UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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Alexandria, Virginia 22313-1450
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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/201,087	10/20/2020	10810050	367894-991101	1450

26379 7590 09/30/2020

DLA PIPER LLP (US)
2000 UNIVERSITY AVENUE
EAST PALO ALTO, CA 94303-2248

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

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

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

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

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

ToutVirtual, Inc., Carlsbad, CA;
Vipul Pabari, Carlsbad, CA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

Doc Code: IFEE PTOL/85B-EFS

Document Description: Issue Fee Payment (PTO-85B)

Issue Fee Transmittal Form

Application Number	Filing Date	First Named Inventor	Atty. Docket No.	Confirmation No.
15201087	01-Jul-2016	Vipul Pabari	367894-991101	1450

TITLE OF INVENTION :

VIRTUAL SYSTEMS MANAGEMENT

Entity Status	Application Type	Art Unit	Class - Subclass	EXAMINER
Small	Utility under 35 USC 111(a)	2472	546000	ABDELNABI MUSA

Issue Fee Due	Publication Due	Total Fee(s) Due	Date Due	Prev. Paid Fee
$500	$0	$500	18-Sep-2020	$0

1.Change of Correspondence Address and/or Indication Of Fee Address (37 CFR 1.33 & 1.363)

Current Correspondence Address:	Current Indicated Fee Address :
26379 DLA PIPER LLP (US) 2000 UNIVERSITY AVENUE EAST PALO ALTO CA 94303-2248 UNITED STATES 650-833-2000 PatentDocketingUS-PaloAlto@dlapiper.com	
☐ Change of correspondence address requested, system generated AIA/122-EFS form attached	☐ Fee Address indication requested, system generated SB/47-EFS form attached

2.Entity Status

Change in Entity Status

○ Applicant certifying micro entity status; system generated Micro Entity certification form attached. See 37 CFR 1.29.
Note: Absent a valid certification of micro entity status, issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment. If this box is checked, you will be prompted to choose a micro entity status on the gross income basis (37 CFR 1.29(a)) or the institution of higher education basis (37 CFR 1.29(d)), and make the applicable certification online.

◉ Applicant asserting small entity status. See 37 CFR 1.27.
Note: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

○ Applicant changing to regular undiscounted fee status.
Note: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

3.The Following Fee(s) Are Submitted:

☒ Issue Fee	☐ I authorize USPTO to apply my previously paid issue fee to the current fees due
☐ Publication Fee	☐ The Director is hereby authorized to apply my previously paid issue fee to the current fee due and to charge deficient fees to Deposit Account Number _____
☐ Advance Order - # of copies _____	☒ If **in addition to** the payment of the issue fee amount submitted with this form, there are any discrepancies in any amount(s) due, the Director is authorized to charge any deficiency, or credit any overpayment, to Deposit Account Number 071896 . The **issue fee must be submitted** with this form. **If payment of the issue fee does not accompany this form, checking this box and providing a deposit account number will NOT be effective to satisfy full payment of the fee(s) due.**

4.Firm and/or Attorney Names To Be Printed

NOTE: If no name is listed, no name will be printed
For printing on the patent front page, list to be displayed as entered

1.

2.

3.

5.Assignee Name(s) and Residence Data To Be Printed

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.

Name	City	State	Country	Category
ToutVirtual, Inc.	Carlsbad	CALIFORNIA	united states	corporation

6.Signature

I certify, in accordance with 37 CFR 1.4(d)(4) that I am an attorney or agent registered to practice before the Patent and Trademark Office who has filed and has been granted power of attorney in this application. I also certify that this Fee(s) Transmittal form is being transmitted to the USPTO via EFS-WEB on the date indicated below.

Signature	/Timothy W. Lohse/	**Date**	09-18-2020
Name	Timothy W. Lohse	**Registration Number**	35255

Electronic Patent Application Fee Transmittal

Application Number:	15201087
Filing Date:	01-Jul-2016
Title of Invention:	VIRTUAL SYSTEMS MANAGEMENT
First Named Inventor/Applicant Name:	Vipul Pabari
Filer:	Timothy W. Lohse
Attorney Docket Number:	367894-991101

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY APPL ISSUE FEE	2501	1	500	500
PUBL. FEE- EARLY, VOLUNTARY, OR NORMAL	1504	1	0	0
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**500**

Electronic Acknowledgement Receipt	
EFS ID:	40600283
Application Number:	15201087
International Application Number:	
Confirmation Number:	1450
Title of Invention:	VIRTUAL SYSTEMS MANAGEMENT
First Named Inventor/Applicant Name:	Vipul Pabari
Customer Number:	26379
Filer:	Timothy W. Lohse
Filer Authorized By:	
Attorney Docket Number:	367894-991101
Receipt Date:	18-SEP-2020
Filing Date:	01-JUL-2016
Time Stamp:	15:16:26
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$500
RAM confirmation Number	E20209HF16247402
Deposit Account	071896
Authorized User	Timothy Lohse
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.20 (Post Issuance fees)	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	Web85b.pdf	45878 6aa17d7b7014a991e000afe02878cc936e1aa604	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	31883 7d4369621b69214f2cbb90be0d83358ea6b2a3bf	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	77761		

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

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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NOTICE OF ALLOWANCE AND FEE(S) DUE

26379 7590 06/18/2020

DLA PIPER LLP (US)
2000 UNIVERSITY AVENUE
EAST PALO ALTO, CA 94303-2248

EXAMINER	
MUSA, ABDELNABI O	
ART UNIT	PAPER NUMBER
2472	

DATE MAILED: 06/18/2020

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/201,087	07/01/2016	Vipul Pabari	367894-991101	1450

TITLE OF INVENTION: VIRTUAL SYSTEMS MANAGEMENT

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$500	$0.00	$0.00	$500	09/18/2020

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 DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). 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. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

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: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

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)

26379 7590 06/18/2020

DLA PIPER LLP (US)
2000 UNIVERSITY AVENUE
EAST PALO ALTO, CA 94303-2248

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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/201,087	07/01/2016	Vipul Pabari	367894-991101	1450

TITLE OF INVENTION: VIRTUAL SYSTEMS MANAGEMENT

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$500	$0.00	$0.00	$500	09/18/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
MUSA, ABDELNABI O	2472	370-546000

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 03-09 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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). 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. Fees submitted: ❑Issue Fee ❑Publication Fee (if required) ❑Advance Order - # of Copies _____

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

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

❑ Applicant certifying micro entity status. See 37 CFR 1.29

❑ Applicant asserting small entity status. See 37 CFR 1.27

❑ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/201,087	07/01/2016	Vipul Pabari	367894-991101	1450

26379 7590 06/18/2020

DLA PIPER LLP (US)
2000 UNIVERSITY AVENUE
EAST PALO ALTO, CA 94303-2248

EXAMINER	
MUSA, ABDELNABI O	
ART UNIT	**PAPER NUMBER**
2472	

DATE MAILED: 06/18/2020

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

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B 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 30 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.

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.

Notice of Allowability	Application No. 15/201,087	Applicant(s) Pabari, Vipul	
	Examiner ABDELNABI O MUSA	Art Unit 2472	AIA (FITF) Status No

-- 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 the amendment filed on 03/26/2019.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 1-16 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

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

   Certified copies:

   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. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ 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).

6. ☐ 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. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☑ Interview Summary (PTO-413), Paper No./Mail Date. 05/29/2020.
5. ☐ Examiner's Amendment/Comment
6. ☑ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/ABDELNABI O MUSA/
Primary Examiner, Art Unit 2472

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

REASONS FOR ALLOWANCE

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

There is no teaching or suggestion in the prior art of the claimed limitations, as presented in the independent claims, specifically providing a virtualization system that has an inventory which includes physical resources and virtual assets managed by a virtualization layer running on the physical resources, receiving a virtual asset provisioning request that specifies parameters to be considered for the virtual asset provisioning request and receiving data on inventory available in the virtualization system, automatically provisioning of a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request, and assigning the provisioned virtual asset to the virtual asset provisioning request to provide user access to the provisioned virtual asset as detailed in the dependent claims for such limitations.

The closest prior art found by the Examiner is the previously cited references namely, (US 2005/0044301 A1) and (US 20030236882 A1).

However, the references alone and in combination do not teach or suggest a virtual system management the way as claimed in the present application.

For these reasons, in conjunction with the other claim limitations puts this case in condition for allowance.

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

Correspondence Information

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ABDELNABI O MUSA whose telephone number is (571)270-1901, and email address is abdelnabi.musa@uspto.gov 'preferred'. The examiner can normally be reached on M-F 9:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kizou, Hassan, can be reached on 571-2723088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ABDELNABI O MUSA/
Primary Examiner, Art Unit 2472

Examiner-Initiated Interview Summary	Application No. 15/201,087	Applicant(s) Pabari, Vipul	
	Examiner ABDELNABI O MUSA	Art Unit 2472	AIA (FITF) Status No

All participants (applicant, applicant's representative, PTO personnel):

(1) ABDELNABI O. MUSA. (3) _____.

(2) Timothy W. Lohse (Reg. No. 35,255). (4) _____.

Date of Interview: 29 May 2020.

Type: ☑ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☑ No.
If Yes, brief description: _____.

Issues Discussed ☐ 101 ☐ 112 ☐ 102 ☑ 103 ☑ Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: 1-16.

Identification of prior art discussed: (US 2005/0044301 A1); (US 20030236882 A1)..

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

submitting an eTD for the double patenting rejection given in the last office action. An agreement was reached..

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/ABDELNABI O MUSA/ Primary Examiner, Art Unit 2472	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/201,087	Pabari, Vipul
	Examiner	Art Unit
	ABDELNABI O MUSA	2472

CPC - Searched*		
Symbol	**Date**	**Examiner**
G06F 9/5077, 9/455, 9/50, 9/5072	2/7/2017	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	2/7/2017	AM
G06F 9/5077, 9/455, 9/50, 9/5072	12/12/2017	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	12/12/2017	AM
G06F 9/5077, 9/455, 9/50, 9/5072	02/14/2019	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	02/14/2019	AM
G06F 9/5077, 9/455, 9/50, 9/5072	06/05/2020	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	06/05/2020	AM

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	2/7/2017	AM
G06F 9/5077, 9/455, 9/50, 9/5072	2/7/2017	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	12/12/2017	AM
G06F 9/5077, 9/455, 9/50, 9/5072	12/12/2017	AM

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

/ABDELNABI O MUSA/ Primary Examiner.Art Unit 2472	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/201,087	Pabari, Vipul
	Examiner	Art Unit
	ABDELNABI O MUSA	2472

Search Notes		
Search Notes	**Date**	**Examiner**
G06F 9/5077, 9/455, 9/50, 9/5072,	2/7/2017	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	2/7/2017	AM
EAST (USPAT, US-PGPUB, EPO, JPO, DERWENT, IBM_TDB), see attached; NPL: IEEE; Inventor Search/DP	2/7/2017	AM
G06F 9/5077, 9/455, 9/50, 9/5072 search is limited by text, see attached search history report.	12/12/2017	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78 search is limited by text, see attached search history report.	12/12/2017	AM
EAST (USPAT, US-PGPUB, EPO, JPO, DERWENT, IBM_TDB), see attached; NPL: IEEE; Inventor Search/DP	12/12/2017	AM
G06F 9/5077, 9/455, 9/50, 9/5072 search is limited by text, see attached search history report.	02/14/2019	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78 search is limited by text, see attached search history report.	02/14/2019	AM
EAST (USPAT, US-PGPUB, EPO, JPO, DERWENT, IBM_TDB), see attached; NPL: IEEE; Inventor Search/DP	02/14/2019	AM
G06F 9/5077, 9/455, 9/50, 9/5072 search is limited by text, see attached search history report.	06/05/2020	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78 search is limited by text, see attached search history report.	06/05/2020	AM
EAST (USPAT, US-PGPUB, EPO, JPO, DERWENT, IBM_TDB), see attached; NPL: IEEE; Inventor Search/DP	06/05/2020	AM

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**
G06F	9/5077, 9/455, 9/50, 9/5072	06/05/2020	AM
H04L	12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	06/05/2020	AM
	EAST US-PGPUB, USPAT, UPAD searched.	06/05/2020	AM

/ABDELNABI O MUSA/ Primary Examiner.Art Unit 2472	

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/201,087	Pabari, Vipul
	Examiner	**Art Unit**
	ABDELNABI O MUSA	2472

CPC						
Symbol					**Type**	**Version**
G06F	/	9	/	5077	F	2013-01-01
G06F	/	9	/	5072	I	2013-01-01
H04L	/	41	/	00	I	2013-01-01
H04L	/	41	/	0806	I	2013-01-01
H04L	/	41	/	0823	I	2013-01-01
H04L	/	41	/	0886	I	2013-01-01
H04L	/	41	/	147	I	2013-01-01
H04L	/	67	/	1008	I	2013-01-01
H04L	/	67	/	1029	I	2013-01-01
H04L	/	67	/	1017	I	2013-01-01
G06F	/	9	/	455	I	2013-01-01
G06F	/	9	/	50	I	2013-01-01
H04L	/	47	/	78	I	2013-01-01
G06F	/	9	/	45558	I	2013-01-01
H04L	/	41	/	046	A	2013-01-01
H04L	/	41	/	0816	A	2013-01-01
H04L	/	41	/	0896	A	2013-01-01
H04L	/	41	/	12	A	2013-01-01
H04L	/	41	/	18	A	2013-01-01
H04L	/	41	/	22	A	2013-01-01
H04L	/	41	/	5025	A	2013-01-01
H04L	/	43	/	08	A	2013-01-01
H04L	/	67	/	1034	A	2013-01-01
H04L	/	67	/	1002	A	2013-01-01
G06F	/	2009	/	45595	A	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	16	
/ABDELNABI O MUSA/ Primary Examiner, Art Unit 2472	05 June 2020	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	15

U.S. Patent and Trademark Office — Part of Paper No.: 20200531

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/201,087	Pabari, Vipul
	Examiner	**Art Unit**
	ABDELNABI O MUSA	2472

INTERNATIONAL CLASSIFICATION				
CLAIMED				
H04J	/	99	/	00

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**
370	546

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 16	
/ABDELNABI O MUSA/ Primary Examiner, Art Unit 2472 (Primary Examiner)	05 June 2020 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 15

U.S. Patent and Trademark Office — Part of Paper No.: 20200531

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/201,087	Pabari, Vipul
	Examiner	**Art Unit**
	ABDELNABI O MUSA	2472

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

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	10	10												
2	2	11	11												
3	3	12	12												
4	4	13	13												
5	5	14	14												
6	6	15	15												
7	7	16	16												
8	8														
9	9														

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	16	
/ABDELNABI O MUSA/ Primary Examiner, Art Unit 2472	05 June 2020	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	15

U.S. Patent and Trademark Office — Part of Paper No.: 20200531

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/201,087	Pabari, Vipul
	Examiner	**Art Unit**
	ABDELNABI O MUSA	2472

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

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

CLAIM		DATE								
Final	Original	02/07/2017	12/12/2017	02/14/2019	06/05/2020					
1	1	✓	✓	✓	=					
2	2	✓	✓	✓	=					
3	3	✓	✓	✓	=					
4	4	✓	✓	✓	=					
5	5	✓	✓	✓	=					
6	6	✓	✓	✓	=					
7	7	✓	✓	✓	=					
8	8	✓	✓	✓	=					
9	9	✓	✓	✓	=					
10	10	✓	✓	✓	=					
11	11	✓	✓	✓	=					
12	12	✓	✓	✓	=					
13	13	✓	✓	✓	=					
14	14	✓	✓	✓	=					
15	15	✓	✓	✓	=					
16	16	✓	✓	✓	=					

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L4	11	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20050223221-$ or US-20050198062-$ or US-20030236882-$).did. or (US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2020/06/09 10:23
S1	7	("20050138165" | "20050155033" | "20060294238" | "20070067435" | "20080086731" | "7463648" | "7512769").PN.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 11:51
S2	19,897	709/223.ccls. or 709/226.ccls. or 709/229.ccls.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:10
S3	16	pabari.in.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:10
S4	0	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host).clm.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:12
S5	1,094	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host)	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:12
S6	1	S3 S5	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:12
S7	1	(virtual$ mange$4).ti.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:13
S8	82	(manage$4 virtual$6 environment resource$4).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:14
S9	13	S2 S8	US-PGPUB; USPAT;	AND	OFF	2010/10/29 17:14

			USOCR; IBM_TDB			
S10	2	(manage$4 virtual$6 environment resource$4 physical host).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:17
S11	17,572	(manage$4 virtual$6 environment (resource$4 or asset$2) physical host allocat$4)	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:10
S12	19,897	709/223.ccls. or 709/226.ccls. or 709/229.ccls.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:11
S13	1,084	S11 S12	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:11
S14	468	S13 (load adj (shar$4 or balanc$4))	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:11
S15	82	(manage$4 virtual$6 environment resource$4).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:13
S16	4	S14 S15	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:13
S17	143	((virtual adj machine) or VM) same new same physical same host	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:18
S18	2	S15 S17	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:19
S19	2	S17 S15	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:19
S20	84	S17 S11	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:21

S21	9	S20 S12	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:22
S22	0	(knowledge near block re$allocat$4 (real$time or real near time) virtual$2 image application$2 (inventory or resource$2) prioriti$6 (peer$2 or member$2) physical).clm.	US-PGPUB; USPAT; USOCR	AND	OFF	2012/04/10 14:21
S23	2	(knowledge near block re$allocat$4 (real$time or real near time) virtual$2 image application$2 (inventory or resource$2) prioriti$6 (peer$2 or member$2) physical)	US-PGPUB; USPAT; USOCR	AND	OFF	2012/04/10 14:21
S24	156	(Automatic configuration management).ab.	US-PGPUB; USPAT; USOCR	AND	OFF	2012/04/10 14:29
S25	41,755	709/223,224,226,229,220,221.ccls.	US-PGPUB; USPAT; USOCR	AND	OFF	2012/04/10 14:31
S26	29	S24 S25	US-PGPUB; USPAT; USOCR	AND	OFF	2012/04/10 14:31
S27	0	(10/460518).APP.	USPAT; USOCR	OR	OFF	2012/04/10 14:34
S28	7	("20050138165" | "20050155033" | "20060294238" | "20070067435" | "20080086731" | "7463648" | "7512769").PN.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S29	25,092	709/223.ccls. or 709/226.ccls. or 709/229.ccls.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S30	20	pabari.in.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S31	0	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host).clm.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S32	1,541	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host)	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S33	1	S30 S32	US-PGPUB; USPAT;	AND	OFF	2012/04/10 14:36

			USOCR; IBM_TDB			
S34	1	(virtual$ mange$4).ti.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S35	122	(manage$4 virtual$6 environment resource$4).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S36	26	S29 S35	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S37	3	(manage$4 virtual$6 environment resource$4 physical host).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S38	22,641	(manage$4 virtual$6 environment (resource$4 or asset$2) physical host allocat$4)	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S39	25,092	709/223.ccls. or 709/226.ccls. or 709/229.ccls.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S40	1,484	S38 S39	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S41	637	S40 (load adj (shar$4 or balanc$4))	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S42	122	(manage$4 virtual$6 environment resource$4).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S43	8	S41 S42	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S44	238	((virtual adj machine) or VM) same new same physical same host	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36

S45	7	S42 S44	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S46	7	S44 S42	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S47	141	S44 S38	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S48	18	S47 S39	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S49	166	(manage$4 virtual$6 resource$4 physical).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:39
S50	118,867	"709".clas.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:39
S51	49	S50 S49	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:39
S52	49	S51 not S26	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:39
S53	0	real near time matrics virtual physical	US-PGPUB; USPAT; USOCR; IBM_TDB	SAME	OFF	2012/04/10 14:43
S54	27	real near time metrics virtual physical	US-PGPUB; USPAT; USOCR; IBM_TDB	SAME	OFF	2012/04/10 14:43
S55	1	S39 and real near time metrics virtual physical	US-PGPUB; USPAT; USOCR; IBM_TDB	SAME	OFF	2012/04/10 14:44
S56	3	S50 S54	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:46

S57	9	pabari.in.	USPAT	AND	OFF	2012/04/10 14:50
S58	20	pabari.in.	US-PGPUB; USPAT	AND	OFF	2012/04/10 14:50
S59	1	S23 S58	US-PGPUB; USPAT	AND	OFF	2012/04/10 14:50
S60	0	S24 S58	USPAT	AND	OFF	2012/04/10 14:51
S78	3	"11503090"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/03/12 15:19
S79	8	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$).did.	US-PGPUB; USPAT	OR	OFF	2013/03/12 15:52
S80	5	S79 and (virtual$7 environment layer network (resourc$2 or computer$2 or printer$2 or device$2) (asset$2 or sofware or program$2 or instruction$2))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	OFF	2013/03/12 15:54
S81	1	(11/031542).APP.	USPAT; USOCR	OR	OFF	2013/03/12 16:04
S82	0	virtual$8 environment virtual$8 near2 laver$1 network resource$2d virtual asset$2 (software or instantiation$1) virtualization layer managing the virtual assets	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:45
S83	0	virtual$8 environment virtual$8 near2 laver$1 network resource$2d virtual asset$2 (software or instantiation$1)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:45
S84	0	virtual$8 environment virtual$8 near2 laver$1 network resource$2d virtual asset$2	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:46
S85	0	virtual$8 environment virtual$8 near2 laver$1	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:46
S86	1	virtual$8 virtual$8 near2 laver$1	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:46

S87	858	virtualization layer manag$6 virtual (asset$2 or resourc$2)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:47
S88	427	virtualization near layer manag$6 virtual (asset$2 or resourc$2)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:47
S89	31	virtualization near layer near5 manag$6 near5 virtual (asset$2 or resourc$2)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:47
S90	10	virtualization near layer near5 manag$6 near5 virtual (asset$2 or resourc$2) and ("709"/$.ccls.)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:48
S91	3,218	(virtual or virtualization) layer network (resourc$2 or assets)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:49
S92	444	S91 and S87	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:49
S93	287	S91 and S88	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:50
S94	522	(virtual or virtualization) near layer network (resourc$2 or assets)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:50
S95	259	S94 and S88	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:50
S96	258	(virtual or virtualization) near layer near4 (resourc$2 or assets)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:54
S97	10	virtualization near layer near5 manag$6 near5 virtual (asset$2 or resourc$2) and ("709"/$.ccls.)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:22
S98	37	(virtual or virtualization) near layer near3 manag$6 near4 (resourc$2 or assets)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:22
S99	33	S98 not S97	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:22
S100	15	(virtualization near layer resourc$2).ab.	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:33
S101	12	S100 not S99	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:33

S102	29	virtualization near layer near2 manag$6 near4 (asset$1 or resourc$2)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:36
S103	2	S102 not S99	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:37
S104	10	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2013/07/24 14:40
S105	2	S104 and (virtual or virtualization) near layer	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:40
S106	37	(virtual or virtualization) near layer near3 manag$6 near4 (resourc$2 or assets)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:40
S107	0	(10/831973).APP.	USPAT; USOCR	AND	OFF	2013/07/24 14:41
S108	10	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2013/08/28 21:06
S109	0	S108 and (virtualization with layer) controller (resourc$2 or inventory or assents) virtualization near4 environment$1 (allocat$4 or re$allocat$4)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:09
S110	403	(virtualization with layer) controller (resourc$2 or inventory or assents) virtualization near4 environment$1 (allocat$4 or re$allocat$4)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:10
S111	32	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:12
S112	0	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:13

		bad$2) log$2 near4 fil$2 @ad<="20061218" and ("370"/$.ccls. or "455"/$.ccls.)				
S113	1	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2 @ad<="20061218" and ("370"/$.ccls. or "455"/$.ccls. or "709".clas.)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:13
S114	1	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2 @ad<="20061218"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:14
S115	0	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2 @ad<="200508/15"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:14
S116	0	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2 @ad<="20050815"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:14
S117	7	((virtualization layer) (resourc$2 or inventory$1 or assent$2) (allocat$4 or re$allocat$4)).ab.	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:18
S118	2	S117 S110	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:18
S119	11	((virtualiz$5 layer) (resourc$2 or inventory$1 or assent$2) (allocat$4 or re$allocat$4)).ab.	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:19
S120	4	S119 not S117	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:21
S121	71	(virtualization near3 layer) (resourc$2 or inventory$1 or assent$2) (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) @ad<="20050815"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:24

S122	71	S121 not S119	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:24
S123	16	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20030236956-$ or US-20020166117-$ or US-20050198062-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$ or US-7330858-$).did.	US-PGPUB; USPAT	AND	OFF	2013/08/28 21:50
S124	0	S123 and (virtualization with layer) controller (resourc$2 or inventory or assents) virtualization near4 environment$1 (allocat$4 or re$allocat$4)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:52
S125	3	S123 and (virtualization with layer) controller (resourc$2 or inventory or asset$2) virtualization (allocat$4 or re$allocat$4)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:53
S126	16	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20030236956-$ or US-20020166117-$ or US-20050198062-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$ or US-7330858-$).did.	US-PGPUB; USPAT	AND	OFF	2013/08/29 18:33
S127	2,748	"l13" and automatic$5	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:33
S128	9	l3and automatic$5	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:34
S129	12	S126 and automatic$5	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:34
S130	1	S126 and automatic$5 same (allocat$4 or re$allocat$4)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:34
S131	259	automatic$5 same (allocat$4 or re$allocat$4) and debug$4 and forecast$4	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:36

S132	69	automatic$5 same (allocat$4 or re$allocat$4) and debug$4 same (inventory or resourc$2) and forecast$4 virtual$4	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:37
S133	62	automatic$5 same (allocat$4 or re$allocat$4) and debug$4 same (inventory or resourc$2) and forecast$4 virtual$4 and @ad<="20050815"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:38
S134	3	automatic$5 near4 (allocat$4 or re$allocat$4) and debug$4 same (inventory or resourc$2) and forecast$4 virtual$4 and @ad<="20050815"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:41
S135	128	automatic$5 near4 (allocat$4 or re$allocat$4) and forecast$4 virtual$4 and @ad<="20050815"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:42
S136	0	automatic$4 (allocat$4 or reallocation) virtual (asset$2 or resourc$2 or inventory) (fore$cast$3 or futur$3) Capacity Planning Manager and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:44
S137	1	automatic$4 (allocat$4 or reallocation) virtual (asset$2 or resourc$2 or inventory) (fore$cast$3 or futur$3) Capacity Planning and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:44
S138	15	automatic$4 (allocat$4 or reallocation) virtual (asset$2 or resourc$2 or inventory) (fore$cast$3 or futur$3) and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:45
S139	3	automatic$4 (allocat$4 or reallocation) virtual (asset$2 or resourc$2 or inventory) (fore$cast$3) and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:46
S140	613	automatic$4 near4 (allocat$4 or reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:51
S141	30	automatic$4 near4 (reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:51
S142	0	automatic$4 near4 (reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815" and forcasting	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:51
S143	1	automatic$4 near4 (reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815" and forecasting	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:51

S144	27	automatic$4 near4 (reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815" and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:54
S145	3	automatic$4 near4 (reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815" and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4) virtual$4	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:55
S146	0	S126 and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4) virtual$4	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:56
S147	7	S126 and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:57
S148	2	S126 and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4) automatic$6	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:58
S149	7	S126 and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4) and automatic$6	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:58
S150	16	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20030236956-$ or US-20020166117-$ or US-20050198062-$ or US-20030236882-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2015/04/30 13:43
S151	0	S150 and day same metric	US-PGPUB; USPAT; USOCR	AND	OFF	2015/04/30 13:43
S152	0	S150 and day and metric	US-PGPUB; USPAT; USOCR	AND	OFF	2015/04/30 13:44
S153	2	S150 and time same day	US-PGPUB; USPAT; USOCR	AND	OFF	2015/04/30 13:44
S154	0	"2008248817".did.	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/01 00:39
S155	1	"20080248817".did.	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/01 00:39

S156	1	"20040203828".did.	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/01 00:45
S157	1	"13639190"	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/01 20:35
S158	16	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20030236956-$ or US-20020166117-$ or US-20050198062-$ or US-20030236882-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2015/05/14 14:39
S159	1	"14450765"	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/14 14:53
S160	4	"11509030"	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/14 15:19
S161	4	"11503090"	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/14 15:22
S162	929	(pabari or vipul).in.	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:23
S163	0	(virtualization physical resources virtual seet$1 automatic$5).clm.	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:24
S164	5	(virtualization physical resources virtual asset$1 automatic$5).clm.	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:24
S165	4	S162 and S164	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:25
S166	1	(14/450765).APP.	USPAT; USOCR	AND	OFF	2017/02/07 15:27
S167	15	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20030236956-$ or US-20020166117-$ or US-20050198062-$	US-PGPUB; USPAT	AND	OFF	2017/02/07 15:45

		or US-20030236882-$).did. or (US-7577722-$ or US-6490620-$).did.				
S168	0	(virtualization physical resources virtual asset$1 automatic$5) AND S167	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:45
S169	9	(virtualization) AND S167	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:45
S170	12	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20050198062-$ or US-20030236882-$).did. or (US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2017/02/24 10:06
S171	1	"8799431".pn.	US-PGPUB; USPAT; USOCR	AND	OFF	2017/12/12 12:15
S172	1	"9444762".pn.	US-PGPUB; USPAT; USOCR	AND	OFF	2017/12/12 12:18
S173	11	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20050223221-$ or US-20050198062-$ or US-20030236882-$).did. or (US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2019/02/14 11:01
S177	11	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20050223221-$ or US-20050198062-$ or US-20030236882-$).did. or (US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2020/06/05 12:29

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	826	((virtual adj machine) or VM) same new same physical same host	USPAT	AND	OFF	2020/06/09 10:23
L2	1,716	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host)	USPAT	AND	OFF	2020/06/09 10:23

L3	15	L1 L2	USPAT	AND	OFF	2020/06/09 10:23
S61	10,106	(manage$4 virtual$6 environment (resource$4 or asset$2) physical host allocat$4)	USPAT	AND	OFF	2012/04/10 14:47
S62	76	((virtual adj machine) or VM) same new same physical same host	USPAT	AND	OFF	2012/04/10 14:47
S63	206	"S13" (load adj (shar$4 or balanc$4))	USPAT	AND	OFF	2012/04/10 14:47
S64	10,106	(manage$4 virtual$6 environment (resource$4 or asset$2) physical host allocat$4)	USPAT	AND	OFF	2012/04/10 14:47
S65	45,876	"S2" "S8"	USPAT	AND	OFF	2012/04/10 14:47
S66	78	(manage$4 virtual$6 resource$4 physical).ab.	USPAT	AND	OFF	2012/04/10 14:47
S67	23,872	709/223,224,226,229,220,221.ccls.	USPAT	AND	OFF	2012/04/10 14:47
S68	21,589	"l3" "l4"	USPAT	AND	OFF	2012/04/10 14:47
S69	593	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host)	USPAT	AND	OFF	2012/04/10 14:47
S70	2	("20050138165" | "20050155033" | "20060294238" | "20070067435" | "20080086731" | "7463648" | "7512769").PN.	USPAT	AND	OFF	2012/04/10 14:48
S71	0	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host).clm.	USPAT	AND	OFF	2012/04/10 14:48
S72	593	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host)	USPAT	AND	OFF	2012/04/10 14:48
S73	497	"L26" "L18"	USPAT	AND	OFF	2012/04/10 14:48
S74	0	S73 S72	USPAT	AND	OFF	2012/04/10 14:48
S75	463	S69 S64	USPAT	AND	OFF	2012/04/10 14:49
S76	0	S62 S72	USPAT	AND	OFF	2012/04/10 14:49
S77	9	pabari.in.	USPAT	AND	OFF	2012/04/10 14:49
S174	633	((virtual adj machine) or VM) same new same physical same host	USPAT	AND	OFF	2019/02/14 11:01
S175	1,426	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host)	USPAT	AND	OFF	2019/02/14 11:01

S176	13	S174 S175	USPAT	AND	OFF	2019/02/14 11:01

6/9/2020 10:23:44 AM
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BIB DATA SHEET

CONFIRMATION NO. 1450

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
15/201,087	07/01/2016 RULE	709	2472	367894-991101

APPLICANTS
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INVENTORS
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**** CONTINUING DATA ***************************
This application is a CON of 14/450,765 08/04/2014 PAT 9444762
which is a CON of 11/503,090 08/10/2006 PAT 8799431
which claims benefit of 60/708,473 08/15/2005

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

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
07/19/2016

Foreign Priority claimed	☐ Yes ☑ No	☐ Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	☐ Yes ☑ No		CA	18	16	2
Verified and Acknowledged	/ABDELNABI O MUSA/ Examiner's Signature	Initials				

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UNITED STATES

TITLE
VIRTUAL SYSTEMS MANAGEMENT

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

BIB (Rev. 05/07).

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/201,087	07/01/2016	Vipul Pabari	367894-000003

CONFIRMATION NO. 1450

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POA ACCEPTANCE LETTER

OC000000117408332

Date Mailed: 06/04/2020

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 05/30/2020.

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**.

/qnguyen/

Doc Code: DIST.E.FILE **Document Description: Electronic Terminal Disclaimer - Filed**	PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT**
Application Number	15201087
Filing Date	01-Jul-2016
First Named Inventor	Vipul Pabari
Attorney Docket Number	367894-000003
Title of Invention	VIRTUAL SYSTEMS MANAGEMENT

☒ Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action

☒ This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.

Owner	Percent Interest
ToutVirtual, Inc.	100%

The owner(s) with percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent number(s)

9444762

8799431

as the term of said prior patent is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later:
- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

◉ Terminal disclaimer fee under 37 CFR 1.20(d) is included with Electronic Terminal Disclaimer request. ○ I certify, in accordance with 37 CFR 1.4(d)(4), that the terminal disclaimer fee under 37 CFR 1.20(d) required for this terminal disclaimer has already been paid in the above-identified application.	
Applicant claims the following fee status: ◉ Small Entity ○ Micro Entity ○ Regular Undiscounted 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.	
THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES I certify, in accordance with 37 CFR 1.4(d)(4) that I am: ◉ An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application Registration Number 35255 ○ A sole inventor ○ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application ○ A joint inventor; all of whom are signing this request	
Signature	/Timothy W. Lohse/
Name	Timothy W. Lohse

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

Electronic Patent Application Fee Transmittal	
Application Number:	15201087
Filing Date:	01-Jul-2016
Title of Invention:	VIRTUAL SYSTEMS MANAGEMENT
First Named Inventor/Applicant Name:	Vipul Pabari
Filer:	Timothy W. Lohse/Jared Ricci
Attorney Docket Number:	367894-000003

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
STATUTORY OR TERMINAL DISCLAIMER	2814	1	160	160
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**160**

Doc Code: DISQ.E.FILE
Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 15201087

Filing Date: 01-Jul-2016

Applicant/Patent under Reexamination: Pabari

Electronic Terminal Disclaimer filed on June 3, 2020

☒ APPROVED

This patent is subject to a terminal disclaimer

☐ DISAPPROVED

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U.S. Patent and Trademark Office

Electronic Acknowledgement Receipt	
EFS ID:	39611725
Application Number:	15201087
International Application Number:	
Confirmation Number:	1450
Title of Invention:	VIRTUAL SYSTEMS MANAGEMENT
First Named Inventor/Applicant Name:	Vipul Pabari
Customer Number:	26379
Filer:	Timothy W. Lohse/Jared Ricci
Filer Authorized By:	Timothy W. Lohse
Attorney Docket Number:	367894-000003
Receipt Date:	03-JUN-2020
Filing Date:	01-JUL-2016
Time Stamp:	13:01:39
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$160
RAM confirmation Number	E202063D01351893
Deposit Account	071896
Authorized User	Jared Ricci
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.19 (Document supply fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Terminal Disclaimer-Filed (Electronic)	eTerminal-Disclaimer.pdf	33562 8294e523255d8394e6774bedb1cd5af6052 08a4b	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30621 6ecc6799bdb57538779fa33e7feacd55c4e9 8167	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	64183		

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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

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

Application Number	11/503,090
Filing Date	August 10, 2006
First Named Inventor	Vipul PABARI
Title	Virtual Systems Management
Art Unit	2148
Examiner Name	David S. Ampagoomian
Attorney Docket Number	367894-000003

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

☐ A Power of Attorney is submitted herewith.

OR

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

26379

OR

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

Practitioner(s) Name	Registration Number

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

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

OR

☐ The address associated with Customer Number:

OR

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

I am the:

☒ Applicant/Inventor.

OR

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

SIGNATURE of Applicant or Assignee of Record

Signature		Date	September 8, 2009
Name	Vipul PABARI	Telephone	408 873 3131
Title and Company	ToutVirtual, Inc. - CTO - This person is authorized to act on behalf of the assignee.		

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

☒ *Total of 1 forms are submitted.

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

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STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: TOUTVIRTUAL, INC.

Application No./Patent No.: 15/201,087 Filed/Issue Date: July 1, 2016

Titled: VIRTUAL SYSTEMS MANAGEMENT

TOUTVIRTUAL, INC., 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 039077, Frame 0571, 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: _____ To: _____

   The document was recorded in the United States Patent and Trademark Office at

   Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: _____ To: _____

   The document was recorded in the United States Patent and Trademark Office at

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This collection of information is required by 37 CFR 3.73(b). 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 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, 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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STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

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The document was recorded in the United States Patent and Trademark Office at

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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.

/Timothy W. Lohse/	May 29, 2020
Signature	Date
TIMOTHY W. LOHSE	35,255
Printed or Typed Name	Title or Registration Number

[Page 2 of 2]

Privacy Act Statement

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

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

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

Electronic Acknowledgement Receipt	
EFS ID:	39582086
Application Number:	15201087
International Application Number:	
Confirmation Number:	1450
Title of Invention:	VIRTUAL SYSTEMS MANAGEMENT
First Named Inventor/Applicant Name:	Vipul Pabari
Customer Number:	26379
Filer:	Timothy W. Lohse
Filer Authorized By:	
Attorney Docket Number:	367894-991101
Receipt Date:	30-MAY-2020
Filing Date:	01-JUL-2016
Time Stamp:	22:23:33
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	367894_991101_General_POA.pdf	111778 cc963f20e73b50953b37474fd313c9a5ab3ebc10	no	1

Warnings:

Information:					
2	Assignee showing of ownership per 37 CFR 3.73	367894_991101_Statement_3_73c_29MAY2020-.pdf	99699 a44e9fd31d898dc2b14d405db49d5d136c15b4cb	no	3
Warnings:					
Information:					
			Total Files Size (in bytes):	211477	

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New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Certificate of Transmission Under 37 CFR 1.8
I hereby certify that this correspondence is being transmitted via electronic submission, attention Mail Stop: Amendment, Commissioner for Patents, Alexandria, VA 22313-1450 on:

March 26, 2020

/Timothy W. Lohse/
Timothy W. Lohse

Appl. No.	:	15/201,087	Confirmation No.	1450
Applicant	:	Vipul Pabari		
Filed	:	July 1, 2016		
TC/A.U.	:	2472		
Examiner	:	Abdelnabi O. Musa		
Docket No.	:	367894-991101		
Customer No.	:	26379		
Title	:	VIRTUAL SYSTEMS MANAGEMENT		

APPEAL BRIEF

Dear Sir/Madam:

This is a brief for an appeal from an Office Action mailed February 26, 2019 and from a Notice of Appeal that was filed on August 26, 2019.

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1. The rejection of claims 1-16 under 35 U.S.C. 103 as being unpatentable over US 2005/0044301 to Vasilevsky et al. ("Vasilevsky") in view of US 2003/0236882 to Yan et al. ("Yan"). 4

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I. REAL PARTY IN INTEREST

The real party in interest in this appeal is the assignee of this application, ToutVirtual

II. RELATED APPEALS AND INTERFERENCES

Appellant is unaware of any related appeals or interferences.

III. STATUS OF THE CLAIMS

The application was originally filed with claims 1-16. Claims 1-16 remain pending and all stand rejected and this is an appeal of rejected Claims 1-16. Claims 1-16 are reproduced and attached in the Claims Appendix.

IV. STATUS OF AMENDMENTS

Applicant had submitted a response to several office actions including the amendment of the claims and at least one RCE and those claims were again rejected. The claims that appear before the Board are those claims rejected in the Final Office Action and are attached hereto in the Claims Appendix.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 1 recites a method for on demand provisioning of virtual asset via a self-service portal in a virtualization system that provides a virtualization system that has an inventory that includes physical resources and virtual assets managed by a virtualization layer running on the physical resources; wherein virtual assets are software instantiations of computer systems. *See US 15/201,087 at Figs. 1-3 and page 8, line 8- page 11, line 8.* The method receives a virtual asset provisioning request that specifies parameters to be considered for the virtual asset provisioning request, receives data on inventory available in the virtualization system, automatically provisions a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request, assigns the provisioned virtual asset to the virtual asset provisioning request and provides user access to the provisioned virtual asset. *See US 15/201,087 at Figs. 1-3 and page 8, line 8- page 11, line 8.*

Independent claim 9 recites an apparatus that performs automatic management of a virtualization environment in a computer network that has a virtualization environment having a computer device with a processor and memory and a control center computer coupled to the computer device, the virtualization environment having an inventory that includes network resources and virtual assets being software instantiations of computer systems hosted on the computer device and a virtualization layer executed by the computer device that manages the virtual assets. *See US 15/201,087 at Figs. 1-3 and page 8, line 8- page 11, line 8.* The control center computer executing a virtual mapping layer that determines an inventory of network resources and virtual assets available to the virtualization environment, wherein the virtual mapping layer determines the inventory without regard to processors, operating systems, virtualization platforms, and application software of the virtualization environment. *See US 15/201,087 at Fig. 2 and page 8, line 8- page 11, line 8.* The control center computer executes a provisioning manager that communicates with the virtual mapping layer, the processor being configured to receive a virtual asset provisioning request that specifies parameters to be considered for the virtual asset provisioning request, automatically provision a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request, assign the provisioned virtual asset to the virtual asset provisioning request and provide user access to the provisioned virtual asset. *See US 15/201,087*

at Fig. 2and page 11, line 19- page 12, line 4.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The grounds of rejection to be reviewed on appeal are as follows:

1. The rejection of claims 1-16 under 35 U.S.C. 103 as being unpatentable over US 2005/0044301 to Vasilevsky et al. ("Vasilevsky") in view of US 2003/0236882 to Yan et al. ("Yan").

VII. APPELLANT'S ARGUMENT

A. Claims 12-18 Are Not Obvious over Etzkorn, Florance and Official Notice

The Examiner has rejected claims 1-16 under 35 U.S.C. 103 as being unpatentable over US 2005/0044301 to Vasilevsky et al. ("Vasilevsky") in view of US 2003/0236882 to Yan et al. ("Yan").

Independent Claim 1

Independent claim 1 recites claim elements that are not disclosed or suggested by the combination of Vasilevsky and Yan.

Providing a Virtualization Environment

Claim 1 recites "providing a virtualization system that has an inventory that includes physical resources and virtual assets managed by a virtualization layer running on the physical resources; wherein virtual assets are software instantiations of computer systems" which is not found in Vasilevsky or Yan.

Yan does not disclose or suggest this claim element and is not relied on in the office action.

Vasilevsky also fails to disclose this claim element. Vasilevsky discloses an operating system layer 103 in a system for providing virtual services. More specifically, the office action explains that the operating system layer 130 may be the claimed virtual assets that are then managed by the virtualization layer 104 in Vasilevsky. The virtualization layer 104 in Vasilevsky isolates applications on a guest operating system (GOS) and maps functions performed by one or more virtual processors to functions performed by one or more physical entities in hardware layer 105. *Vasilevsky at 0058.*

Thus, this claim element is missing from Vasilevsky because: 1) the operating layer 103 of Vasilevsky cannot be the claimed virtual asset that is a software instantiation of computer systems; and 2) the operating layer 103 that is alleged to be the claimed virtual asset is not managed by the virtualization layer identified in Vasilevsky.

Thus, this claim element is not disclosed by Vasilevsky or Yan, alone or in combination.

Independent Claim 9

Claim 9 recites "a virtualization environment having a computer device with a processor and memory and a control center computer coupled to the computer device, the virtualization environment having an inventory that includes network resources and virtual assets being software instantiations of computer systems hosted on the computer device and a virtualization layer executed by the computer device that manages the virtual assets" which is not found in Vasilevsky or Yan.

Yan does not disclose or suggest this claim element and is not relied on in the office action.

Vasilevsky also fails to disclose this claim element. Vasilevsky discloses an operating system layer 103 in a system for providing virtual services. More specifically, the office action explains that the operating system layer 130 may be the claimed virtual assets that are then managed by the virtualization layer 104 in Vasilevsky. The virtualization layer 104 in Vasilevsky isolates applications on a guest operating system (GOS) and maps functions performed by one or more virtual processors to functions performed by one or more physical entities in hardware layer 105. *Vasilevsky at 0058*. Furthermore, in Vasilevsky, the operating system layer 103 and the virtualization layer 104 are on the same computer 101 as shown in Figure 1.

Thus, this claim element is missing from Vasilevsky because: 1) the operating layer 103 of Vasilevsky cannot be the claimed virtual asset that is a software instantiation of computer systems; and 2) the operating layer 103 that is alleged to be the claimed virtual asset is not managed by the virtualization layer identified in Vasilevsky.

Thus, this claim element is not disclosed by Vasilevsky or Yan, alone or in combination.

VIII. CONCLUSION

In view of the foregoing arguments, Claims 1-16 are patentable for the reasons set forth above and the rejection must be rejected and the claims allowed.

Respectfully submitted,

DLA Piper US LLP

Dated: March 26, 2020

By: /Timothy W. Lohse/
Timothy W. Lohse
Reg. No. 35,255
Attorneys for Applicant

ATTN: Patent Department
DLA Piper LLP (US)
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CLAIMS APPENDIX

1. (Original) A method for on demand provisioning of virtual asset via a self-service portal in a virtualization system, the method comprising:

providing a virtualization system that has an inventory that includes physical resources and virtual assets managed by a virtualization layer running on the physical resources; wherein virtual assets are software instantiations of computer systems;

receiving a virtual asset provisioning request that specifies parameters to be considered for the virtual asset provisioning request;

receiving data on inventory available in the virtualization system;

automatically provisioning of a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request;

assigning the provisioned virtual asset to the virtual asset provisioning request; and

providing user access to the provisioned virtual asset.

2. (Original) The method of claim 1 further comprising determining one or more performance metrics of the provisioned virtual asset.

3. (Original) The method of claim 1 further comprising providing a user interface for submitting the virtual asset provisioning request.

4. (Original) The method of claim 3, wherein providing the user interface further comprises providing a user interface to access one or more images in a virtual asset image repository.

5. (Original) The method of claim 2, wherein determining the one or more performance metrics further comprises determining one or more real time performance metrics.

6. (Original) The method of claim 1, wherein the inventory further comprises one or more application programs.

7. (Original) The method of claim 6, wherein one of the application programs comprises one of a network load balancer, a router, a firewall and a storage server.

8. (Original) The method of claim 6, wherein one of the application programs comprises a network server.

9. (Previously Presented) An apparatus that performs automatic management of a virtualization environment in a computer network comprising:

a virtualization environment having a computer device with a processor and memory and a control center computer coupled to the computer device, the virtualization environment having an inventory that includes network resources and virtual assets being software instantiations of computer systems hosted on the computer device and a virtualization layer executed by the computer device that manages the virtual assets;

the control center computer executing a virtual mapping layer that determines an inventory of network resources and virtual assets available to the virtualization environment, wherein the virtual mapping layer determines the inventory without regard to processors, operating systems, virtualization platforms, and application software of the virtualization environment; and

the control center computer executing a provisioning manager that communicates with the virtual mapping layer, the processor being configured to receive a virtual asset provisioning request that specifies parameters to be considered for the virtual asset provisioning request, automatically provision a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request, assign the provisioned virtual asset to the virtual asset provisioning request and provide user access to the provisioned virtual asset.

10. (Original) The apparatus of claim 9, wherein the virtualization environment determines one or more performance metrics of the provisioned virtual asset.

11. (Original) The apparatus of claim 9, wherein the provisioning manager provides a user interface for submitting the virtual asset provisioning request.

12. (Original) The apparatus of claim 11, wherein the provisioning manager provides a user interface to access one or more images in a virtual asset image repository.

13. (Original) The apparatus of claim 10, wherein the virtualization environment determines one or more real time performance metrics.

14. (Original) The apparatus of claim 9, wherein the inventory further comprises one or more application programs.

15. (Original) The apparatus of claim 14, wherein one of the application programs comprises one of a network load balancer, a router, a firewall and a storage server.

16. (Original) The apparatus of claim 14, wherein one of the application programs comprises a network server.

EVIDENCE APPENDIX

NONE

RELATED PROCEEDINGS APPENDIX

NONE

Electronic Patent Application Fee Transmittal					
Application Number:	15201087				
Filing Date:	01-Jul-2016				
Title of Invention:	VIRTUAL SYSTEMS MANAGEMENT				
First Named Inventor/Applicant Name:	Vipul Pabari				
Filer:	Timothy W. Lohse/Tomika Thomas				
Attorney Docket Number:	367894-991101				
Filed as Small Entity					
Filing Fees for Utility under 35 USC 111(a)					
Description		**Fee Code**	**Quantity**	**Amount**	**Sub-Total in USD($)**
Basic Filing:					
Pages:					
Claims:					
Miscellaneous-Filing:					
Petition:					
Patent-Appeals-and-Interference:					
Post-Allowance-and-Post-Issuance:					
Extension-of-Time:					

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 5 months with $0 paid	2255	1	1500	1500
Miscellaneous:				
		Total in USD ($)		**1500**

Electronic Acknowledgement Receipt	
EFS ID:	38983272
Application Number:	15201087
International Application Number:	
Confirmation Number:	1450
Title of Invention:	VIRTUAL SYSTEMS MANAGEMENT
First Named Inventor/Applicant Name:	Vipul Pabari
Customer Number:	26379
Filer:	Timothy W. Lohse/Tomika Thomas
Filer Authorized By:	Timothy W. Lohse
Attorney Docket Number:	367894-991101
Receipt Date:	26-MAR-2020
Filing Date:	01-JUL-2016
Time Stamp:	19:26:53
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1500
RAM confirmation Number	E20203PJ28166420
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Appeal Brief Filed	367894_991101_Appeal_Brief_26Mar20.pdf	46506 e835c07ea8a7889fbb28d5519cd10d6a10083c92	no	14
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30618 a94947bb881015da2ea44895e95fe9168519de01	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	77124		

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/31 (03-14)

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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NOTICE OF APPEAL FROM THE EXAMINER TO THE PATENT TRIAL AND APPEAL BOARD

Docket Number (Optional): 367894-991101

I hereby certify that this correspondence is being facsimile transmitted to the USPTO, EFS-Web transmitted to the USPTO, or deposited with the United States Postal Service with sufficient postage in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, on Alexandria, VA 22313-1450" [37 CFR 1.8(a)]

on August 26, 2019.

Signature /Timothy W. Lohse/

Typed or printed name Timothy W. Lohse

In re Application of: Vipul Pabari

Application Number	Filed
15/201,087	July 1, 2016

For: VIRTUAL SYSTEMS MANAGEMENT

Art Unit	Examiner
2472	Abdelnabi O. Musa

Applicant hereby **appeals** to the Patent Trial and Appeal Board from the last decision of the examiner.

The fee for this Notice of Appeal is (37 CFR 41.20(b)(1)) $ 800.00

☒ Applicant asserts small entity status. See 37 CFR 1.27. Therefore, the fee shown above is reduced by 50%, and the resulting fee is: $ 400.00

☐ Applicant certifies micro entity status. See 37 CFR 1.29. Therefore, the fee shown above is reduced by 75%, and the resulting fee is: $ _____
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

☐ A check in the amount of the fee is enclosed.

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

☒ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 07-1896.

☒ Payment made via EFS-Web.

☐ A petition for an extension of time under 37 CFR 1.136(a) (PTO/AIA/22 or equivalent) is enclosed.
For extensions of time in reexamination proceedings, see 37 CFR 1.550.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant ☒ attorney or agent of record ☐ attorney or agent acting under 37 CFR 1.34

Registration number 35,255 Registration number _____

Signature /Timothy W. Lohse/

Typed or printed name Timothy W. Lohse

Telephone Number 650.833.2055

Date August 26, 2019

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

☐ * Total of _____ forms are submitted.

This collection of information is required by 37 CFR 41.20(b)(1) and 41.31. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. 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, 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.

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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 Patent Application Fee Transmittal

Application Number:	15201087
Filing Date:	01-Jul-2016
Title of Invention:	VIRTUAL SYSTEMS MANAGEMENT
First Named Inventor/Applicant Name:	Vipul Pabari
Filer:	Timothy W. Lohse/Stacy Murray
Attorney Docket Number:	367894-991101

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
NOTICE OF APPEAL	2401	1	400	400
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Extension - 3 months with $0 paid	2253	1	700	700
Miscellaneous:				
		Total in USD ($)		**1100**

Electronic Acknowledgement Receipt	
EFS ID:	36983538
Application Number:	15201087
International Application Number:	
Confirmation Number:	1450
Title of Invention:	VIRTUAL SYSTEMS MANAGEMENT
First Named Inventor/Applicant Name:	Vipul Pabari
Customer Number:	26379
Filer:	Timothy W. Lohse
Filer Authorized By:	
Attorney Docket Number:	367894-991101
Receipt Date:	26-AUG-2019
Filing Date:	01-JUL-2016
Time Stamp:	20:44:13
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1100
RAM confirmation Number	E20198PK44490439
Deposit Account	071896
Authorized User	Timothy Lohse
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.20 (Post Issuance fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Notice of Appeal Filed	991101-Notice_of_Appeal.pdf	24425 5e6dbe94e629424497d3f8cd42bb18f589d8cf9d	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	32317 46c2c4e8f2847485d831af86a7ef780a3288c7bb	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	56742		

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If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/201,087	07/01/2016	Vipul Pabari	367894-991101	1450

26379 7590 02/26/2019

DLA PIPER LLP (US)
2000 UNIVERSITY AVENUE
EAST PALO ALTO, CA 94303-2248

EXAMINER	
MUSA, ABDELNABI O	

ART UNIT	PAPER NUMBER
2472	

NOTIFICATION DATE	DELIVERY MODE
02/26/2019	ELECTRONIC

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

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PatentDocketingUS-PaloAlto@dlapiper.com

Office Action Summary	**Application No.** 15/201,087	**Applicant(s)** Pabari, Vipul	
	Examiner ABDELNABI O MUSA	**Art Unit** 2472	**AIA Status** No

-- 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 MONTHS 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 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 01/07/2019.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ 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*

5) ☑ Claim(s) 1-16 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-16 is/are rejected.

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

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

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

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

11)☑ The drawing(s) filed on 07/01/2016 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).

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).

Certified copies:

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)).

** 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) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

2. Acknowledgment is made for the applicant's response and amendment filed on 01/07/2019.

Continued Examination Under 37 CFR 1.114

3. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/07/2019 has been entered.

Remarks

4. The claims are presented as follows:

- Claims 1-16 are pending.

Response to Amendment

5. Applicant's arguments filed 01/07/2019 have been fully considered but they are not persuasive. The amendment submitted by the applicant does not overcome the rejection made by the examiner in the last office action. The applicant's argument has been considered carefully and does not provide the evidence for lack of motivation.

- **Applicant Argument-1**

  Applicant recites that the references do not disclose, teach or suggest:

"providing a virtualization system that has an inventory that includes physical resources and virtual assets managed by a virtualization layer running on the physical resources; wherein virtual assets are software instantiations of computer systems."

- **Examiner Response to Argument-1**

Vasilevsky teaches a virtual management system **(Vasilevsky: 101-FIG.1)** a virtualization layer is provided that allows operating systems (OSs) and their applications to be executed on a virtual server that spans more than one physical node to manage resources **(Vasilevsky: [0009])** resources may be managed without changes at the application or operating system interface levels **(Vasilevsky: [0009-10])**. FIG.1 shows a management system that is used to execute one or more data center applications, a virtualization layer 104 isolating the operating system layer 103 and the hardware layer 105, which are in communication with application layer 102, such applications may be server application, web-based application, or other application that provides resources to other systems. Such applications communicate directly with virtualization layer 104 or may communicate indirectly through operating system layer 103. Virtualization layer 104 maps functions performed by one or more virtual processors to functions performed by one or more physical entities (physical nodes) in the hardware layer 105 **(Vasilevsky: [0058])** Virtualization layer 104 presents to layers 102 and 103 a single system in the form of a virtual server, where a single instance of OS is executed by the virtual server **(Vasilevsky: [0059])** The physical nodes communicate with each other to share access to resources within the hardware layer 105 **(Vasilevsky: [0060])** which allows for an expansion (or a contraction) of resources used by executing the virtual computing system for the purpose of performing configuration changes, monitoring performance, and performing other administrative functions associated with system 100 **(Vasilevsky:**

[0070]) Therefore Vasilevsky teaches providing a virtualization system that has an inventory that includes physical resources and virtual assets managed by a virtualization layer running on the physical resources; wherein virtual assets are software instantiations of computer systems.

- **Argument-2**

Applicant argument with respect to claim 9 have been fully considered. Examiner mapped the claim language in light of the new amendment. The newly added computer device with a processor and memory are taught in **Vasilevsky** reference as cited in the office action in claim 9 below, for applicant's connivance, see claim 9 as mapped.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO internet Web site contains terminal disclaimer forms which may be used. Please visit http://www.uspto.gov/forms/. The filing date of the application will determine what form should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more

information about eTerminal Disclaimers, refer to http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

Claims 1-16 are rejected on the ground of nonstatutory double patenting over **claims 1-24** of **U.S. Patent No. 8,799,431 B2** since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

The dependent claims in the instant application contain similar limitations contained in the dependent claims in the patented application.

Although the conflicting claims are not identical, they are not patentably distinct from each other. The instant application claims a limitations that are present in the patented application. It would have been obvious to a person having ordinary skilled in the art at the time the invention was made to have modified the instant application by the teaching of the patented application.

This is a Non-statuary obviousness type double patenting rejection because the conflicting claims have in fact been patented.

Claims 1-16 are rejected on the ground of nonstatutory double patenting over **claims 1-24** of **U.S. Patent No. 9,444,762 B2** since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

The dependent claims in the instant application contain similar limitations contained in the dependent claims in the patented application.

Although the conflicting claims are not identical, they are not patentably distinct from each other. The instant application claims a limitations that are present in the patented application. It would have been obvious to a person having ordinary skilled in the art at the time the invention was made to have modified the instant application by the teaching of the patented application.

This is a Non-statuary obviousness type double patenting rejection because the conflicting claims have in fact been patented.

Claim Rejections - 35 USC § 103

7. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any

correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

The following is a quotation of pre-AIA 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, 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 pre-AIA 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 1-16 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over **Vasilevsky et al. Pub. No (US. 2005/0044301 A1)** in view of **Yan et al. Pub. No. (US 2003/0236882 A1).**

Regarding **claim 1**, **Vasilevsky** teaches a method for on demand provisioning of virtual asset via a self-service portal in a virtualization system, the method comprising:

providing a virtualization system **(virtualization environment 100 FIG.1 [0058])** that has an inventory that includes physical resources **(data center provides resources [0058] FIG.1)** and virtual assets **(and operating system layer 103 FIG.1)** managed by a virtualization layer **(virtualization layer 104 FIG.1 [0058])** running on the physical resources; wherein virtual assets are software instantiations of computer systems **(the virtualization layer managing the execution of the operating system [0017] [0042] Manager 212 connected to the virtual computing system 201 over a network that communicates with a management agent executed by one or more virtual servers of system 201 for the purpose of performing configuration changes, monitoring performance, and performing other administrative functions associated with system 201 [0070-71] FIG.2))**;

receiving a virtual asset provisioning request that specifies parameters to be considered for the virtual asset provisioning request **(receive a request to allocate and/or de-allocate resources from an administrator through an user input [0074] executing the management agent as an overhead process at a different priority and at any level of a virtual computing system hierarchy and at any protection or priority level [0087] [0112-114])**;

receiving data on inventory available in the virtualization system **(allocate and/or de-allocate resources from an administrator through an user input [0074] executing the management agent as an overhead process at a different priority and at any level of a virtual computing system hierarchy and at any protection or priority level [0087-88])**;

assigning the provisioned virtual asset to the virtual asset provisioning request **(specify an unassigned resources may be grouped into a "pool" of unassigned resources via assign such assets and presented to an administrator or program as being available for assignment [0082-83])**; and

providing user access to the provisioned virtual asset **(providing the virtual assets to allocate and/or de-allocate resources from an administrator through an interface (e.g., a CLI, or GUI or a programmatic interface' [0074-75]).**

Vasilevsky does not explicitly teach,

automatically provisioning of a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request.

Yan teaches automatically provisioning of a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request **(Yan: a management system includes a set of auto-deployment components that receives requirement update requests from a corresponding virtual operating environment and in response, automatically conduct resource allocation and service re-deployment to adjust behavior at runtime [0030] [0062] FIG.6)**

It would have been obvious to a person having ordinary skilled in the art at the time the invention was made to have modified **Vasilevsky** by the teaching of **Yan** to have an automatic determination of a reallocation of the virtual assets in order to achieve an efficient virtualization management of network resources (**Yan**: **[0030] [0062] FIG.6)**.

Regarding **claim 2**, **Vasilevsky** teaches the method of claim 1 further comprising determining one or more performance metrics of the provisioned virtual asset **(a virtual computing system is provided that allows a network administrator to provision computing resources in real-time ("on-the-fly") without a restart of a virtual computing system [0076-77]).**

Regarding **claim 3**, **Vasilevsky** teaches the method of claim 1 further comprising providing a user interface for submitting the virtual asset provisioning request **(a capability is provided to allocate and/or de-allocate resources from an administrator through an interface (e.g., a CLI, or GUI or a programmatic interface' for the user [0074-75]).**

Regarding **claim 4**, **Vasilevsky** teaches the method of claim 3, wherein providing the user interface further comprises providing a user interface to access one or more images in a virtual asset image repository **(the management agent may be responsible for a number of tasks, including alarm propagation and alert messages [0086-88 [0157]).**

Regarding **claim 5**, **Vasilevsky** teaches the method of claim 2, wherein determining the one or more performance metrics further comprises determining one or more real time performance metrics **(a virtual computing system is provided that allows a network administrator to provision computing resources in real-time ("on-the-fly") without a restart of a virtual computing system [0076-77]).**

Regarding **claim 6**, **Vasilevsky** teaches the method of claim 1, wherein the inventory further comprises one or more application programs **(resources include processing, memory, networking, storage, etc. to a virtual computing system including application programs provide control to an administrator through an GUI interface or to other programs [0074-75]).**

Regarding **claim 7**, **Vasilevsky** teaches the method of claim 6, wherein one of the application programs comprises one of a network load balancer, a router, a firewall and a storage server **(the virtual computing system may be scaled up/scaled down as necessary by the distributed server e.g.,** a load balancer **[0072]).**

Regarding **claim 8**, **Vasilevsky** teaches the method of claim 6, wherein one of the application programs comprises a network server **(resources may be allocated or de-allocated by a distributed server [0072]).**

Regarding **claim 9**, **Vasilevsky** teaches an apparatus that performs automatic management of a virtualization environment in a computer network comprising:

a virtualization environment **(virtualization environment 100 FIG.1 [0058])** having a computer device with a processor and memory and a control center computer coupled to the computer device **(Virtualization layer 104 in turn maps functions performed by one or more virtual processors to functions performed by one or more physical entities in hardware layer 105 [0058-59])**, the virtualization environment

having an inventory that includes network resources **(data center provides resources [0058] FIG.1)** and virtual assets **(and operating system layer 103 FIG.1)** being software instantiations of computer systems hosted on the computer device and a virtualization layer **(virtualization layer 104 FIG.1 [0058])** executed by the computer device that manages the virtual assets **(the virtualization layer managing the execution of the operating system [0017] [0042] Manager 212 connected to the virtual computing system 201 over a network that communicates with a management agent executed by one or more virtual servers of system 201 for the purpose of performing configuration changes, monitoring performance, and performing other administrative functions associated with system 201 [0070-71] FIG.2)**;

the control center computer executing a virtual mapping layer that determines an inventory of network resources and virtual assets available to the virtualization environment **(specify an unassigned resources may be grouped into a "pool" of unassigned resources via assign such assets and presented to an administrator or program as being available for assignment [0082-83])**, wherein the virtual mapping layer determines the inventory without regard to processors, operating systems, virtualization platforms, and application software of the virtualization environment **(a virtual computing system 101 contains processors, operating systems, virtualization platforms, and application software of the virtualization environment [0058-59] FIG.1)**; and

the control center computer executing a provisioning manager that communicates with the virtual mapping layer, the processor being configured to receive a virtual asset provisioning request that specifies parameters to be considered for the virtual asset

provisioning request **(receive a request to allocate and/or de-allocate resources from an administrator through an user input [0074] executing the management agent as an overhead process at a different priority and at any level of a virtual computing system hierarchy and at any protection or priority level [0087] [0112-114])**, **(allocate and/or de-allocate resources from an administrator through an user input [0074] executing the management agent as an overhead process at a different priority and at any level of a virtual computing system hierarchy and at any protection or priority level [0087-88])**, assign the provisioned virtual asset to the virtual asset provisioning request and provide user access to the provisioned virtual asset **(specify an unassigned resources may be grouped into a "pool" of unassigned resources via assign such assets and presented to an administrator or program as being available for assignment [0082-83])**.

Vasilevsky does not explicitly teach,

automatically provision a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request**.**

Yan teaches automatically provision a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request **(Yan: a management system includes a set of auto-deployment components that receives requirement update requests from a corresponding virtual operating environment and in response, automatically conduct resource allocation and service re-deployment to adjust behavior at runtime [0030] [0062] FIG.6)**

It would have been obvious to a person having ordinary skilled in the art at the time the invention was made to have modified **Vasilevsky** by the teaching of **Yan** to have an automatic determination of a reallocation of the virtual assets in order to achieve an efficient virtualization management of network resources (**Yan**: **[0030] [0062] FIG.6)**.

Regarding **claims 10-16**, each dependent claim are related to the same limitation set for hereinabove in **claims 2-8**, where the difference used is **"apparatus"** and the wordings of the claims were interchanged within the claim itself and some of the claims were presented as a combination of two or more previously presented claims. **This change does not affect the limitation of the above treated claims.** Adding these phrases to the claims and interchanging the wording did not introduce new limitations to these claims. **Therefore these claims were rejected for similar reasons as stated above.**

Conclusion

8. When responding to this office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present, in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections See 37 CFR 1.111 (c).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ABDELNABI O MUSA whose telephone number is (571)270-1901, and email address is abdelnabi.musa@uspto.gov 'preferred'. The examiner can normally be reached on M-F 9:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kizou, Hassan can be reached on 571-2723088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ABDELNABI O MUSA/
Primary Examiner, Art Unit 2472

Notice of References Cited	Application/Control No. 15/201,087	Applicant(s)/Patent Under Reexamination Pabari, Vipul	
	Examiner ABDELNABI O MUSA	Art Unit 2472	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20050044301-A1	02-2005	Vasilevsky, Alexander David	G06F9/45533	711/1
*	B	US-20030236882-A1	12-2003	Yan, Yong	G06F8/00	709/225
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/201,087	Pabari, Vipul
	Examiner	**Art Unit**
	ABDELNABI O MUSA	2472

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

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

CLAIM		DATE								
Final	Original	02/07/2017	12/12/2017	02/14/2019						
	1	✓	✓	✓						
	2	✓	✓	✓						
	3	✓	✓	✓						
	4	✓	✓	✓						
	5	✓	✓	✓						
	6	✓	✓	✓						
	7	✓	✓	✓						
	8	✓	✓	✓						
	9	✓	✓	✓						
	10	✓	✓	✓						
	11	✓	✓	✓						
	12	✓	✓	✓						
	13	✓	✓	✓						
	14	✓	✓	✓						
	15	✓	✓	✓						
	16	✓	✓	✓						

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/201,087	Pabari, Vipul
	Examiner	Art Unit
	ABDELNABI O MUSA	2472

CPC - Searched*		
Symbol	**Date**	**Examiner**
G06F 9/5077, 9/455, 9/50, 9/5072,	2/7/2017	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	2/7/2017	AM
G06F 9/5077, 9/455, 9/50, 9/5072,	12/12/2017	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	12/12/2017	AM
G06F 9/5077, 9/455, 9/50, 9/5072,	02/14/2019	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	02/14/2019	AM

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	2/7/2017	AM
G06F 9/5077, 9/455, 9/50, 9/5072	2/7/2017	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	12/12/2017	AM
G06F 9/5077, 9/455, 9/50, 9/5072	12/12/2017	AM

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

/ABDELNABI O MUSA/ Primary Examiner.Art Unit 2472	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/201,087	Pabari, Vipul
	Examiner	Art Unit
	ABDELNABI O MUSA	2472

Search Notes		
Search Notes	**Date**	**Examiner**
G06F 9/5077, 9/455, 9/50, 9/5072,	2/7/2017	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	2/7/2017	AM
EAST (USPAT, US-PGPUB, EPO, JPO, DERWENT, IBM_TDB), see attached; NPL: IEEE; Inventor Search/DP	2/7/2017	AM
G06F 9/5077, 9/455, 9/50, 9/5072 search is limited by text, see attached search history report.	12/12/2017	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78 search is limited by text, see attached search history report.	12/12/2017	AM
EAST (USPAT, US-PGPUB, EPO, JPO, DERWENT, IBM_TDB), see attached; NPL: IEEE; Inventor Search/DP	12/12/2017	AM
G06F 9/5077, 9/455, 9/50, 9/5072 search is limited by text, see attached search history report.	02/14/2019	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78 search is limited by text, see attached search history report.	02/14/2019	AM
EAST (USPAT, US-PGPUB, EPO, JPO, DERWENT, IBM_TDB), see attached; NPL: IEEE; Inventor Search/DP	02/14/2019	AM

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**

/ABDELNABI O MUSA/ Primary Examiner.Art Unit 2472	

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	11	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20050223221-$ or US-20050198062-$ or US-20030236882-$).did. or (US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2019/02/14 11:01
S1	7	("20050138165" | "20050155033" | "20060294238" | "20070067435" | "20080086731" | "7463648" | "7512769").PN.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 11:51
S2	19897	709/223.ccls. or 709/226.ccls. or 709/229.ccls.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:10
S3	16	pabari.in.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:10
S4	0	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host).clm.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:12
S5	1094	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host)	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:12
S6	1	S3 S5	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:12
S7	1	(virtual$ mange$4).ti.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:13
S8	82	(manage$4 virtual$6 environment resource$4).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:14
S9	13	S2 S8	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:14
S10	2	(manage$4 virtual$6 environment resource$4 physical host).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:17
S11	17572	(manage$4 virtual$6 environment	US-PGPUB;	AND	OFF	2010/10/30

		(resource$4 or asset$2) physical host allocat$4)	USPAT; USOCR; IBM_TDB			14:10
S12	19897	709/223.ccls. or 709/226.ccls. or 709/229.ccls.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:11
S13	1084	S11 S12	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:11
S14	468	S13 (load adj (shar$4 or balanc$4))	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:11
S15	82	(manage$4 virtual$6 environment resource$4).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:13
S16	4	S14 S15	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:13
S17	143	((virtual adj machine) or VM) same new same physical same host	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:18
S18	2	S15 S17	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:19
S19	2	S17 S15	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:19
S20	84	S17 S11	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:21
S21	9	S20 S12	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:22
S22	0	(knowledge near block re$allocat$4 (real$time or real near time) virtual$2 image application$2 (inventory or resource$2) prioriti$6 (peer$2 or member$2) physical).clm.	US-PGPUB; USPAT; USOCR	AND	OFF	2012/04/10 14:21
S23	2	(knowledge near block re$allocat$4 (real$time or real near time) virtual$2 image application$2 (inventory or resource$2) prioriti$6 (peer$2 or member$2) physical)	US-PGPUB; USPAT; USOCR	AND	OFF	2012/04/10 14:21
S24	156	(Automatic configuration management).ab.	US-PGPUB; USPAT; USOCR	AND	OFF	2012/04/10 14:29
S25	41755	709/223,224,226,229,220,221.ccls.	US-PGPUB; USPAT; USOCR	AND	OFF	2012/04/10 14:31

S26	29	S24 S25	US-PGPUB; USPAT; USOCR	AND	OFF	2012/04/10 14:31
S27	0	(10/460518).APP.	USPAT; USOCR	OR	OFF	2012/04/10 14:34
S28	7	("20050138165" | "20050155033" | "20060294238" | "20070067435" | "20080086731" | "7463648" | "7512769").PN.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S29	25092	709/223.ccls. or 709/226.ccls. or 709/229.ccls.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S30	20	pabari.in.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S31	0	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host).clm.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S32	1541	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host)	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S33	1	S30 S32	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S34	1	(virtual$ mange$4).ti.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S35	122	(manage$4 virtual$6 environment resource$4).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S36	26	S29 S35	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S37	3	(manage$4 virtual$6 environment resource$4 physical host).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S38	22641	(manage$4 virtual$6 environment (resource$4 or asset$2) physical host allocat$4)	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S39	25092	709/223.ccls. or 709/226.ccls. or 709/229.ccls.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S40	1484	S38 S39	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S41	637	S40 (load adj (shar$4 or balanc$4))	US-PGPUB;	AND	OFF	2012/04/10

			USPAT; USOCR; IBM_TDB			14:36
S42	122	(manage$4 virtual$6 environment resource$4).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S43	8	S41 S42	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S44	238	((virtual adj machine) or VM) same new same physical same host	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S45	7	S42 S44	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S46	7	S44 S42	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S47	141	S44 S38	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S48	18	S47 S39	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S49	166	(manage$4 virtual$6 resource$4 physical).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:39
S50	118867	"709".clas.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:39
S51	49	S50 S49	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:39
S52	49	S51 not S26	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:39
S53	0	real near time matrics virtual physical	US-PGPUB; USPAT; USOCR; IBM_TDB	SAME	OFF	2012/04/10 14:43
S54	27	real near time metrics virtual physical	US-PGPUB; USPAT; USOCR; IBM_TDB	SAME	OFF	2012/04/10 14:43
S55	1	S39 and real near time metrics virtual physical	US-PGPUB; USPAT; USOCR; IBM_TDB	SAME	OFF	2012/04/10 14:44

S56	3	S50 S54	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:46
S57	9	pabari.in.	USPAT	AND	OFF	2012/04/10 14:50
S58	20	pabari.in.	US-PGPUB; USPAT	AND	OFF	2012/04/10 14:50
S59	1	S23 S58	US-PGPUB; USPAT	AND	OFF	2012/04/10 14:50
S60	0	S24 S58	USPAT	AND	OFF	2012/04/10 14:51
S78	3	"11503090"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/03/12 15:19
S79	8	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$).did.	US-PGPUB; USPAT	OR	OFF	2013/03/12 15:52
S80	5	S79 and (virtual$7 environment layer network (resourc$2 or computer$2 or printer$2 or device$2) (asset$2 or sofware or program$2 or instruction$2))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	OFF	2013/03/12 15:54
S81	1	(11/031542).APP.	USPAT; USOCR	OR	OFF	2013/03/12 16:04
S82	0	virtual$8 environment virtual$8 near2 laver$1 network resource$2d virtual asset$2 (software or instantiation$1) virtualization layer managing the virtual assets	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:45
S83	0	virtual$8 environment virtual$8 near2 laver$1 network resource$2d virtual asset$2 (software or instantiation$1)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:45
S84	0	virtual$8 environment virtual$8 near2 laver$1 network resource$2d virtual asset$2	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:46
S85	0	virtual$8 environment virtual$8 near2 laver$1	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:46
S86	1	virtual$8 virtual$8 near2 laver$1	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:46
S87	858	virtualization layer manag$6 virtual (asset$2 or resourc$2)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:47
S88	427	virtualization near layer manag$6 virtual (asset$2 or resourc$2)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:47
S89	31	virtualization near layer near5 manag$6	US-PGPUB;	SAME	OFF	2013/07/24

		near5 virtual (asset$2 or resourc$2)	USPAT; USOCR			10:47
S90	10	virtualization near layer near5 manag$6 near5 virtual (asset$2 or resourc$2) and ("709"/$.ccls.)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:48
S91	3218	(virtual or virtualization) layer network (resourc$2 or assets)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:49
S92	444	S91 and S87	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:49
S93	287	S91 and S88	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:50
S94	522	(virtual or virtualization) near layer network (resourc$2 or assets)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:50
S95	259	S94 and S88	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:50
S96	258	(virtual or virtualization) near layer near4 (resourc$2 or assets)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:54
S97	10	virtualization near layer near5 manag$6 near5 virtual (asset$2 or resourc$2) and ("709"/$.ccls.)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:22
S98	37	(virtual or virtualization) near layer near3 manag$6 near4 (resourc$2 or assets)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:22
S99	33	S98 not S97	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:22
S100	15	(virtualization near layer resourc$2).ab.	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:33
S101	12	S100 not S99	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:33
S102	29	virtualization near layer near2 manag$6 near4 (asset$1 or resourc$2)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:36
S103	2	S102 not S99	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:37
S104	10	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2013/07/24 14:40
S105	2	S104 and (virtual or virtualization) near layer	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:40
S106	37	(virtual or virtualization) near layer near3 manag$6 near4 (resourc$2 or assets)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:40

S107	0	(10/831973).APP.	USPAT; USOCR	AND	OFF	2013/07/24 14:41
S108	10	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2013/08/28 21:06
S109	0	S108 and (virtualization with layer) controller (resourc$2 or inventory or assents) virtualization near4 environment$1 (allocat$4 or re$allocat$4)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:09
S110	403	(virtualization with layer) controller (resourc$2 or inventory or assents) virtualization near4 environment$1 (allocat$4 or re$allocat$4)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:10
S111	32	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:12
S112	0	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2 @ad<="20061218" and ("370"/$.ccls. or "455"/$.ccls.)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:13
S113	1	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2 @ad<="20061218" and ("370"/$.ccls. or "455"/$.ccls. or "709".clas.)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:13
S114	1	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2 @ad<="20061218"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:14
S115	0	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2 @ad<="200508/15"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:14
S116	0	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2 @ad<="20050815"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:14

S117	7	((virtualization layer) (resourc$2 or inventory$1 or assent$2) (allocat$4 or re$allocat$4)).ab.	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:18
S118	2	S117 S110	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:18
S119	11	((virtualiz$5 layer) (resourc$2 or inventory$1 or assent$2) (allocat$4 or re$allocat$4)).ab.	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:19
S120	4	S119 not S117	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:21
S121	71	(virtualization near3 layer) (resourc$2 or inventory$1 or assent$2) (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) @ad<="20050815"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:24
S122	71	S121 not S119	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:24
S123	16	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20030236956-$ or US-20020166117-$ or US-20050198062-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$ or US-7330858-$).did.	US-PGPUB; USPAT	AND	OFF	2013/08/28 21:50
S124	0	S123 and (virtualization with layer) controller (resourc$2 or inventory or assents) virtualization near4 environment$1 (allocat$4 or re$allocat$4)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:52
S125	3	S123 and (virtualization with layer) controller (resourc$2 or inventory or asset$2) virtualization (allocat$4 or re$allocat$4)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:53
S126	16	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20030236956-$ or US-20020166117-$ or US-20050198062-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$ or US-7330858-$).did.	US-PGPUB; USPAT	AND	OFF	2013/08/29 18:33
S127	2748	"l13" and automatic$5	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:33
S128	9	l3and automatic$5	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:34
S129	12	S126 and automatic$5	US-PGPUB; USPAT;	AND	OFF	2013/08/29 18:34

			USOCR			
S130	1	S126 and automatic$5 same (allocat$4 or re$allocat$4)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:34
S131	259	automatic$5 same (allocat$4 or re$allocat$4) and debug$4 and forecast$4	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:36
S132	69	automatic$5 same (allocat$4 or re$allocat$4) and debug$4 same (inventory or resourc$2) and forecast$4 virtual$4	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:37
S133	62	automatic$5 same (allocat$4 or re$allocat$4) and debug$4 same (inventory or resourc$2) and forecast$4 virtual$4 and @ad<="20050815"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:38
S134	3	automatic$5 near4 (allocat$4 or re$allocat$4) and debug$4 same (inventory or resourc$2) and forecast$4 virtual$4 and @ad<="20050815"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:41
S135	128	automatic$5 near4 (allocat$4 or re$allocat$4) and forecast$4 virtual$4 and @ad<="20050815"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:42
S136	0	automatic$4 (allocat$4 or reallocation) virtual (asset$2 or resourc$2 or inventory) (fore$cast$3 or futur$3) Capacity Planning Manager and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:44
S137	1	automatic$4 (allocat$4 or reallocation) virtual (asset$2 or resourc$2 or inventory) (fore$cast$3 or futur$3) Capacity Planning and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:44
S138	15	automatic$4 (allocat$4 or reallocation) virtual (asset$2 or resourc$2 or inventory) (fore$cast$3 or futur$3) and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:45
S139	3	automatic$4 (allocat$4 or reallocation) virtual (asset$2 or resourc$2 or inventory) (fore$cast$3) and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:46
S140	613	automatic$4 near4 (allocat$4 or reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:51
S141	30	automatic$4 near4 (reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:51
S142	0	automatic$4 near4 (reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815" and forcasting	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:51
S143	1	automatic$4 near4 (reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815" and forecasting	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:51
S144	27	automatic$4 near4 (reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815" and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:54

S145	3	automatic$4 near4 (reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815" and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4) virtual$4	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:55
S146	0	S126 and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4) virtual$4	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:56
S147	7	S126 and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:57
S148	2	S126 and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4) automatic$6	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:58
S149	7	S126 and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4) and automatic$6	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:58
S150	16	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20030236956-$ or US-20020166117-$ or US-20050198062-$ or US-20030236882-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2015/04/30 13:43
S151	0	S150 and day same metric	US-PGPUB; USPAT; USOCR	AND	OFF	2015/04/30 13:43
S152	0	S150 and day and metric	US-PGPUB; USPAT; USOCR	AND	OFF	2015/04/30 13:44
S153	2	S150 and time same day	US-PGPUB; USPAT; USOCR	AND	OFF	2015/04/30 13:44
S154	0	"2008248817".did.	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/01 00:39
S155	1	"20080248817".did.	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/01 00:39
S156	1	"20040203828".did.	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/01 00:45
S157	1	"13639190"	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/01 20:35
S158	16	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20030236956-$ or US-20020166117-$ or US-20050198062-$ or US-20030236882-$).did. or (US-7512769-$ or US-7577722-$ or US-	US-PGPUB; USPAT	AND	OFF	2015/05/14 14:39

		6490620-$).did.				
S159	1	"14450765"	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/14 14:53
S160	4	"11509030"	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/14 15:19
S161	4	"11503090"	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/14 15:22
S162	929	(pabari or vipul).in.	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:23
S163	0	(virtualization physical resources virtual seet$1 automatic$5).clm.	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:24
S164	5	(virtualization physical resources virtual asset$1 automatic$5).clm.	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:24
S165	4	S162 and S164	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:25
S166	1	(14/450765).APP.	USPAT; USOCR	AND	OFF	2017/02/07 15:27
S167	15	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20030236956-$ or US-20020166117-$ or US-20050198062-$ or US-20030236882-$).did. or (US-7577722-$ or US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2017/02/07 15:45
S168	0	(virtualization physical resources virtual asset$1 automatic$5) AND S167	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:45
S169	9	(virtualization) AND S167	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:45
S170	12	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20050198062-$ or US-20030236882-$).did. or (US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2017/02/24 10:06
S171	1	"8799431".pn.	US-PGPUB; USPAT; USOCR	AND	OFF	2017/12/12 12:15
S172	1	"9444762".pn.	US-PGPUB; USPAT; USOCR	AND	OFF	2017/12/12 12:18

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	633	((virtual adj machine) or VM) same new same physical same host	USPAT	AND	OFF	2019/02/14 11:01
L3	1426	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host)	USPAT	AND	OFF	2019/02/14 11:01
L4	13	L2 L3	USPAT	AND	OFF	2019/02/14 11:01
S61	10106	(manage$4 virtual$6 environment (resource$4 or asset$2) physical host allocat$4)	USPAT	AND	OFF	2012/04/10 14:47
S62	76	((virtual adj machine) or VM) same new same physical same host	USPAT	AND	OFF	2012/04/10 14:47
S63	206	"S13" (load adj (shar$4 or balanc$4))	USPAT	AND	OFF	2012/04/10 14:47
S64	10106	(manage$4 virtual$6 environment (resource$4 or asset$2) physical host allocat$4)	USPAT	AND	OFF	2012/04/10 14:47
S65	45876	"S2" "S8"	USPAT	AND	OFF	2012/04/10 14:47
S66	78	(manage$4 virtual$6 resource$4 physical).ab.	USPAT	AND	OFF	2012/04/10 14:47
S67	23872	709/223,224,226,229,220,221.ccls.	USPAT	AND	OFF	2012/04/10 14:47
S68	21589	"l3" "l4"	USPAT	AND	OFF	2012/04/10 14:47
S69	593	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host)	USPAT	AND	OFF	2012/04/10 14:47
S70	2	("20050138165" | "20050155033" | "20060294238" | "20070067435" | "20080086731" | "7463648" | "7512769").PN.	USPAT	AND	OFF	2012/04/10 14:48
S71	0	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host).clm.	USPAT	AND	OFF	2012/04/10 14:48
S72	593	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host)	USPAT	AND	OFF	2012/04/10 14:48
S73	497	"L26" "L18"	USPAT	AND	OFF	2012/04/10 14:48
S74	0	S73 S72	USPAT	AND	OFF	2012/04/10 14:48
S75	463	S69 S64	USPAT	AND	OFF	2012/04/10 14:49
S76	0	S62 S72	USPAT	AND	OFF	2012/04/10 14:49
S77	9	pabari.in.	USPAT	AND	OFF	2012/04/10 14:49

2/ 14/ 2019 11:01:40 AM
C:\ Users\ amusa\ Documents\ EAST\ Workspaces\ 15201087.wsp

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/201,087	Filing Date 07/01/2016	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	01/07/2019	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 16	Minus	** 20	= 0	X $50 =	0
	Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $230 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L 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.

LIE
NICOLE NICHOLSON

This collection of information is required by 37 CFR 1.16. 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (02-18)
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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REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	15/201,087	Filing Date	2016-07-01	Docket Number (if applicable)	367894-991101	Art Unit	2472
First Named Inventor	Vipul Pabari			Examiner Name	ABDELNABI O. MUSA		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
(Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 071896

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Signature of Registered U.S. Patent Practitioner			
Signature	/Timothy W. Lohse/	Date (YYYY-MM-DD)	2019-01-07
Name	Timothy W. Lohse	Registration Number	35255

This collection of information is required by 37 CFR 1.114. 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 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, 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 the Freedom of Information Act requires disclosure of these records.

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 inspections or an issued patent.

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

Electronic Patent Application Fee Transmittal					
Application Number:	15201087				
Filing Date:	01-Jul-2016				
Title of Invention:	VIRTUAL SYSTEMS MANAGEMENT				
First Named Inventor/Applicant Name:	Vipul Pabari				
Filer:	Timothy W. Lohse/Tomika Thomas				
Attorney Docket Number:	367894-991101				
Filed as Small Entity					
Filing Fees for Utility under 35 USC 111(a)					
Description		**Fee Code**	**Quantity**	**Amount**	**Sub-Total in USD($)**
Basic Filing:					
Pages:					
Claims:					
Miscellaneous-Filing:					
Petition:					
Patent-Appeals-and-Interference:					
Post-Allowance-and-Post-Issuance:					
Extension-of-Time:					

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 5 months with $0 paid	2255	1	1500	1500
Miscellaneous:				
RCE- 1ST REQUEST	2801	1	650	650
		Total in USD ($)		**2150**

Electronic Acknowledgement Receipt	
EFS ID:	34786053
Application Number:	15201087
International Application Number:	
Confirmation Number:	1450
Title of Invention:	VIRTUAL SYSTEMS MANAGEMENT
First Named Inventor/Applicant Name:	Vipul Pabari
Customer Number:	26379
Filer:	Timothy W. Lohse/Tomika Thomas
Filer Authorized By:	Timothy W. Lohse
Attorney Docket Number:	367894-991101
Receipt Date:	07-JAN-2019
Filing Date:	01-JUL-2016
Time Stamp:	21:18:01
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$2150
RAM confirmation Number	010819INTEFSW00007915071896
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment Submitted/Entered with Filing of CPA/RCE	367894_991101_Response_20190107.pdf	24399 63d928ccefc9bc4681213b198faa8fb75569d685	no	7
Warnings:					
Information:					
2	Request for Continued Examination (RCE)	367894_991101_RCE_sb0030efs.pdf	1349915 486715dcee93503b4339dac207867e974e2f50af	no	3
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	32410 622bf044ce84fa649f6a5556715504193803 2607	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1406724		

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

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Certificate of Transmission Under 37 CFR 1.8
I hereby certify that this correspondence is being transmitted via electronic submission, attention Mail Stop: Amendment, Commissioner for Patents, Alexandria, VA 22313-1450 on:

January 7, 2019

/Timothy W. Lohse/
Timothy W. Lohse

Appl. No.	: 15/201,087	Confirmation No.	1450
Applicant	: Vipul Pabari		
Filed	: July 1, 2016		
TC/A.U.	: 2472		
Examiner	: Abdelnabi O. Musa		
Docket No.	: 367894-991101		
Customer No.	: 26379		
Title	: VIRTUAL SYSTEMS MANAGEMENT		

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

RESPONSE TO OFFICE ACTION

Sir:

In response to the Office action, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 5 of this paper.

Listing of the claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A method for on demand provisioning of virtual asset via a self-service portal in a virtualization system, the method comprising:

providing a virtualization system that has an inventory that includes physical resources and virtual assets managed by a virtualization layer running on the physical resources; wherein virtual assets are software instantiations of computer systems;

receiving a virtual asset provisioning request that specifies parameters to be considered for the virtual asset provisioning request;

receiving data on inventory available in the virtualization system;

automatically provisioning of a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request;

assigning the provisioned virtual asset to the virtual asset provisioning request; and

providing user access to the provisioned virtual asset.

2. (Original) The method of claim 1 further comprising determining one or more performance metrics of the provisioned virtual asset.

3. (Original) The method of claim 1 further comprising providing a user interface for submitting the virtual asset provisioning request.

4. (Original) The method of claim 3, wherein providing the user interface further comprises providing a user interface to access one or more images in a virtual asset image repository.

5. (Original) The method of claim 2, wherein determining the one or more performance metrics further comprises determining one or more real time performance metrics.

6. (Original) The method of claim 1, wherein the inventory further comprises one or more application programs.

7. (Original) The method of claim 6, wherein one of the application programs comprises one of a network load balancer, a router, a firewall and a storage server.

8. (Original) The method of claim 6, wherein one of the application programs comprises a network server.

9. (Previously Presented) An apparatus that performs automatic management of a virtualization environment in a computer network comprising:

a virtualization environment having a computer device with a processor and memory and a control center computer coupled to the computer device, the virtualization environment having an inventory that includes network resources and virtual assets being software instantiations of computer systems hosted on the computer device and a virtualization layer executed by the computer device that manages the virtual assets;

the control center computer executing a virtual mapping layer that determines an inventory of network resources and virtual assets available to the virtualization environment, wherein the virtual mapping layer determines the inventory without regard to processors, operating systems, virtualization platforms, and application software of the virtualization environment; and

the control center computer executing a provisioning manager that communicates with the virtual mapping layer, the processor being configured to receive a virtual asset provisioning request that specifies parameters to be considered for the virtual asset provisioning request, automatically provision a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request, assign the provisioned virtual asset to the virtual asset provisioning request and provide user access to the provisioned virtual asset.

10. (Original) The apparatus of claim 9, wherein the virtualization environment determines one or more performance metrics of the provisioned virtual asset.

11. (Original) The apparatus of claim 9, wherein the provisioning manager provides a user interface for submitting the virtual asset provisioning request.

12. (Original) The apparatus of claim 11, wherein the provisioning manager provides a user interface to access one or more images in a virtual asset image repository.

13. (Original) The apparatus of claim 10, wherein the virtualization environment determines one or more real time performance metrics.

14. (Original) The apparatus of claim 9, wherein the inventory further comprises one or more application programs.

15. (Original) The apparatus of claim 14, wherein one of the application programs comprises one of a network load balancer, a router, a firewall and a storage server.

16. (Original) The apparatus of claim 14, wherein one of the application programs comprises a network server.

REMARKS

Applicant acknowledges the double patenting rejection and will respond to this rejection once allowable subject matter is found in the case.

PRIOR ART REJECTIONS

In response to the rejection of claims 1-16 under 35 U.S.C. 103 as being unpatentable over US 2005/0044301 to Vasilevsky et al. ("Vasilevsky") in view of US 2003/0236882 to Yan et al. ("Yan"), Applicant respectfully traverses the rejection for the reasons set forth below.

Independent Claim 1

Independent claim 1 recites claim elements that are not disclosed or suggested by the combination of Vasilevsky and Yan.

Providing a Virtualization Environment

Claim 1 recites "providing a virtualization system that has an inventory that includes physical resources and virtual assets managed by a virtualization layer running on the physical resources; wherein virtual assets are software instantiations of computer systems" which is not found in Vasilevsky or Yan.

Yan does not disclose or suggest this claim element and is not relied on in the office action.

Vasilevsky also fails to disclose this claim element. Vasilevsky discloses an operating system layer 103 in a system for providing virtual services. More specifically, the office action explains that the operating system layer 130 may be the claimed virtual assets that are then managed by the virtualization layer 104 in Vasilevsky. The virtualization layer 104 in Vasilevsky isolates applications on a guest operating system (GOS) and maps functions performed by one or more virtual processors to functions performed by one or more physical entities in hardware layer 105. *Vasilevsky at 0058.*

Thus, this claim element is missing from Vasilevsky because: 1) the operating layer 103 of Vasilevsky cannot be the claimed virtual asset that is a software instantiation of computer systems; and 2) the operating layer 103 that is alleged to be the claimed virtual asset is not managed by the virtualization layer identified in Vasilevsky.

Thus, this claim element is not disclosed by Vasilevsky or Yan, alone or in combination.

Independent Claim 9

Claim 9 recites "a virtualization environment having a computer device with a processor and memory and a control center computer coupled to the computer device, the virtualization environment having an inventory that includes network resources and virtual assets being software instantiations of computer systems hosted on the computer device and a virtualization layer executed by the computer device that manages the virtual assets" which is not found in Vasilevsky or Yan.

Yan does not disclose or suggest this claim element and is not relied on in the office action.

Vasilevsky also fails to disclose this claim element. Vasilevsky discloses an operating system layer 103 in a system for providing virtual services. More specifically, the office action explains that the operating system layer 130 may be the claimed virtual assets that are then managed by the virtualization layer 104 in Vasilevsky. The virtualization layer 104 in Vasilevsky isolates applications on a guest operating system (GOS) and maps functions performed by one or more virtual processors to functions performed by one or more physical entities in hardware layer 105. *Vasilevsky at 0058*. Furthermore, in Vasilevsky, the operating system layer 103 and the virtualization layer 104 are on the same computer 101 as shown in Figure 1.

Thus, this claim element is missing from Vasilevsky because: 1) the operating layer 103 of Vasilevsky cannot be the claimed virtual asset that is a software instantiation of computer systems; and 2) the operating layer 103 that is alleged to be the claimed virtual asset is not managed by the virtualization layer identified in Vasilevsky.

Thus, this claim element is not disclosed by Vasilevsky or Yan, alone or in combination.

CONCLUSION

The Examiner is invited to call Applicant's attorney at the number below in order to speed the prosecution of this application.

The Commissioner is authorized to charge any deficiencies in fees and credit any overpayment of fees to Deposit Account **No. 07-1896**.

Respectfully submitted,

DLA PIPER LLP (US)

Dated: January 7, 2019

By: /Timothy W. Lohse/
Timothy W. Lohse
Reg. No. 35,255
Attorney for Applicant

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2000 University Avenue
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PTO/AIA/31 (03-14)
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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NOTICE OF APPEAL FROM THE EXAMINER TO THE PATENT TRIAL AND APPEAL BOARD

Docket Number (Optional): 367894-991101

I hereby certify that this correspondence is being facsimile transmitted to the USPTO, EFS-Web transmitted to the USPTO, or deposited with the United States Postal Service with sufficient postage in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, on Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on June 5, 2018.

Signature /Tekaligne Debre/

Typed or printed name Tekaligne Debre

In re Application of: Vipul Pabari

Application Number	Filed
15/201,087	July 1, 2016

For: VIRTUAL SYSTEMS MANAGEMENT

Art Unit	Examiner
2472	ABDELNABI O. Musa

Applicant hereby **appeals** to the Patent Trial and Appeal Board from the last decision of the examiner.

The fee for this Notice of Appeal is (37 CFR 41.20(b)(1)) $ 800

☑ Applicant asserts small entity status. See 37 CFR 1.27. Therefore, the fee shown above is reduced by 50%, and the resulting fee is: $ 400

☐ Applicant certifies micro entity status. See 37 CFR 1.29. Therefore, the fee shown above is reduced by 75%, and the resulting fee is: $ _____
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

☐ A check in the amount of the fee is enclosed.

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

☑ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 07-1896.

☑ Payment made via EFS-Web.

☐ A petition for an extension of time under 37 CFR 1.136(a) (PTO/AIA/22 or equivalent) is enclosed.
For extensions of time in reexamination proceedings, see 37 CFR 1.550.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant

☑ attorney or agent of record
Registration number 35,255

☐ attorney or agent acting under 37 CFR 1.34
Registration number _____

Signature /Timothy W. Lohse/

Typed or printed name Timothy W. Lohse

Telephone Number 650-833-2000

Date June 5, 2018

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

☑ * Total of 1 forms are submitted.

This collection of information is required by 37 CFR 41.20(b)(1) and 41.31. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

Electronic Patent Application Fee Transmittal

Application Number:	15201087
Filing Date:	01-Jul-2016
Title of Invention:	VIRTUAL SYSTEMS MANAGEMENT
First Named Inventor/Applicant Name:	Vipul Pabari
Filer:	Timothy W. Lohse/Tk Debre
Attorney Docket Number:	367894-991101

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
NOTICE OF APPEAL	2401	1	400	400
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Extension - 3 months with $0 paid	2253	1	700	700
Miscellaneous:				
		Total in USD ($)		**1100**

Electronic Acknowledgement Receipt	
EFS ID:	32808793
Application Number:	15201087
International Application Number:	
Confirmation Number:	1450
Title of Invention:	VIRTUAL SYSTEMS MANAGEMENT
First Named Inventor/Applicant Name:	Vipul Pabari
Customer Number:	26379
Filer:	Timothy W. Lohse
Filer Authorized By:	
Attorney Docket Number:	367894-991101
Receipt Date:	05-JUN-2018
Filing Date:	01-JUL-2016
Time Stamp:	20:08:58
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1100
RAM confirmation Number	060618INTEFSW00006408071896
Deposit Account	071896
Authorized User	Timothy Lohse
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Notice of Appeal Filed	367894-991101_Notice_of_Appeal_as_filed_060518.pdf	204081 c6a1624bf919177b7df3fd5e42509067fa6741cd	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	32396 5eda6ca9b0e0ac313a06d58ce3c4c0cd81dcefa0	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	236477		

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.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
<u>National Stage of an International Application under 35 U.S.C. 371</u>
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.
<u>New International Application Filed with the USPTO as a Receiving Office</u>
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.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/201,087	07/01/2016	Vipul Pabari	367894-991101	1450

26379 7590 12/21/2017

DLA PIPER LLP (US)
2000 UNIVERSITY AVENUE
EAST PALO ALTO, CA 94303-2248

EXAMINER	
MUSA, ABDELNABI O	

ART UNIT	PAPER NUMBER
2472	

NOTIFICATION DATE	DELIVERY MODE
12/21/2017	ELECTRONIC

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

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PatentDocketingUS-PaloAlto@dlapiper.com

Office Action Summary	Application No. 15/201,087	Applicant(s) PABARI, VIPUL	
	Examiner ABDELNABI O. MUSA	Art Unit 2472	AIA (First Inventor to File) Status No

-- 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 MONTHS 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 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 *10/02/2017*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ 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*

5)☒ Claim(s) *1-16* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-16* is/are rejected.

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

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

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

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

11)☒ The drawing(s) filed on *07/01/2016* 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).

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).

Certified copies:

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)).

** 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) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

1. The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

2. Acknowledgment is made for the applicant's response and amendment filed on 10/02/2017.

Remarks

3. The claims are presented as follows:

- Claim 9 is amended.
- Claims 1-16 are pending.

Response to Amendment

4. Applicant's arguments filed 10/02/2017 have been fully considered but they are not persuasive. The amendment submitted by the applicant does not overcome the rejection made by the examiner in the last office action. The applicant's argument has been considered carefully and does not provide the evidence for lack of motivation.

- **Applicant Argument-1**

  Applicant recites that the references do not disclose, teach or suggest:

  "providing a virtualization system that has an inventory that includes physical resources and virtual assets managed by a virtualization layer running on the physical resources; wherein virtual assets are software instantiations of computer systems."

- **Examiner Response to Argument-1**

Vasilevsky teaches a virtual management system **(Vasilevsky: 101-FIG.1)** a virtualization layer is provided that allows operating systems (OSs) and their applications to be executed on a virtual server that spans more than one physical node

to manage resources **(Vasilevsky: [0009])** resources may be managed without changes at the application or operating system interface levels **(Vasilevsky: [0009-10])**. FIG.1 shows a management system that is used to execute one or more data center applications, a virtualization layer 104 isolating the operating system layer 103 and the hardware layer 105, which are in communication with application layer 102, such applications may be server application, web-based application, or other application that provides resources to other systems. Such applications communicate directly with virtualization layer 104 or may communicate indirectly through operating system layer 103. Virtualization layer 104 maps functions performed by one or more virtual processors to functions performed by one or more physical entities (physical nodes) in the hardware layer 105 **(Vasilevsky: [0058])** Virtualization layer 104 presents to layers 102 and 103 a single system in the form of a virtual server, where a single instance of OS is executed by the virtual server **(Vasilevsky: [0059])** The physical nodes communicate with each other to share access to resources within the hardware layer 105 **(Vasilevsky: [0060])** which allows for an expansion (or a contraction) of resources used by executing the virtual computing system for the purpose of performing configuration changes, monitoring performance, and performing other administrative functions associated with system 100 **(Vasilevsky: [0070])** Therefore Vasilevsky teaches providing a virtualization system that has an inventory that includes physical resources and virtual assets managed by a virtualization layer running on the physical resources; wherein virtual assets are software instantiations of computer systems.

- **Argument-2**

Applicant argument with respect to claim 9 have been fully considered. Examiner mapped the claim language in light of the new amendment. The newly added computer device with a processor and memory are taught in **Vasilevsky** reference as cited in the office action in claim 9 below, for applicant's connivance, see claim 9 as mapped.

- **Argument-3**

Applicant's arguments with respect to the rejection made under 35 U.S.C. 112 have been fully considered and are persuasive in light of the amendment made to the claims. Therefore, the 35 U.S.C. 112 rejection has been withdrawn.

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO internet Web site contains terminal disclaimer forms which may be used. Please visit http://www.uspto.gov/forms/. The filing date of the application will determine what form should be used. A web-based eTerminal Disclaimer may be filled

out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

Claims 1-16 are rejected on the ground of nonstatutory double patenting over **claims 1-24** of **U.S. Patent No. 8,799,431 B2** since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

The dependent claims in the instant application contain similar limitations contained in the dependent claims in the patented application.

Although the conflicting claims are not identical, they are not patentably distinct from each other. The instant application claims a limitations that are present in the patented application. It would have been obvious to a person having ordinary skilled in the art at the time the invention was made to have modified the instant application by the teaching of the patented application.

This is a Non-statuary obviousness type double patenting rejection because the conflicting claims have in fact been patented.

Claims 1-16 are rejected on the ground of nonstatutory double patenting over **claims 1-24** of **U.S. Patent No. 9,444,762 B2** since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

The dependent claims in the instant application contain similar limitations contained in the dependent claims in the patented application.

Although the conflicting claims are not identical, they are not patentably distinct from each other. The instant application claims a limitations that are present in the patented application. It would have been obvious to a person having ordinary skilled in the art at the time the invention was made to have modified the instant application by the teaching of the patented application.

This is a Non-statuary obviousness type double patenting rejection because the conflicting claims have in fact been patented.

Claim Rejections - 35 USC § 103

6. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

The following is a quotation of pre-AIA 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.

Claims 1-16 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over **Vasilevsky et al. Pub. No (US. 2005/0044301 A1)** in view of **Yan et al. Pub. No. (US 2003/0236882 A1).**

Regarding **claim 1**, **Vasilevsky** teaches a method for on demand provisioning of virtual asset via a self-service portal in a virtualization system, the method comprising:

providing a virtualization system **(virtualization environment 100 FIG.1 [0058])** that has an inventory that includes physical resources **(data center provides resources [0058] FIG.1)** and virtual assets **(and operating system layer 103 FIG.1)** managed by a virtualization layer **(virtualization layer 104 FIG.1 [0058])** running on the physical resources; wherein virtual assets are software instantiations of computer systems **(the virtualization layer managing the execution of the operating system**

[0017] [0042] Manager 212 connected to the virtual computing system 201 over a network that communicates with a management agent executed by one or more virtual servers of system 201 for the purpose of performing configuration changes, monitoring performance, and performing other administrative functions associated with system 201 [0070-71] FIG.2));

receiving a virtual asset provisioning request that specifies parameters to be considered for the virtual asset provisioning request **(receive a request to allocate and/or de-allocate resources from an administrator through an user input [0074] executing the management agent as an overhead process at a different priority and at any level of a virtual computing system hierarchy and at any protection or priority level [0087] [0112-114])**;

receiving data on inventory available in the virtualization system **(allocate and/or de-allocate resources from an administrator through an user input [0074] executing the management agent as an overhead process at a different priority and at any level of a virtual computing system hierarchy and at any protection or priority level [0087-88])**;

assigning the provisioned virtual asset to the virtual asset provisioning request **(specify an unassigned resources may be grouped into a "pool" of unassigned resources via assign such assets and presented to an administrator or program as being available for assignment [0082-83])**; and

providing user access to the provisioned virtual asset **(providing the virtual assets to allocate and/or de-allocate resources from an administrator through an interface (e.g., a CLI, or GUI or a programmatic interface' [0074-75]).**

Vasilevsky does not explicitly teach,

automatically provisioning of a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request.

Yan teaches automatically provisioning of a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request **(Yan: a management system includes a set of auto-deployment components that receives requirement update requests from a corresponding virtual operating environment and in response, automatically conduct resource allocation and service re-deployment to adjust behavior at runtime [0030] [0062] FIG.6)**

It would have been obvious to a person having ordinary skilled in the art at the time the invention was made to have modified **Vasilevsky** by the teaching of **Yan** to have an automatic determination of a reallocation of the virtual assets in order to achieve an efficient virtualization management of network resources (**Yan**: **[0030] [0062] FIG.6)**.

Regarding **claim 2**, **Vasilevsky** teaches the method of claim 1 further comprising determining one or more performance metrics of the provisioned virtual asset **(a virtual**

computing system is provided that allows a network administrator to provision computing resources in real-time ("on-the-fly") without a restart of a virtual computing system [0076-77]).

Regarding **claim 3**, **Vasilevsky** teaches the method of claim 1 further comprising providing a user interface for submitting the virtual asset provisioning request **(a capability is provided to allocate and/or de-allocate resources from an administrator through an interface (e.g., a CLI, or GUI or a programmatic interface' for the user [0074-75]).**

Regarding **claim 4**, **Vasilevsky** teaches the method of claim 3, wherein providing the user interface further comprises providing a user interface to access one or more images in a virtual asset image repository **(the management agent may be responsible for a number of tasks, including alarm propagation and alert messages [0086-88 [0157]).**

Regarding **claim 5**, **Vasilevsky** teaches the method of claim 2, wherein determining the one or more performance metrics further comprises determining one or more real time performance metrics **(a virtual computing system is provided that allows a network administrator to provision computing resources in real-time ("on-the-fly") without a restart of a virtual computing system [0076-77]).**

Regarding **claim 6**, **Vasilevsky** teaches the method of claim 1, wherein the inventory further comprises one or more application programs **(resources include processing, memory, networking, storage, etc. to a virtual computing system including application programs provide control to an administrator through an GUI interface or to other programs [0074-75]).**

Regarding **claim 7**, **Vasilevsky** teaches the method of claim 6, wherein one of the application programs comprises one of a network load balancer, a router, a firewall and a storage server **(the virtual computing system may be scaled up/scaled down as necessary by the distributed server e.g.,** a load balancer **[0072]).**

Regarding **claim 8**, **Vasilevsky** teaches the method of claim 6, wherein one of the application programs comprises a network server **(resources may be allocated or de-allocated by a distributed server [0072]).**

Regarding **claim 9**, **Vasilevsky** teaches an apparatus that performs automatic management of a virtualization environment in a computer network comprising:

a virtualization environment **(virtualization environment 100 FIG.1 [0058])** having a computer device with a processor and memory and a control center computer coupled to the computer device **(Virtualization layer 104 in turn maps functions performed by one or more virtual processors to functions performed by one or more physical entities in hardware layer 105 [0058-59])**, the virtualization

environment having an inventory that includes network resources **(data center provides resources [0058] FIG.1)** and virtual assets **(and operating system layer 103 FIG.1)** being software instantiations of computer systems hosted on the computer device and a virtualization layer **(virtualization layer 104 FIG.1 [0058])** executed by the computer device that manages the virtual assets **(the virtualization layer managing the execution of the operating system [0017] [0042] Manager 212 connected to the virtual computing system 201 over a network that communicates with a management agent executed by one or more virtual servers of system 201 for the purpose of performing configuration changes, monitoring performance, and performing other administrative functions associated with system 201 [0070-71] FIG.2)**;

the control center computer executing a virtual mapping layer that determines an inventory of network resources and virtual assets available to the virtualization environment **(specify an unassigned resources may be grouped into a "pool" of unassigned resources via assign such assets and presented to an administrator or program as being available for assignment [0082-83])**, wherein the virtual mapping layer determines the inventory without regard to processors, operating systems, virtualization platforms, and application software of the virtualization environment **(a virtual computing system 101 contains processors, operating systems, virtualization platforms, and application software of the virtualization environment [0058-59] FIG.1)**; and

the control center computer executing a provisioning manager that communicates with the virtual mapping layer, the processor being configured to receive a virtual asset provisioning request that specifies parameters to be considered for the virtual asset provisioning request **(receive a request to allocate and/or de-allocate resources from an administrator through an user input [0074] executing the management agent as an overhead process at a different priority and at any level of a virtual computing system hierarchy and at any protection or priority level [0087] [0112-114])**, **(allocate and/or de-allocate resources from an administrator through an user input [0074] executing the management agent as an overhead process at a different priority and at any level of a virtual computing system hierarchy and at any protection or priority level [0087-88])**, assign the provisioned virtual asset to the virtual asset provisioning request and provide user access to the provisioned virtual asset **(specify an unassigned resources may be grouped into a "pool" of unassigned resources via assign such assets and presented to an administrator or program as being available for assignment [0082-83])**.

Vasilevsky does not explicitly teach,

automatically provision a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request**.**

Yan teaches automatically provision a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request **(Yan: a management system includes a set of auto-**

deployment components that receives requirement update requests from a corresponding virtual operating environment and in response, automatically conduct resource allocation and service re-deployment to adjust behavior at runtime [0030] [0062] FIG.6)

It would have been obvious to a person having ordinary skilled in the art at the time the invention was made to have modified **Vasilevsky** by the teaching of **Yan** to have an automatic determination of a reallocation of the virtual assets in order to achieve an efficient virtualization management of network resources (**Yan**: **[0030] [0062] FIG.6)**.

Regarding **claims 10-16**, each dependent claim are related to the same limitation set for hereinabove in **claims 2-8**, where the difference used is **"apparatus"** and the wordings of the claims were interchanged within the claim itself and some of the claims were presented as a combination of two or more previously presented claims. **This change does not affect the limitation of the above treated claims.** Adding these phrases to the claims and interchanging the wording did not introduce new limitations to these claims. **Therefore these claims were rejected for similar reasons as stated above.**

Conclusion

7. **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action

When responding to this office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present, in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections See 37 CFR 1.111(c).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Abdelnabi O. Musa whose telephone number is 571-2701901, and email address is abdelnabi.musa@uspto.gov 'preferred'. The examiner can normally be reached on Monday thru Friday: 7:30am to 5:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kizou, Hassan, can be reached on 571-2723088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ABDELNABI O. MUSA/
Primary Examiner, Art Unit 2472

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	"8799431".pn.	US-PGPUB; USPAT; USOCR	AND	OFF	2017/12/12 12:15
L2	1	"9444762".pn.	US-PGPUB; USPAT; USOCR	AND	OFF	2017/12/12 12:18
S1	7	("20050138165" | "20050155033" | "20060294238" | "20070067435" | "20080086731" | "7463648" | "7512769").PN.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 11:51
S2	19897	709/223.ccls. or 709/226.ccls. or 709/229.ccls.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:10
S3	16	pabari.in.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:10
S4	0	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host).clm.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:12
S5	1094	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host)	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:12
S6	1	S3 S5	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:12
S7	1	(virtual$ mange$4).ti.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:13
S8	82	(manage$4 virtual$6 environment resource$4).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:14
S9	13	S2 S8	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:14
S10	2	(manage$4 virtual$6 environment resource$4 physical host).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:17
S11	17572	(manage$4 virtual$6 environment (resource$4 or asset$2) physical host	US-PGPUB; USPAT;	AND	OFF	2010/10/30 14:10

		allocat$4)	USOCR; IBM_TDB			
S12	19897	709/223.ccls. or 709/226.ccls. or 709/229.ccls.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:11
S13	1084	S11 S12	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:11
S14	468	S13 (load adj (shar$4 or balanc$4))	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:11
S15	82	(manage$4 virtual$6 environment resource$4).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:13
S16	4	S14 S15	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:13
S17	143	((virtual adj machine) or VM) same new same physical same host	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:18
S18	2	S15 S17	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:19
S19	2	S17 S15	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:19
S20	84	S17 S11	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:21
S21	9	S20 S12	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:22
S22	0	(knowledge near block re$allocat$4 (real$time or real near time) virtual$2 image application$2 (inventory or resource$2) prioriti$6 (peer$2 or member$2) physical).clm.	US-PGPUB; USPAT; USOCR	AND	OFF	2012/04/10 14:21
S23	2	(knowledge near block re$allocat$4 (real$time or real near time) virtual$2 image application$2 (inventory or resource$2) prioriti$6 (peer$2 or member$2) physical)	US-PGPUB; USPAT; USOCR	AND	OFF	2012/04/10 14:21
S24	156	(Automatic configuration management).ab.	US-PGPUB; USPAT; USOCR	AND	OFF	2012/04/10 14:29
S25	41755	709/223,224,226,229,220,221.ccls.	US-PGPUB; USPAT; USOCR	AND	OFF	2012/04/10 14:31

S26	29	S24 S25	US-PGPUB; USPAT; USOCR	AND	OFF	2012/04/10 14:31
S27	0	(10/460518).APP.	USPAT; USOCR	OR	OFF	2012/04/10 14:34
S28	7	("20050138165" | "20050155033" | "20060294238" | "20070067435" | "20080086731" | "7463648" | "7512769").PN.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S29	25092	709/223.ccls. or 709/226.ccls. or 709/229.ccls.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S30	20	pabari.in.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S31	0	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host).clm.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S32	1541	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host)	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S33	1	S30 S32	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S34	1	(virtual$ mange$4).ti.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S35	122	(manage$4 virtual$6 environment resource$4).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S36	26	S29 S35	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S37	3	(manage$4 virtual$6 environment resource$4 physical host).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S38	22641	(manage$4 virtual$6 environment (resource$4 or asset$2) physical host allocat$4)	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S39	25092	709/223.ccls. or 709/226.ccls. or 709/229.ccls.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S40	1484	S38 S39	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S41	637	S40 (load adj (shar$4 or balanc$4))	US-PGPUB;	AND	OFF	2012/04/10

			USPAT; USOCR; IBM_TDB			14:36
S42	122	(manage$4 virtual$6 environment resource$4).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S43	8	S41 S42	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S44	238	((virtual adj machine) or VM) same new same physical same host	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S45	7	S42 S44	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S46	7	S44 S42	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S47	141	S44 S38	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S48	18	S47 S39	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S49	166	(manage$4 virtual$6 resource$4 physical).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:39
S50	118867	"709".clas.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:39
S51	49	S50 S49	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:39
S52	49	S51 not S26	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:39
S53	0	real near time matrics virtual physical	US-PGPUB; USPAT; USOCR; IBM_TDB	SAME	OFF	2012/04/10 14:43
S54	27	real near time metrics virtual physical	US-PGPUB; USPAT; USOCR; IBM_TDB	SAME	OFF	2012/04/10 14:43
S55	1	S39 and real near time metrics virtual physical	US-PGPUB; USPAT; USOCR; IBM_TDB	SAME	OFF	2012/04/10 14:44

S56	3	S50 S54	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:46
S57	9	pabari.in.	USPAT	AND	OFF	2012/04/10 14:50
S58	20	pabari.in.	US-PGPUB; USPAT	AND	OFF	2012/04/10 14:50
S59	1	S23 S58	US-PGPUB; USPAT	AND	OFF	2012/04/10 14:50
S60	0	S24 S58	USPAT	AND	OFF	2012/04/10 14:51
S78	3	"11503090"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/03/12 15:19
S79	8	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$).did.	US-PGPUB; USPAT	OR	OFF	2013/03/12 15:52
S80	5	S79 and (virtual$7 environment layer network (resourc$2 or computer$2 or printer$2 or device$2) (asset$2 or sofware or program$2 or instruction$2))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	OFF	2013/03/12 15:54
S81	1	(11/031542).APP.	USPAT; USOCR	OR	OFF	2013/03/12 16:04
S82	0	virtual$8 environment virtual$8 near2 laver$1 network resource$2d virtual asset$2 (software or instantiation$1) virtualization layer managing the virtual assets	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:45
S83	0	virtual$8 environment virtual$8 near2 laver$1 network resource$2d virtual asset$2 (software or instantiation$1)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:45
S84	0	virtual$8 environment virtual$8 near2 laver$1 network resource$2d virtual asset$2	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:46
S85	0	virtual$8 environment virtual$8 near2 laver$1	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:46
S86	1	virtual$8 virtual$8 near2 laver$1	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:46
S87	858	virtualization layer manag$6 virtual (asset$2 or resourc$2)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:47
S88	427	virtualization near layer manag$6 virtual (asset$2 or resourc$2)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:47
S89	31	virtualization near layer near5 manag$6	US-PGPUB;	SAME	OFF	2013/07/24

		near5 virtual (asset$2 or resourc$2)	USPAT; USOCR			10:47
S90	10	virtualization near layer near5 manag$6 near5 virtual (asset$2 or resourc$2) and ("709"/$.ccls.)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:48
S91	3218	(virtual or virtualization) layer network (resourc$2 or assets)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:49
S92	444	S91 and S87	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:49
S93	287	S91 and S88	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:50
S94	522	(virtual or virtualization) near layer network (resourc$2 or assets)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:50
S95	259	S94 and S88	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:50
S96	258	(virtual or virtualization) near layer near4 (resourc$2 or assets)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:54
S97	10	virtualization near layer near5 manag$6 near5 virtual (asset$2 or resourc$2) and ("709"/$.ccls.)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:22
S98	37	(virtual or virtualization) near layer near3 manag$6 near4 (resourc$2 or assets)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:22
S99	33	S98 not S97	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:22
S100	15	(virtualization near layer resourc$2).ab.	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:33
S101	12	S100 not S99	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:33
S102	29	virtualization near layer near2 manag$6 near4 (asset$1 or resourc$2)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:36
S103	2	S102 not S99	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:37
S104	10	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2013/07/24 14:40
S105	2	S104 and (virtual or virtualization) near layer	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:40
S106	37	(virtual or virtualization) near layer near3 manag$6 near4 (resourc$2 or assets)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:40

S107	0	(10/831973).APP.	USPAT; USOCR	AND	OFF	2013/07/24 14:41
S108	10	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2013/08/28 21:06
S109	0	S108 and (virtualization with layer) controller (resourc$2 or inventory or assents) virtualization near4 environment$1 (allocat$4 or re$allocat$4)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:09
S110	403	(virtualization with layer) controller (resourc$2 or inventory or assents) virtualization near4 environment$1 (allocat$4 or re$allocat$4)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:10
S111	32	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:12
S112	0	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2 @ad<="20061218" and ("370"/$.ccls. or "455"/$.ccls.)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:13
S113	1	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2 @ad<="20061218" and ("370"/$.ccls. or "455"/$.ccls. or "709".clas.)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:13
S114	1	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2 @ad<="20061218"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:14
S115	0	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2 @ad<="200508/15"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:14
S116	0	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2 @ad<="20050815"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:14

S117	7	((virtualization layer) (resourc$2 or inventory$1 or assent$2) (allocat$4 or re$allocat$4)).ab.	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:18
S118	2	S117 S110	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:18
S119	11	((virtualiz$5 layer) (resourc$2 or inventory$1 or assent$2) (allocat$4 or re$allocat$4)).ab.	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:19
S120	4	S119 not S117	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:21
S121	71	(virtualization near3 layer) (resourc$2 or inventory$1 or assent$2) (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) @ad<="20050815"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:24
S122	71	S121 not S119	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:24
S123	16	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20030236956-$ or US-20020166117-$ or US-20050198062-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$ or US-7330858-$).did.	US-PGPUB; USPAT	AND	OFF	2013/08/28 21:50
S124	0	S123 and (virtualization with layer) controller (resourc$2 or inventory or assents) virtualization near4 environment$1 (allocat$4 or re$allocat$4)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:52
S125	3	S123 and (virtualization with layer) controller (resourc$2 or inventory or asset$2) virtualization (allocat$4 or re$allocat$4)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:53
S126	16	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20030236956-$ or US-20020166117-$ or US-20050198062-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$ or US-7330858-$).did.	US-PGPUB; USPAT	AND	OFF	2013/08/29 18:33
S127	2748	"l13" and automatic$5	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:33
S128	9	l3and automatic$5	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:34
S129	12	S126 and automatic$5	US-PGPUB; USPAT;	AND	OFF	2013/08/29 18:34

			USOCR			
S130	1	S126 and automatic$5 same (allocat$4 or re$allocat$4)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:34
S131	259	automatic$5 same (allocat$4 or re$allocat$4) and debug$4 and forecast$4	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:36
S132	69	automatic$5 same (allocat$4 or re$allocat$4) and debug$4 same (inventory or resourc$2) and forecast$4 virtual$4	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:37
S133	62	automatic$5 same (allocat$4 or re$allocat$4) and debug$4 same (inventory or resourc$2) and forecast$4 virtual$4 and @ad<="20050815"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:38
S134	3	automatic$5 near4 (allocat$4 or re$allocat$4) and debug$4 same (inventory or resourc$2) and forecast$4 virtual$4 and @ad<="20050815"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:41
S135	128	automatic$5 near4 (allocat$4 or re$allocat$4) and forecast$4 virtual$4 and @ad<="20050815"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:42
S136	0	automatic$4 (allocat$4 or reallocation) virtual (asset$2 or resourc$2 or inventory) (fore$cast$3 or futur$3) Capacity Planning Manager and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:44
S137	1	automatic$4 (allocat$4 or reallocation) virtual (asset$2 or resourc$2 or inventory) (fore$cast$3 or futur$3) Capacity Planning and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:44
S138	15	automatic$4 (allocat$4 or reallocation) virtual (asset$2 or resourc$2 or inventory) (fore$cast$3 or futur$3) and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:45
S139	3	automatic$4 (allocat$4 or reallocation) virtual (asset$2 or resourc$2 or inventory) (fore$cast$3) and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:46
S140	613	automatic$4 near4 (allocat$4 or reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:51
S141	30	automatic$4 near4 (reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:51
S142	0	automatic$4 near4 (reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815" and forcasting	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:51
S143	1	automatic$4 near4 (reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815" and forecasting	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:51
S144	27	automatic$4 near4 (reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815" and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:54

S145	3	automatic$4 near4 (reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815" and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4) virtual$4	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:55
S146	0	S126 and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4) virtual$4	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:56
S147	7	S126 and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:57
S148	2	S126 and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4) automatic$6	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:58
S149	7	S126 and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4) and automatic$6	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:58
S150	16	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20030236956-$ or US-20020166117-$ or US-20050198062-$ or US-20030236882-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2015/04/30 13:43
S151	0	S150 and day same metric	US-PGPUB; USPAT; USOCR	AND	OFF	2015/04/30 13:43
S152	0	S150 and day and metric	US-PGPUB; USPAT; USOCR	AND	OFF	2015/04/30 13:44
S153	2	S150 and time same day	US-PGPUB; USPAT; USOCR	AND	OFF	2015/04/30 13:44
S154	0	"2008248817".did.	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/01 00:39
S155	1	"20080248817".did.	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/01 00:39
S156	1	"20040203828".did.	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/01 00:45
S157	1	"13639190"	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/01 20:35
S158	16	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20030236956-$ or US-20020166117-$ or US-20050198062-$ or US-20030236882-$).did. or (US-7512769-$ or US-7577722-$ or US-	US-PGPUB; USPAT	AND	OFF	2015/05/14 14:39

		6490620-$).did.				
S159	1	"14450765"	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/14 14:53
S160	4	"11509030"	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/14 15:19
S161	4	"11503090"	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/14 15:22
S162	929	(pabari or vipul).in.	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:23
S163	0	(virtualization physical resources virtual seet$1 automatic$5).clm.	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:24
S164	5	(virtualization physical resources virtual asset$1 automatic$5).clm.	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:24
S165	4	S162 and S164	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:25
S166	1	(14/450765).APP.	USPAT; USOCR	AND	OFF	2017/02/07 15:27
S167	15	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20030236956-$ or US-20020166117-$ or US-20050198062-$ or US-20030236882-$).did. or (US-7577722-$ or US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2017/02/07 15:45
S168	0	(virtualization physical resources virtual asset$1 automatic$5) AND S167	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:45
S169	9	(virtualization) AND S167	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:45
S170	12	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20050198062-$ or US-20030236882-$).did. or (US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2017/02/24 10:06

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S61	10106	(manage$4 virtual$6 environment (resource$4 or asset$2) physical host allocat$4)	USPAT	AND	OFF	2012/04/10 14:47
S62	76	((virtual adj machine) or VM) same new same	USPAT	AND	OFF	2012/04/10

		physical same host				14:47
S63	206	"S13" (load adj (shar$4 or balanc$4))	USPAT	AND	OFF	2012/04/10 14:47
S64	10106	(manage$4 virtual$6 environment (resource$4 or asset$2) physical host allocat$4)	USPAT	AND	OFF	2012/04/10 14:47
S65	45876	"S2" "S8"	USPAT	AND	OFF	2012/04/10 14:47
S66	78	(manage$4 virtual$6 resource$4 physical).ab.	USPAT	AND	OFF	2012/04/10 14:47
S67	23872	709/223,224,226,229,220,221.ccls.	USPAT	AND	OFF	2012/04/10 14:47
S68	21589	"l3" "l4"	USPAT	AND	OFF	2012/04/10 14:47
S69	593	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host)	USPAT	AND	OFF	2012/04/10 14:47
S70	2	("20050138165" | "20050155033" | "20060294238" | "20070067435" | "20080086731" | "7463648" | "7512769").PN.	USPAT	AND	OFF	2012/04/10 14:48
S71	0	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host).clm.	USPAT	AND	OFF	2012/04/10 14:48
S72	593	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host)	USPAT	AND	OFF	2012/04/10 14:48
S73	497	"L26" "L18"	USPAT	AND	OFF	2012/04/10 14:48
S74	0	S73 S72	USPAT	AND	OFF	2012/04/10 14:48
S75	463	S69 S64	USPAT	AND	OFF	2012/04/10 14:49
S76	0	S62 S72	USPAT	AND	OFF	2012/04/10 14:49
S77	9	pabari.in.	USPAT	AND	OFF	2012/04/10 14:49

12/ 12/ 2017 1:35:55 PM
C:\ Users\ amusa\ Documents\ EAST\ Workspaces\ 15201087.wsp

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15201087	PABARI, VIPUL
	Examiner	Art Unit
	ABDELNABI O MUSA	2472

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

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

CLAIM		DATE								
Final	Original	02/07/2017	12/12/2017							
	1	✓	✓							
	2	✓	✓							
	3	✓	✓							
	4	✓	✓							
	5	✓	✓							
	6	✓	✓							
	7	✓	✓							
	8	✓	✓							
	9	✓	✓							
	10	✓	✓							
	11	✓	✓							
	12	✓	✓							
	13	✓	✓							
	14	✓	✓							
	15	✓	✓							
	16	✓	✓							

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15201087	PABARI, VIPUL
	Examiner	Art Unit
	ABDELNABI O MUSA	2472

CPC- SEARCHED		
Symbol	Date	Examiner
G06F 9/5077, 9/455, 9/50, 9/5072,	2/7/2017	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	2/7/2017	AM
G06F 9/5077, 9/455, 9/50, 9/5072,	12/12/2017	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	12/12/2017	AM

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	2/7/2017	AM
G06F 9/5077, 9/455, 9/50, 9/5072	2/7/2017	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	12/12/2017	AM
G06F 9/5077, 9/455, 9/50, 9/5072	12/12/2017	AM

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

SEARCH NOTES		
Search Notes	Date	Examiner
G06F 9/5077, 9/455, 9/50, 9/5072,	2/7/2017	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	2/7/2017	AM
EAST (USPAT, US-PGPUB, EPO, JPO, DERWENT, IBM_TDB), see attached; NPL: IEEE; Inventor Search/DP	2/7/2017	AM
G06F 9/5077, 9/455, 9/50, 9/5072 search is limited by text, see attached search history report.	12/12/2017	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78 search is limited by text, see attached search history report.	12/12/2017	AM
EAST (USPAT, US-PGPUB, EPO, JPO, DERWENT, IBM_TDB), see attached; NPL: IEEE; Inventor Search/DP	12/12/2017	AM

	/ABDELNABI O MUSA/ Primary Examiner.Art Unit 2472

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

	/ABDELNABI O MUSA/ Primary Examiner.Art Unit 2472

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Certificate of Transmission Under 37 CFR 1.8
I hereby certify that this correspondence is being transmitted via electronic submission, attention Mail Stop: Amendment, Commissioner for Patents, Alexandria, VA 22313-1450 on:

October 2, 2017

/Timothy W. Lohse/
Timothy W. Lohse

Appl. No.	:	15/201,087	Confirmation No.	1450
Applicant	:	Vipul Pabari		
Filed	:	July 1, 2016		
TC/A.U.	:	2472		
Examiner	:	Abdelnabi O. Musa		
Docket No.	:	367894-991101		
Customer No.	:	26379		

* * *

RESPONSE TO OFFICE ACTION

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

Sir:

In response to the Office action, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 5 of this paper.

1. Listing of the claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A method for on demand provisioning of virtual asset via a self-service portal in a virtualization system, the method comprising:

providing a virtualization system that has an inventory that includes physical resources and virtual assets managed by a virtualization layer running on the physical resources; wherein virtual assets are software instantiations of computer systems;

receiving a virtual asset provisioning request that specifies parameters to be considered for the virtual asset provisioning request;

receiving data on inventory available in the virtualization system;

automatically provisioning of a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request;

assigning the provisioned virtual asset to the virtual asset provisioning request; and

providing user access to the provisioned virtual asset.

2. (Original) The method of claim 1 further comprising determining one or more performance metrics of the provisioned virtual asset.

3. (Original) The method of claim 1 further comprising providing a user interface for submitting the virtual asset provisioning request.

4. (Original) The method of claim 3, wherein providing the user interface further comprises providing a user interface to access one or more images in a virtual asset image repository.

5. (Original) The method of claim 2, wherein determining the one or more performance metrics further comprises determining one or more real time performance metrics.

6. (Original) The method of claim 1, wherein the inventory further comprises one or more application programs.

7. (Original) The method of claim 6, wherein one of the application programs comprises one of a network load balancer, a router, a firewall and a storage server.

8. (Original) The method of claim 6, wherein one of the application programs comprises a network server.

9. (Currently Amended) An apparatus that performs automatic management of a virtualization environment in a computer network comprising:

a virtualization environment having a computer device with a processor and memory and a control center computer coupled to the computer device, the virtualization environment having ~~that has~~ an inventory that includes network resources and [[,]] virtual assets being software instantiations of computer systems hosted on the computer device and a virtualization layer executed by the computer device that manages the virtual assets;

the control center computer executing a virtual mapping layer that determines an inventory of network resources and virtual assets available to the virtualization environment, wherein the virtual mapping layer determines the inventory without regard to processors, operating systems, virtualization platforms, and application software of the virtualization environment; and

the control center computer executing a provisioning manager ~~executed by a processor~~ that communicates with the virtual mapping layer, the processor being configured to receive a virtual asset provisioning request that specifies parameters to be considered for the virtual asset provisioning request, automatically provision a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request, assign the provisioned virtual asset to the virtual asset provisioning request and provide user access to the provisioned virtual asset.

10. (Original) The apparatus of claim 9, wherein the virtualization environment determines one or more performance metrics of the provisioned virtual asset.

11. (Original) The apparatus of claim 9, wherein the provisioning manager provides a user interface for submitting the virtual asset provisioning request.

12. (Original) The apparatus of claim 11, wherein the provisioning manager provides a user interface to access one or more images in a virtual asset image repository.

13. (Original) The apparatus of claim 10, wherein the virtualization environment determines one or more real time performance metrics.

14. (Original) The apparatus of claim 9, wherein the inventory further comprises one or more application programs.

15. (Original) The apparatus of claim 14, wherein one of the application programs comprises one of a network load balancer, a router, a firewall and a storage server.

16. (Original) The apparatus of claim 14, wherein one of the application programs comprises a network server.

REMARKS

Applicant acknowledges the double patenting rejection and will respond to this rejection once allowable subject matter is found in the case.

In response to the rejection of claims 9-16 as allegedly reciting means plus function elements, Applicant disagrees. However, in order to expedite the prosecution of this application, Applicant has amended claim 9 to clarify the claim.

PRIOR ART REJECTIONS

In response to the rejection of claims 1-16 under 35 U.S.C. 103 as being unpatentable over US 2005/0044301 to Vasilevsky et al. ("Vasilevsky") in view of US 2003/0236882 to Yan et al. ("Yan"), Applicant respectfully traverses the rejection for the reasons set forth below.

Independent Claim 1

Independent claim 1 recites claim elements that are not disclosed or suggested by the combination of Vasilevsky and Yan.

Providing a Virtualization Environment

Claim 1 recites "providing a virtualization system that has an inventory that includes physical resources and virtual assets managed by a virtualization layer running on the physical resources; wherein virtual assets are software instantiations of computer systems" which is not found in Vasilevsky or Yan.

Yan does not disclose or suggest this claim element and is not relied on in the office action.

Vasilevsky also fails to disclose this claim element. Vasilevsky discloses an operating system layer 103 in a system for providing virtual services. More specifically, the office action explains that the operating system layer 130 may be the claimed virtual assets that are then managed by the virtualization layer 104 in Vasilevsky. The virtualization layer 104 in Vasilevsky isolates applications on a guest operating system (GOS) and maps functions performed by one or more virtual processors to functions performed by one or more physical entities in hardware layer 105. *Vasilevsky at 0058.*

Thus, this claim element is missing from Vasilevsky because: 1) the operating layer 103 of Vasilevsky cannot be the claimed virtual asset that is a software instantiation of computer systems; and 2) the operating layer 103 that is alleged to be the claimed virtual asset is not managed by the virtualization layer identified in Vasilevsky.

Thus, this claim element is not disclosed by Vasilevsky or Yan, alone or in combination.

Independent Claim 9

Claim 9 recites "a virtualization environment having a computer device with a processor and memory and a control center computer coupled to the computer device, the virtualization environment having an inventory that includes network resources and virtual assets being software instantiations of computer systems hosted on the computer device and a virtualization layer executed by the computer device that manages the virtual assets" which is not found in Vasilevsky or Yan.

Yan does not disclose or suggest this claim element and is not relied on in the office action.

Vasilevsky also fails to disclose this claim element. Vasilevsky discloses an operating system layer 103 in a system for providing virtual services. More specifically, the office action explains that the operating system layer 130 may be the claimed virtual assets that are then managed by the virtualization layer 104 in Vasilevsky. The virtualization layer 104 in Vasilevsky isolates applications on a guest operating system (GOS) and maps functions performed by one or more virtual processors to functions performed by one or more physical entities in hardware layer 105. *Vasilevsky at 0058*. Furthermore, in Vasilevsky, the operating system layer 103 and the virtualization layer 104 are on the same computer 101 as shown in Figure 1.

Thus, this claim element is missing from Vasilevsky because: 1) the operating layer 103 of Vasilevsky cannot be the claimed virtual asset that is a software instantiation of computer systems; and 2) the operating layer 103 that is alleged to be the claimed virtual asset is not managed by the virtualization layer identified in Vasilevsky.

Thus, this claim element is not disclosed by Vasilevsky or Yan, alone or in combination.

CONCLUSION

The Examiner is invited to call Applicant's attorney at the number below in order to speed the prosecution of this application.

The Commissioner is authorized to charge any deficiencies in fees and credit any overpayment of fees to Deposit Account **No. 07-1896**.

Respectfully submitted,

DLA PIPER LLP (US)

Dated: October 2, 2017

By /Timothy W. Lohse/
Timothy W. Lohse
Reg. No. 35,255
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Electronic Patent Application Fee Transmittal					
Application Number:	15201087				
Filing Date:	01-Jul-2016				
Title of Invention:	VIRTUAL SYSTEMS MANAGEMENT				
First Named Inventor/Applicant Name:	Vipul Pabari				
Filer:	Timothy W. Lohse				
Attorney Docket Number:	367894-991101				
Filed as Small Entity					
Filing Fees for Utility under 35 USC 111(a)					
Description		**Fee Code**	**Quantity**	**Amount**	**Sub-Total in USD($)**
Basic Filing:					
Pages:					
Claims:					
Miscellaneous-Filing:					
Petition:					
Patent-Appeals-and-Interference:					
Post-Allowance-and-Post-Issuance:					
Extension-of-Time:					

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 3 months with $0 paid	2253	1	700	700
Miscellaneous:				
		Total in USD ($)		**700**

Electronic Acknowledgement Receipt	
EFS ID:	30545005
Application Number:	15201087
International Application Number:	
Confirmation Number:	1450
Title of Invention:	VIRTUAL SYSTEMS MANAGEMENT
First Named Inventor/Applicant Name:	Vipul Pabari
Customer Number:	26379
Filer:	Timothy W. Lohse
Filer Authorized By:	
Attorney Docket Number:	367894-991101
Receipt Date:	02-OCT-2017
Filing Date:	01-JUL-2016
Time Stamp:	22:50:55
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$700
RAM confirmation Number	100317INTEFSW00008257071896
Deposit Account	071896
Authorized User	Timothy Lohse
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		991101-Response_to_NFOA.pdf	26956 403644da714aa6f36e358171794068ca1ad88305	yes	7
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Amendment/Req. Reconsideration-After Non-Final Reject		1	1	
	Claims		2	4	
	Applicant Arguments/Remarks Made in an Amendment		5	7	
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30569 52919cd6395dbd9248876805c7f30c32443ecbce	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	57525		

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/201,087	07/01/2016	Vipul Pabari	367894-991101	1450

26379 7590 04/04/2017

DLA PIPER LLP (US)
2000 UNIVERSITY AVENUE
EAST PALO ALTO, CA 94303-2248

EXAMINER
MUSA, ABDELNABI O

ART UNIT	PAPER NUMBER
2472	

NOTIFICATION DATE	DELIVERY MODE
04/04/2017	ELECTRONIC

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

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PatentDocketingUS-PaloAlto@dlapiper.com

Office Action Summary	Application No. 15/201,087	Applicant(s) PABARI, VIPUL	
	Examiner ABDELNABI O. MUSA	Art Unit 2472	AIA (First Inventor to File) Status No

-- 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 MONTHS 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 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 *07/01/2016*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ 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*

5)☒ Claim(s) *1-16* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-16* is/are rejected.

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

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

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

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

11)☒ The drawing(s) filed on *07/01/2016* 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).

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).

Certified copies:

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)).

** 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) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *07/01/2016*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

1. The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

2. This action is responsive to the application filed on 07/01/2016 has a total of 16 claims pending in the application; there are 2 independent claims and 14 dependent claims, all of which are ready for examination by the examiner.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO internet Web site contains terminal disclaimer forms which may be used. Please visit http://www.uspto.gov/forms/. The filing date of the application will determine what form should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

Claims 1-16 are rejected on the ground of nonstatutory double patenting over **claims 1-24** of **U.S. Patent No. 8,799,431 B2** since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

The dependent claims in the instant application contain similar limitations contained in the dependent claims in the patented application.

Although the conflicting claims are not identical, they are not patentably distinct from each other. The instant application claims a limitations that are present in the patented application. It would have been obvious to a person having ordinary skilled in the art at the time the invention was made to have modified the instant application by the teaching of the patented application.

This is a Non-statuary obviousness type double patenting rejection because the conflicting claims have in fact been patented.

Claims 1-16 are rejected on the ground of nonstatutory double patenting over **claims 1-24** of **U.S. Patent No. 9,444,762 B2** since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

The dependent claims in the instant application contain similar limitations contained in the dependent claims in the patented application.

Although the conflicting claims are not identical, they are not patentably distinct from each other. The instant application claims a limitations that are present in the patented application. It would have been obvious to a person having ordinary skilled in the art at the time the invention was made to have modified the instant application by the teaching of the patented application.

This is a Non-statuary obviousness type double patenting rejection because the conflicting claims have in fact been patented.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claim 9-16, the following limitations are recited:

- "a virtual **environment** ..." as recited in claim 9.

- "a virtual mapping **layer** ..." as recited in claim 9.

- "a provisioning **manger**..." as recited in claim 9.

Dependent claims 10-16 are also rejected since they are depended upon rejection claims set forth above.

The limitations noted immediately above are means-plus-function limitations that invoke 35 U.S.C. 112, sixth paragraph. However, the written description fails to disclose the corresponding structure, material, or acts for the claimed function.

Applicant is required to:

(a) Amend the claim so that the claim limitation will no longer be a means (or step) plus function limitation under 35 U.S.C. 112, sixth paragraph; or

(b) Amend the written description of the specification such that it expressly recites what structure, material, or acts perform the claimed function without introducing any new matter (35 U.S.C. 132(a)).

If applicant is of the opinion that the written description of the specification already implicitly or inherently discloses the corresponding structure, material, or acts so that one of ordinary skill in the art would recognize what structure, material, or acts

perform the claimed function, applicant is required to clarify the record by amending the written description of the specification such that it expressly recites the corresponding structure, material, or acts for performing the claimed function and clearly links or associates the structure, material, or acts to the claimed function, without introducing any new matter (35 U.S.C. 132(a)).

Claim Rejections - 35 USC § 103

5. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

The following is a quotation of pre-AIA 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.

Claims 1-16 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over **Vasilevsky et al. Pub. No (US. 2005/0044301 A1)** in view of **Yan et al. Pub. No. (US 2003/0236882 A1).**

Regarding **claim 1**, **Vasilevsky** teaches a method for on demand provisioning of virtual asset via a self-service portal in a virtualization system, the method comprising:

providing a virtualization system **(virtualization environment 100 FIG.1 [0058])** that has an inventory that includes physical resources **(data center provides resources [0058] FIG.1)** and virtual assets **(and operating system layer 103 FIG.1)** managed by a virtualization layer **(virtualization layer 104 FIG.1 [0058])** running on the physical resources; wherein virtual assets are software instantiations of computer systems **(the virtualization layer managing the execution of the operating system [0017] [0042] Manager 212 connected to the virtual computing system 201 over a network that communicates with a management agent executed by one or more virtual servers of system 201 for the purpose of performing configuration changes, monitoring performance, and performing other administrative functions associated with system 201 [0070-71] FIG.2))**;

receiving a virtual asset provisioning request that specifies parameters to be considered for the virtual asset provisioning request **(receive a request to allocate and/or de-allocate resources from an administrator through an user input [0074] executing the management agent as an overhead process at a different priority and at any level of a virtual computing system hierarchy and at any protection or priority level [0087] [0112-114])**;

receiving data on inventory available in the virtualization system **(allocate and/or de-allocate resources from an administrator through an user input [0074] executing the management agent as an overhead process at a different priority and at any level of a virtual computing system hierarchy and at any protection or priority level [0087-88])**;

assigning the provisioned virtual asset to the virtual asset provisioning request **(specify an unassigned resources may be grouped into a "pool" of unassigned resources via assign such assets and presented to an administrator or program as being available for assignment [0082-83]).**; and

providing user access to the provisioned virtual asset **(providing the virtual assets to allocate and/or de-allocate resources from an administrator through an interface (e.g., a CLI, or GUI or a programmatic interface' [0074-75]).**

Vasilevsky does not explicitly teach,

automatically provisioning of a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request.

Yan teaches automatically provisioning of a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request **(Yan: a management system includes a set of auto-deployment components that receives requirement update requests from a corresponding virtual operating environment and in response, automatically conduct resource allocation and service re-deployment to adjust behavior at runtime [0030] [0062] FIG.6)**

It would have been obvious to a person having ordinary skilled in the art at the time the invention was made to have modified **Vasilevsky** by the teaching of **Yan** to have an automatic determination of a reallocation of the virtual assets in order to

achieve an efficient virtualization management of network resources (**Yan**: **[0030] [0062] FIG.6)**.

Regarding **claim 2**, **Vasilevsky** teaches the method of claim 1 further comprising determining one or more performance metrics of the provisioned virtual asset **(a virtual computing system is provided that allows a network administrator to provision computing resources in real-time ("on-the-fly") without a restart of a virtual computing system [0076-77]).**

Regarding **claim 3**, **Vasilevsky** teaches the method of claim 1 further comprising providing a user interface for submitting the virtual asset provisioning request **(a capability is provided to allocate and/or de-allocate resources from an administrator through an interface (e.g., a CLI, or GUI or a programmatic interface' for the user [0074-75]).**

Regarding **claim 4**, **Vasilevsky** teaches the method of claim 3, wherein providing the user interface further comprises providing a user interface to access one or more images in a virtual asset image repository **(the management agent may be responsible for a number of tasks, including alarm propagation and alert messages [0086-88 [0157]).**

Regarding **claim 5**, **Vasilevsky** teaches the method of claim 2, wherein determining the one or more performance metrics further comprises determining one or more real time performance metrics **(a virtual computing system is provided that allows a network administrator to provision computing resources in real-time ("on-the-fly") without a restart of a virtual computing system [0076-77]).**

Regarding **claim 6**, **Vasilevsky** teaches the method of claim 1, wherein the inventory further comprises one or more application programs **(resources include processing, memory, networking, storage, etc. to a virtual computing system including application programs provide control to an administrator through an GUI interface or to other programs [0074-75]).**

Regarding **claim 7**, **Vasilevsky** teaches the method of claim 6, wherein one of the application programs comprises one of a network load balancer, a router, a firewall and a storage server **(the virtual computing system may be scaled up/scaled down as necessary by the distributed server e.g.,** a load balancer **[0072]).**

Regarding **claim 8**, **Vasilevsky** teaches the method of claim 6, wherein one of the application programs comprises a network server **(resources may be allocated or de-allocated by a distributed server [0072]).**

Regarding **claims 9-16**, the independent claim and each dependent claim are related to the same limitation set for hereinabove in **claims 1-8**, where the difference used is **"apparatus"** and the wordings of the claims were interchanged within the claim itself and some of the claims were presented as a combination of two or more previously presented claims. **This change does not affect the limitation of the above treated claims.** Adding these phrases to the claims and interchanging the wording did not introduce new limitations to these claims. **Therefore these claims were rejected for similar reasons as stated above.**

Conclusion

6. When responding to this office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present, in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections See 37 CFR 1.111(c).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Abdelnabi O. Musa whose telephone number is 571-2701901, and email address is abdelnabi.musa@uspto.gov 'preferred'. The examiner can normally be reached on Monday thru Friday: 7:30am to 5:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kizou, Hassan, can be reached on 571-2723088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Abdelnabi O Musa/
Primary Examiner, Art Unit 2472

Notice of References Cited	Application/Control No. 15/201,087	Applicant(s)/Patent Under Reexamination PABARI, VIPUL	
	Examiner ABDELNABI O. MUSA	Art Unit 2472	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2006/0069761 A1	03-2006	Singh; Sumankumar A.	H04L67/1008	709/222
*	B	US-2005/0044301 A1	02-2005	Vasilevsky, Alexander David	G06F9/45533	711/1
*	C	US-2003/0236882 A1	12-2003	Yan, Yong	G06F8/00	709/225
*	D	US-2006/0149842 A1	07-2006	Dawson; Christopher James	G06F9/505	709/226
*	E	US-6,490,620 B1	12-2002	Ditmer; Christine M.	G06F11/0709	707/E17.107
*	F	US-2004/0015600 A1	01-2004	Tiwary, Ashutosh	G06F11/3414	709/234
	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	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

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

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

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BIB DATA SHEET

CONFIRMATION NO. 1450

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
15/201,087	07/01/2016	709	2472	367894-991101

APPLICANTS
ToutVirtual, Inc., Carlsbad, CA;

INVENTORS
Vipul Pabari, Carlsbad, CA;

**** CONTINUING DATA ***************************
This application is a CON of 14/450,765 08/04/2014 PAT 9444762
which is a CON of 11/503,090 08/10/2006 PAT 8799431
which claims benefit of 60/708,473 08/15/2005

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

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
07/19/2016

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /ABDELNABI O MUSA/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		CA	18	16	2

ADDRESS

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UNITED STATES

TITLE

VIRTUAL SYSTEMS MANAGEMENT

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

BIB (Rev. 05/07).

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15201087	PABARI, VIPUL
	Examiner	Art Unit
	ABDELNABI O MUSA	2472

CPC- SEARCHED		
Symbol	Date	Examiner
G06F 9/5077, 9/455, 9/50, 9/5072,	2/7/2017	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	2/7/2017	AM

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	2/7/2017	AM
G06F 9/5077, 9/455, 9/50, 9/5072	2/7/2017	AM

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
G06F 9/5077, 9/455, 9/50, 9/5072,	2/7/2017	AM
H04L 12/24, 41/00, 41/0806, 41/0823, 41/12, 41/22, 41/78	2/7/2017	AM
EAST (USPAT, US-PGPUB, EPO, JPO, DERWENT, IBM_TDB), see attached; NPL: IEEE; Inventor Search/DP	2/7/2017	AM

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15201087	PABARI, VIPUL
	Examiner	Art Unit
	ABDELNABI O MUSA	2472

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

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

CLAIM		DATE								
Final	Original	02/07/2017								
	1	✓								
	2	✓								
	3	✓								
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	13	✓								
	14	✓								
	15	✓								
	16	✓								

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
		(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20050198062-$ or US-20030236882-$).did. or (US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2017/02/24 10:02
L1	12	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20050198062-$ or US-20030236882-$).did. or (US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2017/02/24 10:06
S1	7	("20050138165" | "20050155033" | "20060294238" | "20070067435" | "20080086731" | "7463648" | "7512769").PN.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 11:51
S2	19897	709/223.ccls. or 709/226.ccls. or 709/229.ccls.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:10
S3	16	pabari.in.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:10
S4	0	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host).clm.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:12
S5	1094	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host)	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:12
S6	1	S3 S5	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:12
S7	1	(virtual$ mange$4).ti.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:13
S8	82	(manage$4 virtual$6 environment resource$4).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:14

S9	13	S2 S8	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:14
S10	2	(manage$4 virtual$6 environment resource$4 physical host).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/29 17:17
S11	17572	(manage$4 virtual$6 environment (resource$4 or asset$2) physical host allocat$4)	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:10
S12	19897	709/223.ccls. or 709/226.ccls. or 709/229.ccls.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:11
S13	1084	S11 S12	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:11
S14	468	S13 (load adj (shar$4 or balanc$4))	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:11
S15	82	(manage$4 virtual$6 environment resource$4).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:13
S16	4	S14 S15	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:13
S17	143	((virtual adj machine) or VM) same new same physical same host	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:18
S18	2	S15 S17	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:19
S19	2	S17 S15	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:19
S20	84	S17 S11	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:21
S21	9	S20 S12	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2010/10/30 14:22
S22	0	(knowledge near block re$allocat$4 (real$time or real near time) virtual$2 image application$2 (inventory or resource$2) prioriti$6 (peer$2 or member$2) physical).clm.	US-PGPUB; USPAT; USOCR	AND	OFF	2012/04/10 14:21
S23	2	(knowledge near block re$allocat$4	US-PGPUB;	AND	OFF	2012/04/10

		(real$time or real near time) virtual$2 image application$2 (inventory or resource$2) prioriti$6 (peer$2 or member$2) physical)	USPAT; USOCR			14:21
S24	156	(Automatic configuration management).ab.	US-PGPUB; USPAT; USOCR	AND	OFF	2012/04/10 14:29
S25	41755	709/223,224,226,229,220,221.ccls.	US-PGPUB; USPAT; USOCR	AND	OFF	2012/04/10 14:31
S26	29	S24 S25	US-PGPUB; USPAT; USOCR	AND	OFF	2012/04/10 14:31
S27	0	(10/460518).APP.	USPAT; USOCR	OR	OFF	2012/04/10 14:34
S28	7	("20050138165" | "20050155033" | "20060294238" | "20070067435" | "20080086731" | "7463648" | "7512769").PN.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S29	25092	709/223.ccls. or 709/226.ccls. or 709/229.ccls.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S30	20	pabari.in.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S31	0	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host).clm.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S32	1541	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host)	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S33	1	S30 S32	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S34	1	(virtual$ mange$4).ti.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S35	122	(manage$4 virtual$6 environment resource$4).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S36	26	S29 S35	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S37	3	(manage$4 virtual$6 environment resource$4 physical host).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S38	22641	(manage$4 virtual$6 environment (resource$4 or asset$2) physical host allocat$4)	US-PGPUB; USPAT; USOCR;	AND	OFF	2012/04/10 14:36

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S39	25092	709/223.ccls. or 709/226.ccls. or 709/229.ccls.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S40	1484	S38 S39	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S41	637	S40 (load adj (shar$4 or balanc$4))	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S42	122	(manage$4 virtual$6 environment resource$4).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S43	8	S41 S42	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S44	238	((virtual adj machine) or VM) same new same physical same host	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S45	7	S42 S44	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S46	7	S44 S42	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S47	141	S44 S38	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S48	18	S47 S39	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:36
S49	166	(manage$4 virtual$6 resource$4 physical).ab.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:39
S50	118867	"709".clas.	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:39
S51	49	S50 S49	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:39
S52	49	S51 not S26	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:39
S53	0	real near time matrics virtual physical	US-PGPUB;	SAME	OFF	2012/04/10

			USPAT; USOCR; IBM_TDB			14:43
S54	27	real near time metrics virtual physical	US-PGPUB; USPAT; USOCR; IBM_TDB	SAME	OFF	2012/04/10 14:43
S55	1	S39 and real near time metrics virtual physical	US-PGPUB; USPAT; USOCR; IBM_TDB	SAME	OFF	2012/04/10 14:44
S56	3	S50 S54	US-PGPUB; USPAT; USOCR; IBM_TDB	AND	OFF	2012/04/10 14:46
S57	9	pabari.in.	USPAT	AND	OFF	2012/04/10 14:50
S58	20	pabari.in.	US-PGPUB; USPAT	AND	OFF	2012/04/10 14:50
S59	1	S23 S58	US-PGPUB; USPAT	AND	OFF	2012/04/10 14:50
S60	0	S24 S58	USPAT	AND	OFF	2012/04/10 14:51
S78	3	"11503090"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/03/12 15:19
S79	8	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$).did.	US-PGPUB; USPAT	OR	OFF	2013/03/12 15:52
S80	5	S79 and (virtual$7 environment layer network (resourc$2 or computer$2 or printer$2 or device$2) (asset$2 or sofware or program$2 or instruction$2))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	OFF	2013/03/12 15:54
S81	1	(11/031542).APP.	USPAT; USOCR	OR	OFF	2013/03/12 16:04
S82	0	virtual$8 environment virtual$8 near2 laver$1 network resource$2d virtual asset$2 (software or instantiation$1) virtualization layer managing the virtual assets	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:45
S83	0	virtual$8 environment virtual$8 near2 laver$1 network resource$2d virtual asset$2 (software or instantiation$1)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:45
S84	0	virtual$8 environment virtual$8 near2 laver$1 network resource$2d virtual asset$2	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:46
S85	0	virtual$8 environment virtual$8 near2 laver$1	US-PGPUB; USPAT;	SAME	OFF	2013/07/24 10:46

			USOCR			
S86	1	virtual$8 virtual$8 near2 laver$1	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:46
S87	858	virtualization layer manag$6 virtual (asset$2 or resourc$2)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:47
S88	427	virtualization near layer manag$6 virtual (asset$2 or resourc$2)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:47
S89	31	virtualization near layer near5 manag$6 near5 virtual (asset$2 or resourc$2)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:47
S90	10	virtualization near layer near5 manag$6 near5 virtual (asset$2 or resourc$2) and ("709"/$.ccls.)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:48
S91	3218	(virtual or virtualization) layer network (resourc$2 or assets)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:49
S92	444	S91 and S87	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:49
S93	287	S91 and S88	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:50
S94	522	(virtual or virtualization) near layer network (resourc$2 or assets)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:50
S95	259	S94 and S88	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:50
S96	258	(virtual or virtualization) near layer near4 (resourc$2 or assets)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 10:54
S97	10	virtualization near layer near5 manag$6 near5 virtual (asset$2 or resourc$2) and ("709"/$.ccls.)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:22
S98	37	(virtual or virtualization) near layer near3 manag$6 near4 (resourc$2 or assets)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:22
S99	33	S98 not S97	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:22
S100	15	(virtualization near layer resourc$2).ab.	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:33
S101	12	S100 not S99	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:33
S102	29	virtualization near layer near2 manag$6 near4 (asset$1 or resourc$2)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:36
S103	2	S102 not S99	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:37
S104	10	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$	US-PGPUB; USPAT	AND	OFF	2013/07/24 14:40

		or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$).did.				
S105	2	S104 and (virtual or virtualization) near layer	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:40
S106	37	(virtual or virtualization) near layer near3 manag$6 near4 (resourc$2 or assets)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/07/24 14:40
S107	0	(10/831973).APP.	USPAT; USOCR	AND	OFF	2013/07/24 14:41
S108	10	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2013/08/28 21:06
S109	0	S108 and (virtualization with layer) controller (resourc$2 or inventory or assents) virtualization near4 environment$1 (allocat$4 or re$allocat$4)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:09
S110	403	(virtualization with layer) controller (resourc$2 or inventory or assents) virtualization near4 environment$1 (allocat$4 or re$allocat$4)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:10
S111	32	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:12
S112	0	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2 @ad<="20061218" and ("370"/$.ccls. or "455"/$.ccls.)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:13
S113	1	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2 @ad<="20061218" and ("370"/$.ccls. or "455"/$.ccls. or "709".clas.)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:13
S114	1	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2 @ad<="20061218"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:14
S115	0	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2)	US-PGPUB; USPAT;	AND	OFF	2013/08/28 21:14

		virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2 @ad<="200508/15"	USOCR			
S116	0	(virtualization with layer) controller (resourc$2 or inventory$1 or assent$2) virtualization near4 environment$1 (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) log$2 near4 fil$2 @ad<="20050815"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:14
S117	7	((virtualization layer) (resourc$2 or inventory$1 or assent$2) (allocat$4 or re$allocat$4)).ab.	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:18
S118	2	S117 S110	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:18
S119	11	((virtualiz$5 layer) (resourc$2 or inventory$1 or assent$2) (allocat$4 or re$allocat$4)).ab.	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:19
S120	4	S119 not S117	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:21
S121	71	(virtualization near3 layer) (resourc$2 or inventory$1 or assent$2) (allocat$4 or re$allocat$4) (erorr$1 or debug$2 or degrad$3 or corrupt$4 or bad$2) @ad<="20050815"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:24
S122	71	S121 not S119	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:24
S123	16	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20030236956-$ or US-20020166117-$ or US-20050198062-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$ or US-7330858-$).did.	US-PGPUB; USPAT	AND	OFF	2013/08/28 21:50
S124	0	S123 and (virtualization with layer) controller (resourc$2 or inventory or assents) virtualization near4 environment$1 (allocat$4 or re$allocat$4)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:52
S125	3	S123 and (virtualization with layer) controller (resourc$2 or inventory or asset$2) virtualization (allocat$4 or re$allocat$4)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/28 21:53
S126	16	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20030236956-$ or US-20020166117-$ or US-20050198062-	US-PGPUB; USPAT	AND	OFF	2013/08/29 18:33

		$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$ or US-7330858-$).did.				
S127	2748	"l13" and automatic$5	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:33
S128	9	l3and automatic$5	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:34
S129	12	S126 and automatic$5	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:34
S130	1	S126 and automatic$5 same (allocat$4 or re$allocat$4)	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:34
S131	259	automatic$5 same (allocat$4 or re$allocat$4) and debug$4 and forecast$4	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:36
S132	69	automatic$5 same (allocat$4 or re$allocat$4) and debug$4 same (inventory or resourc$2) and forecast$4 virtual$4	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:37
S133	62	automatic$5 same (allocat$4 or re$allocat$4) and debug$4 same (inventory or resourc$2) and forecast$4 virtual$4 and @ad<="20050815"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:38
S134	3	automatic$5 near4 (allocat$4 or re$allocat$4) and debug$4 same (inventory or resourc$2) and forecast$4 virtual$4 and @ad<="20050815"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:41
S135	128	automatic$5 near4 (allocat$4 or re$allocat$4) and forecast$4 virtual$4 and @ad<="20050815"	US-PGPUB; USPAT; USOCR	AND	OFF	2013/08/29 18:42
S136	0	automatic$4 (allocat$4 or reallocation) virtual (asset$2 or resourc$2 or inventory) (fore$cast$3 or futur$3) Capacity Planning Manager and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:44
S137	1	automatic$4 (allocat$4 or reallocation) virtual (asset$2 or resourc$2 or inventory) (fore$cast$3 or futur$3) Capacity Planning and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:44
S138	15	automatic$4 (allocat$4 or reallocation) virtual (asset$2 or resourc$2 or inventory) (fore$cast$3 or futur$3) and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:45
S139	3	automatic$4 (allocat$4 or reallocation) virtual (asset$2 or resourc$2 or inventory) (fore$cast$3) and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:46
S140	613	automatic$4 near4 (allocat$4 or reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:51
S141	30	automatic$4 near4 (reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815"	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:51

S142	0	automatic$4 near4 (reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815" and forcasting	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:51
S143	1	automatic$4 near4 (reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815" and forecasting	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:51
S144	27	automatic$4 near4 (reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815" and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:54
S145	3	automatic$4 near4 (reallocation) near4 (asset$2 or resourc$2 or inventory) and @ad<="20050815" and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4) virtual$4	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:55
S146	0	S126 and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4) virtual$4	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:56
S147	7	S126 and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4)	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:57
S148	2	S126 and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4) automatic$6	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:58
S149	7	S126 and (forecast$4 or predict$4 or estimat$4 or project$4 or anticipat$4 or guess$4) and automatic$6	US-PGPUB; USPAT; USOCR	SAME	OFF	2013/08/29 18:58
S150	16	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20030236956-$ or US-20020166117-$ or US-20050198062-$ or US-20030236882-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2015/04/30 13:43
S151	0	S150 and day same metric	US-PGPUB; USPAT; USOCR	AND	OFF	2015/04/30 13:43
S152	0	S150 and day and metric	US-PGPUB; USPAT; USOCR	AND	OFF	2015/04/30 13:44
S153	2	S150 and time same day	US-PGPUB; USPAT; USOCR	AND	OFF	2015/04/30 13:44
S154	0	"2008248817".did.	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/01 00:39
S155	1	"20080248817".did.	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/01 00:39
S156	1	"20040203828".did.	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/01 00:45
S157	1	"13639190"	US-PGPUB;	AND	OFF	2015/05/01

			USPAT; USOCR			20:35
S158	16	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20030236956-$ or US-20020166117-$ or US-20050198062-$ or US-20030236882-$).did. or (US-7512769-$ or US-7577722-$ or US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2015/05/14 14:39
S159	1	"14450765"	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/14 14:53
S160	4	"11509030"	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/14 15:19
S161	4	"11503090"	US-PGPUB; USPAT; USOCR	AND	OFF	2015/05/14 15:22
S162	929	(pabari or vipul).in.	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:23
S163	0	(virtualization physical resources virtual seet$1 automatic$5).clm.	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:24
S164	5	(virtualization physical resources virtual asset$1 automatic$5).clm.	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:24
S165	4	S162 and S164	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:25
S166	1	(14/450765).APP.	USPAT; USOCR	AND	OFF	2017/02/07 15:27
S167	15	(US-20080086731-$ or US-20050155033-$ or US-20060149842-$ or US-20050125537-$ or US-20040015600-$ or US-20060069761-$ or US-20050044301-$ or US-20060184937-$ or US-20050223221-$ or US-20030236956-$ or US-20020166117-$ or US-20050198062-$ or US-20030236882-$).did. or (US-7577722-$ or US-6490620-$).did.	US-PGPUB; USPAT	AND	OFF	2017/02/07 15:45
S168	0	(virtualization physical resources virtual asset$1 automatic$5) AND S167	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:45
S169	9	(virtualization) AND S167	US-PGPUB; USPAT; USOCR	AND	OFF	2017/02/07 15:45

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S61	10106	(manage$4 virtual$6 environment (resource$4 or asset$2) physical host	USPAT	AND	OFF	2012/04/10 14:47

		allocat$4)				
S62	76	((virtual adj machine) or VM) same new same physical same host	USPAT	AND	OFF	2012/04/10 14:47
S63	206	"S13" (load adj (shar$4 or balanc$4))	USPAT	AND	OFF	2012/04/10 14:47
S64	10106	(manage$4 virtual$6 environment (resource$4 or asset$2) physical host allocat$4)	USPAT	AND	OFF	2012/04/10 14:47
S65	45876	"S2" "S8"	USPAT	AND	OFF	2012/04/10 14:47
S66	78	(manage$4 virtual$6 resource$4 physical).ab.	USPAT	AND	OFF	2012/04/10 14:47
S67	23872	709/223,224,226,229,220,221.ccls.	USPAT	AND	OFF	2012/04/10 14:47
S68	21589	"l3" "l4"	USPAT	AND	OFF	2012/04/10 14:47
S69	593	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host)	USPAT	AND	OFF	2012/04/10 14:47
S70	2	("20050138165" | "20050155033" | "20060294238" | "20070067435" | "20080086731" | "7463648" | "7512769").PN.	USPAT	AND	OFF	2012/04/10 14:48
S71	0	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host).clm.	USPAT	AND	OFF	2012/04/10 14:48
S72	593	(manage$4 virtual$6 environment inventory resource$4 prioritiz$4 physical host)	USPAT	AND	OFF	2012/04/10 14:48
S73	497	"L26" "L18"	USPAT	AND	OFF	2012/04/10 14:48
S74	0	S73 S72	USPAT	AND	OFF	2012/04/10 14:48
S75	463	S69 S64	USPAT	AND	OFF	2012/04/10 14:49
S76	0	S62 S72	USPAT	AND	OFF	2012/04/10 14:49
S77	9	pabari.in.	USPAT	AND	OFF	2012/04/10 14:49

2/24/2017 10:06:26 AM
C:\Users\amusa\Documents\EAST\Workspaces\15201087.wsp

INFORMATION DISCLOSURE STATEMENT		
	Applicant:	Vipul Pabari
	Application No.	
	Filed:	July 1, 2016
	For:	**VIRTUAL SYSTEMS MANAGEMENT**
	Group Art Unit:	Not Yet Assigned
	Examiner:	Not Yet Assigned
	Attorney Docket No.:	367894-991101

Commissioner of Patents and Trademarks
(Via Electronic Filing)

Dear Sir:

In accordance with the provisions of 37 C.F.R. § 1.56(a) and 37 C.F.R. § 1.97, Applicant(s) hereby make of record the references listed on the accompanying Form PTO-1449 for consideration by the Examiner in connection with the examination of the above-identified patent application.

This Information Disclosure Statement:

(a)	☒	accompanies a new patent application submitted herewith.
(b)	☐	is filed within three (3) months of the Filing Date or before the mailing date of a First Office Action on the merits; OR
(c)	☐	after the period defined in (b) but before the mailing date of a Final Rejection or Notice of Allowance, OR
(d)	☐	is filed after the first Office Action and more than three months after the application's filing date or PCT national stage date of entry filing but, as far as is known to the undersigned prior to the mailing date of either a final rejection or a notice of allowance, and is accompanied by either the fee ($180) set forth in 37 CFR § 1.17(p) or a certification as specified in 37 CFR § 1.97(e), as checked below OR
(e)	☐	is filed after the mailing date of either a final rejection or a notice of allowance, and the issue fee has not been paid, and is accompanied by the requisite petition fee ($130) set forth in 37 CFR § 1.17(l)(1) and a certification as specified in 37 CFR § 1.97(e), as checked below. This document is to be considered as a petition requesting consideration of the information disclosure statement.

As required under § 1.97(e), Applicants, through the undersigned, hereby state either that [check the appropriate space]:

(f)	☐	Each item of information contained in the Information Disclosure Statement was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing date of the Information Disclosure Statement; or
(g)	☐	No item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing this Statement after making reasonable inquiry, no item of information contained in the Information Disclosure Statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the Information Disclosure Statement.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.O.M/

Regarding the concise statements required for any foreign-language references, a copy of an associated foreign Office Action indicating the relevance is provided in English; see MPEP 609.04(a)(III).

It is respectfully requested that each of the references shown on the attached Form PTO-1449 be made of record in this application. Copies of the references are enclosed.

The Commissioner is authorized to charge any deficiencies and credit any overpayment of fees to our Deposit Account No. **07-1896**.

Respectfully submitted,

Date: July 1, 2016

DLA PIPER LLP (US)

By: /Timothy W. Lohse/
Timothy W. Lohse
Reg. No. 35,255
Attorneys for Applicant(s)
2000 University Avenue
East Palo Alto, CA 94303-2248
650-833-2055

☒ *Customer Number or Bar Code Label*

26379
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on:
July 1, 2016

/Timothy W. Lohse/
Timothy W. Lohse

U.S. DEPT. OF COMMERCE Patent and Trademark Office	Atty. Docket No.: **367894-991101**	Serial No.:
	Applicant: Vipul Pabari	
INFORMATION DISCLOSURE CITATION (Use several sheets if necessary)	Filing Date: July 1, 2016	Group Art Unit: NYA

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE
	7,463,648	12/09/08	Eppstein et al.			
	7,512,769	03/31/09	Lowell et al.			
	7,577,722	08/18/09	Khandekar et al.			
	2002/0166117	11/07/02	Abrams et al.			
	2003/0236882	12/25/03	Yan et al.			
	2003/0236956	12/25/03	Grubbs et al.			
	2005/0044301	02/24/05	Vasilevsky et al.			
	2005/0138165	06/23/05	Tang et al.			
	2005/0155033	07/14/05	Luoffo et al.			
	2006/0069761	03/30/06	Singh et al.			
	2006/0149842	07/06/06	Dawson et al.			
	2006/0184937	08/17/06	Abels et al.			
	2006/0294238	12/28/06	Naik et al.			
	2007-0067435	03/22/07	Landis et al.			
	2008/0086731	04/10/08	Trossman et al.			

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.)

		PCT/US2006/031193, International Preliminary Report on Patentability dated 7/1/2008 (6 pages)

EXAMINER	DATE CONSIDERED
/ABDELNABI O MUSA/	02/07/2017

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.O.M/

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/201,087	07/01/2016	Vipul Pabari	367894-991101

CONFIRMATION NO. 1450

26379
DLA PIPER LLP (US)
2000 UNIVERSITY AVENUE
EAST PALO ALTO, CA 94303-2248

PUBLICATION NOTICE

OC000000086798542

Title:VIRTUAL SYSTEMS MANAGEMENT

Publication No.US-2016-0314022-A1
Publication Date:10/27/2016

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

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

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 15/201,087

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	70		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	300		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	360		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	16 minus 20 =	*	x 40 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2 minus 3 =	*	x 210 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	730		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)	OR	RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L 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 found in the appropriate box in column 1.

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/201,087	07/01/2016	Vipul Pabari	367894-991101

CONFIRMATION NO. 1450

IMPROPER CPOA LETTER

26379
DLA PIPER LLP (US)
2000 UNIVERSITY AVENUE
EAST PALO ALTO, CA 94303-2248

OC000000084465284

Date Mailed: 07/20/2016

NOTICE REGARDING POWER OF ATTORNEY

This is in response to the power of attorney filed 07/01/2016. The power of attorney in this application is not accepted for the reason(s) listed below:

- The revocation is not signed by the applicant, the assignee of the entire interest, or one particular principal attorney having the authority to revoke.

/jchen/

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

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
15/201,087	07/01/2016	2447	730	367894-991101	16	2

CONFIRMATION NO. 1450

26379
DLA PIPER LLP (US)
2000 UNIVERSITY AVENUE
EAST PALO ALTO, CA 94303-2248

FILING RECEIPT



Date Mailed: 07/20/2016

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

Inventor(s)

Vipul Pabari, Carlsbad, CA;

Applicant(s)

ToutVirtual, Inc., Carlsbad, CA;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 14/450,765 08/04/2014
which is a CON of 11/503,090 08/10/2006 PAT 8799431
which claims benefit of 60/708,473 08/15/2005

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 07/19/2016

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/201,087**

Projected Publication Date: 10/27/2016

Non-Publication Request: No

Early Publication Request: No
** **SMALL ENTITY** **
Title

VIRTUAL SYSTEMS MANAGEMENT

Preliminary Class

709

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

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

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

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

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	367894-991101
First Inventor	PABARI, Vipul
Title	VIRTUAL SYSTEMS MANAGEMENT
Express Mail Label No.	Via Electronic Filing

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☒ **Fee Transmittal Form** (PTO/SB/17 or equivalent)
2. ☒ **Applicant asserts small entity status.** See 37 CFR 1.27.
3. ☐ **Applicant certifies micro entity status.** See 37 CFR 1.29. Applicant must attach form PTO/SB/15A or B or equivalent.
4. ☒ **Specification** [*Total Pages* 39] Both the claims and abstract must start on a new page. *(See MPEP § 608.01(a) for information on the preferred arrangement)*
5. ☒ **Drawing(s).** (*35 U.S.C. 113)* [*Total Sheets* 18]
6. **Inventor's Oath or Declaration** [*Total Sheets* 3] *(including substitute statements under 37 CFR 1.64 and assignments serving as an oath or declaration under 37 CFR 1.63(e))*
   a. ☐ Newly executed (original or copy)
   b. ☒ A copy from a prior application (37 CFR 1.63(d))
7. ☒ **Application Data Sheet** **See Note below.* See 37 CFR 1.76 (PTO/AIA/14 or equivalent)
8. ☐ **CD-ROM or CD-R** in duplicate, large table or Computer Program *(Appendix)*
   ☐ Landscape Table on CD
9. **Nucleotide and/or Amino Acid Sequence Submission** *(if applicable, items a. – c. are required)*
   a. ☐ Computer Readable Form (CRF)
   b. ☐ Specification Sequence Listing on:
      i. ☐ CD-ROM or CD-R (2 copies); or
      ii. ☐ Paper
   c. ☐ Statements verifying identity of above copies

ADDRESS TO: **Commissioner for Patents, P.O. Box 1450, Alexandria VA 22313-1450**

ACCOMPANYING APPLICATION PARTS

10. ☐ **Assignment Papers** (cover sheet & document(s)) Name of Assignee ToutVirtual, Inc.
11. ☒ **37 CFR 3.73(c) Statement** ☒ **Power of Attorney** *(when there is an assignee)*
12. ☐ **English Translation Document** *(if applicable)*
13. ☒ **Information Disclosure Statement** (PTO/SB/08 or PTO-1449)
    ☒ Copies of citations attached
14. ☐ **Preliminary Amendment**
15. ☐ **Return Receipt Postcard** *(MPEP § 503) (Should be specifically itemized)*
16. ☐ **Certified Copy of Priority Document(s)** *(if foreign priority is claimed)*
17. ☐ **Nonpublication Request** Under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent.
18. ☐ **Other:**

***Note:** (1) Benefit claims under 37 CFR 1.78 and foreign priority claims under 1.55 **must** be included in an Application Data Sheet (ADS).
(2) For applications filed under 35 U.S.C. 111, the application must contain an ADS specifying the applicant if the applicant is an assignee, person to whom the inventor is under an obligation to assign, or person who otherwise shows sufficient proprietary interest in the matter. See 37 CFR 1.46(b).

19. CORRESPONDENCE ADDRESS

☒ The address associated with Customer Number: 26379 **OR** ☐ Correspondence address below

Name					
Address					
City		State		Zip Code	
Country		Telephone		Email	

Signature	/Timothy W. Lohse/	Date	July 1, 2016	
Name (Print/Type)	Timothy W. Lohse		Registration No. (Attorney/Agent)	35,255

This collection of information is required by 37 CFR 1.53(b). 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 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, 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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VIRTUAL SYSTEMS MANAGEMENT

Related Applications/Priority Claims

This application is a continuation of and claims priority under 35 USC 120 to U.S. Patent Application Serial No. 14/450,765 filed on August 4, 2014 and entitled "Computer Network Systems to Manage Computer Network Virtualization Environments" which in turn is a continuation of and claims priority under 35 USC 120 to U.S. Patent Application Serial No. 11/503,090 filed on August 10, 2006 and entitled "Virtual Systems Management" which in turn claims priority under 35 USC 119(e) to U.S. Provisional Patent Application No. 60/708,473, filed on August 15, 2005, the contents of all of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention.

The present invention relates generally to computer network systems and, more particularly, to management of computer network virtualization environments.

2. Description of the Related Art.

Information Technology (IT) management tasks can be characterized into two general areas, managing present day operations and forecasting capacity for future operations. Ensuring the well being of the current IT environment while using current trends to predict needs and trends for the future business needs is a fine balance and a highly refined skill. Management needs all the help and tools it can find to assist it in these tasks. Today, all major IT management platforms support the International Telecommunications Union (ITU) standard for Element Management Systems (EMS), wherein general functionality can be split into five key areas: Fault, Configuration, Accounting, Performance, and Security (FCAPS).

This conventional methodology has created an element-driven management system, with a focus on ensuring that each of the individual elements are running to their full potential. As the number of elements grew, the need for aggregated and correlated information increased. As the number of data-center locations grew, the need for global visibility and control increased. Conventionally, IT capacity planning for day-to-day operations is typically carried out with a

bottom-up data aggregation and with the use of forecasting methods such as trending, simulation, and custom analytics.

Capacity planning for resources is also typically completed when new business applications are rolled out or during an application upgrade cycle. In this capacity planning scenario, the planning is typically carried out at the individual device level, which is then multiplied by the number of consumers and/or producers and further multiplied by the number of locations that need to be supported, giving a large number in the aggregate: (number of individual devices) x (number of consumers/producers) x (number of locations requiring support).

In order to estimate what resource capacity an enterprise will need to support the core business applications it provides, an enterprise will typically evaluate the worst case usage scenario, and bolster its capacity to ensure that a worst case scenario will be adequately supported. What is often overlooked is that this type of worst-case capacity planning typically is driven by the vendors who have built ROI calculators that are to their benefit.

By planning and bulking up resources to combat this evasive worst case scenario, enterprises typically end up with under-utilized IT resources. Applying the Pareto Principle, an estimate of how much under-utilized capacity can exist in a single enterprise would be as follows: only 20% of the available capacity ends up being used during 80% of the time during a given timeframe.

Many improvements have been made in the enterprise scenario for management of IT resources. At the macro-level, IT resources can be classified into 4 categories: (1) client resources (client resource examples include desktop machines, wireless, handheld devices, client grids (such as SETI@home and the like); (2) server resources (server resource examples include mainframe, File Server, Web server, peer-to-peer servers, blade servers, grid servers etc.); (3) network resources (network resource example include routers, switches, bridges, infiniband, wireless, radio, optical, fiber channel, link aggregation technologies (such as BitTorrent and the like); (4) storage resources (storage resource example include databases, network attached storage, storage area networks, data grids etc.). While one can describe a capacity planning scenario for each of the categories above, they all follow a very similar capacity planning process.

In the following example, we will describe a typical server resource capacity planning scenario. Servers in the enterprise have evolved with new application architecture. Application topologies have evolved from Mainframe-Green Screen interaction, to Client/Server, to Client/Web Server/Application Server/Database, Peer-to-Peer, and so forth. Server resource capacity planning is typically achieved by stress-testing the application with a certain predetermined workload and a set, acceptable application response time. A hardware specification is defined to support a user-defined worst-case scenario. The application is rolled out on the new hardware into a production environment.

Server resource and application utilization is monitored by a FCAPS-compliant management platform to provide complete visibility over operations. In order to provide an aggregated summary view, such management platforms typically roll-up element-level metrics into higher level metrics through data correlation techniques.

Conventionally, with the emergence of resource virtualization and the increase in use of Web services, combined with service-oriented architectures (SOAs), the number of moving pieces that need to be managed for the enterprise continues to rise. For example, imagine an enterprise running composite applications. That enterprise would include using a mixture of legacy, local, and external Web services, running on virtual infrastructure spread globally across the enterprise, and frustrated end users can't complete their mission critical business tasks. It is difficult to achieve sufficient visibility and control to manage such an environment, and knowing where to begin to manage such an environment can be difficult.

Traditional methods of resource planning at the individual physical resource level begin to show their age. For example, correlation and aggregation of element level data also becomes compute-intensive with the increase in the number of managed elements. It has been said that "The information technology industry is in a strange situation. We have enormously sophisticated engines that we're running--in the form of CPUs and communications equipment and so forth, but the way we keep them running is through an outdated vision." Doug Busch, Intel Vice President and CIO-Technology quoted in Intel Magazine, September/October 2004 (available at the URL of: www.intel.com/update/contents/it09041.htm as of June 2005). Management of virtual assets can be achieved conventionally with virtualization software tools, but such techniques are

typically labor intensive and require manual selection and implementation of configurations and utilize relatively cumbersome configuration change management.

In network systems, with virtualization, it is possible to deploy physical resources in the form of virtual assets. The assets can thereby provide the functional equivalent of desktops (user interfaces), operating systems, applications, servers, data bases, and the like. Adding additional applications can be implemented by remotely executed software operations in virtual environments on one or more computers, rather than physical installations involving personnel with an installation CD media at each physical location (computer) of a network where the additional applications are desired.

The management of such virtual assets, however, is becoming increasingly complex and unwieldy. Many tools to assist in the management of virtualization environments are proprietary and work only with virtual environments from particular vendors. Similarly, some virtualization tools might only work with specific central processor units (CPUs) of machines that host the virtual environment, or might only work with specific operating systems or virtualization platforms of either the host machine or in the virtual environment. This characteristic can make it necessary to have multiple tools on hand for the various platforms and vendors that might be deployed throughout a network, as well as making it necessary to acquire and maintain the skill sets necessary to use such tools. The mere fact of requiring such diverse tools is, itself, inefficient. Thus, although virtualization trends show much promise for more efficient utilization of physical resources by optimal deployment of virtual assets, the virtualization environment management task is daunting.

It would be advantageous if more efficient means for managing virtual environments across computer networks were available. The present invention satisfies this need.

SUMMARY

The present invention provides methods and apparatus for management of one or more virtual environments regardless of any underlying central processing unit (CPU) specification and regardless of any underlying operating system (OS) or virtualization environment. In one embodiment of the present invention the virtualization environment is managed through a Control Center application that provides an interface to virtualization environments in communication with

the Control Center computer. The system, through the Control Center, provides active management of the virtualization environment by initiating automatic responses to operational situations that influence dynamic demands on the physical resources and virtual assets. In this way, multiple virtual environments can be managed through a single user interface of a Control Center application even where the underlying CPU of the system physical resources are different from that of the Control Center, even where the operating systems of the Control Center, physical resources, and virtual assets are different, and even where the virtualization environments being managed are different from each other.

In one embodiment, the Control Center can comprise a collection of functional elements characterized as an Asset Manager, a Provisioning Manager, a Dynamic Application Router, an Optimizer, a Performance Manager, and a Capacity Planning Manager. With these functional elements, the process of managing the virtual environment comprises a sequence of building an inventory of available physical resources and virtual assets, provisioning the assets for a desired network virtual configuration, optimizing the mix of physical resources and virtual assets, reporting on the system performance, and planning for future trends and forecasting for needed capacity.

In another embodiment, management of computer network virtualization environments is provided by performing one or more functions from among the set of functions including (1) identification and management of network resources and virtual assets, (2) provisioning of virtual assets in response to network workflow demands, (3) dynamic deployment of virtual assets across the computer network, (4) performance measurement and reporting of resources and virtual assets, and (5) planning and forecasting of resource demands and asset utilization of the virtualization environment, such that the functions are carried out without regard to processors, operating systems, virtualization platforms, and application software of the virtualization environment. In this way, an inventory of resources and assets available at a network virtualization environment is determined, prioritization is assigned to an inventory of available resources and assets, and the inventory is utilized by allocating the virtual assets in the virtualization environment. The allocated virtualization environment is automatically managed by determining real time performance metrics for the environment, and producing a reallocation of

the inventory based on the real time performance metrics. In this way, automatic and efficient virtualization management of a computer network is provided.

Other features and advantages of the present invention should be apparent from the following description of the preferred embodiment, which illustrates, by way of example, the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

Various embodiments of the present invention taught herein are illustrated by way of example, and not by way of limitation, in the FIG. s of the accompanying drawings, in which:

FIG. 1 is a schematic diagram that illustrates a virtualization system embodiment constructed in accordance with the invention;

FIG. 2 is a schematic diagram that illustrates the Control Center components for the Control Center computers illustrated in FIG. 1;

FIG. 3 is a schematic diagram that illustrates the configuration of a virtualization platform network computer shown in FIG. 1;

FIG. 4 is a schematic diagram that shows the construction of the Control Agent in the computer of FIG. 3;

FIG. 5 is a flow diagram that illustrates the operation of the Control Center and Control Agent;

FIG. 6 is a representation of the virtualization configuration with which the present invention can be deployed;

FIG. 7 is a screen shot of a display produced by the user interface of the Control Center computers of FIG. 1;

FIG. 8 is a screen shot of the Physical View display page of the user interface, accessed from the Control Center computers of FIG. 1;

FIG. 9 is a screen shot illustration of a Control Center display that shows a topology view of the virtual environment under management;

FIG. 10 is an expanded view screen shot of the topology view shown in FIG. 9;

FIG. 11 is a block diagram representation of a server virtualization configuration management that can be implemented from a computer such as illustrated in FIG. 1;

FIG. 12 is a block diagram representation of a storage virtualization configuration management that can be implemented from a computer such as illustrated in FIG. 1;

FIG. 13 is a block diagram representation of a network router virtualization configuration management that can be implemented from a computer such as illustrated in FIG. 1;

FIG. 14 is a block diagram representation of a desktop computer virtualization configuration management that can be implemented from a computer such as illustrated in FIG. 1;

FIG. 15 is a screen shot of the Physical View display page of the user interface for a storage virtualization, accessed from the Control Center computers of FIG. 1;

FIG. 16 is a flow diagram that illustrates operation of the computer such as illustrated in FIG. 1;

FIG. 17 is a flow diagram that illustrates operation of Knowledge Block processing so the computer such as illustrated in FIG. 1 can operate; and

FIG. 18 is a flow diagram that illustrates operation of the Control Center interface for the computers illustrated in FIG. 1.

In the drawings, like reference numerals refer to like structures. It will be recognized that some or all of the Figures are schematic representations for purposes of illustration and do not necessarily depict the actual relative sizes or locations of the elements shown. The Figures are provided for the purpose of illustrating one or more embodiments of the invention with the explicit understanding that they will not be used to limit the scope or the meaning of the claims.

DETAILED DESCRIPTION

In the following paragraphs, the present invention will be described in detail by way of example with reference to the attached drawings. While this invention is capable of embodiment in many different forms, there is shown in the drawings and will herein be described in detail specific embodiments, with the understanding that the present disclosure is to be considered as an example of the principles of the invention and not intended to limit the invention to the specific

embodiments shown and described. That is, throughout this description, the embodiments and examples shown should be considered as exemplars, rather than as limitations on the present invention. Descriptions of well known components, methods and/or processing techniques are omitted so as to not unnecessarily obscure the invention. As used herein, the "present invention" refers to any one of the embodiments of the invention described herein, and any equivalents. Furthermore, reference to various feature(s) of the "present invention" throughout this document does not mean that all claimed embodiments or methods must include the referenced feature(s).

FIG. 1 is an illustration of a network implementation of a virtualization environment 100 constructed in accordance with the invention for virtualization system management such that resource utilization is highly leveraged. Users at network computers 102, 104, 106 can communicate over a network 108 to gain access to system resources that are available through Control Center computers such as Control Center A 110 and Control Center B 112. Each of the Control Center computers 110, 112 executes application software and thereby manages one or more virtual environments regardless of any underlying central processing unit (CPU) and regardless of any underlying operating system (OS) or virtualization platform software. For example, a Control Center computer can manage resources and virtual assets that are powered by CPUs from Intel Corporation of Santa Clara, California USA or from Motorola, Inc. of Schaumberg, Illinois USA, or other vendors. The physical resources and virtual assets can be managed from the Control Center computers whether the underlying OS of the computers, resources, and assets is a Windows-based OS from Microsoft Corporation of Redmond, Washington USA or a Macintosh OS from Apple Computer Inc. of Cupertino, California USA or others, and whether the virtualization environment is a platform by VMWare, Inc. of Palo Alto, California USA or International Business Machines Corporation of Armonk, New York USA or others. Operating parameters of the virtualization system management can be specified and changed at the Control Center computers 110, 112 through a user interface that is provided by the application software described herein executing at the respective Control Center computers 110, 112. The Control Center computers are represented in FIG. 1 as physical devices rather than virtual assets. Deployment of the Control Center on physical devices is typical, because otherwise a Control Center that is deployed on a virtual asset would leave the users with being dependent on

their virtualization platform for configuration management and the like, in addition to the usual machine dependencies.

In this description, physical devices such as computers, printers, routers, and other "boxes" will be referred to as resources, whereas virtual devices that exist only as software instantiations of equipment objects in a virtual environment will be referred to as virtual assets. The resource-asset dichotomy will be maintained throughout this discussion.

The present invention provides automated management of network-based virtual environments through Control Center software that supports on-demand operation of one or more functions including (1) identification and management of enterprise resources and virtual assets, (2) provisioning of virtual assets in response to network workflow demands, (3) dynamic deployment (routing) of virtual assets across the network, (4) performance measurement and reporting of virtual assets and resources, and (5) planning and forecasting of resource demands and asset utilization. Such operations are carried out without regard to the mix of otherwise proprietary processors, operating systems, virtualization platforms, application software, and protocols. These features and functions are provided in a modular fashion so that desired functions can be included in the system, and functions not desired can be excluded from the system. In any implementation in accordance with the present invention, the virtualization management system is transparent to the virtual environment being managed, in that the system can support multiple virtual environments with different protocols and operating specifications. Thus, the disclosed system is platform-independent.

FIG. 1 shows that the users 102, 104, 106 can communicate with the Control Centers 110, 112 through a network 108, which can comprise a local area network, a wide area network, or through an extended network such as the Internet, or any other network for communication among multiple computers. FIG. 1 also indicates that the users can be connected directly to a Control Center computer, if desired, such as for the user 106 indicated as User 3.

Each Control Center computer 110, 112 that is equipped with the virtualization management application described herein will have management of one or more physical assets within a domain or other subnet arrangement associated with the respective Control Center. FIG. 1 shows that Control Center A 110 manages multiple resources, two of which are shown: a first

set of resources 120 and a second set of resources 122. For ease of illustration, each set 120, 122 may be considered in the context of a computer rack system containing multiple computer physical assets. It should be understood that additional physical resources can be managed by the Control Center A, but are not shown in FIG. 1 for simplicity of illustration.

The first set of resources 120 are illustrated as comprising two blade servers, indicated in FIG. 1 as Blade 1 and Blade 2. The second set of resources are illustrated as comprising two additional blade servers, Blade n and Blade n+1. Thus, a number of different resources can be accommodated. It should be understood that the resources could comprise other devices or equipment, such as memory devices, printers, routers, and the like. It should also be understood that the blade servers themselves (Blade 1, Blade 2, …, Blade n, Blade n+1, …) can be configured to support a variety of virtual assets, including desktop computer environments, data storage, application servers, routers, and the like. FIG. 1 shows that Control Center B 112 manages two sets of resources, illustrated as Rack B1 and Rack B2. As with the Control Center A, it should be understood that the actual physical resources that make up Rack B1 130 and Rack B2 132 can comprise a variety of network-based computer equipment.

FIG. 2 is a schematic diagram that illustrates the application components for the virtualization management application of the Control Center computers 110, 112 illustrated in FIG. 1. The components enable the Control Center computers to function according to the description herein to provide automatic, network-based virtualization management independently of underlying processors, operating systems, and virtual environments. FIG. 2 shows the Control Center computer as including an Asset Manager 204, a Provisioning Manager 206, a Dynamic Application Router 208, an Optimizer 210, a Performance Manager 212, and a Capacity Planning Manager 214. In addition, a Virtual Mapping engine 216 is included, for determining the physical resources and virtual assets with which the Control Center will communicate. The Virtual Mapping engine is programmed to discover the physical resources, such as the physical devices with which the Control Center is in network communications, and also the virtual resources, such as virtual servers, storage, desktops, and the like with which the Control Center has access. The Virtual Mapping engine 216 can be self-starting, such as being launched at Control Center start-up or at some other predetermined system event, or the Virtual Mapping engine can be initiated by a user via a command.

As described further below, the illustrated embodiment of the Control Center 202 is configured in a modular fashion, such that the installation of the Control Center of the computers 110, 112 in FIG. 1 need not include every one of the modular components 204-214 illustrated in FIG. 2. Rather, system requirements and user needs may be such that less than all of the Control Center components are installed on any one Control Center machine of the system. Any installation of the Control Center, however, will include the Virtual Mapping engine 216, so that the Control Center will be suitably informed of its environment. A more detailed description of the functionality for each of the modular components 204-214 is provided below.

Asset Manager

The Asset Manager 204 provides visibility and management of all global virtual assets available to the Control Center. This component provides a global view of all the resources used in a virtualized infrastructure along with a physical and logical topology view. Thus, a user can view a global topology view and an inventory of virtual infrastructure from a central console. In addition, the component will support discovery and configuration of virtual resources, allow topology views for physical and logical infrastructure, provide inventory reports at local, remote, and global context, and simplify management of applications, hardware resources, virtual assets, and operating systems.

Provisioning Manager

The Provisioning Manager 206 provides an on-demand solution for provisioning of virtual assets for an automated workflow management. This component provides an automated solution allowing users to request and schedule their individual virtual asset needs and IT management to prioritize and provision the required assets on demand. The component can be used to provide a portal for users' virtual asset requests showing available virtual assets, as well as a supervisor portal to prioritize needs and approve asset needs by time and priority, and also provides an IT manager to provision the needed resources and keeping track of used and available assets, an automated workflow system for users and IT to track needs and resources, supports the ability to keep mission critical application and assets to put them on line on demand for emergency and disaster recovery needs, and provides a repository of virtual machines supporting VMWare, Microsoft and Xen virtual assets and their needed hardware components. The Provisioning

Manager provides central management of global virtual machine images, provides an enterprise workflow system for adds, moves and changes in virtual infrastructure, and can be used to standardize and optimize virtual infrastructure use from lab to production environment, such as needed in different development testing scenarios.

Dynamic Application Router

The Dynamic Application Router 208 provides real time and dynamic routing of applications running on virtual infrastructure. With this component, users of the Control Center can move applications running on virtual assets by comparing application usage with business policy and drivers, and scheduling appropriate routing actions. This component can be used to move applications to different virtual assets as global business need changes, provide dynamic allocation of global virtual assets for workload optimization, enable zero down time in upgrading virtual environments, provide an optimizer for balancing resource and asset inventory against needs, a scheduler to auto schedule actions and provide reports, and provide alarms and triggers to notify users of out of balance inventory items. The component also provides an aggregated action library for all virtual infrastructure, performs zero downtime virtual asset maintenance and upgrades, ensures a high availability plan for mission critical applications running on virtual infrastructure, can compare business policy against real time asset usage and then make load balance changes, and can provide top 10 recommendations for solutions.

Optimizer

The Optimizer 210 component operates on the virtual assets of a physical resource to provide efficient configuration of the assets in accordance with a set of business rules. For example, the Optimizer component may operate on a user desktop or on a server that manages a virtual environment so as to configure an efficient combination of applications and assets, such as virtual devices of the host machine. In this way, the Optimizer provides a user with control over how virtual assets use the underlying physical resources. Users can set business policies based on application criticality and can let the Optimizer allocate appropriate physical resources in accordance with the business policies. The Optimizer can allocate resources such as CPU, network, memory, hard disk, and the like in accordance with the business policies that have been set by the user. Configuration of the business policies lets the user have a high degree of control

over the allocation of resources. For example, users can set a maximum limit on how much each virtual asset can use the underlying physical resource.

Performance Manager

The Performance Manager component 212 provides availability and performance management for all virtual assets in the system. This component shows performance of virtual asset usage, provides key performance matrices and metrics, and identifies future potential bottlenecks. The component can be used to provide real time monitoring and viewing of all virtual assets usage, measure and trend performance and show it against plan, provide triggers, alerts, and alarms for key performance matrices and metrics, identify current and predicted bottlenecks, and provides a cross-platform solution.

Capacity Planning Manager

The Capacity Planning Manager component 214 provides capacity planning, trending and forecasting based on usage and needs. This component provides capacity planning, trending and forecasting of virtual assets based on historical trends and future projected business needs. The component can be used to show used versus available capacity of virtual assets, trends capacity usage and compares it with thresholds, provides historical trend reports, provides forecasting of future needs, and provides alarms and triggers based on capacity usage and thresholds.

FIG. 3 is a schematic diagram that illustrates the configuration of an embodiment of a network computer device 300 constructed in accordance with the present invention to provide a virtualization environment that is managed by the Control Center described herein. The computer device is, therefore, a physical resource of the network 100. For example, the computer device 300 can comprise a blade server, such as one of the blade servers 120, 122 illustrated in FIG. 1. That is, the computer device 300 can comprise a desktop computer system, a laptop, a blade server, conventional server, or other computing machine that includes hardware components 302. In FIG. 3, the hardware components are illustrated as including input/output facilities 304 (such as keyboard, display, mouse, and printer facilities), a central processor unit (CPU) 306, memory 308, mass storage 310 (such as disk drives), and a network interface card 312 for network communications. Those skilled in the art will understand that not all of the hardware components shown are necessary for successful operation of the computer device 300 in the network 100.

The hardware components of the device 300 will depend on the system requirements and the function of the device within the network.

The computer device 300 includes an application that provides a virtualization layer 322 that manages virtual assets 326. Thus, the computer comprises a host machine for the virtualization environment. In FIG. 3, the virtual assets are illustrated as two virtual computers, or machines, a first Virtual Machine 328 and a second Virtual Machine 330. Each virtual machine can include an operating system (OS) for the virtual machine, computer applications programs executing on the virtual machine OS, and virtual hardware assets for the virtual machine. In FIG. 3, the first Virtual Machine 328 is shown as including an application program "App 1", an application program "App 2", and two instances or copies of an application program "App 3". The second Virtual Machine 330 is shown with one instance of App 1, one instance of App 3, and single instances of applications App 4 and App 5. As noted above, any one of the computer host machines, or boxes, of the network 100 can include a greater or lesser number of virtual machines. Two virtual machines are shown in FIG. 3 for purposes of illustration. Likewise, a greater or lesser number of applications running on the virtual OS can be provided. There is similar flexibility in the configuration (type and number) of OS and hardware assets of each virtual machine.

In accordance with the invention, a Control Center (such as illustrated in FIG. 2) manages the virtual assets of each computer host machine 300 for which the Control Center is responsible. To accomplish such functionality, the Control Center must communicate with the virtualization layer of the host machine. FIG. 3 shows that a Control Agent 324 can be installed on the host machine 300 to facilitate such communication. The Control Agent 324 provides an interface between the hardware resources 302 of the host and the Virtualization Layer software 322. The Control Agent 324 facilitates communication between the external Control Center components 204-214 (FIG. 2) and the Virtualization Layer 322 of the host machine, and provides a common interface to the variety of virtualization software that might be available on the host machine. For example, the Virtualization Layer may be provided by products from VMWare, or Xen, or Microsoft, or IBM Corporation, or other visualization platforms or emulation interfaces. In this way, the Control Agent acts as a universal adapter between the Control Center and the virtualization layer platforms of the host machines in the network. In some cases, it might be

possible for the Control Center components (FIG. 2) to communicate directly with the Virtualization Layer 322 without need for a Control Agent 324, in which case there will be no Control Agent 324 installed at the host machine.

For example, if the Asset Manager component 204 can communicate directly with the Virtualization Layer using native interfaces of the virtualization layer, then the Control Agent 324 is not needed. This would likely be the case if, for example, the virtualization layer is provided by VMWare, which includes controls needed for external communications. Other virtualization software, such as provided by Xen and Microsoft, does not typically include such native controls and therefore a Control Agent 324 would be necessary. Those skilled in the art will appreciate that such controls typically include actions such as "Move VM", "Migrate VM", "Clone VM", and the like, which support movement, migration, and cloning of virtual machines and which usually can be invoked programmatically by all virtualization platforms. It is these controls that may be implemented by the Control Agent 324 , in the absence of a native control in the virtualization platform. If the host machine does include a Control Agent 324, then the Control Agent 324 will have components to facilitate communication between the Control Center and the Virtualization Layer 322. In an alternative embodiment, the Control Agent 324 can be integrated into the Control Center itself, such that the Control Center can communicate directly with the Virtualization Layer 322 of the host machine, regardless of the virtualization middleware that is actually installed at the host machine. Those skilled in the art will understand how to integrate the functionality of the Control Agent 324 described herein into the Control Center, without further explanation, in view of the description provided.

FIG. 4 is a schematic diagram that shows the construction of the Control Agent 324 with components for virtualization communication and management. These are the components that enable the Control Agent 324 of a host machine (that is, the machine on which the Control Agent 324 is installed) to communicate with the Control Center of an external network machine. FIG. 4 shows that the Control Agent 324 includes a Communication Abstraction Layer/Adapter 402. This component ensures that the Control Agent 324 can communicate with the hardware resources of the host machine, such as network communications devices, through which the Control Agent 324 can send and receive data with one of the external Control Centers 110, 112.

In the Control Agent 324, an Action Event Receiver 404 receives notifications about incoming events for which a response or action is required. Such notifications will typically involve, for example, changes in status of a virtual machine or requests for action or service. The Control Agent 324 also includes a Server Monitor 404 that checks for status of the virtual applications of the host machine, and also checks the status of the external Control Center with which it is communicating. As noted above, each host machine is associated, or managed, by a designated Control Center. The Control Agent 324 also includes an Event Dispatcher 408, which initiates actions by the host machine in response to the incoming events received by the Action Event Receiver 404. A Control Center Interface Layer 414 provides a monitoring interface function, a management interface function, and a statistics interface function for data exchange between the Control Agent 324 and the associated Control Center. A Virtual Platform Abstraction Layer 416 permits communications between the host machine 302 resources and a set of multiple middleware adapters 418, as described further below.

In the server virtualization of the illustrated embodiment, the Control Agent 324 acts as a proxy between the Control Center 110, 112 and server instances. The Control Agent manages the messaging between the Control Center and the actual VMs. The Control Agent 324 will be created per host and per VM, as required. The Control Agent communicates with the Control Center through a communications protocol, such as the WS Management Catalog Protocol specification, wherein the Control Agent 324 is implemented as a service and will have the set of virtual assets that it manages. Other communications schemes can be used, as will be known to those skilled in the art. The VM's and Hosts are the available resources, as specified by the protocol. The Control Agent 324 is assigned a unique URI and will provide a selector to select a VM instance running within the server.

The Control Agent 324 can create a VM using a Resource configuration feature. The Control Agent 324 is responsible for a variety of tasks, including:

collecting Statistics from the VM's and hosts;

monitoring the health of the VM's and hosts;

generating Alarms when the VM's are out of balance;

monitoring the various events generated by the VM's and sending an appropriate alert to the Server;

communicating the VM / host status to the server;

performing management actions such as Create a VM, Suspend VM, Stop VM, and Move VM.

The Control Agent 324 also supports communication between the Abstraction Layer 416 and different Virtualization servers (virtualization platforms). The Abstraction Layer supports interfaces for monitoring, managing, and collecting statistics from the VMs and hosts.

The Control Center 110, 112 can start the Control Agent 324. The Control Agent 324 has its lifecycle independent of the Control Center and can handle reconnection with the Control Center, when it starts.

The Control Agent 324 also controls and monitors the health of the host machine. The Control Agent 324 is responsible for mining the system performance statistics such as the network performance, memory usage, and the disk usage of the host and passing these statistics on to the Control Center.

If a particular VM fails, the Control Agent 324 tries to restart the VM, or if that fails, sends out an alarm message to the virtual server.

Data constructs, such as Communication Objects, implement the communication protocols between the Control Agent 324 and the Control Center 110, 112. The communication protocol can be based on the WS Catalog protocol, in use by VMWare. Other suitable protocols will occur to those skilled in the art, in view of this description.

The Control Center has virtualization management responsibilities that include:

managing / monitoring Control Agents 324 ;

triggering Business Rules in the case of Alarm messages;

launching / moving applications to different virtual machines based on the VM work load (the Server makes the decisions and the request is sent to the Control Agent 324 to perform the operation;

balancing workload across different hosts /VM's;

performing Scheduled events;

re-initiating a Control Agent 324 in case of a failure;

aggregating the performance statistics across all the Control Agents 324 ;

providing management API's for the Control Center console (user interface) with which an administrator can monitor / manage individual host machines (physical devices) and VMs.

The Control Center includes the following functional components to perform the above-mentioned responsibilities:

an Event Receiver that receives messages from the Control Agent 324 and passes them on to an Action Manager. The Event Receiver is also responsible for generating a timeout event that will be triggered if no Ping/Alarm/Report Status messages are received after a configured period of time;

a Host Monitor that sends out heartbeat messages s to the Control Agent 324 (similar to a ping) to ensure that the host is available. When a Host Monitor detects that a host is not available, it will provide the Host Manager with that information;

Host States, which include two distinct states, from the point view of other machines managed by the server: either Offline, in which the host is not a fully active member of the virtualization infrastructure, wherein the host and VMs deployed may or may not be running; and Online, in which the host is a fully active member of the virtualization infrastructure, wherein the host maintains heartbeats, mines system performance statistical data, and can own and run Control Agents 324;

a Host Manager that is responsible for controlling host machines with Control Agents 324. For each Host, the Host Manager will launch one Control Agent 324. When a Host Monitor detects that a host is not available, the Host Manager tries to send a double-check ping message to the suspected unavailable

host. If that host does not respond, the Host Manager will first try to launch a new Control Agent 324 process over that host before changing the Host State to indicate it as 'Offline' and implementing fail-over of its VM's to other Hosts;

a Scheduler that is responsible for scheduling applications based on a business policy. The Scheduler generates a set of actions to be performed based on certain business rules and the business policy. The actions are passed on to an Action Manager. The Action Manager is responsible for executing the actions;

an Action Manager that receives actions from the Event Receiver, Host Manager, and the Scheduler. The choice of host for performing actions such as CreateVM, MoveVM is made by a Load Balancer process. The Action Manager submits a list of hosts and VM actions to the Load Balancer process. The Load Balancer, based on certain business rules and also the load on the hosts, maps the VMs to the host machines.

The operation of the components described above can be better understood with reference to FIG. 5, which illustrates the operation of the Control Center and Control Agent 324. The operation of FIG. 5 begins with a halt condition of a VM, for example "VM1", which generates an event message that is sent to an Event Receiver of the Control Center. This condition is represented by the diagram box numbered 502. Next, at box 504, the Control Agent attempts to restart VM1. In this example, the restart fails, and therefore the Control Agent 324 sends a message to the corresponding Server Monitor (box 506). That is, a condition is detected by the Control Agent 324 and, once detected, the Control Agent 324 will attempt to rectify the condition. If that attempt fails, then the Control Agent 324 informs the Control Center with an event message and the Control Center processes the event with the Event Receiver.

At box 508, the Control Agent 324 message is received at an Event Receiver, and Business Rules are executed to determine the available hosts for supporting the type of virtual machine that has failed. At box 510, the Load Balancing procedure identifies a host machine from the list of available hosts. Next, at box 512, the Event Dispatcher sends the failure event message to the Control Agent 324 of the selected host machine. Lastly, the Action Event Receiver of the

selected host machine receives the event message and performs the action (startup VM) to restore the failed virtual machine.

Returning to the description of FIG. 4, the Control Center Interface Layer 414 enables the Control Agent 324 to communicate with the associated Control Center to provide the Control Center with information about the status of the host machine (monitoring function), receive instructions and commands from the Control Center (management), and report on operational information (statistics). Thus, the Interface Layer extends these three functional areas involving administration, monitoring, and performance statistics.

The Administration aspect of the Control Agent 324 provides all the methods that are required for managing a virtual server, such as the GSX / ESX server platform from VMWare, and the virtual machines under its supervision. All methods related to starting, stopping, cloning, and moving a virtual machine are managed through the Administration interface.

The Monitoring aspect of the Control Agent 324 provides methods to check virtual machine status and review heartbeat information for a virtual machine. The monitoring interface includes methods to get the statistical information and compare it with specified thresholds and generate Action Events. The Control Agent 324 operation includes a "getAllEvents" method that validates each threshold value and generates the necessary Action Events.

The Statistical aspect of the Control Agent 324 collects the statistical information. The methods used by the Control Agent in these duties are responsible for obtaining performance statistics for CPU performance, disk performance, memory performance, and network performance. Those skilled in the art will understand the various performance metrics by which such performance is typically judged. The Control Agent 324 operation therefore includes methods such as getCPUperfStats, getDiskPerfStats, getMemoryPerfStats and getNetworkPerfStats, which are responsible for returning corresponding specific statistical objects such as CPUStats, DiskStats, MemoryStats, and NetworkStats. These methods are supported for a variety of servers, such as ESX servers, and some servers will require the Control Agent 324 to make system calls to obtain the information, such as for GSX servers.

As noted above, the Virtual Platform Abstraction Layer 416 of the Control Agent 324 includes a set of multiple middleware adapters 418. The middleware adapters communicate with

the virtualization environments of the host machine 302. These virtualization environments are shown in FIG. 4 as including platforms by VMWare 420, Xen 422, Microsoft 424, IBM 426, and also emulation solutions 428. It should be understood that these depicted platforms are for purpose of illustration only; additional or alternative virtualization platforms can also be accommodated.

To provide an abstraction layer over a variety of virtualization servers such as from VMWare, Xen, and Microsoft, the Abstraction Layer 416 of the Control Agent 324 provides a common API access for the virtualization servers. To do so, the Control Agent 324 includes components in accordance with the virtualization platform and communication management protocol, components such as:

a Communication Object Layer that manages services management events and translates to corresponding method calls, in accordance with the communication management protocol in use for the virtualization platform, such as JMS Events and in the case of the VMWare virtualization platform;

an Agent Interface comprising a generic interface that supports at least three interfaces including Administration, Monitoring, and Statistics, and uses a factory pattern to create an Agent Object specific to VMWare, Xen or Microsoft, or whatever the virtualization platform as desired;

a Virtualization Platform Agent, such as a VMWare Agent as an implementation class for an Agent Interface that is specific to VMWare platforms, and which uses JNI to call the COM layer on MS platform and uses JPL on Linux and Solaris;

a JNI DLL comprising an ATL dll that wraps the VMCOM object, wherein the COM functionality is exposed as method calls that can be accessed through JNI;

VMCOM interfaces, such as VMserverCtl, VMCtl, IConnectParams;

a VMIQAgent that is designed to be a web service with certain exposed methods, which for applicable communication management protocols may

comprise a JMS Client application that produces / subscribes to certain sets of events for the required communication protocols. On startup, the VMIQAgent will use the Agent Factory class to create the VMWare Agent object. The information about the Virtualization server can be maintained as a part of the Agent Configuration file, which will only maintain the Virtualization server name, such that the details of the server, such as whether it is a GSX Server or ESX Server, will be obtained by querying the server itself.

For example, the Control Agent 324 may include a "VMWareAgentImpl" class for implementation of a Control Agent 324 interface to VMWare systems. This implementation class makes calls to classes called "VMServerCtl" and "VMCtl", wherein the VMServerCtl class includes methods related to the GSX and ESX servers. The VMServerCtl class is implemented as a singleton class. There would be only one instance of the Server object. This discussion assumes that there will be only one server per host (GSX server or ESX server). A host will not have the virtual machines of multiple virtualization servers (such as VmWare, Xen, and Microsoft). The server object will maintain a map of the VMName-to-VMCtl objects. The lookup will be on VMNames. The user can give the same name to multiple virtual machines on a server. Currently, VMWare does support duplicate names. The VMCtl and VMServerCTL classes invoke the com / perl interfaces of VMWare using JNI wrapper and JPL, respectively. The JNIWrapper is a DLL file which exposes methods from the VMCOM object.

The operations of the Control Center and Control Agent 324 to manage the virtual environment will support various use cases, or operating scenarios, including creation and startup of virtual machines (VMs). Such operations are described as follows for a VMWare environment (corresponding operations for other virtualization environments will be known to those skilled in the art, in view of this description):

Create VM

1. In order to create a VM on a particular host, the VM Manager first copies the "vmdk" file and the "vmx" file to the host machine using ssh and then send an event to the host.

2. The event message contains the following information

VM Name--Name of the VM to be created

VMTemplateInfo--Template details include type of server, location of the vmx and .vmdk files.

3. The event is received by the Control Agent 324.

4. createVM method is invoked by passing the VMName and the template info

5. VMWareAgentImpl class then modifies the display name to the VMName and the vmdk file reference in the vmx file.

6. VMWareAgentImpl class then checks for an existing VM with the same name and checks to see if the configuration file is the same. If not, then registers the VM with the GSX / ESX server.

StartVM

1. VM Manager sends an event to the VMIQAgent on a particular host to start a VM. The message contains the VMName.

2. The VMIQAgent receives the message and then calls the VMWareAgentImpl 's StartVM Method.

3. VMWareAgentImpl looks up the VMCtl object corresponding to the VMName in the VMMap

4. Calls a StartVM method of the VMCtl object by passing the vmx file name.

5. The StartVM method returns a task handle.

6. The task status is monitored by the VMWareAgentImpl

7. The VMCOM object returns a task handle. If the task state is completed then the Completed status is returned to the Manager.

8. The VMWareAgentImpl class monitors the task status.

9. If the task status is VM_QUESTION, then a new event is raised to the VM Manager with the QuestionInfo as the message.

10. The event is received by the VMManager - Either through an autoresponse or a manual process an answer is sent back to the VMIQAgent

11. Control Agent 324 receives the message – Message has a reference to the VMName, task id and the answer.

12. VMWareAgentImpl then calls answerVM method of the VMCOM object to set the answer.

13. Procedure is repeated till the task status is set to completed.

Other actions can be supported by suitable methods, as desired:

1. CreateVirtualDisk

2. ChangePermissions

3. Consolidate_VM

4. Snapshot_VM

5. Revert_VM

6. Enable / Disable host

7. Configure CPU, Configure disk, Configure memory, configure Host, Configure Network.

FIG. 6 is a representation of the virtualization environment that can be managed using a computer with the Control Center application described herein, such as the Control Center A 110 and the Control Center B 112 illustrated in FIG. 1. FIG. 6 is a schematic diagram that illustrates the various levels of virtualization that can be reached and managed with the Control Centers. In FIG. 6, multiple end users 602, 604, 606 can access physical resources and virtual assets of the host computer 300. FIG. 6 shows a conceptualized depiction of the access as the multiple users being accommodated through multiple virtual desktops, or user interfaces, through a desktop virtualization layer 608. The desktop virtualization layer presents the users with a collection of virtual assets available to the users as they communicate over the network (see the system

configuration illustrated in FIG. 1). The assets can include multiple applications of the host machine, depicted as "App 1" 610, "App 2" 612, and "App 3" 614 for purposes of illustration. The applications may include word processing, email, Web browsers, servers, and the like. The applications can be supported by middleware software through an application virtualization layer 616. The middleware applications are represented by "MW 1" 618, "MW 2" 620, "MW 3" 622. The middleware applications 618, 620, 622 can access data stores through a storage virtualization layer 624. The data stores are represented in FIG. 6 by databases 626, 628, 630 indicated as DB 1, DB 2, and DB 3, respectively. In accordance with the invention, the Control Center application can perform configuration management and forecasting services for the host computer and the available virtual assets through each of the various virtualization layers 608, 616, 624.

FIG. 7 is a screen shot of a Control Center display produced by the user interface of the Control Center computers 110, 112 of FIG. 1. That is, the Control Center virtualization management application provides a user interface that includes a display such as illustrated in FIG. 7. The "Virtual Manager" program window shows a list of applications in a left window pane corresponding to a virtual environment for the specified host machine, which is illustrated as "XPRO2005" in the left window pane. The Control Center display shows that the XPRO2005 computer includes three applications, which are operating systems, as shown in the detail pane on the right side of the display. The three operating systems are illustrated in FIG. 7 as "Windows XP Professional", "SuSE Linux Enterprise Server", and "Windows 2000 Advanced Server". Other operating systems can be supported by the Control Center.

The setting pane on the right side, below the OS listing pane, shows the user interface feature for setting operating parameters of the Control Center. The priority of the virtual machine under management (VM Priority) can be set with a display slider from low priority to high priority. A high priority setting means that the VM will have a high probability of being instantiated on the host machine under management. A low priority setting means that the VM is a likely candidate for deletion from the virtualization of the host machine if resource utilization is great and if other VMs have a higher priority setting. The virtualization parameters that can be set for the virtualization environment through the user interface of FIG. 7 include settings for operation of CPU, memory, hard disk, and network.

The installed Control Center application provides a network-based, intelligent orchestration engine for automatic management of virtual assets across multiple computer virtualization platforms around a network. The exact management functions that can be performed by the Control Center will depend on the number of components selected for installation on the Control Center computer. The full complement of components are illustrated in FIG. 2 and were described above. The illustrated embodiment described herein is constructed with a modular approach, so that users can select desired components and can leave out the rest. The following description of operating feature details assumes a full installation of all the FIG. 2 Control Center components, except where noted, and the full installation will be referred to as the "application" except where a particular component is singled out for description or mention. It should be understood that installing any one of the FIG. 2 components will provide a user interface that includes the Control Center, albeit with functionality in accordance with the installed components.

The Control Center application provides a centralized repository for virtual infrastructure configuration change management with an audit trail for IT compliance requirements. In accordance with the application, macro-level policies are defined based on business needs. These are implemented as Application Criticality Rules (ACRs), described further below. The Control Center operates as a virtual controller that can mediate between physical server, network, applications, and storage resources. Such mediation can occur based on a combination of portable, application-provided as well as user-defined, Knowledge Blocks (KBs). The Control Center can also provide Adaptive Application Routing (AAR) for virtual assets based on the ACRs. With the Knowledge Blocks, the Control Center can take intelligent actions based on the KBs when any of the ACRs are violated.

The ACRs allow a user to specify business rules for controlling priority settings for applications. For example, in a system with a set of five application App1, App2, App3, App4, and App5, one of the rules could specify that, each morning from 6:00 am to 10:00 am, the five applications will have priorities set as follows: App1 has high priority, App2 has low priority, App3 has medium priority, App4 has low priority, and App5 has high priority. If preferred, the Control Center can provide a priority setting that is numerical, such as a range of integral numbers between 0 (zero) and 10 (ten). Other priority range indicators can be used as desired, such as

colors or other indexes. If traffic to an application is detected as being above a threshold level, another business rule could specify a dynamic response, that the priority for the corresponding application can be adjusted higher. Conversely, action could be specified to reduce priority if traffic is detected as abnormally low. Another business rule could be set for prospective action, for example, such that a particular application is given an increased priority according to time of day.

Control Center management of virtual assets and mediation between physical resources in conjunction with the ACRs provides a robust load balancing functionality with the ability to distribute server load among potential host machines, and determine when and how to increase or decrease the number of VM's to improve overall system throughput.

For purposes of the load balancing function, load can be calculated on a server by following several alternative criteria, or parameters. One parameter can be CPU run queue length, which returns the load as the average number of processes in the operating system (OS) run queue over a specific time period in seconds, normalized over the number of processors. Another parameter is CPU utilization, which returns the load as the CPU usage percentage. Other suitable parameters can include Network Performance (traffic throughput), Disk Performance, which can be measured by the number of bytes read and/or written in a specific time period in seconds, and Memory Performance, mainly by the ratio of the active memory used as compared with total managed memory. If desired, a weighted formula can be used for computing the load on a particular host based on these parameters.

With such parameters available, the load balancing strategy can be implemented with two different strategies: Static load balancing and dynamic load balancing. Static load balancing is similar to having a pre-defined set of minimum and maximum number of VM's that can run on a given host. The Dynamic load balancing approach suggests that, based on the current and the future load on a host, a decision is made as to which VM should run on which host. Once a set of hosts are identified, then the load balancer processing can pick a particular host, by a round-robin or a weighted round-robin method. The load balancer processing would first try to assign the high priority VM's to hosts with minimum load.

The Control Center also provides an interface to the installed configuration management application, which operates in conjunction with observed real-time events on the network. This is achieved through a four-step process that includes (1) monitor, discover and alert tasks, (2) applying user-guided fix automation tasks, (3) automatically applying basic KBs, and automatically applying more complex KBs and user-defined KBs. In addition, the Control Center provides a mechanism to centrally schedule resource re-allocation in response to defined business events.

FIG. 8 and the following drawing FIG. s illustrate the automatic virtualization management in accordance with an embodiment of the invention in the context of managing a collection of virtual assets comprising application servers, but it should be understood that the Control Center virtualization management application being described can also be used to manage other virtual assets, such as user desktops (user interfaces), data storage such as database arrays and attached storage, and network traffic devices such as routers and switches.

FIG. 8 is a screen shot of the Physical View display page of the user interface, accessed from the Control Center computers 110, 112 of FIG. 1. FIG. 8 shows that the Physical View display enables a user to visualize resource utilization relationships. For example, FIG. 8 graphically illustrates two subnets attached to the Control Center computer, indicated as Net 1 and Net 2. This illustrated arrangement is analogous to Control Center B of FIG. 1, which shows Rack B1 and Rack B2 under management of Control Center B. Thus, Rack B1 could correspond to Net 1 and Rack B2 could correspond to Net 2. Alternatively, Net 1 and Net 2 could correspond to other types of network subdivisions. For example, Net 1 and Net 2 could relate to geographical divisions of the network, or could correspond to departmental groupings or subnet groupings.

In FIG. 8, Net 1 is shown as a virtual environment that includes Server 1 and Server 2, each of which manages a VNet 1 and a VNet 2, respectively. Operating on VNet 1 are an instance of App 1, an instance of App 2, and an instance of App 3. Under Server 2, the operating applications include one instance of App 1, an instance of App 4, and an instance of App 5. Thus, VNet 1 and VNet 2 are virtual networks that are deployed within Server 1 and Server 2. This view shows the application topology within the virtual infrastructure, and shows which virtual

asset is running on what physical resource (dependency) and how they are interconnected via virtual networks and physical networks.

Knowledge Block

The Knowledge Block feature can be used to specify analysis rules that can detect application performance degradation. In response to such detection, an alert can be sent over the network, such as an alert message being sent to a network administrator. After an alert message has been sent, the configuration management application can wait for an administrative action, or the application can be set up so as to execute an automatic action. For example, in response to a "crash" of a virtual machine, the application can find the last known "good" VM image from a repository and can deploy that image to the affected machine. In response to overtaxed applications, the application can deploy a new application instance, and can add new application instance information into a network load balancer to indicate the new instance is available and should be considered as part of the "available application pool". In addition, the application can remove a degrading application from the available application pool, or can move a degrading application VM from a group of production servers to a debug server pool. Other functions that can be performed by the application in accordance with Knowledge Blocks include the capture of log files from the degrading application VM, the capture of archive logs and sending of email alert messages to an administrator with the archive log location, and the halting of a degrading application VM and removal of it from the debug server pool.

FIG. 9 is an illustration of a Control Center display that shows a topology view of the virtual environment under management. FIG. 9 shows physical resources and virtual assets such as depicted in FIG. 8, but illustrates particular user interface features of the Control Center software. Thus, FIG. 9 shows three physical servers, representing networks, indicated by network addresses 255.101.0.0, 255.102.0.0, and 255.103.0.0. Machine 1 and Machine 2, which are physical resources, are shown connected to the 255.101.0.0 server, and Machine 3, another physical resource device, is shown connected to the 255.102.0.0 server. Various network management operations can be carried out with a drag-and-drop user interface, represented by the icons arrayed along the left side of the display window. For the objects in the large window pane,

these operations represent moving display objects, connecting objects, and creating instances of objects such as networks, storage, routers, hubs, and the like.

FIG. 10 is an illustration of the FIG. 9 topology view showing Machine 3 expanded. The expanded (Level 1) view shows that Machine 3 is installed with virtual server applications that include "SSB Server", "Oracle with mail", and "SS2000 with mail". These virtual assets are connected so as to comprise a virtual network connected to the 255.101.0.0 server. The menu choices CPU, MEM, NET, and I/O in the Level 1 window for Machine 3 indicate that additional configuration details for these respective characteristics of Machine 3 are available in a Level 2 display (not illustrated) by selection of the corresponding display icons.

FIG. 11 is a block diagram representation of a server virtualization configuration management scheme that can be implemented from a computer such as the Control Center computers 110, 112 illustrated in FIG. 1. FIG. 11 depicts the virtualization management 1102 of the network computer system 100 (FIG. 1) as comprising an association or mapping between the actual Physical Resources, such as a collection of computer hardware machines 1104, to a collection of Virtual Machine Assets 1106, or applications, in accordance with a set of application critical Rules 1108. In a typical system, for example, two physical machines might be sufficient to deploy forty virtual machines, each of which can be assigned a different application to operate and thereby provide services to network users. The configuration of the Virtual Machines 1106 and their corresponding operational applications will be governed by the set of Rules 1108. Thus, if a rule specifies that a particular application has a high priority at a particular time of day, then a respective one of the Control Center computers 110, 112 (FIG. 1) will adjust the deployment of applications among the Virtual Machines 1106 under its management at the appropriate times.

The server virtualization implementation described thus far can be used to control and manage a complete virtualization environment, including assets such as storage assets, virtual routers, and virtual desktops. Such configurations are depicted in FIG. 12, FIG. 13, and FIG. 14.

FIG. 12 is a block diagram representation of how storage in physical servers can be allocated by the virtual server using the system management of the present invention. FIG. 12 depicts the configuration management 1202 of the network computer system 100 (FIG. 1) as

comprising an association or mapping between actual Physical Resources comprising a collection of disk drives or storage devices 1204 to a collection of Logical Units 1206, such as network virtual storage drives, in accordance with a set of application critical Rules 1208. That is, the storage servers (physical resources comprising disks) are mapped to virtual assets (logical units). In a typical system, for example, two physical machines (CPUs with attached data devices) might be sufficient to implement forty logical units, each of which can be assigned a different network drive assignment, such as drive c:, or d:, or e:, and so forth, to operate and thereby provide data storage for network users. The configuration of the Logical Units 1206 and their corresponding virtual drives will be governed by the set of Rules 1208. Thus, if a rule specifies that a particular network drive should have a capacity of 50 GB while a particular application is running, to act as temporary storage for the application, then the configuration management application 110, 112 will adjust the data capacity configuration of the logical unit 1206 to provide the desired capacity, and will load the desired data, for the appropriate operational conditions.

FIG. 13 is a block diagram representation a network router virtualization configuration that can be managed through a virtual server that is managed from a Control Center computer 110, 112 such as illustrated in FIG. 1. FIG. 13 depicts the configuration management 1302 of the network computer system 100 (FIG. 1) for a collection of actual Physical Resources comprising a collection of processing devices for network path control, such as programmable machines or computers otherwise configurable through a virtualization layer to provide control of network paths, such as devices that can operate as routers 1304. The devices 1304 are associated with or mapped to assigned network paths 1306, such as virtual private network (VPN) devices, or secure routers. The mapping is in accordance with a set of application critical Rules 1308. In a typical system, for example, two physical machines (CPUs with attached network communications abilities) might be sufficient to implement a set of forty VPN servers, each of which can be assigned to different network paths or addresses. The configuration of the Network Path devices 1306 and their corresponding routing operations will be governed by the set of Rules 1308. Thus, if a rule specifies that a particular VPN router 1306 should handle traffic for a particular address, then the Control Center virtualization management application will adjust the network path assignment of the VPN router 1306 to provide the desired assignment.

FIG. 14 is a block diagram representation of a desktop computer virtualization configuration that can be managed through a virtual server that is managed from a Control Center such as illustrated in FIG. 1. FIG. 14 depicts the configuration management scheme 1402 of the network computer system 100 (FIG. 1) as comprising an association or mapping between actual Physical Resources comprising a collection of computers or other processing devices 1404 to a collection of Installed virtual asset Applications 1406, such as virtual machine applications including word processing, email, spreadsheet, and Web browser, in accordance with a set of application critical Rules 1408. In a typical system, for example, a collection of physical computing machines 1404 (processing devices such as desktops, laptops, and PDAs) might be sufficient to implement forty virtual user interfaces, each of which can provide a collection of installed applications 1406. The configuration of the Installed Applications 1406 will be governed by the set of Rules 1408. Thus, if a rule specifies that a particular user interface should include word processing and a Web browser during specified times of day, but then delete the browser application at other times of day, then the Control Center virtualization management application will adjust the deployed applications of the logical unit 1406 to provide the desired user interface, for the appropriate operational (time-of-day) conditions.

Although FIG. 11 describes the virtualization management of virtual assets in the context of virtual machines or servers, as noted above, the Control Center application 202 (FIG. 2) described herein also can be used for management of other network virtual assets, such as virtual storage devices, network path devices, and user interfaces (desktops).

FIG. 15 is an illustration of a storage virtualization configuration that can be managed in accordance with the present invention. Those skilled in the art will recognize that FIG. 15 is similar to the illustration of FIG. 8 except for depicting storage devices and virtual storage assets (logical units, or LUNs) in place of servers and virtual applications, respectively. Thus, corresponding details of the discussion above for the server virtualization may be applied to the storage virtualization depicted in FIG. 15, which those skilled in the art will understand in view of this description. Similarly, the present invention can be used in conjunction with other corresponding virtualizations, such as routers and desktops.

FIG. 16 is a flow diagram that illustrates operation of the computer installed with the Control Center application 110, 112 such as illustrated in FIG. 1. When the application is launched, generally on boot up of the computer, the application will first perform a monitor and inventory operation 1602 that will determine the collection of virtual assets available to the computer. The monitor and inventory operation involves the Control Center application communicating with the virtualization platform software to determine a pool of available resource and asset inventory, including user interface inventory (such as installed applications), network servers, network storage devices, network routers and switches, and the like, all accessible from the host machine. As noted above, such communications are facilitated in appropriate situations by the presence of a Control Agent in each host machine. The Control Agent can provide the necessary communications facilities for communications between the host machine and the associated Control Center computer.

After the Control Center determines the collection of available virtualization assets, the next operation is for the application to apply the application rules 1604. These include the Application Critical Rules such as illustrated above in FIG. s 11-14 and any rules defined by the user in Knowledge Blocks or imported as Knowledge Blocks. The next operation is for the Control Center application to enforce the rules 1606. For example, the rules may specify the number of application servers of a particular type that are deployed at given times of the day, or in response to detected network traffic conditions. Other discretionary operations may then continue.

FIG. 17 is a flow diagram that illustrates operation of Knowledge Block processing for the Control Center computer such as illustrated in FIG. 1. In the first operation, the group of rules can be created 1702. These rules can include rules that are default rules common to all implementations of the application, and can also include rules that the user has fashioned for particular purposes using the rule editor. In the next operation, Knowledge Block rules can optionally be imported or exported 1704. In the last Knowledge Block processing operation, the rules are applied 1706. As noted above, application of the rules can result in automatic configuration changes that the Control Center application implements through an interface with the virtualization layer software. Other processing can then take place.

FIG. 18 is a flow diagram that illustrates operation of the Control Center computers 110, 112 illustrated in FIG. 1. In the first operation, real-time performance metrics are obtained 1802. Such metrics include utilization rate for each of the virtual assets, such as virtual network servers, virtual routers, virtual storage, and the like. Such metrics are also used in the load balancing function, as described above. Next, the Control Center application checks for any automatic configuration changes that are called for 1804. For example, one of the rules might specify a specific mix of virtual servers at a given time of day. Depending on the time of day, then, the application might instantiate more or fewer virtual servers, as specified by the rule (KB).

If configuration changes are called for, an affirmative outcome at the decision box 1804, then the Control Center issues commands to the virtualization layer software to implement the desired configuration changes 1806. Those skilled in the art will understand how to implement such configuration changes without further explanation, given the description herein. If no configuration changes are called for, a negative outcome at the decision box 1804, then the Control Center next checks to determine if any of the ACRs or Knowledge Block rules have been violated by any system configuration settings or performance metrics, as indicated by the decision box 1808. If there has been a rules violation, an affirmative outcome at the decision box, then the application reports the violation 1810. The report can take the form of an alert email message generated by the Control Center application that is sent to a network administrator or other predetermined email mailing address. After the alert email message has been sent 1810, the Control Center issues commands to the virtualization layer software to implement the desired configuration changes 1812. Those skilled in the art will understand how to implement such configuration changes without further explanation, given the description herein. Operation then returns to determining real-time system performance metrics 1802 and the loop repeats for as long as the Control Center application is executing. If there was no rules violation, a negative outcome at the decision box 1808, then no configuration change is carried out and, instead, operation returns to determining the performance metrics and the loop repeats itself.

In this way, the Control Center provides automatic virtualization management for computer network systems that include network virtual assets. A wide range of installation enhancements can be implemented, including business (application critical) rules, import and export of rules, and administrator alert messages.

The present invention has been described above in terms of presently preferred embodiments so that an understanding of the present invention can be conveyed. One skilled in the art will appreciate that the present invention can be practiced by other than the above-described embodiments, which are presented in this description for purposes of illustration and not of limitation. The specification and drawings are not intended to limit the exclusionary scope of this patent document. It is noted that various equivalents for the particular embodiments discussed in this description may practice the invention as well. That is, while the present invention has been described in conjunction with specific embodiments, it is evident that many alternatives, modifications, permutations and variations will become apparent to those of ordinary skill in the art in light of the foregoing description. Accordingly, it is intended that the present invention embrace all such alternatives, modifications and variations as fall within the scope of the appended claims. The fact that a product, process or method exhibits differences from one or more of the above-described exemplary embodiments does not mean that the product or process is outside the scope (literal scope and/or other legally-recognized scope) of the following claims.

Claims:

1. A method for on demand provisioning of virtual asset via a self-service portal in a virtualization system, the method comprising:

providing a virtualization system that has an inventory that includes physical resources and virtual assets managed by a virtualization layer running on the physical resources; wherein virtual assets are software instantiations of computer systems;

receiving a virtual asset provisioning request that specifies parameters to be considered for the virtual asset provisioning request;

receiving data on inventory available in the virtualization system;

automatically provisioning of a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request;

assigning the provisioned virtual asset to the virtual asset provisioning request; and

providing user access to the provisioned virtual asset.

2. The method of claim 1 further comprising determining one or more performance metrics of the provisioned virtual asset.

3. The method of claim 1 further comprising providing a user interface for submitting the virtual asset provisioning request.

4. The method of claim 3, wherein providing the user interface further comprises providing a user interface to access one or more images in a virtual asset image repository.

5. The method of claim 2, wherein determining the one or more performance metrics further comprises determining one or more real time performance metrics.

6. The method of claim 1, wherein the inventory further comprises one or more application programs.

7. The method of claim 6, wherein one of the application programs comprises one of a network load balancer, a router, a firewall and a storage server.

8. The method of claim 6, wherein one of the application programs comprises a network server.

9. An apparatus that performs automatic management of a virtualization environment in a computer network comprising:

a virtualization environment that has an inventory that includes network resources, virtual assets and a virtualization layer that manages the virtual assets;

a virtual mapping layer that determines an inventory of network resources and virtual assets available to the virtualization environment, wherein the virtual mapping layer determines the inventory without regard to processors, operating systems, virtualization platforms, and application software of the virtualization environment; and

a provisioning manager executed by a processor that communicates with the virtual mapping layer, the processor being configured to receive a virtual asset provisioning request that specifies parameters to be considered for the virtual asset provisioning request, automatically provision a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request, assign the provisioned virtual asset to the virtual asset provisioning request and provide user access to the provisioned virtual asset.

10. The apparatus of claim 9, wherein the virtualization environment determines one or more performance metrics of the provisioned virtual asset.

11. The apparatus of claim 9, wherein the provisioning manager provides a user interface for submitting the virtual asset provisioning request.

12. The apparatus of claim 11, wherein the provisioning manager provides a user interface to access one or more images in a virtual asset image repository.

13. The apparatus of claim 10, wherein the virtualization environment determines one or more real time performance metrics.

14. The apparatus of claim 9, wherein the inventory further comprises one or more application programs.

15. The apparatus of claim 14, wherein one of the application programs comprises one of a network load balancer, a router, a firewall and a storage server.

16. The apparatus of claim 14, wherein one of the application programs comprises a network server.

ABSTRACT OF THE DISCLOSURE

An apparatus and method for automatic configuration management of a network are provided. The apparatus and method may provide a virtualization system that has an inventory that includes physical resources and virtual assets managed by a virtualization layer running on the physical resources; wherein virtual assets are software instantiations of computer systems, receive a virtual asset provisioning request that specifies parameters to be considered for the virtual asset provisioning request and receive data on inventory available in the virtualization system. The apparatus and method may automatically provision a particular virtual asset to a particular physical resource in the virtualization system that matches the parameters in the virtual asset provisioning request, assign the provisioned virtual asset to the virtual asset provisioning request and provide user access to the provisioned virtual asset.

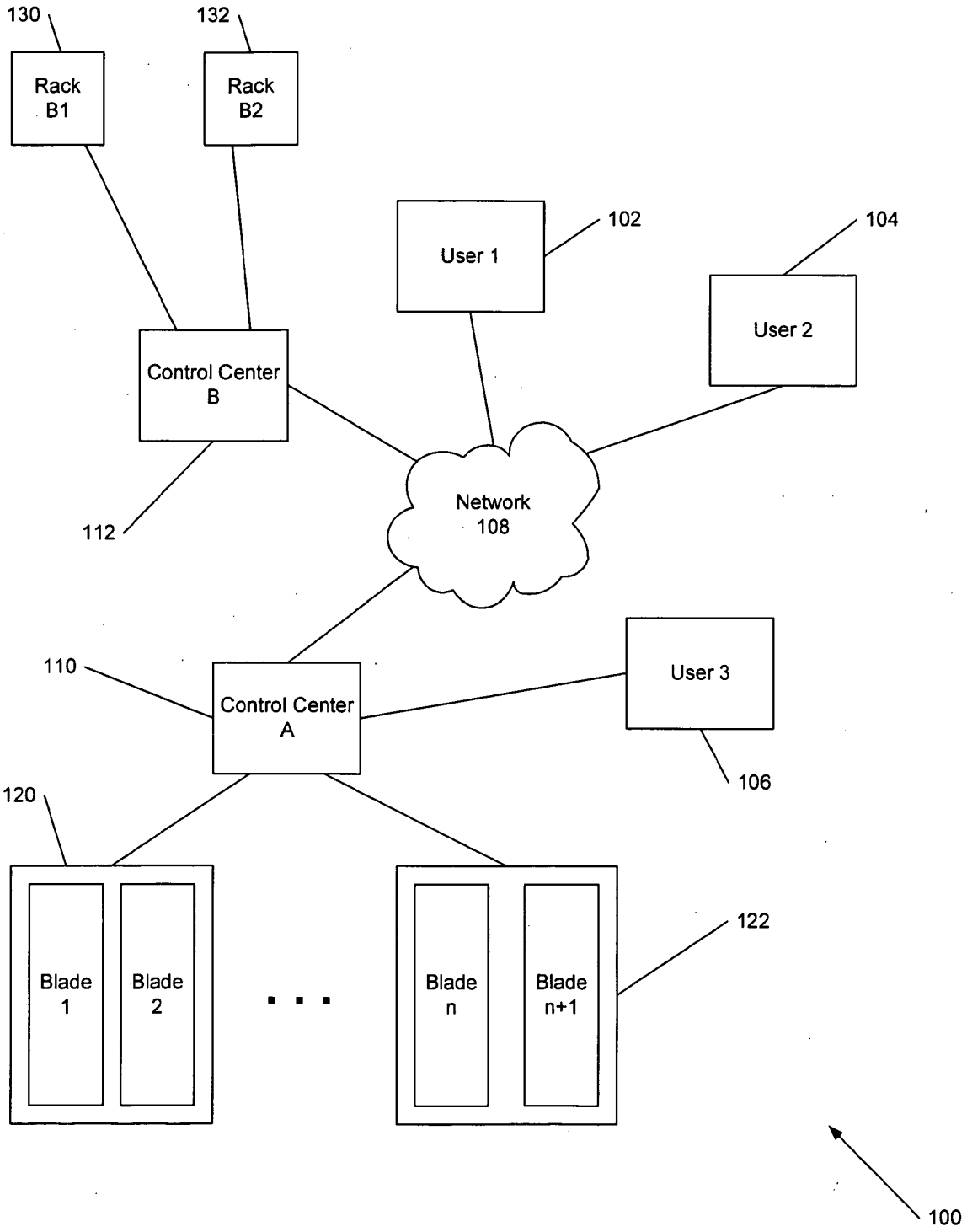

130
132
Rack B1
Rack B2
User 1
102
104
User 2
Control Center B
112
Network 108
110
Control Center A
User 3
106
120
Blade 1
Blade 2
Blade n
Blade n+1
122
100

FIG. 1

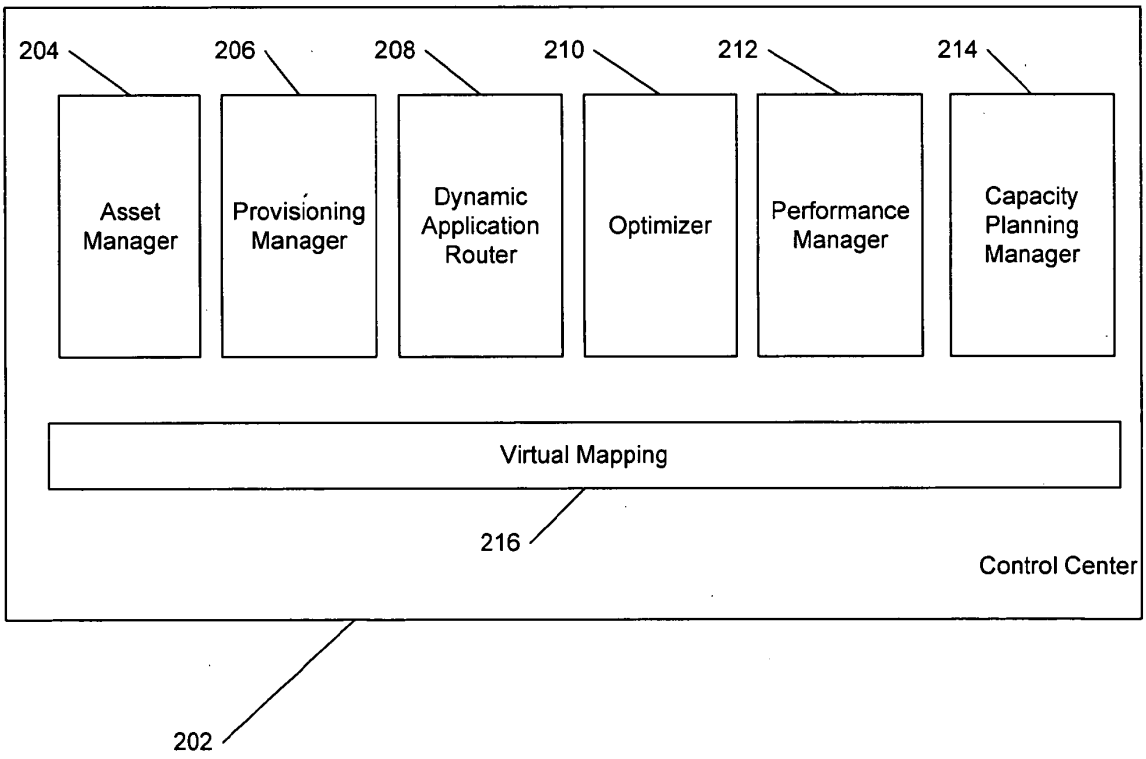

204
206
208
210
212
214
Asset Manager
Provisioning Manager
Dynamic Application Router
Optimizer
Performance Manager
Capacity Planning Manager
Virtual Mapping
216
Control Center
202

FIG. 2

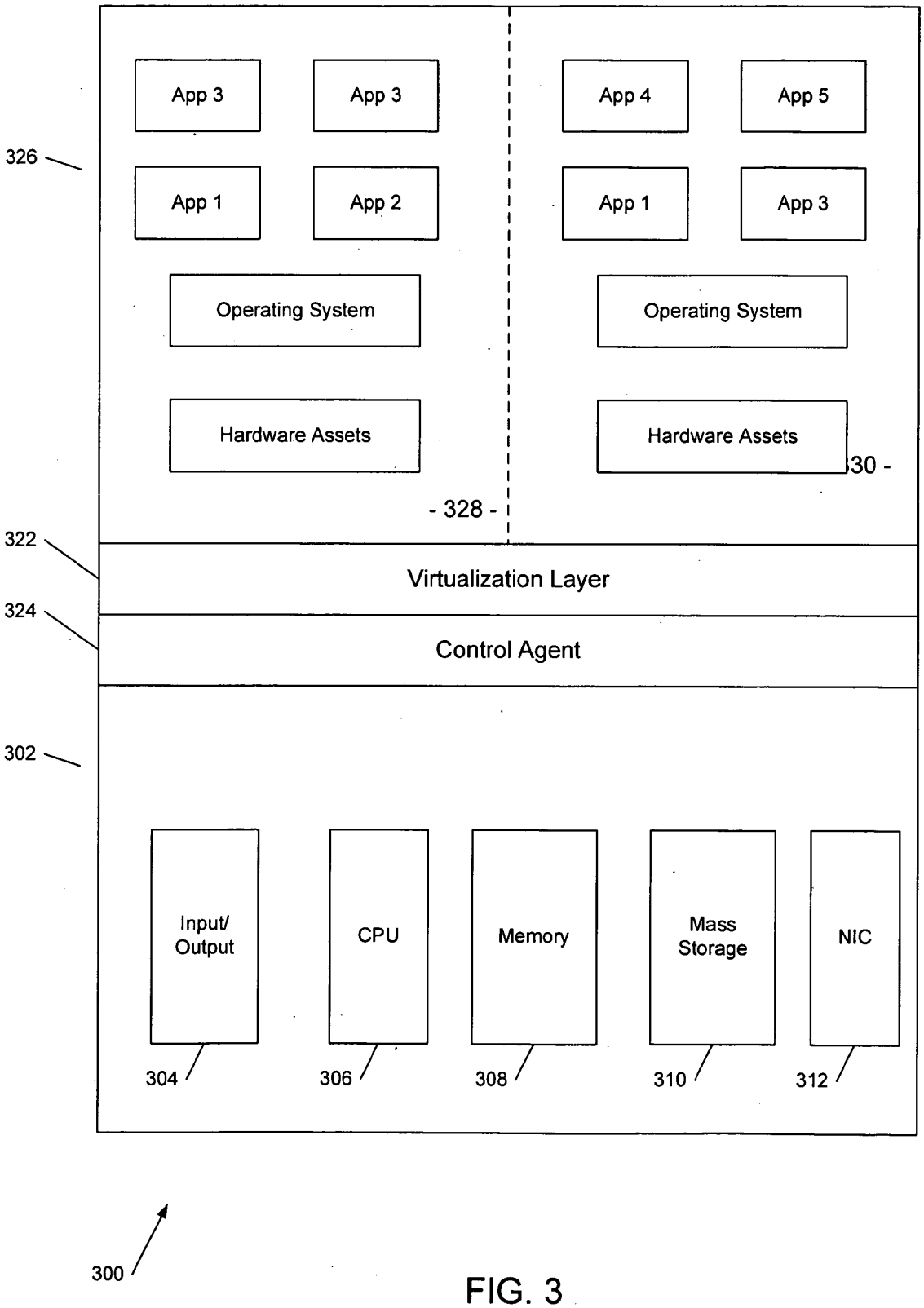

App 3
App 3
App 4
App 5
App 1
App 2
App 1
App 3
Operating System
Operating System
Hardware Assets
Hardware Assets
326
330
328
322
Virtualization Layer
324
Control Agent
302
Input/ Output
CPU
Memory
Mass Storage
NIC
304
306
308
310
312
300

FIG. 3

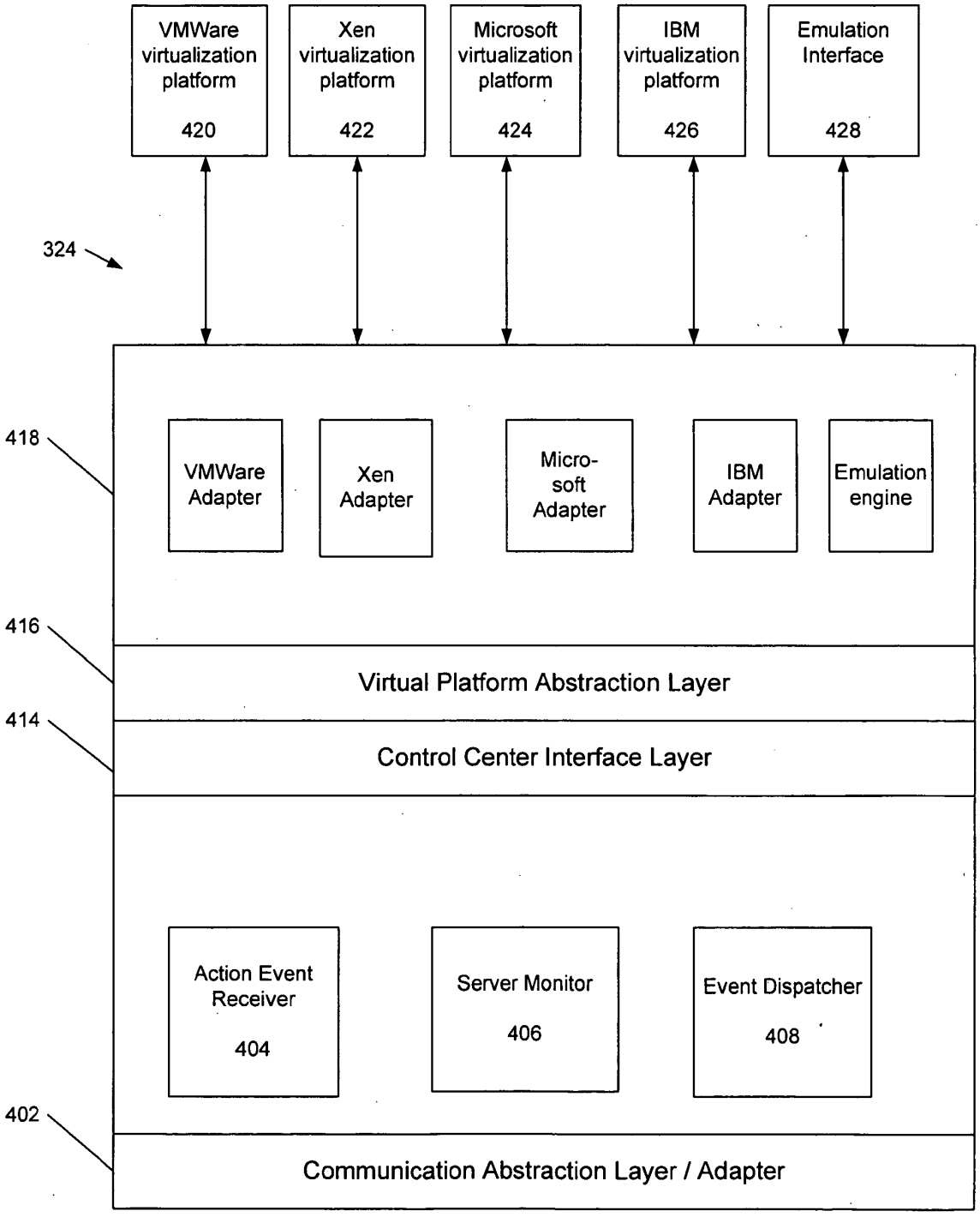

VMWare virtualization platform 420
Xen virtualization platform 422
Microsoft virtualization platform 424
IBM virtualization platform 426
Emulation Interface 428
324
418
VMWare Adapter
Xen Adapter
Micro-soft Adapter
IBM Adapter
Emulation engine
416
Virtual Platform Abstraction Layer
414
Control Center Interface Layer
Action Event Receiver 404
Server Monitor 406
Event Dispatcher 408
402
Communication Abstraction Layer / Adapter

FIG. 4

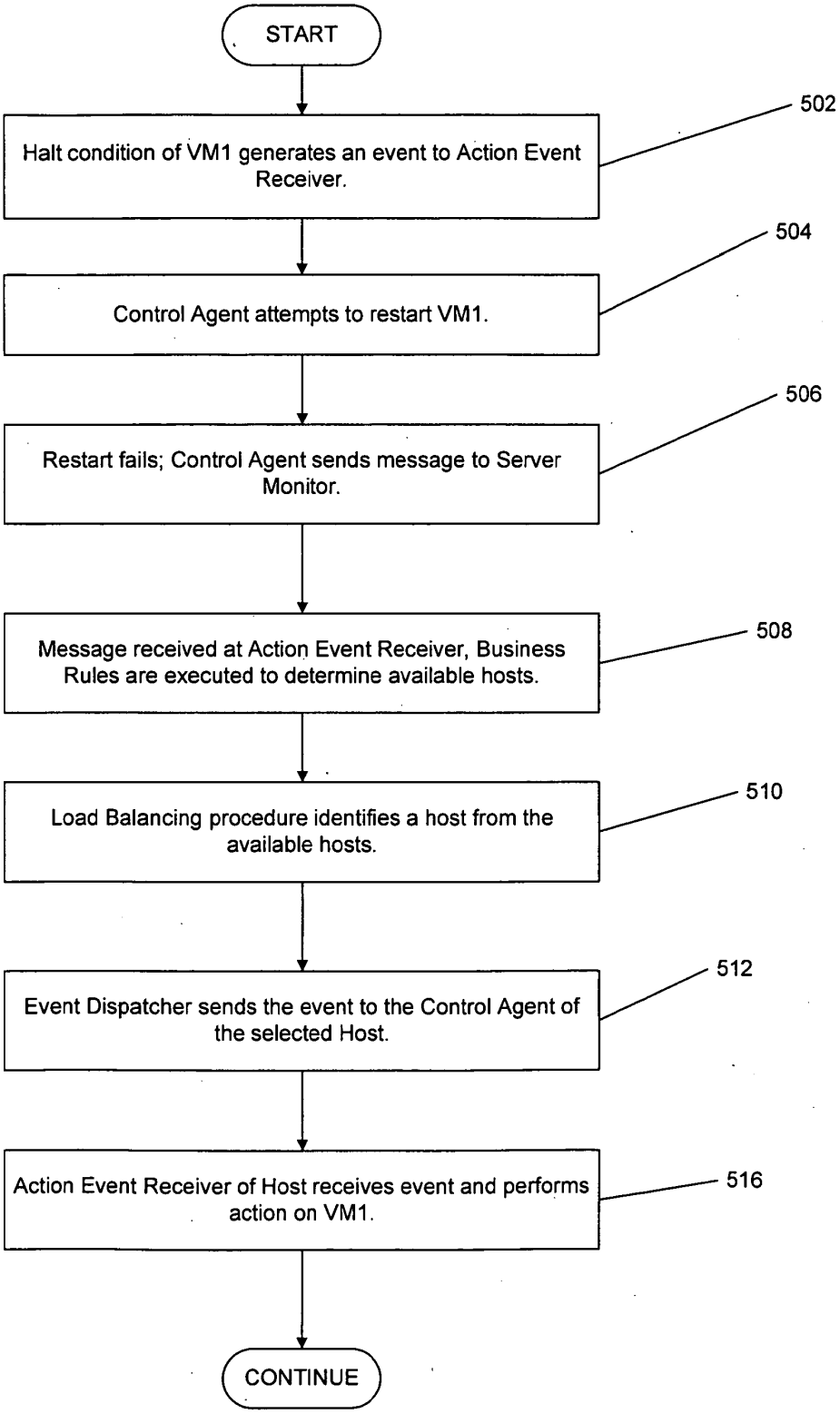

START
Halt condition of VM1 generates an event to Action Event Receiver.
502
Control Agent attempts to restart VM1.
504
Restart fails; Control Agent sends message to Server Monitor.
506
Message received at Action Event Receiver, Business Rules are executed to determine available hosts.
508
Load Balancing procedure identifies a host from the available hosts.
510
Event Dispatcher sends the event to the Control Agent of the selected Host.
512
Action Event Receiver of Host receives event and performs action on VM1.
516
CONTINUE

FIG. 5

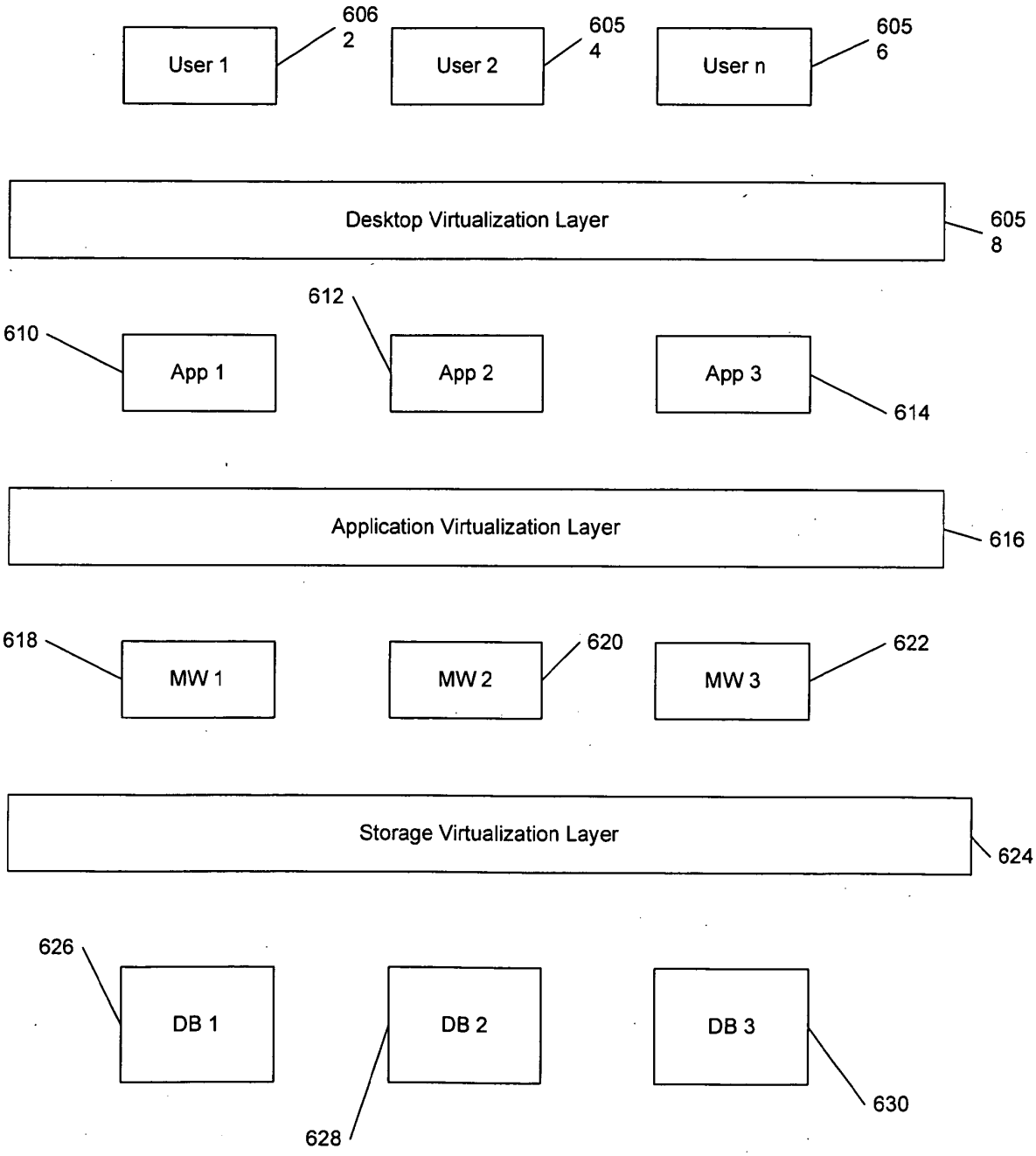
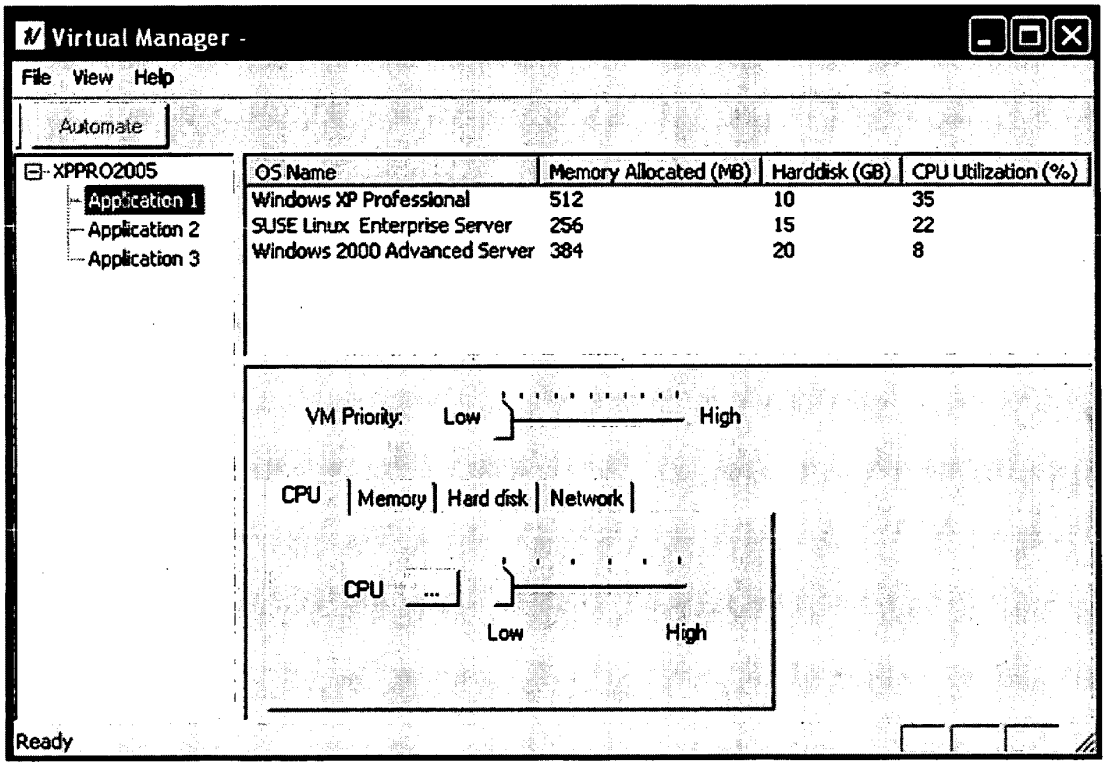
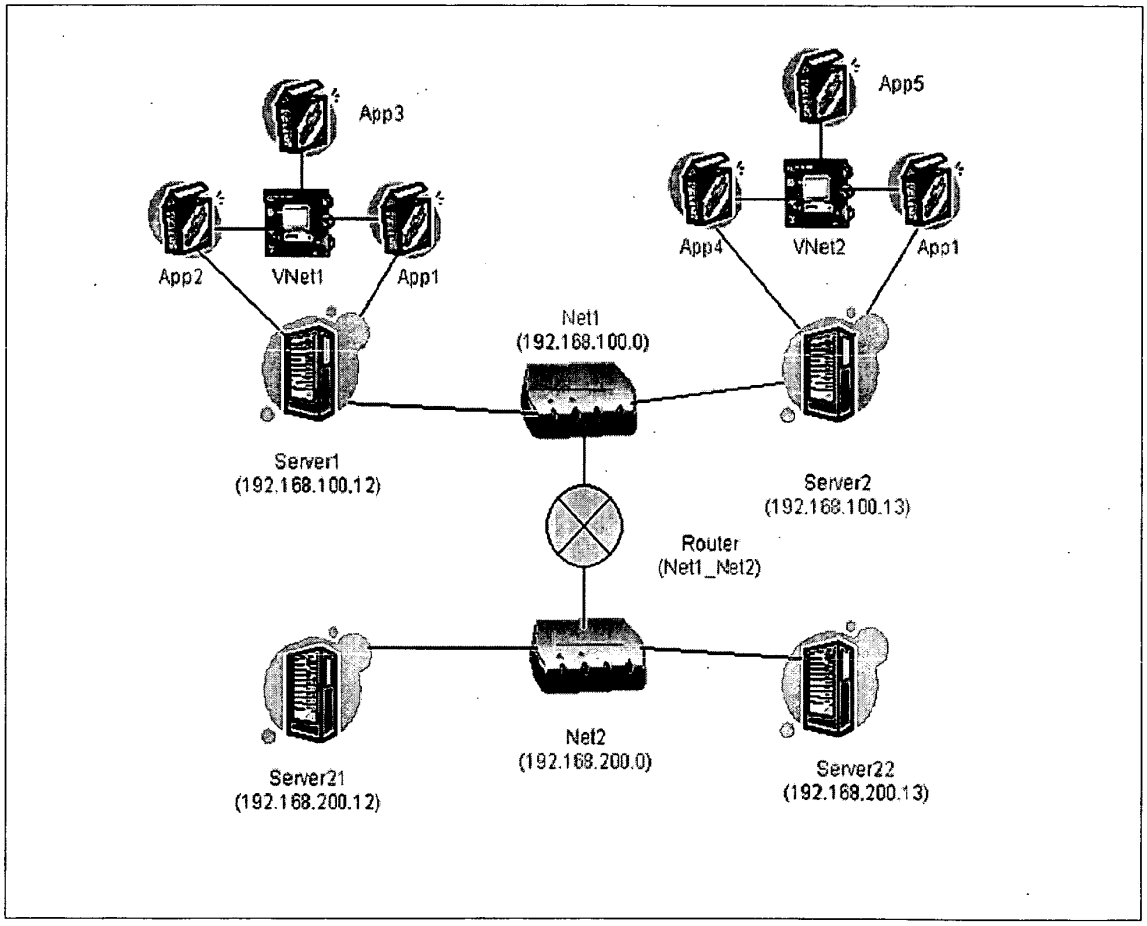

User 1
6062
User 2
6054
User n
6056
Desktop Virtualization Layer
6058
612
610
App 1
App 2
App 3
614
Application Virtualization Layer
616
618
MW 1
MW 2
620
MW 3
622
Storage Virtualization Layer
624
626
DB 1
DB 2
DB 3
628
630

FIG. 6



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FIG. 7



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FIG. 8

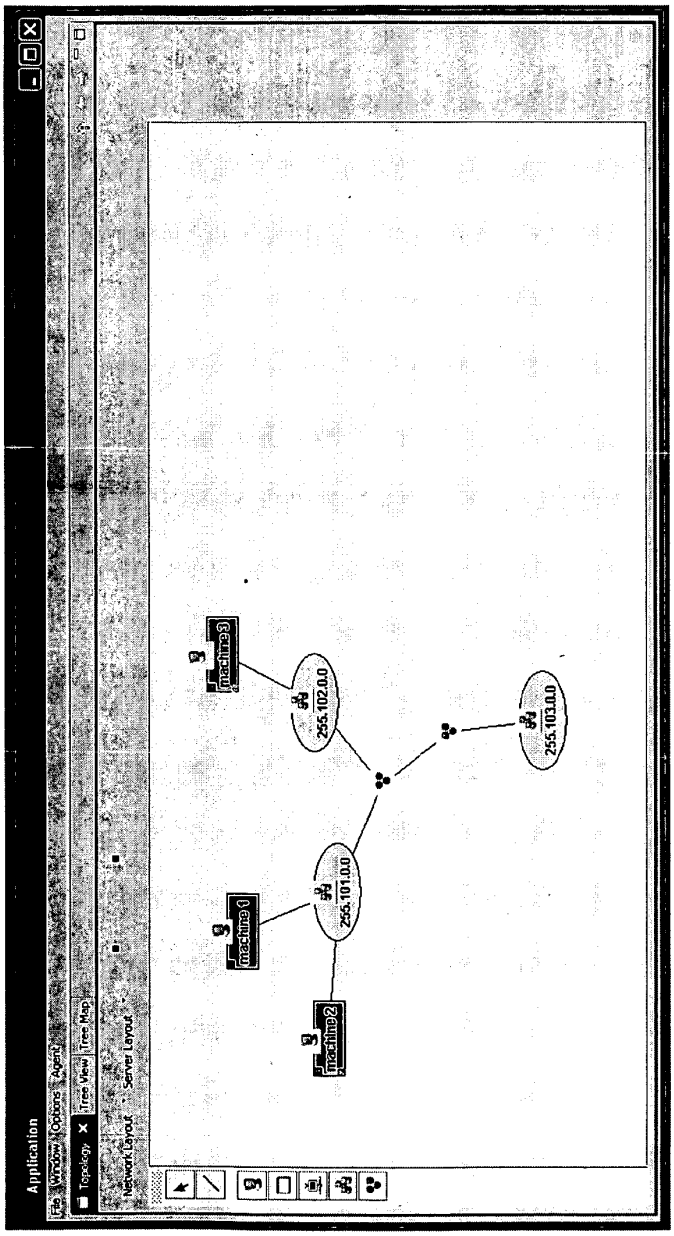


FIG. 9

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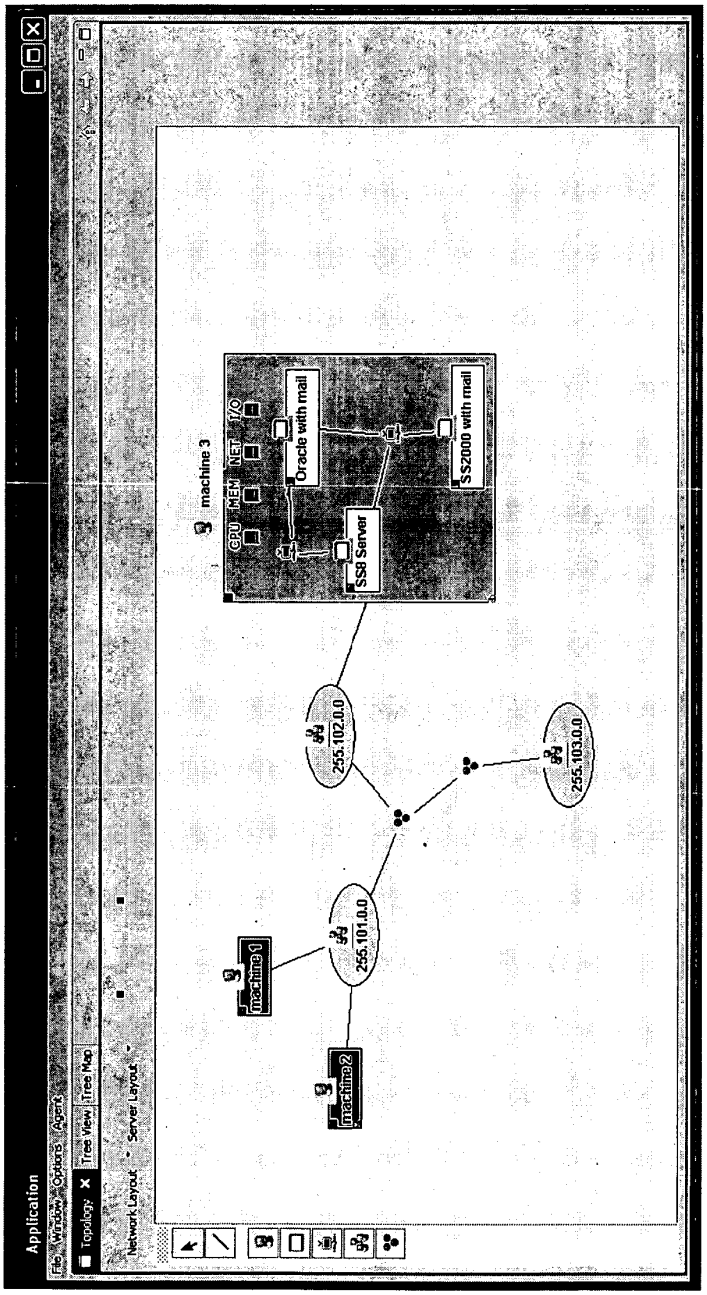
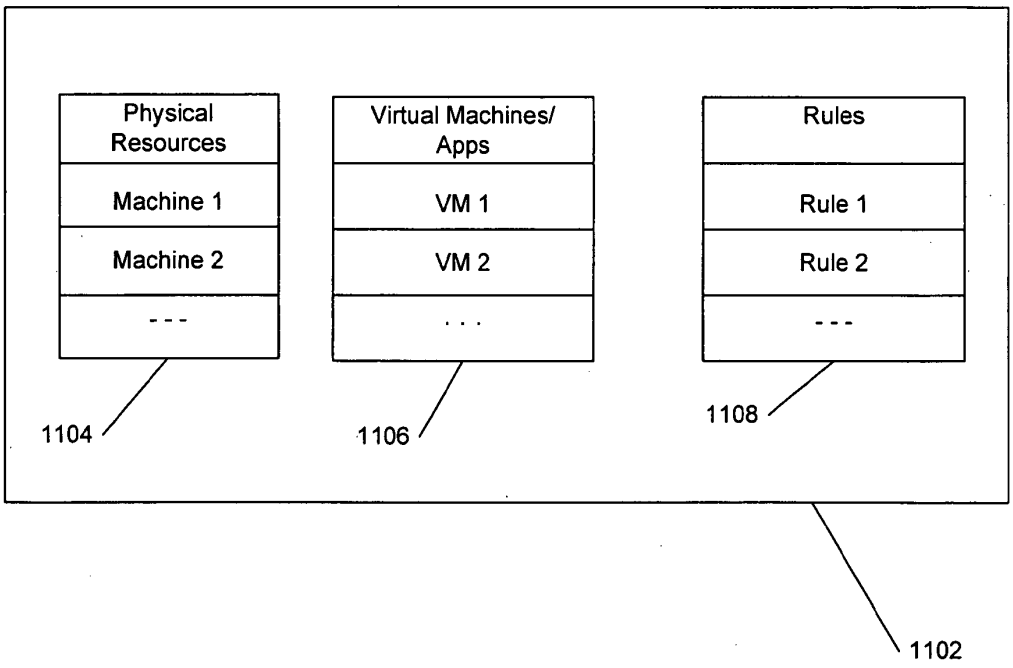


FIG. 10

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Physical Resources
Machine 1
Machine 2

Virtual Machines/ Apps
VM 1
VM 2
. . .
Rules
Rule 1
Rule 2

1104
1106
1108
1102

FIG. 11

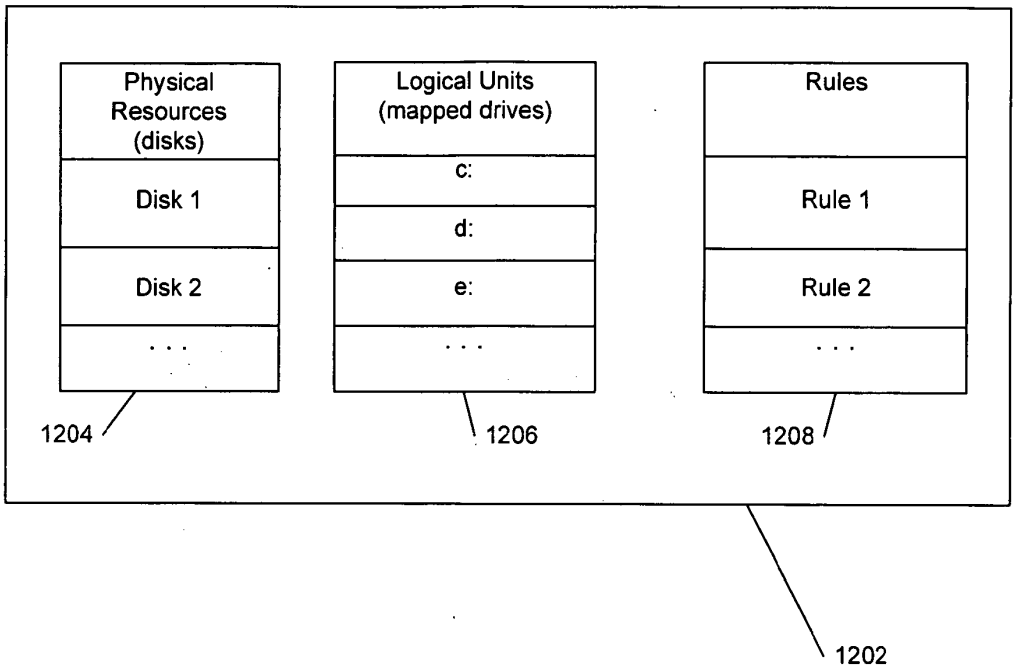

Physical Resources (disks)
Disk 1
Disk 2
. . .
Logical Units (mapped drives)
c:
d:
e:
. . .
Rules
Rule 1
Rule 2
. . .
1204
1206
1208
1202

FIG. 12

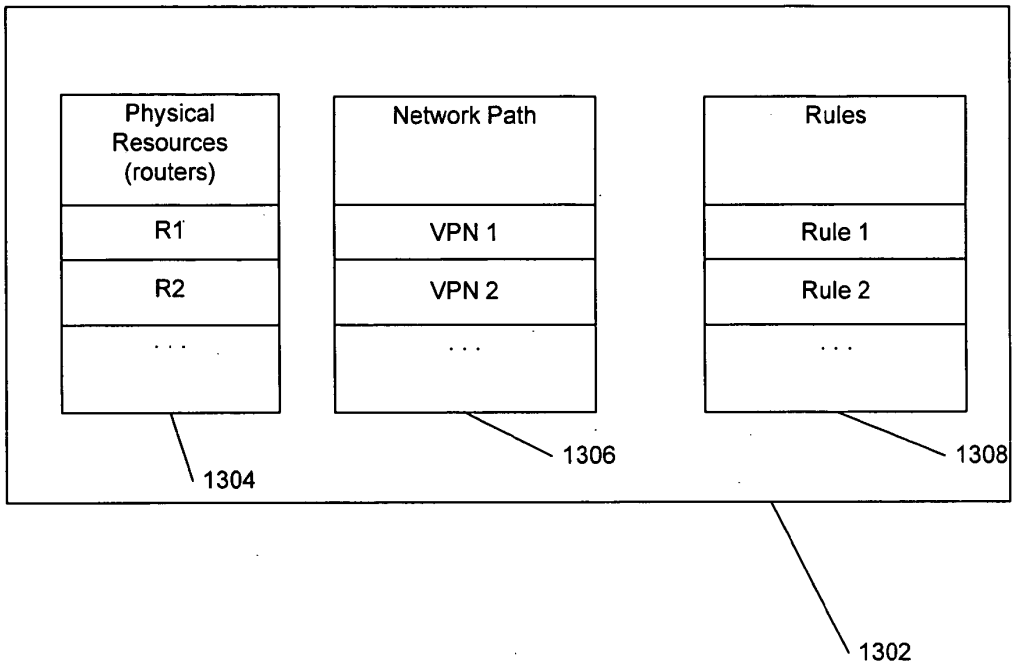
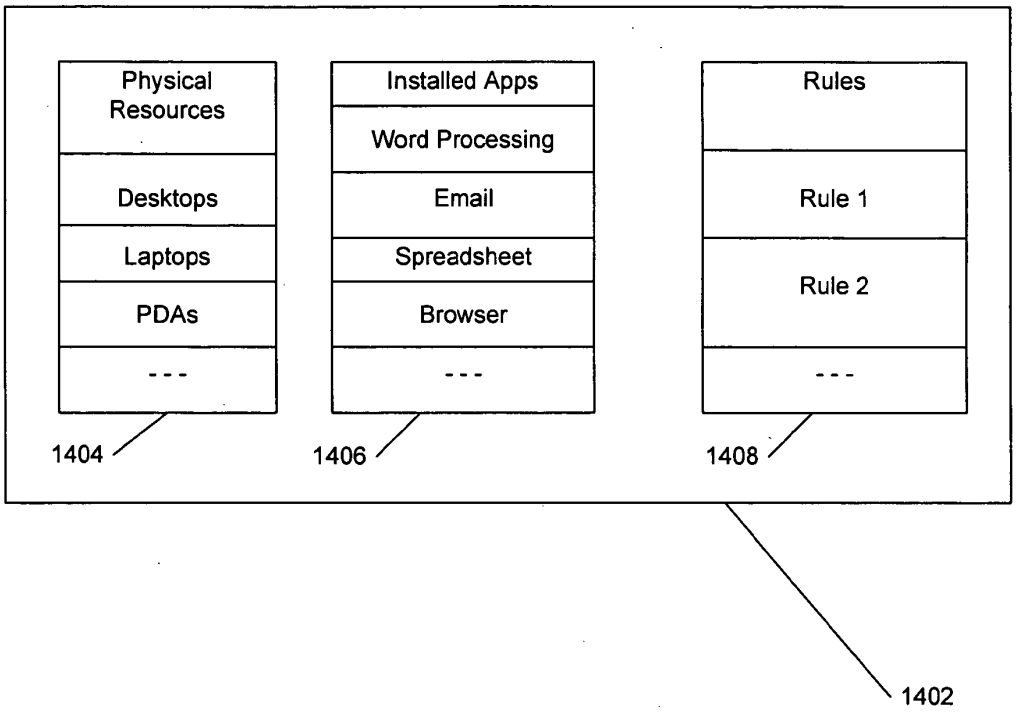

Physical Resources (routers)
R1
R2
. . .
Network Path
VPN 1
VPN 2
. . .
Rules
Rule 1
Rule 2
. . .
1304
1306
1308
1302

FIG. 13


Physical Resources
Desktops
Laptops
PDAs

Installed Apps
Word Processing
Email
Spreadsheet
Browser

Rules
Rule 1
Rule 2

1404
1406
1408
1402

FIG. 14

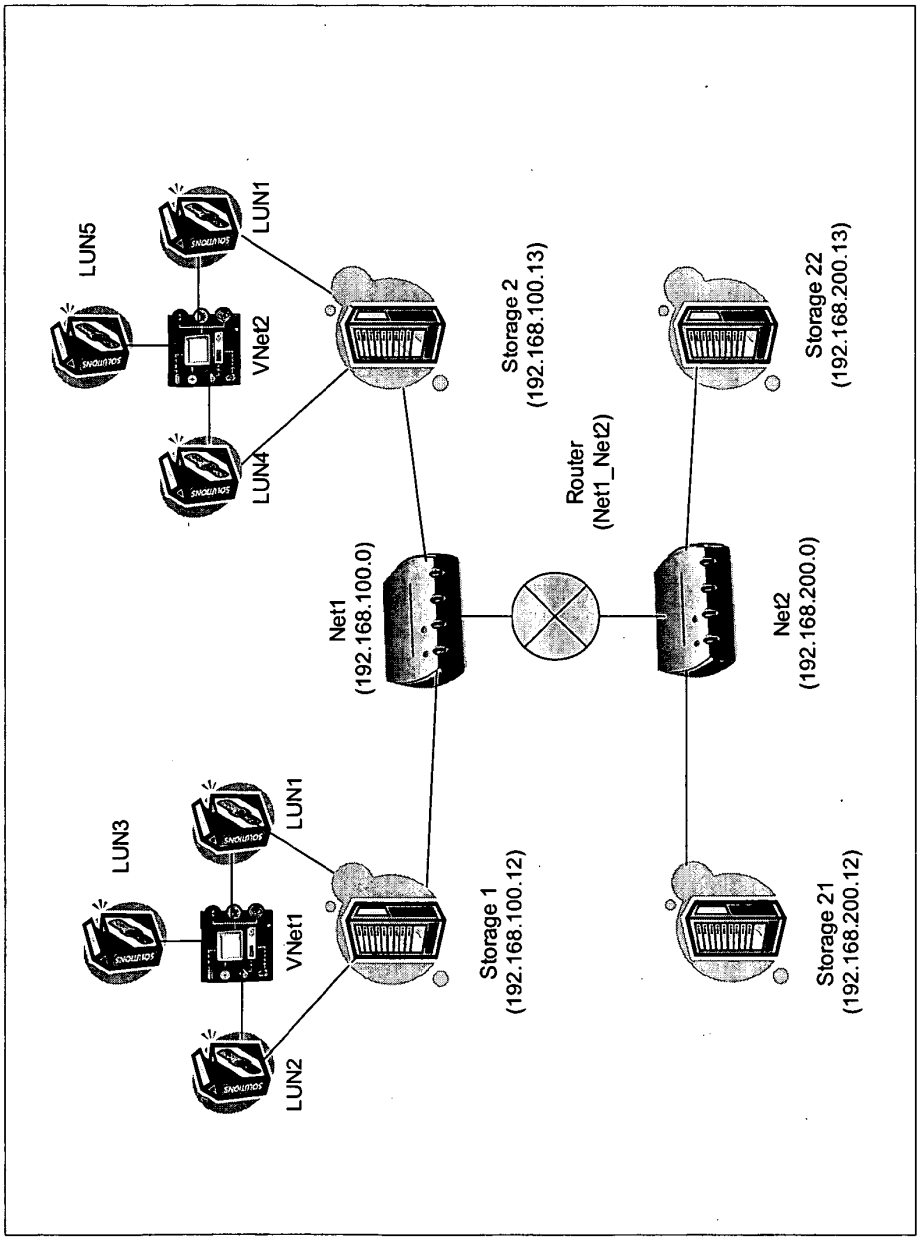


FIG. 15

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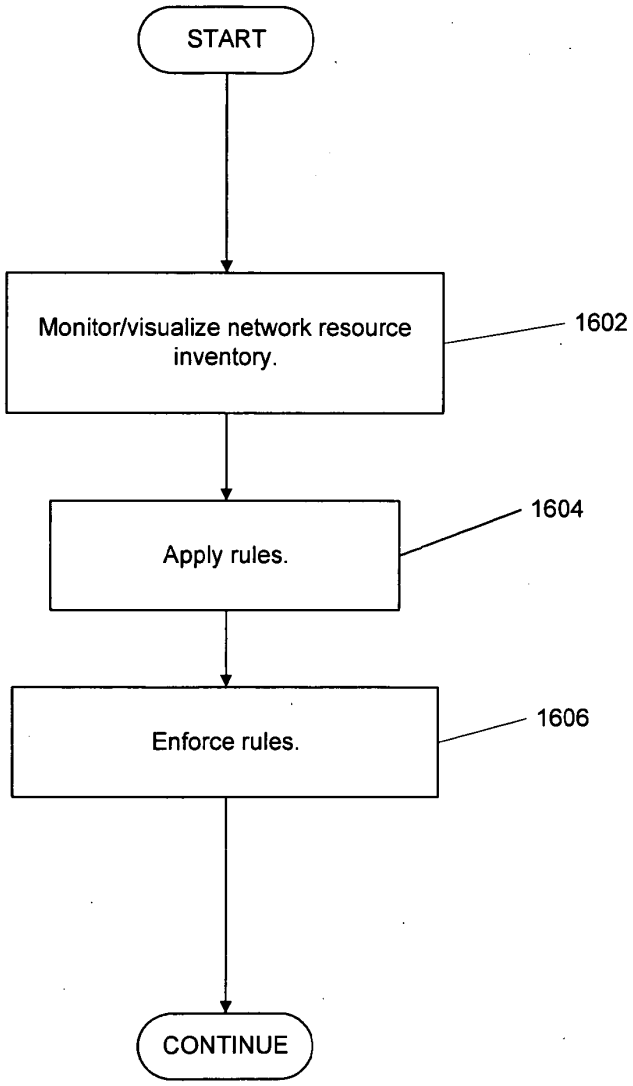

START
Monitor/visualize network resource inventory.
1602
Apply rules.
1604
Enforce rules.
1606
CONTINUE

FIG. 16

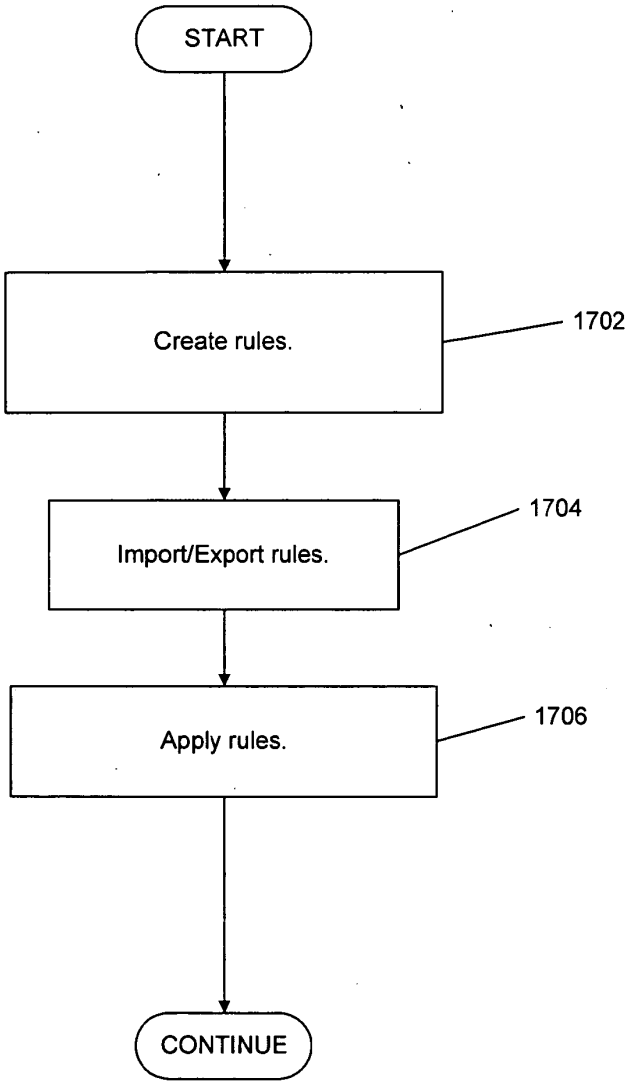

START
Create rules.
1702
Import/Export rules.
1704
Apply rules.
1706
CONTINUE

FIG. 17

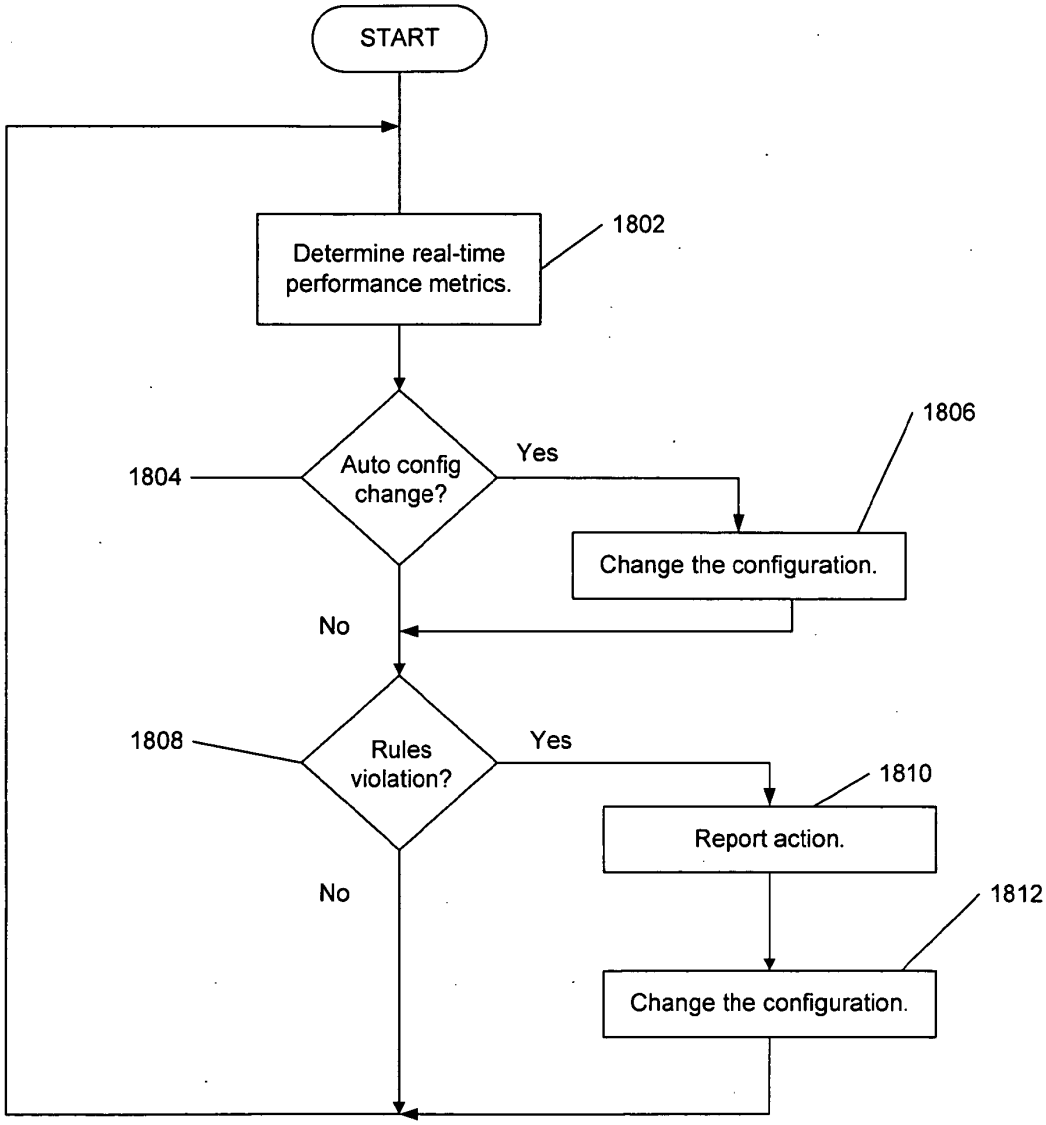

START
Determine real-time performance metrics.
1802
Auto config change?
1804
Yes
1806
Change the configuration.
No
Rules violation?
1808
Yes
1810
Report action.
No
1812
Change the configuration.

FIG. 18

PTO/AIA/08 (06-12)
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DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63)

☐ Declaration Submitted With Initial Filing OR ☒ Declaration Submitted After Initial Filing (surcharge (37 CFR 1.16(f)) required)

Attorney Docket Number	367894-991100
First Named Inventor	PABARI, Vipul
COMPLETE IF KNOWN	
Application Number	14/450,765
Filing Date	August 4, 2014
Art Unit	2447
Examiner Name	Not Yet Assigned

VIRTUAL SYSTEMS MANAGEMENT

(Title of the Invention)

As a below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application,

OR

☒ United States Application Number or PCT International application number 14/450,765 filed on 08/04/2014.

The above-identified application was made or authorized to be made by me.

I believe I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

Authorization To Permit Access To Application by Participating Office

☐ If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the above-identified patent application is filed access to the above-identified patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the above-identified patent application is filed to have access to the above-identified patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the above-identified patent application with respect to: 1) the above-identified patent application-as-filed; 2) any foreign application to which the above-identified patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the above-identified patent application; and 3) any U.S. application-as-filed from which benefit is sought in the above-identified patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing the Authorization to Permit Access to Application by Participating Offices.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. 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 21 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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DECLARATION — Utility or Design Patent Application

Direct all correspondence to:	☒	The address associated with Customer Number:	26379	OR ☐	Correspondence address below
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Address					
City		State		Zip	
Country		Telephone		Email	

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available. Petitioner/applicant is advised that documents which form the record of a patent application (such as the PTO/SB/01) are placed into the Privacy Act system of records DEPARTMENT OF COMMERCE, COMMERCE-PAT-7, System name: *Patent Application Files*. Documents not retained in an application file (such as the PTO-2038) are placed into the Privacy Act system of COMMERCE/PAT TM 10, System name: *Deposit Accounts and Electronic Funds Transfer Profiles.*

LEGAL NAME OF SOLE OR FIRST INVENTOR:

(*E.g.*, Given Name (first and middle (if any)) and Family Name or Surname)
Vipul PABARI

Inventor's Signature		Date (Optional)	
Residence: City Carlsbad	State CA	Country US	
Mailing Address 7349 Spinnaker Street			
City Carlsbad	State CA	Zip 92011	Country US

☐ Additional inventors are being named on the _____ supplemental sheet(s) PTO/AIA/10 attached hereto

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STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Vipul Pabari

Application No./Patent No.: _____ Filed/Issue Date: July 1, 2016

Titled: VIRTUAL SYSTEMS MANAGEMENT

ToutVirtual, Inc., a Carlsbad, CA

(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 033703, Frame 0914, 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: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a COPY thereof is attached.

2. 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.

This collection of information is required by 37 CFR 3.73(b). 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 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, 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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STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

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4. From: _____ To: _____

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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.

/Timothy W. Lohse/	July 1, 2016
Signature	Date
Timothy W. Lohse	35,255
Printed or Typed Name	Title or Registration Number

[Page 2 of 2]

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

Application Number	11/503,090
Filing Date	August 10, 2006
First Named Inventor	Vipul PABARI
Title	Virtual Systems Management
Art Unit	2148
Examiner Name	David S. Ampagoomian
Attorney Docket Number	367894-000003

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

☐ A Power of Attorney is submitted herewith.

OR

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

26379

OR

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

Practitioner(s) Name	Registration Number

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

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

OR

☐ The address associated with Customer Number:

OR

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

I am the:

☒ Applicant/Inventor.

OR

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

SIGNATURE of Applicant or Assignee of Record

Signature		Date	September 18, 2009
Name	Vipul PABARI	Telephone	408 873 9311
Title and Company	ToutVirtual, Inc.		

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

☒ *Total of 1 forms are submitted.

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

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INFORMATION DISCLOSURE STATEMENT		
	Applicant:	Vipul Pabari
	Application No.	
	Filed:	July 1, 2016
	For:	**VIRTUAL SYSTEMS MANAGEMENT**
	Group Art Unit:	Not Yet Assigned
	Examiner:	Not Yet Assigned
	Attorney Docket No.:	367894-991101

Commissioner of Patents and Trademarks
(Via Electronic Filing)

Dear Sir:

In accordance with the provisions of 37 C.F.R. § 1.56(a) and 37 C.F.R. § 1.97, Applicant(s) hereby make of record the references listed on the accompanying Form PTO-1449 for consideration by the Examiner in connection with the examination of the above-identified patent application.

This Information Disclosure Statement:

(a)	☒	accompanies a new patent application submitted herewith.
(b)	☐	is filed within three (3) months of the Filing Date or before the mailing date of a First Office Action on the merits; OR
(c)	☐	after the period defined in (b) but before the mailing date of a Final Rejection or Notice of Allowance, OR
(d)	☐	is filed after the first Office Action and more than three months after the application's filing date or PCT national stage date of entry filing but, as far as is known to the undersigned prior to the mailing date of either a final rejection or a notice of allowance, and is accompanied by either the fee ($180) set forth in 37 CFR § 1.17(p) or a certification as specified in 37 CFR § 1.97(e), as checked below OR
(e)	☐	is filed after the mailing date of either a final rejection or a notice of allowance, and the issue fee has not been paid, and is accompanied by the requisite petition fee ($130) set forth in 37 CFR § 1.17(l)(1) and a certification as specified in 37 CFR § 1.97(e), as checked below. This document is to be considered as a petition requesting consideration of the information disclosure statement.

As required under § 1.97(e), Applicants, through the undersigned, hereby state either that [check the appropriate space]:

(f)	☐	Each item of information contained in the Information Disclosure Statement was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing date of the Information Disclosure Statement; or
(g)	☐	No item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing this Statement after making reasonable inquiry, no item of information contained in the Information Disclosure Statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the Information Disclosure Statement.

Regarding the concise statements required for any foreign-language references, a copy of an associated foreign Office Action indicating the relevance is provided in English; see MPEP 609.04(a)(III).

It is respectfully requested that each of the references shown on the attached Form PTO-1449 be made of record in this application. Copies of the references are enclosed.

The Commissioner is authorized to charge any deficiencies and credit any overpayment of fees to our Deposit Account No. **07-1896**.

Respectfully submitted,

Date: July 1, 2016

DLA PIPER LLP (US)

By: /Timothy W. Lohse/
Timothy W. Lohse
Reg. No. 35,255
Attorneys for Applicant(s)
2000 University Avenue
East Palo Alto, CA 94303-2248
650-833-2055

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on:
July 1, 2016

/Timothy W. Lohse/
Timothy W. Lohse

U.S. DEPT. OF COMMERCE Patent and Trademark Office	Atty. Docket No.: **367894-991101**	Serial No.:
	Applicant: Vipul Pabari	
INFORMATION DISCLOSURE CITATION (Use several sheets if necessary)	Filing Date: July 1, 2016	Group Art Unit: NYA

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE
	7,463,648	12/09/08	Eppstein et al.			
	7,512,769	03/31/09	Lowell et al.			
	7,577,722	08/18/09	Khandekar et al.			
	2002/0166117	11/07/02	Abrams et al.			
	2003/0236882	12/25/03	Yan et al.			
	2003/0236956	12/25/03	Grubbs et al.			
	2005/0044301	02/24/05	Vasilevsky et al.			
	2005/0138165	06/23/05	Tang et al.			
	2005/0155033	07/14/05	Luoffo et al.			
	2006/0069761	03/30/06	Singh et al.			
	2006/0149842	07/06/06	Dawson et al.			
	2006/0184937	08/17/06	Abels et al.			
	2006/0294238	12/28/06	Naik et al.			
	2007-0067435	03/22/07	Landis et al.			
	2008/0086731	04/10/08	Trossman et al.			

FOREIGN PATENT DOCUMENTS

EXAMINER INTITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.)

		PCT/US2006/031193, International Preliminary Report on Patentability dated 7/1/2008 (6 pages)

EXAMINER	DATE CONSIDERED

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference 41965-0003PC	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2006/031193	International filing date *(day/month/year)* 10 August 2006 (10.08.2006)	Priority date *(day/month/year)* 15 August 2005 (15.08.2005)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant TOUTVIRTUAL INC.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 01 July 2008 (01.07.2008)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Philippe Becamel e-mail: pt12.pct@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
STEVEN A. MOORE
HELLER EHRMAN LLP
4350 LA JOLLA VILLAGE DRIVE
SAN DIEGO, CA 92122

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

	Date of mailing (*day/month/year*) 12 JUN 2008
Applicant's or agent's file reference 41965-0003PC	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date (*day/month/year*)	Priority date (*day/month/year*)
PCT/US06/31193	10 August 2006 (10.08.2006)	15 August 2005 (15.08.2005)

International Patent Classification (IPC) or both national classification and IPC

IPC: **G06F 15/173**(2006.01)
USPC: 709/223,226

Applicant

TOUTVIRTUAL, INC.

1. This opinion contains indications relating to the following items:

☒	Box No. I	Basis of the opinion
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis(b)* that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US	Date of completion of this opinion	Authorized officer
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	27 May 2008 (27.05.2008)	Jeffrey Pwu Telephone No. 571-270-1896

Form PCT/ISA/237 (cover sheet) (April 2007)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US06/31193

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:
   - ☒ the international application in the language in which it was filed
   - ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of:

   a. type of material
      - ☐ a sequence listing
      - ☐ table(s) related to the sequence listing

   b. format of material
      - ☐ on paper
      - ☐ in electronic form

   c. time of filing/furnishing
      - ☐ contained in the international application as filed.
      - ☐ filed together with the international application in electronic form.
      - ☐ furnished subsequently to this Authority for the purposes of search.

4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

Form PCT/ISA/237(Box No. I) (April 2007)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US06/31193

Box No. V Reasoned statement under Rule 43 *bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims NONE	YES
	Claims 1-29	NO
Inventive step (IS)	Claims NONE	YES
	Claims 1-29	NO
Industrial applicability (IA)	Claims 1-29	YES
	Claims NONE	NO

2. Citations and explanations:

Please See Continuation Sheet

Form PCT/ISA/237 (Box No. V) (April 2007)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US06/31193

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

V. 2. Citations and Explanations:

1. Claims 1-29 lack novelty under PCT Article 33(2) as being anticipated by Trossman et al (2003/0149685 A1).

2. Independent claim 1, Trossman discloses a method for automatic management of a virtualization environment in a computer network, the method comprising:

determining an inventory of network resources and virtual assets available to a virtualization environment of the computer network (Trossman: "The data storage 20 contains information on the groupings and poolings of resources in the resource system 12 for management purposes." [0042], [0034-0036]);

assigning prioritization to members of the available inventory for the virtualization environment (Trossman: "Each of these group information sets may contains an identification of each resource in the group, the size of the group, the number of active and idle resources in the group and the priority of the group and the pool to which the group belongs." [0042], [0023]);

provisioning virtual assets from among the available inventory, thereby establishing a provisioned virtualization environment (Trossman: abstract, "Given the differing resource requirements for each application environment using and requiring resources in the resource system 12, the resource change mechanism 18 decides where the resources will be allocated." [0031]);

determining real time performance metrics for the provisioned virtualization environment ("These resources are monitored for availability and performance information according to their assigned execution (or application) environments" Trossman: abstract, [0022-0023]);

producing a reallocation of the virtual assets automatically in response to the real time performance metrics ("The resources can then be reconfigured or reallocated to different environment so that the requirements of each environment can be met." Trossman: abstract, [0034-0036]); and

initiating the reallocation of the virtual assets ("The present invention provides dynamic configuration and allocation of resources in a data center." Trossman: abstract).

3. Independent claim 25, Trossman discloses a method for automatic management of a virtualization environment in a computer network, the method comprising: performing one or more functions from the group of functions consisting of (1) identification and management of network resources and virtual assets, (2) provisioning of virtual assets in response to network workflow demands, (3)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US06/31193

Supplemental Box
In case **the space in any of the preceding boxes is not sufficient.**

dynamic deployment of virtual assets across the computer network, (4) performance measurement and reporting of resources and virtual assets, and (5) planning and forecasting of resource demands and asset utilization of the virtualization environment (Trossman: abstract, [0022-0023], [0031-0036],[0042]); wherein such functions are carried out without regard to processors, operating systems, virtualization platforms, and application software of the virtualization environment (Trossman: [0031-36]).

4. Independent 26, Trossman discloses a method of managing a virtualization environment in a computer network, the method comprising: providing a virtualization environment at a computer in communication with the computer network (Trossman: abstract,[0035-0038]); determining an inventory of network resources and virtual assets available to the virtualization environment (Trossman: "The data storage 20 contains information on the groupings and poolings of resources in the resource system 12 for management purposes." [0042], [0034-0036]); performing at least one function from among the group of functions consisting of (1) identification and management of network resources and virtual assets, (2) provisioning of virtual assets in response to network workflow demands, (3) dynamic deployment of virtual assets across the computer network, (4) performance measurement and reporting of resources and virtual assets, and (5) planning and forecasting of resource demands and asset utilization of the virtualization environment (Trossman: abstract, [0022-0023], [0031-0036],[0042]),
wherein such functions are carried out without regard to processors, operating systems, virtualization platforms, and application software of the virtualization environment (Trossman: [0031-0036]).

5. Independent 27, Trossman discloses an apparatus that performs automatic management of a virtualization environment in a computer network, the method comprising: a network communications unit that enables communications between the apparatus and the computer network (Trossman: [0023-0024]); an operating system of the apparatus that supports a virtualization environment in communication with the apparatus (Trossman: [0026]); and a Virtual Mapping layer that determines an inventory of network resources and virtual assets available to the virtualization environment , wherein the Virtual Mapping layer determines the inventory without regard to processors, operating systems (Trossman: "The data storage 20 contains information on the groupings and poolings of resources in the resource system 12 for management purposes." [0042], [0034-0036]), virtualization platforms, and application software of the virtualization environment (Trossman: abstract, [0034-0038]).

6. Dependent claims 2-24,28-9 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirement of PCT in respect of novelty.

7. Claims 1-29 meet the criteria set out in PCT Article 33(4), and thus has industrial applicability because the subject matter claimed can be made or used in industry.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	367894-991101
	Application Number	
Title of Invention	VIRTUAL SYSTEMS MANAGEMENT	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Vipul		Pabari	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Carlsbad	State/Province	CA	Country of Residence [i]	US

Mailing Address of Inventor:

Address 1	7349 Spinnaker Street		
Address 2			
City	Carlsbad	State/Province	CA
Postal Code	92011	Country [i]	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	26379		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	VIRTUAL SYSTEMS MANAGEMENT		
Attorney Docket Number	367894-991101	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	18	Suggested Figure for Publication (if any)	

PTO/AIA/14 (08-15)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	367894-991101
	Application Number	
Title of Invention	VIRTUAL SYSTEMS MANAGEMENT	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	26379		

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix	Remove
Registration Number					
Prefix	**Given Name**	Middle Name	**Family Name**	Suffix	Remove
Registration Number					

Additional Representative Information blocks may be generated within this form by selecting the **Add** button.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	367894-991101
	Application Number	
Title of Invention	VIRTUAL SYSTEMS MANAGEMENT	

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the application number blank.

Prior Application Status			Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	14450765	2014-08-04

Prior Application Status	Patented			Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14450765	Continuation of	11503090	2006-08-10	8799431	2014-08-05

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
11503090	Claims benefit of provisional	60708473	2005-08-15

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

PTO/AIA/14 (08-15)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	367894-991101
	Application Number	
Title of Invention	VIRTUAL SYSTEMS MANAGEMENT	

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	367894-991101
	Application Number	
Title of Invention	VIRTUAL SYSTEMS MANAGEMENT	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

PTO/AIA/14 (08-15)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	367894-991101
	Application Number	
Title of Invention	VIRTUAL SYSTEMS MANAGEMENT	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

◉ Assignee	○ Legal Representative under 35 U.S.C. 117	○ Joint Inventor
○ Person to whom the inventor is obligated to assign.	○ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:	
If the Applicant is an Organization check here.	☒
Organization Name	ToutVirtual, Inc.

Mailing Address Information For Applicant:

Address 1	7033 Llama Street		
Address 2			
City	Carlsbad	**State/Province**	CA
Country[i]	US	Postal Code	92009
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

PTO/AIA/14 (08-15)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	367894-991101
	Application Number	
Title of Invention	VIRTUAL SYSTEMS MANAGEMENT	

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country [i]		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	367894-991101
	Application Number	
Title of Invention	VIRTUAL SYSTEMS MANAGEMENT	

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e. g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Timothy W. Lohse/			Date (YYYY-MM-DD)	
First Name	Timothy	Last Name	Lohse	Registration Number	35255

Additional Signature may be generated within this form by selecting the Add button.

Electronic Patent Application Fee Transmittal	
Application Number:	
Filing Date:	
Title of Invention:	VIRTUAL SYSTEMS MANAGEMENT
First Named Inventor/Applicant Name:	Vipul Pabari
Filer:	Timothy W. Lohse
Attorney Docket Number:	367894-991101
Filed as Small Entity	
Filing Fees for Utility under 35 USC 111(a)	

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	70	70
Utility Examination Fee	2311	1	360	360
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**430**

Electronic Acknowledgement Receipt	
EFS ID:	26243769
Application Number:	15201087
International Application Number:	
Confirmation Number:	1450
Title of Invention:	VIRTUAL SYSTEMS MANAGEMENT
First Named Inventor/Applicant Name:	Vipul Pabari
Customer Number:	26379
Filer:	Timothy W. Lohse
Filer Authorized By:	
Attorney Docket Number:	367894-991101
Receipt Date:	01-JUL-2016
Filing Date:	
Time Stamp:	17:53:54
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$430
RAM confirmation Number	070516INTEFSW00005003071896
Deposit Account	071896
Authorized User	Timothy Lohse
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal of New Application	991101-Utility_Transmittal.pdf	72802 7effe338abad4625b080e214b53fe98a441cdc06	no	1
Warnings:					
Information:					
2		991101-Specification.pdf	169664 3bede775abf79dfeea85cde7167acceeea66acb5	yes	39

Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	35
Claims	36	38
Abstract	39	39

Warnings:					
Information:					
3	Drawings-only black and white line drawings	991101-Drawings.pdf	601818 6ea0fa6aa6faf0275ecca02f418a09f0f74ff7db	no	18
Warnings:					
Information:					
4	Oath or Declaration filed	991101-Inventor_Declaration.pdf	112114 c4d4e918fddc344e88a749815e6458247e1ba46d	no	2
Warnings:					
Information:					
5	Assignee showing of ownership per 37 CFR 3.73	991101-373-Stmt.pdf	20148 8b54ea5a7c771e889578b6f2cbbb4c96295ee08c	no	2

Warnings:					
Information:					
6	Power of Attorney	991101-POA.pdf	171143 522ba0c1b2b459a951d48ccb67502a022554aaac	no	1
Warnings:					
Information:					
7	Information Disclosure Statement (IDS) Form (SB08)	991101-IDS_070116.pdf	28985 bed5f525eeb0b11524ea9f5550486006fdcc11cd	no	3
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
8	Other Reference-Patent/App/Search documents	NPL-IPRP.pdf	233707 13819b3812b9fbb940e9e49c8c02c5a119259dfb	no	6
Warnings:					
Information:					
9	Application Data Sheet	WebADS.pdf	123812 5756abaa172db04f0c18305c1bdee72871053edf	no	8
Warnings:					
Information:					
10	Fee Worksheet (SB06)	fee-info.pdf	31805 bf922a4687d9b6edd9aee3e4870d13fe0f81755b	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	1565998	

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

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

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

Electronic Patent Application Fee Transmittal	
Application Number:	15201087
Filing Date:	
Title of Invention:	VIRTUAL SYSTEMS MANAGEMENT
First Named Inventor/Applicant Name:	Vipul Pabari
Filer:	Timothy W. Lohse
Attorney Docket Number:	367894-991101
Filed as Small Entity	
Filing Fees for Utility under 35 USC 111(a)	

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility Search Fee	2111	1	300	300
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**300**

Electronic Acknowledgement Receipt	
EFS ID:	26245466
Application Number:	15201087
International Application Number:	
Confirmation Number:	1450
Title of Invention:	VIRTUAL SYSTEMS MANAGEMENT
First Named Inventor/Applicant Name:	Vipul Pabari
Customer Number:	26379
Filer:	Timothy W. Lohse
Filer Authorized By:	
Attorney Docket Number:	367894-991101
Receipt Date:	01-JUL-2016
Filing Date:	
Time Stamp:	18:00:55
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$300
RAM confirmation Number	070516INTEFSW00005046071896
Deposit Account	071896
Authorized User	Timothy Lohse
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Fee Worksheet (SB06)	fee-info.pdf	30067 312ec534bf6e1c9f62830fcb493a905d8f445488	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	30067		

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New Applications Under 35 U.S.C. 111
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