREA NETWORK LATENCY REDUCTION
82118663	F200302043	US	US7240186	Granted		16-Jul-2001	N/A	N/A	SYSTEM AND METHOD TO AVOID RESOURCE CONTENTION IN THE PRESENCE OF EXCEPTIONS
82119764	F200302153	US	US7167987	Granted		29-Aug-2001	N/A	N/A	USE OF BIOMETRICS TO PROVIDE PHYSICAL AND LOGIC ACCESS TO COMPUTER DEVICES
82120697	F200302391	US	US7111084	Granted		28-Dec-2001	N/A	N/A	DATA STORAGE NETWORK WITH HOST TRANSPARENT FAILOVER CONTROLLED BY HOST BUS ADAPTER
82121852	F200302581	US	US7739485	Granted		11-Oct-2002	15-Dec-2021	7,706.00	CACHED FIELD REPLACEABLE UNIT EEPROM DATA
82121996	F200302618	US	US7092258	Granted		15-Sep-2003	N/A	N/A	CABLE MANAGEMENT SYSTEM AND METHOD OF INSTALLATION AND OPERATION THEREOF
82133435	F200304361	US	US6886109	Granted		18-May-2001	N/A	N/A	METHOD AND APPARATUS FOR EXPEDITING SYSTEM INITIALIZATION
82169255	F200309194	US	US7580814	Granted		23-Mar-2004	25-Feb-2021	7,706.00	SEQUENCE SIMULATOR

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82169261	F200309196	US	US7570591	Granted		3-Aug-2004	4-Feb-2021	7,706.00	METHOD AND APPARATUS FOR NEGOTIATING LINK SPEED AND CONFIGURATION
82171562	F200310064	US	US7519996	Granted		25-Aug-2003	N/A	N/A	SECURITY INTRUSION MITIGATION SYSTEM AND METHOD
82171565	F200310064	GB	GB2405563	Granted		13-Aug-2004	13-Aug-2021	764.74	A SECURITY INTRUSION MITIGATION SYSTEM AND METHOD
82173791	F200310966	US	US7954086	Granted		19-May-2003	30-Nov-2022	7,406.00	SELF-DESCRIBING KERNEL MODULES
82175876	F200311794	US	US8000322	Granted		14-Mar-2005	16-Feb-2023	7,706.00	CROSSBAR SWITCH DEBUGGING
82175879	F200311794	CN	CN200510088233.2	Granted		29-Jul-2005	29-Jul-2021	1,367.42	CROSSBAR SWITCH DEBUGGING
82176536	F200312054	US	US7447971	Granted		14-May-2004	N/A	N/A	DATA RECOVERY SYSTEMS AND METHODS
82176917	F200312197	US	US7765550	Granted		26-May-2005	27-Jan-2022	7,406.00	SYSTEM FOR CONTROLLING CONTEXT SWITCH OF DEFERRED REQUESTS USING COUNTER AND FLAG SETTING OF THREAD ACCESSING SHARED RESOURCE OR ENTERING CODE REGION
82176923	F200312200	US	US7577945	Granted		26-May-2005	18-Feb-2021	7,406.00	MEMORY MAPPED LAZY SIGNAL BLOCKING

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82178690	F200313003	US	US7996825	Granted		31-Oct-2003	9-Feb-2023	7,706.00	CROSS-FILE INLINING BY USING SUMMARIES AND GOLBAL WORKLIST
82178723	F200313024	US	US7814467	Granted		15-Jan-2004	12-Apr-2022	7,406.00	PROGRAM OPTIMIZATION USING OBJECT FILE SUMMARY INFORMATION
82180442	F200313758	US	US7739536	Granted		25-Feb-2005	15-Dec-2021	7,706.00	INTELLIGENT FREQUENCY AND VOLTAGE MARGINING
82180508	F200313774	US	US7454514	Granted		12-Jan-2004	N/A	N/A	PROCESSING DATA WITH UNCERTAIN ARRIVAL TIME
82180757	F200313907	US	US7487255	Granted		14-Aug-2003	3-Aug-2020	7,406.00	ROUTING CACHE MANAGEMENT WITH ROUTE FRAGMENTATIO N
82180943	F200313973	US	US7600023	Granted		5-Nov-2004	6-Apr-2021	7,706.00	SYSTEMS AND METHODS OF BALANCING CROSSBAR BANDWIDTH
82181105	F200314048	US	US7672929	Granted		22-Dec-2004	2-Sep-2021	7,706.00	DATABASE MODIFICATION HISTORY
82181606	F200314251	US	US7809991	Granted		11-Jan-2005	5-Apr-2022	7,706.00	SYSTEM AND METHOD TO QUALIFY DATA CAPTURE
82181612	F200314251	US	US7228472	Granted		11-Jan-2005	N/A	N/A	SYSTEM AND METHOD TO CONTROL DATA CAPTURE
82182284	F200314251	US	US7752016	Granted		11-Jan-2005	6-Jan-2022	7,706.00	SYSTEM AND METHOD FOR DATA ANALYSIS

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82182992	F200314776	US	US7474793	Granted		2-Sep-2004	6-Jul-2020	7,406.00	METHODS FOR COMPRESSION USING A DENOISER
82182998	F200314778	US	US7624009	Granted		2-Sep-2004	24-May-2021	7,406.00	METHOD AND SYSTEM FOR PRODUCING VARIABLE LENGTH CONTEXT MODELS
82184231	F200315313	US	US7624319	Granted		23-Dec-2004	24-May-2021	7,706.00	PERFORMANCE MONITORING SYSTEM
82186253	F200316232	US	US7876689	Granted		29-Jun-2005	25-Jul-2022	7,406.00	METHOD AND APPARATUS FOR LOAD BALANCING NETWORK INTERFACE ADAPTERS BASED ON NETWORK INFORMATION
82186562	F200316383	US	US7552238	Granted		30-Sep-2004	23-Dec-2020	7,406.00	METHOD AND APPARATUS FOR MAINTAINING NETWORK DEVICE CONFIGURATIONS
82187447	F200400179	US	US7143389	Granted		28-Jul-2004	N/A	N/A	SYSTEMS AND METHODS FOR GENERATING NODE LEVEL BYPASS CAPACITOR MODELS
82187564	F200400224	US	US7743383	Granted		1-Nov-2004	22-Dec-2021	7,406.00	ADAPTIVE COOPERATIVE SCHEDULING
82189400	F200401067	US	US7752623	Granted		16-Sep-2004	6-Jan-2022	7,406.00	SYSTEM AND METHOD FOR ALLOCATING RESOURCES BY EXAMINING A SYSTEM CHARACTERISTIC

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82189718	F200401204	US	US7339490	Granted		29-Jun-2004	N/A	N/A	MODULAR SENSOR ASSEMBLY
82189787	F200401266	US	US7643434	Granted		30-Sep-2004	5-Jul-2021	7,706.00	METHOD AND SYSTEM FOR MANAGING NETWORK NODES WHICH COMMUNICATE VIA CONNECTIVITY SERVICES OF A SERVICE PROVIDER
82190012	F200401406	US	US7057509	Granted		29-Jun-2004	N/A	N/A	MONITORING AN OBJECT WITH IDENTIFICATION DATA AND TRACKING DATA
82190207	F200401511	US	US8443171	Granted		30-Jul-2004	14-Nov-2020	3,606.00	RUN-TIME UPDATING OF PREDICTION HINT INSTRUCTIONS
82190210	F200401511	CN	CN200510088159 4	Granted		29-Jul-2005	29-Jul-2021	1,367.42	RUN-TIME UPDATING OF PREDICTION HINT INSTRUCTIONS
82190213	F200401511	GB	GB2416885	Granted		12-Jul-2005	12-Jul-2021	691.79	RUN-TIME UPDATING OF PREDICTION HINT INSTRUCTIONS
82191920	F200402290	US	US8977651	Granted		14-Apr-2004	10-Sep-2022	3,606.00	METHOD AND APPARATUS FOR MULTI-PROCESS ACCESS TO A LINKED-LIST
82193288	F200402795	US	US7660937	Granted		28-Jun-2006	9-Aug-2021	7,706.00	EMULATING A USB HOST CONTROLLER
82196321	F200403866	US	US7383471	Granted		28-Dec-2004	N/A	N/A	DIAGNOSTIC MEMORY DUMPING

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82197110	F200404278	US	US7500056	Granted		21-Jul-2004	3-Sep-2020	7,406.00	SYSTEM AND METHOD TO FACILITATE RESET IN A COMPUTER SYSTEM
82197320	F200404388	US	US8930400	Granted		22-Nov-2004	6-Jul-2022	3,766.00	A SYSTEM AND METHOD FOR DISCOVERING KNOWLEDGE COMMUNITIES
82197740	F200404591	US	US7743380	Granted		21-Jan-2005	22-Dec-2021	7,406.00	MONITORING CLUSTERED SOFTWARE APPLICATIONS
82198079	F200404777	US	US7539931	Granted		8-Apr-2005	26-Nov-2020	7,406.00	STORAGE ELEMENT FOR MITIGATING SOFT ERRORS IN LOGIC
82199306	F200405310	US	US7877740	Granted		13-Jun-2005	25-Jul-2022	7,406.00	HANDLING CAUGHT EXCEPTIONS
82199318	F200405319	US	US7634773	Granted		24-Nov-2004	15-Jun-2021	7,406.00	METHOD AND APPARATUS FOR THREAD SCHEDULING ON MULTIPLE PROCESSORS
82201661	F200406544	US	US8799466	Granted		31-Jan-2005	5-Feb-2022	3,606.00	METHOD AND APPARATUS FOR AUTOMATIC VERIFICATION OF A NETWORK ACCESS CONTROL CONSTRUCT FOR A NETWORK SWITCH
82203017	F200407176	US	US7853934	Granted		23-Jun-2005	14-Jun-2022	7,406.00	HOT-SWAPPING A DYNAMIC CODE GENERATOR

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82203827	F200407611	US	US7123172	Granted		29-Jul-2005	N/A	N/A	METHOD AND SYSTEM FOR DETERMINING AN OPTIMAL OR NEAR OPTIMAL SET OF CONTEXTS BY CONSTRUCTING A MULTI-DIRECTIONAL CONTEXT TREE
82203830	F200407611	US	US8085888	Granted		13-Oct-2006	27-Jun-2023	7,706.00	METHOD AND SYSTEM FOR DETERMINING AN OPTIMAL OR NEAR OPTIMAL SET OF CONTEXTS BY CONSTRUCTING A MULTI-DIRECTIONAL CONTEXT TREE
82204691	F200407938	US	US8997102	Granted		3-Jun-2005	30-Sep-2022	3,606.00	PRIORITIZATION OF PROCESSES FOR DEACTIVATING PROCESSES TO REDUCE MEMORY PRESSURE CONDITION
82204928	F200408027	US	US7941804	Granted		31-Oct-2005	10-Nov-2022	7,406.00	ALLOCATING RESOURCES AMONG TIERED PARTITIONS OF DIFFERENT TYPES
82206494	F200500286	US	US7673305	Granted		23-Oct-2006	2-Sep-2021	7,406.00	SYSTEM AND METHOD OF EXPEDITING CERTAIN JOBS IN A COMPUTER PROCESSING SYSTEM
82206599	F200500344	US	US7373565	Granted		23-Aug-2005	N/A	N/A	START/STOP CIRCUIT FOR PERFORMANCE COUNTER

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82206602	F200500344	GB	GB2429552	Granted		2-Aug-2006	2-Aug-2021	618.83	START/STOP CIRCUIT FOR PERFORMANCE COUNTER
82206632	F200500349	US	US7711914	Granted		28-Jun-2005	4-Nov-2021	7,406.00	DEBUGGING USING VIRTUAL WATCHPOINTS
82206881	F200500508	US	US7323920	Granted		13-Jun-2005	N/A	N/A	SOFT-ERROR RATE IMPROVEMENT IN A LATCH USING LOW-PASS FILTERING
82207067	F200500606	US	US8990547	Granted		23-Aug-2005	24-Sep-2022	3,606.00	SYSTEMS AND METHODS FOR RE-ORDERING INSTRUCTIONS
82207133	F200500634	US	US8346740	Granted		22-Jul-2005	1-Jul-2020	3,606.00	FILE CACHE MANAGEMENT SYSTEM
82208279	F200501135	US	US7738681	Granted		1-Nov-2005	15-Dec-2021	7,706.00	FINGERPRINT AND PHYSICAL ATTRIBUTE DETECTION
82208402	F200501180	US	US8739288	Granted		31-Jul-2007	27-Nov-2021	3,606.00	AUTOMATIC DETECTION OF VULNERABILITY EXPLOITS
82208507	F200501222	US	US7765528	Granted		21-Sep-2005	27-Jan-2022	7,406.00	IDENTIFYING SOURCES OF MEMORY RETENTION
82208855	F200501422	US	US7903556	Granted		3-Nov-2005	8-Sep-2022	7,706.00	METHOD OF CONTROLLING DATA TRANSFERS BETWEEN NODES IN A COMPUTER SYSTEM
82209365	F200501734	US	US7816975	Granted		20-Sep-2005	19-Apr-2022	7,706.00	CIRCUIT AND METHOD FOR BIAS VOLTAGE GENERATION

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82209767	F200501965	US	US8650296	Granted		31-Oct-2006	11-Aug-2021	3,606.00	WORKLOAD REALLOCATION INVOLVING INTER-SERVER TRANSFERS OF SOFTWARE LICENSE RIGHTS AND INTRA-SERVER TRANSFER OF HARDWARE RESOURCES
82209998	F200502087	US	US8949404	Granted		24-May-2005	3-Aug-2022	3,766.00	ACQUIRING GRAPHICAL OPERATING SYSTEM POST-FAILURE SCREEN
82210232	F200502177	US	US7636643	Granted		29-Jun-2006	22-Jun-2021	7,406.00	GAUGE HAVING A DYNAMICALLY UPDATED INDICIA OF A VALUE'S NORMAL RANGE, AND METHODS AND MEANS TO FACILITATE THE DISPLAY AND UPDATE OF SAME
82210268	F200502188	US	US7594223	Granted		27-Jun-2005	22-Mar-2021	7,406.00	STRAIGHT-LINE POST-INCREMENT OPTIMIZATION FOR MEMORY ACCESS INSTRUCTIONS
82210868	F200502476	US	US8595612	Granted		26-Oct-2006	26-May-2021	3,606.00	DISPLAY OF WEB PAGE WITH AVAILABLE DATA
82211354	F200502764	US	US8391432	Granted		8-Aug-2005	5-Sep-2024	7,706.00	DATA SERIALIZER
82212575	F200503321	US	US8924590	Granted		14-Feb-2006	30-Jun-2022	3,606.00	SYSTEM AND METHOD FOR COMMUNICATIN G IN A NETWORKED SYSTEM

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82212875	F200503479	US	US8688890	Granted		5-Dec-2006	1-Oct-2021	3,766.00	BIT ORDERING FOR COMMUNICATING AN ADDRESS ON A SERIAL FABRIC
82213166	F200503643	US	US7610468	Granted		26-Oct-2006	27-Apr-2021	7,706.00	MODIFIED BUDDY SYSTEM MEMORY ALLOCATION
82213211	F200503688	US	US8738346	Granted		26-Oct-2006	27-Nov-2021	3,606.00	METHOD AND APPARATUS FOR CONTROLLING MULTIPLE SIMULATIONS
82214159	F200504348	US	US7672923	Granted		31-Oct-2006	2-Sep-2021	7,406.00	GRID NETWORK MANAGEMENT VIA AUTOMATIC TREND ANALYSIS OF A SERVICE LEVEL AGREEMENT.
82214258	F200504419	US	US8521652	Granted		19-May-2006	27-Feb-2021	3,606.00	DISCOVERING LICENSES IN SOFTWARE FILES
82215572	F200505182	US	US7970143	Granted		5-Aug-2005	28-Dec-2022	7,706.00	SYSTEM, METHOD AND APPARATUS TO OBTAIN A KEY FOR ENCRYPTION/DECRYPTION/DATA RECOVERY FROM AN ENTERPRISE CRYPTOGRAPHY KEY MANAGEMENT SYSTEM

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82815953	F200505182	DE	DE602005030748.6	Granted		5-Aug-2005	5-Aug-2021	1,822.09	SYSTEM, METHOD AND APPARATUS TO OBTAIN A KEY FOR ENCRYPTION/DECRYPTION/DATA RECOVERY FROM AN ENTERPRISE CRYPTOGRAPHY KEY MANAGEMENT SYSTEM
82815955	F200505182	GB	GB1913509	Granted		5-Aug-2005	5-Aug-2021	691.79	SYSTEM, METHOD AND APPARATUS TO OBTAIN A KEY FOR ENCRYPTION/DECRYPTION/DATA RECOVERY FROM AN ENTERPRISE CRYPTOGRAPHY KEY MANAGEMENT SYSTEM
82215986	F200505367	US	US7895409	Granted		30-Jul-2007	22-Aug-2022	7,406.00	APPLICATION INSPECTION TOOL FOR DETERMINING A SECURITY PARTITION
82216013	F200505381	US	US7657776	Granted		20-Sep-2006	2-Aug-2021	7,406.00	CONTAINING MACHINE CHECK EVENTS IN A VIRTUAL PARTITION
82216367	F200505552	US	US9038051	Granted		31-Oct-2006	19-Nov-2022	3,606.00	SELECTING PATCH SOLUTIONS BASED ON AVAILABILITY OF INFORMATION REGARDING PATCHES PREVIOUSLY INSTALLED ON USER SYSTEM

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82216469	F200505597	US	US7698545	Granted		24-Apr-2006	13-Oct-2021	7,406.00	COMPUTER CONFIGURATION CHRONOLOGY GENERATOR
82216655	F200505721	US	US7872965	Granted		22-Aug-2005	18-Jul-2022	7,406.00	NETWORK RESOURCE TEAMING PROVIDING RESOURCE REDUNDANCY AND TRANSMIT/RECEIVE LOAD-BALANCING THROUGH A PLURALITY OF REDUNDANT PORT TRUNKS
82217171	F200505962	US	US7971193	Granted		14-Jul-2006	28-Dec-2022	7,406.00	METHODS FOR PERFORMINING CROSS MODULE CONTEXT-SENSITIVE SECURITY ANALYSIS
82217174	F200505968	US	US7644204	Granted		31-Oct-2006	5-Jul-2021	7,406.00	SCSI I/O COORDINATOR
82217573	F200506169	US	US8516218	Granted		30-Oct-2006	20-Feb-2021	3,606.00	PATTERN-BASED MAPPING FOR STORAGE SPACE MANAGEMENT
82217705	F200506280	US	US8522042	Granted		31-Oct-2006	27-Feb-2021	3,766.00	METHOD AND APPARATUS FOR ENFORCEMENT OF SOFTWARE LICENSE PROTECTION
82217870	F200506400	US	US7721133	Granted		27-Apr-2006	18-Nov-2021	7,706.00	SYSTEMS AND METHODS OF SYNCHRONIZING REFERENCE FREQUENCIES
82218650	F200506827	US	US7953996	Granted		18-Dec-2006	30-Nov-2022	7,406.00	ACPI TO FIRMWARE INTERFACE

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82218854	F200506945	US	US9298668	Granted		6-Jul-2010	29-Sep-2023	3,766.00	BIT ERROR RATE REDUCTION BUFFER, METHOD AND APPARATUS
82218926	F200506982	US	US8402463	Granted		30-Oct-2006	19-Sep-2024	7,706.00	HARDWARE THREADS PROCESSOR CORE UTILIZATION
82219271	F200507176	US	US7861042	Granted		23-Oct-2006	28-Jun-2022	7,406.00	PROCESSOR ACQUISITION OF OWNERSHIP OF ACCESS COORDINATOR FOR SHARED RESOURCE
82219313	F200507184	US	US7855957	Granted		30-Aug-2006	21-Jun-2022	7,406.00	METHOD AND SYSTEM OF TRANSMIT LOAD BALANCING ACROSS MULTIPLE PHYSICAL PORTS
82219409	F200507258	US	US7502888	Granted		7-Feb-2006	N/A	N/A	SYMMETRIC MULTIPROCESSOR SYSTEM
82219514	F200507306	US	US8739162	Granted		27-Apr-2007	27-Nov-2021	3,606.00	ACCURATE MEASUREMENT OF MULTITHREADED PROCESSOR CORE UTILIZATION AND LOGICAL PROCESSOR UTILIZATION
82219718	F200507426	US	US7743244	Granted		31-Oct-2006	22-Dec-2021	7,406.00	COMPUTER SYSTEM MODEL GENERATION WITH TRACKING OF ACTUAL COMPUTER SYSTEM CONFIGURATION

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82241207	F200507596	US	US8650579	Granted		29-Oct-2007	11-Aug-2021	3,606.00	CONTAINMENT FOR COMPUTER-SOFTWARE UPDATE INSTALLATION PROCESSES
82220024	F200507702	US	US10198709	Granted		27-Mar-2006	5-Aug-2022	2,006.00	MANAGING ASSETS USING AT LEAST ONE POLICY AND ASSET LOCATIONS
82220027	F200507704	US	US8510450	Granted		22-Apr-2006	13-Feb-2021	3,606.00	RECONCILIATIO N OF WEB SERVER SESSION STATES WITH CLIENT BROWSER STATES
82220048	F200507714	US	US7710862	Granted		30-Aug-2006	4-Nov-2021	7,406.00	METHOD AND SYSTEM OF ASSIGNING MEDIA ACCESS CONTROL (MAC) ADDRESSES ACROSS TEAMED COMMUNICATIO N PORTS
82220135	F200507803	US	US7788477	Granted		31-Jan-2007	28-Feb-2022	7,406.00	METHODS, APPARATUS AND ARTICLES OF MANUFACTURE TO CONTROL OPERATING SYSTEM IMAGES FOR DISKLESS SERVERS
82220549	F200600217	US	US8799591	Granted		30-Jan-2007	5-Feb-2022	3,606.00	READ-WRITE SPINLOCK WITH NO MUTUAL EXCLUSION AMONG READERS
82220579	F200600243	US	US7774652	Granted		19-Sep-2006	10-Feb-2022	7,706.00	CIRCUITRY AND METHOD TO DETECT CONDITIONS OF DATA

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82220864	F200600374	US	US6871300	Granted		4-May-2001	N/A	N/A	EMBEDDED SERVER CHASSIS HARDWARE MASTER SYSTEM AND METHOD
82220945	F200600412	US	US7515428	Granted		31-Oct-2006	N/A	N/A	DESIGN FOR AUTOMATIC POSITIONING OF POWER SUPPLY MODULE HANDLE
82222385	F200600835	US	US7941812	Granted		30-Jan-2007	10-Nov-2022	7,406.00	INPUT/OUTPUT VIRTUALIZATIO N THROUGH OFFLOAD TECHNIQUES
82223009	F200601155	US	US7729368	Granted		19-Jan-2007	1-Dec-2021	7,406.00	NETWORK BUFFER CACHING
82224527	F200601902	US	US8739143	Granted		31-Jan-2007	27-Nov-2021	3,606.00	PROFILING METRICS FOR COMPUTER PROGRAMS
82224551	F200601915	US	US8504943	Granted		24-Oct-2006	6-Feb-2021	3,606.00	DISPLAYING GROUP ICONS REPRESENTING RESPECTIVE GROUPS OF NODES
82224686	F200601982	US	US7895581	Granted		26-Jan-2007	22-Aug-2022	7,406.00	PROFILING COLLECTOR FOR COMPUTER SYSTEM
82225349	F200602280	US	US8782779	Granted		26-Sep-2007	15-Jan-2022	3,766.00	SYSTEM AND METHOD FOR ACHIEVING PROTECTED REGION WITHIN COMPUTER SYSTEM
82226180	F200602579	US	US7730365	Granted		30-Apr-2007	1-Dec-2021	7,406.00	WORKLOAD MANAGEMENT FOR MAINTAINING REDUNDANCY OF NON-DATA COMPUTER COMPONENTS

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82228010	F200603372	US	US8966474	Granted		30-Apr-2007	24-Aug-2022	3,606.00	MANAGING VIRTUAL MACHINES USING SHARED IMAGE
82229636	F200603919	US	US8768978	Granted		30-Jul-2007	1-Jan-2022	3,606.00	SINGLE-OPERATION ON-LINE SCHEMA EVOLUTION
82231193	F200700459	US	US7765242	Granted		10-May-2007	27-Jan-2022	7,406.00	METHODS AND APPARATUS FOR STRUCTURE LAYOUT OPTIMIZATION FOR MULTI-THREADED PROGRAMS
82231262	F200700495	US	US8584138	Granted		30-Jul-2007	12-May-2021	3,606.00	DIRECT SWITCHING OF SOFTWARE THREADS BY SELECTIVELY BYPASSING RUN QUEUE BASED ON SELECTION CRITERIA
82232414	F200700918	US	US8352957	Granted		31-Jan-2008	8-Jul-2020	3,606.00	APPARATUS AND METHOD FOR PASSING METADATA IN STREAMS MODULES
82233344	F200701141	US	US9081627	Granted		31-Jul-2007	14-Jan-2023	3,766.00	WORKLOAD MANAGEMENT WITH RESOURCE TRANSFER SEQUENCE PLANNED AS A FUNCTION OF RANKING OF RESOURCE ALLOCATIONS
82233425	F200701161	US	US7671634	Granted		30-Jul-2007	2-Sep-2021	7,706.00	REDUNDANT CLOCK SWITCH CIRCUIT

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82233830	F200701258	US	US7827266	Granted		31-Jul-2007	2-May-2022	7,406.00	SYSTEM AND METHOD OF CONTROLLING MULTIPLE COMPUTER PLATFORMS
82235330	F200701661	US	US8505019	Granted		31-Oct-2008	6-Feb-2021	3,606.00	SYSTEM AND METHOD FOR INSTANT CAPACITY/WORKLOAD MANAGEMENT INTEGRATION
82235378	F200701686	US	US7783823	Granted		31-Jul-2007	24-Feb-2022	7,706.00	HARDWARE DEVICE DATA BUFFER
82235381	F200701686	GB	GB2451549	Granted		7-Jul-2008	7-Jul-2021	443.74	HARDWARD DEVICE DATA BUFFER
82237277	F200702190	US	US8621470	Granted		24-Jan-2008	30-Jun-2021	3,606.00	WAKEUP-ATTRIBUTE-BASED ALLOCATION OF THREADS TO PROCESSORS
82237688	F200702350	US	US7551039	Granted		19-Oct-2007	23-Dec-2020	7,406.00	PHASE ADJUSTMENT IN PHASE-LOCKED LOOPS USING MULTIPLE OSCILLATOR SIGNALS
82238465	F200702551	US	US7929919	Granted		25-Sep-2008	19-Oct-2022	7,706.00	SYSTEMS AND METHODS FOR A PLL-ADJUSTED REFERENCE CLOCK
82238810	F200702649	US	US9389921	Granted		15-Dec-2008	12-Jan-2024	3,766.00	SYSTEM AND METHOD FOR FLEXIBLE DEVICE DRIVER RESOURCE ALLOCATION
82240934	F200703378	US	US7518418	Granted		25-Sep-2007	N/A	N/A	RATIO GRANULARITY CLOCK DIVIDER CIRCUIT AND METHOD

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82240937	F200703378	TW	TWI435538	Granted		25-Aug-2008	20-Apr-2021	359.56	RATIO GRANULARITY CLOCK DIVIDER CIRCUIT AND METHOD
82240940	F200703379	US	US7521972	Granted		25-Sep-2007	N/A	N/A	FIFTY PERCENT DUTY CYCLE CLOCK DIVIDER CIRCUIT AND METHOD
82240943	F200703379	CN	CN200810149759.0	Granted		25-Sep-2008	25-Sep-2021	1,032.98	FIFTY PERCENT DUTY CYCLE CLOCK DIVIDER CIRCUIT AND METHOD
82240946	F200703380	US	US7567097	Granted		29-Sep-2007	28-Jan-2021	7,406.00	PRE-DRIVER CIRCUIT AND APPARATUS USING SAME
82562920	F200801253	US	US9015454	Granted		2-May-2008	21-Oct-2022	3,766.00	BINDING DATA TO COMPUTERS USING CRYPTOGRAPHIC CO-PROCESSOR AND MACHINE-SPECIFIC AND PLATFORM-SPECIFIC KEYS
82247759	F200801497	US	US8392928	Granted		28-Oct-2008	5-Sep-2020	3,606.00	AUTOMATED WORKLOAD PLACEMENT RECOMMENDATIONS FOR A DATA CENTER
82247768	F200801502	US	US9367197	Granted		28-Jan-2009	14-Dec-2023	3,766.00	DISPLAYING COMPUTER RESOURCE HIERARCHY
82247912	F200801603	US	US8527988	Granted		31-Jul-2009	3-Mar-2021	3,606.00	PROXIMITY MAPPING OF VIRTUAL-MACHINE THREADS TO PROCESSORS

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82931281	F200801779	CN	CN200980160839.9	Granted		9-Aug-2009	9-Aug-2020	666.46	ILLUMINABLE INDICATOR OF ELECTRONIC DEVICE BEING ENABLED BASED AT LEAST ON USER PRESENCE
82852934	F200801779	US	US8692683	Granted		9-Aug-2009	8-Oct-2021	3,766.00	ILLUMINABLE INDICATOR OF ELECTRONIC DEVICE BEING ENABLED BASED AT LEAST ON USER PRESENCE
82248920	F200802382	US	US8392736	Granted		31-Jul-2009	5-Sep-2020	3,606.00	MANAGING MEMORY POWER USAGE
82250024	F200803342	US	US8694974	Granted		29-Apr-2009	8-Oct-2021	3,606.00	LOAD-CHECKING ATOMIC SECTION
82250579	F200803737	US	US8607245	Granted		15-May-2009	10-Jun-2021	3,606.00	DYNAMIC PROCESSOR-SET MANAGEMENT
82251356	F200900425	US	US7797530	Granted		9-Apr-2001	14-Mar-2022	7,706.00	AUTHENTICATION AND ENCRYPTION METHOD AND APPARATUS FOR A WIRELESS LOCAL ACCESS NETWORK
82258727	F200902756	US	US8713139	Granted		29-Oct-2009	29-Oct-2021	3,606.00	AUTOMATIC FIXUP OF NETWORK CONFIGURATION ON SYSTEM IMAGE MOVE
82260449	F200903890	US	US8688838	Granted		14-Dec-2009	1-Oct-2021	3,606.00	PROFILE MANAGEMENT SYSTEMS
82260881	F200904195	US	US8401925	Granted		26-Jan-2010	19-Sep-2020	3,606.00	MULTI-PRODUCT SOFTWARE LICENSE SELECTION

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82261280	F200904423	US	US8452717	Granted		27-Apr-2010	28-Nov-2020	3,606.00	PRESENTING AN INTERACTIVE GUIDANCE STRUCTURE IN A COLLABORATIV E ENVIRONMENT
82934011	F200904474	US	US9425902	Granted		11-Jan-2010	23-Feb-2024	3,766.00	SYSTEM INCLUDING DRIVER CIRCUIT FOR ELECTRICAL SIGNALING AND OPTICAL SIGNALING
82261919	F200904777	US	US8356198	Granted		30-Mar-2010	15-Jul-2020	3,606.00	PERFORMING POWER MANAGEMENT BASED ON INFORMATION REGARDING ZONES OF DEVICES IN A SYSTEM
82263782	F201000860	US	US8353489	Granted		21-Sep-2010	15-Jan-2021	$4,260.0 0	MOUNTING KIT
82264178	F201001112	US	US8356141	Granted		28-Jun-2010	15-Jan-2021	$4,260.0 0	IDENTIFYING REPLACEMENT MEMORY PAGES FROM THREE PAGE RECORD LISTS
82595313	F201001837	US	US9049034	Granted		2-Feb-2011	2-Dec-2022	3,766.00	MULTICAST FLOW MONITORING
82271222	F201003322	US	US6898210	Granted		31-May-2000	N/A	N/A	SYSTEM AND METHOD FOR PROVIDING A LOCAL AREA NETWORK UTILIZING REMOTE TRANSCEIVERS
82271810	F201003559	US	US7133446	Granted		19-Oct-2000	N/A	N/A	PERFORMANCE INDICATOR FOR WIRELESS DIGITAL SIGNAL RECEPTION

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82272365	F201003769	US	US6763001	Granted		17-Aug-2000	N/A	N/A	DISCOVERING NON MANAGED DEVICES IN A NETWORK SUCH AS A LAN USING TELNET
82272374	F201003772	US	US6775243	Granted		15-Sep-2000	N/A	N/A	GRAPHICALLY DISTINGUISHING A PATH BETWEEN TWO POINTS ON A NETWORK
82272485	F201003815	US	US7194534	Granted		4-Apr-2001	N/A	N/A	DISPLAY OF PHONES ON A MAP OF A NETWORK
82272548	F201003843	US	US6954785	Granted		17-Aug-2000	N/A	N/A	A SYSTEM FOR IDENTIFYING DEVICES THAT HAVE THE HIGHEST TOTAL VOLUME DATA TRANSFER AND COMMUNICATE WITH AT LEAST A THRESHOLD NUMBER OF CLIENT DEVICES
82274099	F201004538	US	US7702726	Granted		10-Apr-2002	20-Oct-2021	7,706.00	SYSTEM AND METHODS FOR PROVIDING PRESENCE SERVICES IN IP NETWORK
82274312	F201004586	US	US7155622	Granted		15-May-2003	N/A	N/A	SYSTEM AND METHOD FOR THE MANAGEMENT OF POWER SUPPLIED OVER DATA LINES
82274948	F201004727	US	US8416766	Granted		2-Jun-2009	9-Oct-2024	7,706.00	METHOD FOR IMPLEMENTING DISTRIBUTED VOICE FUNCTIONS INTO SOFTWARE APPLICATIONS

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82274954	F201004727	CN	CN200910146274.0	Granted		26-Jun-2009	26-Jun-2021	1,032.98	METHOD FOR IMPLEMENTING DISTRIBUTED VOICE FUNCTIONS INTO SOFTWARE APPLICATIONS
82275887	F201005039	US	US8725781	Granted		30-Jan-2011	13-Nov-2021	3,766.00	SENTIMENT CUBE
82275890	F201005041	US	US8949211	Granted		31-Jan-2011	3-Aug-2022	3,766.00	OBJECTIVE-FUNCTION BASED SENTIMENT
82586665	F201005286	US	US8966210	Granted		4-Apr-2011	24-Aug-2022	3,606.00	ZONE GROUP CONNECTIVITY INDICATOR
82581296	F201005340	US	US8713183	Granted		27-Mar-2011	29-Oct-2021	3,766.00	RESOURCE COMPATABILITY FOR DATA CENTERS
82677110	F201005997	US	US8719478	Granted		11-Aug-2011	6-Nov-2021	3,606.00	DEADLOCK PREVENTION
82277090	F300202276	US	US7143316	Granted		8-Apr-2003	N/A	N/A	FAULT DIAGNOSIS IN A NETWORK
82069802	F30990155	US	US7096204	Granted		6-Oct-2000	N/A	N/A	ELECTRONIC COMMERCE SYSTEM
82072100	F50980009	US	US6891863	Granted		6-Oct-2000	N/A	N/A	DEVICE AND METHODS FOR PROCESSING CHANNELS IN A DATA STREAM
82664931	F700205294	US	US8478900	Granted		18-May-2011	2-Jan-2021	3,766.00	DETERMINING MISCONNECTION OF AN ELECTRONIC DEVICE TO A NETWORK DEVICE USING ZONE INFORMATION

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82774491	F700205856	US	US8578023	Granted		29-Jul-2011	5-May-2021	3,606.00	COMPUTER RESOURCE UTILIZATION MODELING FOR MULTIPLEWORK LOADS

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81967265	F10001399	US	US7032074	Expired		1-Apr-2004	N/A	N/A	METHOD AND MECHANISM TO USE A CACHE TO TRANSLATE FROM A VIRTUAL BUS TO A PHYSICAL BUS
81967427	F10001428	US	US7209248	Granted		8-Dec-2000	N/A	N/A	MANAGING THE LIFETIME OF DISTRIBUTED RESOURCE DATA USING TEMPORAL SCOPES
81969518	F10002098	US	US6557005	Granted		12-Sep-2000	N/A	N/A	METHOD AND SYSTEM FOR DYNAMICALLY GENERATING WEB FORMS IN A VARIETY OF LANGUAGES
81969818	F10002141	US	US6875930	Granted		18-Apr-2002	N/A	N/A	OPTIMIZED CONDUCTOR ROUTING FOR MULTIPLE COMPONENTS ON A PRINTED CIRCUIT BOARD
81969821	F10002141	TW	TWI255678	Granted		11-Dec-2002	20-May-2021	686.40	OPTIMIZED CONDUCTOR ROUTING FOR MULTIPLE COMPONENTS ON A PRINTED CIRCUIT BOARD
81982970	F10006721	US	US8392586	Granted		15-May-2001	5-Sep-2020	3,606.00	METHOD AND APPARATUS TO MANAGE TRANSACTIONS AT A NETWORK STORAGE DEVICE
81988511	F10010394	US	US6859892	Granted		25-Apr-2001	N/A	N/A	SYNCHRONOUS BREAKPOINT SYSTEM AND METHOD

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81989456	F10010858	US	US7020800	Granted		24-Jan-2002	N/A	N/A	SYSTEM AND METHOD FOR MEMORY FAILURE RECOVERY USING LOCKSTEP PROCESSES
82079957	F100110432	JP	JP4309215	Granted		9-Sep-2003	15-May-2021	1,069.38	CIRCUIT COOLING APPARATUS
82079963	F100110432	US	US7019973	Granted		9-Jun-2004	N/A	N/A	CIRCUIT COOLING APPARATUS
82079960	F100110432	GB	GB2393330	Granted		28-Aug-2003	28-Aug-2020	754.86	CIRCUIT COOLING APPARATUS
82080047	F100110473	US	US7218917	Granted		15-Jan-2002	N/A	N/A	METHOD FOR SEARCHING NODES FOR INFORMATION
82080056	F100110473	JP	JP4002890	Granted		15-Jan-2003	24-Aug-2021	1,655.14	A METHOD FOR SEARCHING NODES FOR INFORMATION
82080059	F100110473	DE	DE60308144.4	Granted		15-Jan-2003	15-Jan-2021	2,257.04	A METHOD FOR SEARCHING NODES FOR INFORMATION
82081022	F100111090	US	US6886353	Granted		31-Oct-2003	N/A	N/A	COOLING SYSTEM
82081025	F100111090	US	US6854287	Granted		31-Oct-2003	N/A	N/A	COOLING SYSTEM
82097813	F100111090	US	US6938433	Granted		4-Dec-2002	N/A	N/A	COOLING SYSTEM WITH EVAPORATORS DISTRIBUTED IN SERIES
82097822	F100111090	JP	JP4927335	Granted		21-Nov-2003	17-Feb-2021	663.85	COOLING SYSTEM WITH EVAPORATORS DISTRIBUTED IN SERIES

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82097831	F100111090	GB	GB1466234	Granted		21-Nov-2003	21-Nov-2020	753.48	COOLING SYSTEM WITH EVAPORATORS DISTRIBUTED IN SERIES
82097834	F100111090	DE	DE60305436.6	Granted		21-Nov-2003	21-Nov-2020	2,039.61	COOLING SYSTEM WITH EVAPORATORS DISTRIBUTED IN SERIES
82097837	F100111090	FR	FR1466234	Granted		21-Nov-2003	21-Nov-2020	837.35	COOLING SYSTEM WITH EVAPORATORS DISTRIBUTED IN SERIES
82082273	F100111613	US	US6957353	Granted		31-Oct-2001	N/A	N/A	SYSTEM AND METHOD FOR PROVIDING MINIMAL POWER-CONSUMING REDUNDANT COMPUTING HARDWARE FOR DISTRIBUTED SERVICES
81990701	F10011295	US	US8036983	Granted		18-Jan-2002	11-Apr-2023	7,706.00	SYSTEM FOR AND METHOD OF WEB BASED NON-WAGE COMPENSATION
81998180	F10014757	US	US7020145	Granted		24-Sep-2001	N/A	N/A	NETWORK TOPOLOGY MANAGER
82001252	F10016873	US	US7571143	Granted		15-Jan-2002	4-Feb-2021	7,706.00	SOFTWARE PAY-PER-USE PRICING
82006175	F10019538	US	US6912607	Granted		6-Feb-2002	N/A	N/A	METHOD AND APPARATUS FOR ASCERTAINING THE STATUS OF MULTIPLE DEVICES SIMULTANEOUS LY OVER A DATA BUS

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82006970	F10019860	US	US6832270	Granted		8-Mar-2002	N/A	N/A	VIRTUALIZATION OF COMPUTER SYSTEM INTERCONNECTS
82082900	F100200127	US	US7085884	Granted		30-Jun-2003	N/A	N/A	SYSTEM AND METHOD FOR STORING OPERATIONAL DATA OF A STORAGE AUTOMATION DEVICE TO A REMOVABLE NONVOLATILE MEMORY COMPONENT
82082906	F100200127	US	US8370574	Granted		13-Jun-2006	5-Aug-2020	3,606.00	SYSTEM AND METHOD FOR STORING CONFIGURATION DATA OF A STORAGE AUTOMATION DEVICE
82083239	F100200246	US	US7266598	Granted		22-Oct-2002	N/A	N/A	PROGRAMMABLE DATA CENTER
82085048	F100201076	US	US6822878	Granted		9-Oct-2002	N/A	N/A	CIRCUIT BOARD SUPPORT ARRANGEMENT, METHOD, AND METHOD FOR USING THE SAME
82085051	F100201076	GB	GB2394121	Granted		23-Sep-2003	23-Sep-2020	754.86	CIRCUIT BOARD SUPPORT ARRANGEMENT, METHOD, AND METHOD FOR USING THE SAME
82085873	F100201476	US	US7519800	Granted		27-Mar-2003	N/A	N/A	APPARATUS AND METHOD FOR ENFORCING HOMOGENEITY WITHIN PARTITIONS OF HETEROGENEOUS COMPUTER SYSTEMS

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82086638	F100201724	US	US6854284	Granted		31-Oct-2003	N/A	N/A	COOLING OF DATA CENTERS
82086647	F100201724	US	US6868683	Granted		31-Oct-2003	N/A	N/A	COOLING OF DATA CENTERS
82086650	F100201724	US	US6945058	Granted		14-May-2004	N/A	N/A	COOLING OF DATA CENTERS
82086680	F100201734	US	US6812719	Granted		28-May-2003	N/A	N/A	ELECTRONIC PROBE WITH A TIP THAT IS SECURABLE TO AN ELECTRONIC DEVICE
82087196	F100201875	US	US6924777	Granted		17-Mar-2003	N/A	N/A	ENHANCED ANTENNA USING FLEXIBLE CIRCUITRY
82087199	F100201875	JP	JP4421333	Granted		2-Mar-2004	11-Dec-2020	917.77	ANTENNA WITH ENHANCED PERFORMANCE USING FLEXIBLE CIRCUIT ELEMENT
82087886	F100202130	US	US7229050	Granted		27-Nov-2002	N/A	N/A	RACEWAY SYSTEM
82088003	F100202179	US	US7513779	Granted		4-Jun-2003	N/A	N/A	CONNECTOR HAVING A BYPASS CAPACITOR AND METHOD FOR REDUCING THE IMPEDANCE AND LENGTH OF A RETURN-SIGNAL PATH
82088006	F100202179	GB	GB2402813	Granted		19-May-2004	19-May-2021	764.74	CONNECTOR HAVING A BYPASS CAPACITOR AND METHOD FOR REDUCING THE IMPEDANCE AND LENGTH OF A RETURN-SIGNAL PATH

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82088642	F100202606	US	US7058828	Granted		12-Aug-2002	N/A	N/A	SYSTEM, METHOD AND APPARATUS FOR THE FREQUENCY MANAGEMENT OF BLADES IN A BLADED ARCHITECTURE BASED ON PERFORMANCE REQUIREMENTS
82088648	F100202606	GB	GB2393540	Granted		25-Jul-2003	25-Jul-2021	837.70	SYSTEM, METHOD AND APPARATUS FOR THE FREQUENCY MANAGEMENT OF BLADES IN A BLADED ARCHITECTURE BASED ON PERFORMANCE REQUIREMENTS
82088660	F100202606	US	US7076671	Granted		12-Aug-2002	N/A	N/A	MANAGING AN OPERATING FREQUENCY OF PROCESSORS IN A MULTI-PROCESSOR COMPUTER SYSTEM
82088894	F100202721	US	US6925409	Granted		3-Oct-2002	N/A	N/A	SYSTEM AND METHOD FOR PROTECTION OF ACTIVE FILES DURING EXTREME CONDITIONS
82089791	F100203149	US	US6854092	Granted		12-Aug-2002	N/A	N/A	REDUCING VARIATION IN RANDOMIZED NANOSCALE CIRCUIT CONNECTIONS
82090853	F100204043	US	US7360295	Granted		15-Mar-2005	N/A	N/A	SYSTEM AND METHOD FOR SECURELY POSITIONING APPARATUS WITHIN A HOUSING

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82091672	F100204699	US	US6867362	Granted		7-Mar-2003	N/A	N/A	CABLE EXTENSION FOR REDUCING EMI EMISSIONS
82093010	F200205329	US	US6856518	Granted		14-Jul-2003	N/A	N/A	ASSEMBLY FOR SUPPORTING A SHORT PRINTED CIRCUIT CARD
82093061	F200205355	US	US7673125	Granted		26-Jun-2003	2-Sep-2021	7,406.00	RESETTING MULTIPLE CELLS WITHIN A PARTITION OF A MULTIPLE PARTITION COMPUTER SYSTEM
82093649	F200205884	US	US7049796	Granted		17-Jan-2003	N/A	N/A	HOT SWAP POWER DELIVERY CIRCUIT
82093655	F200205884	GB	GB2397447	Granted		30-Dec-2003	30-Dec-2020	753.48	HOT SWAP POWER DELIVERY CIRCUIT
82093763	F200205935	US	US6877926	Granted		10-Sep-2002	N/A	N/A	SLIDE MEMBER POSITIVE COUPLING ALIGNMENT ASSEMBLY
82093766	F200205938	US	US7025430	Granted		10-Sep-2002	N/A	N/A	BALL RETAINER FORWARD LOCKING ASSEMBLY
82094612	F200206279	US	US7047471	Granted		3-Mar-2003	N/A	N/A	VOLTAGE MARGIN TESTING OF BLADED SERVERS
82095557	F200206690	US	US7039734	Granted		24-Sep-2002	N/A	N/A	SYSTEM AND METHOD OF MASTERING A SERIAL BUS

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82100279	F200208659	US	US7483142	Granted		3-May-2006	27-Jul-2020	7,406.00	SECURITY SYSTEMS AND MONITORING METHODS USING QUANTUM STATES
82100504	F200208714	US	US7068498	Granted		20-May-2003	N/A	N/A	COMPUTER SYSTEM WITH SLIDABLE MOTHERBOARD
82100846	F200208792	US	US6866540	Granted		18-Apr-2003	N/A	N/A	INDICIA-EQUIPPED ACTUATOR ASSEMBLY
82101308	F200208936	US	US7140801	Granted		22-Aug-2003	N/A	N/A	PRE-LOADING LATCH
82101962	F200209130	US	US7453701	Granted		17-Aug-2005	N/A	N/A	COMPUTER SYSTEM WITH MOVABLE CARD GUIDE
82103468	F200209593	US	US8533828	Granted		21-Jan-2003	10-Mar-2021	3,606.00	A SYSTEM FOR PROTECTING SECURITY OF A PROVISIONABLE NETWORK
82103564	F200209624	GB	GB2410846	Granted		2-Feb-2005	2-Feb-2021	691.79	REDUNDANT INPUT POWER SYSTEM
82217681	F200210205	US	US7092850	Granted		29-Sep-2005	N/A	N/A	SENSOR SIGNAL DEBOUNCING
82106249	F200300486	US	US7324685	Granted		20-Oct-2003	N/A	N/A	INSPECTION SYSTEMS AND METHODS

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82120604	F200302365	US	US7152174	Granted		6-Mar-2003	N/A	N/A	METHOD AND APPARATUS FOR OPERATING A SERVER SYSTEM INCLUDING DETERMINING THE POWER SUPPLIED BY ONE OF A PLURALITY OF POWER SUPPLIES BY MEASURING VOLTAGE ON A LOAD SHARE SIGNAL LINE
82121690	F200302533	US	US7015682	Granted		30-Jan-2003	N/A	N/A	CONTROL OF A POWER FACTOR CORRECTED SWITCHING POWER SUPPLY
82121813	F200302570	US	US6858792	Granted		19-Dec-2002	N/A	N/A	TOOL-LESS COUPLING ASSEMBLY
82167731	F200308561	US	US7539027	Granted		29-Oct-2007	26-Nov-2020	7,406.00	FORCE DISTRIBUTING SPRING ELEMENT
82167908	F200308604	US	US7035096	Granted		31-Oct-2003	N/A	N/A	LOCKING MECHANISM FOR REMOVABLE COMPONENTS
82169174	F200309140	US	US6989523	Granted		11-Apr-2003	N/A	N/A	PHOTON NUMBER RESOLVING SYSTEMS AND METHODS
82180925	F200309140	US	US7002133	Granted		3-Oct-2003	N/A	N/A	DETECTING ONE OR MORE PHOTONS FROM THEIR INTERACTIONS WITH PROBE PHOTONS IN A MATTER SYSTEM

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82169510	F200309294	US	US7578733	Granted		27-Jul-2004	25-Feb-2021	7,706.00	ENCLOSURES WITH REDUNDANT FANS IN DOORS WITH INTERLOCKS
82169516	F200309297	US	US7447043	Granted		22-Dec-2003	N/A	N/A	POWER CABLING ASSEMBLY
82170770	F200309815	US	US7608194	Granted		6-Jul-2007	27-Apr-2021	7,706.00	PHOTONIC STRUCTURES, DEVICES, AND METHODS
82171055	F200309900	US	US8825902	Granted		27-Oct-2003	2-Mar-2022	3,606.00	CONFIGURATION VALIDATION CHECKER
82173314	F200310798	US	US7275068	Granted		19-Dec-2003	N/A	N/A	DISCOVERING COMMUNITIES-OF-PRACTICE
82174166	F200311115	US	US7222246	Granted		26-Sep-2003	N/A	N/A	METHOD FOR DETERMINING NUMBER OF DYNAMICALLY TEMPERATURE-ADJUSTED POWER SUPPLY UNITS NEEDED TO SUPPLY POWER ACCORDING TO MEASURE OPERATING TEMPERATURE OF POWER SUPPLY UNITS
82178384	F200312862	US	US7496740	Granted		26-Jul-2004	24-Aug-2020	7,406.00	ACCESSING INFORMATION ASSOCIATED WITH AN ADVANCED CONFIGURATION AND POWER INTERFACE ENVIRONMENT

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82179812	F200313515	US	US7502699	Granted		29-Jul-2005	10-Sep-2020	7,406.00	SYSTEM AND METHOD FOR MONITORING POWER IN A FRONT END RECTIFIER POWER SYSTEM
82180610	F200313804	US	US7277292	Granted		28-Apr-2004	N/A	N/A	EXPANDABLE BRACING APPARATUS AND METHOD
82181489	F200314217	US	US7133173	Granted		26-Jul-2004	N/A	N/A	NONLINEAR ELECTROMAGNETIC QUANTUM INFORMATION PROCESSING
82181498	F200314217	JP	JP4684294	Granted		28-Jun-2005	18-Feb-2021	1,249.62	NONLINEAR ELECTROMAGNETIC QUANTUM INFORMATION PROCESSING
82181501	F200314217	CN	CN200580024861.2	Granted		28-Jun-2005	28-Jun-2021	1,367.42	NONLINEAR ELECTROMAGNETIC QUANTUM INFORMATION PROCESSING
82184933	F200315657	US	US7512825	Granted		27-Sep-2004	30-Sep-2020	7,406.00	RESPONDING TO DC POWER DEGRADATION
82184936	F200315657	GB	GB2418502	Granted		13-Sep-2005	13-Sep-2020	610.84	RESPONDING TO DC POWER DEGRADATION
82185953	F200316140	US	US7380146	Granted		22-Apr-2005	N/A	N/A	POWER MANAGEMENT SYSTEM
82191062	F200401898	US	US7330119	Granted		29-Apr-2005	N/A	N/A	REMOTE MEASUREMENT EMPLOYING RFID
82191953	F200401898	JP	JP5022417	Granted		11-Sep-2009	22-Jun-2021	844.09	REMOTE MEASUREMENT OF MOTION EMPLOYING RFID

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82193378	F200402827	US	US7031870	Granted		28-May-2004	N/A	N/A	DATA CENTER EVALUATION USING AN AIR RE-CIRCULATION INDEX
82193786	F200402979	US	US7643458	Granted		25-May-2005	5-Jul-2021	7,406.00	COMMUNICATING BETWEEN WIRELESS COMMUNITIES
82199909	F200405637	US	US7514816	Granted		19-May-2005	N/A	N/A	OUTPUT CURRENT THRESHOLD ADJUSTMENT FOR A POWER SUPPLY
82201862	F200406613	US	US7492803	Granted		10-Jun-2005	17-Aug-2020	7,406.00	FIBER-COUPLED SINGLE PHOTON SOURCE
82201871	F200406613	JP	JP5068256	Granted		9-Jun-2006	24-Aug-2020	307.99	FIBER-COUPLED SINGLE PHOTON SOURCE
82201952	F200406639	US	US7289690	Granted		15-Apr-2005	N/A	N/A	PHOTONIC CRYSTAL DEVICE FOR FLUID SENSING
82202276	F200406843	US	US7544072	Granted		29-Oct-2007	9-Dec-2020	7,406.00	RETRACTABLE PROTECTION APPARATUS FOR ELECTRONIC DEVICE PINS
82208555	F200501254	US	US7742310	Granted		29-Sep-2006	22-Dec-2021	7,706.00	SEQUENCER
82208558	F200501254	GB	GB2442308	Granted		12-Sep-2007	12-Sep-2020	438.03	SEQUENCER
82208633	F200501301	US	US7186150	Granted		27-Oct-2005	N/A	N/A	SPLIT KEY IN A PRESS-FIT CONNECTOR
82210004	F200502098	US	US8000462	Granted		12-Aug-2005	16-Feb-2023	7,706.00	SCREENING OF CALLS IN A PACKET-BASED NETWORK

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82210010	F200502098	CN	CN200680038219.4	Granted		7-Aug-2006	7-Aug-2020	985.42	SCREENING OF CALLS IN A PACKET-BASED NETWORK
82210016	F200502098	IN	IN280291	Granted		7-Aug-2006	7-Aug-2020	416.00	SCREENING OF CALLS IN A PACKET-BASED NETWORK
83881516	F200502098	DE	DE602006041022.0	Granted		7-Aug-2006	7-Aug-2020	1,272.38	SCREENING OF CALLS IN A PACKET-BASED NETWORK
83881518	F200502098	GB	GB1920586	Granted		7-Aug-2006	7-Aug-2020	524.44	SCREENING OF CALLS IN A PACKET-BASED NETWORK
82213148	F200503639	US	US7474810	Granted		15-May-2007	6-Jul-2020	7,406.00	METHOD AND APPARATUS FOR CONTROLLING LIGHT FLUX WITH SUB-MICRON PLASMON WAVEGUIDES
82214672	F200504645	US	US7924413	Granted		29-Feb-2008	12-Oct-2022	7,706.00	NANOWIRE-BASED PHOTONIC DEVICES
82214693	F200504645	US	US7465954	Granted		28-Apr-2006	N/A	N/A	NANOWIRE DEVICES AND SYSTEMS, LIGHT-EMITTING NANOWIRES, AND METHODS OF PRECISELY POSITIONING NANOPARTICLES
82214696	F200504645	US	US7910915	Granted		23-Oct-2008	22-Sep-2022	7,706.00	NANOWIRE DEVICES AND SYSTEMS, LIGHT-EMITTING NANOWIRES, AND METHODS OF PRECISELY POSITIONING NANOPARTICLES

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82216058	F200505397	US	US9015308	Granted		17-Jan-2007	21-Oct-2022	3,766.00	MULTILAYER DISTRIBUTED PROCESSING SYSTEM
82216061	F200505397	GB	GB2449037	Granted		17-Jan-2007	17-Jan-2021	531.28	MULTILAYER DISTRIBUTED PROCESSING SYSTEM
82217819	F200506362	US	US7540746	Granted		6-Apr-2006	N/A	N/A	ELECTRICAL ENCODING OF CABLE TYPES AND CONFIGURATIONS
82219115	F200507109	CN	CN200780028366.8	Granted		11-Jul-2007	11-Jul-2020	985.42	COMPACT SYSTEMS FOR GENERATING POLARIZATION-ENTANGLED PHOTONS
83087119	F200507109	FR	FR2047319	Granted		11-Jul-2007	11-Jul-2020	483.88	COMPACT SYSTEMS FOR GENERATING POLARIZATION-ENTANGLED PHOTONS
83087121	F200507109	DE	DE602007026575.4	Granted		11-Jul-2007	11-Jul-2020	1,093.17	COMPACT SYSTEMS FOR GENERATING POLARIZATION-ENTANGLED PHOTONS
83087123	F200507109	GB	GB2047319	Granted		11-Jul-2007	11-Jul-2020	438.03	COMPACT SYSTEMS FOR GENERATING POLARIZATION-ENTANGLED PHOTONS
82219103	F200507109	US	US7639953	Granted		27-Jul-2006	29-Jun-2021	7,706.00	COMPACT SYSTEMS FOR GENERATING POLARIZATION-ENTANGLED PHOTONS

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82219112	F200507109	JP	JP4842378	Granted		11-Jul-2007	14-Oct-2021	1,069.38	COMPACT SYSTEMS FOR GENERATING POLARIZATION-ENTANGLED PHOTONS
82219238	F200507162	CN	CN200780035137.9	Granted		11-Jul-2007	11-Jul-2020	985.42	COMPACT, SINGLE-CHIP-BASED, ENTANGLED POLARIZATION-STATE PHOTON SOURCES AND METHODS FOR GENERATING PHOTONS IN ENTANGLED POLARIZATION STATES
82219226	F200507162	US	US7373059	Granted		22-Sep-2006	N/A	N/A	COMPACT, SINGLE CHIP-BASED, ENTANGLED POLARIZATION-STATE PHOTON SOURCES AND METHODS FOR GENERATING PHOTONS IN ENTANGLED POLARIZATION STATES
82219235	F200507162	JP	JP4864143	Granted		11-Jul-2007	18-Nov-2020	1,006.29	COMPACT, SINGLE-CHIP-BASED, ENTANGLED POLARIZATION-STATE PHOTON SOURCES AND METHODS FOR GENERATING PHOTONS IN ENTANGLED POLARIZATION STATES
82222280	F200600747	US	US7519245	Granted		31-Oct-2006	N/A	N/A	MODULAR ARRAY COMPUTER WITH OPTICAL INTERCELL COMMUNICATIONS PATHWAYS

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82222283	F200600749	US	US9052916	Granted		21-Sep-2006	9-Dec-2022	3,766.00	SYSTEM ROM WITH AN EMBEDDED DISK IMAGE
82222934	F200601104	US	US8387053	Granted		25-Jan-2007	26-Aug-2020	3,606.00	METHOD AND SYSTEM FOR ENHANCING COMPUTER PROCESSING PERFORMANCE
83019366	F200601661	US	US8357926	Granted		1-Jun-2012	22-Jul-2020	3,606.00	GAIN-CLAMPED SEMICONDUCTOR OPTICAL AMPLIFIERS
82224152	F200601661	US	US8212235	Granted		25-Apr-2007	3-Jan-2024	7,706.00	NANOWIRE-BASED OPTO-ELECTRONIC DEVICES
82224158	F200601661	CN	CN200880013724 2	Granted		25-Apr-2008	25-Apr-2021	1,032.98	NANOWIRE-BASED OPTO-ELECTRONIC DEVICES
82224167	F200601661	KR	KR101455706	Granted		25-Apr-2008	22-Oct-2021	463.28	NANOWIRE-BASED OPTO-ELECTRONIC DEVICES
82225475	F200602319	US	US8612973	Granted		26-Sep-2007	17-Jun-2021	3,766.00	METHOD AND SYSTEM FOR HANDLING INTERRUPTS WITHIN COMPUTER SYSTEM DURING HARDWARE RESOURCE MIGRATION
82226066	F200602534	US	US7498524	Granted		23-Apr-2007	3-Sep-2020	7,406.00	ENCLOSURE AND GASKET ASSEMBLY FOR REDUCING EMI
82227224	F200603002	US	US7466410	Granted		26-Jan-2007	N/A	N/A	PHOTONIC-BASED SENSORS AND METHODS FOR DETECTING ANALYTES

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82227767	F200603277	US	US7805041	Granted		21-Mar-2007	28-Mar-2022	7,706.00	ELECTROMAGNETIC RADIATION AMPLIFICATION SYSTEMS BASED ON PHOTONIC GRATINGS
82227773	F200603277	CN	CN200880009047.7	Granted		21-Mar-2008	21-Mar-2021	1,032.98	ELECTROMAGNETIC RADIATION AMPLIFICATION SYSTEMS BASED ON PHOTONIC GRATINGS
82232504	F200700946	CN	CN200880109804.8	Granted		30-Jul-2008	30-Jul-2020	985.42	SYSTEM AND METHODS FOR ROUTING OPTICAL SIGNALS
82232498	F200700946	US	US7499615	Granted		1-Aug-2007	3-Sep-2020	7,406.00	SYSTEM AND METHODS FOR ROUTING OPTICAL SIGNALS
82232513	F200700946	KR	KR10-1508619	Granted		30-Jul-2008	30-Mar-2021	486.67	SYSTEM AND METHODS FOR ROUTING OPTICAL SIGNALS
82405250	F200700946	US	US8811778	Granted		6-May-2008	19-Feb-2022	3,766.00	SYSTEMS AND METHODS FOR ROUTING OPTICAL SIGNALS
82234532	F200701455	US	US7929865	Granted		27-Jul-2007	19-Oct-2022	7,706.00	FREE SPACE WDM SIGNAL DETECTOR
82234544	F200701455	JP	JP5133414	Granted		16-Jul-2008	16-Nov-2020	390.76	FREE SPACE WDM SIGNAL DETECTOR
82234658	F200701481	US	US7477441	Granted		24-Jul-2007	13-Jul-2020	7,406.00	MEMS DEVICE WITH NANOWIRE STANDOFF LAYER
82235153	F200701619	US	US8351204	Granted		31-Jan-2008	8-Jul-2020	3,606.00	MODULAR DATA PROCESSING COMPONENTS AND SYSTEMS

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82235141	F200701619	CN	CN200880128462.4	Granted		31-Jan-2008	31-Jan-2021	1,032.98	MODULAR DATA PROCESSING COMPONENTS AND SYSTEMS
82235150	F200701619	KR	KR10-1434239	Granted		31-Jan-2008	20-Aug-2021	415.63	MODULAR DATA PROCESSING COMPONENTS AND SYSTEMS
82235552	F200701730	US	US8738658	Granted		23-Apr-2008	27-Nov-2021	3,766.00	METHOD FOR USING PATHS IN A DIRECTORY FOR LOCATING OBJECTS
82237004	F200702142	US	US9032397	Granted		28-May-2008	12-Nov-2022	3,766.00	VIRTUAL MACHINE MIGRATION WITH DIRECT PHYSICAL ACCESS CONTROL
82239494	F200702925	CN	CN200880128457.3	Granted		31-Jan-2008	31-Jan-2021	990.04	FREE SPACE OPTICAL INTERCONNECT
82239500	F200702925	JP	JP5205473	Granted		31-Jan-2008	22-Feb-2021	366.26	FREE SPACE OPTICAL INTERCONNECT
82239503	F200702925	KR	KR10-1395169	Granted		31-Jan-2008	8-May-2021	451.15	FREE SPACE OPTICAL INTERCONNECT
82245326	F200702925	JP	JP5155444	Granted		7-May-2008	14-Dec-2020	406.20	ARRAYS, SYSTEM AND METHOD FOR BI-DIRECTIONAL DATA TRANSMISSION
82245329	F200702925	KR	KR10-1453946	Granted		7-May-2008	16-Oct-2021	530.62	ARRAYS, SYSTEM AND METHOD FOR BI-DIRECTIONAL DATA TRANSMISSION
82405286	F200702925	US	US8611758	Granted		7-May-2008	17-Jun-2021	3,766.00	ARRAYS, SYSTEM AND METHOD FOR BI-DIRECTIONAL DATA TRANSMISSION

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82240844	F200703347	US	US8355251	Granted		21-Aug-2008	15-Jul-2020	3,606.00	REMOTE EXHAUST FOR RACK SYSTEMS
82241627	F200703656	US	US8108645	Granted		26-Jun-2008	31-Jul-2023	7,706.00	OPTIMIZED MEMORY ALLOCATION VIA FEATURE EXTRACTION
82595701	F200800383	CN	CN200880130639.4	Granted		31-Jul-2008	31-Jul-2020	985.42	NANO-WIRE OPTICAL BLOCK DEVICES FOR AMPLIFYING, MODULATING, AND DETECTING OPTICAL SIGNALS
82595703	F200800383	DE	DE112008003958	Granted		31-Jul-2008	31-Jul-2020	913.97	NANO-WIRE OPTICAL BLOCK DEVICES FOR AMPLIFYING, MODULATING, AND DETECTING OPTICAL SIGNALS
82595705	F200800383	JP	JP5474065	Granted		31-Jul-2008	14-Feb-2021	397.69	NANO-WIRE OPTICAL BLOCK DEVICES FOR AMPLIFYING, MODULATING, AND DETECTING OPTICAL SIGNALS
82595707	F200800383	KR	KR10-1510356	Granted		31-Jul-2008	1-Apr-2021	593.23	NANO-WIRE OPTICAL BLOCK DEVICES FOR AMPLIFYING, MODULATING, AND DETECTING OPTICAL SIGNALS
82595709	F200800383	US	US8873893	Granted		31-Jul-2008	28-Apr-2022	3,766.00	NANO-WIRE OPTICAL BLOCK DEVICES FOR AMPLIFYING, MODULATING, AND DETECTING OPTICAL SIGNALS

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82247651	F200801450	US	US8127124	Granted		19-Mar-2009	28-Aug-2023	7,706.00	REMOTE CONFIGURATION OF COMPUTING PLATFORMS
82934043	F200801450	US	US8370610	Granted		24-Feb-2012	5-Aug-2024	7,706.00	REMOTE CONFIGURATION OF COMPUTING PLATFORMS
82654452	F200802164	CN	CN200880130978.2	Granted		4-Sep-2008	4-Sep-2020	985.42	DIELECTRIC WAVEGUIDE INTERSECTION WITH REDUCED LOSSES
82654456	F200802164	JP	JP5376544	Granted		4-Sep-2008	4-Oct-2021	397.69	DIELECTRIC WAVEGUIDE INTERSECTION WITH REDUCED LOSSES
82654458	F200802164	KR	KR10-1515870	Granted		4-Sep-2008	22-Apr-2021	664.27	DIELECTRIC WAVEGUIDE INTERSECTION WITH REDUCED LOSSES
82654460	F200802164	US	US8655124	Granted		4-Sep-2008	18-Aug-2021	3,766.00	DIELECTRIC WAVEGUIDE INTERSECTION WITH REDUCED LOSSES
82249022	F200802452	US	US8363654	Granted		7-Nov-2008	29-Jul-2020	3,606.00	PREDICTIVE PACKET FORWARDING FOR A NETWORK SWITCH
82250468	F200803661	US	US8477045	Granted		29-Oct-2009	2-Jan-2021	3,606.00	CONFIGURATION INFORMATION PROVIDED TO CONFIGURABLE ELECTRONIC DEVICE RESIDING IN A SHIPPING BOX
82938863	F200803670	US	US8780908	Granted		28-Oct-2009	15-Jan-2022	3,606.00	METHOD AND APPARATUS FOR TRACING A MULTICAST FLOW

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82259093	F200903003	US	US8521940	Granted		27-Oct-2009	27-Feb-2021	3,766.00	PAIRED NODE CONTROLLERS
82259711	F200903377	US	US8537859	Granted		26-Feb-2010	17-Mar-2021	3,766.00	REASSEMBLY OF MINI-PACKETS IN A BUFFER
82263698	F201000775	US	US8424826	Granted		12-Oct-2010	23-Oct-2024	7,406.00	ATTACHMENT APPARATUS FOR AN EXTERNAL POWER SUPPLY
83161099	F201001120	CN	CN201080068233.5	Granted		26-Jul-2010	26-Jul-2020	666.46	MITIGATION OF DETECTED PATTERNS IN A NETWORK DEVICE
83733017	F201001270	CN	CN201180071455.7	Granted		8-Aug-2011	8-Aug-2021	698.53	FABRIC CHIP HAVING TRUNKED LINKS
83733023	F201001270	US	US9369296	Granted		8-Aug-2011	14-Dec-2023	3,766.00	FABRIC CHIP HAVING TRUNKED LINKS
82264643	F201001462	US	US8353718	Granted		17-Dec-2010	15-Jan-2021	$4,260.00	HANDLE ASSEMBLY FOR ELECTRICAL CONNECTION WITH A GROUNDING MECHANISM
82271798	F201003557	US	US6829314	Granted		10-Aug-2000	N/A	N/A	ADAPTER FOR NEAR END CROSSTALK AND ECHO CANCELLER FOR BI-DIRECTIONAL DIGITAL COMMUNICATIONS
82271858	F201003574	US	US6882661	Granted		14-Sep-2000	N/A	N/A	SYSTEM FOR DETECTION OF ASYNCHRONOUS PACKET RATES AND MAINTENANCE OF MAXIMUM THEORETICAL PACKET RATE

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82271987	F201003620	US	US6694388	Granted		31-May-2000	N/A	N/A	DYNAMIC QUEUING SYSTEM INCORPORATING MULTIPLE QUEUES SHARING A SINGLE MEMORY
82272107	F201003667	US	US7286652	Granted		31-May-2000	N/A	N/A	FOUR CHANNEL AUDIO RECORDING IN A PACKET BASED NETWORK
82272131	F201003671	US	US6762995	Granted		14-Jun-2000	N/A	N/A	NETWORK SWITCH INCLUDING HYSTERESIS IN SIGNALLING FULLNESS OF TRANSMIT QUEUES
82272152	F201003677	US	US6807175	Granted		25-Aug-2000	N/A	N/A	DISTRIBUTED MULTICAST ROUTING IN PACKET-BASED COMMUNICATIO N NETWORK DEVICES
82272170	F201003682	US	US9112768	Granted		15-Sep-2000	18-Feb-2023	3,766.00	DISCOVERING NON MANAGED DEVICES IN A NETWORK SUCH AS A LAN USING HTTP
82272197	F201003693	US	US7512685	Granted		30-Nov-2000	N/A	N/A	METHOD AND SYSTEM FOR IMPLEMENTING WIRELESS DATA TRANSFERS BETWEEN A SELECTED GROUP OF MOBILE COMPUTING DEVICES

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82272332	F201003764	US	US7233601	Granted		14-Sep-2000	N/A	N/A	CASCADE ARCHITECTURE AND OPERATION FOR PACKET-BASED COMMUNICATIO N SYSTEMS
82272380	F201003773	US	US6928059	Granted		15-Sep-2000	N/A	N/A	EFFICIENT METHOD OF DEDUCING NETWORK TOPOLOGY INCLUDING ENDSTATIONS
82272401	F201003780	US	US6574414	Granted		8-Jan-2001	N/A	N/A	LIGHT TRANSMISSION APPARATUS AND METHOD
82272431	F201003795	US	US6856683	Granted		28-Feb-2001	N/A	N/A	METHOD FOR REDUCING NOISE FROM A NON-LINEAR DEVICE THAT SHARES A CUSTOMER LOOP WITH AN ASYMMETRIC DIGITAL SUBSCRIBER LINE MODEM
82272446	F201003802	US	US6801950	Granted		25-Sep-2000	N/A	N/A	STACKABLE NETWORK UNIT INCLUDING REGISTER FOR IDENTIFYING TRUNK CONNECTION STATUS OF STACKED UNITS
82272479	F201003814	US	US6912206	Granted		15-Sep-2000	N/A	N/A	DISCOVERY OF PHONES ON A NETWORK, SUCH AS A LAN

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82272509	F201003831	US	US6857027	Granted		14-Nov-2000	N/A	N/A	INTELLIGENT NETWORK TOPOLOGY AND CONFIGURATION VERIFICATION USING A METHOD OF LOOP DETECTION
82272587	F201003853	US	US7673034	Granted		9-Aug-2000	2-Sep-2021	7,706.00	SELF SERVICE DATA INTERFACE
82272593	F201003853	US	US7463732	Granted		9-Aug-2000	N/A	N/A	FLEXIBLE DATA OUTLET
82272701	F201003916	US	US6847635	Granted		20-Jun-2000	N/A	N/A	METHOD TO TRANSMIT SILENCE COMPRESSED VOICE OVER IP EFFICIENTLY IN DOCSIS CABLE NETWORKS
82272746	F201003933	US	US6865223	Granted		5-Feb-2001	N/A	N/A	EQUALIZER ADAPTER FOR A PULSE AMPLITUDE MODULATION RECEIVER
82272749	F201003934	US	US6996062	Granted		28-Feb-2001	N/A	N/A	POLICY-BASED WEIGHTED RANDOM EARLY DETECTION METHOD FOR AVOIDING CONGESTION IN INTERNET TRAFFIC
82272767	F201003939	US	US6694360	Granted		9-Jun-2000	N/A	N/A	MULTI-MODE NETWORK INTERFACE HAVING LOADABLE SOFTWARE IMAGES

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82272824	F201003964	US	US7062569	Granted		19-Jan-2001	N/A	N/A	CASCADE CONTROL ARCHITECTURE AND OPERATION FOR PACKET-BASED COMMUNICATIO N SYSTEMS
82272863	F201003994	US	US6829309	Granted		5-Feb-2001	N/A	N/A	PHASE DETECTOR FOR BAUD RATE-SAMPLED MULTI-STATE SIGNAL RECEIVER
82272998	F201004060	US	US7366168	Granted		3-Apr-2001	N/A	N/A	TCP CONTROL PACKET DIFFERENTIAL SERVICE
82273007	F201004067	US	US6914952	Granted		19-Jan-2001	N/A	N/A	SUPERFRAME ALIGNMENT TO A PRE-EXISTING ADSL DATA EXCHANGE
82273139	F201004136	US	US6920172	Granted		2-Jan-2001	N/A	N/A	DUAL PURPOSE SPREAD SPECTRUM RADIO RECEIVERS WITH CONTROLLED FREQUENCY REJECTION
82273160	F201004139	US	US6839360	Granted		20-Feb-2001	N/A	N/A	FIFO STORAGE INCLUDING POINTER MISALIGNMENT DETECTION
82273172	F201004141	US	US6819680	Granted		26-Mar-2001	N/A	N/A	LINK AGGREGATION CONTROL FOR NETWORK DEVICES
82273190	F201004170	US	US6973513	Granted		9-Apr-2001	N/A	N/A	METHOD FOR EFFICIENT USE OF A TRANSMIT ENGINE

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82273208	F201004177	US	US6854015	Granted		28-Feb-2001	N/A	N/A	SYSTEM FOR ISOLATING ETHERNET NETWORK TRAFFIC
82273253	F201004202	US	US6963921	Granted		16-Feb-2001	N/A	N/A	METHOD AND APPARATUS FOR HARDWARE ASSISTED TCP PACKET RE-ASSEMBLY
82273268	F201004211	US	US6963541	Granted		27-Feb-2001	N/A	N/A	UPSTREAM TRANSMISSION PROFILES FOR A DOCSIS OR DOCSIS-LIKE SYSTEM
82273295	F201004225	US	US6873701	Granted		29-Mar-2001	N/A	N/A	SYSTEM AND METHOD FOR DTMF DETECTION USING LIKELIHOOD RATIOS
82273307	F201004227	US	US6868088	Granted		26-Apr-2001	N/A	N/A	AUTOMATIC DETECTOR OF MEDIA INTERFACE PROTOCOL TYPE
82273313	F201004228	US	US7340515	Granted		10-Jul-2001	N/A	N/A	OPTIMISATION OF NETWORK CONFIGURATION
82273319	F201004229	US	US7385939	Granted		2-Jul-2001	N/A	N/A	NETWORK MANAGEMENT APPARATUS AND METHOD FOR DETERMINING THE TOPOLOGY OF A NETWORK
82273325	F201004230	US	US7673035	Granted		2-Jul-2001	2-Sep-2021	7,706.00	APPARATUS AND METHOD FOR PROCESSING DATA RELATING TO EVENTS ON A NETWORK

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82273337	F201004232	US	US7016955	Granted		2-Jul-2001	N/A	N/A	NETWORK MANAGEMENT APPARATUS AND METHOD FOR PROCESSING EVENTS ASSOCIATED WITH DEVICE REBOOT
82273376	F201004271	US	US7010588	Granted		2-Jul-2001	N/A	N/A	A SYSTEM USING A SERIES OF EVENT PROCESSORS FOR PROCESSING NETWORK EVENTS TO REDUCE NUMBER OF EVENTS TO BE DISPLAYED
82273394	F201004275	US	US7065670	Granted		31-Oct-2002	N/A	N/A	SERVER MONITORING AND FAILOVER MECHANISM
82273406	F201004278	US	US7028086	Granted		22-Aug-2001	N/A	N/A	APPARATUS, METHOD, AND COMPUTER PROGRAM FOR DETECTION OF SERVER-LIKE DEVICES ON A COMPUTER NETWORK BASED ON INGRESS TO EGRESS NETWORK TRAFFIC RATIOS
82273439	F201004307	US	US6877145	Granted		2-Aug-2001	N/A	N/A	AUTOMATIC GENERATION OF INTERCONNECT LOGIC COMPONENTS
82273496	F201004328	US	US7392518	Granted		21-Feb-2002	N/A	N/A	ROBUST REMOTE FLASH ROM UPGRADE SYSTEM AND METHOD

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82273550	F201004338	US	US6970921	Granted		27-Jul-2001	N/A	N/A	NETWORK INTERFACE SUPPORTING VIRTUAL PATHS FOR QUALITY OF SERVICE
82273604	F201004359	US	US7225236	Granted		7-Aug-2001	N/A	N/A	LOAD BALANCING BETWEEN LNSS USING VIRTUAL LNS WITH MINIMAL LAC CONFIGURATION
82273751	F201004415	US	US7340536	Granted		22-Jan-2002	N/A	N/A	METHOD AND APPARATUS FOR DETERMINING UNMANAGED NETWORK DEVICES IN THE TOPOLOGY OF A NETWORK
82273757	F201004416	US	US6915448	Granted		24-Apr-2002	N/A	N/A	STORAGE DISK FAILOVER AND REPLACEMENT SYSTEM
82273814	F201004432	US	US7042889	Granted		4-Mar-2002	N/A	N/A	NETWORK SWITCH WITH PARALLEL WORKING OF LOOK-UP ENGINE AND NETWORK PROCESSOR
82273865	F201004452	US	US7274703	Granted		16-Jul-2002	N/A	N/A	STACKABLE NETWORK UNITS WITH RESILIENCY FACILITY
82273868	F201004452	GB	GB2386524	Granted		29-Aug-2002	29-Aug-2021	896.07	STACKABLE NETWORKS UNITS WITH RESILIENCE FACILITY

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82273871	F201004453	US	US7249183	Granted		4-Jun-2002	N/A	N/A	METHOD TO ENABLE CONTINUOUS MOBILITY ACROSS WIRED AND WIRELESS NETWORK INTERFACES
82273874	F201004454	US	US7564861	Granted		22-Aug-2002	21-Jan-2021	7,706.00	SYSTEMS AND METHODS FOR COMPRESSING DATA
82273883	F201004458	US	US7283555	Granted		25-Jun-2002	N/A	N/A	METHOD AND APPARATUS FOR DETERMINING A POLLING INTERVAL IN A NETWORK MANAGEMENT SYSTEM
82273907	F201004475	US	US7564835	Granted		6-Nov-2002	21-Jan-2021	7,406.00	SYSTEM AND METHOD FOR MAXIMIZING THE USE OF BANDWIDTH OPTIMIZATION TECHNIQUES IN VOICE-OVER-PACKET CONNECTIONS
82273931	F201004480	US	US7123615	Granted		11-Mar-2002	N/A	N/A	STACKED NETWORK ROUTERS
82273988	F201004504	US	US8307063	Granted		25-Jun-2002	6-May-2024	7,706.00	METHOD AND APPARATUS FOR MANAGING DATA TRAFFIC ASSOCIATED WITH A USER ON A NETWORK
82274069	F201004528	US	US6807266	Granted		30-Aug-2002	N/A	N/A	METHOD AND APPARATUS FOR PROVISIONING A SOFT SWITCH
82274084	F201004533	US	US6839239	Granted		17-Jul-2002	N/A	N/A	ELECTRONIC DEVICE PACKAGING

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82274096	F201004537	US	US7089424	Granted		10-May-2002	N/A	N/A	PERIPHERAL DEVICE FOR PROTECTING DATA STORED ON HOST DEVICE AND METHOD AND SYSTEM USING THE SAME
82274120	F201004543	US	US7274750	Granted		27-Sep-2002	N/A	N/A	GAIN AND PHASE IMBALANCE COMPENSATION FOR OFDM SYSTEMS
82274231	F201004569	US	US7490155	Granted		13-Mar-2003	N/A	N/A	MANAGEMENT AND CONTROL FOR INTERACTIVE MEDIA SESSIONS
82274267	F201004572	US	US7420968	Granted		6-Jun-2003	N/A	N/A	HIGH-SPEED SWITCH ARCHITECTURE
82274273	F201004573	US	US7362750	Granted		17-Jun-2003	N/A	N/A	SWITCH MODULE ARCHITECTURE
82274282	F201004575	US	US7391784	Granted		30-Dec-2002	N/A	N/A	METHOD AND SYSTEM FOR COMMUNICATIN G STATE INFORMATION BETWEEN DEVICES OF A COMMUNICATIO NS NETWORK
82274294	F201004582	US	US7480723	Granted		8-Apr-2003	N/A	N/A	METHOD AND SYSTEM FOR PROVIDING DIRECTORY BASED SERVICES
82576918	F201006045	US	USD732547	Granted		31-Jan-2011	N/A	N/A	BEZEL WITH DOCKING RECESS
83852687	F201006045	US	USD753664	Granted		1-Apr-2014	N/A	N/A	BEZEL WITH DOCKING RECESS

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84161772	F201006045	US	USD765088	Granted		24-Feb-2015	N/A	N/A	BEZEL WITH DOCKING RECESS
82062347	F30003063	US	US6941476	Granted		10-May-2001	N/A	N/A	INFORMATION STORAGE
82062344	F30003063	GB	GB2362970	Expired		31-May-2000	N/A	N/A	IMPROVEMENTS RELATING TO INFORMATION STORAGE
82065557	F30014514	US	US7363425	Granted		28-Dec-2001	N/A	N/A	SYSTEM AND METHOD FOR SECURING DRIVE ACCESS TO MEDIA BASED ON MEDIUM IDENTIFICATION NUMBERS
82065560	F30014514	JP	JP4716478	Granted		19-Dec-2002	8-Apr-2021	1,069.38	SYSTEM AND METHOD FOR SECURING DRIVE ACCESS TO MEDIA BASED ON MEDIUM IDENTIFICATION NUMBERS
82664940	F700205218	US	US8661279	Granted		19-Jul-2011	25-Aug-2021	3,766.00	POWER CAPPING USING C-STATES
82965470	F700207896	US	US8966313	Granted		30-Apr-2012	24-Aug-2022	3,766.00	SYSTEMS AND METHODS FOR A SHARED DEBUG PIN

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81974582	F10003624	US	US6862691	Granted		19-Sep-2001	N/A	N/A	REDUNDANT COMPONENT SYSTEM AND METHOD FOR FACILITATING ENDSYSTEM FUNCTIONALITY
81984005	F10007152	US	US6954928	Granted		8-Aug-2001	N/A	N/A	METHOD FOR SELECTING A SET OF PATCHES TO UPDATE A SYSTEM OF PROGRAMS
81986741	F10008034	US	US6708515	Granted		31-Aug-2001	N/A	N/A	PASSIVE SPRAY COOLANT PUMP
81986753	F10008038	US	US6886117	Granted		20-Nov-2001	N/A	N/A	FIELD REPAIRABLE EMBEDDED MEMORY IN SYSTEM-ON-A-CHIP
81986756	F10008039	US	US6910155	Granted		25-Jun-2001	N/A	N/A	SYSTEM AND METHOD FOR CHIP TESTING
81988508	F10010393	US	US6964035	Granted		3-Jul-2001	N/A	N/A	DEBUGGING AN OPERATING SYSTEM KERNEL WITH DEBUGGER SUPPORT IN A NETWORK INTERFACE CARD
81988553	F10010441	US	US6981104	Granted		12-Jul-2002	N/A	N/A	METHOD FOR CONDUCTING CHECKPOINTING WITHIN A WRITEBACK CACHE
81989051	F10010651	US	US6883091	Granted		30-May-2001	N/A	N/A	REDUCING BOOT TIMES VIA INTRUSION MONITORING

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83087160	F100110476	US	US9053458	Granted		7-Aug-2012	N/A	N/A	SYSTEM AND METHOD FOR PROFILING CLIENTS WITHIN A SYSTEM FOR HARVESTING COMMUNITY KNOWLEDGE
81990020	F10011053	US	US7076539	Granted		30-Jul-2001	N/A	N/A	NETWORK CONNECTIVITY ESTABLISHMENT AT USER LOG-IN
81991103	F10011520	US	US6976073	Granted		29-Nov-2001	N/A	N/A	TRANSPARENT REMOTE DATA STORAGE DEVICE AND METHOD
81991115	F10011521	US	US6907519	Granted		19-Mar-2002	N/A	N/A	SYSTEMS AND METHODS FOR INTEGRATING EMULATED AND NATIVE CODE
81993140	F10012290	US	US6874050	Granted		16-Jan-2002	N/A	N/A	CIRCUIT AND METHOD FOR EXPANDING A SERIAL BUS
81994784	F10012965	US	US7046587	Granted		23-Aug-2001	N/A	N/A	SYSTEMS AND METHODS FOR PROVIDING AUTOMATIC ACCESS TO DATA MEDIA IN A DATA STORAGE SYSTEM
81994793	F10012965	DE	DE60220350.3	Granted		22-Aug-2002	22-Aug-2020	2,108.66	SYSTEMS AND METHODS FOR PROVIDING AUTOMATIC ACCESS TO DATA MEDIA IN A DATA STORAGE SYSTEM

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81994799	F10012965	GB	GB1288937	Granted		22-Aug-2002	22-Aug-2020	826.86	SYSTEMS AND METHODS FOR PROVIDING AUTOMATIC ACCESS TO DATA MEDIA IN A DATA STORAGE SYSTEM
81995162	F10013118	US	US6901303	Granted		31-Jul-2001	N/A	N/A	METHOD AND APPARATUS FOR CONTROLLING FANS AND POWER SUPPLIES TO PROVIDE ACCELERATED RUN-IN TESTING
81996422	F10013826	US	US6889349	Granted		22-Aug-2001	N/A	N/A	DIGITAL EVENT SAMPLING CIRCUIT AND METHOD
81996431	F10013830	US	US6851064	Granted		22-Aug-2001	N/A	N/A	FINE-GRAINED THERMAL CONTROL IN MEMORY SUBSYSTEMS
82000199	F10016250	US	US6918027	Granted		30-Jul-2001	N/A	N/A	SYSTEM AND METHOD FOR IN-SYSTEM PROGRAMMING THROUGH AN ON-SYSTEM JTAG
82002023	F10017351	US	US6857047	Granted		10-Jun-2002	N/A	N/A	MEMORY COMPRESSION FOR COMPUTER SYSTEMS
82002458	F10017545	US	US7318120	Granted		24-Dec-2004	N/A	N/A	HARDWARE ASSISTED COMMUNICATIO N BETWEEN PROCESSORS
82002905	F10017839	US	US6909577	Granted		7-Jun-2002	N/A	N/A	LOW-OVERHEAD STORAGE MAGAZINE

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82002914	F10017840	US	US6883109	Granted		30-Jul-2001	N/A	N/A	METHOD FOR ACCESSING SCAN CHAINS AND UPDATING EEPROM-RESIDENT FPGA CODE THROUGH A SYSTEM MANGEMENT PROCESSOR AND JTAG BUS
82003640	F10018117	US	US7480815	Granted		10-Jun-2005	N/A	N/A	CONTROLLER COMMUNICATIONS OVER AN ALWAYS-ON CONTROLLER INTERCONNECT
82004525	F10018651	US	US7340749	Granted		3-Dec-2002	N/A	N/A	METHOD AND APPARATUS TO DETECT PRESENCE OF OR A SIZE OF A DATA CARTRIDGE
82004534	F10018651	DE	DE60307027.2	Granted		21-Nov-2003	21-Nov-2020	2,039.61	MEDIA-DETECTION SYSTEMS
82004993	F10019017	US	US6980884	Granted		16-Jul-2002	N/A	N/A	INTRUSION MONITORS FOR MEDIA STORAGE SYSTEMS
82005002	F10019017	DE	DE60332514.9	Granted		11-Jul-2003	11-Jul-2021	2,272.89	INTRUSION MONITORS FOR MEDIA STORAGE SYSTEMS
82005005	F10019017	FR	FR1383121	Granted		11-Jul-2003	11-Jul-2021	946.25	INTRUSION MONITORS FOR MEDIA STORAGE SYSTEMS
82005008	F10019017	GB	GB1383121	Granted		11-Jul-2003	11-Jul-2021	837.70	INTRUSION MONITORS FOR MEDIA STORAGE SYSTEMS
82086674	F10019724	US	US7263192	Granted		20-Mar-2002	N/A	N/A	ESTABLISHING AN ENCRYPTED SESSION

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82006889	F10019840	US	US6909570	Granted		25-Nov-2002	N/A	N/A	HARD DISK DRIVE STORAGE SYSTEM
82006910	F10019852	US	US7256435	Granted		2-Jun-2003	N/A	N/A	MULTILEVEL IMPRINT LITHOGRAPHY
82082915	F100200135	US	US7529966	Granted		20-Aug-2004	5-Nov-2020	7,406.00	STORAGE SYSTEM WITH JOURNALING
82084247	F100200743	US	US6858162	Granted		1-Apr-2002	N/A	N/A	SINGLE MOLECULE REALIZATION OF THE SWITCH AND DOIDE COMBINATION
82085375	F100201208	US	US7219230	Granted		8-May-2002	N/A	N/A	OPTIMIZING COSTS ASSOCIATED WITH MANAGING ENCRYPTED DATA
82085789	F100201450	GB	GB2391582	Granted		10-Jun-2003	10-Jun-2021	837.70	FAN-SECURING DEVICE FOR USE WITH A HEAT TRANSFER DEVICE
82085792	F100201450	US	US6879487	Granted		30-Sep-2003	N/A	N/A	FAN-SECURING DEVICE FOR USE WITH A HEAT TRANSFER DEVICE
82087094	F100201843	US	US6976119	Granted		14-Jun-2002	N/A	N/A	METHOD AND SYSTEM FOR PROVIDING A LOCATION OF A DATA INTERFACE
82087100	F100201843	GB	GB2393291	Granted		4-Jun-2003	4-Jun-2021	837.70	METHOD AND SYSTEM FOR PROVIDING A LOCATION OF A DATA INTERFACE
82087247	F100201886	US	US6907314	Granted		16-Sep-2003	N/A	N/A	INVENTORY CONTROL DEVICE

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82088090	F100202247	US	US7334978	Granted		23-Jun-2003	N/A	N/A	CARTRIDGE-HANDLING APPARATUS FOR A MEDIA STORAGE SYSTEM
82088099	F100202247	DE	DE60326440.9	Granted		29-Dec-2003	29-Dec-2021	2,272.89	CARTRIDGE-HANDLING APPARATUS FOR A MEDIA STORAGE SYSTEM
82088105	F100202247	GB	GB1492104	Granted		29-Dec-2003	29-Dec-2020	753.48	CARTRIDGE-HANDLING APPARATUS FOR A MEDIA STORAGE SYSTEM
82090061	F100203351	US	US7886430	Granted		13-Dec-2002	15-Aug-2022	7,406.00	METHOD OF INSTALLING CIRCUIT BOARD COMPONENT
82090346	F100203591	US	US7188171	Granted		23-Jan-2003	N/A	N/A	METHOD AND APPARATUS FOR SOFTWARE AND HARDWARE EVENT MONITORING AND REPAIR
82091372	F100204291	US	US6896541	Granted		18-Feb-2003	N/A	N/A	INTERFACE CONNECTOR THAT ENABLES DETECTION OF CABLE CONNECTION
82091852	F100204836	US	US6895460	Granted		19-Jul-2002	N/A	N/A	SYNCHRONIZATION OF ASYNCHRONOUS EMULATED INTERRUPTS
82578862	F109	US	US7502903	Granted		7-Nov-2005	N/A	N/A	METHOD AND APPARATUS FOR MANAGING DATA STORAGE SYSTEMS

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82578875	F109	US	US7444489	Granted		7-Nov-2005	N/A	N/A	APPLICATIONS FOR NON-DISRUPTIVELY MOVING DATA BETWEEN LOGICAL DISK REGIONS IN A DATA STORAGE SYSTEM
82031588	F10971442	US	US7062702	Granted		14-Mar-2001	N/A	N/A	EFFICIENT PARITY OPERATIONS
82578819	F12535	US	US7093278	Granted		8-May-2002	N/A	N/A	REMOTE CONSOLE FOR MONITOR AND CONTROL OF SYSTEM FIRMWARE
82578822	F12537	US	US7111157	Granted		8-May-2002	N/A	N/A	SPURIOUS INPUT DETECTION FOR FIRMWARE
82578829	F12540	US	US7124324	Granted		22-Aug-2002	N/A	N/A	METHOD OF TESTING FIBRE CHANNEL PORTS IN A STORAGE SERVER AT FULL BANDWIDTH WITHOUT CONNECTION TO EXTERNAL DEVICES
82093328	F200205608	US	US7469370	Granted		23-Dec-2002	N/A	N/A	ENABLING MULTIPLE TESTING DEVICES
82094180	F200206068	US	US6880146	Granted		31-Jan-2003	N/A	N/A	MOLECULAR-WIRE-BASED RESTORATIVE MULTIPLEXER, AND METHOD FOR CONSTRUCTING A MULTIPLEXER BASED ON A CONFIGURABLE, MOLECULAR-JUNCTION-NANOWIRE CROSSBAR

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82094192	F200206075	US	US6898098	Granted		31-Jan-2003	N/A	N/A	MOLECULAR-JUNCTION-NANOWIRE-CROSSBAR-BASED ASSOCIATIVE ARRAY
82094783	F200206363	US	US6856926	Granted		3-Mar-2003	N/A	N/A	FREQUENCY MARGIN TESTING OF BLADED SERVERS
82095791	F200206843	US	US6820146	Granted		1-Oct-2002	N/A	N/A	FILTER DRIVER FOR BLOCKING ACCESS BY HOST TO DEVICES
82097240	F200207344	US	US7493450	Granted		14-Apr-2003	N/A	N/A	METHOD OF TRIGGERING READ CACHE PRE-FETCH TO INCREASE HOST READ THROUGHPUT
82097885	F200207703	US	US7228345	Granted		15-Oct-2002	N/A	N/A	SERVER WITH LAN SWITCH THAT CONNECTS PORTS BASED ON BOOT PROGRESS INFORMATION
82098389	F200207865	US	US7100273	Granted		3-Mar-2003	N/A	N/A	INTERCONNECT VALIDATION INSTRUMENTS
82099109	F200208131	US	US7873723	Granted		30-Jan-2003	18-Jul-2022	7,706.00	DEVICE DATA
82220018	F200208131	US	US7686229	Granted		27-Mar-2006	30-Sep-2021	7,706.00	RFID READER DEVICE HAVING CLOSELY PACKED ANTENNAS
82220252	F200208131	US	US7806333	Granted		18-Oct-2006	5-Apr-2022	7,706.00	TRACKING RFID TAGS WITH OVERLAPPING ANTENNAS

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82099112	F200208132	US	US6796506	Granted		10-Mar-2003	N/A	N/A	TRACKING ELECTRONIC DEVICES
82099676	F200208397	US	US7546475	Granted		13-May-2003	N/A	N/A	POWER-AWARE ADAPTATION IN A DATA CENTER
82099691	F200208401	US	US7045996	Granted		30-Jan-2003	N/A	N/A	POSITION DETERMINATION BASED ON PHASE DIFFERENCE
82103501	F200209613	US	US7590909	Granted		24-Aug-2005	15-Mar-2021	7,406.00	IN-CIRCUIT TESTING SYSTEM AND METHOD
82103666	F200209639	US	US7145775	Granted		30-Jul-2004	N/A	N/A	CHASSIS CONDUCTED COOLING THERMAL DISSIPATION APPARATUS FOR SERVERS
82103681	F200209643	US	US8621304	Granted		7-Oct-2004	30-Jun-2021	3,606.00	BUILT-IN- SELF-TEST SYSTEM AND METHOD FOR AN INTEGRATED CIRCUIT
82105283	F200300040	US	US6868899	Granted		25-Aug-2003	N/A	N/A	VARIABLE HEIGHT THERMAL INTERFACE
82105697	F200300182	US	US6982570	Granted		30-Oct-2003	N/A	N/A	RECONFIGURAB LE DEVICE
82117616	F200301772	US	US6874103	Granted		13-Nov-2001	N/A	N/A	ADAPTER-BASED RECOVERY SERVER OPTION
82118564	F200302016	US	US7284067	Granted		20-Feb-2002	N/A	N/A	METHOD FOR INTEGRATED LOAD BALANCING AMONG PEER SERVERS

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82119695	F200302139	US	US8370468	Granted		8-Nov-2006	5-Aug-2024	7,706.00	METHOD AND APPARATUS FOR CREATING A SECURE EMBEDDED I/O PROCESSOR FOR A REMOTE SERVER MANAGEMENT CONTROLLER
82119701	F200302141	US	US7047462	Granted		4-Jan-2002	N/A	N/A	METHOD AND APPARATUS FOR PROVIDING JTAG FUNCTIONALITY IN A REMOTE SERVER MANAGEMENT CONTROLLER
82119902	F200302189	US	US6912599	Granted		19-Oct-2001	N/A	N/A	METHOD AND APPARATUS FOR SENSING POSITIONS OF DEVICE ENCLOSURES WITHIN MULTI-SHELF CABINETS
82119950	F200302202	US	US6889345	Granted		19-Oct-2001	N/A	N/A	SYSTEM AND METHOD FOR LOCATING A FAILED STORAGE DEVICE IN A DATA STORAGE SYSTEM
82120214	F200302270	US	US6870436	Granted		11-Mar-2002	N/A	N/A	METHOD AND APPARATUS TO ATTENUATE POWER PLANE NOISE ON A PRINTED CIRCUIT BOARD USING HIGH ESR CAPACITORS
82120691	F200302389	US	US7028177	Granted		31-Jan-2002	N/A	N/A	ARRAY CONTROLLER ROM CLONING IN REDUNDANT CONTROLLERS

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82120694	F200302390	US	US7093043	Granted		27-Dec-2001	N/A	N/A	DATA ARRAY HAVING REDUNDANCY MESSAGING BETWEEN ARRAY CONTROLLERS OVER THE HOST BUS
82121663	F200302525	US	US6901458	Granted		11-Jul-2002	N/A	N/A	MULTI-MODE SCSI BACKPLANE AND DETECTION LOGIC
82168088	F200308692	US	US6922496	Granted		31-Jan-2003	N/A	N/A	INTEGRATED VCSELS ON ASIC MODULE USING FLEXIBLE ELECTRICAL CONNECTIONS
82168127	F200308692	US	US6975514	Granted		31-Jan-2003	N/A	N/A	INTEGRATED VCSELS ON TRADITIONAL VLSI PACKAGING
82168292	F200308761	US	US7028106	Granted		5-Dec-2003	N/A	N/A	REMAPPING ROUTING INFORMATION ENTRIES IN AN EXPANDER
82171157	F200309939	US	US8023828	Granted		17-Oct-2005	20-Mar-2023	7,706.00	QUANTUM INFORMATION CONVERSION BETWEEN MATTER AND LIGHT REPRESENTATIONS
82171166	F200309939	JP	JP5437634	Granted		21-Jul-2006	20-Dec-2020	467.95	QUANTUM INFORMATION CONVERSION BETWEEN MATTER AND LIGHT REPRESENTATIONS

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82171169	F200309939	CN	CN200680038674.4	Granted		21-Jul-2006	21-Jul-2020	959.27	QUANTUM INFORMATION CONVERSION BETWEEN MATTER AND LIGHT REPRESENTATIONS
82174472	F200311229	US	US7930539	Granted		3-Aug-2004	19-Oct-2022	7,706.00	COMPUTER SYSTEM RESOURCE ACCESS CONTROL
82179221	F200313243	US	US8028174	Granted		4-May-2005	27-Mar-2023	7,706.00	CONTROLLING UPATE OF CONTENT OF A PROGRAMMABLE READ-ONLY MEMORY
82179365	F200313243	US	US7296146	Granted		12-Jan-2004	N/A	N/A	SECURITY MEASURES IN A PARTITIONABLE COMPUTING SYSTEM
82179857	F200313535	US	US7484065	Granted		20-Apr-2004	N/A	N/A	SELECTIVE MEMORY ALLOCATION
82203497	F200313719	US	US7307732	Granted		31-May-2005	N/A	N/A	PHOTONIC CRYSTAL INTERFEROMETER
82180394	F200313719	US	US7492979	Granted		27-Sep-2004	17-Aug-2020	7,406.00	PHOTONIC CRYSTAL LASER SENSORS AND METHODS
82187561	F200400222	US	US7519973	Granted		29-Sep-2004	N/A	N/A	PROVIDING UNIQUE EVENT NOTIFICATION TO ENABLE FIRMWARE TO REQUEST THAT AN OPERATING SYSTEM PERFORM A UNIQUE ACTION

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82187903	F200400362	US	US7386537	Granted		23-Jul-2004	N/A	N/A	METHOD AND SYSTEM FOR DETERMINING SIZE OF A DATA CENTER
82188296	F200400516	US	US7610526	Granted		24-Jan-2005	27-Apr-2021	7,706.00	ON-CHIP CIRCUITRY FOR BUS VALIDATION
82189034	F200400854	US	US7607123	Granted		21-Sep-2004	20-Apr-2021	7,706.00	SYSTEMS AND METHODS FOR VALIDATING DEBUG INFORMATION FOR OPTIMIZED CODE
82192358	F200402482	US	US8375114	Granted		9-Apr-2004	12-Aug-2024	7,706.00	DEVICE LOADING IN STORAGE NETWORKS
82192430	F200402517	US	US7633928	Granted		27-Mar-2006	15-Jun-2021	7,706.00	COMMUNICATIO N DATA METHOD AND SYSTEM FOR VOICE APPLICATIONS EXCECUTABLE BY USER EQUIPMENT.
82193402	F200402838	US	US8694423	Granted		21-May-2004	8-Oct-2021	3,606.00	SYSTEMS AND METHODS FOR BROKERING DATA IN A TRANSACTIONA L GATEWAY
82193606	F200402914	US	US7447889	Granted		20-Apr-2005	N/A	N/A	METHOD AND APPARATUS FOR CONFIGURING A COMPUTER SYSTEM UTILIZING A READ ONLY MEMORY STORING AN OPTION FILE CONTAINING SELECTABLE CONFIGURATION OPTIONS AND A SCRIPT FILE

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82194782	F200403286	US	US8059539	Granted		29-Dec-2004	15-May-2023	7,706.00	LINK THROUGHPUT ENHANCER
82198589	F200405003	US	US7555644	Granted		21-Jul-2006	30-Dec-2020	7,406.00	SYSTEM AND METHOD FOR OPERATING SYSTEM IMAGE PROVISIONING IN A UTILITY COMPUTING ENVIRONMENT
82199369	F200405354	US	US7581242	Granted		30-Apr-2005	25-Feb-2021	7,706.00	AUTHENTICATING PRODUCTS
82201619	F200406527	US	US8782186	Granted		31-Jul-2006	15-Jan-2022	3,766.00	SYSTEMS AND METHODS FOR ADDRESSING MANAGED ELEMENTS
82204112	F200407681	US	US8392546	Granted		28-Oct-2005	5-Sep-2024	7,706.00	DISTRIBUTED MANAGED SYSTEM, SYSTEM COMPONENTS, AND METHODS OF COMMUNICATING COMMANDS
82204703	F200407943	US	US7831768	Granted		30-Oct-2007	9-May-2022	7,706.00	METHOD AND APPARATUS FOR WRITING DATA TO A DISK ARRAY
82205429	F200408352	US	US7825512	Granted		12-Sep-2005	2-May-2022	7,706.00	ELECTRONIC PACKAGE WITH COMPLIANT ELECTRICALLY-CONDUCTIVE BALL INTERCONNECT
82208054	F200501046	US	US7926042	Granted		31-Oct-2005	12-Oct-2022	7,406.00	SYSTEM AND METHOD FOR DYNAMIC INSTRUMENTATION
82209239	F200501635	GB	GB2426841	Granted		4-Jun-2005	4-Jun-2021	691.79	MEMORY CONTROLLER

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82209242	F200501635	US	US7461216	Granted		23-Feb-2006	N/A	N/A	MEMORY CONTROLLER
82213925	F200504155	US	US9032127	Granted		14-Sep-2006	12-Nov-2022	3,606.00	METHOD OF BALANCING I/O DEVICE INTERRUPT SERVICE LOADING IN A COMPUTER SYSTEM
82215089	F200504853	US	US8369212	Granted		29-Aug-2006	5-Aug-2020	3,606.00	NETWORK PATH VALIDATION BASED ON USER-SPECIFIED CRITERIA
82217183	F200505971	US	US7984242	Granted		1-Jun-2009	19-Jan-2023	7,706.00	PROGRAM THREAD SYNCHRONIZATION
82218749	F200505971	US	US7587555	Granted		10-Nov-2005	8-Mar-2021	7,706.00	PROGRAM THREAD SYNCHRONIZATION
82221359	F200600469	US	US7600111	Granted		20-Sep-2006	6-Apr-2021	7,706.00	METHOD OF RESTARTING A COMPUTER PLATFORM
82222361	F200600469	US	US7962734	Granted		15-Mar-2007	14-Dec-2022	7,706.00	METHOD OF RESTARTING A COMPUTER PLATFORM
82222121	F200600653	US	US7933993	Granted		24-Apr-2006	26-Oct-2022	7,406.00	RELOCATABLE VIRTUAL PORT FOR ACCESSING EXTERNAL STORAGE
82226867	F200602849	US	US7877645	Granted		30-Jul-2007	25-Jul-2022	7,406.00	USE OF OPERATIONAL CONFIGURATION PARAMETERS TO PREDICT SYSTEM FAILURES
82230503	F200700250	US	US8929741	Granted		30-Jul-2007	6-Jul-2022	3,766.00	OPTICAL INTERCONNECT

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82232561	F200700952	US	US8255513	Granted		14-Dec-2001	28-Feb-2024	7,706.00	A TOPOLOGY INFORMATION SYSTEM FOR A MANAGED WORLD
82233401	F200701159	US	US7984150	Granted		31-Jul-2007	19-Jan-2023	7,706.00	CELL COMPATIBILTY IN MULTIPROCESSOR SYSTEMS
82233404	F200701159	CN	CN200810129477.4	Granted		31-Jul-2008	31-Jul-2021	1,032.98	CELL COMPATIBILTY IN MULTIPROCESSOR SYSTEMS
82235156	F200701620	US	US8357980	Granted		15-Oct-2007	22-Jul-2020	3,606.00	PLASMONIC HIGH-SPEED DEVICES FOR ENHANCING THE PERFORMANCE OF MICROELECTRONIC DEVICES
82235162	F200701620	CN	CN200880112331.7	Granted		15-Oct-2008	15-Oct-2021	1,032.98	PLASMONIC HIGH-SPEED DEVICES FOR ENHANCING THE PERFORMANCE OF MICROELECTRONIC DEVICES
82235165	F200701620	DE	DE112008002737	Granted		15-Oct-2008	15-Oct-2021	1,178.09	PLASMONIC HIGH-SPEED DEVICES FOR ENHANCING THE PERFORMANCE OF MICROELECTRONIC DEVICES
82235168	F200701620	JP	JP5222950	Granted		15-Oct-2008	15-Mar-2021	397.69	PLASMONIC HIGH-SPEED DEVICES FOR ENHANCING THE PERFORMANCE OF MICROELECTRONIC DEVICES

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82235171	F200701620	KR	KR10-1517423	Granted		15-Oct-2008	28-Apr-2021	451.15	PLASMONIC HIGH-SPEED DEVICES FOR ENHANCING THE PERFORMANCE OF MICROELECTRONIC DEVICES
82235777	F200701831	US	US8053748	Granted		20-Oct-2008	8-May-2023	7,706.00	INTEGRATED CIRCUITS WITH PHASE CHANGE DEVICES
82854022	F200701831	US	US8212230	Granted		25-Sep-2011	3-Jan-2024	7,706.00	INTEGRATED CIRCUITS WITH PHASE CHANGE DEVICES
82236662	F200702022	US	US8254996	Granted		21-Aug-2008	28-Feb-2024	7,706.00	SYSTEMS AND METHODS FOR MANAGING ACCESS CHANNELS
82240685	F200703283	US	US9389649	Granted		25-Mar-2008	12-Jan-2024	3,766.00	LOCKING MECHANISM WITH MOVABLE AND FIXED MEMBERS EACH HAVING SINGLE AND DOUBLE LOCKING FEATURES
82241528	F200703619	US	US8373061	Granted		28-Oct-2008	12-Aug-2020	3,606.00	PHOTOVOLTAIC CELLS WITH STACKED LIGHT-ABSORPTION LAYERS AND METHODS OF FABRICATING THE SAME
82573265	F200704722	CN	CN200880130176.1	Granted		2-Jul-2008	2-Jul-2020	1,081.10	VERIFICATION OF REMOTE COPIES OF DATA
82756289	F200801174	US	US8368118	Granted		16-Dec-2008	5-Aug-2020	3,606.00	SEMICONDUCTOR STRUCTURE HAVING AN ELOG ON A THERMALLY AND ELECTRICALLY CONDUCTIVE MASK

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82853054	F200802102	CN	CN200980158980.5	Granted		27-Apr-2009	27-Apr-2021	1,032.98	ENERGY-EFFICIENT STANDBY MODE IN A SWITCHING POWER SUPPLY
82853058	F200802102	US	US9401635	Granted		27-Apr-2009	26-Jan-2024	3,766.00	SWITCHING POWER SUPPLY FOR A LOAD IN STANDBY MODE
82852232	F200802394	US	US8664605	Granted		28-Apr-2009	4-Sep-2021	3,766.00	COVERT LABEL STRUCTURE
82249742	F200803068	US	US8370688	Granted		22-Apr-2010	5-Aug-2020	3,606.00	IDENTIFYING A STORAGE DEVICE AS FAULTY FOR A FIRST STORAGE VOLUME WITHOUT IDENTIFYING THE STORAGE DEVICE AS FAULTY FOR A SECOND STORAGE VOLUME
82249793	F200803147	US	US8370571	Granted		8-Apr-2009	5-Aug-2020	3,606.00	TRANSFER CONTROL OF A STORAGE VOLUME BETWEEN STORAGE CONTROLLERS IN A CLUSTER
82854071	F200803277	US	US9494419	Granted		31-Jul-2009	15-May-2024	3,766.00	BEAM DIRECTION SENSOR
82925991	F200803277	CN	CN200980160709.5	Granted		31-Jul-2009	31-Jul-2021	1,032.98	BEAM DIRECTION SENSOR
82250642	F200803771	US	US9311319	Granted		27-Aug-2009	12-Oct-2023	3,766.00	METHOD AND SYSTEM FOR ADMINISTRATION OF STORAGE OBJECTS
82250732	F200900008	US	US7939967	Granted		25-Jun-2009	10-Nov-2022	7,706.00	MULTIPLE POWER SUPPLY CONTROL

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82257317	F200901894	US	US8930010	Granted		5-Feb-2007	6-Jul-2022	3,606.00	INTELLIGENT ASSEMBLY SYSTEM AND METHOD OF USE
82853115	F200902751	US	US8634321	Granted		18-Dec-2009	21-Jul-2021	3,606.00	PROXY AGENTS IN A NETWORK
82635896	F200903834	TW	TW477810	Granted		31-Jan-2011	20-Mar-2021	359.56	OPTICAL DEVICES BASED ON NON-PERIODIC SUB-WAVELENGTH GRATINGS
82853254	F200903834	US	US8952403	Granted		29-Jan-2010	10-Aug-2022	3,766.00	OPTICAL DEVICES BASED ON NON-PERIODIC SUB-WAVELENGTH GRATINGS
84121874	F200903834	US	US10061139	Granted		14-Jan-2015	28-Feb-2022	2,006.00	OPTICAL DEVICES BASED ON NON-PERIODIC SUB-WAVELENGTH GRATINGS
82654418	F200904389	TW	TWI440907	Granted		1-Mar-2011	10-Jun-2021	359.56	TELECENTRIC OPTICAL ASSEMBLY
83119816	F200904389	US	US8947796	Granted		7-May-2010	3-Aug-2022	3,766.00	TELECENTRIC OPTICAL ASSEMBLY
83164626	F200904841	US	US9158647	Granted		20-Jul-2010	13-Apr-2023	3,766.00	FORMATTING SYSTEM MONITORING INFORMATION
83235817	F201001046	JP	JP5777722	Granted		29-Oct-2010	17-Jul-2021	476.28	SMALL-MODE-VOLUME, VERTICAL-CAVITY, SURFACE-EMITTING LASER
83235820	F201001046	US	US9991676	Granted		29-Oct-2010	5-Dec-2021	2,006.00	SMALL-MODE-VOLUME, VERTICAL-CAVITY, SURFACE-EMITTING LASER

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82265270	F201001847	US	US8726261	Granted		6-Apr-2011	13-Nov-2021	3,766.00	ZERO DOWNTIME HARD DISK FIRMWARE UPDATE
83546345	F201001922	KR	KR101603135	Granted		10-Feb-2011	8-Mar-2021	342.80	GRATING-BASED POLARIZERS AND OPTICAL ISOLATORS
82271360	F201003405	US	US6665543	Granted		4-Oct-2000	N/A	N/A	ANTENNA EXTRACTION ON REMOVAL OF STYLUS FOR HANDHELD DEVICE
82272962	F201004041	US	US7002932	Granted		12-Jan-2001	N/A	N/A	METHOD AND SYSTEM FOR PROVIDING NETWORK CONNECTIVITY AND MOBILITY WHILE ROAMING
82273352	F201004237	US	US7137047	Granted		5-Apr-2004	N/A	N/A	METHOD AND APPARATUS FOR SELECTION OF ARQ PARAMETERS AND ESTIMATION OF IMPROVED COMMUNICATIONS
82273664	F201004389	US	US8346938	Granted		25-Sep-2002	1-Jul-2024	7,706.00	EFFICIENT ESTABLISHMENT OF WIRELESS CONNECTIONS
82273793	F201004428	US	US7424532	Granted		15-Feb-2002	N/A	N/A	METHOD AND SYSTEM FOR AUTOMATIC NETWORK RESOURCE SELECTION AND CONFIGURATION IN A NETWORK ENVIRONMENT

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82274156	F201004550	US	US9479464	Granted		14-Apr-2009	25-Apr-2024	3,766.00	COMPUTER SYSTEM AND NETWORK INTERFACE WITH HARDWARE BASED PACKET FILTERING AND CLASSIFICATION
82274387	F201004599	US	US7702903	Granted		8-Aug-2005	20-Oct-2021	7,706.00	LICENSE RE-ALLOCATION SYSTEM AND METHOD
82274405	F201004603	GB	GB2411540	Granted		25-Feb-2004	25-Feb-2021	764.74	CASCADE CONTROL SYSTEM FOR NETWORK UNITS
82274408	F201004603	US	US7660323	Granted		28-Jun-2004	9-Aug-2021	7,706.00	CASCADE CONTROL SYSTEM FOR NETWORK UNITS
82274432	F201004608	US	US8327026	Granted		1-Jul-2004	4-Jun-2024	7,706.00	METHOD AND SYSTEM FOR SELECTING A DATA COMPRESSION TECHNIQUE FOR DATA TRANSFER THROUGH A DATA NETWORK
82274459	F201004619	US	US7480260	Granted		13-May-2004	N/A	N/A	METHOD AND APPARATUS FOR IMPLEMENTING A PRESENCE-BASED UNIVERSAL CAMP-ON FEATURE IN PACKET-BASED TELEPHONY SYSTEMS
82274465	F201004621	GB	GB2414623	Granted		27-May-2004	27-May-2021	764.74	DISTRIBUTED BRIDGING WITH SYNCHRONIZATION OF FORWARDING DATABASES

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82274468	F201004621	US	US7483999	Granted		9-Jul-2004	N/A	N/A	DISTRIBUTED BRIDGING WITH SYNCHRONIZATION FORWARDING DATABASES
82274471	F201004622	US	US7555751	Granted		11-Aug-2004	N/A	N/A	METHOD AND SYSTEM FOR PERFORMING A LIVE SYSTEM UPGRADE
82274480	F201004624	US	US8792475	Granted		11-Mar-2005	29-Jan-2022	3,606.00	METHOD AND SYSTEM FOR PROVIDING PASS THROUGH WEB CONFIGURATION ON AN INTERNET PROTOCOL (IP) TELEPHONE
82274483	F201004625	US	US9036618	Granted		11-Mar-2005	19-Nov-2022	3,606.00	METHOD AND SYSTEM FOR PROVIDING VOICE ASSISTED CONFIGURATION ON AN INTERNET PROTOCOL (IP) TELEPHONE
82274519	F201004633	US	US7480299	Granted		22-Feb-2005	N/A	N/A	RULES ENGINE FOR ACCESS CONTROL LISTS IN NETWORK UNITS
82274522	F201004635	GB	GB2420468	Granted		17-Nov-2004	17-Nov-2020	681.61	PACKET METERING IN HIGH-SPEED NETWORK UNITS
82274525	F201004635	US	US7349335	Granted		11-Jan-2005	N/A	N/A	PACKET METERING IN HIGH-SPEED NETWORK UNITS
82274528	F201004636	US	US8767974	Granted		15-Jun-2005	1-Jan-2022	3,606.00	SYSTEM AND METHOD FOR GENERATING COMFORT NOISE

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82274531	F201004637	US	US7526081	Granted		5-Oct-2004	N/A	N/A	TELEPHONE RECORDING AND STORING ARBITRARY KEYSTROKES SEQUENCE WITH REPLAY WITH A SINGLE STROKE
82274534	F201004637	US	US8218533	Granted		13-Mar-2009	10-Jan-2024	7,706.00	TELEPHONE RECORDING AND STORING ARBITRARY KEYSTROKES SEQUENCE WITH REPLAY WITH A SINGLE STROKE
82274555	F201004642	US	US7480300	Granted		22-Feb-2005	N/A	N/A	CONTENT ADDRESSABLE MEMORY ORGANIZED TO SHARE ENTRIES BETWEEN DIFFERENT ENTITIES SUCH AS PORTS OF A NETWORK UNIT
82274777	F201004678	US	US7711744	Granted		18-Jan-2006	4-Nov-2021	7,406.00	SIMPLE AND FAST DIRECTORY SEARCH WITH REDUCED KEYSTROKES AND REDUCED SERVER CALLS
82274798	F201004688	US	US7532474	Granted		21-Feb-2006	12-Nov-2020	7,406.00	APPARATUS FOR DISSIPATING HEAT FROM ELECTRONIC COMPONENTS IN AN ENCLOSED HOUSING
82062101	F30003028	US	US6925288	Granted		29-Mar-2001	N/A	N/A	GATHERING INFORMATION FROM SHORT-RANGE WIRELESS PORTALS
82065014	F30012087	US	US6873270	Granted		30-Oct-2002	N/A	N/A	DATA STORAGE AND ANALYSIS

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82070618	F50004606	US	US6920492	Granted		18-Jun-2001	N/A	N/A	PROCESS FOR CONTROLLING DEVICES OF AN INTRANET NETWORK THROUGH THE WEB
82070621	F50004606	DE	DE60039975.3	Expired		19-Jun-2000	N/A	N/A	PROCESS FOR CONTROLLING DEVICES OF AN INTRANET NETWORK THROUGH THE WEB
82070627	F50004606	GB	GB1168711	Expired		19-Jun-2000	N/A	N/A	PROCESS FOR CONTROLLING DEVICES OF AN INTRANET NETWORK THROUGH THE WEB
82070990	F50011154	US	US7062672	Granted		7-Jun-2002	N/A	N/A	METHOD OF AND COMPUTER NETWORK ARRANGEMENT FOR RESTORING AN IMPAIRED SOFTWARE IMAGE
82801074	F700205328	US	US8862577	Granted		15-Aug-2011	14-Apr-2022	3,766.00	VISUALIZING SENTIMENT RESULTS WITH VISUAL INDICATORS REPRESENTING USER SENTIMENT AND LEVEL OF UNCERTAINTY
82689078	F700205361	US	US8539113	Granted		16-Jun-2011	17-Mar-2021	3,766.00	INDICATORS FOR STREAMS ASSOCIATED WITH MESSAGES
83791163	F700205461	KR	KR101602811	Granted		29-Jul-2011	7-Mar-2021	383.94	OPTICAL POWER SPLITTERS
83791132	F700205462	KR	KR10-1563608	Granted		29-Jul-2011	21-Oct-2021	463.28	FIBER OPTICS CONNECTORS

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83791138	F700205462	US	US9052475	Granted		29-Jul-2011	9-Dec-2022	3,766.00	FIBER OPTICS CONNECTORS
82654416	F700205946	US	US8549219	Granted		7-Dec-2010	1-Apr-2021	3,766.00	PREVENTING HARD DRIVE FAILURE AND DATA LOSS DUE TO VIBRATION
82755131	F700206210	US	US8924667	Granted		3-Oct-2011	30-Jun-2022	3,766.00	BACKUP STORAGE MANAGEMENT
83698837	F700206222	CN	CN201180070805.8	Granted		18-Jul-2011	18-Jul-2020	666.46	OPTICAL INTERCONNECT
83698845	F700206222	US	US9170377	Granted		18-Jul-2011	27-Apr-2023	3,766.00	OPTICAL INTERCONNECT
82753547	F700206817	US	US9218527	Granted		29-Sep-2011	22-Jun-2023	3,766.00	ANOMALY DETECTION IN STREAMING DATA
82859781	F700206858	US	US9413358	Granted		29-Apr-2012	9-Feb-2024	3,766.00	FORWARD COUNTER BLOCK
84049818	F700207121	US	US9164250	Granted		14-Mar-2012	20-Apr-2023	3,766.00	REPLACEABLE MODULAR OPTICAL CONNECTION ASSEMBLY
82871690	F700207287	US	US8811210	Granted		13-Feb-2012	19-Feb-2022	3,766.00	EFFECTIVE APPLICATION DENSITIES FOR FABRICS
83930310	F700207642	US	US9341780	Granted		9-Dec-2011	17-Nov-2023	3,766.00	OPTICAL CONNECTIONS
82978201	F700207679	US	US8883616	Granted		31-Jul-2012	11-May-2022	3,766.00	GERMANIUM ON INSULATOR APPARATUS
82850245	F700207691	US	US8711693	Granted		21-Feb-2012	29-Oct-2021	3,766.00	GATEWAY CHANNEL UTILIZATION

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83996161	F700208065	US	US9372522	Granted		20-Apr-2012	21-Dec-2023	3,766.00	OVERVOLTAGE PROTECTION SYSTEMS AND METHOD
83991414	F700208157	US	US9413623	Reviving		26-Apr-2012	9-Feb-2024	3,606.00	MULTICAST ROUTING PATH CHECK
83992351	F700208617	US	US9161105	Granted		11-Apr-2012	13-Apr-2023	3,766.00	ROUTING OPTICAL SIGNALS
83150130	F700209140	US	US9246774	Granted		21-Feb-2013	26-Jul-2023	3,766.00	SAMPLE BASED DETERMINATION OF NETWORK POLICY VIOLATIONS
84076180	F700209670	US	US9520946	Granted		26-Jul-2012	13-Jun-2024	3,766.00	OPTICAL ENGINE
83992436	F700209695	US	US9176279	Granted		25-Apr-2012	3-May-2023	3,766.00	ANALYZING LIGHT BY MODE INTERFERENCE
83206779	F700212807	US	US9058295	Granted		25-Apr-2013	16-Dec-2022	3,766.00	ENCRYPT DATA OF STORAGE DEVICE
90142920	F700214270	US	US9715431	Granted		15-Jul-2013	25-Jan-2021	2,006.00	REBUILDING DRIVE DATA
83777585	F700215692	US	US9329965	Granted		31-Jan-2014	3-Nov-2023	3,766.00	EXTRACTING LOG FILES FROM STORAGE DEVICES
84293496	FARBA0002	CN	CN200780041079.0	Granted		3-Jul-2007	3-Jul-2021	1,032.98	A METHOD AND SYSTEM FOR DYNAMIC METRIC AND WIRELESS HELLO PROTOCOL
84268251	FARBA0042	US	US8351546	Granted		17-Dec-2008	8-Jul-2024	7,706.00	SENSING DEVICE ORIENTATION IN WIRELESS NETWORKS

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84268551	FARBA0118	US	US7983163	Granted		23-Dec-2008	19-Jan-2023	7,706.00	SYSTEM AND METHOD FOR IMPLEMENTING ADAPTIVE LOAD SHARING TO BALANCE NETWORK TRAFFIC

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81966353	F10001098	US	US6857086	Expired		21-Apr-2003	N/A	N/A	HIERARCHY OF FAULT ISOLATION TIMERS
81969824	F10002142	US	US7124180	Expired		27-Apr-2000	N/A	N/A	INTERNET USAGE DATA RECORDING SYSTEM AND METHOD EMPLOYING A CONFIGURABLE RULE ENGINE FOR THE PROCESSING AND CORRELATION OF NETWORK DATA
81971150	F10002493	US	US6813275	Expired		21-Apr-2000	N/A	N/A	METHOD AND APPARATUS FOR PREVENTING UNDERFLOW AND OVERFLOW ACROSS AN ASYNCHRONOUS CHANNEL
81971252	F10002509	US	US6912679	Expired		29-Apr-2000	N/A	N/A	SYSTEM AND METHOD FOR ELECTRICAL DATA LINK TESTING
81971258	F10002511	US	US6647469	Expired		1-May-2000	N/A	N/A	USING READ CURRENT TRANSACTIONS FOR IMPROVED PERFORMANCE IN DIRECTORY-BASED COHERENT I/O SYSTEMS
81971459	F10002566	US	US6928525	Expired		28-Apr-2000	N/A	N/A	PER CACHE LINE SEMAPHORE FOR CACHE ACCESS ARBITRATION
81972005	F10002818	US	US6671792	Expired		28-Apr-2000	N/A	N/A	SHARE MASKS AND ALIAS FOR DIRECTORY COHERENCY

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81972032	F10002825	US	US6651124	Expired		28-Apr-2000	N/A	N/A	METHOD AND APPARATUS FOR PREVENTING DEADLOCK IN A DISTRIBUTED SHARED MEMORY SYSTEM
81972035	F10002825	US	US6865634	Expired		16-Oct-2003	N/A	N/A	METHOD AND APPARATUS FOR DEADLOCK PREVENTION IN A DISTRIBUTED SHARED MEMORY SYSTEM
81972050	F10002834	US	US6647517	Expired		27-Apr-2000	N/A	N/A	APPARATUS AND METHOD FOR PROVIDING ERROR ORDERING INFORMATION AND ERROR LOGGING INFORMATION
81972209	F10002924	US	US6799287	Expired		1-May-2000	N/A	N/A	METHOD AND APPARATUS FOR VERIFYING ERROR CORRECTING CODES
81977594	F10004587	US	US7032086	Granted		28-Feb-2003	N/A	N/A	SYSTEM AND METHOD FOR ADJUSTING STORAGE DEVICE LAYOUT WITH AT LEAST ONE STATUS FOR THE ADJUSTING
81986432	F10007913	US	US7424461	Granted		28-Jun-2001	N/A	N/A	MULTI-MODULE GENETIC PROGRAMMING WITH MULTIPLE GENETIC DATA REPRESENTATIO NS
82082450	F100111713	US	US7224891	Granted		13-Feb-2002	N/A	N/A	DIGITAL PHOTOGRAPH PRESENTATION USING DVD PLAYERS

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81994958	F10013045	US	US7774611	Granted		6-May-2002	10-Feb-2022	7,706.00	ENFORCING FILE AUTHORIZATION ACCESS
81996038	F10013647	US	US7502839	Granted		28-Sep-2001	10-Sep-2020	7,406.00	MODULE-BUILDING METHOD FOR DESIGNING INTERCONNECT FABRICS
81996071	F10013661	US	US8032828	Granted		4-Mar-2002	4-Apr-2023	7,706.00	METHOD AND SYSTEM OF DOCUMENT TRANSFORMATION BETWEEN A SOURCE EXTENSIBLE MARKUP LANGUAGE (XML) SCHEMA AND A TARGET XML SCHEMA
81999323	F10015521	US	US8051176	Granted		7-Nov-2002	1-May-2023	7,706.00	METHOD AND SYSTEM FOR PREDICTING CONNECTIONS IN A COMPUTER NETWORK
82085489	F100201273	US	US8798964	Granted		6-Nov-2002	5-Feb-2022	3,766.00	METHODS AND APPARATUS FOR DESIGNING THE RANKING AND WIRING CONFIGURATIONS FOR PIECES OF HARDWARE
82095059	F100201387	US	US8799501	Granted		27-Jun-2002	5-Feb-2022	3,766.00	SYSTEM AND METHOD FOR ANONYMOUSLY SHARING AND SCORING INFORMATION POINTERS, WITHIN A SYSTEM FOR HARVESTING COMMUNITY KNOWLEDGE
82087874	F100202128	US	US7024758	Granted		28-May-2003	N/A	N/A	ASSEMBLY FOR ALIGNING A COMPONENT

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82089530	F100203011	US	US6829142	Granted		25-Oct-2002	N/A	N/A	CELL THERMAL CONNECTOR
82090361	F100203618	US	US7073029	Granted		27-Jan-2003	N/A	N/A	STORAGE SYSTEM USING FAST STORAGE AND LOG-STRUCTURED STORAGE
81956231	F1094649	GB	GB2048314	Expired		21-Jun-1995	N/A	N/A	MEDIA AUTOCHANGER SUCH AS AN OPTICAL DISK AUTOCHANGER
82008596	F10950142	GB	GB2048315	Expired		21-Jun-1995	N/A	N/A	CONTROL MODULE FOR A COMPUTER PERIPHERAL SUCH AS A MEDIA AUTOCHANGER
82035512	F10972015	US	US6728951	Expired		14-Apr-2000	N/A	N/A	SYSTEM AND METHOD FOR PERFORMING AUTOMATED INCREMENTAL COMPILATION OF COMPUTER PROGRAMS
82040858	F10980981	US	US8171266	Granted		2-Aug-2001	N/A	N/A	LOOK-AHEAD LOAD PRE-FETCH IN A PROCESSOR
82041722	F10981145	US	US6941569	Expired		3-Dec-2002	N/A	N/A	SYSTEM AND METHOD UTILIZING A CONDUCTIVE BRUSH FOR PROVIDING POWER SIGNALS TO A CARTRIDGE ACCESS DEVICE
82047860	F10990153	DE	DE49906067.9	Granted		22-Jun-1999	N/A	N/A	BEZEL FOR RACK MOUNTED DEVICE

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82052933	F10991388	US	US6888836	Expired		26-May-1999	N/A	N/A	METHOD FOR ALLOCATING WEB SITES ON A WEB HOSTING CLUSTER
82054217	F10991599	US	US7143315	Expired		16-Oct-2003	N/A	N/A	DATA STORAGE SYSTEMS AND METHODS
82055057	F10991802	US	US6671802	Expired		13-Apr-2000	N/A	N/A	PERFORMANCE OPTIMIZATION OF COMPUTER SYSTEM BY DYNAMICALLY AND IMMEDIATELY UPDATING A CONFIGURATION SETTING BASED ON DETECTED CHANGE IN PREFERRED USE
82058666	F10992650	US	US6487636	Expired		24-Apr-2000	N/A	N/A	METHOD AND APPARATUS FOR MAPPING DATA IN A HETEROGENEOUS DISK ARRAY STORAGE SYSTEM
82094639	F200206289	US	US7983422	Granted		25-Jul-2003	19-Jan-2023	7,706.00	QUANTUM CRYPTOGRAPHY
82094648	F200206289	JP	JP4829788	Granted		22-Jul-2004	22-Sep-2020	1,770.42	QUANTUM CRYPTOGRAPHY WITH QUANTUM CHANNEL CHECK
82094651	F200206289	DE	DE602004010270.9	Granted		22-Jul-2004	22-Jul-2020	1,690.52	QUANTUM CRYPTOGRAPHY WITH QUANTUM CHANNEL CHECK
82094657	F200206289	GB	GB1652334	Granted		22-Jul-2004	22-Jul-2020	682.85	QUANTUM CRYPTOGRAPHY WITH QUANTUM CHANNEL CHECK

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82096223	F200207002	US	US7607136	Granted		28-Oct-2003	20-Apr-2021	7,706.00	METHOD AND APPARATUS FOR INTERFACING WITH A DISTRIBUTED COMPUTING SERVICE
82096484	F200207094	US	US7337018	Granted		31-Jul-2003	N/A	N/A	HEAT SINK FAN MANAGEMENT BASED ON PERFORMANCE REQUIREMENTS
82096487	F200207094	GB	GB2404792	Granted		29-Jul-2004	29-Jul-2020	682.85	HEAT SINK FAN MANAGEMENT BASED ON PERFORMANCE REQUIREMENTS
82096490	F200207095	US	US7054156	Granted		2-Sep-2003	N/A	N/A	FAN ROTOR SYSTEMS HAVING COLLAPSIBLE FAN BLADES
82101161	F200208889	US	US6896539	Granted		30-Jun-2003	N/A	N/A	PIVOT COMPONENT COUPLED WITH FIRST CIRCUIT BOARD FOR CONTROL OF RELATIVE ALIGNMENT OF FIRST CIRCUIT BOARD CONNECTION COMPONENT WITH SECOND CIRCUIT BOARD CONNECTION COMPONENT
82103495	F200209610	US	US7082032	Granted		25-Aug-2003	N/A	N/A	HEAT DISSIPATION DEVICE WITH TILTED FINS
82103654	F200209636	US	US7079390	Granted		5-Jun-2003	N/A	N/A	SYSTEM AND METHOD FOR HEAT DISSIPATION AND AIR FLOW REDIRECTION IN A CHASSIS

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82104851	F200210142	US	US7480797	Granted		31-Jul-2004	20-Jul-2020	7,406.00	METHOD AND SYSTEM FOR PREVENTING CURRENT-PRIVILEGE-LEVEL-INFORMATION LEAKS TO NON-PRIVILEGED CODE
82104926	F200210171	US	US7643983	Granted		27-Mar-2003	5-Jul-2021	7,706.00	DATA STORAGE SYSTEM EMULATION
82105160	F200300004	US	US7107600	Granted		17-Mar-2003	N/A	N/A	SYSTEM AND METHOD FOR CLEANING ELECTRICAL DELIVERY SYSTEMS
82117313	F200301707	US	US6456510	Expired		31-Aug-2000	N/A	N/A	REGULATED DC POWER SUPPLY
82117337	F200301713	US	US6442067	Expired		23-May-2000	N/A	N/A	RECOVERY ROM FOR ARRAY CONTROLLERS
82117649	F200301781	US	US6678840	Granted		31-Aug-2000	N/A	N/A	FAULT CONTAINMENT AND ERROR RECOVERY IN A SCALABLE MULTIPROCESSOR
82117652	F200301781	US	US7152191	Expired		23-Oct-2003	N/A	N/A	FAULT CONTAINMENT AND ERROR RECOVERY IN A SCALABLE MULTIPROCESSOR

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82118051	F200301885	US	US6832282	Expired		1-Jul-2003	N/A	N/A	SYSTEM AND METHOD FOR PROVIDING FORWARD PROGRESS AND AVOIDING STARVATION AND LIVELOCK IN A MULTIPROCESSOR COMPUTER SYSTEM
82122050	F200302633	US	US7023708	Granted		20-Dec-2002	N/A	N/A	MULTILEVEL CABLE SUPPORT ARM AND SYSTEM AND METHOD INCORPORATING SAME
82132523	F200304132	US	US6842833	Expired		30-Jun-1998	N/A	N/A	COMPUTER SYSTEM AND METHOD FOR TRANSFERRING DATA BETWEEN MULTIPLE PEER-LEVEL STORAGE UNITS
82166255	F200308314	US	US6654902	Expired		11-Apr-2000	N/A	N/A	PERSISTENT RESERVATION IO BARRIERS
82166258	F200308314	US	US7346801	Expired		1-Aug-2003	N/A	N/A	PERSISTENT RESERVATION IO BARRIERS
82166381	F200308347	US	US7114020	Expired		28-Apr-2000	N/A	N/A	SOFTWARE MECHANISM FOR UNIQUE IDENTIFICATION OF SCSI DEVICE
82167758	F200308575	US	US7348498	Granted		17-Jul-2003	N/A	N/A	PARTIALLY VOIDED ANTI-PADS

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82168118	F200308700	US	US7333293	Granted		29-Jun-2004	N/A	N/A	STORAGE SYSTEM HAVING A READER WITH A LIGHT SENSING PORTION INCLINED WITH RESPECT TO AN AXIS OF A LABEL OF A STORAGE MEDIUM
82171787	F200310143	US	US7761421	Granted		16-May-2003	20-Jan-2022	7,706.00	READ, WRITE, AND RECOVERY OPERATIONS FOR REPLICATED DATA
82174301	F200311171	US	US7697690	Granted		21-Jul-2003	13-Oct-2021	7,706.00	WINDOWED BACKWARD KEY ROTATION
82176806	F200312160	US	US7505261	Granted		18-Mar-2004	17-Sep-2020	7,406.00	ELECTRICAL-OPTICAL SIGNAL CONVERSION FOR AUTOMATED STORAGE SYSTEMS
82176827	F200312171	US	US7230792	Granted		19-Nov-2003	N/A	N/A	MEDIA SELECTION SYSTEMS AND METHODS HAVING A COUPLER FOR SLIDABLY ENGAGING A STORAGE MEDIUM IN A STORAGE SYSTEM
82179566	F200313377	US	US7336490	Granted		24-Nov-2004	N/A	N/A	MULTI-CHIP MODULE WITH POWER SYSTEM
82179569	F200313377	US	US7499281	Granted		2-Jan-2008	3-Sep-2020	7,406.00	MULTI-CHIP MODULE WITH POWER SYSTEM

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82179656	F200313407	US	US7451302	Granted		10-Mar-2004	N/A	N/A	SYSTEM AND METHOD FOR MANAGING CONFIGURATION DATA FOR A MULTI-CELL COMPUTER SYSTEM
82180403	F200313720	US	US7289221	Granted		27-Sep-2004	N/A	N/A	MACH ZEHNDER PHOTONIC CRYSTAL SENSORS AND METHODS
82184357	F200315378	US	US7823156	Granted		3-Feb-2005	26-Apr-2022	7,706.00	METHOD OF HASHING ADDRESS SPACE TO STORAGE SERVERS
82186991	F200316679	US	US7480113	Granted		8-Aug-2007	20-Jul-2020	7,406.00	TAPE DRIVE APPARATUS
82216535	F200401087	US	US7436209	Granted		30-Oct-2006	N/A	N/A	NANOSCALE ELECTRONIC LATCH
82189427	F200401087	US	US7307448	Granted		24-May-2005	N/A	N/A	INTERCONNECTABLE NANOSCALE COMPUTATIONAL STAGES
82189433	F200401087	US	US7257016	Granted		24-May-2005	N/A	N/A	ENHANCED NANOWIRE-CROSSBAR LATCH ARRAY
82189598	F200401152	US	US7529060	Granted		2-Feb-2004	5-Nov-2020	7,406.00	READ AND WRITE HEAD ELEMENT ARRANGEMENT
82190375	F200401591	US	US7546600	Granted		30-Apr-2004	9-Dec-2020	7,406.00	METHOD OF ASSIGNING VIRTUAL PROCESS IDENTIFIER TO PROCESS WITHIN PROCESS DOMAIN

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82191587	F200402090	US	US7289321	Granted		16-Nov-2004	N/A	N/A	VENTILATED CASING FOR AN ELECTRONIC DEVICE
82193519	F200402893	US	US7552434	Granted		30-Apr-2004	23-Dec-2020	7,406.00	METHOD OF PERFORMING KERNEL TASK UPON INITIAL EXECUTION OF PROCESS AT USER LEVEL
82194107	F200403003	US	US8364829	Granted		24-Sep-2004	29-Jul-2020	3,606.00	SYSTEM AND METHOD FOR ASCRIBING RESOURCE CONSUMPTION TO ACTIVITY IN A CAUSAL PATH OF A NODE DISTRIBUTED COMPUTING SYSTEM
82194314	F200403103	US	US7471638	Granted		8-Oct-2004	N/A	N/A	TESTING FOR A MISCONNECTION BETWEEN FIRST AND SECOND NETWORKS
82194803	F200403293	US	USD523859	Expired		4-Apr-2005	N/A	N/A	MEDIA CARTRIDGE
82195382	F200403483	US	US8627213	Granted		10-Aug-2004	7-Jul-2021	3,766.00	CHAT ROOM SYSTEM
82196798	F200404117	US	US8392900	Granted		17-Mar-2005	5-Sep-2020	3,606.00	METHODS AND SYSTEMS FOR BARRIER REDUCTION IN PARALLEL PROCESSING SYSTEMS
82197119	F200404283	US	US7467329	Granted		23-Jun-2005	16-Jun-2020	7,406.00	METHOD OF ESTIMATING STORAGE SYSTEM RELIABILITY
82197158	F200404313	US	US9053501	Granted		31-Oct-2004	9-Dec-2022	3,766.00	SPONTANEOUS SHARING OF MEDIA ASSET REFERENCES

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82201010	F200406253	US	US7544591	Granted		18-Jan-2007	9-Dec-2020	7,406.00	METHOD OF CREATING ISOLATED ELECTRODES IN A NANOWIRE-BASED DEVICE
82201907	F200406631	US	US7242199	Granted		21-Apr-2005	N/A	N/A	ACTIVE INTERCONNECTS AND CONTROL POINTS IN INTEGRATED CIRCUITS
82205042	F200408089	US	US7480424	Granted		19-Sep-2005	20-Jul-2020	7,406.00	METHOD AND APPARATUS FOR MODIFYING AN ELECTROMAGNETIC RADIATION BEAM
82207400	F200408089	US	US8098971	Granted		19-Sep-2005	17-Jul-2023	7,706.00	METHOD AND APPARATUS FOR ELECTROMAGNETIC RESONANCE USING NEGATIVE INDEX MATERIAL
82207409	F200408089	JP	JP4829971	Granted		21-Jul-2006	22-Sep-2020	1,031.63	METHOD AND APPARATUS FOR ELECTROMAGNETIC RESONANCE USING NEGATIVE INDEX MATERIAL
82207415	F200408089	DE	DE602006009536.8	Granted		21-Jul-2006	21-Jul-2020	1,272.38	METHOD AND APPARATUS FOR ELECTROMAGNETIC RESONANCE USING NEGATIVE INDEX MATERIAL
82207418	F200408089	FR	FR1938429	Granted		21-Jul-2006	21-Jul-2020	555.56	METHOD AND APPARATUS FOR ELECTROMAGNETIC RESONANCE USING NEGATIVE INDEX MATERIAL

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82207421	F200408089	GB	GB1938429	Granted		21-Jul-2006	21-Jul-2020	524.44	METHOD AND APPARATUS FOR ELECTROMAGNETIC RESONANCE USING NEGATIVE INDEX MATERIAL
82218434	F200408089	US	US7352941	Granted		31-Oct-2006	N/A	N/A	METHOD AND APPARATUS FOR ELECTROMAGNETIC RESONANCE AND AMPLIFICATION USING NEGATIVE INDEX MATERIAL
82206395	F200500206	US	US7836111	Granted		29-Apr-2005	16-May-2022	7,706.00	DETECTING CHANGE IN DATA
82206401	F200500206	US	US7505868	Granted		29-Apr-2005	17-Sep-2020	7,406.00	PERFORMING QUALITY DETERMINATION OF DATA
82206671	F200500369	US	US8781977	Granted		29-Mar-2005	15-Jan-2022	3,766.00	SYSTEM AND METHOD OF PRICING RESOURCES
82208927	F200501467	US	US7437338	Granted		21-Mar-2006	N/A	N/A	PROVIDING INFORMATION REGARDING A TREND BASED ON OUTPUT OF A CATEGORIZER
82210514	F200502276	US	US7474823	Granted		12-Oct-2006	6-Jul-2020	7,406.00	TUNABLE DISPERSION COMPENSATION
82210871	F200502477	US	US7251092	Granted		25-Jul-2005	N/A	N/A	DATA TRANSFER APPARATUS AND METHOD FOR TRANSFERRING DATA

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82211144	F200502628	US	US7289868	Granted		22-Aug-2005	N/A	N/A	SYSTEM AND METHOD FOR CALCULATING A SHIFT VALUE BETWEEN PATTERN INSTANCES
82212551	F200503308	US	US7502971	Granted		12-Oct-2005	N/A	N/A	DETERMINING A RECURRENT PROBLEM OF A COMPUTER RESOURCE USING SIGNATURES
82213670	F200503906	US	US7489583	Granted		6-Sep-2005	N/A	N/A	CONSTANT-WEIGHT-CODE-BASED ADDRESSING OF NANOSCALE AND MIXED MICROSCALE/NANOSCALE ARRAYS
82214174	F200504358	US	US8606894	Granted		27-Apr-2006	10-Jun-2021	3,766.00	SERVER CONSOLIDATION
82214600	F200504603	US	US7546013	Granted		31-May-2006	N/A	N/A	NANOPARTICLE COUPLED TO WAVEGUIDE
82214609	F200504603	JP	JP4871994	Granted		22-May-2007	25-Nov-2020	873.50	NANOPARTICLE COUPLED TO WAVEGUIDE
82214642	F200504613	US	US7530032	Granted		28-Oct-2005	5-Nov-2020	7,406.00	NANOWIRE CROSSBAR IMPLEMENTATIONS OF LOGIC GATES USING CONFIGURABLE, TUNNELING RESISTOR JUNCTIONS
82216148	F200505468	US	US7447026	Granted		31-Aug-2006	N/A	N/A	SYSTEM FOR HOT SWAPPING HEAT EXCHANGERS

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82217930	F200506432	US	US7823154	Granted		16-Sep-2005	26-Apr-2022	7,706.00	SYSTEM AND METHOD FOR PROVIDING, BY A PLURALITY OF SCHEDULERS, DIFFERENTIATED SERVICE TO CONSUMERS OF DISTRIBUTED RESOURCES
82218791	F200506906	US	US7243877	Granted		7-Apr-2006	N/A	N/A	TAPE REEL
82218968	F200507008	US	US8214838	Granted		26-Jul-2006	3-Jan-2024	7,400.00	SYSTEM AND METHOD FOR ATTRIBUTING TO A CORRESPONDING VIRTUAL MACHINE CPU UTILIZATION OF A NETWORK DRIVER DOMAIN BASED ON WEIGHTED COMMUNICATION
82219595	F200507343	US	US7517794	Granted		21-Oct-2005	N/A	N/A	METHOD FOR FABRICATING NANOSCALE FEATURES
82219769	F200507436	US	US8732307	Granted		25-Jul-2006	20-Nov-2021	3,766.00	PREDICTIVE CONTROL FOR RESOURCE ENTITLEMENT
82220357	F200600115	US	US7707215	Granted		17-Oct-2006	27-Oct-2021	7,706.00	PARIMUTUEL CONTENT PROVISIONING
82222718	F200601010	US	US7610383	Granted		11-Aug-2006	27-Apr-2021	7,706.00	DATA-OBJECT-RELATED-REQUEST ROUTING IN A DYNAMIC, DISTRIBUTED DATA-STORAGE SYSTEM

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82223486	F200601309	US	US8347726	Granted		25-Apr-2007	8-Jul-2020	3,606.00	FREE-STANDING NANOWIRE SENSOR AND METHODS FOR FORMING AND USING THE SAME
82223495	F200601311	US	US8773882	Granted		15-Apr-2010	8-Jan-2022	3,766.00	MIXED-SCALE ELECTRONIC INTERFACES
82225259	F200602234	US	USD627772	Granted		26-Mar-2007	N/A	N/A	AN OPERATOR CONTROL PANEL WITH DISPLAY AND MULTIPLE FUNCTION BUTTONS FOR A STORAGE LIBRARY
82233167	F200602441	US	US8024514	Granted		17-Jul-2007	20-Mar-2023	7,706.00	ACCESS CONTROL MANAGEMENT
82226204	F200602589	US	US8395896	Granted		24-Feb-2007	12-Sep-2020	3,606.00	REDUNDANT COOLING SYSTEMS AND METHODS
82230137	F200700096	US	US7757023	Granted		1-Aug-2007	13-Jan-2022	7,706.00	STORAGE-CENTRIC MANAGEABILITY IN A SYSTEM
82231646	F200700635	US	US7962480	Granted		31-Jul-2007	14-Dec-2022	7,406.00	USING A WEIGHTED TREE TO DETERMINE DOCUMENT RELEVANCE
82231916	F200700731	US	US8793264	Granted		18-Jul-2007	29-Jan-2022	3,766.00	DETERMINING A SUBSET OF DOCUMENTS FROM WHICH A PARTICULAR DOCUMENT WAS DERIVED
82232318	F200700875	US	US8392708	Granted		29-Sep-2008	5-Sep-2020	3,606.00	AUDITING DATA INTEGRITY

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82239869	F200700875	US	US8281151	Granted		1-Oct-2008	2-Apr-2024	7,706.00	AUDITOR ASSISTED EXTRACTION AND VERIFICATION OF CLIENT DATA RETURNED FROM A STORAGE PROVIDED WHILE HIDING CLIENT DATA FROM THE AUDITOR
82232477	F200700945	US	US7477809	Granted		31-Jul-2007	13-Jul-2020	7,406.00	PHOTONIC GUIDING DEVICE
82232483	F200700945	US	US7835602	Granted		23-Oct-2008	16-May-2022	7,706.00	PHOTONIC GUIDING DEVICE
82232486	F200700945	CN	CN200880101515.3	Granted		30-Jul-2008	30-Jul-2021	990.04	PHOTONIC GUIDING DEVICE
82232495	F200700945	KR	KR10-1588348	Granted		30-Jul-2008	19-Jan-2021	260.52	PHOTONIC GUIDING DEVICE
82239827	F200702994	US	US8732308	Granted		1-Oct-2008	20-Nov-2021	3,766.00	COORDINATED MANAGEMENT IN VIRTUALIZED SYSTEMS USING MANAGEMENT BROKERS AND MANAGEMENT CHANNELS
82245341	F200702994	US	US9395786	Granted		9-Oct-2008	19-Jan-2024	3,766.00	CROSS-LAYER POWER MANAGEMENT IN A MULTI-LAYER SYSTEM
82239983	F200703037	US	US8812508	Granted		14-Dec-2007	19-Feb-2022	3,766.00	SYSTEMS AND METHODS FOR EXTRACTING PHASES FROM TEXT
82241663	F200703681	US	US8694991	Granted		22-Aug-2008	8-Oct-2021	3,766.00	SERVER VIRTUALIZED USING VIRTUALIZATIO N PLATFORM

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82654469	F200703809	US	US8677365	Granted		27-Aug-2008	18-Sep-2021	3,766.00	PERFORMING ZONE BASED WORKLOAD SCHEDULING ACCORDING TO ENVIRONMENTAL CONDITIONS
82242488	F200703973	US	US7925927	Granted		30-Oct-2008	12-Oct-2022	7,706.00	SIMULATOR FOR DETERMINING DATA LOSS IN A FAULT TOLERANT SYSTEM
82242503	F200703974	US	US8677208	Granted		19-Sep-2008	18-Sep-2021	3,766.00	GENERATING A PARALLEL RECOVERY PLAN FOR A DATA STORAGE SYSTEM
82242506	F200703974	CN	CN200880117051.5	Granted		19-Sep-2008	19-Sep-2020	985.42	GENERATING A PARALLEL RECOVERY PLAN FOR A DATA STORAGE SYSTEM
82243097	F200704122	US	US8019765	Granted		29-Oct-2008	13-Mar-2023	7,706.00	IDENTIFYING FILES ASSOCIATED WITH A WORKFLOW
82620394	F200704234	US	US8774625	Granted		8-Aug-2008	8-Jan-2022	3,766.00	METHOD AND SYSTEMS FOR IMPLEMENTING HIGH-RADIX SWITCH TOPOLOGIES ON RELATIVELY LOWER-RADIX SWITCH PHYSICAL NETWORKS
82244438	F200704554	GB	GB2461899	Granted		17-Jul-2008	17-Jul-2021	443.74	CONTROLLING MOTION OF STORAGE MEDIA
82244441	F200704554	US	US7911727	Granted		1-Oct-2008	22-Sep-2022	7,706.00	CONTROLLING MOTION OF STORAGE MEDIA

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Patent ID Tranche 8	Patent Family Id	CC	Patent Number	Patent Status	Application Number if not Granted	Filed Date	Annuity Due Date	Annuity Cost (Est. USD)	Application Title
82641262	F200704721	US	US8386494	Granted		7-Aug-2008	26-Aug-2020	3,606.00	PROVIDING DATA STRUCTURES FOR DETERMINING WHETHER KEYS OF AN INDEX ARE PRESENT IN A STORAGE SYSTEM
82245164	F200800251	US	US8347070	Granted		30-Oct-2008	1-Jul-2024	7,706.00	METHOD FOR CONTROLLING RESOURCE UTILIZATION RATE AND COMPUTER SYSTEM
82245167	F200800252	US	US8677375	Granted		29-Jan-2009	18-Sep-2021	3,766.00	SELECTING EXECUTING REQUESTS TO PREEMPT
82247732	F200801486	US	US8516099	Granted		26-Jan-2009	20-Feb-2021	3,606.00	SCALING MANAGEMENT TASKS PERFORMED BY A MANAGEMENT SYSTEM ACCORDING TO A DETERMINED SIZE OF A MANAGED ENVIRONMENT
82910274	F200802535	US	US9179580	Granted		10-Jun-2010	3-May-2023	3,766.00	DATA CENTER COOLER WITH CHILLER AND COOLING TOWER (AS AMENDED)
82249292	F200802683	US	US8355828	Granted		13-Mar-2009	15-Jul-2020	3,606.00	DETERMINING OPTIMAL SETTINGS FOR RESOURCE ACTUATORS
82853976	F200803285	US	US8774638	Granted		31-Jul-2009	8-Jan-2022	3,766.00	PHOTONIC QUANTUM SYSTEM ALIGNMENT USING MULTIPLE BEAMS

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Patent ID Tranche 8	Patent Family Id	CC	Patent Number	Patent Status	Application Number if not Granted	Filed Date	Annuity Due Date	Annuity Cost (Est. USD)	Application Title
82925997	F200803285	CN	CN200980160706.1	Granted		31-Jul-2009	31-Jul-2021	1,032.98	PHOTONIC QUANTUM SYSTEM ALIGNMENT USING MULTIPLE BEAMS
82250756	F200900032	US	US8390705	Granted		27-Oct-2009	5-Sep-2024	7,706.00	NANOWIRE PHOTODIODES
82250801	F200900057	US	US8402016	Granted		27-May-2009	19-Sep-2020	3,606.00	FETCHING OPTIMIZATION IN MULTI-WAY PIPELINED DATABASE JOINS
82922683	F200900329	US	US8569900	Granted		20-Jul-2009	29-Apr-2021	3,766.00	NANOWIRE SENSOR WITH ANGLED SEGMENTS THAT ARE DIFFERENTLY FUNCTIONALIZED
82251176	F200900333	US	US8327721	Granted		26-Oct-2009	11-Jun-2024	7,706.00	SENSOR FABRIC FOR SHAPE PERCEPTION
82251317	F200900411	US	US8374622	Granted		12-Dec-2007	12-Aug-2024	7,706.00	CALL ADMISSION CONTROL FOR WI FI
82918780	F200902356	CN	CN200980161379.1	Granted		10-Jul-2009	10-Jul-2020	666.46	MEMRISTIVE JUNCTION WITH INTRINSIC RECTIFIER
82258220	F200902356	TW	TWI517465	Granted		9-Jul-2010	10-Jan-2021	237.00	MEMRISTIVE JUNCTION WITH INTRINSIC RECTIFIER
82852408	F200902356	US	US8710483	Granted		10-Jul-2009	29-Oct-2021	3,766.00	MEMRISTIVE JUNCTION WITH INTRINSIC RECTIFIER
82918782	F200902356	KR	KR10-1530118	Granted		10-Jul-2009	12-Jun-2021	664.27	MEMRISTIVE JUNCTION WITH INTRINSIC RECTIFIER

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82258373	F200902417	TW	TWI523290	Granted		27-Jul-2010	20-Feb-2021	237.00	MEMRISTORS WITH ASYMMETRIC ELECTRODES
82853070	F200902417	US	US9171613	Granted		28-Jul-2009	27-Apr-2023	3,766.00	MEMRISTORS WITH ASYMMETRIC ELECTRODES
82258460	F200902461	US	US9405731	Granted		26-Aug-2009	2-Feb-2024	3,766.00	ENERGY BASED WAVELET THRESHOLDING
82259390	F200903200	US	US8431474	Granted		25-Sep-2009	30-Oct-2024	7,406.00	THREE DIMENSIONAL MULTILAYER CIRCUIT
82259435	F200903225	US	US8392168	Granted		3-Nov-2009	5-Sep-2020	3,606.00	SIMULATING AN APPLICATION DURING A SAMPLING PERIOD AND A NON-SAMPLING PERIOD
82259600	F200903307	US	US8402461	Granted		15-Nov-2009	19-Sep-2020	3,606.00	SWITCHING BETWEEN DIRECT MODE AND INDIRECT MODE FOR VIRTUAL MACHINE I/O REQUESTS
90045005	F200903800	JP	JP5969677	Granted		5-Oct-2015	15-Jul-2020	182.67	MULTIMODE VERTICAL-CAVITY SURFACE-EMITTING LASER ARRAYS
83034236	F200903989	US	US8904176	Granted		28-Apr-2010	2-Jun-2022	3,766.00	PROTECTING THE INFORMATION ENCODED IN A BLOOM FILTER USING ENCODED BITS OF DATA

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Patent ID Tranche 8	Patent Family Id	CC	Patent Number	Patent Status	Application Number if not Granted	Filed Date	Annuity Due Date	Annuity Cost (Est. USD)	Application Title
90648620	F200903989	DE	DE602010053953.9	Granted		28-Apr-2010	28-Apr-2021	804.57	PROTECTING THE INFORMATION ENCODED IN A BLOOM FILTER USING ENCODED BITS OF DATA
90648624	F200903989	GB	GB2564346	Granted		28-Apr-2010	28-Apr-2021	327.01	PROTECTING THE INFORMATION ENCODED IN A BLOOM FILTER USING ENCODED BITS OF DATA
82261124	F200904320	US	US8364909	Granted		25-Jan-2010	29-Jul-2020	3,606.00	DETERMINING A CONFLICT IN ACCESSING SHARED RESOURCES USING A REDUCED NUMBER OF CYCLES
82261316	F200904449	US	US8664940	Granted		12-Oct-2010	4-Sep-2021	3,766.00	GRAPHITE-BASED SENSOR
83214681	F201000277	CN	CN201080069548.1	Granted		11-Oct-2010	11-Oct-2020	648.83	SYSTEM AND METHOD FOR QUERYING A DATA STREAM
82263137	F201000463	US	US8539059	Granted		2-Jun-2010	17-Mar-2021	3,766.00	MANAGING COOLING DEVICES AND COMPUTING NODES IN AN INFRASTRUCTURE
83139124	F201000520	US	US8990165	Granted		13-Jul-2010	24-Sep-2022	3,766.00	METHODS, APPARATUS AND ARTICLES OF MANUFACTURE TO ARCHIVE DATA
82585683	F201000596	US	US8725904	Granted		18-Aug-2011	13-Nov-2021	3,766.00	MANAGEMENT PROCESSORS, METHODS AND ARTICLES OF MANUFACTURE

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Patent ID Tranche 8	Patent Family Id	CC	Patent Number	Patent Status	Application Number if not Granted	Filed Date	Annuity Due Date	Annuity Cost (Est. USD)	Application Title
83166392	F201000824	US	US9275542	Granted		30-Jul-2010	1-Sep-2023	3,766.00	LOCATION-INDEXED AUDIO CONTENT
83834197	F201001697	CN	CN201180074045.8	Granted		2-Sep-2011	2-Sep-2021	698.53	APPARATUS TO STORE DATA AND METHODS TO READ MEMORY CELLS
83834203	F201001697	US	US9311998	Granted		2-Sep-2011	12-Oct-2023	3,766.00	APPARATUS TO STORE DATA AND METHODS TO READ MEMORY CELLS
90175060	F201001697	US	US9431103	Granted		9-Mar-2016	29-Feb-2024	3,766.00	APPARATUS TO STORE DATA AND METHODS TO READ MEMORY CELLS
82267643	F201002333	US	US6937610	Expired		6-Oct-2000	N/A	N/A	METHOD AND PROTOCOL FOR A MEDIUM ACCESS CONTROL LAYER FOR LOCAL AREA NETWORKS WITH MULTIPLE-PRIORITY TRAFFIC
82268585	F201002556	US	US6959082	Expired		10-Jul-2001	N/A	N/A	METHOD AND SYSTEM FOR AUTOMATIC GAIN CONTROL WITH ADAPTIVE TABLE LOOKUP
82269776	F201002905	US	US7660408	Expired		28-Apr-2000	N/A	N/A	ATTENUATION AND TERMINATION CIRCUIT USING IMPEDANCE SYNTHESIS
82269779	F201002905	US	US8472614	Expired		22-Dec-2009	N/A	N/A	ATTENUATION AND TERMINATION CIRCUIT USING IMPEDANCE SYNTHESIS

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82269821	F201002924	US	US6859051	Expired		2-Jun-2003	N/A	N/A	SYSTEMS AND METHODS FOR IMPEDANCE SYNTHESIS
82270880	F201003297	US	US6507303	Expired		31-May-2000	N/A	N/A	DIRECT DIGITAL CONVERSION OF BASEBAND SIGNALS TO SUPER-NYQUIST FREQUENCIES
82272755	F201003297	US	US6703954	Expired		20-Dec-2002	N/A	N/A	DIRECT DIGITAL CONVERSION OF BASEBAND SIGNALS TO SUPER-NYQUIST FREQUENCIES
82271678	F201003514	US	US6601180	Expired		14-Apr-2000	N/A	N/A	METHOD AND SYSTEM FOR PROVIDING LINK DETECTION TO A PC CARD FOR POWER MANAGEMENT
82271741	F201003533	US	US7275093	Expired		26-Apr-2000	N/A	N/A	METHODS AND DEVICE FOR MANAGING MESSAGE SIZE TRANSMITTED OVER A NETWORK
82271903	F201003585	US	US6826279	Expired		25-May-2000	N/A	N/A	BASE BAND ECHO CANCELLATION USING LAGUERRE ECHO ESTIMATION
82272026	F201003635	US	US6982962	Expired		10-Apr-2000	N/A	N/A	SYSTEM AND METHOD FOR SELECTING A NETWORK ACCESS PROVIDER USING A PORTABLE INFORMATION DEVICE

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82272263	F201003731	US	US6545643	Expired		8-Sep-2000	N/A	N/A	EXTENDABLE PLANAR DIVERSITY ANTENNA
82272266	F201003731	US	US6933896	Expired		7-Apr-2003	N/A	N/A	EXTENDABLE PLANAR DIVERSITY ANTENNA
82272293	F201003749	US	US6766453	Expired		28-Apr-2000	N/A	N/A	AUTHENTICATED DIFFIE-HELLMAN KEY AGREEMENT PROTOCOL WHERE THE COMMUNICATING PARTIES SHARE A SECRET KEY WITH A THIRD PARTY
82272296	F201003753	US	US7024690	Expired		28-Apr-2000	N/A	N/A	PROTECTED MUTUAL AUTHENTICATION OVER AN UNSECURED WIRELESS COMMUNICATION CHANNEL
82272530	F201003835	US	US6772349	Expired		3-May-2000	N/A	N/A	DETECTION OF AN ATTACK SUCH AS A PRE-ATTACK ON A COMPUTER NETWORK
82272536	F201003836	US	US6862286	Expired		8-May-2000	N/A	N/A	TRACKING DYNAMIC ADDRESSES ON A NETWORK
82272572	F201003848	US	US6704016	Expired		8-May-2000	N/A	N/A	METHOD AND APPARATUS FOR THE GRAPHICAL PRESENTATION OF SELECTED DATA

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82272617	F201003860	US	US6701442	Expired		9-May-2000	N/A	N/A	A POWER MANAGEMENT CIRCUIT FOR SELECTIVELY APPLYING POWER TO NETWORK MONITORING CIRCUITRY WHICH MONITORS THE RECEIPT OF NETWORK WAKE-UP MESSAGES
82272695	F201003911	US	US6273735	Expired		25-Oct-2000	N/A	N/A	ROTATING TURRET SIDE-ENTRY RETRACTABLE JACK
82272893	F201004009	US	US6366261	Expired		8-Sep-2000	N/A	N/A	METHOD AND APPARATUS FOR OVERMOLDED ANTENNA
82272908	F201004015	US	US6509876	Expired		8-Sep-2000	N/A	N/A	ANTENNA FOR WIRELESS COMMUNICATIO N SYSTEM
82818908	F201005231	US	US9275041	Granted		24-Oct-2011	1-Sep-2023	3,766.00	PERFORMING SENTIMENT ANALYSIS ON MICROBLOGGIN G DATA, INCLUDING IDENTIFYING A NEW OPINION TERM THEREIN (AS AMENDED)
82576208	F201005331	US	US8390959	Granted		24-Mar-2011	5-Sep-2020	3,606.00	ACTUATOR WITH NON-MOVING MASS
83051101	F201005530	TW	TWI529988	Granted		19-Jul-2012	10-Apr-2021	237.00	MEMRISTOR STRUCTURE WITH A DOPANT SOURCE
83786501	F201005530	US	US9178153	Granted		20-Jul-2011	3-May-2023	3,766.00	MEMRISTOR STRUCTURE WITH A DOPANT SOURCE

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Patent ID Tranche 8	Patent Family Id	CC	Patent Number	Patent Status	Application Number if not Granted	Filed Date	Annuity Due Date	Annuity Cost (Est. USD)	Application Title
83057100	F201005561	TW	TWI520149	Granted		26-Jul-2012	31-Jan-2021	237.00	METHOD AND SYSTEM FOR REDUCING WRITE-BUFFER CAPACITIES WITHIN MEMRISTOR-BASED DATA-STORAGE DEVICES
83769079	F201005561	KR	KR10-1620761	Granted		27-Jul-2011	4-May-2021	383.94	METHOD AND SYSTEM FOR REDUCING WRITE-BUFFER CAPACITIES WITHIN MEMRISTOR-BASED DATA-STORAGE DEVICES
83769083	F201005561	US	US9405614	Granted		27-Jul-2011	2-Feb-2024	3,766.00	METHOD AND SYSTEM FOR REDUCING WRITE-BUFFER CAPACITIES WITHIN MEMRISTOR-BASED DATA-STORAGE DEVICES
82678579	F201005877	US	US8373584	Granted		16-May-2011	12-Aug-2020	3,606.00	COMPRESSING AND DECOMPRESSIN G DATA
83051185	F201006081	TW	TWI520393	Granted		26-Jul-2012	31-Jan-2021	237.00	NITRIDE-BASED MEMRISTORS
83807343	F201006081	KR	KR10-1528572	Granted		3-Aug-2011	8-Jun-2021	522.19	NITRIDE-BASED MEMRISTORS
83566663	F700205541	JP	JP5859654	Lapsed		25-Aug-2011	25-Dec-2020	206.51	MODEL-BASED STEREOSCOPIC AND MULTIVIEW CROSS-TALK REDUCTION
82835640	F700206343	US	US8854860	Granted		31-Jan-2012	7-Apr-2022	3,766.00	METAL-INSULATOR TRANSITION LATCH

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83862114	F700206343	KR	KR10-1634191	Granted		28-Oct-2011	22-Jun-2021	383.94	METAL-INSULATOR PHASE TRANSITION FLIP-FLOP
83862120	F700206343	US	US9331700	Granted		28-Oct-2011	3-Nov-2023	3,766.00	METAL-INSULATOR PHASE TRANSITION FLIP-FLOP
83863051	F700206384	KR	KR101620247	Granted		4-Nov-2011	3-May-2021	486.79	DECODER CIRCUITS HAVING METAL-INSULATOR-METAL THRESHOLD SWITCHES
83815245	F700206830	US	US9064568	Granted		26-Aug-2011	23-Dec-2022	3,766.00	CIRCUIT AND METHOD FOR READING A RESISTIVE SWITCHING DEVICE IN AN ARRAY
84020521	F700208907	US	US9224821	Granted		26-Apr-2012	29-Jun-2023	3,766.00	CUSTOMIZABLE NONLINEAR ELECTRICAL DEVICES
83013477	F700210371	US	US8793258	Granted		31-Jul-2012	29-Jan-2022	3,766.00	PREDICTING SHARING ON A SOCIAL NETWORK
83099558	F700211223	US	US9411657	Granted		9-Nov-2012	9-Feb-2024	3,766.00	LOAD-BALANCED SPARSE ARRAY PROCESSING
83138539	F700212517	US	US8810780	Granted		31-Jan-2013	19-Feb-2022	3,766.00	PLASMON RESONANCE BASED STRAIN GAUGE
83139311	F700212552	US	US9408050	Granted		31-Jan-2013	2-Feb-2024	3,766.00	REDUCING BANDWIDTH USAGE OF A MOBILE CLIENT

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Patent ID Tranche 8	Patent Family Id	CC	Patent Number	Patent Status	Application Number if not Granted	Filed Date	Annuity Due Date	Annuity Cost (Est. USD)	Application Title
83140845	F700212571	US	US9195727	Granted		30-Jan-2013	24-May-2023	3,766.00	DELTA PARTITIONS FOR BACKUP AND RESTORE
84191546	F700220555	EM	EM28789910001	Granted		27-Nov-2015	27-Nov-2020	135.11	RDX MICROSERVER MODULE
90405775	F700220555	EM	EM28789910002	Granted		27-Nov-2015	27-Nov-2020	135.11	SERVER MODULE

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Vertiv v. Valtrus

Recordable Assignment - Escrow (PEA) Valtrus_v3

Final Audit Report 2021-01-21

Created:	2021-01-20
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"Recordable Assignment - Escrow (PEA) Valtrus_v3" History

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HPE-OT_Valtrus_ Assignment and Lien

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PART B - FEE(S) TRANSMITTAL

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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.

TIFFANY TURNER (Depositor's name)
(Signature)
11-8-04 (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,697	10/31/2003	Chandrakant D. Patel	100111090-1/5	9800

TITLE OF INVENTION: COOLING SYSTEM

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1370	$300	$1670	01/26/2005

EXAMINER	ART UNIT	CLASS-SUBCLASS
NORMAN, MARC E	3744	062-259200

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.
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2. For printing on the patent front page, list
(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
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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: Hewlett-Packard Development Company, L.P.
(B) RESIDENCE: (CITY and STATE OR COUNTRY): Houston, Texas

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:
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☒ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number 08-2025 (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 Richard P. Lange Date 11-8-04
Typed or printed name RICHARD P. LANGE Registration No. 27,296

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.

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.

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02 FC:1504 300.00 DA
03 FC:8001 3.00 DA

PAGE 1/1 * RCVD AT 11/8/2004 4:01:34 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-2/1 * DNIS:7464000 * CSID:6508575487 * DURATION (mm-ss):00-46

Vertiv Ex. 1003
Vertiv v. Valtrus

UNITED STATES PATENT AND TRADEMARK OFFICE

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

7590 10/26/2004

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P. O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER	
NORMAN, MARC E	
ART UNIT	**PAPER NUMBER**
3744	

DATE MAILED: 10/26/2004

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,697	10/31/2003	Chandrakant D. Patel	100111090-3	9800

TITLE OF INVENTION: COOLING SYSTEM

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1370	$300	$1670	01/26/2005

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.

PTOL-85 (Rev. 09/04) Approved for use through 04/30/2007.

Vertiv Ex. 1003
Vertiv v. Valtrus

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 further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

7590 10/26/2004

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P. O. Box 272400
Fort Collins, CO 80527-2400

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.

(Depositor's name)

(Signature)

(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,697	10/31/2003	Chandrakant D. Patel	100111090-3	9800

TITLE OF INVENTION: COOLING SYSTEM

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1370	$300	$1670	01/26/2005

EXAMINER	ART UNIT	CLASS-SUBCLASS
NORMAN, MARC E	3744	062-259200

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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Vertiv Ex. 1003
Vertiv v. Valtrus

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,697	10/31/2003	Chandrakant D. Patel	100111090-3	9800

7590 10/26/2004

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P. O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER	
NORMAN, MARC E	
ART UNIT	**PAPER NUMBER**
3744	

DATE MAILED: 10/26/2004

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 0 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 0 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 (703) 305-1383. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

PTOL-85 (Rev. 09/04) Approved for use through 04/30/2007.

Vertiv Ex. 1003
Vertiv v. Valtrus

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,697	10/31/2003	Chandrakant D. Patel	100111090-3	9800

7590 10/26/2004

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P. O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER	
NORMAN, MARC E	
ART UNIT	**PAPER NUMBER**
3744	

DATE MAILED: 10/26/2004

Notice of Fee Increase on October 1, 2004

If a reply to a "Notice of Allowance and Fee(s) Due" is filed in the Office on or after October 1, 2004, then the amount due will be higher than that set forth in the "Notice of Allowance and Fee(s) Due" because some fees will increase effective October 1, 2004. See Revision of Patent Fees for Fiscal Year 2005; Final Rule, 69 Fed. Reg. 52604, 52606 (May 10, 2004).

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

If the fee paid is the amount shown on the "Notice of Allowance and Fee(s) Due" but not the correct amount in view of the fee increase, a "Notice of Pay Balance of Issue Fee" will be mailed to applicant. In order to avoid processing delays associated with mailing of a "Notice of Pay Balance of Issue Fee," if the response to the Notice of Allowance is to be filed on or after October 1, 2004 (or mailed with a certificate of mailing on or after October 1, 2004), the issue fee paid should be the fee that is required at the time the fee is paid. See Manual of Patent Examining Procedure (MPEP), Section 1306 (Eighth Edition, Rev. 2, May 2004). If the issue fee was previously paid, and the response to the "Notice of Allowance and Fee(s) Due" includes a request to apply a previously-paid issue fee to the issue fee now due, then the difference between the issue fee amount at the time the response is filed and the previously-paid issue fee should be paid. See MPEP Section 1308.01.

Effective October 1, 2004, 37 CFR 1.18 is amended by revising paragraphs (a) through (c) to read as set forth below.

Section 1.18 Patent post allowance (including issue) fees.

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent:
- By a small entity (Sec. 1.27(a)) $685.00
- By other than a small entity $1,370.00

(b) Issue fee for issuing a design patent:
- By a small entity (Sec. 1.27(a)) $245.00
- By other than a small entity $490.00

(c) Issue fee for issuing a plant patent:
- By a small entity (Sec. 1.27(a)) $330.00
- By other than a small entity $660.00

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

PTOL-85 (Rev. 09/04) Approved for use through 04/30/2007.

Vertiv Ex. 1003
Vertiv v. Valtrus

Notice of Allowability	Application No.	Applicant(s)	
	10/697,697	PATEL ET AL.	
	Examiner	Art Unit	
	Marc E. Norman	3744	

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

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

1. ☒ This communication is responsive to *amendment filed 4 October 2004*.

2. ☒ The allowed claim(s) is/are *1,2,5,9-11,19,22-24 and 30-41*.

3. ☒ The drawings filed on *31 October 2003* 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)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Vertiv Ex. 1003
Vertiv v. Valtrus

REASONS FOR ALLOWANCE

Claims 1, 2, 5, 9-11, 19, 22-24, and 30-41 are allowed.

The following is an examiner's statement of reasons for allowance: As amended, independent claims 1, 22, 23, 30, and 39 overcome Stahl et al. as applied in the previous Office Action. The prior art (and in particular Stahl et al.) does not teach the method/system of cooling a room having a plurality of computer systems comprising the combination of steps/features recited, and in particular wherein the mass flow rate of the cooling fluid supplied to each of the heat exchangers is individually manipulated.

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

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc E. Norman whose telephone number is 703-305-2711. The examiner can normally be reached on Mon.-Fri., 8:00-5:30, with first Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise Esquivel can be reached on 703-308-2597. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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).

MN

MARC NORMAN
PRIMARY EXAMINER

Issue Classification	Application No.	Applicant(s)	
	10/697,697	PATEL ET AL.	
	Examiner	Art Unit	
	Marc E. Norman	3744	

ISSUE CLASSIFICATION

ORIGINAL CLASS	ORIGINAL SUBCLASS	CLASS	CROSS REFERENCE(S) SUBCLASS (ONE SUBCLASS PER BLOCK)						
62	259.2	62	185	201					
INTERNATIONAL CLASSIFICATION		361	696						
	/								
	/								
	/								
	/								
	/								

~~(Assistant Examiner)~~ ~~(Date)~~

TH 10-25-04
(Legal Instruments Examiner) (Date)

MARC NORMAN
PRIMARY EXAMINER 10/20/04
(Primary Examiner) (Date)

Total Claims Allowed: 22

O.G. Print Claim(s)	O.G. Print Fig.
1	3

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

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	(1)	17	31		61		91		121		151		181
2	2	7	32		62		92		122		152		182
	3	8	33		63		93		123		153		183
	4	9	34		64		94		124		154		184
3	5	13	35		65		95		125		155		185
	6	15	36		66		96		126		156		186
	7	18	37		67		97		127		157		187
	8	19	38		68		98		128		158		188
4	9	20	(39)		69		99		129		159		189
5	10	21	40		70		100		130		160		190
6	11	22	41		71		101		131		161		191
	12		42		72		102		132		162		192
	13		43		73		103		133		163		193
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	16		46		76		106		136		166		196
	17		47		77		107		137		167		197
	18		48		78		108		138		168		198
11	19		49		79		109		139		169		199
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	21		51		81		111		141		171		201
10	(22)		52		82		112		142		172		202
14	(23)		53		83		113		143		173		203
12	24		54		84		114		144		174		204
	25		55		85		115		145		175		205
	26		56		86		116		146		176		206
	27		57		87		117		147		177		207
	28		58		88		118		148		178		208
	29		59		89		119		149		179		209
16	(30)		60		90		120		150		180		210

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Vertiv v. Valtrus

Search Notes

Application No.	Applicant(s)	
10/697,697	PATEL ET AL.	
Examiner	**Art Unit**	
Marc E. Norman	3744	

SEARCHED

Class	Subclass	Date	Examiner
62	259.2 201 229 185 186	4/30/04	MN
	157 208		
	178 180		
361	696		
update search		10/20/04	MN

INTERFERENCE SEARCHED

Class	Subclass	Date	Examiner
Same as above		10/20/04	MN

SEARCH NOTES (INCLUDING SEARCH STRATEGY)

	DATE	EXMR
Consulted Parent Case (10/210,040) Inventor Name Search	4/29/04	MN
EAST update search (see attached)	10/20/04	MN

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Index of Claims

Application No.	Applicant(s)
10/697,697	PATEL ET AL.
Examiner	**Art Unit**
Marc E. Norman	3744

√	Rejected	–	(Through numeral) Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

Final	Original	4/30/04	10/20/04
	(1)	√	=
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	Hits	Search Text	DBs
1	710	(62/259.2).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT
2	398	(62/201).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT
3	726	(62/229).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT
4	369	(62/185).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT
5	1028	(62/186).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT
6	513	(62/157).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT
7	330	(62/208).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT
8	154	(62/178).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT
9	750	(62/180).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT
10	127	(361/696).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT
11	11931	(computer or data) adj (room or center)	USPAT; US-PGPUB; EPO; JPO; DERWENT
12	187	((computer or data) adj (room or center)) and 62/$.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT
13	363358	(heat adj exchanger) or evaporator	USPAT; US-PGPUB; EPO; JPO; DERWENT
14	144	(((computer or data) adj (room or center)) and 62/$.ccls.) and ((heat adj exchanger) or evaporator)	USPAT; US-PGPUB; EPO; JPO; DERWENT
15	25	((((computer or data) adj (room or center)) and 62/$.ccls.) and ((heat adj exchanger) or evaporator)) and chiller	USPAT; US-PGPUB; EPO; JPO; DERWENT
16	44	((((computer or data) adj (room or center)) and 62/$.ccls.) and ((heat adj exchanger) or evaporator)) and (flow adj rate)	USPAT; US-PGPUB; EPO; JPO; DERWENT

EAST update Seard 10/20/04

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	Hits	Search Text	DBs
17	61021	(flow adj rate) with (coolant or (cooling adj fluid) or water or refrigerant)	USPAT; US-PGPUB; EPO; JPO; DERWENT
18	37	((((computer or data) adj (room or center)) and 62/$.ccls.) and ((heat adj exchanger) or evaporator)) and ((flow adj rate) with (coolant or (cooling adj fluid) or water or refrigerant))	USPAT; US-PGPUB; EPO; JPO; DERWENT
19	28	(((((computer or data) adj (room or center)) and 62/$.ccls.) and ((heat adj exchanger) or evaporator)) and ((flow adj rate) with (coolant or (cooling adj fluid) or water or refrigerant))) not (bash-cul$.in. or patel-chan$.in.)	USPAT; US-PGPUB; EPO; JPO; DERWENT
20	203	((computer or data) adj (room or center)) and 361/$.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT
21	45	(((computer or data) adj (room or center)) and 361/$.ccls.) and ((heat adj exchanger) or evaporator)	USPAT; US-PGPUB; EPO; JPO; DERWENT
22	26	((((computer or data) adj (room or center)) and 361/$.ccls.) and ((heat adj exchanger) or evaporator)) and (flow adj rate)	USPAT; US-PGPUB; EPO; JPO; DERWENT
23	13	((((computer or data) adj (room or center)) and 361/$.ccls.) and ((heat adj exchanger) or evaporator)) and ((flow adj rate) with (coolant or (cooling adj fluid) or water or refrigerant))	USPAT; US-PGPUB; EPO; JPO; DERWENT
24	603	62/$.ccls. and 361/$.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT
25	571	((computer or data) adj (room or center)) and (temperature near3 sens$3)	USPAT; US-PGPUB; EPO; JPO; DERWENT

	Hits	Search Text	DBs
26	4370	((62/259.2).CCLS.) or ((62/201).CCLS.) or ((62/229).CCLS.) or ((62/185).CCLS.) or ((62/186).CCLS.) or ((62/157).CCLS.) or ((62/208).CCLS.) or ((62/178).CCLS.) or ((62/180).CCLS.) or ((361/696).CCLS.)	USPAT; US-PGPUB; EPO; JPO; DERWENT
27	56	(((62/259.2).CCLS.) or ((62/201).CCLS.) or ((62/229).CCLS.) or ((62/185).CCLS.) or ((62/186).CCLS.) or ((62/157).CCLS.) or ((62/208).CCLS.) or ((62/178).CCLS.) or ((62/180).CCLS.) or ((361/696).CCLS.)) and (((computer or data) adj (room or center)) and (temperature near3 sens$3))	USPAT; US-PGPUB; EPO; JPO; DERWENT
28	30	((((62/259.2).CCLS.) or ((62/201).CCLS.) or ((62/229).CCLS.) or ((62/185).CCLS.) or ((62/186).CCLS.) or ((62/157).CCLS.) or ((62/208).CCLS.) or ((62/178).CCLS.) or ((62/180).CCLS.) or ((361/696).CCLS.)) and (((computer or data) adj (room or center)) and (temperature near3 sens$3))) and (flow adj rate)	USPAT; US-PGPUB; EPO; JPO; DERWENT
29	10	(((((62/259.2).CCLS.) or ((62/201).CCLS.) or ((62/229).CCLS.) or ((62/185).CCLS.) or ((62/186).CCLS.) or ((62/157).CCLS.) or ((62/208).CCLS.) or ((62/178).CCLS.) or ((62/180).CCLS.) or ((361/696).CCLS.)) and (((computer or data) adj (room or center)) and (temperature near3 sens$3))) and (flow adj rate)) not (bash-cul$.in. or patel-chan$.in.)	USPAT; US-PGPUB; EPO; JPO; DERWENT

PATENT APPLICATION FEE DETERMINATION RECORD
Effective October 1, 2003

Application or Docket Number: 10011/990-5 (18/699,697)

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	22	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	22 minus 20=	* 2
INDEPENDENT CLAIMS	5 minus 3 =	* 2
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	OR	RATE	FEE
BASIC FEE	385.00	OR	BASIC FEE	770.00
X$ 9=		OR	X$18=	36
X43=		OR	X86=	172
+145=		OR	+290=	
TOTAL		OR	TOTAL	972

CLAIMS AS AMENDED - PART II

AMENDMENT A	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X43=		OR	X86=	
+145=		OR	+290=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT B	(Column 1) 10-4-04 CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	* 22	Minus	** 22	=
Independent	* 5	Minus	*** 5	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X43=		OR	X86=	
+145=		OR	+290=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT C	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X43=		OR	X86=	
+145=		OR	+290=	
TOTAL ADDIT. FEE		OR	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.

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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, Colorado 80527-2400

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PATENT & TRADEMARK OFFICE
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HPNO 100111090-5

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):	Chandrakant D. Patel et al.	**Confirmation No.:**	9800
Serial No.:	10/697,697	**Examiner:**	Marc E. Norman
Filed:	October 31, 2003	**Group Art Unit:**	3744
Title:	COOLING SYSTEM		

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

AMENDMENT UNDER 37 C.F.R. § 1.111

Sir:

In response to the Official Action dated May 4, 2004, kindly amend the application identified above as follows. In the following, underlines indicate additions and strikethroughs indicate deletions.

IN THE CLAIMS:

Please find below a listing of all of the pending claims. The statuses of the claims are set forth in parentheses.

1. (Currently amended) A method for cooling a room configured to house a plurality of computer systems, said method comprising:

providing a plurality of heat exchanger units configured to receive air from said room and to deliver air to said room;

supplying said plurality of heat exchanger units with cooling fluid from an air conditioning unit;

cooling said received air through heat exchange with the cooling fluid in the plurality of heat exchanger units;

sensing temperatures at one or more locations in said room;

controlling at least one of the temperature of said cooling fluid and said air delivery by said plurality of heat exchanger units to said room in response to said sensed temperatures at said one or more locations; and

wherein the step of controlling said air delivery by said plurality of heat exchanger units comprises individually manipulating a mass flow rate of the cooling fluid supplied to each of the plurality of heat exchanger units.

2. (Previously Presented) The method according to claim 1, wherein said step of controlling at least one of a temperature of said cooling fluid and said air delivery to said room comprises varying an output of said air conditioning unit to control the temperature of said cooling fluid.

3 and 4. (Canceled).

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5. (Original) The method according to claim 1, further comprising:

determining whether the sensed temperatures at one or more locations in said room are within a predetermined range.

6-8. (Canceled).

9. (Original) The method according to claim 5, further comprising:

varying the cooling fluid temperature in response to the sensed temperatures at one or more locations in said room being outside of said predetermined range.

10. (Original) The method according to claim 9, further comprising:

increasing said cooling fluid temperature in response to a sum of the sensed temperatures at one or more locations being below said predetermined range.

11. (Original) The method according to claim 9, further comprising:

decreasing said cooling fluid temperature in response to a sum of the sensed temperatures at one or more locations being above said predetermined range.

12-18. (Canceled).

19. (Previously Presented) The system according to claim 22, further comprising one or more temperature sensors, wherein said heat exchanger controller is configured to receive environmental condition information from said one or more temperature sensors.

20 and 21. (Canceled).

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22. (Currently amended) A system for cooling a room containing one or more computer systems, said one or more computer systems being housed in a plurality of racks, said system comprising:

a plurality of heat exchanger units configured to receive cooling fluid through a cooling fluid line from an air conditioning unit for cooling the cooling fluid, said plurality of heat exchanger units being further configured to receive air through openings in the plurality of heat exchanger units, wherein said air is cooled through heat transfer with said cooling fluid in the plurality of heat exchanger units;

said plurality of heat exchanger units having at least one fan configured to cause air to flow into and flow out of the heat exchanger unit;

a heat exchanger controller operable to control a supply of said cooling fluid to said plurality of heat exchanger units and operable to control the speed of the at least one fan;

one or more temperature sensors for sensing temperatures at one or more locations in the room;

an air conditioning unit controller configured to operate the air conditioning unit to vary the temperature of said cooling fluid delivered to the one or more locations in the room; and[[.]]

~~one or more~~ a plurality of pumps configured to control cooling fluid delivery to respective ones ~~one or more~~ of said plurality of heat exchanger units, wherein said heat exchanger controller is operable to control said ~~one or more~~ plurality of pumps to thereby individually control the mass flow rate of cooling fluid delivered into each of the respective heat exchanger units.

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23. (Currently amended) A system for cooling a room containing one or more computer systems, said system comprising:

a plurality of heat exchanger units configured to receive cooling fluid through a cooling fluid line from an air conditioning unit for cooling the cooling fluid, said plurality of heat exchanger units being further configured to receive air through openings in the plurality of heat exchanger units, wherein said air is cooled through heat transfer with said cooling fluid in the plurality of heat exchanger units;

said plurality of heat exchanger units having at least one fan configured to cause air to flow into and flow out of the plurality of heat exchanger units;

a heat exchanger controller operable to control a supply of said cooling fluid to said plurality of heat exchanger units and operable to control the speed of the at least one fan;

one or more temperature sensors for sensing temperatures at one or more locations in the room;

an air conditioning unit controller configured to operate the air conditioning unit to vary the temperature of said cooling fluid delivered to the one or more locations in the room; and

a plurality of valves configured to meter the flow of cooling fluid through each of said plurality of heat exchanger units positioned along [[said]]respective cooling fluid lines generally upstream of [[said]]respective heat exchanger units, wherein said heat exchanger controller is operable to individually control the mass flow rate of said cooling fluid through said plurality of valves.

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24. (Previously Presented) The system according to claim 22, wherein said cooling device comprises at least one of a variable capacity compressor, a heat exchanger, a chiller, and a cooling device controller configured to control said at least one of said variable capacity compressor, said heat exchanger, and said chiller.

25-29. (Canceled).

30. (Currently amended) A system for cooling computer systems housed in one or more racks, said racks being maintained in a room, said system comprising:

means for receiving air from the room, said means for receiving air being located at ~~various~~ a plurality of locations of the room;

means for cooling the received air in the plurality of means for receiving air, said plurality of means for cooling including means for receiving cooling fluid from an air conditioning unit;

means for delivering cooled air to said computer systems;

means for measuring temperatures at one or more locations in said room;

means for controlling delivery of said cooled air through said means for delivering cooled air in response to the temperature measurements;

means for controlling the temperature of said cooling fluid; and

means for individually manipulating a mass flow rate of the cooling fluid supplied to the ~~heat exchanger unit~~ plurality of means for receiving air, wherein the means for individually manipulating varies the mass flow rate of cooling fluid supplied to each of the plurality of means for receiving air in substantially independent manners.

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31. (Original) The system according to claim 30, further comprising:

means for controlling delivery of cooling fluid through said cooling means.

32. (Currently amended) The method according to claim 1, wherein the step of manipulating a mass flow rate of the cooling fluid supplied to each of the plurality of heat exchanger units further comprises metering the flow of cooling fluid through each of said plurality of heat exchanger units with a plurality of valves positioned along [[a]]respective cooling fluid lines configured to channel cooling fluid from the air conditioning unit to the plurality of heat exchanger units.

33. (Currently amended) The method according to claim 1, wherein the step of manipulating a mass flow rate of the cooling fluid supplied to each of the plurality of heat exchanger units further comprises metering the flow of cooling fluid through said plurality of heat exchanger units with ~~one or more~~ a plurality of pumps positioned along [[a]]respective cooling fluid lines configured to channel cooling fluid from the air conditioning unit to the plurality of heat exchanger units.

34. (Currently amended) The method according to claim 1, ~~wherein the step of providing a heat exchanger unit further comprises providing a plurality f heat exchanger units positioned at various locations of the room, said method~~ further comprising:

manipulating the mass flow rate of cooling fluid supplied to [[a]]the plurality of heat exchanger units in [[a]] substantially independent manners with respect to each of the plurality of heat exchanger units.

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35. (Currently amended) The system according to claim 22, wherein said heat exchanger controller is operable to control said ~~one or more~~ plurality of pumps to supply cooling fluid to [[a]]the plurality of heat exchanger units in [[a]] substantially independent manners with respect to each of the plurality of heat exchanger units.

36. (Previously Presented) The system according to claim 23, wherein said heat exchanger controller is operable to control the mass flow rate of said cooling fluid through a plurality of heat exchanger units in a substantially independent manner with respect to each of the plurality of heat exchanger units.

37. (Currently amended) The system according to claim 30, further comprising:

means for metering the flow of cooling fluid through said ~~heat exchanger~~ means for receiving air, said means for metering being positioned along [[a]]respective cooling fluid lines configured to channel cooling fluid from the air conditioning unit to respective ones of the means for receiving air.

38. (Previously Presented) The system according to claim 30, further comprising:

means for manipulating the mass flow rate of cooling fluid supplied to a plurality of means for receiving air in a substantially independent manner with respect to each of the plurality of means for receiving air.

39. (Currently amended) A computer readable storage medium on which is embedded one or more computer programs, said one or more computer programs implementing a method for cooling a room configured to house a plurality of computer systems, said one or more computer programs comprising a set of instructions for:

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supplying a plurality of heat exchanger unit configured to receive air from the room and to deliver air to the room with cooling fluid from an air conditioning unit;

cooling said received air through heat exchange with the cooling fluid in the plurality of heat exchanger units;

sensing temperatures at one or more locations in said room;

controlling at least one of the temperature of said cooling fluid and said air delivery by said plurality of heat exchanger units to said room in response to said sensed temperatures at said one or more locations; and

individually manipulating a mass flow rate of the cooling fluid supplied to the each of the plurality of heat exchanger units.

40. (Currently amended) The computer readable storage medium according to claim 39, said one or more computer programs further comprising a set of instructions for:

metering the flow of cooling fluid through said plurality of heat exchanger units with a valve positioned along [[a]]respective cooling fluid lines configured to channel cooling fluid from the air conditioning unit to the plurality of heat exchanger units.

41. (Previously Presented) The computer readable storage medium according to claim 39, said one or more computer programs further comprising a set of instructions for:

manipulating the mass flow rate of cooling fluid supplied to a plurality of heat exchanger units in a substantially independent manner with respect to each of the plurality of heat exchanger units.

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REMARKS

Favorable reconsideration of this application is respectfully requested in view of the amendments above and the following remarks. By virtue of the foregoing amendments, Claims 1, 22, 23, 30, 32-35, 37, 39, and 40 have been amended. Accordingly, Claims 1, 2, 5, 9-11, 19, 22-24, 30-41 are pending for examination in the present application.

No new matter has been presented by way of the claim amendments and such amendments are deemed unobjectionable. Entry thereof is respectfully requested.

Information Disclosure Statement

The Examiner's consideration of the information contained in the Information Disclosure Statement filed on October 31, 2003 is noted with appreciation.

Drawings

The indication that the drawings filed on October 31, 2003 have been accepted is also noted with appreciation.

Claim Rejection Under 35 U.S.C. §102

The test for determining if a reference anticipates a claim, for purposes of a rejection under 35 U.S.C. § 102, is whether the reference discloses all the elements of the claimed combination, or the mechanical equivalents thereof functioning in substantially the same way to produce substantially the same results. As noted by the Court of Appeals for the Federal Circuit in *Lindemann Maschinenfabrick GmbH v. American Hoist and Derrick Co.*, 221 USPQ 481, 485 (Fed. Cir. 1984), in evaluating the sufficiency of an anticipation rejection under 35 U.S.C. § 102, the Court stated:

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> Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim.

Therefore, if the cited reference does not disclose each and every element of the claimed invention, then the cited reference fails to anticipate the claimed invention and, thus, the claimed invention is distinguishable over the cited reference.

Claims 1, 2, 30, 31, and 39 have been rejected under 35 U.S.C. §102(e) as allegedly being anticipated by the disclosure contained in U.S. Patent No. 6,557,624 to Stahl et al. This rejection is respectfully traversed because the claimed invention as set forth in Claims 1, 30, and 39, and the claims that depend therefrom are patentably distinguishable over the disclosure contained in the Stahl et al. document.

Stahl et al. discloses a method and system for cooling a room. The cooling system of Stahl et al. includes a heat exchanger 110 and fan units 120. As shown, for instance, in Figures 1 and 2 of Stahl et al., the heat exchanger 110 is a continuous tube through which coolant fluid flows in the vicinities of the fan units 120. In other words, coolant fluid enters into one end of the heat exchanger 110 and exits through an opposite end of the heat exchanger 110. While the coolant fluid flows through the heat exchanger 110, the coolant fluid absorbs heat from the air around the heat exchanger 110 to thereby cool the air. The air around the fan units 120 is supplied into the room R by operation of the fans 130 of the fan units 120.

The cooling system disclosed in Stahl et al. differs in many ways from the systems and methods set forth in the present invention. For instance, with respect to Claim 1 of the present invention, Stahl et al. does not disclose that a mass flow rate of the coolant fluid supplied into each of a plurality of heat exchangers is manipulated. Instead, Stahl et al. discloses that the supply of coolant flow rate may be controlled manually or automatically. Ostensibly, because the heat exchange path 110 is a circuitous path and the fans 130 are

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movable to various locations along the path 100, Stahl et al. did not intend for individual control of cooling fluid flow rate through each of the heat exchanger units (which the Official Action considers as each interface of fans 130 and heat exchange path 110). Indeed, Stahl et al. is primarily concerned with the ability to reposition the fans 130 along the heat exchange path 110 such that the fans 130 may be repositioned with changing needs in the room.

This concern, however, teaches away from individually varying the supply of coolant to each of the heat exchanger units. In fact, the coolant fluid flows through the heat exchanger 110 in the vicinities of the fan units 120 without regard to any type of independent flow control. Therefore, Stahl et al. does not disclose any type of mechanism for controlling or varying coolant flow in the vicinities of the individual fan units 120. In other words, the cooling fluid flow in the vicinities of the fan units 120 is the same for each fan unit 120.

In any regard, therefore, Stahl et al. fails to disclose that the mass flow rate of the cooling fluid supplied to each of the plurality of heat exchanger is individually manipulated. Accordingly, Stahl et al. fails to meet the test for anticipation set forth above and therefore cannot anticipate Claims 1 or 39 of the present invention.

Claim 30 of the present invention has been amended to include that the system includes means for individually manipulating a mass flow rate of the cooling fluid supplied to a plurality of means for receiving air. The means for individually manipulating varies the mass flow rate of cooling fluid supplied to each of the plurality of means for receiving air in substantially independent manners. Thus, assuming in Stahl et al. that the interface of the fans 130 and the heat exchange paths 110 represent a functional heat exchange unit as asserted in the Official Action, Stahl et al. does not disclose that coolant flow into each of these interfaces is individually manipulated in substantially independent manners.

As described hereinabove, Stahl et al. includes a circuitous coolant flow path 110 that carries coolant in the vicinities of the fans 130 without regard to the mass flow rate of coolant

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flow past any individual fan 130. Instead, Stahl et al. discloses control over the supply of coolant into the entire path 110. Thus, Stahl et al. fails to disclose each and every element claimed in Claim 30 of the present invention and thus cannot anticipate Claim 30.

Accordingly, as Stahl et al. fails to anticipate Claims 1, 30, and 39, the Examiner is respectfully requested to withdraw the rejections thereof and to allow these claims. In addition, Claims 2, and 31 are also considered as being allowable over the Stahl et al. disclosure at least by virtue of their dependencies upon respective allowable Claims 1 and 30.

Claim Rejection Under 35 U.S.C. §103

The test for determining if a claim is rendered obvious by one or more references for purposes of a rejection under 35 U.S.C. § 103 is set forth in MPEP § 706.02(j):

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck,* 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Therefore, if the above-identified criteria are not met, then the cited reference(s) fails to render obvious the claimed invention and, thus, the claimed invention is distinguishable over the cited reference(s).

The Official Action sets forth a rejection of Claims 22-24, and 32-41 under 35 U.S.C. §103(a) as allegedly being unpatentable over the disclosure contained in Stahl et al. in view of U.S. Patent No. 5,946,926 to Hartman. This rejection is respectfully traversed because Stahl et al. considered singly or in combination with Hartman fails to disclose all of the elements of Claims 22-24 and 32-41.

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Prima Facie Case of Obviousness Has Not Been Established

Stahl et al. discloses a cooling system having a heat exchanger 110 and a plurality of fans 130. As described in Stahl et al., the heat exchanger 110 forms a circuitous path through which coolant flows. In addition, the fans 130 are movable to various locations with respect to the heat exchanger 110, such that, the fans 130 may be repositioned in a room. In this regard, the fans 130 are detachably connected around the heat exchanger 110 to facilitate air flow around the heat exchanger 110 at the various locations in the room. Stahl et al. discloses that the mass flow rate of coolant flow through the heat exchanger 110 may be controlled, presumably on a broad scale, that is, for the entire heat exchanger 110.

The Official Action correctly notes that Stahl et al. fails to disclose that the mass flow rate of cooling fluid flow is controlled by a pump as set forth in Claim 22 of the present invention. The Official Action also correctly notes that Stahl et al. fails to disclose that the mass flow rate of cooling fluid flow is independently controlled through a valve positioned upstream of the heat exchangers, as set forth in Claim 23 of the present invention.

In an effort to make up for these deficiencies in Stahl et al., the Official Action relies upon the disclosure contained in Hartman. More particularly, the Official Action asserts that Hartman discloses the control of cooling fluid flow through control of a variable flow pump 640. The reliance upon the disclosure contained in Hartman is improper for at least the following reasons.

The variable flow pump 640 pumps return water back to a chilled water generating system at a variable flow rate. Hartman also discloses that "a plurality of individual pumps" can be "arranged for operation in concert, i.e., so that the multiple pumps change flow rates together." (column 7, lines 50-53). Thus, Hartman does not disclose that individual pumps are operated to individually control of the mass flow rate of cooling fluid delivered to each heat exchanger unit as claimed in Claim 22 of the present invention. In addition, Hartman

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fails to disclose a plurality of valves positioned along respective cooling fluid lines upstream of respective heat exchanger units, where the mass flow rate of cooling fluid through each of the plurality of valves is individually controlled.

Because Stahl et al. and Hartman considered singly or in combination does not disclose every element contained in Claims 22 and 23 of the present invention, the Official Action has failed to establish a prima facie case of obviousness. ("To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). 'All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).").

At least by virtue of Hartman's failure to disclose the elements missing in Stahl et al., the proposed modification of Stahl et al. with the Hartman disclosure would still fail to yield all of the elements of the present invention as set forth in Claims 22-24 and 32-41. Therefore, even assuming for the sake of argument that the proposed modification of Stahl et al. as set forth in the Official Action were proper, the proposed modification would still not render obvious Claims 22-24 and 32-41.

Proposed Modification is Improper

The proposed modification of Stahl et al. based upon the disclosure contained in Hartman is improper. As held in *In re Gordon*, "[i]f [the] proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification." 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). As will be seen from the discussion below, the proposed modification would render Stahl et al. unsatisfactory for its intended purpose.

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Initially, it should be noted that Stahl et al. pertains to a system for cooling a room where a plurality of fans 130 are movable with respect to a fixed heat exchanger 110. The fans 130 are movable with respect to the heat exchanger 110 so as to redefine the flow of cooled air into the room. Thus, as shown for instance in Figure 2 of Stahl et al., the heat exchanger 110 is configured to cover a substantially large area of a ceiling or floor. In addition, the fans 130 are movable to various locations with respect to the heat exchanger 110. It is quite evident that the intended purpose of Stahl et al. is to provide a cooling system that is reconfigurable to accommodate for changing conditions in the room.

However, that intended purpose is defeated if the Stahl et al. system is modified to include the pump 640 or valve 654 described in Hartman. More particularly, the addition of the pump 640 or valve 654 of Hartman into the heat exchanger 110 would no longer enable the Stahl et al. system to be reconfigurable. Instead, the fans 130 would be fixedly located along the heat exchanger 110 to enable the control over the chilled water discussed in Hartman. Thus, the proposed modification of Stahl et al. based upon the disclosure contained in Hartman would destroy a critical feature in Stahl et al. Consequently, there is no suggestion or motivation to make the modification proposed in the Official Action under the standards set forth in *In re Gordon.*

Accordingly, for at least the foregoing reasons, it is respectfully submitted that independent Claims 22, 23, and 39 are allowable over the disclosures contained in Stahl et al. and Hartman, considered singly or in combination. In addition, Claims 24, 32-38, 40, and 41 depend from allowable independent claims and are also allowable over these documents. These depending claims are also allowable over the disclosures contained in Stahl et al. and Hartman for reasons in addition to their dependencies.

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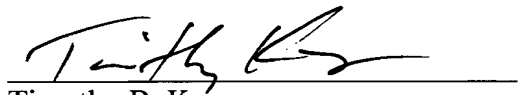
Conclusion

In light of the foregoing, withdrawal of the rejections of record and allowance of this application are earnestly solicited.

Should the Examiner believe that a telephone conference with the undersigned would assist in resolving any issues pertaining to the allowability of the above-identified application, please contact the undersigned at the telephone number listed below. Please grant any required extensions of time and charge any fees due in connection with this request to deposit account no. 08-2025.

Respectfully submitted,

Chandrakant D. Patel et al.

Dated: October 4, 2004 By 

Timothy B. Kang
Registration No.: 46,423

MANNAVA & KANG, P.C.
8221 Old Courthouse Road
Suite 104
Vienna, VA 22182
(703) 652-3817
(703) 880-5270 (facsimile)

Vertiv Ex. 1003
Vertiv v. Valtrus

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P. O. Box 272400
Fort Collins, Colorado 80527-2400

OTPE JC98 OCT 04 2004 PATENT & TRADEMARK OFFICE

PATENT APPLICATION

ATTORNEY DOCKET NO. 100111090-5

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Chandrakant D. Patel et al.

Confirmation No.: 9800

Application No.: 10/697,697

Examiner: Marc E. Norman

Filing Date: Oct. 31, 2003

Group Art Unit: 3744

Title: COOLING SYSTEM

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

PETITION FOR EXTENSION OF TIME

Sir:

In an Office Action mailed on **May 4, 2004**, on the above-identified U.S. Patent application, a shortened statutory period of **3** months was set for response. In accordance with 37 C.F.R. 1.136(a), applicant(s) hereby request(s) a:

( ) one month
(X) two months
( ) three months
( ) four months

time extension so that the period for response to the Office Action expires on **October 4, 2004**. Authorization to charge the fee required by 37 CFR 1.17 to Deposit Account 08-2025 appears in the enclosed transmittal letter. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees. A duplicate copy of this sheet is enclosed.

I hereby certify that this correspondence is being deposited with the United States Postal Service as :

( ) First Class Mail

( ) "Express Mail Post Office to Addressee" service under 37 CFR 1.10.

"Express Mail" label no.

in an envelope addressed to: Commissioner for Patents, Alexandria, VA 22313-1450.

Date of Deposit:

Typed Name:

Signature:_____

Respectfully submitted,

Chandrakant D. Patel et al.

By _____

Timothy B. Kang

Attorney/Agent for Applicant(s)
Reg. No. **46,423**

Date: **October 4, 2004**

Telephone No.: **(703) 652-3817**

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Vertiv Ex. 1003
Vertiv v. Valtrus

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P. O. Box 272400
Fort Collins, Colorado 80527-2400

OCT 04 2004

PATENT APPLICATION

ATTORNEY DOCKET NO. 100111090-5

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Chandrakant D. Patel et al.

Confirmation No.: 9800

Application No.: 10/697,697

Examiner: Marc E. Norman

Filing Date: Oct. 31, 2003

Group Art Unit: 3744

Title: COOLING SYSTEM

Mail Stop Amendment
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL LETTER FOR RESPONSE/AMENDMENT

Sir:

Transmitted herewith is/are the following in the above-identified application:

(X) Response/Amendment
(X) New fee as calculated below
( ) No additional fee
( ) Other: _____ (fee $_____)
(X) Petition to extend time to respond
( ) Supplemental Declaration

CLAIMS AS AMENDED BY OTHER THAN A SMALL ENTITY						
(1) FOR	(2) CLAIMS REMAINING AFTER AMENDMENT	(3) NUMBER EXTRA	(4) HIGHEST NUMBER PREVIOUSLY PAID FOR	(5) PRESENT EXTRA	(6) RATE	(7) ADDITIONAL FEES
TOTAL CLAIMS	22	MINUS	22	= 0	X $18	$ 0
INDEP. CLAIMS	5	MINUS	5	= 0	X $88	$ 0
[ ] FIRST PRESENTATION OF A MULTIPLE DEPENDENT CLAIM					+ $300	$ 0
EXTENSION FEE	1ST MONTH $110.00 [ ]	2ND MONTH $430.00 [X]	3RD MONTH $980.00 [ ]	4TH MONTH $1530.00 [ ]		$ 430
					OTHER FEES	$
					TOTAL ADDITIONAL FEE FOR THIS AMENDMENT	$ 430

Charge $ 0 to Deposit Account 08-2025. At any time during the pendency of this application, please charge any fees required or credit any overpayment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees. A duplicate copy of this sheet is enclosed.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Alexandria, VA 22313-1450.

Date of Deposit:

Typed Name:

Signature:_____

Respectfully submitted,

Chandrakant D. Patel et al.

By _____

Timothy B. Kang

Attorney/Agent for Applicant(s)
Reg. No. **46,423**

Date: **October 4, 2004**

Telephone No.: **(703) 652-3817**

Rev 10/04 (TransAmd)

- Attach as First Page to Transmitted Papers -

Vertiv Ex. 1003
Vertiv v. Valtrus

OIPE
OCT 04 2004
PATENT & TRADEMARK OFFICE

PATENT
Atty Docket No.: 100111090-5

JKW

In The U.S. Patent and Trademark Office

In Re the Application of:

Inventor(s):	Chandrakant D. Patel et al.	**Confirmation No.:**	9800
Serial No.:	10/697,697	**Examiner:**	Marc E. Norman
Filed:	October 31, 2003	**Group Art Unit:**	3744
Title:	COOLING SYSTEM		

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

CERTIFICATE OF HAND-DELIVERY WITH THE USPTO

I hereby certify that this correspondence is being deposited with the United States Patent and Trademark Office. This correspondence contains the following document(s):

1 sheet of Transmittal Letter for Response/Amendment (2 copies).
1 sheet of Petition for Extension of Time (2 copies).
1 check for payment of two-month extension of time.
17 sheets of Amendment Under 37 C.F.R. § 1.111.

Respectfully submitted,

MANNAVA & KANG, P.C.

On October 4, 2004

Timothy B. Kang
Reg. No.: 46,423

MANNAVA & KANG, P.C.
8221 Old Courthouse Road
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(703) 652-3817
(703) 880-5270 (facsimile)

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,697	10/31/2003	Chandrakant D. Patel	100111090-3	9800

7590 05/04/2004

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P. O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER	
NORMAN, MARC E	

ART UNIT	PAPER NUMBER
3744	

DATE MAILED: 05/04/2004

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

Vertiv Ex. 1003
Vertiv v. Valtrus

Office Action Summary	Application No.	Applicant(s)
	10/697,697	PATEL ET AL.
	Examiner	Art Unit
	Marc E. Norman	3744

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

Period for Reply

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

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

Status

1)☒ Responsive to communication(s) filed on *31 October 2003*.

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

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

Disposition of Claims

4)☒ Claim(s) *1,2,5,9-11,19,22-24 and 30-41* is/are pending in the application.

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

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5,9-11,19,22-24 and 30-41* is/are rejected.

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

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

Application Papers

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

10)☒ The drawing(s) filed on *31 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

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

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

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

a)☐ All b)☐ Some * c)☐ None of:

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

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

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

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

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/31/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

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Vertiv v. Valtrus

DETAILED ACTION

Claim Rejections - 35 USC § 102

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

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 30, 31, 39 are rejected under 35 U.S.C. 102(e) as being anticipated by Stahl et al.

As per claims 1, 30, 31, and 39, Stahl et al. discloses a method for cooling a computer room comprising providing a plurality of heat exchangers at various locations in the room (each interface of fans 130 and heat exchange path 110 represent a functional heat exchange unit) including fans 130 configured to deliver air to respective locations in the room; supplying the heat exchangers with cooling fluid (via path 110), cooling the air through fans 130 with the cooling fluid in path 130; and controlling the temperature of the cooling fluid (column 3, lines 52-54) and air delivery based on sensed temperature/desired cooling capacity (column 3, line 66 – column 4, line 10), and controlling a mass flow rate of the cooling fluid supplied to the heat exchangers (column 3, lines 52-54).

As per claim 2, again Stahl et al. further teaches the coolant temperature being automatically controlled (column 3, lines 52-54; column 5, lines 43-45; claim 18).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 22-24 and 32-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stahl et al. in view of Hartman.

As per claims 22 and 33 Stahl et al. teaches all the limitations of the claims (as discussed above regarding claim 1) except that it does not specifically teach the cooling fluid flow being controlled by controlling the fluid pump. However, this is the typical way in which cooling fluid is controlled within a chiller system. Hartman, for example, teaches controlling fluid flow by controlling variable flow pump 640. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply a variable pump such as taught by Hartman to the system of Stahl et al. for the purpose of controlling fluid flow, particularly since Stahl et al. teaches fluid flow being controlled automatically (column 3, lines 52-54).

As per claim 23, 32, 34-38, 40 and 41, Stahl et al. teaches all the limitations of the claim (as discussed above regarding claim 1) except that it does not teach independently controlling the mass flow rate of the cooling fluid through a valve positioned upstream of the heat exchanger. Hartman teaches modulating valve 654 upstream of heat exchanger 630. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply a valve such as that taught by Hartman to the system of Stahl et al. for the purpose of independently controlling fluid flow, and thus the degree of heat exchange, at each of the heat exchangers.

As per claim 24, both Stahl et al. and Hartman teach the controller controlling the chiller system.

Claims 5 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stahl et al. in view of Nakanishi et al.

As per claims 5 and 9-11, Stahl et al does not teach the controls being based on a predetermined range. Nakanishi et al. teaches a method of cooling a computer room wherein the controller determines if sensed temperatures are within a predetermined range (Abstract, lines 13-15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine these features of Nakanishi et al. to the system of Stahl et al. for the purpose of refining the control of temperature within the room, particularly since both references are directed to controlling the distribution of temperature within a computer room.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stahl et al. in view of Hartman as applied to claim 22 above, and further in view of Nakanishi.

As per claim 19, while Stahl et al. does not specifically describe the arrangement of temperature sensors in conjunction with the controller, it does disclose, for example,

automatically varying the speed of the fans to provide desired cooling capacity. Nakanishi et al. teaches an air conditioner control circuit receiving condition information from the temperature sensors (see Figure 5; column 4, lines 10-30), controlling fan speed/air delivery, and memory (of PC 70) controlling fans and AC circuit (see Figure 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply these features of the methodology of Nakanishi et al. to the system of Stahl et al. for the purpose of carrying out the automatic fan control according to cooling capacity as disclosed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc E. Norman whose telephone number is 703-305-2711. The examiner can normally be reached on Mon.-Fri., 8:00-5:30, with first Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise Esquivel can be reached on 703-308-2597. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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).

MN

MARC NORMAN
PRIMARY EXAMINER

PATENT APPLICATION

Sheet 1 of 1

FORM PTO-1449 LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)	ATTY. DOCKET NO. 100111090-5	APPLICATION NO. 10/697,697	CONFIRMATION NO.
	APPLICANT Chandrakant D. Patel et al.		
	FILING DATE herewith	GROUP 3744	

REFERENCE DESIGNATION **U.S. PATENT DOCUMENTS**

EXAMINER INITIAL		DOCUMENT NUMBER	PUBLICATION DATE	NAME	Pages, Columns, Lines Where Relevant Passages or Figures Appear
MW	1A	6,283,380	Sept. 4, 2001	Nakanishi et al.	
MW	1B	6,374,627	April 23, 2002	Schumacher et al.	
M	1C	6,557,624	May 6, 2003	Stahl et al.	
	1D				
	1E				
	1F				
	1G				
	1H				
	1I				
	1J				
	1K				

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	PUBLICATION DATE	NAME OF PATENTEE OR APPLICANT	Pages/Columns/Lines Where Relevant Passages/Figures Appear	Check if Translation attached
	1L					
	1M					
	1N					
	1O					
	1P					

OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, etc.)

	1Q	
	1R	
	1S	

EXAMINER	DATE CONSIDERED
	4/30/04

Rev 10/03 (PTO1449)

Vertiv Ex. 1003
Vertiv v. Valtrus

Notice of References Cited	Application/Control No. 10/697,697	Applicant(s)/Patent Under Reexamination PATEL ET AL.	
	Examiner Marc E. Norman	Art Unit 3744	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,276,152 B1	08-2001	Sibik, Lee L.	62/201
	B	US-5,946,926	09-1999	Hartman, Thomas B.	62/201
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

Vertiv Ex. 1003
Vertiv v. Valtrus

Index of Claims

Application No.	Applicant(s)
10/697,697	PATEL ET AL.
Examiner	**Art Unit**
Marc E. Norman	3744

√	Rejected	–	(Through numeral) Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

Claim		Date
Final	Original	4/30/04
	(1)	✓
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	9	✓
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	(30)	✓
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Vertiv Ex. 1003
Vertiv v. Valtrus

Search Notes	Application No.	Applicant(s)	
	10/697,697	PATEL ET AL.	
	Examiner	Art Unit	
	Marc E. Norman	3744	

SEARCHED			
Class	Subclass	Date	Examiner
62	259.2 201 229 185	4/30/04	MN
	186		
	157 208		
	178 180		
361	696		

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
Consulted Parent Case (10/210,040) Inventor Name Search	4/29/04	MN

Vertiv Ex. 1003
Vertiv v. Valtrus

PATENT APPLICATION FEE DETERMINATION RECORD
Effective October 1, 2003

Application or Docket Number
10011/990-5 10/697,697

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	22	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	22 minus 20=	* 2
INDEPENDENT CLAIMS	5 minus 3 =	* 2
MULTIPLE DEPENDENT CLAIM PRESENT		☐

* If the difference in column 1 is less than zero, enter "0" in column 2

SMALL ENTITY TYPE ☐		OR	OTHER THAN SMALL ENTITY	
RATE	FEE		RATE	FEE
BASIC FEE	385.00	OR	BASIC FEE	770.00
XS 9=		OR	X$18=	36
X43=		OR	X86=	172
+145=		OR	+290=	
TOTAL		OR	TOTAL	972

CLAIMS AS AMENDED - PART II

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X43=		OR	X86=	
+145=		OR	+290=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X43=		OR	X86=	
+145=		OR	+290=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT C

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X43=		OR	X86=	
+145=		OR	+290=	
TOTAL ADDIT. FEE		OR	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.

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00727 U.S.PTO
10/697697
103103

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of:

Inventor(s):	Chandrakant D. Patel et al.	**Confirmation No.:**	
Serial No.:	TBD	**Examiner:**	TBD
Filed:	Herewith	**Group Art Unit:**	TBD
Title:	COOLING SYSTEM		

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

CERTIFICATE OF HAND-DELIVERY WITH THE USPTO

I hereby certify that this correspondence is being deposited with the United States Patent and Trademark Office. This correspondence contains the following document(s):

2 sheets of Request For A Continuing Application Under 37 C.F.R. 1.53(b) (2 copies).

10 sheets of Preliminary Amendment.

5 sheets of Formal Drawings.

26 sheets of Prior Application.

Declaration (2 pages).

2 Receipt Postcards.

Information Disclosure Statement and Form PTO-1449.

Respectfully submitted,

MANNAVA & KANG, P.C.

On October 31, 2003

Timothy B. Kang
Reg. No.: 46,423

MANNAVA & KANG, P.C.
2930 Langdon Gate Drive
Fairfax, VA 22031
703-560-8503
703-991-1162 (facsimile)

CONTINUING APPLICATION UNDER 37 CFR 1.53(b) (continu d)

ATTORNEY DOCKET NO. 100111090-5

Inv ntorship Stat m nt

( ) Delete the following named individuals as inventors in this application in accordance with 37 CFR 1.53(b) as a result of a change in the claimed subject matter:

Appointment f Associate Attorney

( ) Recognize as Associate Attorney or Agent _____

Registration No. _____

( ) authorization is hereby granted by signature below of the Attorney or Agent of record

( ) the Associate Attorney or Agent may not have the authority to appoint other Attorneys or Agents

Communications

(X) Address all future communications to:

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P. O. Box 272400
Fort Collins, Colorado 80527-2400

Direct telephone calls to:

Timothy B. Kang
(703) 560-8503

Other Amendments

(X) Enter the enclosed Preliminary Amendment. The filing fee is calculated on the basis of the amended claims.

Fee Calculation

(X) The filing fee is calculated below for (X) Utility ( ) Design

CLAIMS AS FILED BY OTHER THAN A SMALL ENTITY				
(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) TOTALS
TOTAL CLAIMS	22 — 20	2	X $18	$ 36
INDEPENDENT CLAIMS	5 — 3	2	X $86	$ 172
ANY MULTIPLE DEPENDENT CLAIMS	0		$290	$ 0
BASIC FEE: Design ($340.00); Utility ($770.00)				$ 770
TOTAL FILING FEE				$ 978
TOTAL CHARGES TO DEPOSIT ACCOUNT				$ 978

Charge $ 978 to Deposit Account 08-2025. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

Chandrakant D. Pat l et al

By _____

Timothy B. Kang
Attorney/Agent for Applicant(s)
Reg. No. **46,423**

Date: **Oct. 31, 2003**

Telephone No.: **(703) 560-8503**

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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P. O. Box 272400
Fort Collins, Colorado 80527-2400

PATENT APPLICATION

ATTORNEY DOCKET NO. 100111090-5

IN THE
U.S. PATENT AND TRADEMARK OFFICE

Anticipated Classification of this application:
Class 236 Subclass 49.3
Prior application:
Examiner: Marc E. Norman
Art Unit: 3744

I hereby certify that this is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on _____ and is addressed to the Commissioner for Patents, Alexandria, VA 22313-1450

"Express Mail" label no.

Typed Name:

Signature: _____

C mmissioner For Patents
PO Box 1450
Al xandria, VA 22313-1450

REQUEST FOR A CONTINUING APPLICATION UNDER 37 CFR 1.53(b)

Sir:

This is a request for filing a continuing application under 37 CFR 1.53(b) a
( ) continuation application of:
(X) divisional application of:

Pending Prior Application

Application No. 10/210,040 filed August 2, 2002.

Title COOLING SYSTEM

Name of applicant(s) Chandrakant D. Patel et al

Copy of Application

(X) Enclosed is a copy of the prior application, including the drawings.
( ) Enclosed is a new specification, including new drawings.

Oath or Declaration

(X) Enclosed is a copy of the prior Declaration (37 CFR 1.63(d)).
( ) Enclosed is a newly executed Declaration (original or copy).

Foreign Priority - 35 USC 119

( ) Foreign priority under 35 U.S.C. 119 has been claimed in prior Application No. _____
filed on _____ in _____
( ) The certified copy has been filed in prior Application No. _____
filed _____.
( ) A separate paper claiming direct priority to a foreign application is enclosed herewith. A certified copy of the foreign application will be provided in due course.

R lat Back - 35 USC 120

Cross Reference To Related Application(s);
This is a ( ) continuation (X) divisional
of copending application number 10/210,040 filed on August 2, 2002,
which is hereby incorporated by reference herein.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

UTILITY PATENT APPLICATION FOR:

COOLING SYSTEM

INVENTORS:

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Cullen E. BASH
662 Mangels Avenue
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HP Docket No.: 100111090-5

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COOLING SYSTEM

CROSS-REFERENCES

The present invention is related to pending U.S. Application Ser. No. 09/970,707, filed October 5, 2001, and entitled "SMART COOLING OF DATA CENTERS", by Patel et al., U.S. Application Ser. No. 10/157,892 filed on May 31, 2002 (HP Docket No. 100200782-1) entitled "CONTROLLED COOLING OF A DATA CENTER", by Patel et al., U.S. Application Ser. No. 10/122,010, filed on April 24, 2002, and entitled, "DATA CENTER ENERGY MANAGEMENT SYSTEM", by Friedrich et al., all of which are assigned to the assignee of the present invention and are incorporated by reference herein in their entireties.

FIELD OF THE INVENTION

This invention relates generally to cooling systems.

BACKGROUND OF THE INVENTION

A data center may be defined as a location, e.g., room, that houses computer systems arranged in a number of racks. A standard rack may be defined as an Electronics Industry Association (EIA) enclosure, 78 in. (2 meters) wide, 24 in. (0.61 meter) wide and 30 in. (0.76 meter) deep. Standard racks may be configured to house a number of computer systems, e.g., about forty (40) systems, with future configurations of racks being designed to accommodate up to eighty (80) systems. The computer systems typically include a number of components, e.g., one or more of printed circuit boards (PCBs), mass storage devices, power supplies, processors, micro-controllers, semi-conductor devices, and the like, that may dissipate relatively significant amounts of heat during the operation of the respective components. For example, a typical computer system comprising multiple microprocessors may dissipate approximately 250 W of power. Thus, a rack containing forty (40) computer systems of this type may dissipate approximately 10 KW of power.

The power required to transfer the heat dissipated by the components in the racks to the cool air contained in the data center is generally equal to about 10 percent of the power needed to operate the components. However, the power required to remove the heat dissipated by a plurality of racks in a data center is generally equal to about 50 percent of the power needed to

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operate the components in the racks. The disparity in the amount of power required to dissipate the various heat loads between racks and data centers stems from, for example, the additional thermodynamic work needed in the data center to cool the air. In one respect, racks are typically cooled with fans that operate to move cooling fluid, e.g., air, cooling fluid, etc., across the heat dissipating components; whereas, data centers often implement reverse power cycles to cool heated return air. The additional work required to achieve the temperature reduction, in addition to the work associated with moving the cooling fluid in the data center and the condenser, often add up to the 50 percent power requirement. As such, the cooling of data centers presents problems in addition to those faced with the cooling of the racks.

Conventional data centers are typically cooled by operation of one or more air conditioning units. For example, compressors of air conditioning units typically require a minimum of about thirty (30) percent of the required operating energy to sufficiently cool the data centers. The other components, e.g., condensers, air movers (fans), etc., typically require an additional twenty (20) percent of the required cooling capacity. As an example, a high density data center with 100 racks, each rack having a maximum power dissipation of 10KW, generally requires 1 MW of cooling capacity. Air conditioning units with a capacity of 1 MW of heat removal generally requires a minimum of 300 KW input compressor power in addition to the power needed to drive the air moving devices, e.g., fans, blowers, etc. Conventional data center air conditioning units do not vary their cooling fluid output based on the distributed needs of the data center. Instead, these air conditioning units generally operate at or near a maximum compressor power even when the heat load is reduced inside the data center.

The substantially continuous operation of the air conditioning units is generally designed to operate according to a worst-case scenario. For example, air conditioning systems are typically designed around the maximum capacity and redundancies are utilized so that the data center may remain on-line on a substantially continual basis. However, the computer systems in the data center may only utilize around 30-50% of the maximum cooling capacity. In this respect, conventional cooling systems often attempt to cool components that may not be operating at a level which may cause their temperatures to exceed a predetermined temperature range. Consequently, conventional cooling systems often incur greater amounts of operating expenses than may be necessary to sufficiently cool the heat generating components contained in the racks of data centers.

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SUMMARY OF THE INVENTION

According to one embodiment, the present invention pertains to a method for cooling a room configured to house a plurality of computer systems. In the method, there is provided a heat exchanger unit configured to receive air from the room and to deliver air to the room. The heat exchanger unit is supplied with cooling fluid that is operable to cool the received air in the heat exchanger unit. In addition, temperatures at one or more locations in the room are sensed and at least one of the temperature of the cooling fluid and the air delivery to the room is controlled in response to the sensed temperatures at the one or more locations.

According to another embodiment, the invention relates a system for cooling a room containing one or more computer systems. The system includes a heat exchanger unit configured to receive cooling fluid through a fluid line and to receive air, where the air may be cooled through heat transfer with the cooling fluid. The heat exchanger unit has at least one fan configured to cause air to flow out of the heat exchanger unit. The system also includes a heat exchanger controller operable to control a supply of the cooling fluid to the heat exchanger unit and operable to control the speed of the at least one fan. The system further includes a device for cooling the cooling fluid and a cooling device controller configured to operate the device for cooling to vary the temperature of the cooling fluid.

According to yet another embodiment, the present invention pertains to a system for cooling computer systems housed in one or more racks maintained in a room. The system includes means for cooling air including means for receiving cooling fluid. The system also includes means for delivering cooled air to the computer systems and means for measuring temperatures at one or more locations in the room. Additionally, the system includes means for controlling delivery of the cooled air in response to the temperature measurements and means for controlling the temperature of the cooling fluid.

BRIEF DESCRIPTION OF THE DRAWINGS

Features of the present invention will become apparent to those skilled in the art from the following description with reference to the figures, in which:

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FIG. 1 shows a simplified schematic illustration of a room containing a cooling system in accordance with an embodiment of the invention;

FIG. 2 is an enlarged partly cross-sectional view of section A in FIG. 1;

FIG. 3 is a schematic illustration taken along lines III-III of FIG. 1;

FIG. 4 is an exemplary block diagram for a cooling system according to an embodiment of the invention; and

FIG. 5 shows a flow diagram of an operational mode according to an embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

For simplicity and illustrative purposes, the present invention is described by referring mainly to an exemplary embodiment thereof. In the following description, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It will be apparent however, to one of ordinary skill in the art, that the present invention may be practiced without limitation to these specific details. In other instances, well known methods and structures have not been described in detail so as not to unnecessarily obscure the present invention.

According to an embodiment of the present invention, a cooling system may include a heat exchanger unit (HEU) configured to receive cooling fluid (e.g., chilled water, R134a, ethylene glycol mixture, and the like). The HEU may be designed to cause air to exchange heat with the cooling fluid to thereby cool the air. The HEU may also be designed to deliver the cooled air to one or more computer systems. The cooling system may also include a cooling device operable to cool the cooling fluid. The cooling device may comprise one or more of known cooling systems (e.g., a closed loop refrigeration cycle configured to transfer heat with the cooling fluid). The cooling device may therefore include a second generally closed-loop system having refrigerant flowing through a refrigerant line and positioned to receive heat from the cooling fluid.

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One or more controllers may be provided to operate the cooling system components. The one or more controllers may be configured to monitor environmental conditions within the room, and more particularly in areas around predetermined computer systems, and manipulate operation of the HEU and the cooling device according to the monitored environmental conditions. For example, the one or more controllers may control the temperature of the cooling fluid and/or the output of the HEU.

In one respect, by manipulating the output of the HEU and the temperature of the cooling fluid, the amount of energy required to cool the computer systems may be relatively low. Thus, according to the embodiment described above, instead of operating components of the cooling device, e.g., compressors, heat exchangers, fans, etc., at substantially 100 percent of the anticipated heat dissipation from the computer systems, those components may be operated according to the actual cooling needs. In addition, the computer systems and the racks in which they are housed may be positioned throughout the room according to their anticipated heat loads, to additionally increase control over the energy required by the cooling system. Furthermore, as described in U.S. Application Ser. No. 10/122,010, filed on April 24, 2002, the loads may be distributed between various computer systems to further increase energy efficiency of air conditioning resources.

In another respect, the positioning of the racks may be determined through implementation of numerical modeling and metrology of the cooling fluid flow throughout the data center. In addition, the numerical modeling may be implemented to determine the volume flow rate and velocity of the cooling fluid flow through each of the HEU's.

A more detailed description of the above-described embodiment may be found in co-pending U.S. Application Ser. No. 09/970,707, filed October 5, 2001, which is assigned to the assignee of the present invention and is incorporated by reference herein in its entirety.

Referring first to FIG. 1, there is illustrated a room 10, e.g., a data center, housing a plurality of racks 12, and a cooling system 20. Also illustrated is a raised floor 14 that may be provided to enable placement of wires, tubes, and the like for delivery into and from the racks 12.

The racks 12 may generally house a plurality of components (not shown), e.g., processors, micro-controllers, memories, semi-conductor devices, and the like. The components may be

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elements of a plurality of subsystems (not shown), e.g., computers, servers, etc. The subsystems and the components may be implemented to perform various electronic, e.g., computing, switching, routing, displaying, and the like, functions. In the performance of these electronic functions, the components, and therefore the subsystems, may dissipate relatively large amounts of heat. Because the racks 12 have been generally known to include upwards of forty (40) or more subsystems, they may require substantially large amounts of cooling fluid to maintain the subsystems and the components generally within a predetermined operating temperature range. According to an embodiment of the invention, by substantially controlling the amount of cooling air delivered to the components and the subsystems located in the racks 12 based upon their respective heat loads, the power consumed by the cooling system 20 to cool and supply the cooling fluid may also be controlled.

The cooling system 20 is illustrated as including a plurality of HEU's 22 and a cooling device 24. The HEU's 22 may be supported from a ceiling 16 of the room 10 by one or more supports 26. The HEU's 22 may comprise any reasonably suitable air conditioning unit designed to receive air and to deliver the received air, e.g., the DATACOOL environmental control system manufactured and distributed by Liebert of Irvine, California. As can be seen in FIG. 1, the HEU's 22 are positioned to receive air that may become heated by virtue of the heat dissipated by, for example, the computer systems located in the racks 12. Although an HEU 22 is illustrated as positioned over a rack 12, it should be understood that the HEU's 22 may be positioned at various other locations. For example a plurality of HEU's 22 may be positioned to cool a single rack. Determinations of HEU 22 placement within the room 10 may be predicated upon techniques designed to optimize cooling performance and/or energy efficiency.

The HEU's 22 may be positioned to generally supply the racks 12 with cooling air. More particularly, the HEU's 22 may be positioned to supply cooling air to the racks 12 in accordance with their heat dissipation. By way of example, computer systems that undergo higher loads are known to generate greater amounts of heat as compared to computer systems that undergo lower or no loads. Thus, the HEU's 22 may be positioned and operated to supply those computer systems (and racks 12) that generate greater amounts of heat with greater mass flow rates of cooling air and/or relatively lower temperature air. In addition, those computer systems (and racks 12) that generate little or no heat, may likewise, receive little or no cooling air and/or relatively higher temperature air. In this respect, the amount of energy required to operate the

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HEU's 22 specifically, and the cooling system 20 as a whole, may be substantially optimized according to the demands of the computer systems.

Alternatively, or additionally to the above, because usage of the computer systems contained in the racks 12 may vary at different times of the day, instead of varying the position of the HEU's 22, the load placed on the computer systems may be varied. For instance, as described in co-pending U.S. Application Serial No. 10/122,010, the work load on some of the computer systems may be performed by other computer systems to substantially maximize energy efficiency of the cooling system. In this regard, the load may be transferred, for example, to one location in the room 10 if it is determined that such a load transfer is more energy efficient than under normal operating conditions. Moreover, the load transfer may occur at different times of the day and as load requirements vary.

The cooling device 24 may comprise any reasonably suitable type of cooling device designed to adequately cool the cooling fluid. In addition, the cooling device 24 may include the capability of varying the temperature of the cooling fluid. Some suitable cooling devices may include those that implement air conditioners, heat exchangers, heat pumps, variable capacity chillers, evaporative cooling systems, and the like. For example, the cooling device 24 may comprise a closed-loop refrigeration cycle apparatus having a heat transfer section where the heat from the cooling fluid in a fluid line 28 may be transferred to refrigerant contained in the closed-loop refrigeration cycle apparatus.

Although the cooling device 24 is illustrated as being located outside of the room 10, it should be understood that the cooling device 24 may be positioned within the room 24 without deviating from the scope of the present invention.

The cooling fluid may be configured to flow through the HEU's 22 and return to the cooling device 24 via fluid lines 28. As seen in FIG. 1, the fluid line 28 generally forms a closed loop system in which the cooling fluid may become heated in the HEU's 22 and cooled in the cooling device 24.

Although one room 10 is illustrated in FIG. 1, it should be understood that the room 10 may comprise more than one room and that the cooling system 20 may be configured to cool a plurality of rooms.

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With reference now to FIG. 2, there is illustrated an enlarged partly cross-sectional view of section A in FIG. 1. As seen in FIG. 2, the HEU 22 generally comprises, among other things, a plurality of fans 30 and an opening 32. The fans 30 are designed to cause air from the room 10 to flow into the opening 32, as indicated by arrows 34. The fans 30 are also configured to cause the air to flow back out into the room 10, in the manner indicated by arrows 36. It should be understood that the HEU 22 may include additional components and that some of the components described may be removed and/or modified without departing from the scope of the invention.

The fluid line 28 is situated to run through the HEU 22 below the fans 30 and in the direction of air flow from the HEU 22 to the room 10. In this respect, as the air flows by the fluid line 28, heat may be transferred from the air to the cooling fluid contained in the fluid line 28. Consequently, the air flowing out of the HEU 22 may be at a lower temperature relative to the air entering the HEU 22.

A pump 38 may be provided along the fluid line 28 at a location generally upstream of the HEU 22. The pump 38 may be designed to apply sufficient pressure to the cooling fluid entering the HEU 22 to enable the cooling fluid to flow at a predetermined rate through the HEU 22. In this respect, the pump 38 may comprise any pump capable of performing the above-described operations in a reasonably suitable manner. The pump 38 may be configured to supply cooling fluid to a plurality of HEU's 22 and to control the pressure of the cooling fluid flowing through one or more of the HEU's 22. A valve 40 is illustrated between the pump 38 and the HEU 22 along the fluid line 28. The valve 40 may be an electronically controllable valve capable of varying the flow of cooling fluid through the fluid line 28, as well as substantially stopping the flow of the cooling fluid. As a result, the volume flow rate of the cooling fluid through the fluid line 28 extending through the HEU 22 may be manipulated at predetermined levels such that the temperature of the air flowing out of the HEU 22 may be substantially optimized.

Although the pump 38 and the valve 40 are illustrated as separate components, it should be understood that their respective functions may be performed by a single component, e.g., the pump 38. In this example, the pump 38 may be configured as a variable speed pump configured to vary the flow of cooling fluid through the HEU 22.

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A pipe 42 may be located along the fluid line 28 at a location downstream of the HEU 22. The pipe 42 may enable cooling fluid that has passed through the HEU 22 to be introduced into cooling fluid entering into the HEU 22. A pipe valve 44 may be positioned along the pipe 42 to substantially control the amount of this cooling fluid introduced into the cooling fluid entering into the HEU 22. The pipe valve 44 may be any reasonably suitable valve (e.g., a three-way valve) capable of controlling the cooling fluid flow through the pipe 42.

In this respect, the temperature of the cooling fluid may thus be further controlled. By way of example, the temperature of the cooling fluid may be increased prior to its introduction into an HEU 22 in a multi-HEU system (see e.g., FIG. 3). In this type of configuration, when one rack 12 is dissipating a greater amount of heat relative to another rack 12, the temperature of cooling air flow supplied to each of these racks may differ from one another. That is, the rack 12 dissipating the greater amount of heat may receive air flow from a first HEU 22 that is at a lower temperature compared to the rack that is dissipating a lesser amount of heat. Consequently, the temperature of the cooling fluid introduced into that first HEU may be at a lower temperature than the cooling fluid introduced into a second HEU.

Temperature sensors 46 may be located in a supply portion and a return portion of the fluid line 28 such that a determination may be made as to changes in the cooling fluid temperature prior to and following flow through the HEU 22. This information may be implemented to determine the amount of return cooling fluid to be introduced into the supply portion of the fluid line 28.

A temperature sensor 48 e.g., a thermocouple or the like, is illustrated on the rack 12. A single temperature sensor 48 is depicted in FIG. 2 for purposes of simplicity, it should, however, be understood that a plurality of temperature sensors 48 may be positioned at various locations of the rack 12 as well as other areas of the room 12. The temperature sensor 48 may supply temperature readings to a controller (not shown) configured to operate the HEU 22, the pump 38, the valve 40, and the pipe valve 44. In addition, the temperature readings may also be supplied to a controller (not shown) configured to operate the cooling device 24. The manner of information transmittal between the temperature sensor 48 and the controllers may comprise any reasonably suitable arrangement, e.g., wired or wireless connection.

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In place of, or in addition to, the temperature sensor 48, a mobile device (not shown) designed to gather or measure at least one local environmental condition (e.g., temperature, air flow, humidity, etc.) in the room 10 may be implemented. By way of example, a suitable mobile device may comprise the environmental condition detecting device described in co-pending U.S. Application Ser. No. 10/157,892, filed on May 31, 2002 (HP Docket No. 100200782-1) entitled "CONTROLLED COOLING OF A DATA CENTER", by Patel et al., which is assigned to the assignee of the present invention and incorporated by reference herein in its entirety. Information gathered by the mobile device may be transmitted to the controller, which may vary operation of the cooling system 20 in response to the information.

Alternatively, or in addition to, the above-described environmental condition sensing devices, the amount of heat generated by the computer systems contained in the racks 12, and the resulting necessary cooling requirements, may be anticipated according to the amount of load placed on the computer systems. A suitable method of implementing anticipated sensing is described in co-pending U.S. Application Ser. No. 09/970,707, which is assigned to the assignee of the present invention and incorporated by reference herein in its entirety.

Referring now to FIG. 3, there is shown a schematic illustration taken along lines III-III of FIG. 1. FIG. 3 illustrates a plurality of HEU's 22 and a plurality of fluid lines 28 emanating from a pair of pumps 38. The illustration also shows that the HEU's 22 include rows of fans 30 located adjacent to the openings 32. Situated beneath each of the fans 30 are fluid lines 28. In addition, located generally upstream of the HEU's 22 are respective valves 40, which may comprise three-way valves. As can be seen in FIG. 3, the pumps 38 may control the supply of cooling fluidt hrough a plurality of HEU's 22. In addition, it may be seen that the valves 40 generally enable control of cooling fluid flow through respective fluid lines 28.

In this respect, the temperature of the air flowing out of the HEU's 22, and more specifically, out of each side of the HEU's 22 may be controlled in substantially independent manners (e.g., by operation a three-way valves (not shown)). In one regard, the flow of cooling fluid through certain HEU's 22 may be restricted or substantially halted, for instance, in situations where the computer systems for which an HEU 22 is configured to cool are in idle states. It should be understood that the configuration of HEU's 22, pumps 38, fluid lines 28, and valves 40 depicted in FIG. 3 is but one manner of a variety of different obtainable configurations.

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It should also be understood that the specific configuration for any given room may depend upon a multitude of factors, e.g., cooling needs, room configuration, cooling device type, etc. In addition, the fluid lines 28 may be positioned above the fans 30 such that air may substantially be cooled prior to flowing into the fans 30 without deviating from the scope of the present invention.

FIG. 4 is an exemplary block diagram 50 for a cooling system 52 according to an embodiment of the invention. It should be understood that the following description of the block diagram 50 is but one manner of a variety of different manners in which such a cooling system 52 may be operated. In addition, it should be understood that the cooling system 52 may include additional components and that some of the components described may be removed and/or modified without departing from the scope of the invention.

The cooling system 52 includes an HEU controller 54 configured to control the operations of the HEU 56. The HEU controller 54 may comprise a microprocessor, a micro-controller, an application specific integrated circuit (ASIC), and the like. The HEU controller 54 may, for example, control the speed of the fans 58, the operation of the pump 60, the valve 62, and the pipe valve 78. Interface electronics 64 may be provided to act as a control interface between the HEU controller 54 and the HEU 56, pump 60, and valve 62. Alternatively, a control interface my be omitted between the HEU controller 54 and the above-described components as seen with respect to the connection between the HEU controller 54 and, for example, the pipe valve 78. The HEU controller 54 may also be interfaced with a temperature sensor 68, e.g., one or more of the temperature sensors described hereinabove with respect to FIG. 2.

The HEU controller 54 may be interfaced with an HEU memory 66 configured to provide storage of a computer software that provides the functionality of the HEU controller 54, e.g., the speed of the fans, pump operation, etc. The HEU memory 66 may be implemented as a combination of volatile and non-volatile memory, such as dynamic random access memory (DRAM), EEPROM, flash memory, and the like. The HEU memory 66 may also be configured to provide a storage for containing data and/or information pertaining to the manner in which HEU controller 54 may operate the fans 58, the pump 60, the valve 62, and the pipe valve 78. In one respect, the manner of operation of the above-described components may be based according to temperature measurements by the temperature sensor 68.

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The HEU controller 54 may be further interfaced with a cooling device controller 70. The interface may be effectuated via a wired protocol, such as IEEE 802.3, etc., wireless protocols, such as IEEE 801.11b, wireless serial connection, Bluetooth, etc., or combinations thereof.

The cooling device controller 70 may be configured to control the operations of the cooling device 72. The cooling device controller 70 may comprise a microprocessor, a micro-controller, an application specific integrated circuit (ASIC), and the like. The cooling device controller 70 is generally configured to manipulate the temperature of the cooling fluid by controlling the operation of the cooling device 72. In this regard, the cooling device 72 may comprise a variable speed compressor, a heat exchanger, a chilled water heat exchanger, a centrifugal chiller, and the like. More particularly, the cooling device controller 70 may be designed to vary the operation of one or more of the above-recited components to vary the amount of heat transfer on the refrigerant contained in the refrigeration loop of the cooling device 72 to thereby vary the cooling fluid temperature.

Interface electronics (I/F) 74 may be provided to act as an interface between the cooling device controller 70 and the components for operating the cooling device 72, e.g., the supply of voltage to vary the speed of the compressor, control of the heat exchanger (centrifugal chiller) capacity, etc.

The cooling device controller 70 may also be interfaced with a cooling device (CD) memory 76 configured to provide storage of a computer software that provides the functionality of the cooling device 72, e.g., compressor, heat exchanger, and the like, and may be executed by the cooling device controller 70. The CD memory 76 may be implemented as a combination of volatile and non-volatile memory, such as DRAM, EEPROM, flash memory, and the like. The CD memory 76 may also be configured to provide a storage for containing data/information pertaining to the manner in which the compressor (heat exchanger, chiller) may be manipulated in response to, for example, variations in the temperature of the cooling fluid and/or air in the room.

In one respect, the capacity (e.g., the amount of work exerted on the cooling fluid) of the compressor (heat exchanger, chiller, etc.) may be modified to thereby control the temperature and of the cooling fluid. The compressor (heat exchanger, chiller, etc.) may thus be controlled to either increase or decrease the mass flow rate of the refrigerant flowing therethrough.

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Consequently, when the temperature in the room 10 is below a predetermined range, the capacity of the (heat exchanger, chiller, etc.) may be reduced to substantially reduce the amount of work, thus the amount of energy exerted on the refrigerant. This may lead to a significant reduction in the costs associated with operating the cooling system 52 as compared with conventional cooling systems.

Because the specific type of compressor (heat exchanger, chiller, etc.) to be employed with embodiments of the invention may vary according to individual needs, the invention is not limited to any specific type of compressor (heat exchanger, chiller, etc.). Instead, any reasonably suitable type of compressor (heat exchanger, chiller, etc.) capable of accomplishing certain aspects of the invention may be employed with the embodiments of the invention. The choice of compressor (heat exchanger, chiller, etc.) may therefore depend upon a plurality of factors, e.g., cooling requirements, costs, operating expenses, etc.

By way of example, if there is a detected or anticipated change in the temperature of a rack, e.g., rack 12, areas surrounding the rack, etc., the HEU controller 54 may operate to manipulate the corresponding HEU 56 and/or fan(s) 58 to compensate, e.g., change the volume flow rate, velocity, and other characteristic of the air flow, for the change in temperature. In addition, or as an alternative to the above, the cooling device controller 70 may operate to cause the cooling device 72 to lower the refrigerant temperature. In this respect, each of the racks 12 and/or portions thereof may generally receive substantially only the amount of cooling air necessary to maintain the temperature of the racks 12 within a predetermined temperature range. In addition, the refrigerant, and therefore the cooling fluid, temperature may also be controlled as needed to substantially optimize cooling of the racks 12. By controlling the cooling air flow in the above-described manner, the cooling system 52 may be operated at substantially optimized levels, thereby decreasing the amount of energy and thus the operating costs required to cool the computer systems in the racks 12.

Moreover, the cooling device controller 70 may operate the compressor (heat exchanger, chiller, etc.) in a manner to vary the cooling fluid temperature in response to various degrees of detected increases/decreases in the operation of the HEU 56. More particularly, a look up table (not shown) may be stored in the CD memory 76. The look up table may include information pertaining to the level of compressor speed (heat exchanger capacity, etc.) increase necessary for

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a detected increase in the operation of the HEU 56. In this respect, the compressor speed (heat exchanger capacity, etc.) may be varied substantially incrementally in response to detected changes in the operation of the HEU 56.

FIG. 5 shows a flow diagram of an operational mode 100 according to an embodiment of the invention. It should be understood that the operational mode 100 may include additional operations and that some of the operations may be removed and/or modified without departing from the scope of the invention. The following description of the operational mode 100 is made with reference to the block diagram 50 illustrated in FIG. 4, and thus makes reference to the elements cited therein.

The operations illustrated in the operational mode 100 may be contained as a utility, program, or a subprogram, in any desired computer accessible medium. In addition, the operational mode 100 may be embodied by a computer program, which can exist in a variety of forms both active and inactive. For example, they can exist as software program(s) comprised of program instructions in source code, object code, executable code or other formats. Any of the above can be embodied on a computer readable medium, which include storage devices and signals, in compressed or uncompressed form.

Exemplary computer readable storage devices include conventional computer system RAM, ROM, EPROM, EEPROM, and magnetic or optical disks or tapes. Exemplary computer readable signals, whether modulated using a carrier or not, are signals that a computer system hosting or running the computer program can be configured to access, including signals downloaded through the Internet or other networks. Concrete examples of the foregoing include distribution of the programs on a CD ROM or via Internet download. In a sense, the Internet itself, as an abstract entity, is a computer readable medium. The same is true of computer networks in general. It is therefore to be understood that those functions enumerated below may be performed by any electronic device capable of executing the above-described functions.

In the operational mode 100, the cooling system 52 is activated at step 110. At step 120, the temperature of one or more racks (Tr) is sensed by temperature sensors, e.g., one or more temperature sensors 68. The temperature sensors may comprise one or more of the above-described temperature sensors, e.g., thermocouple, mobile environmental condition sensing device, etc. The Tr's generally correspond to the heat load of the heat dissipating components

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and therefore the computer systems contained in the racks, e.g., rack 12. Therefore, the Tr's may be based upon the temperatures of specific heat dissipating components and subsystems. In addition, the Tr's may be based upon the temperatures in the general vicinity of the racks and/or sections of the racks. Thus, those skilled in the art will understand that certain embodiments of the present invention may be employed with temperature sensors located at various positions throughout the room, e.g., room 10. Moreover, use of the term "rack" herein generally refers to racks for supporting computer systems and additionally to sections of the racks as well as areas around the racks. Therefore, the use of the term "rack" throughout the present disclosure is not meant to limit certain aspects thereof to entire racks, but instead, is relied upon to simplify the description of certain embodiments of the present invention.

As an alternative to the temperature sensor 68, the Tr's may be anticipated in the manner described hereinabove and in co-pending U.S. Patent Application Serial No. 09/970,707.

At step 130, it is determined whether each of the Tr's is within a predetermined range of operating temperatures, e.g., between a maximum set point temperature (Tmax,set) and a minimum set point temperature (Tmin,set). In general, the range of temperatures Tmin,set and Tmax,set pertains to threshold temperatures to determine whether to increase or decrease the flow of cooling air delivered to the racks. This range of operating temperatures may be set according to a plurality of factors. These factors may include, for example, the operating temperatures set forth by the manufacturers of the subsystems and components located in the racks, through testing to determine the optimal operating temperatures, etc. In addition, the predetermined range of operating temperatures may vary from one subsystem to another.

For those racks having Tr's that are within the predetermined range, their temperatures are sensed again at step 120. For those racks determined to have heat loads that do not fall within the predetermined temperature range, i.e., fall outside of Tmin,set and Tmax,set, the HEU controller 54 may determine whether those racks have temperatures that are below the Tmin,set at step 140.

The air flow supplied by the HEU 56, and more particularly the fans 58, configured to supply cooling air flow to the racks having Tr's below or equal to the Tmin,set, may be decreased at step 150. In addition, and/or alternatively, the temperature of the cooling fluid supplied through the HEU's 56 may be increased to thereby increase the temperature of the air supplied to

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these racks. As described hereinabove, this may be accomplished by decreasing the work placed on the refrigerant by the cooling device 72 and/or by opening the bypass valve 62. Additionally, the temperature of the air flowing from the HEU 56 may also be increased by causing the valve 78 to enable a lower volume flow rate of cooling fluid to flow therethrough.

The air flow supplied by the HEU 56 configured to supply cooling air flow to the racks having Tr's above the Tmin,set, and thus above the Tmax,set, may be increased at step 160. In this regard, the HEU controller 54 may increase power to the fans 58 to enable greater air flow to the racks. In addition, and/or alternatively, the HEU controller 54 may increase the flow of cooling fluid through the HEU 56 via operation of the pump 60 and/or the valve 78.

By virtue of certain embodiments of the invention, racks having various Tr's may be supplied with air flow having various characteristics, e.g., temperature, velocity, direction, and the like. That is, for example, in a system comprising a plurality of HEU's 56, air flow may be supplied to racks having higher Tr's by certain HEU's 56 substantially simultaneously with air flow supplied to racks having relatively lower Tr's by other HEU's 56 where each of the racks receives different levels of air flow. Additionally, the temperature of the cooling fluid supplied through the HEU's 56 delivering air flow to racks having higher Tr's may be relatively lower than the temperature of the cooling fluid supplied through the HEU's 56 delivering air flow to racks having lower Tr's. It should thus be appreciated that steps 150 and 160 may be respectively and substantially simultaneously performed by various HEU's 56.

According to an embodiment of the invention, the decrease in volume flow rate and/or velocity of the air flow at step 150 and the increase in volume and/or velocity of the air flow at step 160 may be accomplished by incrementally varying the air flow from the HEU 56. For example, the volume flow rate and/or velocity of the air flow from the HEU 56 may be varied by a predetermined amount during a first iteration. The Tr may be measured at a predetermined time following the variation and steps 130-160 may be repeated. By repeating this process a number of times, the temperature of the rack may be substantially brought within the predetermined range.

At step 170, the cooling device controller 70 may determine whether to vary the cooling fluid temperature, e.g., increase the compressor speed (heat exchanger capacity, etc.). The cooling fluid temperature may be decreased in response to, for example, actual and/or detected

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increases in Tr. In the alternative, the decrease in cooling fluid temperature may be predicated upon the amount of work performed by the HEU 56. More particularly, as the work performed by the HEU 56 increases, thereby signaling an increase in the Tr, the cooling device controller 70 may cause the cooling device 72 to decrease the refrigerant temperature. In addition, when a plurality of HEU's 56 are implemented to cool one or more racks, the cooling device controller 70 may determine whether the total amount of decreases in the volume flow rates of the cooling air exceeds the total amount of increases in the volume flow rates flow of the cooling air. At step 180, the cooling device controller 70 may determine whether to decrease the cooling fluid temperature.

At step 190, the cooling device controller 70 may cause the cooling fluid temperature to be decreased in response to a determination to do so at step 180. Alternatively, the cooling device controller 70 may cause the cooling fluid temperature to be increased at step 200 in response to a determination to do so at step 180. As described hereinabove, the cooling device controller 70 may operate to vary the temperature of the cooling fluid by varying the speed of the compressor, capacity of the heat exchanger, and the like.

It should be understood that steps 150, 160, and 190 or 200 may be performed substantially simultaneously. More particularly, on a zonal level, temperature readings determined at step 120 for various racks may be implemented in varying the delivery of cooling air to the various racks. Additionally, on a global level, the temperature of the cooling fluid may be varied according to the changes in the cooling requirements of the racks. For example, when the temperature of a rack exceeds a predetermined threshold range, the HEU(s) 56 supplying cooling air flow to that rack may increase the air flow to that rack. Substantially concurrently, the temperature of the cooling fluid may be decreased by an amount relative to the increased rack temperature.

Following steps 190 or 200, the Tr's are sensed again at step 120. In addition, the steps following step 120 may be repeated for an indefinite period of time and may form a closed-loop pattern.

In accordance with embodiments of the present invention, the cooling requirements of a room configured to house computer systems may be analyzed to substantially optimize the layout of the racks within the room. In one respect, the substantial optimization of the rack layout in the

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room may enable the cooling system of the data center to operate at generally lower energy and greater efficiency levels by virtue of the reduced workload placed on the components of the cooling systems, e.g., compressors, HEU's, etc. In addition, the cooling requirements may be analyzed to optimize the workload of the computer systems as described above. In this regard, the actual or anticipated temperatures may be stored in a look-up table and used as references in optimizing the room layout and/or workload distribution. The cooling requirements within the room may be analyzed by operation of any reasonably suitable commercially available computational fluid dynamics (CFD) tool, e.g., FLOVENT, a 3-D modeling software capable of predicting temperature variations based upon fluid flow analyses.

By virtue of the numerical modeling, various cooling devices as well as the HEU's described hereinabove may be positioned throughout the room to substantially control the manner in which the racks receive the cooling fluid.

In addition, the cooling devices may also be positioned to substantially maximize and optimize their performances, e.g., to prevent one or more of the cooling devices from operating at substantially excessive levels.

In determining the cooling air distribution requirement within the room, each of the racks may be assigned a heat load which may correspond to a maximum heat load predicted for that rack, e.g., through anticipated power draw. For example, a rack containing 40 subsystems, e.g., computers, may have a maximum heat load of 10 KW and a rack containing 20 subsystems may have a maximum heat load of 5 KW. By implementing the CFD in this manner, for example in a room containing 100 racks, four cooling devices, and a plurality of HEU's, racks having a potential for relatively larger heat loads may be relatively separately located throughout the data center. In one respect, therefore, the cooling devices and the HEU's within the room may be operated at substantially less than maximum power levels while the racks may receive sufficient amounts of cooling fluid. More specifically, the power required to operate the cooling devices and the HEU's may be regulated to efficiently supply cooling fluid to the racks by providing substantially only that amount of cooling fluid necessary to maintain the racks within nominal operating temperatures.

Additionally, a CFD tool may be implemented substantially simultaneously with the cooling system. More specifically, the CFD tool may be utilized to substantially continuously

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vary the operation of the cooling system to operate according to the heat loads generated in the racks. In this regard, the anticipated or actual heat loads (e.g., based upon the power draw of the components) on the racks may be inputted into the CFD tool, along with one or more of the following properties: velocity of the cooling fluid flowing through various sections of the room and the distribution of temperature and pressure of the cooling fluid in the data center, to determine an optimal manner in which, for example, the HEU's may be operated. The velocity of the air flow as well as other atmospheric conditions at various locations within the room may be sensed by a temperature sensor. The sensed conditions may be transmitted or otherwise relayed to the CFD tool to enable the tool to perform the necessary calculations.

In this regard, the CFD tool may be implemented to produce a numerical model of the room to thus determine an optimized cooling distribution within the room. A correlation of one or more of the following properties: velocity of the cooling fluid flowing through various sections of the room, distribution of temperature and pressure of the cooling fluid in the room, and the power draw into the racks, may be created based on the numerical modeling. The correlation may be used to infer thermal conditions throughout the room when only a minimum number of sensors are available during operation of the cooling system. In addition, the correlation may substantially reduce the amount of time required for the CFD tool to perform the computing operations.

By virtue of certain embodiments of the present invention, one of ordinary skill in the art will readily recognize that the amount of energy, and thus the costs associated with cooling the racks located within a room may be substantially reduced. In one respect, by operating the cooling system to supply cooling fluid substantially only as needed by the racks, the cooling system may be operated at a relatively more efficient manner in comparison with conventional cooling systems.

What has been described and illustrated herein is a preferred embodiment of the invention along with some of its variations. The terms, descriptions and figures used herein are set forth by way of illustration only and are not meant as limitations. Those skilled in the art will recognize that many variations are possible within the spirit and scope of the invention, which is intended to be defined by the following claims -- and their equivalents -- in which all terms are meant in their broadest reasonable sense unless otherwise indicated.

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What is claimed is:

1. A method for cooling a room configured to house a plurality of computer systems, said method comprising:

providing a heat exchanger unit configured to receive air from said room and to deliver air to said room;

supplying said heat exchanger unit with cooling fluid, wherein said cooling fluid is operable to cool said received air in said heat exchanger unit;

sensing temperatures at one or more locations in said room;

controlling at least one of the temperature of said cooling fluid and said air delivery to said room in response to said sensed temperatures at said one or more locations.

2. The method according to claim 1, further comprising:

providing a cooling device configured to manipulate the temperature of said cooling fluid, wherein said step of controlling at least one of a temperature of said cooling fluid and said air delivery to said room comprises varying an output of said cooling device to control the temperature of said cooling fluid.

3. The method according to claim 2, wherein said cooling device comprises a refrigeration loop having a variable capacity compressor and a refrigerant, and wherein said step of controlling the temperature of said cooling fluid comprises controlling the temperature of said refrigerant through operation of said variable capacity compressor.

4. The method according to claim 1, wherein said heat exchanger unit comprises at least one fan configured to effectuate delivery of the air, and wherein said step of controlling at least one of a temperature of said cooling fluid and said air delivery to said room comprises varying an output of said fan to control the delivery of air to the room.

5. The method according to claim 1, further comprising:

determining whether the sensed temperatures at one or more locations in said room are within a predetermined range.

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6. The method according to claim 5, further comprising:

determining whether the sensed temperatures is at least one of less than and equal to a minimum set point temperature in response to said sensed temperatures at one or more locations in said room being outside of said predetermined range.

7. The method according to claim 6, wherein said controlling step comprises decreasing said air delivery to said room in response to said sensed temperatures at said one or more locations being at least one of less than and equal to a minimum set point temperature.

8. The method according to claim 6, wherein said controlling step comprises increasing said air delivery to said room in response to said sensed temperatures being above said minimum set point temperature and outside of said predetermined range.

9. The method according to claim 5, further comprising:

varying the cooling fluid temperature in response to the sensed temperatures at one or more locations in said room being outside of said predetermined range.

10. The method according to claim 9, further comprising:

increasing said cooling fluid temperature in response to a sum of the sensed temperatures at one or more locations being below said predetermined range.

11. The method according to claim 9, further comprising:

decreasing said cooling fluid temperature in response to a sum of the sensed temperatures at one or more locations being above said predetermined range.

12. The method according to claim 1, further comprising:

performing a numerical modeling of a temperature distribution and flow characteristics of air within the room; and

manipulating said cooling system in response to said numerical modeling.

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13. The method according to claim 12, further comprising:

implementing said numerical modeling to correlate at least two of temperature, velocity and pressure of said cooling fluid and power draw of said racks within said data center to thereby infer a thermal condition throughout said room, wherein said controlling step further comprises manipulating said cooling system in response to said inferred thermal condition.

14. The method according to claim 1, wherein said step of sensing temperatures at one or more locations in said room comprises sensing said temperatures with a mobile environmental condition sensing device.

15. The method according to claim 1, wherein said step of sensing temperatures at one or more locations in said room comprises determining said temperatures according to anticipated heat loads of one or more of said plurality of computer systems.

16. The method according to claim 1, further comprising:

manipulating the workload on the plurality of computer systems to optimize energy efficiency in cooling said plurality of computer systems.

17. The method according to claim 1, wherein said step of controlling at least one of the temperature of said cooling fluid and said air delivery to said room in response to said sensed temperatures at said one or more locations comprises substantially ceasing air delivery and cooling fluid delivery in response to said sensed temperatures being below a predetermined set point temperature.

18. A system for cooling a room containing one or more computer systems, said system comprising:

a heat exchanger unit configured to receive cooling fluid through a cooling fluid line and to receive air, wherein said air may be cooled through heat transfer with said cooling fluid;

said heat exchanger unit having at least one fan configured to cause air to flow out of the heat exchanger unit;

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a heat exchanger controller operable to control a supply of said cooling fluid to said heat exchanger unit and operable to control the speed of the at least one fan;

a device for cooling said cooling fluid; and

a cooling device controller configured to operate the device for cooling to vary the temperature of said cooling fluid.

19. The system according to claim 18, further comprising one or more temperature sensors, wherein said heat exchanger controller is configured to receive environmental condition information from said one or more temperature sensors.

20. The system according to claim 19, wherein said temperature sensor comprises at least one of a thermocouple and a mobile environmental condition sensing device.

21. The system according to claim 18, wherein said computer systems are housed in a plurality of racks, and wherein a plurality of heat exchanger units are positioned at various locations in said room to supply air flow to said plurality of racks in a substantially independent manner.

22. The system according to claim 21, further comprising:

one or more pumps configured to control cooling fluid delivery to one or more of said plurality of heat exchanger units, wherein said heat exchanger controller is operable to control said one or more pumps.

23. The system according to claim 18, further comprising:

a valve configured to meter the flow of cooling fluid through said heat exchanger positioned along said cooling fluid line generally upstream of said heat exchanger unit, wherein said heat exchanger controller is operable to control the mass flow rate of said cooling fluid through said valve.

24. The system according to claim 18, wherein said cooling device comprises at least one of a variable capacity compressor, a heat exchanger, a chiller, and a cooling device controller

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configured to control said at least one of said variable capacity compressor, said heat exchanger, and said chiller.

25. The system according to claim 24, wherein said cooling device controller is configured to communicate with said heat exchanger controller.

26. The system according to claim 25, wherein said communication between the cooling device controller and the heat exchanger controller includes communication of information pertaining to the level of operation of said one or more heat exchanger units, and wherein said cooling device controller is configured to operate said at least one of the variable capacity compressor, heat exchanger, and chiller in response to said information.

27. The system according to claim 25, wherein said communication comprises at least one of temperature measurements and heat exchanger unit operations.

28. The system according to claim 18, wherein said heat exchanger unit is supported from a ceiling of said room.

29. The system according to claim 18, further comprising:

a connecting line between a supply portion of said cooling fluid line and a return portion of said cooling fluid line; and

a valve configured to meter the flow of cooling fluid through said connecting line, wherein said heat exchanger controller is operable to control the flow of said cooling fluid through said valve.

30. A system for cooling computer systems housed in one or more racks, said racks being maintained in a room, said system comprising:

means for cooling air including means for receiving cooling fluid;

means for delivering cooled air to said computer systems;

means for measuring temperatures at one or more locations in said room;

means for controlling delivery of said cooled air in response to the temperature measurements; and

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means for controlling the temperature of said cooling fluid.

31. The system according to claim 30, further comprising:

means for controlling delivery of cooling fluid through said cooling means.

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ABSTRACT OF THE DISCLOSURE

A system and method for cooling a room configured to house a plurality of computer systems. A heat exchanger unit is configured to receive air from the room and to deliver air to the room. The heat exchanger unit is supplied with cooling fluid operable to cool the received air in the heat exchanger unit. At least one of the temperature of the cooling fluid supplied to the heat exchanger unit and the air delivery to the room may be controlled in response to temperatures sensed at one or more locations in the room.

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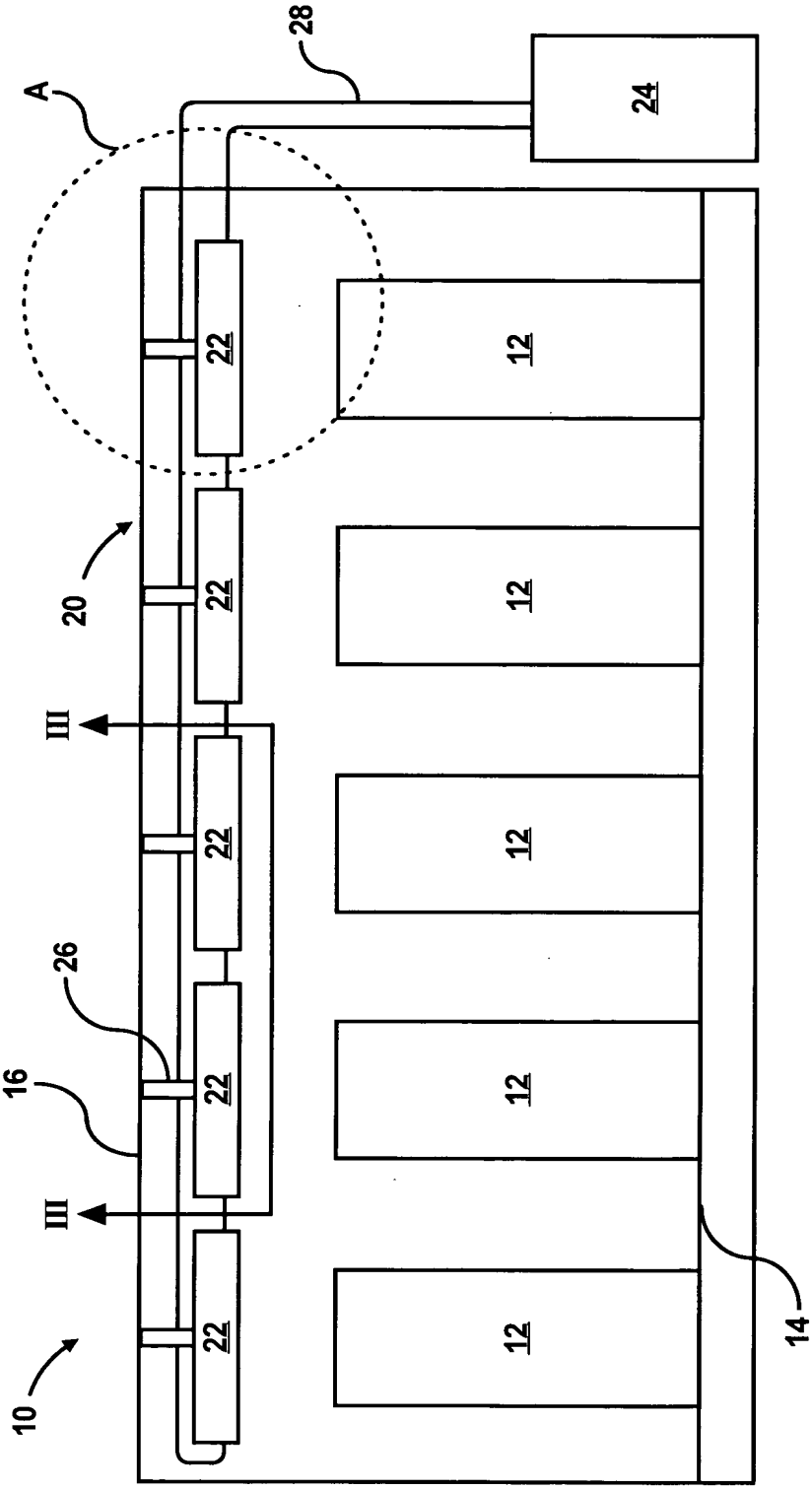


FIG. 1

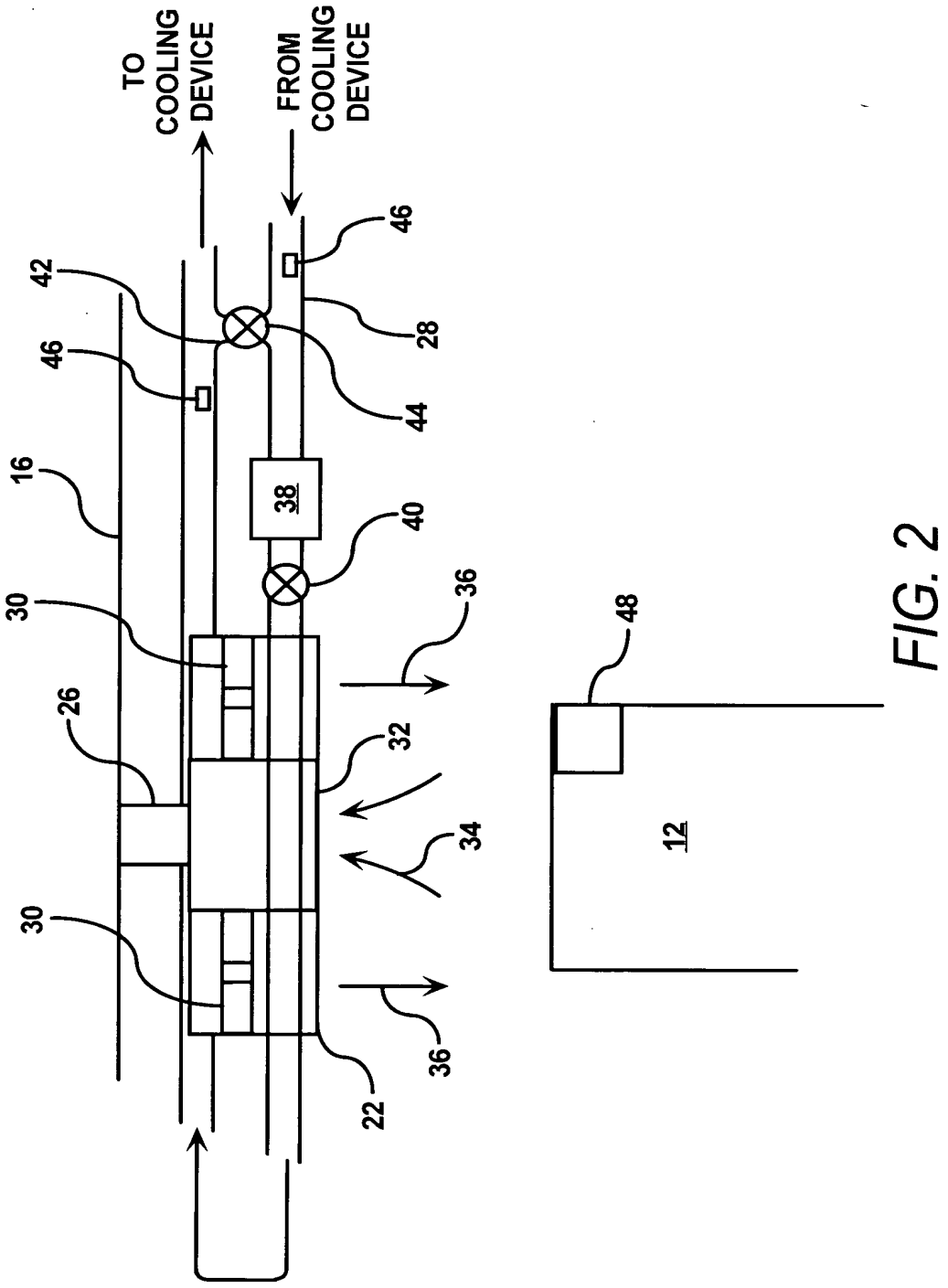

TO COOLING DEVICE
FROM COOLING DEVICE
42
46
46
28
44
16
38
40
30
36
26
32
34
30
36
22
48
12

FIG. 2

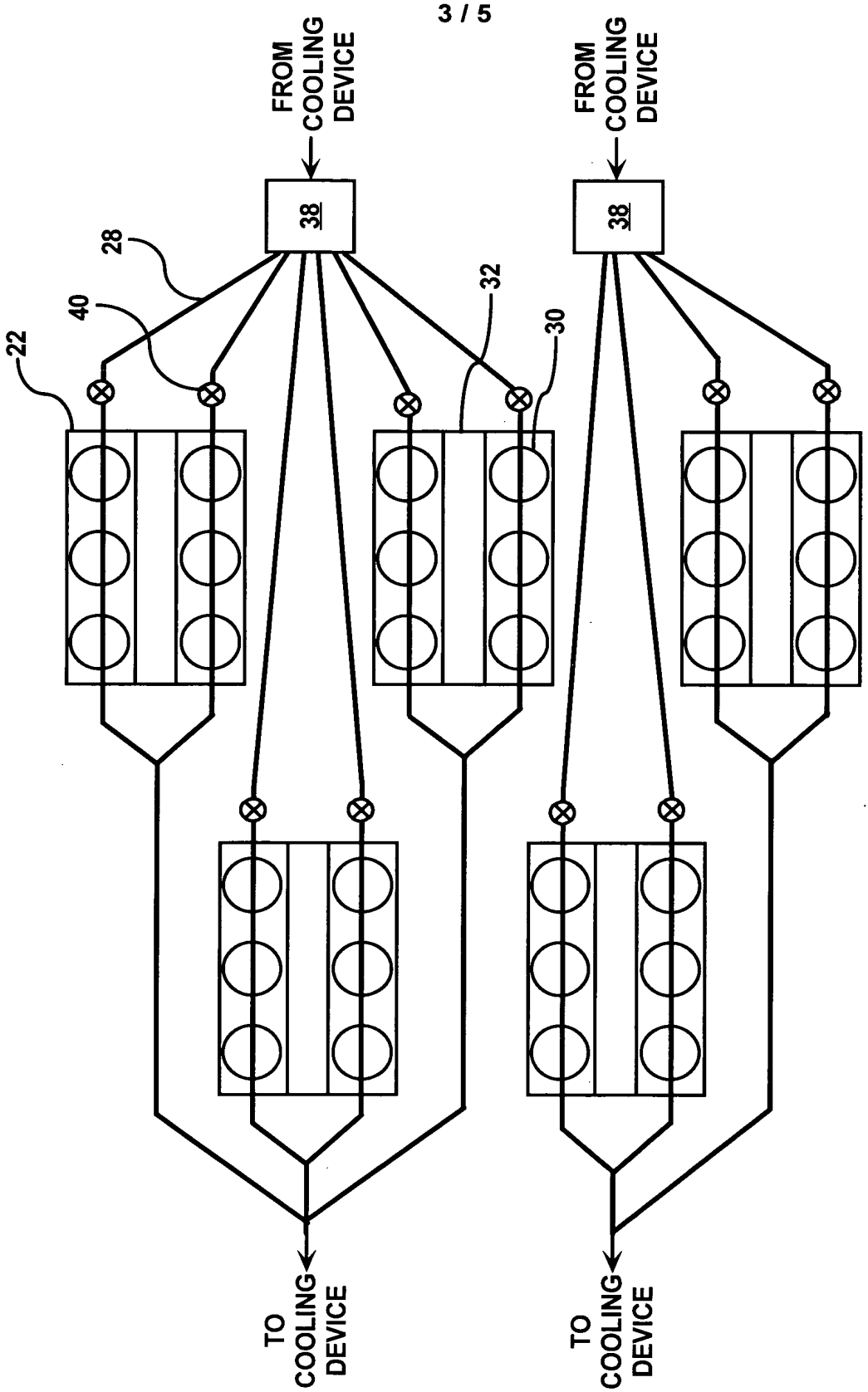

FROM COOLING DEVICE
FROM COOLING DEVICE
38
38
28
40
22
32
30
TO COOLING DEVICE
TO COOLING DEVICE

FIG. 3

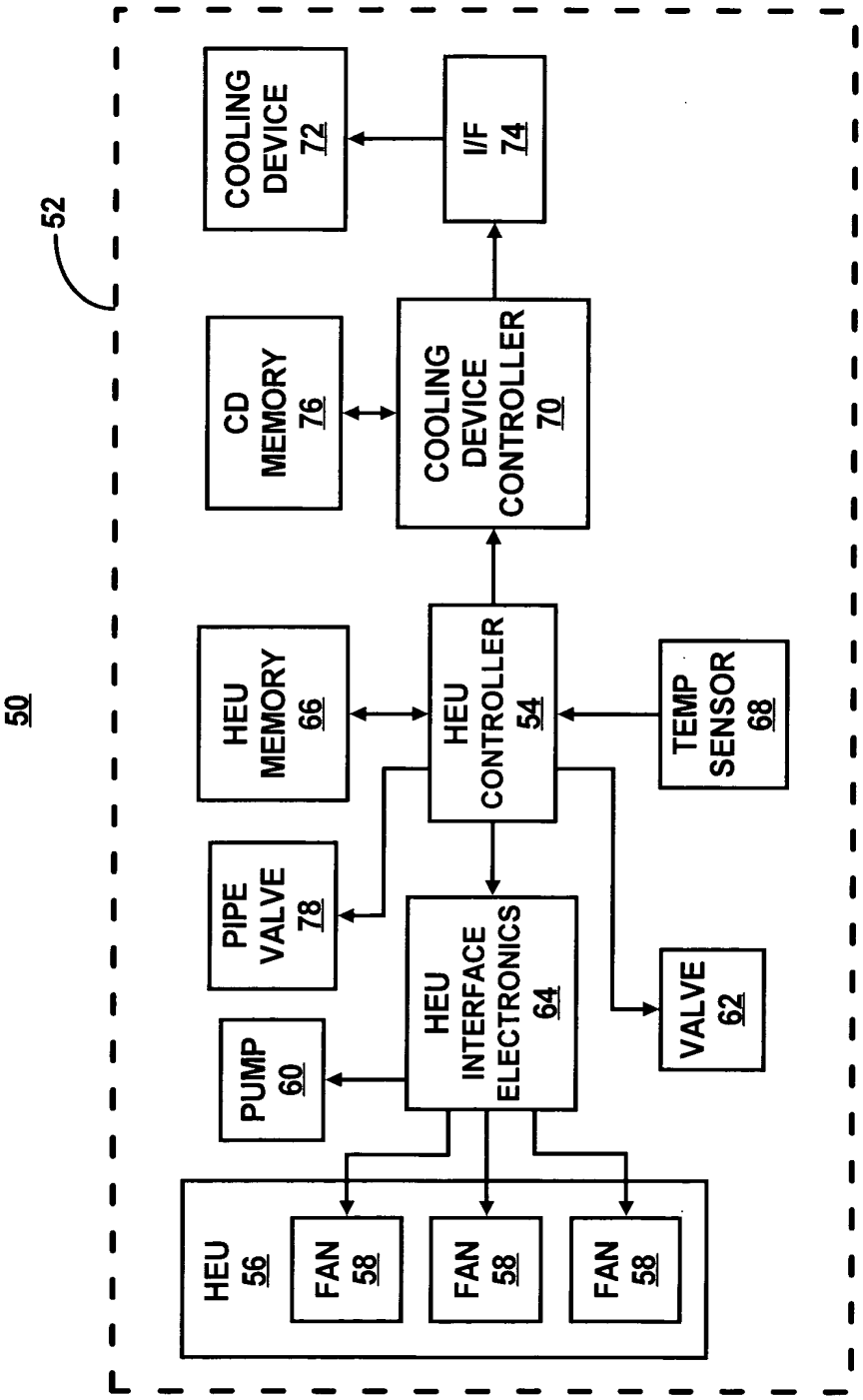

50
52
COOLING DEVICE 72
I/F 74
CD MEMORY 76
COOLING DEVICE CONTROLLER 70
HEU MEMORY 66
HEU CONTROLLER 54
TEMP SENSOR 68
PIPE VALVE 78
HEU INTERFACE ELECTRONICS 64
VALVE 62
PUMP 60
HEU 56
FAN 58
FAN 58
FAN 58

FIG. 4

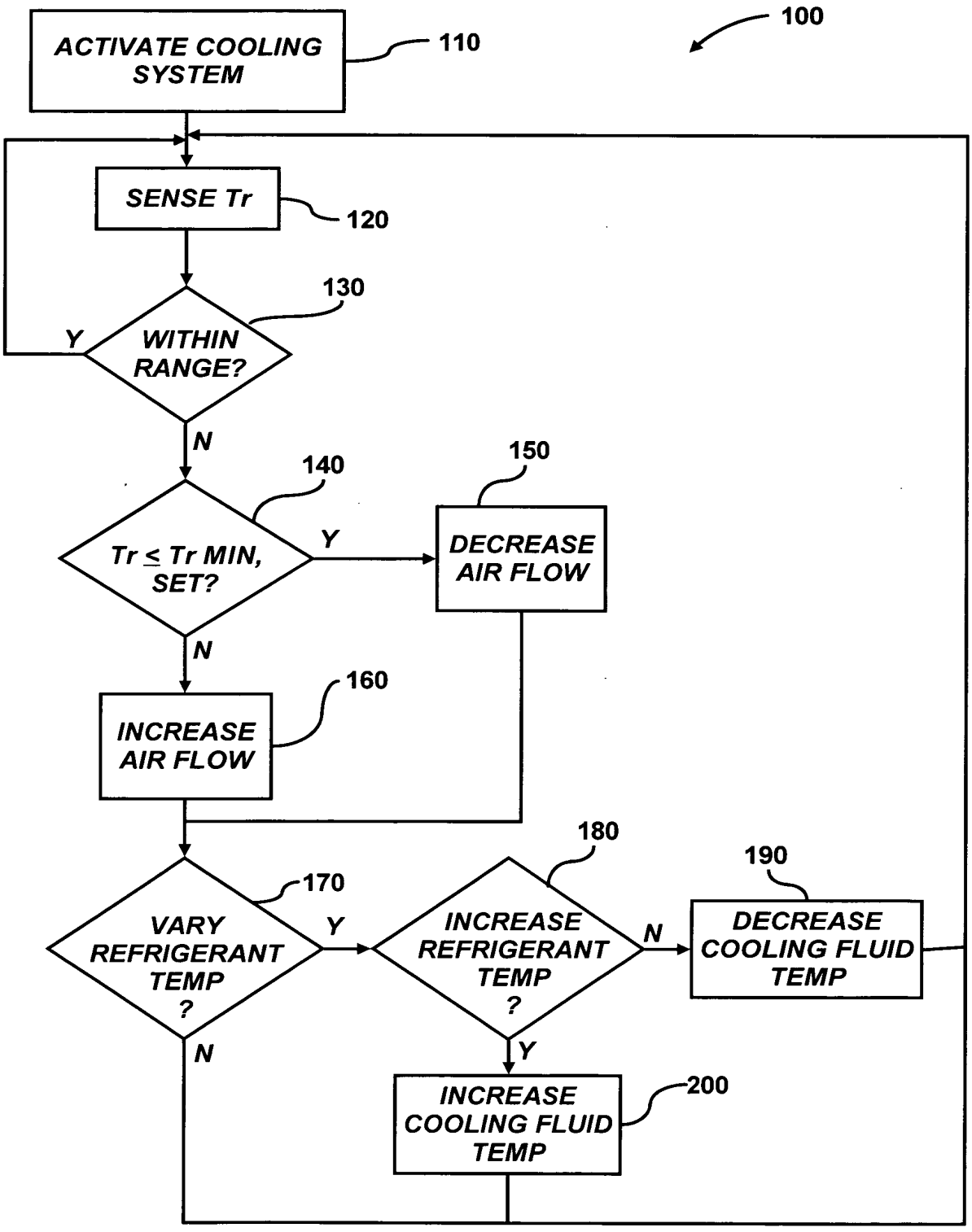

100
ACTIVATE COOLING SYSTEM
110
SENSE Tr
120
130
WITHIN RANGE?
Y
N
140
Tr ≤ Tr MIN, SET?
Y
150
DECREASE AIR FLOW
N
160
INCREASE AIR FLOW
170
VARY REFRIGERANT TEMP ?
Y
N
180
INCREASE REFRIGERANT TEMP ?
N
190
DECREASE COOLING FLUID TEMP
Y
200
INCREASE COOLING FLUID TEMP

FIG. 5

PATENT APPLICATION

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

ATTORNEY DOCKET NO. 100111090-1

As a below named inventor, I hereby declare that:

My residence/post office address and citizenship are as stated below next to my name;

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 entitled:

COOLING SYSTEM

the specification of which is attached hereto unless the following box is checked:

( ) was filed on _____ as US Application No. or PCT International Application Number _____ and was amended on _____ (if applicable).

I hereby state that I have reviewed and understood the contents of the above-identified specification, including the claims, as amended by any amendment(s) referred to above. I acknowledge the duty to disclose all information which is material to patentability as defined in 37 CFR 1.56.

Foreign Application(s) and/or Claim of Foreign Priority

I hereby claim foreign priority benefits under Title 35, United States Code Section 119 of any foreign application(s) for patent or inventor(s) certificate listed below and have also identified below any foreign application for patent or inventor(s) certificate having a filing date before that of the application on which priority is claimed:

COUNTRY	APPLICATION NUMBER	DATE FILED	PRIORITY CLAIMED UNDER 35 U.S.C. 119
			YES: ___ NO: ___
			YES: ___ NO: ___

Provisional Application

I hereby claim the benefit under Title 35, United States Code Section 119(e) of any United States provisional application(s) listed below:

APPLICATION NUMBER	FILING DATE

U. S. Priority Claim

I hereby claim the benefit under Title 35, United States Code, Section 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 in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

APPLICATION NUMBER	FILING DATE	STATUS (patented/pending/abandoned)

POWER OF ATTORNEY:

As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

Customer Number 022879

Place Customer Number Bar Code Label here

Send Correspondence to:
HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, Colorado 80527-2400

Direct Telephone Calls To:
LLOYD E. DAKIN, JR.
650-857-2295

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 issued thereon.

Full Nam of Inventor: Chandrakant D. PATEL Citizenship: US

Resid nc : 37432 Gillett R ad, Fr m nt, California 94536

P st Offic Address: Sam as residence.

Inventor's Signature

August 1, 2002
Date

Rev 05/02 (DecPwr)

(Use Page Two For Additional Inventor(s) Signature(s))

Vertiv Ex. 1003
Vertiv v. Valtrus

DECLARATION AND POWER OF ATTORNEY
FOR PATENT APPLICATION (continued)

ATTORNEY DOCKET NO. 100111090-1

Full Name of # 2 joint inventor: Cullen E. BASH Citizenship: US

Residence: 662 Mangels Avenue, San Francisco, California 94127

Post Office Address:

Cullen B

Inventor's Signature 8/01/2002

Date

Full Name of # 3 joint inventor: Citizenship:

Residence:

Post Office Address:

Inventor's Signature

Date

Full Name of # 4 joint inventor: Citizenship:

Residence:

Post Office Address:

Inventor's Signature

Date

Full Name of # 5 joint inventor: Citizenship:

Residence:

Post Office Address:

Inventor's Signature

Date

Full Name of # 6 joint inventor: Citizenship:

Residence:

Post Office Address:

Inventor's Signature

Date

Full Name of # 7 joint inventor: Citizenship:

Residence:

Post Office Address:

Inventor's Signature

Date

Full Name of # 8 joint inventor: Citizenship:

Residence:

Post Office Address:

Inventor's Signature

Date

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Vertiv v. Valtrus

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, Colorado 80527-2400

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):	Chandrakant D. Patel et al.	**Confirmation No.:**	
Serial No.:	TBD	**Examiner:**	TBD
Filed:	October 31, 2003	**Group Art Unit:**	TBD
Title:	COOLING SYSTEM		

MAIL STOP NON-FEE AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT

Sir:

Prior to examination of the above-identified application, kindly amend the application as follows. In the following, underlines indicate additions and strikethroughs (or double-brackets) indicate deletions.

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IN THE CLAIMS:

Please find below a listing of all of the pending claims. The statuses of the claims are set forth in parentheses.

1. (Currently amended) A method for cooling a room configured to house a plurality of computer systems, said method comprising:

providing a heat exchanger unit configured to receive air from said room and to deliver air to said room;

supplying said heat exchanger unit with cooling fluid from an air conditioning unit~~, wherein said cooling fluid is operable to cool said received air in said heat exchanger unit~~;

cooling said received air through heat exchange with the cooling fluid in the heat exchanger unit;

sensing temperatures at one or more locations in said room;

controlling at least one of the temperature of said cooling fluid and said air delivery by said heat exchanger unit to said room in response to said sensed temperatures at said one or more locations; and

wherein the step of controlling said air delivery by said heat exchanger unit comprises manipulating a mass flow rate of the cooling fluid supplied to the heat exchanger unit.

2. (Currently amended) The method according to claim 1, ~~further comprising:~~

~~providing a cooling device configured to manipulate the temperature of said cooling fluid,~~ wherein said step of controlling at least one of a temperature of said cooling fluid and said air delivery to said room comprises varying an output of said air conditioning unit ~~cooling device~~ to control the temperature of said cooling fluid.

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3 and 4. (Canceled).

5. (Original) The method according to claim 1, further comprising:

determining whether the sensed temperatures at one or more locations in said room are within a predetermined range.

6-8. (Canceled).

9. (Original) The method according to claim 5, further comprising:

varying the cooling fluid temperature in response to the sensed temperatures at one or more locations in said room being outside of said predetermined range.

10. (Original) The method according to claim 9, further comprising:

increasing said cooling fluid temperature in response to a sum of the sensed temperatures at one or more locations being below said predetermined range.

11. (Original) The method according to claim 9, further comprising:

decreasing said cooling fluid temperature in response to a sum of the sensed temperatures at one or more locations being above said predetermined range.

12-18. (Canceled).

19. (Currently amended) The system according to claim [[18]]22, further comprising one or more temperature sensors, wherein said heat exchanger controller is configured to receive environmental condition information from said one or more temperature sensors.

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20 and 21. (Canceled).

22. (Currently amended) ~~The system according to claim 21, further comprising:~~ A system for cooling a room containing one or more computer systems, said one or more computer systems being housed in a plurality of racks, said system comprising:

a plurality of heat exchanger units configured to receive cooling fluid through a cooling fluid line from an air conditioning unit for cooling the cooling fluid, said plurality of heat exchanger units being further configured to receive air through openings in the plurality of heat exchanger units, wherein said air is cooled through heat transfer with said cooling fluid in the plurality of heat exchanger units;

said plurality of heat exchanger units having at least one fan configured to cause air to flow into and flow out of the heat exchanger unit;

a heat exchanger controller operable to control a supply of said cooling fluid to said plurality of heat exchanger units and operable to control the speed of the at least one fan;

one or more temperature sensors for sensing temperatures at one or more locations in the room;

an air conditioning unit controller configured to operate the air conditioning unit to vary the temperature of said cooling fluid delivered to the one or more locations in the room; and.

one or more pumps configured to control cooling fluid delivery to one or more of said plurality of heat exchanger units, wherein said heat exchanger controller is operable to control said one or more pumps.

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23. (Currently amended) ~~The system according to claim 18, further comprising:~~ A system for cooling a room containing one or more computer systems, said system comprising:

a heat exchanger unit configured to receive cooling fluid through a cooling fluid line from an air conditioning unit for cooling the cooling fluid, said heat exchanger unit being further configured to receive air through openings in the heat exchanger unit, wherein said air is cooled through heat transfer with said cooling fluid in the heat exchanger unit;

said heat exchanger unit having at least one fan configured to cause air to flow into and flow out of the heat exchanger unit;

a heat exchanger controller operable to control a supply of said cooling fluid to said heat exchanger unit and operable to control the speed of the at least one fan;

one or more temperature sensors for sensing temperatures at one or more locations in the room;

an air conditioning unit controller configured to operate the air conditioning unit to vary the temperature of said cooling fluid delivered to the one or more locations in the room; and

a valve configured to meter the flow of cooling fluid through said heat exchanger positioned along said cooling fluid line generally upstream of said heat exchanger unit, wherein said heat exchanger controller is operable to control the mass flow rate of said cooling fluid through said valve.

24. (Currently amended) The system according to claim [[18]]22, wherein said cooling device comprises at least one of a variable capacity compressor, a heat exchanger, a chiller, and a cooling device controller configured to control said at least one of said variable capacity compressor, said heat exchanger, and said chiller.

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25-29. (Canceled).

30. (Currently amended) A system for cooling computer systems housed in one or more racks, said racks being maintained in a room, said system comprising:

means for receiving air from the room, said means for receiving air being located at various locations of the room;

means for cooling the received air in the plurality of means for receiving air, said plurality of means for cooling including means for receiving cooling fluid from an air conditioning unit;

means for delivering cooled air to said computer systems;

means for measuring temperatures at one or more locations in said room;

means for controlling delivery of said cooled air through said means for delivering cooled air in response to the temperature measurements; [[and]]

means for controlling the temperature of said cooling fluid; and

means for manipulating a mass flow rate of the cooling fluid supplied to the heat exchanger unit.

31. (Original) The system according to claim 30, further comprising:

means for controlling delivery of cooling fluid through said cooling means.

32. (New) The method according to claim 1, wherein the step of manipulating a mass flow rate of the cooling fluid supplied to the heat exchanger unit further comprises metering the flow of cooling fluid through said heat exchanger with a valve positioned along

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a cooling fluid line configured to channel cooling fluid from the air conditioning unit to the heat exchanger unit.

33. (New) The method according to claim 1, wherein the step of manipulating a mass flow rate of the cooling fluid supplied to the heat exchanger unit further comprises metering the flow of cooling fluid through said heat exchanger with one or more pumps positioned along a cooling fluid line configured to channel cooling fluid from the air conditioning unit to the heat exchanger unit.

34. (New) The method according to claim 1, wherein the step of providing a heat exchanger unit further comprises providing a plurality of heat exchanger units positioned at various locations of the room, said method further comprising:

manipulating the mass flow rate of cooling fluid supplied to a plurality of heat exchanger units in a substantially independent manner with respect to each of the plurality of heat exchanger units.

35. (New) The system according to claim 22, wherein said heat exchanger controller is operable to control said one or more pumps to supply cooling fluid to a plurality of heat exchanger units in a substantially independent manner with respect to each of the plurality of heat exchanger units.

36. (New) The system according to claim 23, wherein said heat exchanger controller is operable to control the mass flow rate of said cooling fluid through a plurality of heat exchanger units in a substantially independent manner with respect to each of the plurality of heat exchanger units.

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37. (New) The system according to claim 30, further comprising:

means for metering the flow of cooling fluid through said heat exchanger, said means for metering being positioned along a cooling fluid line configured to channel cooling fluid from the air conditioning unit to the means for receiving air.

38. (New) The system according to claim 30, further comprising:

means for manipulating the mass flow rate of cooling fluid supplied to a plurality of means for receiving air in a substantially independent manner with respect to each of the plurality of means for receiving air.

39. (New) A computer readable storage medium on which is embedded one or more computer programs, said one or more computer programs implementing a method for cooling a room configured to house a plurality of computer systems, said one or more computer programs comprising a set of instructions for:

supplying a heat exchanger unit configured to receive air from the room and to deliver air to the room with cooling fluid from an air conditioning unit;

cooling said received air through heat exchange with the cooling fluid in the heat exchanger unit;

sensing temperatures at one or more locations in said room;

controlling at least one of the temperature of said cooling fluid and said air delivery by said heat exchanger unit to said room in response to said sensed temperatures at said one or more locations; and

manipulating a mass flow rate of the cooling fluid supplied to the heat exchanger unit.

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40. (New) The computer readable storage medium according to claim 39, said one or more computer programs further comprising a set of instructions for:

metering the flow of cooling fluid through said heat exchanger with a valve positioned along a cooling fluid line configured to channel cooling fluid from the air conditioning unit to the heat exchanger unit.

41. (New) The computer readable storage medium according to claim 39, said one or more computer programs further comprising a set of instructions for:

manipulating the mass flow rate of cooling fluid supplied to a plurality of heat exchanger units in a substantially independent manner with respect to each of the plurality of heat exchanger units.

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REMARKS

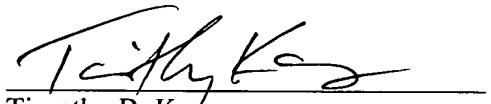
Entry of the foregoing amendment is respectfully requested. No new matter has been introduced by way of the claim amendments or additions.

The Examiner is respectfully requested to consider this preliminary amendment prior to examination of the above-identified application. Should the Examiner believe that a telephone conference with the undersigned would assist in resolving any issues pertaining to the allowability of the above-identified application, please contact the undersigned at the telephone number listed below. Please charge any fees due in connection with this request to deposit account no. 08-2025.

Respectfully submitted,

Chandrakant D. Patel et al.

Dated: October 31, 2003

By 

Timothy B. Kang
Registration No.: 46,423

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(703) 991-1162 (facsimile)

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Vertiv v. Valtrus

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P. O. Box 272400
Fort Collins, Colorado 80527-2400

PATENT APPLICATION

ATTORNEY DOCKET NO. 100111090-5

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):	Chandrakant D. Patel et al.	**Confirmation No.:**	
Application No.:	TBD	**Examiner:**	
Filing Date:	Herewith	**Group Art Unit:**	
Title:	COOLING SYSTEM		

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Sir:

This Information Disclosure Statement is submitted:

(X) under 37 CFR 1.97(b), or
(Within three months of filing national application; or date of entry of national application; or before mailing date of first office action on the merits; whichever occurs last)

( ) under 37 CFR 1.97 (c) together with either a:
( ) Statement under 37 CFR 1.97(e), or
( ) a $180.00 fee under 37 CFR 1.17(p), or
(After the CFR 1.97 (b) time period, but before final action or notice of allowance, whichever occurs first)

( ) under 37 CFR 1.97 (d) together with a:
( ) Statement under 37 CFR 1.97(e)(1) or (2), and
( ) a $180.00 fee set forth in 37 CFR 1.17(p).
(Filed after final action, a notice of allowance, on or before payment of the issue fee)

Please charge to Deposit Account **08-2025** the sum of $0.00 . At any time during the pendency of this application, please charge any fees required or credit any overpayment to Deposit Account **08-2025** pursuant to 37 CFR 1.25.

(X) Applicant(s) submit herewith Form PTO 1449 - Information Disclosure Statement together with any required copies of patents, publications or other information of which applicant(s) are aware, which applicant(s) believe(s) may be material to the examination of this application and for which there may be a duty to disclose in accordance with 37 CFR 1.56.

( ) A concise explanation of the relevance of foreign language patents, foreign language publications and other foreign language information listed on PTO Form 1449, as presently understood by the individuals(s) designated in 37 CFR 1.56 (c) most knowledgeable about the content is given on the attached sheet, or where a foreign language patent is cited in a search report or other action by a foreign patent office in a counterpart foreign application, an English language version of the search report or action which indicates the degree of relevance found by the foreign office is listed on form PTO 1449 and is enclosed herewith.

It is requested that the information disclosed herein be made of record in this application.

( ) I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Alexandria, VA 22313-1450. Date of Deposit: _____

OR

( ) I hereby certify that this paper is being transmitted to the Patent and Trademark Office facsimile number _____ on _____
Number of pages:

Typed Name:

Signature: _____

Respectfully submitted,

Chandrakant D. Patel et al.

By _____

Timothy B. Kang

Attorney/Agent for Applicant(s)
Reg. No. **46,423**

Date: **Oct. 31, 2003**

Telephone No.: **(703) 560-8503**

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FORM PTO-1449	ATTY. DOCKET NO.	APPLICATION NO.	CONFIRMATION NO.
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT	100111090-5		
	APPLICANT: Chandrakant D. Patel et al.		
(Use several sheets if necessary)	FILING DATE: herewith	GROUP	

REFERENCE DESIGNATION **U.S. PATENT DOCUMENTS**

EXAMINER INITIAL		DOCUMENT NUMBER	PUBLICATION DATE	NAME	Pages, Columns, Lines Where Relevant Passages or Figures Appear
	1A	6,283,380	Sept. 4, 2001	Nakanishi et al.	
	1B	6,374,627	April 23, 2002	Schumacher et al.	
	1C	6,557,624	May 6, 2003	Stahl et al.	
	1D				
	1E				
	1F				
	1G				
	1H				
	1I				
	1J				
	1K				

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	PUBLICATION DATE	NAME OF PATENTEE OR APPLICANT	Pages/Columns/Lines Where Relevant Passages/Figures Appear	Check if Translation attached
	1L					
	1M					
	1N					
	1O					
	1P					

OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, etc.)

	1Q	
	1R	
	1S	

EXAMINER	DATE CONSIDERED

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Vertiv v. Valtrus

PATENT APPLICATION FEE DETERMINATION RECORD
Effective October 1, 2003

Application or Docket Number: 10011090-5

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	22	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	22 minus 20=	* 2
INDEPENDENT CLAIMS	5 minus 3 =	* 2
MULTIPLE DEPENDENT CLAIM PRESENT		☐

* If the difference in column 1 is less than zero, enter "0" in column 2

SMALL ENTITY TYPE ☐		OR	OTHER THAN SMALL ENTITY	
RATE	FEE		RATE	FEE
BASIC FEE	385.00	OR	BASIC FEE	770.00
X$ 9=		OR	X$18=	36
X43=		OR	X86=	172
+145=		OR	+290=	
TOTAL		OR	TOTAL	978

CLAIMS AS AMENDED - PART II

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
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X43=		OR	X86=	
+145=		OR	+290=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X43=		OR	X86=	
+145=		OR	+290=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT C

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
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X43=		OR	X86=	
+145=		OR	+290=	
TOTAL ADDIT. FEE		OR	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.

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MULTIPLE DEPENDENT CLAIM FEE CALCULATION SHEET

SERIAL NO.

FILING DATE

APPLICANT(S)

CLAIMS

	AS FILED		AFTER 1ST AMENDMENT		AFTER 2ND AMENDMENT	
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TOTAL CLAIMS	22					

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TOTAL DEP.						
TOTAL CLAIMS						

PTO-1360 (Replication only) (3/03)

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PATENT APPLICATION SERIAL NO. _____

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

11/04/2003 MBIZUNES 00000052 082025 10697697

01 FC:1001 770.00 DA
02 FC:1202 36.00 DA
03 FC:1201 172.00 DA

PTO-1556
(5/87)

*U.S. Government Printing Office: 2002 — 489-267/69033

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