



# UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/341,471	12/31/2019	10523492	59612/00067	2381

27871 7590 12/11/2019  
BLAKE, CASSELS & GRAYDON LLP  
COMMERCE COURT WEST  
199 BAY STREET, SUITE 4000  
TORONTO, ONTARIO M5L 1A9  
CANADA

## 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 655 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):

Andrew D. HILLIER, Toronto, CANADA;  
Cirba Inc., Richmond Hill, CANADA;  
Tom YUYITUNG, Toronto, CANADA;

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](http://SelectUSA.gov).

IR103 (Rev. 10/09)



# UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/341,471	07/25/2014	Andrew D. HILLIER	59612/00067	2381
27871 7590 11/21/2019 BLAKE, CASSELS & GRAYDON LLP COMMERCE COURT WEST 199 BAY STREET, SUITE 4000 TORONTO, ONTARIO M5L 1A9 CANADA			EXAMINER MEJIA, ANTHONY	
			ART UNIT 2451	PAPER NUMBER
			NOTIFICATION DATE 11/21/2019	DELIVERY MODE 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):

epatent@blakes.com  
jelena.zubac@blakes.com



# **INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 1 of 2

## **Complete if Known**

Application Number 14/341,471  
 Filing Date July 25, 2014  
 First named Inventor HILLIER, Andrew D.  
 Art Unit 2642  
 Examiner Name  
 Attorney Docket Number 59612/00067

## **U.S. PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code <sup>2</sup> (if known)			
		US-2005/0132331 A1	06-16-2005	WOOD	
		US-2007/0094375 A1	04-26-2007	SNYDER et al.	
		US-2007/0250621 A1	10-25-2007	HILLIER	
		<del>US-2007/0250615 A1</del>	<del>10-25-2007</del>	<del>HILLIER</del>	
		US-6,249,769 B1	06-19-2001	RUFFIN et al.	
		US-6,557,008 B1	04-29-2003	TEMPLE, III et al.	
		US-7,055,149 B2	05-30-2006	BIRKHOLZ et al.	
		US-7,616,583 B1	11-10-2009	POWER et al.	
		US-7,640,342 B1	12-29-2009	AHARONI et al.	
		US-7,680,754 B2	03-16-2010	HILLIER	
		US-7,809,817 B2	10-05-2010	HILLIER	
		US-20070250615			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			

## **FOREIGN PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind-Code <sup>5</sup> (if known)				
		EP	0498130	A2	08-12-1992	INTERNATIONAL BUSINESS MACHINE CORPORATION		
		WO	2004/084083	A1	09-30-2004	UNISYS CORPORATION		

Examiner Signature /ANTHONY MEJIA/ Date Considered 11/18/2019

**EXAMINER:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup> Applicants' unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

22651769.1

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

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(Use as many sheets as necessary)</i>				<b>Complete if Known</b>	
				Application Number	14/341,471
				Filing Date	July 25, 2014
				First named Inventor	HILLIER, Andrew D.
				Art Unit	2642
				Examiner Name	
Sheet	2	of	2	Attorney Docket Number	59612/00067

### NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalogue, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	<sup>2</sup> T
		McKENNA, D.; "Systems Consolidation Framework"; 2004; pp. 1 to 21; <a href="http://www.sun.com/emrkt/campaign_docs/0904enterprise_consolidation/consolidation_framework.pdf">http://www.sun.com/emrkt/campaign_docs/0904enterprise_consolidation/consolidation_framework.pdf</a>	
		TANENBAUM, Andrew S. et al; Distributed Systems: Principles and Paradigms; US Ed edition; January 15, 2002; pp. 22-42, 326-336; Prentice Hall	
		HILLIER, Andrew; "A Quantitative and Analytical Approach to Server Consolidation" dated January 2006, published at least as early as February 3, 2006; CIRBA Inc.; Technical Whitepaper	
		HILLIER, Andrew; "Data Center Intelligence" dated March 2006, published at least as early as April 1, 2006; CIRBA Inc.; Technical Whitepaper	
		SPELLMAN, Amy et al.; "Server Consolidation Using Performance Modeling"; IT Professional; Sep/Oct 2003; pp. 31-36; Vol. 5, No. 5	
		TSAGARIS, N.; International PCT Search Report from corresponding PCT Application No. PCT/CA2007/000675; search completed June 19, 2007	
		KIELHOFER, P.; Search Report from corresponding European Application No. 13169900.1; search completed November 6, 2013	
		KIELHOFER, P.; Supplementary Partial Search Report for corresponding European Application No. 07719602.0; search completed July 7, 2010	

Examiner Signature	/ANTHONY MEJIA/	Date Considered	11/18/2019
--------------------	-----------------	-----------------	------------

**EXAMINER:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup>  
**Applicants' unique citation designation number (optional).** <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

22651769.1

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

# **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)

27871 7590 10/18/2019  
**BLAKE, CASSELS & GRAYDON LLP**  
**COMMERCE COURT WEST**  
**199 BAY STREET, SUITE 2000**  
**TORONTO, ONTARIO M5L 1A9**  
**CANADA**

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.
14/341,471	07/25/2014	Andrew D. HILLIER	59612/00067	2381

**TITLE OF INVENTION: METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS**

APPL. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1000	\$0.00	\$0.00	\$1000	01/21/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
MEJIA, ANTHONY	2451	709-223000

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 Brett J. SLANEY

2 Blake, Cassels & Graydon LLP

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

**Cirba IP Inc.**

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

**Markham, CANADA**

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 /Brett J. Slaney/

Date November 8, 2019

Typed or printed name Brett J. SLANEY

Registration No. 58,772

Electronic Patent Application Fee Transmittal				
<b>Application Number:</b>		14341471		
<b>Filing Date:</b>		25-Jul-2014		
<b>Title of Invention:</b>		METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS		
<b>First Named Inventor/Applicant Name:</b>		Andrew D. HILLIER		
<b>Filer:</b>		Brett Joseph Slaney/Judith Martin		
<b>Attorney Docket Number:</b>		59612/00067		
Filed as Large Entity				
<b>Filing Fees for Utility under 35 USC 111(a)</b>				
<b>Description</b>	<b>Fee Code</b>	<b>Quantity</b>	<b>Amount</b>	<b>Sub-Total in USD(\$)</b>
<b>Basic Filing:</b>				
<b>Pages:</b>				
<b>Claims:</b>				
<b>Miscellaneous-Filing:</b>				
<b>Petition:</b>				
<b>Patent-Appeals-and-Interference:</b>				
<b>Post-Allowance-and-Post-Issuance:</b>				
UTILITY APPL ISSUE FEE	1501	1	1000	1000

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1000



## Electronic Acknowledgement Receipt

<b>EFS ID:</b>	37704523
<b>Application Number:</b>	14341471
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	2381
<b>Title of Invention:</b>	METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS
<b>First Named Inventor/Applicant Name:</b>	Andrew D. HILLIER
<b>Customer Number:</b>	27871
<b>Filer:</b>	Brett Joseph Slaney/Judith Martin
<b>Filer Authorized By:</b>	Brett Joseph Slaney
<b>Attorney Docket Number:</b>	59612/00067
<b>Receipt Date:</b>	08-NOV-2019
<b>Filing Date:</b>	25-JUL-2014
<b>Time Stamp:</b>	17:36:29
<b>Application Type:</b>	Utility under 35 USC 111(a)

### Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$1000
RAM confirmation Number	E2019A8H36556960
Deposit Account	022553
Authorized User	Judith Martin
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	Issue Fee Payment (PTO-85B)	Cirba67_Issue-Fee-Transmittal.pdf	999468	no	1
			fcd85517dba15e6f904614516962968e46789ab		

## **Warnings:**

## **Information:**

2	Fee Worksheet (SB06)	fee-info.pdf	30357	no	2
			0797dab353ca93473c2740565d3af1fa5e74da2c		

## **Warnings:**

## **Information:**

<b>Total Files Size (in bytes):</b>	1029825
-------------------------------------	---------

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

### **New Applications Under 35 U.S.C. 111**

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

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

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

### **New International Application Filed with the USPTO as a Receiving Office**

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



# UNITED STATES PATENT AND TRADEMARK OFFICE

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

## NOTICE OF ALLOWANCE AND FEE(S) DUE

27871 7590 10/18/2019  
BLAKE, CASSELS & GRAYDON LLP  
COMMERCE COURT WEST  
199 BAY STREET, SUITE 4000  
TORONTO, ONTARIO M5L 1A9  
CANADA

EXAMINER

MEJIA, ANTHONY

ART UNIT

PAPER NUMBER

2451

DATE MAILED: 10/18/2019

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/341,471	07/25/2014	Andrew D. HILLIER	59612/00067	2381

TITLE OF INVENTION: METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1000	\$0.00	\$0.00	\$1000	01/21/2020

**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](http://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)

27871 7590 10/18/2019  
BLAKE, CASSELS & GRAYDON LLP  
COMMERCE COURT WEST  
199 BAY STREET, SUITE 4000  
TORONTO, ONTARIO M5L 1A9  
CANADA

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.
14/341,471	07/25/2014	Andrew D. HILLIER	59612/00067	2381

TITLE OF INVENTION: METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1000	\$0.00	\$0.00	\$1000	01/21/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
MEJIA, ANTHONY	2451	709-223000

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,

1 \_\_\_\_\_

(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.

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  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/341,471	07/25/2014	Andrew D. HILLIER	59612/00067	2381
27871	7590	10/18/2019	EXAMINER	
BLAKE, CASSELS & GRAYDON LLP			MEJIA, ANTHONY	
COMMERCE COURT WEST			ART UNIT	
199 BAY STREET, SUITE 4000			PAPER NUMBER	
TORONTO, ONTARIO M5L 1A9			2451	
CANADA			DATE MAILED: 10/18/2019	

## 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.

<b>Notice of Allowability</b>	<b>Application No.</b> 14/341,471	<b>Applicant(s)</b> HILLIER et al.	
	<b>Examiner</b> ANTHONY MEJIA	<b>Art Unit</b> 2451	<b>AIA (FITF) Status</b> 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 07/02/2019.  
☐ 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 1,3-13 and 15-35. 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](http://www.uspto.gov/patents/init_events/pph/index.jsp) or send an inquiry to [PPHfeedback@uspto.gov](mailto: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. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	5. <input type="checkbox"/> Examiner's Amendment/Comment
2. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date <u>07/02/2019</u> .	6. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance
3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material ____.	7. <input type="checkbox"/> Other ____.
4. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date. ____.	

/ANTHONY MEJIA/ Primary Examiner, Art Unit 2451	
--	--

<b>Notice of References Cited</b>	Application/Control No. 14/341,471		Applicant(s)/Patent Under Reexamination HILLIER et al.	
	Examiner ANTHONY MEJIA		Art Unit 2451	Page 1 of 2

**U.S. PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20050209819-A1	09-2005	Wehrs, Michael Edward	G06F9/4411	702/182
*	B	US-7616583-B1	11-2009	Power; Jonathan	G06Q10/06	370/252
*	C	US-6487723-B1	11-2002	MacInnis; Alexander G.	A63F13/12	725/132
*	D	US-6412012-B1	06-2002	Bieganski; Paul	G06Q30/02	709/232
*	E	US-6249769-B1	06-2001	Ruffin; Michael	G06Q10/06	705/7.13
*	F	US-20060253472-A1	11-2006	Wasserman; Theodore Jeremy	G06Q10/06	1/1
*	G	US-7865889-B1	01-2011	Bird; Mark	G06F8/60	717/168
*	H	US-20020199180-A1	12-2002	Donaldson, Jesse	G06F9/45537	717/178
*	I	US-20020078262-A1	06-2002	Harrison, Benjamin R.	G06F9/44526	719/331
*	J	US-20060184917-A1	08-2006	Troan; Lawrence Edward	G06F11/2289	717/124
*	K	US-20030154472-A1	08-2003	Daase, Detlef	G06F8/61	717/176
*	L	US-8024743-B2	09-2011	Werner; Randolph	G06F9/541	709/203
*	M	US-20060179124-A1	08-2006	Stefaniak; Joseph Peter	G06F9/5055	709/219

**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.



<b>Notice of References Cited</b>	Application/Control No. 14/341,471	Applicant(s)/Patent Under Reexamination HILLIER et al.	
	Examiner ANTHONY MEJIA	Art Unit 2451	Page 2 of 2

**U.S. PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20070156857-A1	07-2007	King; David L.	H04L41/0806	709/220
*	B	US-20060179431-A1	08-2006	Devanathan; Sriram Nmi	G06F8/61	717/168
*	C	US-20060179171-A1	08-2006	Stefaniak; Joseph Peter	G06F9/5061	710/15
*	D	US-20070006218-A1	01-2007	Vinberg; Anders B.	G06F8/61	717/174
*	E	US-20060155912-A1	07-2006	Singh; Sumankumar A.	G06F9/5088	711/6
*	F	US-20090070771-A1	03-2009	Yuyitung; Tom Silangan	G06Q10/06	718/105
*	G	US-20040107125-A1	06-2004	Guheen, Michael F.	G06Q50/01	705/319
*	H	US-7577722-B1	08-2009	Khandekar; Dilip	G06F9/45558	709/220
*	I	US-20130204975-A1	08-2013	Keith, JR.; Robert O.	H04L63/10	709/219
*	J	US-20010049743-A1	12-2001	Phippen, Robert William	G06F9/541	709/237
	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.

<b><i>Search Notes</i></b> 	<b>Application/Control No.</b> 14/341,471	<b>Applicant(s)/Patent Under Reexamination</b> HILLIER et al.
	<b>Examiner</b> ANTHONY MEJIA	<b>Art Unit</b> 2451

<b>CPC - Searched*</b>		
<b>Symbol</b>	<b>Date</b>	<b>Examiner</b>
H04L41/022, H04L41/0873, H04L41/0853, H04L41/0853, H04L41/0853, H04L12/24	10/15/2019	A.M.

<b>CPC Combination Sets - Searched*</b>		
<b>Symbol</b>	<b>Date</b>	<b>Examiner</b>


<b>US Classification - Searched*</b>			
<b>Class</b>	<b>Subclass</b>	<b>Date</b>	<b>Examiner</b>
709	223	10/15/2019	A.M.

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

<b>Search Notes</b>		
<b>Search Notes</b>	<b>Date</b>	<b>Examiner</b>
EAST Inventor and Assignee Search (See Search History)	10/15/2019	A.M.
EAST Class Limited w/Text-based Search (See Search History)	10/15/2019	A.M.
EAST Text-based Search (See Search History)	10/15/2019	A.M.
NPL Search (See Search History)	10/15/2019	A.M.


<b>Interference Search</b>			
<b>US Class/CPC Symbol</b>	<b>US Subclass/CPC Group</b>	<b>Date</b>	<b>Examiner</b>
	H04L41/022, H04L41/0873, H04L41/0853, H04L41/0853, H04L41/0853, H04L12/24	10/15/2019	A.M.
709	223	10/15/2019	A.M.

/ANTHONY MEJIA/ Primary Examiner.Art Unit 2451	
---	--

<b><i>Index of Claims</i></b> 	<b>Application/Control No.</b> 14/341,471	<b>Applicant(s)/Patent Under Reexamination</b> HILLIER et al.
	<b>Examiner</b> ANTHONY MEJIA	<b>Art Unit</b> 2451

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

CLAIMS										
<input type="checkbox"/> Claims renumbered in the same order as presented by applicant <input type="checkbox"/> CPA <input type="checkbox"/> T.D. <input type="checkbox"/> R.1.47										
CLAIM		DATE								
Final	Original	10/17/2016	07/22/2017	05/23/2018	12/26/2018	10/15/2019				
	1	✓	✓	✓	✓	=				
	2	✓	✓	✓	✓	-				
	3	✓	✓	✓	✓	=				
	4	✓	✓	✓	✓	=				
	5	✓	✓	✓	✓	=				
	6	✓	✓	✓	✓	=				
	7	✓	✓	✓	✓	=				
	8	✓	✓	✓	✓	=				
	9	✓	✓	✓	✓	=				
	10	✓	✓	✓	✓	=				
	11	✓	✓	✓	✓	=				
	12	✓	✓	✓	✓	=				
	13	✓	✓	✓	✓	=				
	14	✓	✓	✓	✓	-				
	15	✓	✓	✓	✓	=				
	16	✓	✓	✓	✓	=				
	17	✓	✓	✓	✓	=				
	18	✓	✓	✓	✓	=				
	19	✓	✓	✓	✓	=				
	20	✓	✓	✓	✓	=				
	21	✓	✓	✓	✓	=				
	22	✓	✓	✓	✓	=				
	23	✓	✓	✓	✓	=				
	24	✓	✓	✓	✓	=				
	25					=				
	26					=				
	27					=				
	28					=				
	29					=				
	30					=				
	31					=				
	32					=				
	33					=				
	34					=				
	35					=				

<b>Issue Classification</b> 	<b>Application/Control No.</b> 14/341,471	<b>Applicant(s)/Patent Under Reexamination</b> HILLIER et al.
	<b>Examiner</b> ANTHONY MEJIA	<b>Art Unit</b> 2451


CPC						
Symbol					Type	Version
H04L	/	41	/	022	F	2013-01-01
H04L	/	41	/	0853	I	2013-01-01
H04L	/	41	/	0873	I	2013-01-01



CPC Combination Sets							
Symbol				Type	Set	Ranking	Version
	/		/				



NONE		<b>Total Claims Allowed:</b>	
(Assistant Examiner)	(Date)	33	
/ANTHONY MEJIA/ Primary Examiner, Art Unit 2451	15 October 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

U.S. Patent and Trademark Office

Part of Paper No.: 20191014

<b>Issue Classification</b> 	<b>Application/Control No.</b> 14/341,471	<b>Applicant(s)/Patent Under Reexamination</b> HILLIER et al.
	<b>Examiner</b> ANTHONY MEJIA	<b>Art Unit</b> 2451

<b>INTERNATIONAL CLASSIFICATION</b>			
<b>CLAIMED</b>			
G06F		15	 173

<b>NON-CLAIMED</b>			
			


<b>US ORIGINAL CLASSIFICATION</b>	
<b>CLASS</b>	<b>SUBCLASS</b>
709	223

<b>CROSS REFERENCES(S)</b>						
<b>CLASS</b>	<b>SUBCLASS (ONE SUBCLASS PER BLOCK)</b>					
709	223					

NONE		<b>Total Claims Allowed:</b>	
(Assistant Examiner)	(Date)	33	
/ANTHONY MEJIA/ Primary Examiner, Art Unit 2451	15 October 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

U.S. Patent and Trademark Office

Part of Paper No.: 20191014

<b>Issue Classification</b> 	<b>Application/Control No.</b> 14/341,471	<b>Applicant(s)/Patent Under Reexamination</b> HILLIER et al.
	<b>Examiner</b> ANTHONY MEJIA	<b>Art Unit</b> 2451

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant <input type="checkbox"/> CPA <input type="checkbox"/> T.D. <input type="checkbox"/> R.1.47															
<b>CLAIMS</b>															
<b>Final</b>	<b>Original</b>	<b>Final</b>	<b>Original</b>	<b>Final</b>	<b>Original</b>	<b>Final</b>	<b>Original</b>	<b>Final</b>	<b>Original</b>	<b>Final</b>	<b>Original</b>	<b>Final</b>	<b>Original</b>	<b>Final</b>	<b>Original</b>
1	1	9	10	17	19	26	28								
	2	10	11	18	20	27	29								
2	3	11	12	19	21	28	30								
3	4	12	13	20	22	29	31								
4	5		14	21	23	30	32								
5	6	13	15	22	24	31	33								
6	7	14	16	23	25	32	34								
7	8	15	17	24	26	33	35								
8	9	16	18	25	27										

NONE		<b>Total Claims Allowed:</b>	
(Assistant Examiner)	(Date)	33	
/ANTHONY MEJIA/ Primary Examiner, Art Unit 2451	15 October 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

IEEE.org | IEEE Xplore Digital Library | IEEE-SA | IEEE Spectrum | More Sites

Cart (0) | Create Account | Personal Sign In

Access provided by:  
United States Patent and  
Trademark Office  
Sign Out

Browse

My Settings

Get Help

Search within results

Download PDFs | Per Page: Per Page 25 | Export | Alert Set Search Alerts | Search History

Showing 1-25 of 56 for  
(((("All Metadata":cloud) AND "All Metadata":evaluating OR determining OR estimating) AND "All Metadata":compatibility OR  
compatible)  
job OR task

Filters Applied: 1872 - 2006

☐ Conferences (41)☐ Journals (11)☐ Courses (2)☐ Magazines (1)☐ Standards (1)

Filter

Alert Set Search Alerts

| sort: Sort Relevance

Show

☒ All Results☐ My Subscribed  
Content☐ Open Access

Year

Single Year	Range
1964	2006

1964	2006
------	------

From

1964

To

2006

Author

Affiliation

Publication Title

Publisher

Conference  
Location

Standard Status

Standard Type

Index Terms

☐ **An Empirical Estimate of the Contribution of Terrain Reflections to Interfering Signal Distributions**

L. Katz ; A. Singer

IEEE Transactions on Electromagnetic Compatibility

Year: 1965 | Volume: 7, Issue: 2 | Journal Article | Publisher: IEEE

Abstract (2430 Kb)

**An Empirical Estimate of the Contribution of Terrain Reflections to Interfering Signal Distributions**

L. Katz ; A. Singer

IEEE Transactions on Electromagnetic Compatibility

Year: 1965 | Volume: 7, Issue: 2 | Journal Article | Publisher: IEEE

☐ **EMI hardening of "Flexi Nozzle Control system" --- A case study**

K. Rajeshwar Rao ; Sandeep M Satav ; K. Suryanarayana

2006 9th International Conference on Electromagnetic Interference and Compatibility (INCEMIC 2006)

Year: 2006 | Conference Paper | Publisher: IEEE

Abstract (782 Kb)

**EMI hardening of "Flexi Nozzle Control system" --- A case study**

K. Rajeshwar Rao ; Sandeep M Satav ; K. Suryanarayana

2006 9th International Conference on Electromagnetic Interference and Compatibility (INCEMIC 2006)

Year: 2006 | Conference Paper | Publisher: IEEE

☐ **Task-Compatibility-Based Motion Planning for Bimanual Assembly**

Myun Joong Hwang ; Nam Soo Park ; Sung Jo Kwak ; Doo Yong Lee

2006 IEEE International Conference on Systems, Man and Cybernetics

Year: 2006 | Volume: 6 | Conference Paper | Publisher: IEEE

Cited by: Papers (4)

Abstract (876 Kb)

**Task-Compatibility-Based Motion Planning for Bimanual Assembly**

Myun Joong Hwang ; Nam Soo Park ; Sung Jo Kwak ; Doo Yong Lee

2006 IEEE International Conference on Systems, Man and Cybernetics

Year: 2006 | Volume: 6 | Conference Paper | Publisher: IEEE

Standards Dictionary  
Terms

- $\boldsymbol{m}$  -out-of-
- $\boldsymbol{n}$  code.
- $\boldsymbol{n}$  -address in
- $\boldsymbol{n}$  struction.
- $\boldsymbol{n}$  -adic Boolean
- $\boldsymbol{n}$  operation.
- $\boldsymbol{n}$  -adic operation.
- $\boldsymbol{n}$

Browse »

## Bibliographic Data

Application No: 14/341,471

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☐ Yes ☒ No ☐ Met After Allowance

Verified and Acknowledged: /ANTHONY MEJIA/

Examiner's Signature

Initials

Title:

METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY  
OF COMPUTER SYSTEMS

---

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
07/25/2014	709	2451	59612/00067
RULE			

### APPLICANTS

Cirba Inc., Richmond Hill, CANADA

### INVENTORS

Andrew D. HILLIER Toronto, CANADA

Tom YUYITUNG Toronto, CANADA

### CONTINUING DATA

This application is a CON of 11738936 04/23/2007 PAT 8793679

11738936 is a CIP of 11535355 09/26/2006 PAT 7809817

11738936 is a CIP of 11535308 09/26/2006 PAT 7680754

11535355 has PRO of 60745322 04/21/2006

11535308 has PRO of 60745322 04/21/2006

### FOREIGN APPLICATIONS

#### IF REQUIRED, FOREIGN LICENSE GRANTED\*\*

08/04/2014

### STATE OR COUNTRY

CANADA

### ADDRESS

BLAKE, CASSELS & GRAYDON LLP

COMMERCE COURT WEST

199 BAY STREET, SUITE 4000

TORONTO, ON M5L 1A9

CANADA

### FILING FEE RECEIVED

\$2,660



## EAST Search History

## EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
		(compatibile compatibility) near ((virtual ADJ machines) hosts VMs))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 13:33
		(check\$3 verifying verifies evaluat\$3) SAME (compatibility compatible) SAME ()	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 11:46
		@ad< "20060421" @rlad< "20060421"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:54
L1	9	((("CIRBA") near3 ("INC"))).AS.AANM.	USPAT	OR	OFF	2019/10/15 07:22
L2	27	((("HILLIER") near3 ("Andrew")) OR (("YUYITUNG") near3 ("Tom"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/10/15 07:22
L3	27	((("HILLIER") near3 ("Andrew")) OR (("YUYITUNG") near3 ("Tom"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/10/15 07:22
L4	13	("8667500"   "20040034577"   "20050132331"   "20070094375"   "20070250615"   "20070250621"   "20700250615"   "6249769"   "6557008"   "7055149"   "7616583"   "7640342"   "7680754"   "7809817").PN.	US-PGPUB; USPAT	OR	OFF	2019/10/15 07:23
S1	1	"14341471"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 17:38
S2	3	"20050209819"	US-PGPUB; USPAT; USOCR;	OR	OFF	2016/10/15 21:16

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S3	2	"6487723".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:16
S4	4	"6412012".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:17
S5	2	"7616583".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:17
S6	16578	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L12/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:20
S7	54	(Hillier near Andrew).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:21
S8	43	(Yuyitung near Tom).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:21
S9	26	(Cirba near Inc\$2).AS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:22
S10	30145	709/223.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:22
S11	7	(compatible compatibility) near	US-PGPUB;	OR	OFF	2016/10/15

		(licenses licensing) near (software)	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			21:23
S12	761	(compatible compatibility) near (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:24
S13	38	(compatible compatibility) near (operating ADJ system) near (two different)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:25
S14	100	(split divide) near (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:26
S15	0	S12 and S14	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:26
S16	3	(determin\$3) near (operable) near (together)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:27
S17	2	"20040168052"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 04:17
S18	11	("20050132331"   "20070094375"   "20070250615"   "20070250621"   "6249769"   "6557008"   "7055149"   "7616583"   "7640342"   "7680754"   "7809817"   "US-20050132331"   "US-20070094375"   "US- 20070250621"   "US-20700250615"   "US-6249769"   "US-6557008"   "US- 7055149"   "US-7616583"   "US- 7640342"   "US-7680754"   "US- 7809817"   "US-").PN.	US-PGPUB; USPAT	OR	OFF	2016/10/17 06:14
S19	16578	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc.	US-PGPUB; USPAT;	OR	OFF	2016/10/17 06:21

		H04L41/0853.cpc. H04L12/24.cpc.	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S20	100	(split divide) near (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 06:21
S21	5	S19 and S20	US-PGPUB; USPAT	OR	OFF	2016/10/17 06:21
S22	94	H04L/6508.cpc. H04L/12/2863.cpc. H04L/6580.cpc. H04L/4308.cpc.	US-PGPUB; USPAT	OR	OFF	2016/10/17 07:05
S23	11	("20050132331"   "20070094375"   "20070250615"   "20070250621"   "6249769"   "6557008"   "7055149"   "7616583"   "7640342"   "7680754"   "7809817"   "US-20050132331"   "US-20070094375"   "US- 20070250621"   "US-20700250615"   "US-6249769"   "US-6557008"   "US- 7055149"   "US-7616583"   "US- 7640342"   "US-7680754"   "US- 7809817"   "US-").PN.	US-PGPUB; USPAT	OR	OFF	2016/10/17 07:29
S24	11	("20050132331"   "20070094375"   "20070250615"   "20070250621"   "6249769"   "6557008"   "7055149"   "7616583"   "7640342"   "7680754"   "7809817"   "US-20050132331"   "US-20070094375"   "US- 20070250621"   "US-20700250615"   "US-6249769"   "US-6557008"   "US- 7055149"   "US-7616583"   "US- 7640342"   "US-7680754"   "US- 7809817"   "US-").PN.	US-PGPUB; USPAT	OR	OFF	2016/10/17 07:29
S25	1	"20050209818"	US-PGPUB; USPAT	OR	OFF	2016/10/17 09:43
S26	2	"6249769".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:51
S27	144	(compatible compatibility) SAME (workload utilization) SAME (target)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:52
S28	16578	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L12/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:53

S29	11	S27 and S28	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:53
S30	4772	(compatible compatibility) SAME (workload utilization)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:54
S31	27	(rank\$3) SAME (compatible compatibility) SAME (workload utilization)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:54
S32	2	"7680754".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 10:18
S33	4	"13750444"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/15 12:22
S34	8963	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L12/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:37
S35	57	(Hillier near Andrew).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:37
S36	48	(Yuyitung near Tom).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:37
S37	27	(Cirba near Inc\$2).AS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2017/07/17 00:37

			DERWENT; IBM_TDB			
S38	2	(transfer\$4 mov\$3 migrat\$3) near (task workload job) near (compatible compatibility)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:43
S39	1684	(transfer\$4 mov\$3 migrat\$3) SAME (task workload job) SAME (compatible compatibility)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:45
S40	202442	(transfer\$4 mov\$3 migrat\$3) SAME (task workload job)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:51
S41	7680	(check\$3 verifying verifies evaluat\$3) near (compatibility compatible)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:52
S42	409	S40 and S41	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:53
S43	54421399	@ad< "20060421" @rlad< "20060421"	US-PGPUB; USPAT; USOCR; FPRS; EPO	OR	OFF	2017/07/17 00:55
S44	193	S42 and S43	US-PGPUB; USPAT; USOCR; FPRS; EPO	OR	OFF	2017/07/17 00:57
S45	34	(check\$3 verifying verifies evaluat\$3) near (compatibility compatible) near (target)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:59
S46	4	("20020078262"   "20020199180"   "20030227477"   "20060184917").PN.	US-PGPUB; USPAT	OR	OFF	2017/07/17 01:03
S47	6	(check\$3 verifying verifies evaluat\$3) near (compatibility compatible) near (job workload task)	US-PGPUB; USPAT; USOCR;	OR	OFF	2017/07/17 01:04

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S48	40	(check\$3 verifying verifies evaluat\$3) SAME (compatibility compatible) SAME (back-up second another mirror) near (server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 01:06
S49	19	S43 and S48	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 01:06
S50	7680	(check\$3 verifying verifies evaluat\$3) near (compatibility compatible)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:49
S51	54421399	@ad< "20060421" @rlad< "20060421"	US-PGPUB; USPAT; USOCR; FPRS; EPO	OR	OFF	2017/07/17 10:49
S52	40	(check\$3 verifying verifies evaluat\$3) SAME (compatibility compatible) SAME (back-up second another mirror) near (server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:49
S53	19	S51 and S52	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:49
S54	7	S53 and S50	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:49
S55	19	S51 and S52	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:51
S56	19	S55 and S51	US-PGPUB; USPAT; USOCR;	OR	OFF	2017/07/17 10:51

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S57	3937	(check\$3 verifying verifies evaluat\$3) SAME (compatibility compatible) SAME (server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:54
S58	1747	S51 and S57	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:54
S59	1646	(check\$3 verifying verifies evaluat\$3) SAME (compatibility compatible) SAME (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 11:46
S60	339	S59 and S57	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 11:46
S61	186	S51 AND S60	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 11:46
S62	1	"14623806"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/19 11:45
S63	0	(determin\$3 analyz\$3) near (server system) near (compatible) SAME (overload\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/19 13:32
S64	77	(determin\$3 analyz\$3) same (server system) same (compatible) SAME (overload\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/19 13:33
S65	1646	(check\$3 verifying verifies evaluat\$3)	US-PGPUB;	OR	OFF	2017/07/19



		SAME (compatibility compatible) SAME (operating ADJ system)	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			13:43
S66	21	(admin user administrator) near (list) near (compatible)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:19
S67	2071	(list) near (compatible compatibility)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:24
S68	9300425	@ad< "20060421" @rlad< "20060421"	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2017/07/20 18:24
S69	1024	S67 and S68	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2017/07/20 18:24
S70	192	S69 and (workload utilization)	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2017/07/20 18:27
S71	662	(compatible compatibility) near (scoring score)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:42
S72	140	S68 and S71	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:42
S73	11780	(compatible compatibility similarity) near (scoring score)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:52
S74	2	(compatible compatibility similarity) near (scoring score) near (target second) near (device system server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:53

S75	11	("20040034577"   "20050132331"   "20070094375"   "20070250621"   "20700250615"   "6249769"   "6557008"   "7055149"   "7616583"   "7640342"   "7680754"   "7809817").PN.	US-PGPUB; USPAT	OR	OFF	2017/07/20 18:55
S76	193	(compatible compatibility similarity) near (scoring score) near (device system server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 19:01
S77	210	(compatible compatibility similarity) near (scoring score rank\$3) near (device system server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 19:48
S78	66	(compatible compatibility similarity) near (list rank\$3) near (device system server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 19:55
S79	24	S68 and S78	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 19:56
S80	1	"14436190"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 20:09
S81	5	"20020013802"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/21 16:57
S82	3	"20100322213"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/21 18:27
S83	157	(look\$3 search\$3 analyz\$3 determin\$3) near (list database listing) near (compatible compatibility)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	OFF	2017/07/22 15:05

			IBM_TDB			
S84	9300425	@ad< "20060421" @rlad< "20060421"	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2017/07/22 15:05
S85	54	S83 and S84	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/22 15:05
S86	2	"20060179171"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/23 01:34
S87	1358	("VM" (virtual ADJ machine)) near (workload utilization overload)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/23 01:48
S88	9300425	@ad< "20060421" @rlad< "20060421"	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2017/07/23 01:49
S89	52	S87 and S88	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/23 01:49
S90	44	S89 and (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/23 01:51
S91	0	"14341471"	USPAT	OR	OFF	2018/05/23 16:55
S92	0	"20060179171"	USPAT	OR	OFF	2018/05/23 17:43
S93	0	"20060179171"	USPAT	OR	OFF	2018/05/23 17:43
S94	1	"20060179171"	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2018/05/23 17:43
S95	63	(Hillier near Andrew).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/23 18:00

S96	54	(Yuyitung near Tom).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/23 18:00
S97	27	(Cirba near Inc\$2).AS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/23 18:00
S98	985	(compatible compatibility) near (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/23 18:01
S99	8	(compatible compatibility) near (licenses licensing) near (software)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/23 18:01
S100	5	(report output display) near (solution configuration) near (compatible)	USPAT	OR	OFF	2018/05/23 18:02
S101	1833	(compatible compatibility) near (target another second)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 09:18
S102	240	S101 and (weights scores)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 09:18
S103	181	S102 and (rules constraints parameters)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 09:18
S104	1839	(compatible compatibility compatibilities) near (target another second)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 09:21
S105	240	S104 and (weights scores)	US-PGPUB; USPAT;	OR	OFF	2018/12/26 09:22

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S106	181	S105 and (rules constraints parameters)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 09:22
S107	79	S106 and (workload utilization)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 09:22
S108	114	S106 and (workload utilization usage)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 09:23
S109	9319469	@ad< "20060421" @rlad< "20060421"	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2018/12/26 11:46
S110	1839	(compatible compatibility compatibilities) near (target another second)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 11:46
S111	240	S110 and (weights scores)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 11:46
S112	181	S111 and (rules constraints parameters)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 11:46
S113	114	S112 and (workload utilization usage)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 11:46
S114	30	S113 and S109	US-PGPUB; USPAT; USOCR;	OR	OFF	2018/12/26 11:46

			EPO			
S115	2	"7755722".pn. "20040107125"	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2018/12/26 11:47
S116	2	"20040107125"	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2018/12/26 11:47
S117	0	"7755722".pn.	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2018/12/26 11:47
S118	0	"7755722".pn.	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2018/12/26 11:48
S119	1	"7577722".pn.	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2018/12/26 11:48
S120	415	("20020069369"   "20020120660"   "20020144257"   "20020156877"   "20040268348"   "6453392"   "6535977"   "6865732"   "6978232"   "7006964"   "7228337"   "7448079").PN. OR ("7577722").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/12/26 11:48
S121	1	S119 and (compatible compatibility)	US-PGPUB; USPAT; USOCR	OR	OFF	2018/12/26 11:49
S122	894	(scor\$3 percentage) near (compatibility compatible)	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:20
S123	238	S122 and S109	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:21
S124	25	(scor\$3 percentage) near (compatibility compatible) same (workload utilization)	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:21
S125	2	(migrating) near (compatibility compatible) same (workload utilization)	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:24
S126	17133	(compatibility compatible) same (workload utilization)	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:24
S127	7735	S109 and S126	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:24
S128	1649194	(scor\$3 percentage)	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:25
S129	3255	S127 and S128	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:25
S130	32	S129 and (virtual ADJ machine (VM))	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:25

S131	134	(compatibility compatible) same (workload utilization) same (migration migrating)	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:29
S132	31	S109 and S131	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:29
S133	55	(compatibile compatibility) near (virtual ADJ machines) hosts VMs	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 13:33
S134	794	(compatibile compatibility) near (score percentage)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 13:34
S135	114	S134 and S109	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 13:34
S136	1	S135 and (workload utilization)	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:36
S137	7735	S126 and S109	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:37
S138	0	(evaluat\$3 determin\$3) near (systems servers) near (compatibility compatible) near (migration migrated joined collaborate)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/10/14 18:30
S139	4	(evaluat\$3 determin\$3) near (compatibility compatible) near (targeted migration migrated joined collaborate)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/10/14 18:32
S140	13	(evaluat\$3 determin\$3) near (compatibility compatible) near (cloud)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/10/14 18:33
S141	12	(evaluat\$3 determin\$3) near (compatibility compatible) near (cloud) and (configuration layout toplogy)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	OFF	2019/10/14 18:35

			IBM_TDB			
S142	65	(Hillier near Andrew).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/10/14 18:36
S143	56	(Yuyitung near Tom).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/10/14 18:36
S144	27	(Cirba near Inc\$2).AS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/10/14 18:36
S145	10117	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L12/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/10/14 18:36
S146	0	S141 and S145	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/10/14 18:37
S147	0	S141 and (technical) same (business enterprise)	US-PGPUB; USPAT; EPO	OR	OFF	2019/10/14 18:44
S148	11	S141 and (business enterprise)	US-PGPUB; USPAT; EPO	OR	OFF	2019/10/14 18:44
S149	14	(evaluat\$3 determin\$3 check\$3) near (compatibility compatible) near (cloud)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/10/15 02:23
S150	2	(evaluat\$3 determin\$3 check\$3) near (compatibility compatible) near (target ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/10/15 02:25
S151	4666	(evaluat\$3 determin\$3 check\$3) same (compatibility compatible) near (server system)	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2019/10/15 02:27



## EAST Search History

			EPO; JPO; DERWENT; IBM_TDB			
S152	9328093	@ad< "20060421" @rlad< "20060421"	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2019/10/15 02:27
S153	1786	S151 and S152	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2019/10/15 02:28
S154	10100	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L12/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/10/15 02:28
S155	0	S153 and S154	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2019/10/15 02:28
S156	744	S153 and (cloud distributed)	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2019/10/15 02:29
S157	3	(evaluat\$3 determin\$3 check\$3) same (compatibility compatible) near (server system) near (job task)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/10/15 02:39

**EAST Search History (Interference)**

&lt; This search history is empty &gt;

**10/ 15/ 2019 7:23:35 AM****C:\Users\amejia\Documents\EAST\Workspaces\14341471.wsp**

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> ( Not for submission under 37 CFR 1.99)	Application Number	14341471
	Filing Date	2014-07-25
	First Named Inventor	HILLIER, Andrew D.
	Art Unit	2451
	Examiner Name	MEJIA, Anthony
	Attorney Docket Number	59612/00067

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code <sup>1</sup>	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	8667500	B1	2014-03-04	Jl et al.	

If you wish to add additional U.S. Patent citation information please click the Add button.

Add

U.S.PATENT APPLICATION PUBLICATIONS						Remove
Examiner Initial*	Cite No	Publication Number	Kind Code <sup>1</sup>	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Published Application citation information please click the Add button.

Add

FOREIGN PATENT DOCUMENTS								Remove
Examiner Initial*	Cite No	Foreign Document Number <sup>3</sup>	Country Code <sup>2i</sup>	Kind Code <sup>4</sup>	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T <sup>5</sup>
	1							

If you wish to add additional Foreign Patent Document citation information please click the Add button

Add

NON-PATENT LITERATURE DOCUMENTS					<a href="#">Remove</a>
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.			T <sup>5</sup>

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> ( Not for submission under 37 CFR 1.99)	Application Number	14341471
	Filing Date	2014-07-25
	First Named Inventor	HILLIER, Andrew D.
	Art Unit	2451
	Examiner Name	MEJIA, Anthony
	Attorney Docket Number	59612/00067

1	RAMAN, R. et al.; "Policy Drive Heterogeneous Resource Co-Allocation with Gangmatching"; HPDC '03 Proceedings of the 12th IEEE International Symposium on High Performance Distributed Computing; June 22-24, 2003; IEEE Computer Society, U.S.A.
2	VMware Product Data Sheet; VMware DRS: Dynamic balancing and allocation of resources for virtual machines; <a href="https://www.vmware.com/pdf/drs_datasheet.pdf">https://www.vmware.com/pdf/drs_datasheet.pdf</a> ; VMware, Inc.; published at least as early as 2007
3	VMware Infrastructure: Resource Management; <a href="https://www.vmware.com/pdf/vmware_drs_wp.pdf">https://www.vmware.com/pdf/vmware_drs_wp.pdf</a> ; VMware, Inc.; published at least as early as 2006

If you wish to add additional non-patent literature document citation information please click the Add button

#### EXAMINER SIGNATURE

Examiner Signature	/ANTHONY MEJIA/	Date Considered	10/15/2019
--------------------	-----------------	-----------------	------------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> See Kind Codes of USPTO Patent Documents at [www.USPTO.GOV](http://www.USPTO.GOV) or MPEP 901.04. <sup>2</sup> Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>3</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>4</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>5</sup> Applicant is to place a check mark here if English language translation is attached.

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> ( Not for submission under 37 CFR 1.99)	Application Number	14341471
	Filing Date	2014-07-25
	First Named Inventor	HILLIER, Andrew D.
	Art Unit	2451
	Examiner Name	MEJIA, Anthony
	Attorney Docket Number	59612/00067

### CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

**OR**

☐ That 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 the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

### SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Brett J. Slaney/	Date (YYYY-MM-DD)	2019-07-02
Name/Print	Brett J. SLANEY	Registration Number	58772

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

## 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.

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

Application No: 14/341,471  
Amendment Dated: July 2, 2019  
Reply to Office Action of: January 2, 2019

Docket No: 59612/00067

**IN THE UNITED STATES PATENT & TRADEMARK OFFICE**

Appln. No: **14/341,471**  
Applicant: **CiRBA Inc.**  
Filed: **July 25, 2014**  
Title: **Method and System for Determining Compatibility of Computer Systems**  
Art Unit: **2451**  
Examiner: **MEJIA, Anthony**  
Docket No: **59612/00067**

Mail Stop Amendment  
U.S. Patent & Trademark Office  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**RESPONSE**

Sir:

This is further to the Office Action dated January 2, 2019. Applicant advises that a petition for a three-month extension of time is being filed concurrently herewith, and wishes to amend the above-identified application as follows:

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

**Remarks:** begin on page 8 of this paper.

### Amendments to the Claims

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

#### Listing of claims:

1. (Currently amended) A computer implemented method for ~~determining compatibility of computer systems for combining~~ placing source systems on target systems, the method comprising:

~~analyzing compatibility parameters for the computer systems to determine whether a source system is compatible with at least one of: i) a target system, and ii) another source system, wherein the compatibility parameters correspond to features or characteristics of the respective computer systems that can be evaluated, quantified, measured, or compared between systems;~~

~~analyzing source system workload data to determine which of the computer systems is operable with another system on the target system; and~~

~~evaluating one or more source systems against other source systems and against one or more target systems using at least one rule set that evaluates parameters of the systems to determine whether the systems can or can not be placed together on a specific target system, wherein the evaluating comprises one or more of: a 1-to-1 compatibility analysis, an N-to-1 compatibility analysis, or an N-by-N compatibility analysis; and~~

~~generating an output comprising a workload placement solution based on which of the computer systems is operable and compatible with other systems, to enable one or more placements of source systems onto target systems to be implemented.~~

~~placing the source systems onto the target systems in accordance with technical, business, and workload constraints determined in the compatibility analysis.~~

2. (Cancel)

3. (Currently amended) The method of claim 1, further comprising:

generating a plurality of potential workload placement solutions; and

selecting an optimal workload placement solution ~~for the output~~, from the plurality of potential workload placement solutions.

4. (Previously presented) The method of claim 3, wherein the optimal workload placement solution is selected according to one or more criteria, the one or more criteria comprising at least one of a

compatibility score, and a number of transfers.

5. (Currently amended) The method of claim 1, further comprising ranking a plurality of target systems as candidates to host one or more source workloads according to compatibility scores and a resultant target resource utilization and selecting a best candidate.

6. (Currently amended) The method of claim 1, wherein ~~the compatibility parameters comprise technical parameters, business parameters, or both technical and business parameters~~, at least one of which compatibility parameter relates to the presence of licensed software, the method further comprising determining a combination of workloads running particular software applications that when combined onto the target system minimizes the software licensing costs.

7. (Previously presented) The method of claim 1, further comprising determining at least one optimal combination of workloads corresponding to virtual machines operable on the target system.

8. (Previously presented) The method of claim 7, wherein a virtual machine corresponds to an abstraction of a physical system, enabling an operating system to be independently installed on each virtual system residing on a same physical system.

9. (Previously presented) The method of claim 7, wherein a virtual machine corresponds a logical subdivision of an operating system installed on a physical system, enabling isolation in operation without executing a different operating system.

10. (Previously presented) The method of claim 1, further comprising determining at least one optimal combination of applications operable independently on the target system.

11. (Previously presented) The method of claim 10, wherein the optimal combination of applications coexist in a same operating system environment.

12. (Currently amended) The method of claim 10, wherein the optimal combination of applications is determined using a multi-dimensional analysis of inter-compatibility between ~~[[the]]~~ a plurality of workloads and the target system.

13. (Currently amended) A non-transitory computer readable medium comprising computer



executable instructions for ~~determining compatibility of computer systems for combining~~ placing source systems on target systems, the computer executable instructions comprising instructions for:

~~analyzing compatibility parameters for the computer systems to determine whether a source system is compatible with at least one of: i) a target system, and ii) another source system, wherein the compatibility parameters correspond to features or characteristics of the respective computer systems that can be evaluated, quantified, measured, or compared between systems;~~

~~analyzing source system workload data to determine which of the computer systems is operable with another system on the target system; and~~

~~evaluating one or more source systems against other source systems and against one or more target systems using at least one rule set that evaluates parameters of the systems to determine whether the systems can or can not be placed together on a specific target system, wherein the evaluating comprises one or more of: a 1-to-1 compatibility analysis, an N-to-1 compatibility analysis, or an N-by-N compatibility analysis; and~~

~~generating an output comprising a workload placement solution based on which of the computer systems is operable and compatible with other systems, to enable one or more placements of source systems onto target systems to be implemented.~~

~~placing the source systems onto the target systems in accordance with technical, business, and workload constraints determined in the compatibility analysis.~~

14. (Cancel)

15. (Currently amended) The non-transitory computer readable medium of claim 13, further comprising instructions for:

generating a plurality of potential workload placement solutions; and

selecting an optimal workload placement solution ~~for the output~~, from the plurality of potential workload placement solutions.

16. (Previously presented) The non-transitory computer readable medium of claim 15, wherein the optimal workload placement solution is selected according to one or more criteria, the one or more criteria comprising at least one of a compatibility score, and a number of transfers.

17. (Currently amended) The non-transitory computer readable medium of claim 13, further comprising instructions for ranking a plurality of target systems as candidates to host one or more source workloads according to compatibility scores and a resultant target resource utilization and

selecting a best candidate.

18. (Previously presented) The non-transitory computer readable medium of claim 13, wherein ~~the compatibility parameters comprise technical parameters, business parameters, or both technical and business parameters,~~ at least one of which compatibility parameter relates to the presence of licensed software, the computer executable instructions further comprising instructions for determining a combination of workloads running particular software applications that when combined onto the target system minimizes the software licensing costs.

19. (Previously presented) The non-transitory computer readable medium of claim 13, further comprising instructions for determining at least one optimal combination of workloads corresponding to virtual machines operable on the target system.

20. (Previously presented) The non-transitory computer readable medium of claim 19, wherein a virtual machine corresponds to an abstraction of a physical system, enabling an operating system to be independently installed on each virtual system residing on a same physical system.

21. (Previously presented) The non-transitory computer readable medium of claim 19, wherein a virtual machine corresponds a logical subdivision of an operating system installed on a physical system, enabling isolation in operation without executing a different operating system.

22. (Previously presented) The non-transitory computer readable medium of claim 13, further comprising instructions for determining at least one optimal combination of applications operable independently on the target system.

23. (Previously presented) The non-transitory computer readable medium of claim 22, wherein the optimal combination of applications coexist in a same operating system environment.

24. (Currently amended) The non-transitory computer readable medium of claim 22, wherein the optimal combination of applications is determined using a multi-dimensional analysis of inter-compatibility between [[the]] a plurality of workloads and the target system.

25. (New) A system for determining compatibility of computer systems for placing source systems on target systems, the system comprising a processor and memory, the memory comprising computer

executable instructions for operating the system by:

evaluating one or more source systems against other source systems and against one or more target systems using at least one rule set that evaluates parameters of the systems to determine whether the systems can or can not be placed together on a specific target system, wherein the evaluating comprises one or more of: a 1-to-1 compatibility analysis, an N-to-1 compatibility analysis, or an N-by-N compatibility analysis; and

placing the source systems onto the target systems in accordance with technical, business, and workload constraints determined in the compatibility analysis.

26. (New) The system of claim 25, further comprising instructions for:

generating a plurality of potential workload placement solutions; and

selecting an optimal workload placement solution, from the plurality of potential workload placement solutions.

27. (New) The system of claim 26, wherein the optimal workload placement solution is selected according to one or more criteria, the one or more criteria comprising at least one of a compatibility score, and a number of transfers.

28. (New) The system of claim 25, further comprising instructions for ranking a plurality of target systems as candidates to host one or more source workloads according to compatibility scores and a resultant target resource utilization and selecting a best candidate.

29. (New) The system of claim 25, wherein at least one compatibility parameter relates to the presence of licensed software, the method further comprising determining a combination of workloads running particular software applications that when combined onto the target system minimizes the software licensing costs.

30. (New) The system of claim 25, further comprising instructions for determining at least one optimal combination of workloads corresponding to virtual machines operable on the target system.

31. (New) The system of claim 30, wherein a virtual machine corresponds to an abstraction of a physical system, enabling an operating system to be independently installed on each virtual system residing on a same physical system.

32. (New) The system of claim 30, wherein a virtual machine corresponds a logical subdivision of an operating system installed on a physical system, enabling isolation in operation without executing a different operating system.

33. (New) The system of claim 25, further comprising instructions for determining at least one optimal combination of applications operable independently on the target system.

34. (New) The system of claim 33, wherein the optimal combination of applications coexist in a same operating system environment.

35. (New) The system of claim 33, wherein the optimal combination of applications is determined using a multi-dimensional analysis of inter-compatibility between a plurality of workloads and the target system.

## **REMARKS**

Applicant wishes to thank the Examiner for reviewing the present application.

### **Claim Amendments**

Claim 1 has been amended to clarify the protection being sought, by replacing the “analyzing” operations with: “evaluating one or more source systems against other source systems and against one or more target systems using at least one rule set that evaluates parameters of the systems to determine whether the systems can or can not be placed together on a specific target system, wherein the evaluating comprises one or more of: a 1-to-1 compatibility analysis, an N-to-1 compatibility analysis, or an N-by-N compatibility analysis”.

Claim 1 has also been amended to insert: “placing the source systems onto the target systems in accordance with technical, business, and workload constraints determined in the compatibility analysis”.

Claim 13 has been amended in a manner consistent with claim 1 as amended.

Claims 2 and 14 have been canceled and claims 3, 5, 6, 15, 17, and 18 amended to be consistent with claims 1 and 13 as amended.

Claims 12 and 24 have been amended to replace “the” with “a”.

New claims 25-35 have been added, which are directed to a system consistent with the existing claims directed to a method and a non-transitory computer readable medium.

Applicant respectfully submits that no new subject matter has been added by way of these amendments.

### **Claim Rejections – 35 U.S.C. 101**

Claims 1-24 have been rejected under 35 U.S.C. 101 for being directed to non-statutory subject matter. The Applicant respectfully traverses the rejections as follows.

Applicant has amended claim 1 as indicated above, to specify a practical application of the previously recited “output”, namely: “placing the source systems onto the target systems in accordance with technical, business, and workload constraints determined in the compatibility analysis”. Applicant submits that the rejections under 35 U.S.C. 101 are thereby rendered moot.

Applicant notes that in accordance with the 2019 Revised Patent Subject Matter Eligibility Guidance (also referred to as “2019 PEG”), two changes have been made in Step 2A of the MPEP

flowchart used for assessing subject matter eligibility.

The first change to Step 2A sets forth a new procedure, called “revised Step 2A”, under which a claim is not “directed to” a judicial exception unless the claim satisfies a two-prong inquiry. In prong one, the Examiner must determine if the claim recites an abstract idea, law of nature, or natural phenomenon. If not, the claim is not directed to a judicial exception. However, even if prong one is met (i.e. when the claim is “directed to” a judicial exception), the Examiner must determine if the claim recites additional elements that integrate the judicial exception into a practical application. That is, if the recited exception is integrated into a practical application, then the claim is **eligible**, concluding the eligibility analysis.

The second change to Step 2A is that an identification of particular groupings of abstract ideas is provided for use in prong one of Step 2A, replacing the “Eligibility Quick Reference Sheet Identifying Abstract Ideas”.

While Applicant does not necessarily agree with the Examiner that claims 1 and 13 are “directed to” an abstract idea, for the sake of argument, prong two of revised Step 2A would clearly be met. That is, the claims clearly recite additional elements that integrate the (alleged) judicial exception into a practical application.

For example, amended claim 1 recites in part:

“evaluating one or more source systems against other source systems and against one or more target systems using at least one rule set that evaluates parameters of the systems to determine whether the systems can or can not be placed together on a specific target system, wherein the evaluating comprises one or more of: a 1-to-1 compatibility analysis, an N-to-1 compatibility analysis, or an N-by-N compatibility analysis; and

placing the source systems onto the target systems in accordance with technical, business, and workload constraints determined in the compatibility analysis”

If one assumes, for the sake of argument, that evaluating the systems using at least one rule set, and wherein the evaluating includes a compatibility analysis are considered to be an abstract idea, Applicant respectfully submits that additional elements are clearly recited that integrate the abstract idea into a practical application.

In particular, claim 1 as amended recites: “placing the source systems onto the target systems in accordance with technical, business, and workload constraints determined in the compatibility analysis”. That is, claim 1 clearly recites applying the result of the compatibility analysis by placing source systems onto target systems – a practical application of any alleged abstract idea.

For at least that reason, the claims as amended clearly involve a practical application of the features recited in the claims, in accordance with Step 2A and thus should be deemed patent eligible.

Applicant furthermore submits that the present claims should be found to be eligible for reasons similar to those expressed in Example 37 of the Subject Matter Eligibility Examples: Abstract Ideas, also referred to as “2019 PEG Examples 37 through 42”, issued on January 7, 2019. In Example 37 while determining the amount of use of each icon over a predetermined period of time was found to be a judicial exception, the claim was found to, as a whole, integrate a mental process into a practical application by reciting a specific manner of automatically displaying icons.

As indicated above, in claim 1, the compatibility analysis(es) is/are performed in the “evaluating”, and then is/are applied to place source systems onto target systems. Clearly this integrates the alleged judicial exception into a practical application.

In view of the foregoing, Applicant respectfully submits that claim 1 is patent eligible, and complies with 35 U.S.C. 101. Similar arguments apply to claims 13, 25, and those claims dependent on claims 1, 13, and 25.

### **Claim Rejections – 35 U.S.C. 102 and 103**

Claims 1-6, 10-18, and 22-24 have been rejected under 35 U.S.C. 102(e) as being anticipated by Khandekar (US 7,577,722). Claims 7-9 and 19-21 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Khandekar in view of Vinberg (US 2007/0006218). The Applicant respectfully traverses the rejections as follows.

Claim 1 as amended recites in part:

“evaluating one or more source systems against other source systems and against one or more target systems using at least one rule set that evaluates parameters of the systems to determine whether the systems can or can not be placed together on a specific target system, wherein the evaluating comprises one or more of: a 1-to-1 compatibility analysis, an N-to-1 compatibility analysis, or an N-by-N compatibility analysis; and

placing the source systems onto the target systems in accordance with technical, business, and workload constraints determined in the compatibility analysis”.

Khandekar is concerned with providing a system that allows hosting providers to easily and flexibly configure the systems to be hosted or provided with a range of available options. Khandekar

purports that it should not be necessary to have a separate dedicated physical system for each user, and configuring systems should be fully automated (or at least more so). To address these objectives, Khandekar teaches a system to create virtualized computer systems based on input information that identifies a desired configuration. The system then is meant to automatically configure and deploy a virtual machine (VM) on a physical host platform according to this input information.

However, Khandekar does not teach or suggest evaluating source systems by performing a compatibility analysis (as recited in claim 1), let alone placing source systems based on technical, business and workload constraints determined in the compatibility analysis. Khandekar also fails to provide any details on their disclosed “heuristics engine” that would lead a person skilled in the art to what is recited in the present claims.

First, Applicant notes that Khandekar does not in any way mention business constraints or non-technical factors that can impact VM placement. The most detailed description of the heuristics algorithm is given in col. 20 lines 31-62; but does not mention any non-technical criteria, such as software licensing, maintenance windows, service level agreements, etc. This passage simply says ““The system designer will be able to determine which heuristics/rules to implement”. Given that the state of the art at the time of Khandekar was to only scrutinize resource utilization and technical considerations, it would be a leap to suggest that Khandekar suggests this feature, namely to incorporate business constraints into the workload placement process.

Second, Khandekar mentions a “heuristics engine” but does not provide enough detail for someone skilled in the art to contemplate a meaningful implementation, let alone what is recited in claim 1 as amended. The references provided in Khandekar are vague (e.g. Fig 2) and allude to a broad spectrum of capabilities:

- Selecting a VM image from a library (Col. 10:27-29)
- Selecting applications from a library (Col. 10:33-35)
- Validating user input (Col. 10:43-49)
- Analyzing intended tasks, performance specifications, functional goals (Col. 12:29-34)
- Selecting the best host (Col. 20:32-40).

Given that Khandekar’s primary focus is in provisioning and configuration management, and makes only passing references to workload placement, Khandekar at most teaches the need for a heuristics engine as part of the system it describes, but not sufficient detail to amount to a disclosure of what is claimed in the present application.

With respect to Vinberg, Applicant notes that while Vinberg may generally suggest the use of virtual machines, Vinberg fails to teach or suggest the elements above that distinguish over



Application No: 14/341,471  
Amendment Dated: July 2, 2019  
Reply to Office Action of: January 2, 2019

Docket No: 59612/00067

Khandekar and therefore Vinberg fails to cure the deficiencies in Khandekar. As such, claims 7-9 and 19-21 are invention over Khandekar and Vinberg. The other claims are similarly patentable over this combination of references.

\* \* \*

The Applicant requests early reconsideration and allowance of the present application.

Respectfully submitted,

/Brett J. Slaney/

---

Brett J. Slaney  
Agent for Applicant  
Registration No. 58,772

**Date: July 2, 2019**

BLAKE, CASSELS & GRAYDON LLP  
199 Bay Street  
Suite 4000, Commerce Court West  
Toronto ON M5L 1A9  
Canada

Tel: 416-863-2518  
BSL/

Application No. 14/341,471

**IN THE UNITED STATES PATENT & TRADEMARK OFFICE**

Appl. No.:	<b>14/341,471</b>	Art Unit:	<b>2451</b>
Applicant:	<b>CiRBA Inc.</b>	Examiner:	<b>MEJIA, Anthony</b>
Filed:	<b>July 25, 2014</b>	Docket No.:	<b>59612/00067</b>
Title:	<b>Method and System for Determining Compatibility of Computer Systems</b>		

U.S. Patent & Trademark Office  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

**SECOND SUPPLEMENTAL**  
**INFORMATION DISCLOSURE STATEMENT**

Pursuant to the duty to disclose under 37 CFR §1.56, Applicant submits herewith a Form SB/08 listing references of which the Applicant is aware and which are brought to the attention of the Examiner. In accordance with 37 CFR §1.98(a)(2), copies of the non-patent reference documents listed in the enclosed Form are submitted herewith.

Pursuant to 35 USC §120, this application relies on the earlier filing date(s) of the following prior application(s):

<u>Serial Number</u>	<u>Filing Date</u>
11/738,936	April 23, 2007
11/535,355	September 26, 2006
11/535,308	September 26, 2006

The filing of this IDS shall not be construed as a representation that a search has been made, an admission that the information cited is, or is considered to be, material for patentability, or that no other material information exists. This filing shall not be construed as an admission against interest in any matter.

This IDS is being submitted pursuant to 37 CFR 1.97(c) prior to the issuance of a final action or a Notice of Allowance. Pursuant to 37 CFR 1.97(c)(2), payment of the fee prescribed under 37

23685833.1

Application No. 14/341,471

CFR 1.17(p) is being submitted by electronic payment via EFS-Web. In the event of any discrepancy in the required fees, please debit or credit our Deposit Account Number 02-2553 accordingly and advise us immediately.

Applicant respectfully requests consideration of the items listed and requests the Examiner to return a copy of the attached Form after being marked as being considered by the Examiner.

Respectfully submitted,

Date: July 2, 2019

/Brett J. Slaney/

**Brett J. Slaney**  
Registration No. **58,772**  
Agent for Applicant

**BLAKE, CASSELS & GRAYDON LLP**  
199 Bay Street  
Suite 4000, Commerce Court West  
Toronto, Ontario, M5L 1A9  
Canada

Tel 416-863-2518  
Fax 416-863-2653

BSL/jmz

(✓) enclosure

23685833.1

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> ( Not for submission under 37 CFR 1.99)	Application Number	14341471
	Filing Date	2014-07-25
	First Named Inventor	HILLIER, Andrew D.
	Art Unit	2451
	Examiner Name	MEJIA, Anthony
	Attorney Docket Number	59612/00067

U.S. PATENTS							Remove	
Examiner Initial*	Cite No	Patent Number	Kind Code <sup>1</sup>	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear		
	1	8667500	B1	2014-03-04	Jl et al.			
If you wish to add additional U.S. Patent citation information please click the Add button.							Add	
U.S. PATENT APPLICATION PUBLICATIONS							Remove	
Examiner Initial*	Cite No	Publication Number	Kind Code <sup>1</sup>	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear		
	1							
If you wish to add additional U.S. Published Application citation information please click the Add button.							Add	
FOREIGN PATENT DOCUMENTS							Remove	
Examiner Initial*	Cite No	Foreign Document Number <sup>3</sup>	Country Code <sup>2i</sup>	Kind Code <sup>4</sup>	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T <sup>5</sup>
	1							
If you wish to add additional Foreign Patent Document citation information please click the Add button.							Add	
NON-PATENT LITERATURE DOCUMENTS							Remove	
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.						T <sup>5</sup>

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> ( Not for submission under 37 CFR 1.99)	Application Number	14341471
	Filing Date	2014-07-25
	First Named Inventor	HILLIER, Andrew D.
	Art Unit	2451
	Examiner Name	MEJIA, Anthony
	Attorney Docket Number	59612/00067

1	RAMAN, R. et al.; "Policy Drive Heterogeneous Resource Co-Allocation with Gangmatching"; HPDC '03 Proceedings of the 12th IEEE International Symposium on High Performance Distributed Computing; June 22-24, 2003; IEEE Computer Society, U.S.A.
2	VMware Product Data Sheet; VMware DRS: Dynamic balancing and allocation of resources for virtual machines; <a href="https://www.vmware.com/pdf/drs_datasheet.pdf">https://www.vmware.com/pdf/drs_datasheet.pdf</a> ; VMware, Inc.; published at least as early as 2007
3	VMware Infrastructure: Resource Management; <a href="https://www.vmware.com/pdf/vmware_drs_wp.pdf">https://www.vmware.com/pdf/vmware_drs_wp.pdf</a> ; VMware, Inc.; published at least as early as 2006

If you wish to add additional non-patent literature document citation information please click the Add button

**EXAMINER SIGNATURE**

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> See Kind Codes of USPTO Patent Documents at [www.USPTO.GOV](http://www.USPTO.GOV) or MPEP 901.04. <sup>2</sup> Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>3</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>4</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>5</sup> Applicant is to place a check mark here if English language translation is attached.

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> ( Not for submission under 37 CFR 1.99)	Application Number	14341471
	Filing Date	2014-07-25
	First Named Inventor	HILLIER, Andrew D.
	Art Unit	2451
	Examiner Name	MEJIA, Anthony
	Attorney Docket Number	59612/00067

### CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

**OR**

☐ That 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 the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

### SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Brett J. Slaney/	Date (YYYY-MM-DD)	2019-07-02
Name/Print	Brett J. SLANEY	Registration Number	58772

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

## 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				
<b>Application Number:</b>		14341471		
<b>Filing Date:</b>		25-Jul-2014		
<b>Title of Invention:</b>		METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS		
<b>First Named Inventor/Applicant Name:</b>		Andrew D. HILLIER		
<b>Filer:</b>		Brett Joseph Slaney/Judith Martin		
<b>Attorney Docket Number:</b>		59612/00067		
Filed as Large Entity				
<b>Filing Fees for Utility under 35 USC 111(a)</b>				
<b>Description</b>	<b>Fee Code</b>	<b>Quantity</b>	<b>Amount</b>	<b>Sub-Total in USD(\$)</b>
<b>Basic Filing:</b>				
<b>Pages:</b>				
<b>Claims:</b>				
CLAIMS IN EXCESS OF 20	1202	9	100	900
INDEPENDENT CLAIMS IN EXCESS OF 3	1201	1	460	460
<b>Miscellaneous-Filing:</b>				
<b>Petition:</b>				
<b>Patent-Appeals-and-Interference:</b>				



Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
<b>Post-Allowance-and-Post-Issuance:</b>				
<b>Extension-of-Time:</b>				
Extension - 3 months with \$0 paid	1253	1	1400	1400
<b>Miscellaneous:</b>				
SUBMISSION- INFORMATION DISCLOSURE STMT	1806	1	240	240
<b>Total in USD (\$)</b>				<b>3000</b>

## Electronic Acknowledgement Receipt

<b>EFS ID:</b>	36484555
<b>Application Number:</b>	14341471
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	2381
<b>Title of Invention:</b>	METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS
<b>First Named Inventor/Applicant Name:</b>	Andrew D. HILLIER
<b>Customer Number:</b>	27871
<b>Filer:</b>	Brett Joseph Slaney/Judith Martin
<b>Filer Authorized By:</b>	Brett Joseph Slaney
<b>Attorney Docket Number:</b>	59612/00067
<b>Receipt Date:</b>	02-JUL-2019
<b>Filing Date:</b>	25-JUL-2014
<b>Time Stamp:</b>	18:15:06
<b>Application Type:</b>	Utility under 35 USC 111(a)

### Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$ 3000
RAM confirmation Number	070319INTEFSW00005677022553
Deposit Account	022553
Authorized User	Judith Martin
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		Cirba67_OA4-Response.pdf	178309	yes	12
			c46fa3c698bc48bb8a61a3671ab2032c95371de		
	Multipart Description/PDF files in .zip description				
	Document Description		Start		End
	Amendment/Req. Reconsideration-After Non-Final Reject		1		1
	Claims		2		7
	Applicant Arguments/Remarks Made in an Amendment		8		12
Warnings:					
Information:					
2	Transmittal Letter	Cirba67_IDS3-Letter.pdf	143971	no	2
			ed055019b3f8a13b74c4951e98de320d50a17fb9		
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	Cirba67_IDS3-SB08-Form.pdf	1080385	no	4
			75fbef0a0ecdff854233f94d062078bf2b4af262		
Warnings:					
Information:					
4	Non Patent Literature	Cirba67_IDS3-NPL1.pdf	136785	no	10
			5d71bca317b40035d100c083746eddc9a86c61e2		
Warnings:					
Information:					
5	Non Patent Literature	Cirba67_IDS3-NPL2.pdf	997558	no	2
			84902b1c725ae57e197524b8b9c8c9c6298376c6		

<b>Warnings:</b>					
<b>Information:</b>					
6	Non Patent Literature	Cirba67_IDS3-NPL3.pdf	6797480	no	24
			b2b0d4a80dedcac337d84df5c029a9d81f2f07c4		
<b>Warnings:</b>					
<b>Information:</b>					
7	Fee Worksheet (SB06)	fee-info.pdf	35487	no	2
			79180437959db2414c0317cf0b9a74e746c03552		
<b>Warnings:</b>					
<b>Information:</b>					
<b>Total Files Size (in bytes):</b>			9369975		
<p><b>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.</b></p> <p><b><u>New Applications Under 35 U.S.C. 111</u></b>  <b>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.</b></p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b>  <b>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.</b></p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b>  <b>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.</b></p>					

<b>PATENT APPLICATION FEE DETERMINATION RECORD</b> Substitute for Form PTO-875				Application or Docket Number 14/341,471		Filing Date 07/25/2014		<input type="checkbox"/> To be Mailed	
ENTITY: <input checked="" type="checkbox"/> LARGE <input type="checkbox"/> SMALL <input type="checkbox"/> MICRO									
<b>APPLICATION AS FILED - PART I</b>									
		(Column 1)			(Column 2)				
FOR		NUMBER FILED			NUMBER EXTRA			RATE (\$)	FEE (\$)
<input type="checkbox"/> BASIC FEE (37 CFR 1.16(a), (b), or (c))		N/A			N/A			N/A	
<input type="checkbox"/> SEARCH FEE (37 CFR 1.16(k), (i), or (m))		N/A			N/A			N/A	
<input type="checkbox"/> 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 \$80 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))		minus 3 =	*					x \$420 =	
<input type="checkbox"/> 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).							
<input type="checkbox"/> 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			
<b>APPLICATION AS AMENDED - PART II</b>									
		(Column 1)			(Column 2)			(Column 3)	
AMENDMENT	07/02/2019	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA			RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(i))	* 33	Minus	** 24	= 9			x \$100 =	900
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0			x \$460 =	0
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))								
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
								TOTAL ADD'L FEE	900
		(Column 1)			(Column 2)			(Column 3)	
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA			RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=			x \$0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=			x \$0 =	
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))								
	<input type="checkbox"/> 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.								LIE	
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".								/EFREM WARREN/	
*** 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.									

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.*



# UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/341,471	07/25/2014	Andrew D. HILLIER	59612/00067	2381
27871 7590 01/02/2019 BLAKE, CASSELS & GRAYDON LLP COMMERCE COURT WEST 199 BAY STREET, SUITE 4000 TORONTO, ONTARIO M5L 1A9 CANADA			EXAMINER MEJIA, ANTHONY	
			ART UNIT 2451	PAPER NUMBER
			NOTIFICATION DATE 01/02/2019	DELIVERY MODE 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):

epatent@blakes.com  
jelena.zubac@blakes.com



***Notice of Pre-AIA or AIA Status***

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

***Continued Examination Under 37 CFR 1.114***

2. 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. Applicants' submission filed on **30 October 2018** has been entered.

***Priority***

3. This application discloses and claims only subject matter disclosed in prior U.S. AP No. **11/535,308** and now US PAT No. **7,680,754**, filed **26 September 2006**, and names the inventor or at least one joint inventor named in the prior application. Accordingly, this application constitutes as a continuation to claim the benefit of the filing date of the prior application above, attention is directed to 35 U.S.C. 120, 37 CFR 1.78, and MPEP § 211 *et seq.*

***Response to Amendment***

4. Acknowledgement is made that Claims 1-2 and 13-14 have been amended in the instant application presented herein.



***Response to Arguments***

5. Applicant's arguments, see pages 6-9 of Remarks filed **30 October 2018**, with respect to the rejection(s) of claim(s) 1-24 under 35 U.S.C. 101 have been fully considered but they are not persuasive. Applicants explicitly argue that by assessing whether compatibilities exist and whether the systems are operable together on a target system, existing environments can be optimized. Thus, this not only improves the software and computing system that is analyzing the environment but the computer environment itself. As such, there is clearly an improvement to another technology and the amendments provide an additional specific limitation over what is well understood conventional and provide meaningful limitation beyond over what is understood and conventional and provide yet another meaningful limitation beyond generally linking the use a judicial exception to a particular environment. Examiner still fails to see how the claimed invention is directed towards a technical improvement or specific solution to a technical problem (see *McRO, Inc. dba Planet Blue v. Bandai Namco Games America Inc.*, 120 USPQ2d 1091 (Fed. Cir. 2016) and *BASCOM Global Internet Services v. AT&T Mobility LLC*, 827 F.3d 1341 (Fed. Cir. 2016)). In this case, an administrator and/or developer (human) can determine compatibility of computer systems for combining source systems. Thus it remains unclear as to what technical improvement or specific solution to a technical problem the claimed invention is disclosing. It is unclear as to what limitations recite significantly more than the abstract idea. Furthermore, the claimed steps of: "analyzing compatible parameters...and...analyzing source system workload data...operable together on the target system...generating an output..." appears to close to the steps of Comparing information regarding a sample or test subject to a control or target data (Ambry/Myriad CAFC) and Collecting information, analyzing it, and displaying certain results of the collection and analysis (Electric Power Group). Specifically, in this instance, applicants argue on page 8 that the "controlling the placement of such systems by creating a workload placement solution..." However, Examiner fails to see where the step of "controlling..." is disclosed. Claim 1 for

instance merely discloses steps of “analyzing compatibility parameters...”, “analyzing source system...”, and “generating an output....” Examiner fails to see where a “controlling...” step as argued is disclosed.

In the cited RCT case on page 10 of Remarks, applicants argue that claim 1 ties the operations performed in the analyses to the creation of a workload placement solution in order to control the placements source systems onto target systems when implemented, in order to solve a particular problem in a particular type of computing environment. However, no actual implementation of controlling is disclosed in the claim.

6. Applicant’s arguments, see pages 7-8, with respect to the rejection(s) of claim(s) 1-24 under 35 U.S.C. 102 have been fully considered and are persuasive. However, a new grounds of rejection is made below as necessitated by applicants’ substantial amendments to the claims thereof.

***Claim Rejections - 35 USC § 101***

7. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claims 1-24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claim as a whole, considering all claim elements both individually and in combination, do not amount to significantly more than an abstract idea.

Examples of abstract ideas may include fundamental economic practices, certain methods of organizing human activities, an idea of itself, and mathematical relationships or formulas. They may also include ideas that are routine, long-prevalent, or conventional. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l et. al.*, 134 S. Ct. 2347 (2014). Step one of the Alice framework involves determining the breadth of the claims in order to determine whether the claims extend to cover a “fundamental economic practice long prevalent in our system...” *Alice*, 134 S. Ct. at 2356 (emphasis added).

Claims 1-24 are directed to the abstract ideas of “An idea of itself”, such as concepts relating to “analyzing compatibility parameters”, “analyzing source system workload data...operable together on target system” and “generating an output...” an idea of itself where an idea standing alone, such as an un-instantiated concept, plan or scheme.

The following claim limitations are considered to be part of the abstract idea: “analyzing compatibility parameters”, “analyzing source system workload data”, and “generating an output...”.

The following court cases contain similar steps as those in the present claims: concepts relating to “analyzing compatibility parameters”, “analyzing source system workload data...operable together on target system”, and “generating an output...” (*Electric Power Group*; “*Ambry/Myriad CAFC*”).

In addressing the second [step 2a] analysis of *Alice*, an abstract idea does not become non-abstract by limiting the invention to a particular field of use or technological environment, such as the Internet. A simple instruction to apply an abstract idea on a computer is not enough.

In general, conventional steps, specified at a high level of generality, are insufficient to supply an inventive concept. “Analyzing compatibility parameters...and...”analyzing source system workload data...operable together on target system...”, and “generating an output...”, These types of steps are insufficient to transform an otherwise patent-ineligible abstract idea into patent-eligible subject matter. *Ultramercial, Inc. v. Hulu, LLC*, 09-CV-68918 at p. 11 (Fed. Cir. 2014), paraphrasing *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289 (2012).

Claims 1-24 merely recite a method for determining compatibility of computer systems for combining source systems on target systems which are not sufficient limitation and/or elements for eligibility subject matter under 35 U.S.C. 101 [abstract idea]. The client devices are used for execution of general purpose computing instructions in order to implement the abstract idea, and do not amount to more than mere data gathering and displaying. The claimed solution must be necessarily rooted in computer technology in order to overcome a problem specifically, and the steps of analyzing disclosed

within the claims do not provide any improvement to the computing device or the network technology (see *McRO, Inc. dba Planet Blue v. Bandai Namco Games America Inc.*, 120 USPQ2d 1091 (Fed. Cir. 2016) and *BASCOM Global Internet Services v. AT&T Mobility LLC*, 827 F.3d 1341 (Fed. Cir. 2016). Furthermore, the recited additional features of the “clients”, when taken as a whole, do not provide significantly more than the abstract idea.

The following court cases contain similar steps as those in the present claims: concepts relating to: “analyzing compatibility parameters...and...”analyzing source system workload data...operable together on target system...”, and “generating an output”...(collecting information, analyzing it, displaying certain results of the collection and analysis, comparing information regarding a sample or test subject to a target data) (*Electric Power Group*; “Ambry/Myriad CAFC”).

In addressing the second [step 2b] analysis, the office noted the present independent claims, recites additional structure, specifically a “computer systems”, do not contribute significantly to the underlying abstract idea. The additional elements or combination of elements, other than the abstract idea per se, amount to no more than mere recitation of a generic computer structure that serves to perform generic computer functions that are well-understood, routine, and conventional activities previously known. The dependent claims 2-12 also further fail to cure the deficiencies of their independent claim 1, similarly dependent claims 14-24 also fail to cure the deficiencies of their independent claim 13 as the additional elements and functions recited by the dependent claims do not provide meaningful limitations to transform the abstract idea into a patent eligible application that amounts significantly more than the abstract idea itself. Thus, claims 1-24, when taken individually or as an ordered combination fail to recite significantly more than the abstract idea itself.

***Claim Rejections - 35 USC § 102***

9. 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 the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –  
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-6, 10-18, and 22-24 are rejected under pre-AIA 35 U.S.C. 102 as being anticipated by anticipated by Khandekar et al. (US 7,577,722 B1) (hereinafter as Khandekar).

Regarding Claim 1, Khandekar teaches a method for determining compatibility of systems for combining source systems on target systems, the method comprising:

analyzing compatibility parameters for the computer systems to determine whether a source system is compatible with at least one of:

i) a target system (col.9, lines 1-8, col.10, lines 15-49, col.11, lines 36-67, and col.12, lines 1-24, lines 61-67-col.13, lines 1-35), and

ii) another source system, wherein the compatibility parameters correspond to features or characteristics of the respective computer systems that can be evaluated, quantified, measured, or compared between (col.9, lines 1-8, col.10, lines 15-49, col.11, lines 36-67, and col.12, lines 1-24, lines 61-67-col.13, lines 1-35)

analyzing source system workload data to determine which of the computer systems is operable together with another system on the target system (col.9, lines 1-8, col.10, lines 15-49, col.11, lines 36-67, and col.12, lines 1-24, lines 61-67-col.13, lines 1-35); and

generating an output comprising a workload placement solution based on which the computer systems is operable and compatible with other systems, to enable one or more placements of source systems to be implemented (col.9, lines 1-8, col.10, lines 15-49, col.11, lines 36-67, and col.12, lines 1-24, lines 61-67-col.13, lines 1-35).

Regarding Claim 2, Khandekar further teaches wherein the compatibility parameters comprise technical parameters of the systems and non- technical business parameters in a computing environment comprising computer systems (col.9, lines 1-8, col.10, lines 15-49, col.11, lines 36-67, and col.12, lines 1-24, lines 61-67-col.13, lines 1-35).

Regarding Claim 3, Khandekar further teaches wherein the method further comprises:

generating a plurality of potential workload placement solutions (col.9, lines 1-8, col.10, lines 15-49, col.11, lines 36-67, and col.12, lines 1-24, lines 61-67-col.13, lines 1-35); and

selecting an optimal workload placement solution for the output from the plurality of potential workload placement solutions (col.9, lines 1-8, col.10, lines 15-49, col.11, lines 36-67, and col.12, lines 1-24, lines 61-67-col.13, lines 1-35).

Regarding Claim 4, Khandekar further teaches wherein the optimal workload placement solution is selected according to one or more criteria, the one or more criteria comprising at least one of a compatibility score, and a number of transfers (col.9, lines 1-8, col.10, lines 15-49, col.11, lines 36-67, and col.12, lines 1-24, lines 61-67-col.13, lines 1-35).

Regarding Claim 5, Khandekar further teaches ranking a plurality of target systems as candidates to host one or more source workloads according to compatibility scores and a resultant target resource utilization (col.9, lines 1-8, col.10, lines 15-49, col.11, lines 36-67, and col.12, lines 1-24, lines 61-67-col.13, lines 1-35).

Regarding Claim 6, Khandekar further teaches wherein the compatibility parameters comprise technical parameters, business parameters, or both technical and business parameters, at least one of which relates to the presence of licensed software, the method further comprising determining a combination of workloads running particular software applications that when combined onto the target system minimizes the software licensing costs (col.9, lines 1-8, col.10, lines 15-49, col.11, lines 36-67, and col.12, lines 1-24, lines 61-67-col.13, lines 1-35).

Regarding Claim 10, Khandekar further teaches determining at least one optimal combination of applications operable independently on the target system (col.9, lines 1-8, col.10, lines 15-49, col.11, lines 36-67, and col.12, lines 1-24, lines 61-67-col.13, lines 1-35).

Regarding Claim 11, Khandekar further teaches wherein the optimal combination of applications coexist in a same operating system environment (col.9, lines 1-8, col.10, lines 15-49, col.11, lines 36-67, and col.12, lines 1-24, lines 61-67-col.13, lines 1-35).

Regarding Claim 12, Khandekar further teaches wherein the optimal combination of applications is determined using a multi-dimensional analysis of inter-compatibility between the plurality of workloads and the target system (col.9, lines 1-8, col.10, lines 15-49, col.11, lines 36-67, and col.12, lines 1-24, lines 61-67-col.13, lines 1-35).

Regarding Claim 13, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 1 above, same rationale of rejection is applicable.

Regarding Claim 14, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 2 above, same rationale of rejection is applicable.

Regarding Claim 15, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 3 above, same rationale of rejection is applicable.

Regarding Claim 16, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 4 above, same rationale of rejection is applicable.

Regarding Claim 17, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 5 above, same rationale of rejection is applicable.

Regarding Claim 18, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 6 above, same rationale of rejection is applicable.

Regarding Claim 22, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 10 above, same rationale of rejection is applicable.

Regarding Claim 23, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 11 above, same rationale of rejection is applicable.



Regarding Claim 24, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 12 above, same rationale of rejection is applicable.

11. Claims 7-9 and 19-21 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Khandekar in further view of Vinberg et al. (US 2007/0006218 A1) (hereinafter as Vinberg).

Regarding Claim 7, Khandekar teaches the method of claim 1 above.

Khandekar does not explicitly teach the step of determining at least one optimal combination of workloads corresponding to virtual machines operable on the target system.

However, Vinberg in a similar field of endeavor discloses a model-based virtual system including the step of:

determining at least one optimal combination of workloads corresponding to virtual machines operable on the target system (pars [0014-0021], [0048-0054], [0057], [0085], and [0094-0095]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Vinberg in the teachings Khandekar in to derive a model that considers workload constraints. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings of Khandekar and Vinberg to help minimize conflicts in an installation process.

Regarding Claim 8, Vinberg further teaches wherein a virtual machine corresponds to an abstraction of a physical system, enabling an operating system to be independently installed on each virtual system residing on a same physical system(pars [0014-0021], [0048-0054], [0057], [0085], and [0094-0095]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Vinberg in the teachings Steraniak in to derive a model that considers workload constraints. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings of Khandekar and Vinberg to help minimize conflicts in an installation process.

Regarding Claim 9, Vinberg further teaches wherein a virtual machine corresponds a logical subdivision of an operating system installed on a physical system, enabling isolation in operation without executing a different operating system (pars [0014-0021], [0048-00534], [0057], [0085], and [0094-0095]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Vinberg in the teachings Steraniak in to derive a model that considers workload constraints. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings of Khandekar and Vinberg to help minimize conflicts in an installation process.

Regarding Claim 19, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 7 above, same rationale of rejection is applicable.

Regarding Claim 20, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 8 above, same rationale of rejection is applicable.

Regarding Claim 21, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 9 above, same rationale of rejection is applicable.

***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY MEJIA whose telephone number is (571)270-3630. The examiner can normally be reached on **Mon-Fri 10:30a-630pm**.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Parry can be reached on **(571) 272-8328**. 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.

/ANTHONY MEJIA/  
Primary Examiner, Art Unit 2451

<b>Notice of References Cited</b>	Application/Control No. 14/341,471		Applicant(s)/Patent Under Reexamination HILLIER et al.	
	Examiner ANTHONY MEJIA		Art Unit 2451	Page 1 of 2

#### U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20050209819-A1	09-2005	Wehrs, Michael Edward	G06F9/4411	702/182
*	B	US-7616583-B1	11-2009	Power; Jonathan	G06Q10/06	370/252
*	C	US-6487723-B1	11-2002	MacInnis; Alexander G.	A63F13/12	348/E5.006
*	D	US-6412012-B1	06-2002	Bieganski; Paul	G06Q30/02	709/232
*	E	US-6249769-B1	06-2001	Ruffin; Michael	G06Q10/06	705/7.13
*	F	US-20060253472-A1	11-2006	Wasserman; Theodore Jeremy	G06Q10/06	1/1
*	G	US-7865889-B1	01-2011	Bird; Mark	G06F8/60	717/168
*	H	US-20020199180-A1	12-2002	Donaldson, Jesse	G06F9/45537	717/178
*	I	US-20020078262-A1	06-2002	Harrison, Benjamin R.	G06F9/44526	719/331
*	J	US-20060184917-A1	08-2006	Troan; Lawrence Edward	G06F11/2289	717/124
*	K	US-20030154472-A1	08-2003	Daase, Detlef	G06F8/61	717/176
*	L	US-8024743-B2	09-2011	Werner; Randolph	G06F9/541	709/203
*	M	US-20060179124-A1	08-2006	Stefaniak; Joseph Peter	G06F9/5055	709/219

#### 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	Provisional Specification, 60/969344, 08/31/2007, pages 1-24
	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.

U.S. Patent and Trademark Office  
PTO-892 (Rev. 01-2001)

Notice of References Cited

Part of Paper No. 20181226

<b>Notice of References Cited</b>	Application/Control No. 14/341,471		Applicant(s)/Patent Under Reexamination HILLIER et al.	
	Examiner ANTHONY MEJIA		Art Unit 2451	Page 2 of 2

**U.S. PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20070156857-A1	07-2007	King; David L.	H04L41/0806	709/220
*	B	US-20060179431-A1	08-2006	Devanathan; Sriram Nmi	G06F8/61	717/168
*	C	US-20060179171-A1	08-2006	Stefaniak; Joseph Peter	G06F9/5061	710/15
*	D	US-20070006218-A1	01-2007	Vinberg; Anders B.	G06F8/61	717/174
*	E	US-20060155912-A1	07-2006	Singh; Sumankumar A.	G06F9/5088	711/6
*	F	US-20090070771-A1	03-2009	Yuyitung; Tom Silangan	G06Q10/06	718/105
*	G	US-20040107125-A1	06-2004	Guheen, Michael F.	G06Q50/01	705/319
*	H	US-7577722-B1	08-2009	Khandekar; Dilip	G06F9/45558	709/220
*	I	US-20150089501-A1	03-2015	Ganesan; Rajeshwari	G06F9/5077	718/1
	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.

<b><i>Index of Claims</i></b> 	<b>Application/Control No.</b> 14/341,471	<b>Applicant(s)/Patent Under Reexamination</b> HILLIER et al.
	<b>Examiner</b> ANTHONY MEJIA	<b>Art Unit</b> 2451

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

CLAIMS										
<input type="checkbox"/> Claims renumbered in the same order as presented by applicant <input type="checkbox"/> CPA <input type="checkbox"/> T.D. <input type="checkbox"/> R.1.47										
CLAIM		DATE								
Final	Original	10/17/2016	07/22/2017	05/23/2018	12/26/2018					
	1	✓	✓	✓	✓					
	2	✓	✓	✓	✓					
	3	✓	✓	✓	✓					
	4	✓	✓	✓	✓					
	5	✓	✓	✓	✓					
	6	✓	✓	✓	✓					
	7	✓	✓	✓	✓					
	8	✓	✓	✓	✓					
	9	✓	✓	✓	✓					
	10	✓	✓	✓	✓					
	11	✓	✓	✓	✓					
	12	✓	✓	✓	✓					
	13	✓	✓	✓	✓					
	14	✓	✓	✓	✓					
	15	✓	✓	✓	✓					
	16	✓	✓	✓	✓					
	17	✓	✓	✓	✓					
	18	✓	✓	✓	✓					
	19	✓	✓	✓	✓					
	20	✓	✓	✓	✓					
	21	✓	✓	✓	✓					
	22	✓	✓	✓	✓					
	23	✓	✓	✓	✓					
	24	✓	✓	✓	✓					

<b><i>Search Notes</i></b> 	<b>Application/Control No.</b> 14/341,471	<b>Applicant(s)/Patent Under Reexamination</b> HILLIER et al.
	<b>Examiner</b> ANTHONY MEJIA	<b>Art Unit</b> 2451

CPC - Searched*		
Symbol	Date	Examiner
H04L41/022, H04L41/0873, H04L41/0853, H04L41/0853, H04L41/0853, H04L12/24	12/26/2018	A.M.

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
709	223	12/26/2018	A.M.

\* 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
EAST Inventor and Assignee Search (See Search History)	12/26/2018	A.M.
EAST Class Limited w/Text-based Search (See Search History)	12/26/2018	A.M.
EAST Text-based Search (See Search History)	12/26/2018	A.M.

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

/ANTHONY MEJIA/ Primary Examiner.Art Unit 2451	
---	--

## EAST Search History

## EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L5	9319469	@ad< "20060421" @rlad< "20060421"	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2018/12/26 11:46
L6	1839	(compatible compatibility compatibilities) near (target another second)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 11:46
L7	240	L6 and (weights scores)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 11:46
L8	181	L7 and (rules constraints parameters)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 11:46
L9	114	L8 and (workload utilization usage)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 11:46
L10	30	L9 and L5	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2018/12/26 11:46
L11	2	"7755722".pn. "20040107125"	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2018/12/26 11:47
L12	2	"20040107125"	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2018/12/26 11:47
L13	0	"7755722".pn.	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2018/12/26 11:47
L14	0	"7755722".pn.	US-PGPUB; USPAT;	OR	OFF	2018/12/26 11:48



			USOCR; EPO			
L15	1	"7577722".pn.	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2018/12/26 11:48
L16	415	("20020069369"   "20020120660"   "20020144257"   "20020156877"   "20040268348"   "6453392"   "6535977"   "6865732"   "6978232"   "7006964"   "7228337"   "7448079").PN. OR ("7577722").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/12/26 11:48
L17	1	15 and (compatibile compatibility)	US-PGPUB; USPAT; USOCR	OR	OFF	2018/12/26 11:49
L18	894	(scor\$3 percentage) near (compatibility compatible)	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:20
L19	238	18 and 5	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:21
L20	25	(scor\$3 percentage) near (compatibility compatible) same (workload utilization)	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:21
L21	2	(migrating) near (compatibility compatible) same (workload utilization)	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:24
L22	17133	(compatibility compatible) same (workload utilization)	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:24
L23	7735	5 and 22	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:24
L24	1649194	(scor\$3 percentage)	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:25
L25	3255	23 and 24	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:25
L26	32	25 and (virtual ADJ machine (VM))	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:25
L27	134	(compatibility compatible) same (workload utilization) same (migration migrating)	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:29
L28	31	5 and 27	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:29
L29	55	(compatibile compatibility) near ((virtual ADJ machines) hosts VMs)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 13:33
L30	794	(compatibile compatibility) near (score percentage)	US-PGPUB; USPAT;	OR	OFF	2018/12/26 13:34

## EAST Search History

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
L31	114	30 and 5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 13:34
L32	1	31 and (workload utilization)	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:36
L33	7735	22 and 5	US-PGPUB; USPAT; EPO	OR	OFF	2018/12/26 13:37
S1	1	"14341471"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 17:38
S2	3	"20050209819"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:16
S3	2	"6487723".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:16
S4	4	"6412012".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:17
S5	2	"7616583".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:17
S6	16578	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L12/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:20

## EAST Search History

S7	54	(Hillier near Andrew).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:21
S8	43	(Yuyitung near Tom).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:21
S9	26	(Cirba near Inc\$2).AS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:22
S10	30145	709/223.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:22
S11	7	(compatible compatibility) near (licenses licensing) near (software)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:23
S12	761	(compatible compatibility) near (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:24
S13	38	(compatible compatibility) near (operating ADJ system) near (two different)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:25
S14	100	(split divide) near (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:26
S15	0	S12 and S14	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2016/10/15 21:26

			DERWENT; IBM_TDB			
S16	3	(determin\$) near (operable) near (together)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:27
S17	2	"20040168052"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 04:17
S18	11	("20050132331"   "20070094375"   "20070250615"   "20070250621"   "6249769"   "6557008"   "7055149"   "7616583"   "7640342"   "7680754"   "7809817"   "US-20050132331"   "US-20070094375"   "US- 20070250621"   "US-20700250615"   "US-6249769"   "US-6557008"   "US- 7055149"   "US-7616583"   "US- 7640342"   "US-7680754"   "US- 7809817"   "US-").PN.	US-PGPUB; USPAT	OR	OFF	2016/10/17 06:14
S19	16578	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L12/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 06:21
S20	100	(split divide) near (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 06:21
S21	5	S19 and S20	US-PGPUB; USPAT	OR	OFF	2016/10/17 06:21
S22	94	H04L/6508.cpc. H04L/12/2863.cpc. H04L/6580.cpc. H04L/4308.cpc.	US-PGPUB; USPAT	OR	OFF	2016/10/17 07:05
S23	11	("20050132331"   "20070094375"   "20070250615"   "20070250621"   "6249769"   "6557008"   "7055149"   "7616583"   "7640342"   "7680754"   "7809817"   "US-20050132331"   "US-20070094375"   "US- 20070250621"   "US-20700250615"   "US-6249769"   "US-6557008"   "US- 7055149"   "US-7616583"   "US- 7640342"   "US-7680754"   "US- 7809817"   "US-").PN.	US-PGPUB; USPAT	OR	OFF	2016/10/17 07:29
S24	11	("20050132331"   "20070094375"   "20070250615"   "20070250621"   "6249769"   "6557008"   "7055149"   "7616583"   "7640342"   "7680754"   "7809817"   "US-20050132331"	US-PGPUB; USPAT	OR	OFF	2016/10/17 07:29

		"US-20070094375"   "US-20070250621"   "US-20700250615"   "US-6249769"   "US-6557008"   "US-7055149"   "US-7616583"   "US-7640342"   "US-7680754"   "US-7809817"   "US-").PN.				
S25	1	"20050209818"	US-PGPUB; USPAT	OR	OFF	2016/10/17 09:43
S26	2	"6249769".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:51
S27	144	(compatible compatibility) SAME (workload utilization) SAME (target)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:52
S28	16578	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L12/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:53
S29	11	S27 and S28	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:53
S30	4772	(compatible compatibility) SAME (workload utilization)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:54
S31	27	(rank\$3) SAME (compatible compatibility) SAME (workload utilization)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:54
S32	2	"7680754".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 10:18
S33	4	"13750444"	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2017/07/15 12:22

			EPO; JPO; DERWENT; IBM_TDB			
S34	8963	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L12/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:37
S35	57	(Hillier near Andrew).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:37
S36	48	(Yuyitung near Tom).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:37
S37	27	(Cirba near Inc\$2).AS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:37
S38	2	(transfer\$4 mov\$3 migrat\$3) near (task workload job) near (compatible compatibility)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:43
S39	1684	(transfer\$4 mov\$3 migrat\$3) SAME (task workload job) SAME (compatible compatibility)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:45
S40	202442	(transfer\$4 mov\$3 migrat\$3) SAME (task workload job)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:51
S41	7680	(check\$3 verifying verifies evaluat\$3) near (compatibility compatible)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:52
S42	409	S40 and S41	US-PGPUB; USPAT;	OR	OFF	2017/07/17 00:53

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S43	54421399	@ad< "20060421" @rlad< "20060421"	US-PGPUB; USPAT; USOCR; FPRS; EPO	OR	OFF	2017/07/17 00:55
S44	193	S42 and S43	US-PGPUB; USPAT; USOCR; FPRS; EPO	OR	OFF	2017/07/17 00:57
S45	34	(check\$3 verifying verifies evaluat\$3) near (compatibility compatible) near (target)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:59
S46	4	("20020078262"   "20020199180"   "20030227477"   "20060184917").PN.	US-PGPUB; USPAT	OR	OFF	2017/07/17 01:03
S47	6	(check\$3 verifying verifies evaluat\$3) near (compatibility compatible) near (job workload task)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 01:04
S48	40	(check\$3 verifying verifies evaluat\$3) SAME (compatibility compatible) SAME (back-up second another mirror) near (server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 01:06
S49	19	S43 and S48	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 01:06
S50	7680	(check\$3 verifying verifies evaluat\$3) near (compatibility compatible)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:49
S51	54421399	@ad< "20060421" @rlad< "20060421"	US-PGPUB; USPAT; USOCR; FPRS; EPO	OR	OFF	2017/07/17 10:49
S52	40	(check\$3 verifying verifies evaluat\$3) SAME (compatibility compatible)	US-PGPUB; USPAT;	OR	OFF	2017/07/17 10:49

		SAME (back-up second another mirror) near (server)	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S53	19	S51 and S52	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:49
S54	7	S53 and S50	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:49
S55	19	S51 and S52	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:51
S56	19	S55 and S51	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:51
S57	3937	(check\$3 verifying verifies evaluat\$3) SAME (compatibility compatible) SAME (server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:54
S58	1747	S51 and S57	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:54
S59	1646	(check\$3 verifying verifies evaluat\$3) SAME (compatibility compatible) SAME (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 11:46
S60	339	S59 and S57	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 11:46



S61	186	S51 AND S60	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 11:46
S62	1	"14623806"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/19 11:45
S63	0	(determin\$3 analyz\$3) near (server system) near (compatible) SAME (overload\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/19 13:32
S64	77	(determin\$3 analyz\$3) same (server system) same (compatible) SAME (overload\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/19 13:33
S65	1646	(check\$3 verifying verifies evaluat\$3) SAME (compatibility compatible) SAME (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/19 13:43
S66	21	(admin user administrator) near (list) near (compatible)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:19
S67	2071	(list) near (compatible compatibility)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:24
S68	9300425	@ad< "20060421" @rlad< "20060421"	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2017/07/20 18:24
S69	1024	S67 and S68	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2017/07/20 18:24
S70	192	S69 and (workload utilization)	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2017/07/20 18:27

S71	662	(compatible compatibility) near (scoring score)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:42
S72	140	S68 and S71	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:42
S73	11780	(compatible compatibility similarity) near (scoring score)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:52
S74	2	(compatible compatibility similarity) near (scoring score) near (target second) near (device system server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:53
S75	11	("20040034577"   "20050132331"   "20070094375"   "20070250621"   "20700250615"   "6249769"   "6557008"   "7055149"   "7616583"   "7640342"   "7680754"   "7809817").PN.	US-PGPUB; USPAT	OR	OFF	2017/07/20 18:55
S76	193	(compatible compatibility similarity) near (scoring score) near (device system server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 19:01
S77	210	(compatible compatibility similarity) near (scoring score rank\$3) near (device system server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 19:48
S78	66	(compatible compatibility similarity) near (list rank\$3) near (device system server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 19:55
S79	24	S68 and S78	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	OFF	2017/07/20 19:56

			IBM_TDB			
S80	1	"14436190"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 20:09
S81	5	"20020013802"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/21 16:57
S82	3	"20100322213"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/21 18:27
S83	157	(look\$3 search\$3 analyz\$3 determin\$3) near (list database listing) near (compatible compatibility)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/22 15:05
S84	9300425	@ad< "20060421" @rlad< "20060421"	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2017/07/22 15:05
S85	54	S83 and S84	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/22 15:05
S86	2	"20060179171"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/23 01:34
S87	1358	("VM" (virtual ADJ machine)) near (workload utilization overload)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/23 01:48
S88	9300425	@ad< "20060421" @rlad< "20060421"	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2017/07/23 01:49
S89	52	S87 and S88	US-PGPUB; USPAT;	OR	OFF	2017/07/23 01:49

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S90	44	S89 and (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/23 01:51
S91	0	"14341471"	USPAT	OR	OFF	2018/05/23 16:55
S92	0	"20060179171"	USPAT	OR	OFF	2018/05/23 17:43
S93	0	"20060179171"	USPAT	OR	OFF	2018/05/23 17:43
S94	1	"20060179171"	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2018/05/23 17:43
S95	63	(Hillier near Andrew).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/23 18:00
S96	54	(Yuyitung near Tom).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/23 18:00
S97	27	(Cirba near Inc\$2).AS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/23 18:00
S98	985	(compatible compatibility) near (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/23 18:01
S99	8	(compatible compatibility) near (licenses licensing) near (software)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/23 18:01
S100	5	(report output display) near (solution configuration) near (compatible)	USPAT	OR	OFF	2018/05/23 18:02
S101	1833	(compatible compatibility) near (target another second)	US-PGPUB; USPAT;	OR	OFF	2018/12/26 09:18

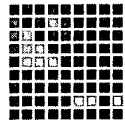
			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S102	240	S101 and (weights scores)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 09:18
S103	181	S102 and (rules constraints parameters)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 09:18
S104	1839	(compatible compatibility compatibilities) near (target another second)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 09:21
S105	240	S104 and (weights scores)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 09:22
S106	181	S105 and (rules constraints parameters)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 09:22
S107	79	S106 and (workload utilization)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 09:22
S108	114	S106 and (workload utilization usage)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/12/26 09:23

**EAST Search History (Interference)**

&lt; This search history is empty &gt;

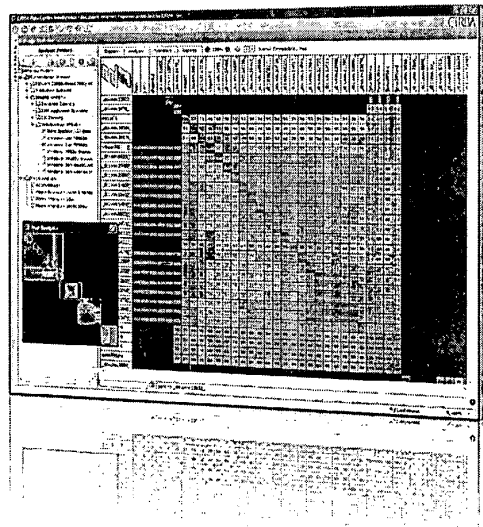
**12/ 26/ 2018 2:29:15 PM****C:\ Users\ amejia\ Documents\ EAST\ Workspaces\ 14341471.wsp**





# CiRBA

## Data Center Intelligence



## VMware Analysis Using CiRBA **August 2007**

Tom Yuyitung  
Andrew Hillier  
CiRBA Inc.



## Contents

Introduction	3
CirBA Data Center Intelligence	3
CirBA Constraint Analysis	4
Technical Constraint Analysis	4
Business Constraint Analysis	4
Workload Constraint Analysis	4
Built-In CirBA Rulesets	5
CirBA Analysis Maps	5
VMware Analysis using CirBA	7
General Analysis Process	8
ESX Server Specification	9
ESX Upgrade Analysis	9
Aggregate Server Utilization Analysis	9
CPU Workload Normalization	10
Virtualization Overhead	10
Aggregate Workloads	10
Hypothetical ESX Servers	12
VMotion Compatibility Map	13
Physical Environment Analysis	14
Technical Constraint Analysis	14
Business Constraint Analysis	14
Workload Constraint Analysis	14
High Availability Planning	14
Combined (Net-Effect) Constraint Analysis	14
Optimization	16
ESX Optimization Analysis	16
ESX Cluster Design	17
Cluster Membership Design	17
DRS Rule Design	19
VirtualCenter API Integration	20
Ongoing Management	21
Virtual Environment Tracking	21
Virtual Environment Analysis	21
About CirBA	23





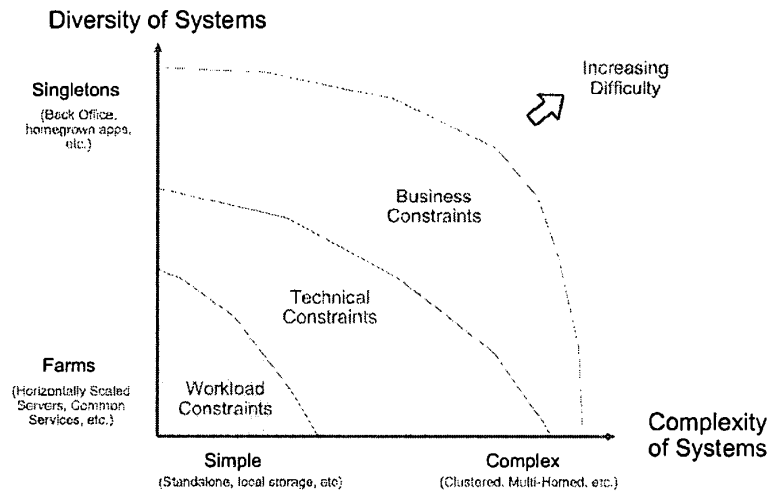
## Introduction

Virtualization is not just a sizing exercise. For production environments, it is an exercise in understanding all the constraints that govern and impact a target environment, and ensuring that these constraints are taken into account when planning and managing virtual environments.

This is especially true of VMware Infrastructure, where sophisticated features such as VMotion, DRS and HA necessitate careful planning and diligent administration of virtual environments. These features have helped make VMware the industry-leading virtualization solution, but to properly capitalize on their true power, it is necessary to combine them with accurate intelligence and focused analytics in order to safely and effectively transform existing servers into the new virtual paradigm.

## CiRBA Data Center Intelligence

CiRBA's Data Center Intelligence is software that rapidly analyzes and visually maps the safest path to an optimally consolidated or virtualized datacenter. By performing an extremely detailed analysis of environments that takes into account all relevant technical, business and workload constraints, CiRBA analysis helps drive risk out of virtualization initiatives while at the same time optimizing ROI by uncovering the optimal combinations of servers.





## **CiRBA Constraint Analysis**

CiRBA analysis uses rules and mathematical techniques to analyze constraints that affect all major virtualization and consolidation strategies. These constraints can be generally categorized into three main areas:

### **Technical Constraint Analysis**

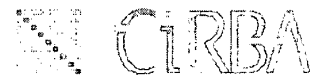
Technical constraints are constraints that affect “what can go together”, and typically include configuration-oriented elements such as version compatibilities, environmental settings, patch requirements, security configurations, etc. In VMware analysis, the technical constraint models employed typically focus on ESX and VMotion compatibilities, storage configurations, unsupported or nonstandard hardware, network connectivity, and other considerations that may impact the viability of and/or path to virtualization.

### **Business Constraint Analysis**

Business constraints are more concerned with “what should go together”, both from a business and process perspective. Criteria such as maintenance windows, availability targets, application owners, locations, departments, and other non-technical criteria are analyzed to ensure that there is consistency in the virtual environment and to prevent any production problems post-virtualization.

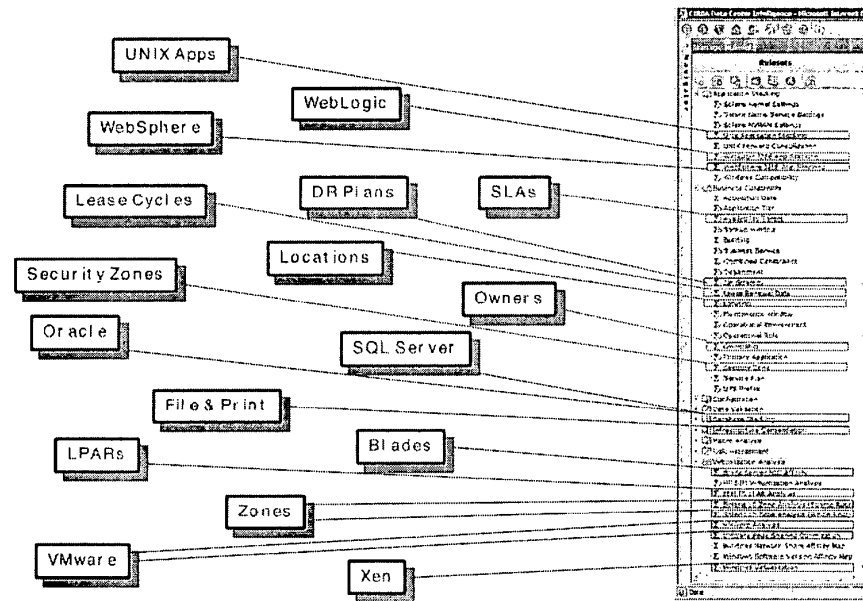
### **Workload Constraint Analysis**

Workload constraint analysis answers the question “what fits together”, and looks at the utilization levels and patterns of servers to determine what the optimal combinations may be (both onto existing hardware as well as new servers). CiRBA's workload analysis uses quartile-based representations of CPU, disk I/O, network I/O, memory utilization and disk utilization in order to build out a comprehensive scorecard-based view of the workload affinities in an environment.



## Built-In CIRBA Rulesets

CIRBA includes rulesets and workload analysis models designed to analyze these three types of constraints across a variety of consolidation and virtualization strategies.

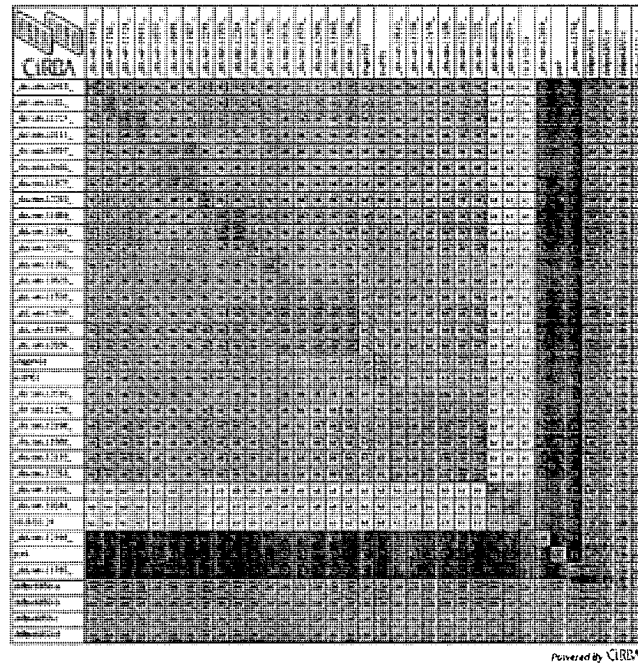


*CIRBA's built-in rulesets provide out-of-the-box support for a broad array of popular consolidation and virtualization strategies, and include rulesets for analyzing critical business constraints within an organization that can have a significant impact on VMware implementations*

## CIRBA Analysis Maps

When analyzing sets of servers using rulesets, CIRBA produces 2-dimensional visual scorecards, or maps, which detail the compatibilities within an environment. These maps provide an intuitive visualization of the consolidation and/or virtualization potential in an environment, and also show the specific P2V mappings and cluster relationships that are uncovered by the analysis.

CIRBA maps use a color-coded scoring mechanism where specific server combinations are scored from 0-100, with 0 being completely incompatible and 100 being fully compatible. The score ranges are rendered using red, orange, yellow and green colors to represent the different levels of compatibility, with green representing the highest compatibility. For consolidation and virtualization analysis, these high scores represent opportunity to combine servers and achieve higher efficiency.

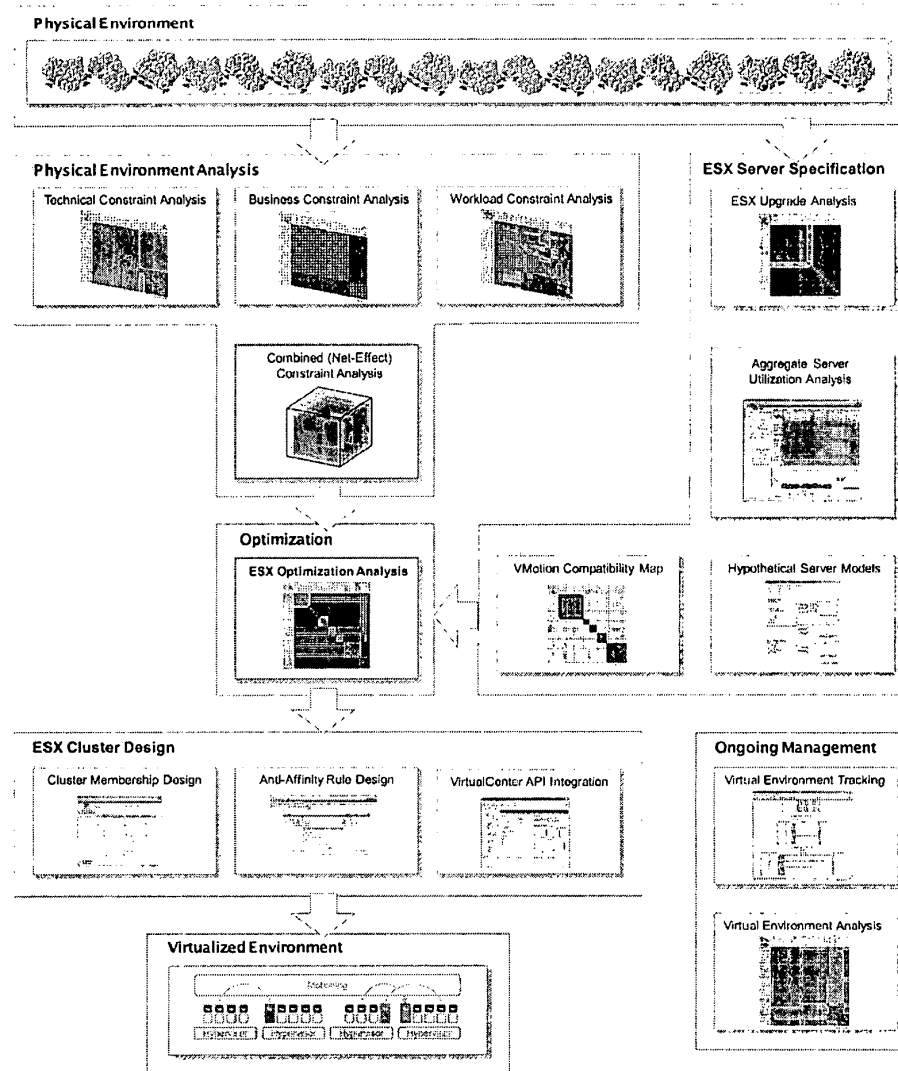


CirBA compatibility map, showing the result of applying a VMware ruleset against a set of physical servers. The servers are listed down the left hand side and also in the same order across the top, producing a cross-correlation map of the compatibilities of these servers.

Green regions represent "affinity regions" where the servers are generally self-consistent. The yellow, orange and red areas, on the other hand, represent server combinations where key constraints may be violated if they are virtualized onto the same infrastructure. The 4 servers to the right of and below the blue lines are hypothetical targets that the environment is being analyzed onto.



## VMware Analysis using CirBA





## General Analysis Process

The analysis process begins with the gathering of highly detailed configuration and workload data from systems in an existing **Physical Environment**. The targets of this data acquisition include the systems to be virtualized as well as those that may be converted to ESX servers to form part of the new virtual infrastructure. The CIRBA software automates the data collection from the systems, using either agent-based or agentless means, in order to ensure that all analyses are based on up-to-date data. This data is combined with business attributes and process-related information related to the servers to form a complete set of analysis inputs.

From this information, built-in rulesets identify the physical systems that can be converted into ESX servers, allowing existing servers to be repurposed as ESX servers without buying new hardware. This **ESX Server Specification** step also performs aggregate utilization computations in order to determine the overall capacity required in the virtual environment, and allows analysts to specify hypothetical server models (i.e. candidates for purchase) that can be used to make up the shortfall. (Note that many organizations use new hardware exclusively, and absorb decommissioned servers in later project phases.) Finally, the CIRBA analysis groups the ESX server candidates based on VMotion compatibility, which defines the clusterable pools of servers from which the new environment will be constructed.

The **Physical Environment Analysis** step evaluates technical, business and workload constraints against the systems to be virtualized using advanced rule sets and workload algorithms. The constraints are combined to produce an overall system affinity map that indicates the systems which should be kept together and which ones should be separated when they are virtualized.

The **Optimization** step determines the optimal mapping of physical servers onto virtual environments and clusters, and allows what-if analysis to determine the optimal **ESX Cluster Design** that minimizes the ESX server counts while addressing the ESX server and virtual machine compatibility constraints. The resulting analysis maps define the cluster memberships of the ESX servers and virtual machines as well as DRS affinity and anti-affinity rules. The automated generation of the cluster membership accelerates the implementation of virtualized environments while at the same time reducing risk in implementation and subsequent operation.

After the virtualized environment is deployed, the CIRBA software performs **Ongoing Management** by gathering configuration and workload data from the ESX hosts and virtual machines on an ongoing basis and using this to both track the environments as well as enable further analysis and optimization as servers and constraints change over time.

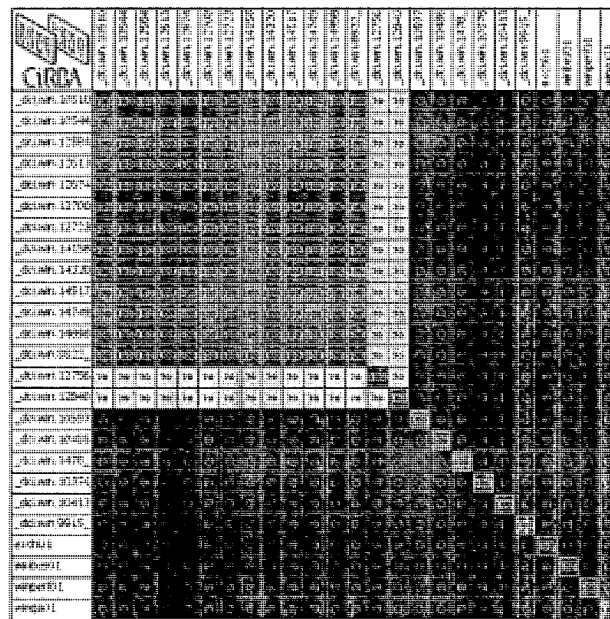


# ESX Server Specification

## ESX Upgrade Analysis

This analysis identifies the physical systems that can be converted to ESX Servers. The analysis checks whether the systems are included in the VMware system compatibility list. Note that the system compatibility can vary between ESX server versions, and the compatibility for some systems may be qualified – e.g. patch required, specific processor revision.

In addition, the analysis validates the various ESX server and VMotion requirements such as minimum CPU clock speeds (1500MHz), maximum RAM (64GB), maximum CPU cores (32) and multiple GB Ethernet network interface cards.

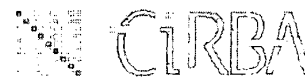


Powered By CIRBA

ESX Compatibility Map showing which servers in the current environment are candidates for upgrading to run ESX. The large green area shows servers that are unconditionally supported, and the yellow areas show platforms that can support ESX with some qualifications.

## Aggregate Server Utilization Analysis

The key system resources for sizing target ESX servers are CPU and memory utilization, storage, and disk and network I/O rates. The aggregate resource utilization of the source systems is compared against the capacity of the ESX server candidates. This analysis determines the additional server hardware, if any, that is required to support the planned virtualized environment.



### CPU Workload Normalization

To accurately combine the processor utilization of the systems based on different processors, industry benchmarks are employed by CirBA to normalize the CPU workload data. Processor benchmarks such as SPEC CINT2000 are better suited than basic processor speeds (MHz) since benchmarks account for different processor architectures that affect performance significantly.

CirBA uses a comprehensive CPU benchmark table to determine the CINT2000 value of the physical systems based on the server model and processors.

### Virtualization Overhead

As an additional software layer, VMware adds a performance overhead. As such, when modeling the resource utilization of physical systems in the virtualized target environment, a virtualization overhead is added to the source system workloads.

CirBA uses an advanced virtualization overhead model to estimate CPU utilization of physical systems when virtualized on an ESX server. The CPU overhead is modeled for each guest as a function of the CPU utilization, network I/O and disk I/O rates.

Similarly, the memory overhead is comprised of the service console memory (default is 272MB, maximum is 800MB) and guest system contributions. The memory overhead of each guest system is affected by its memory allocation, the number of virtual CPUs, and whether it is a 32 or 64 bit operating system.

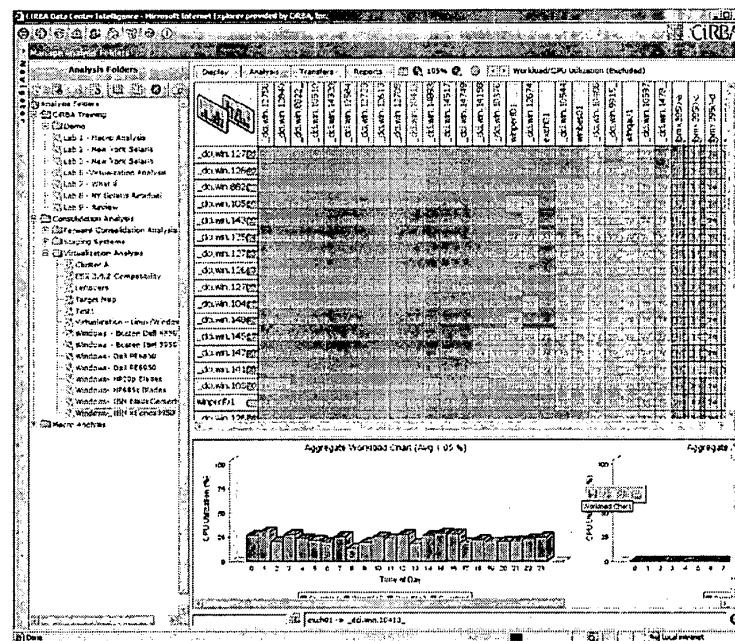
Note that the memory overhead of similar virtualized systems can be offset by the memory saved through the VMware transparent page sharing feature.

### Aggregate Workloads

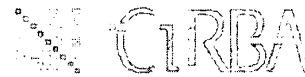
By normalizing workloads and accounting for virtualization overhead, the projected resource requirements of the physical systems can be modeled with higher accuracy. The aggregate resource requirements are adjusted further to include the desired headroom to account for future growth and high availability requirements.

Similarly, the aggregate resource capacity of the ESX server candidates is calculated by CirBA.





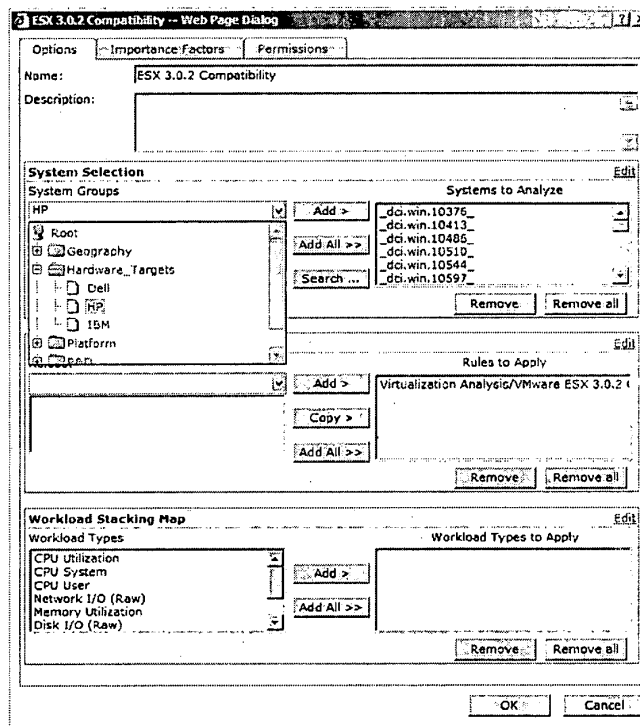
Aggregate Utilization Report showing the normalized utilization of an entire environment. Utilization is reported as a rolled-up average as well as a time-of-day curve showing peak and sustained activity throughout the daily cycle. This is an important measure of the consolidation potential of an environment, and gives an initial estimate of the CPU, I/O, Disk and Network capacity required in the ESX server environment.



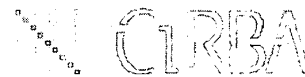
## Hypothetical ESX Servers

The projected aggregate workloads of the source and target systems are compared to determine whether additional computing resources are required. If there is insufficient capacity, the amount of hypothetical ESX server hardware is estimated.

CIRBA includes built-in hardware targets that represent most popular blade and rack-mount servers from the major manufacturers, and new models can be easily created by end users.



*Hypothetical Server Model selection within the CirBA Analysis Property dialog. By supporting analysis onto models, analysts can perform what-if analysis and compare the relative merits of virtualizing onto different types of hardware before any hardware purchases are made*



## VMotion Compatibility Map

ESX servers must have compatible processor architectures to support the live migration of a guest system between the servers. Specifically, VMotion compatibility is affected by processor vendor (Intel, AMD), family (Pentium 4, Intel Core, AMD K8, AMD K7) and support for specific features (64-bit support, SSE3, NX/XD).

CIRBA includes a VMotion compatibility rule set that analyzes target ESX servers and divides the servers into compatible pools that are candidates for cluster membership.

Powered By CIRBA

VMotion compatibility map, showing the sets of servers that are compatible from a VMotion perspective. This is an important step in defining the go-forward environment, as many incompatibilities exist between servers platforms, including those from the same manufacturer. Because clusters rely on VMotion, this map effectively sculpts out the pools of servers from which clusters can be built.



## Physical Environment Analysis

### Technical Constraint Analysis

The technical analysis identifies the physical systems that can be virtualized by considering virtualized system constraints including guest operating system support, maximum limits on virtual processors (4), memory (16GB) and swap (16GB).

In addition, the analysis highlights constraints that can impact the compatibility of virtualized systems including unique legacy devices (modems, token ring cards), and uncommon network connectivity or storage requirements.

Finally, the analysis evaluates the sameness of guest system images to assess the potential to take advantage of VMware's transparent page sharing capabilities.

The resulting technical affinity map illustrates groups of systems that must be kept together or apart, as well as groups that are ideally kept together or apart.

### Business Constraint Analysis

This analysis focuses on business factors that impact the compatibility of the source systems. Factors considered include such things as system availability targets, system owners, service chargeback models, physical locations and regulatory requirements. As with the technical constraint analysis, the business affinity map that reflects groups of systems to keep together or apart.

### Workload Constraint Analysis

The workload analysis evaluates the combination of one or more source workloads onto the target ESX servers. It evaluates processor utilization, memory, disk I/O and network I/O. The analysis employs the workload normalization and virtualization overhead models described earlier to predict workloads with better accuracy.

The CIRBA workload analysis considers sustained and peak system workloads at like times and at offset times to consider the normal and worst case scenarios. Workload analysis parameters can be specified to adjust the conservatism or aggressiveness of the constraints.

In general, systems with lower workloads are better virtualization candidates than those with very high workloads and resource requirements.

### High Availability Planning

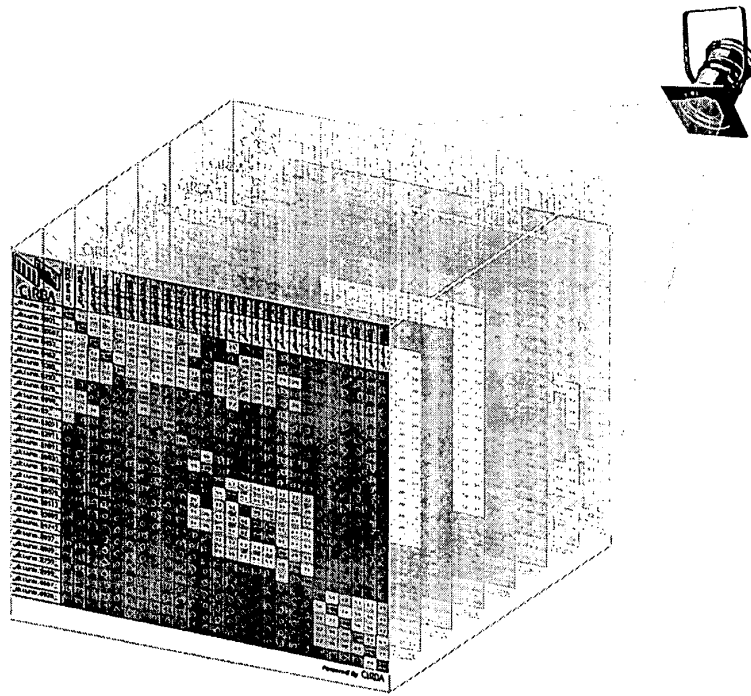
Capacity planning for high available clusters can be readily performed through what-if workload analysis by adjusting the workload headroom thresholds or excluding target ESX servers from the analysis to simulate host failures.

### Combined (Net-Effect) Constraint Analysis

The net-effect constraint analysis combines the technical, business and workload constraints to provide an overall affinity map. CIRBA analyzes multiple constraint maps using 3-dimensional data structures that enable simultaneous assessment of all constraints.



The overall affinity map defines regions of compatible source systems that can be assigned to common clusters. The compatibility scores reflect the degree of compatibility/incompatibility between systems.



*CIRBA Net-Effect "Cube" showing the NxNxM construct that is used for affinity region and optimization analysis. Each individual technical, business and workload constraint map is represented as a layer in the cube, and these layers act as "lenses" when computing the net effect, defining what is and is not possible when combining servers into virtual environments.*

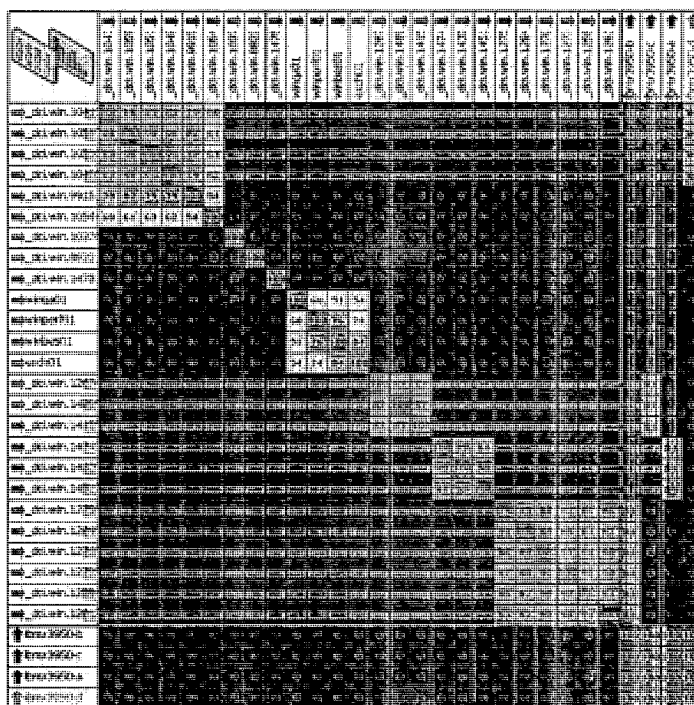


## Optimization

### ESX Optimization Analysis

The virtualization candidates and target ESX servers are analyzed to determine recommended cluster configurations, cluster memberships of guest systems and DRS affinity/anti-affinity rules.

CIRBA employs heuristic optimization algorithms (referred to as "auto fit") to automatically determine the virtualization solution that eliminates the largest number of servers with the highest set of compatibility scores. Additional what-if scenarios are easily modeled by modifying constraints, adding servers, etc. to the analysis.

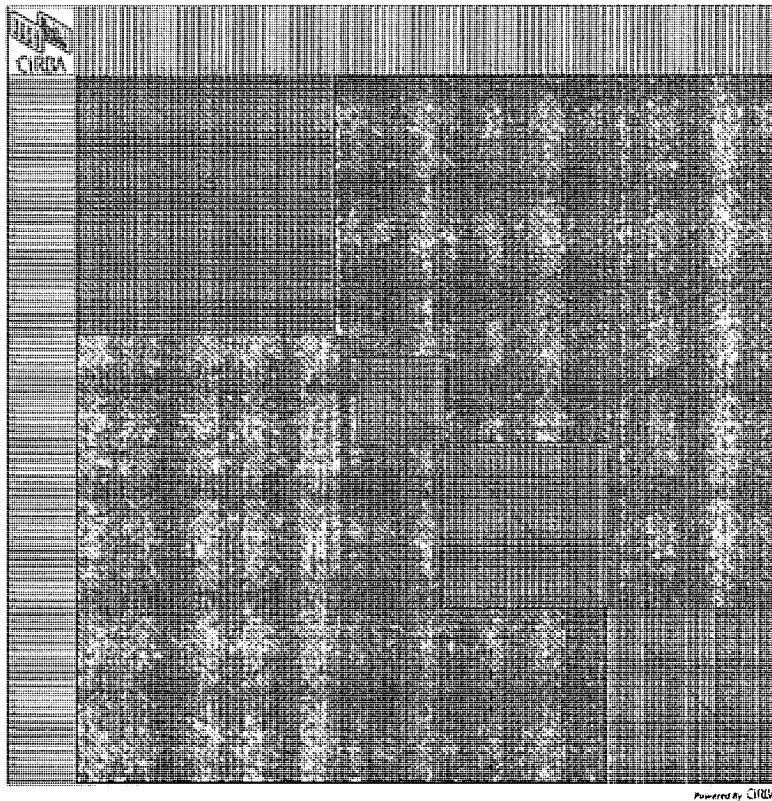


Optimization analysis showing the "auto fit" of a set of physical servers onto a new virtual environment consisting of 4 IBM X-Series servers. By simultaneously analyzing all constraints and affinities in 3 dimensions, a solution is found that eliminates the largest number of servers while maintaining the highest scores (which translates into the lowest risk).

## ESX Cluster Design

### Cluster Membership Design

The VM-cluster assignments are constrained by the clusterability of the target ESX servers, the affinity of the source systems, workload requirements of the source systems and resource capacities of the target ESX servers. The CirBA ESX optimization analysis considers all these constraints and recommends the placement of source systems on the set of clusterable ESX targets.



*Cluster-based view of guest OSs. Larger areas of non-zero scores represent recommended cluster membership, and in this case there are 5 distinct clusters emerging from the analysis. The orange areas within these regions are anti-affinity regions within a cluster, and the appropriate DRS rules are generated by CirBA in order to assure that constraints are honored at runtime.*



Additional considerations for defining VMware clusters are:

- The maximum allowable ESX servers/cluster for DRS/HA is 16 – some recommend 10-12
- Servers in the cluster must share common storage and networking
- Ideally, servers should have similar hardware specifications (CPU, memory, etc.)
- Blade servers are suitable for clustering since they share common resources.

CIRBA's built-in rulesets account for many of these considerations, and the optimal cluster size is a factor commonly used to decide between when to make a separate cluster and when to employ affinity and anti-affinity rules within a single cluster.

CIRBA Data Center Intelligence - Microsoft Internet Explorer provided by CIRBA, Inc.

CIRBA

Navigator View System Groups

Analysis

Auditing

Reporting

Report Management

System Groups

View System Groups

Manage System Groups

Full Name: /Root/ESX\_Clusters/Cluster1/

Description:

Parent System Group: /Root/ESX\_Clusters/

Cluster1 Systems

Show 10 of 21 (Find/Prev) 1, 2, 3 (Next/Last)

<input type="checkbox"/>	Name	IP Address	Location	Platform	OS Version	Agent Name	Last Agent	Alerts
<input type="checkbox"/>	Domain12412..._dc.WIN.5609_		Boston	Compaq ProLiant ML570 G2	Windows 2000 Server	WinTelServers	Jan 15, 2007 12:21:10 AM	ANY
<input type="checkbox"/>	Domain12425..._dc.WIN.5629_		Boston	Compaq ProLiant ML570	Windows 2000 Server	WinTelServers	Jan 15, 2007 12:21:10 AM	ANY
<input type="checkbox"/>	Domain12519..._dc.WIN.9753_		Boston	HP ProLiant DL380 G3	Windows 2000 Server	WinTelServers	Jan 15, 2007 12:21:10 AM	ANY
<input type="checkbox"/>	Domain12537..._dc.WIN.9692_		Boston	Compaq ProLiant ML570	Windows 2000 Server	WinTelServers	Jan 15, 2007 12:21:10 AM	ANY
<input type="checkbox"/>	Domain12584..._dc.WIN.12585_		Chicago	HP ProLiant DL380 G4	Windows Server 2003, Standard Edition	WinTelServers	Jan 15, 2007 12:21:10 AM	ANY
<input type="checkbox"/>	Domain12612..._dc.WIN.10747_		Chicago	HP ProLiant DL380 G4	Windows Server 2003, Standard Edition	WinTelServers	Jan 15, 2007 12:21:10 AM	ANY
<input type="checkbox"/>	Domain12674..._dc.WIN.9634_		Chicago	HP ProLiant DL380 G3	Windows Server 2003, Enterprise Edition	WinTelServers	Jan 15, 2007 12:21:10 AM	ANY
<input type="checkbox"/>	Domain12709..._dc.WIN.11900_		Chicago	HP ProLiant DL380 G4	Windows Server 2003, Standard Edition	WinTelServers	Jan 15, 2007 12:21:10 AM	ANY
<input type="checkbox"/>	Domain12727..._dc.WIN.10743_		Chicago	HP ProLiant DL380 G4	Windows Server 2003, Standard Edition	WinTelServers	Jan 15, 2007 12:21:10 AM	ANY
				Windows			Jan 15, 2007	

User Management

Administration

CIRBA Local Manager

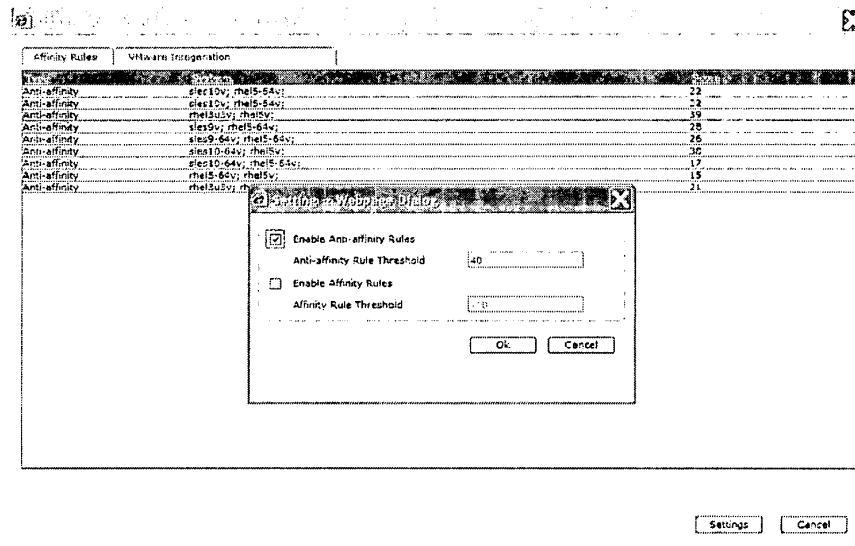
Report showing cluster membership as derived from the affinity analysis. CIRBA's system groups allow logical representation of groups of servers that can be used for many analysis and reporting purposes.



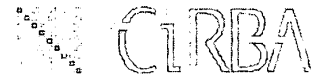
## DRS Rule Design

In general, highly incompatible source systems are assigned to separate clusters. Moderately incompatible source systems can be assigned to the same cluster and kept apart through DRS anti-affinity rules. Conversely, highly compatible systems are kept together using DRS affinity rules.

Constraints such as physical location, regulatory compliance, etc. typically govern what approach is used.

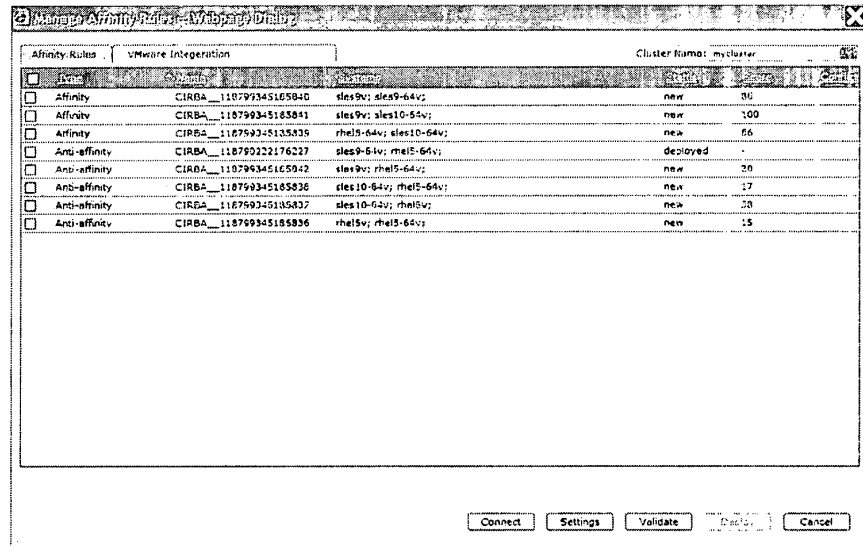


CIRBA's DRS rule-programming interface, showing anti-affinity rules that have been automatically derived from an analysis map. By using threshold-based generation of rules, both affinity and anti-affinity rules can be established and maintained.



## VirtualCenter API Integration

The DRS affinity and anti-affinity rules are determined by the DRS rule analysis and administrators can choose to synchronize them directly with the VirtualCenter server. CIRBA's API-level integration with VirtualCenter is bi-directional, and all cluster membership information and manually-programmed rules are automatically synchronized with DRS to enable long-term management of virtual environments. As well, the synchronization operation ensures that there are no rule conflicts prior to applying the new rules.



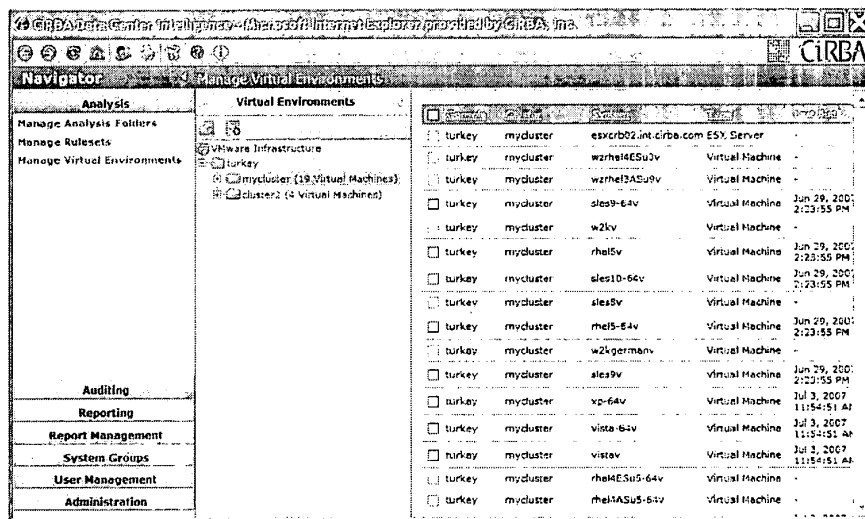
CIRBA's DRS rule-programming interface, showing affinity and anti-affinity rules that have been automatically derived from an analysis map. By using threshold-based generation of rules, both affinity and anti-affinity rules can be established and maintained.



## Ongoing Management

### Virtual Environment Tracking

After the VMware environment is deployed, CirBA can collect detailed configuration and workload data from the ESX hosts and virtual machines.



CirBA's VMware Infrastructure discovery interface, showing the clusters under the control of a specific VirtualCenter server. CirBA's bi-directional interface automatically discovers the cluster membership of ESX servers and virtual machines and uses this to drive analysis and generate the appropriate DRS rules.

### Virtual Environment Analysis

The data collected from the VMware environment is analyzed to detect outliers and non-compliant guest and ESX server settings such as the installation of VMware Tools on guest systems, service console security settings, etc.

The support for VMotion between specific ESX hosts and VMs must be evaluated on an ongoing basis by considering the network and storage dependencies, VMotion CPU compatibility, and relevant guest configuration settings (e.g. CPU affinity, connected drives, raw device mappings, internal virtual switch connections). It is imperative that the VMotion capability between servers be maintained to maximize the reliability and optimal operation of the virtualized environment.

As the virtual environment changes over time, CirBA re-analyzes the environment based on latest configuration, business and workload data to determine actions to improve compatibility and load balancing. Recommended actions may be to move existing VMs and/or ESX hosts to different clusters, update DRS affinity or anti-affinity rules, or update VM resource reservations.

[illegible]

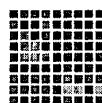
*Virtual environment analysis showing the identification of an existing cluster that is suitable to host a new application that is about to be deployed. By analyzing new applications against the existing infrastructure, forward consolidation becomes a seamless, low-risk operation and new servers can be purchased only when aggregate capacity dips below safe levels.*



## About CirBA

CirBA is a leading provider of Data Center Intelligence (DCI) software solutions. CirBA software provides IT organizations with the empirical configuration and workload analyses required to uncover waste in the data center and identify associated consolidation and virtualization opportunities.

Global 5000 customers can better manage stacked or virtualized environments over the long term through better control of system diversity, automated compliance reporting and unmatched change analysis. For more information, visit [www.cirba.com](http://www.cirba.com).



**CIRBA**

1595 16th Avenue, Suite 400  
Richmond Hill, Ontario  
Canada, L4B 3N9

**Toll Free:** +1.866.731.0090  
**Telephone:** +1.905.731.0090  
**Fax:** +1.905.731.0092  
**Online:** [www.cirba.com](http://www.cirba.com)

Copyright © 2007, Cirba Inc. All rights reserved.  
VMware Analysis Using Cirba  
White Paper  
August 2007

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.

**Request  
for  
Continued Examination (RCE)  
Transmittal**

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

Application Number	14/341,471
Filing Date	July 25, 2014
First Named Inventor	HILLIER, Andrew D.
Art Unit	2451
Examiner Name	MEJIA, Anthony
Attorney Docket Number	59612/00067

**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. See Instruction Sheet for RCEs (not to be submitted to the USPTO) on page 2.

1. **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).
- a. ☐ 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.
- i. ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on \_\_\_\_\_
- ii. ☐ Other \_\_\_\_\_
- b. ☒ Enclosed
- i. ☒ Amendment/Reply
- iii. ☐ Information Disclosure Statement (IDS)
- ii. ☐ Affidavit(s)/ Declaration(s)
- iv. ☐ Other \_\_\_\_\_
2. **Miscellaneous**
- a. ☐ 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)
- b. ☐ Other \_\_\_\_\_
3. **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 the following fees, any underpayment of fees, or credit any overpayments, to Deposit Account No. \_\_\_\_\_.
- a. ☒
- i. ☐ RCE fee required under 37 CFR 1.17(e)
- ii. ☐ Extension of time fee (37 CFR 1.136 and 1.17)
- iii. ☒ Other \$1,200 paid 10/18/2018; RCE not entered; Finality of prior OA withdrawn.
- b. ☐ Check in the amount of \$ \_\_\_\_\_ enclosed
- c. ☐ Payment by credit card (Form PTO-2038 enclosed)
- d. ☐ Payment by EFS-Web

**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.**

**SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED**

Signature	/Brett J. Slaney/	Date	October 30, 2018
Name (Print/Type)	Brett J. SLANEY	Registration No.	58,772

**CERTIFICATE OF MAILING OR TRANSMISSION**

I hereby certify that this correspondence is being EFS-Web transmitted to the United States Patent and Trademark Office (USPTO), deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450 or facsimile transmitted to the USPTO on the date shown below.

Signature	_____
Name (Print/Type)	_____
Date	_____

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. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop RCE, 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				
<b>Application Number:</b>		14341471		
<b>Filing Date:</b>		25-Jul-2014		
<b>Title of Invention:</b>		METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS		
<b>First Named Inventor/Applicant Name:</b>		Andrew D. HILLIER		
<b>Filer:</b>		Brett Joseph Slaney/Judith Martin		
<b>Attorney Docket Number:</b>		59612/00067		
Filed as Large Entity				
<b>Filing Fees for Utility under 35 USC 111(a)</b>				
<b>Description</b>	<b>Fee Code</b>	<b>Quantity</b>	<b>Amount</b>	<b>Sub-Total in USD(\$)</b>
<b>Basic Filing:</b>				
<b>Pages:</b>				
<b>Claims:</b>				
<b>Miscellaneous-Filing:</b>				
<b>Petition:</b>				
<b>Patent-Appeals-and-Interference:</b>				
<b>Post-Allowance-and-Post-Issuance:</b>				
<b>Extension-of-Time:</b>				



Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension - 2 months with \$0 paid	1252	1	600	600
<b>Miscellaneous:</b>				
<b>Total in USD (\$)</b>				<b>600</b>

## Electronic Acknowledgement Receipt

<b>EFS ID:</b>	34164851
<b>Application Number:</b>	14341471
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	2381
<b>Title of Invention:</b>	METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS
<b>First Named Inventor/Applicant Name:</b>	Andrew D. HILLIER
<b>Customer Number:</b>	27871
<b>Filer:</b>	Brett Joseph Slaney/Judith Martin
<b>Filer Authorized By:</b>	Brett Joseph Slaney
<b>Attorney Docket Number:</b>	59612/00067
<b>Receipt Date:</b>	30-OCT-2018
<b>Filing Date:</b>	25-JUL-2014
<b>Time Stamp:</b>	17:56:38
<b>Application Type:</b>	Utility under 35 USC 111(a)

### Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$ 600
RAM confirmation Number	103118INTEFSW00005137022553
Deposit Account	022553
Authorized User	Brett Slaney
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		Cirba67_OA-Response.pdf	160497	yes	12
			f50d9b6282241e388b2722e1f5a9af6935804164		
	Multipart Description/PDF files in .zip description				
	Document Description		Start		End
	Applicant Arguments/Remarks Made in an Amendment		6		12
	Claims		2		5
	Amendment Submitted/Entered with Filing of CPA/RCE		1		1
Warnings:					
Information:					
2	Request for Continued Examination (RCE)	Cirba67_RCE.pdf	88347	no	1
			34677cba7d2e2b7cfa75f6928056da3fee2647db		
Warnings:					
This is not a USPTO supplied RCE SB30 form.					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30837	no	2
			93cf685560979f233c2e2a2077ad84a2b95wa54d		
Warnings:					
Information:					
Total Files Size (in bytes):			279681		

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.

## **REMARKS**

Applicant thanks the Examiner for reviewing the present application.

### **Overview of Substance of Telephone Interview**

Applicant also thanks the Examiner for taking the time to speak with the undersigned's assistant on July 17, 2018 to discuss the appropriateness of the finality of the present Office Action. The Examiner explained that the previous office action was in fact marked incorrectly as a final action and thus the RCE fee paid at that time was never required. As such, Applicant will request, with this submission, that the unnecessarily paid fee be applied to the currently filed RCE.

### **Claim Amendments**

Claim 1 has been amended inserting: "wherein the compatibility parameters correspond to features or characteristics of the respective computer systems that can be evaluated, quantified, measured, or compared between systems" to clarify the compatibility parameters. Claim 1 has also been amended to clarify that the workload placement solution is based on which of the computer systems is operable "and compatible with other systems". Claim 1 has also been amended to clarify that this enables one or more "placements of source systems onto target systems". Claim 13 has been amended in a similar manner. Support for these amendments can be found in at least paragraph [0082] of the present application.

Claims 2 and 14 have been amended to improve clarity and to be consistent with claims 1 and 13 as amended.

Applicant respectfully submits that no new subject matter has been added by way of these amendments.

### **Claim Rejections – 35 U.S.C. 101**

Claims 1-24 have been rejected under 35 U.S.C. 101 for being directed to non-statutory subject matter. The Applicant respectfully traverses the rejections as follows.

Applicant has amended claim 1 as indicated above, to clarify the manner in which the compatibility parameters are analyzed and the nature of such compatibility parameters. The output comprising the workload placement solution that is used to enable placements to be implemented

(i.e. provides a tangible output that improves the operation of a computing system – discussed below). Claim 1 as amended therefore recites:

“analyzing compatibility parameters for the computer systems to determine whether a source system is compatible with at least one of: i) a target system, and ii) another source system, wherein the compatibility parameters correspond to features or characteristics of the respective computer systems that can be evaluated, quantified, measured, or compared between systems;  
analyzing source system workload data to determine which of the computer systems is operable with another system on the target system;  
and  
generating an output comprising a workload placement solution based on which of the computer systems is operable and compatible with other systems, to enable one or more placements of source systems onto target systems to be implemented”.

Such an output can be used to implement transfers such as consolidation solution, feed into a subsequent iteration towards an ideal solution, etc. That is, the output that is generated from the analyses of the data contributes to an improvement in the way the computer systems operate, particularly together.

As previously argued, prior systems did not use compatibility parameters to determine whether source systems are compatible with a target system and/or each other, let alone to determine which of the plurality of system are operable with other systems. This improves not only the analyses that are conducted, but also the effectiveness and efficiencies of the computing environment being analyzed, since the claimed method allows for compatibilities to be determined, e.g. for subsequent operations to have systems operating together on a target system. The aforementioned amendments clarify the output as recited above. The prior solutions simply did not address this, and have not provided a technical solution, let alone in the way recited in claim 1.

Prior systems that evaluated computing hardware capacities and sizing (e.g. Wasserman, Stefaniak, Vinberg) did not use compatibility parameters to determine whether source systems are compatible with a target system and/or each other, let alone to determine which of the plurality of system are operable with other systems. By assessing whether compatibilities exist and whether systems are operable together on a target system, existing environments can be optimized. As

stated above, this not only improves the software and computing system that is analyzing the environment, but the computing environment itself. As such, there is clearly an improvement to another technology. The amendments presented herein also provide an additional specific limitation over what is well-understood and conventional, and provide yet another meaningful limitation beyond generally linking the use of a judicial exception to a particular technological environment (see also the Applicant's previous arguments in that regard).

Keeping the above in mind, Applicant will now compare the present claims with various decisions where claims directed to computer-implemented inventions, have been found to be patent eligible.

As a first consideration, Applicant refers to *Enfish v. Microsoft Corporation (Enfish)*, which states that: "...the first step in the *Alice* inquiry in this case asks whether the focus of the claims is on the specific asserted improvement in computer capabilities...or, instead, on a process that qualifies as an "abstract idea" for which computers are invoked merely as a tool...In this case, however, the plain focus of the claims is on an improvement to computer functionality itself, not on economic or other tasks for which a computer is used in its ordinary capacity".

Indeed, as explained above, the present claims are directed to a specific improvement to the way computers (e.g., a target hosting environment of computing systems) operate, including analyzing both compatibility and workload data to generate an output comprising a workload placement solution that, when implemented, controls the way in which placements of source systems onto target systems occur. Therefore, similar to the claims at issue in *Enfish*, the present claims are not directed to an abstract idea and should therefore be found patent eligible without even requiring the second step of the *Alice* inquiry.

Next, Applicant refers to *McRO, Inc., DBA Planet Blue v. Bandai Namco Games (McRO)*, in which it was found that: "...the structure of the limited rules reflects a specific implementation not demonstrated as that which "any [animator] engaged in the search for [an automation process] would likely have utilized"...claim 1 is limited to a specific process for automatically animating characters using particular information and techniques and does not preempt approaches that use rules of a different structure or different techniques...When looked at as a whole, claim 1 is directed to a patentable, technological improvement over the existing, manual 3-D animation techniques. The claim uses the limited rules in a process specifically designed to achieve an improved technological result in conventional industry practice...therefore, is not directed to an abstract idea".

As explained above, claim 1 of the present application includes analyzing both compatibility parameters and workload data in order to determine if systems are operable with other systems, and then controlling the placement of such systems by creating a workload placement solution. This

improves the way in which a computing environment that hosts such systems, operates. The manner in which hosting environments were provisioned with new demands or consolidated based on existing placements, prior to the claimed method, may therefore be considered the “conventional industry practice”. By applying the analyses and then generating the workload placement solution in order to control implementation of one or more placements as recited in claim 1, this conventional industry practice involving real computing resources, is clearly improved. That is, claim 1 recites an improvement in computer technology that achieves an improved technological result in conventional industry practice and is therefore not directed to an abstract idea and should be found patent eligible without requiring the second step of the *Alice* inquiry.

The above arguments are further supported by the USPTO Memorandum of April 2, 2018 in which the Office confirms that software-based innovations can make “non-abstract improvements to computer technology” and be deemed patent-eligible subject matter at the first step of the *Alice/Mayo* analysis. In this memorandum, the Office refers to *Finjan Inc. v. Blue Coat Systems, Inc. (Finjan)*, wherein the claims were held patent eligible because the court concluded that the claimed method recites specific steps that accomplish a result that realizes an improvement in computer functionality. In *Finjan*, the functionality being claimed relates to generating a security profile that identifies both hostile and potentially hostile operations, and can protect the user against both previously unknown viruses and “obfuscated code”. The court found this to be an improvement over traditional virus scanning, which only recognized the presence of previously-identified viruses.

Akin with this decision, claim 1 is directed to a method that generates a workload placement solution according to analyses of both compatibility parameters and workload data to determine which systems are operable with other systems. This can avoid guesswork and well as inefficiencies created by over- or under-provisioning a computing environment. This can be considered an improvement over traditional provisioning in computing environments that do not have this ability to analyze and then generate such a workload placement solution. Previous systems at most involved guesswork to then have what is believed to be enough computing resources, which again can create an environment that is under- or over-provisioned. Clearly claim 1 is directed to a process that is not an abstract idea and thus is patent eligible for the same reasons as those confirmed in *Finjan*.

While the above clearly shows that claim 1 is not directed to an abstract idea, for the sake of completeness, Applicant submits that claim 1 would also amount to significantly more than an abstract idea, for reasons consistent with Examples 2 (*DDR Holdings*) and 3 (*RCT*) in the USPTO set of examples related to abstract ideas.

In *DDR*, it was found that the invention: “...does not “merely recite the performance of some



business practice known from the pre-Internet world... Instead, the claimed solution is necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks". Akin to *DDR*, claim 1 does not merely recite a business solution, but is rooted in computer technology relevant to adopting demands in a computing environment involving real computing resources and overcomes a problem specifically arising in this realm (i.e. the lack of a way to address overbooking and/or overprovisioning).

In *RCT*, the court found that the claim: "...also recites the additional steps of comparing the blue noise mask to a gray scale image to transform the gray scale image to a binary image... These additional steps tie the mathematical operation (the blue noise mask) to the processor's ability to process digital images. These steps add meaningful limitations to the abstract idea of generating a blue noise mask and therefore add significantly more to the abstract idea than mere computer implementation. Importantly, in the present application, claim 1 ties the operations performed in the analyses to the creation of a workload placement solution in order to control the placements of source systems onto target systems when implemented, in order to solve a particular problem in a particular type of computing environment. As such, claim 1 should also be considered significantly more than any alleged abstract idea and be considered much more than mere computer implementation (while Applicant reiterates that claim 1 should not be considered an abstract idea in the first place).

In view of the foregoing, Applicant submits that claim 1 is not directed to an abstract idea and should be patent eligible for at least that reason. Moreover, the claimed method is also rooted in computer technology relevant to adopting demands in a computing environment involving real computing resources and overcomes a problem specifically arising in this realm, and further still would be considered significantly more than any abstract idea (for the sake of argument). For at least these reasons, claim 1 complies with 35 U.S.C. 101. Similar arguments apply to claims 13 and those claims dependent on claims 1 and 13.

### **Claim Rejections – 35 U.S.C. 103**

Claims 1-6, 10-18, and 22-24 have been rejected under 35 U.S.C. 102(e) as being anticipated by Stefaniak (US 2006/0179171). Claims 7-9 and 19-21 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Stefaniak in view of Vinberg (US 2007/0006218). The Applicant respectfully traverses the rejections as follows.

Claim 1 recites in part:

“analyzing compatibility parameters for the computer systems to determine whether a source system is compatible with at least one of: i) a target system, and ii) another source system, wherein the compatibility parameters correspond to features or characteristics of the respective computer systems that can be evaluated, quantified, measured, or compared between systems;

analyzing source system workload data to determine which of the computer systems is operable with another system on the target system;  
and

generating an output comprising a workload placement solution based on which of the computer systems is operable and compatible with other systems, to enable one or more placements of source systems onto target systems to be implemented”.

Stefaniak may teach a consolidation service (115) that can be used to consolidate a first server farm (110) into a second server farm (120), but Stefaniak at most provides an example of what the claimed invention improves upon. As indicated above, prior systems failed to consider the compatibility of source systems with the target systems and each other, let alone to determine which of systems are operable with other systems.

For example, at paragraph [0036] in Stefaniak, the “discovered features” are only analyzed to determine redundancies and utilization of resources. This speaks to looking at usage and capacity, not compatibility. Similarly, at paragraph [0039], consolidating applications to run on a single server does not consider the compatibility of systems with the target system or each other. The Examiner has also pointed to paragraph [00143], which while it does use the term “compatibility”, this is in the context of database compatibility, e.g. for schema commonality and differences in the data in such databases. This does not, however, teach or suggest analyzing compatibility of systems with respect to a target system and another source system. All that Stefaniak does in this embodiment is look at whether a 1-to-1 compatibility exists between the data held in different databases.

In addition to the above differences, Stefaniak also fails to teach or suggest generating an output comprising a workload solution based on which of a plurality of systems are operable together. As indicated above, the claimed invention improves upon prior techniques such as that

disclosed by Stefaniak by looking at compatibility data for a plurality of computer systems to determine whether they are compatible with a target or each other and providing an output accordingly.

For at least these reasons, the Applicant respectfully submits that the claims are both novel and patentable over Stefaniak.

With respect to Vinberg, the Applicant notes that while Vinberg may generally suggest the use of virtual machines, Vinberg fails to teach or suggest the elements above that distinguish over Stefaniak and therefore Vinberg fails to cure the deficiencies in Stefaniak. As such, claims 7-9 and 19-21 are invention over Stefaniak and Vinberg. The other claims are similarly patentable over this combination of references.

\* \* \*

The Applicant requests early reconsideration and allowance of the present application.

Respectfully submitted,

/Brett J. Slaney/

---

Brett J. Slaney  
Agent for Applicant  
Registration No. 58,772

**Date: October 30, 2018**

BLAKE, CASSELS & GRAYDON LLP  
199 Bay Street  
Suite 4000, Commerce Court West  
Toronto ON M5L 1A9  
Canada

Tel: 416-863-2518  
BSL/

### **Amendments to the Claims**

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

#### **Listing of claims:**

1. (Currently amended) A computer implemented method for determining compatibility of computer systems for combining source systems on target systems, the method comprising:

analyzing compatibility parameters for a plurality of ~~the~~ computer systems to determine whether ~~[[the]] a source system is systems are~~ compatible with at least one of: i) a target system, and ii) another source system, wherein the compatibility parameters correspond to features or characteristics of the respective computer systems that can be evaluated, quantified, measured, or compared between systems each other;

analyzing source system workload data to determine which of the ~~plurality of computer~~ systems ~~[[are]] is operable together with another system~~ on the target system; and

generating an output comprising a workload placement solution based on which of the ~~plurality of computer~~ systems ~~[[are]] is operable and compatible with other systems together~~, to enable one or more ~~transfers~~ placements of source systems onto target systems to be implemented.

2. (Currently amended) The method of claim 1, wherein the compatibility parameters comprise technical parameters of the systems and non-technical business parameters in a computing environment comprising the computer systems.

3. (Previously presented) The method of claim 1, further comprising:

generating a plurality of potential workload placement solutions; and

selecting an optimal workload placement solution for the output, from the plurality of potential workload placement solutions.

4. (Previously presented) The method of claim 3, wherein the optimal workload placement solution is selected according to one or more criteria, the one or more criteria comprising at least one of a compatibility score, and a number of transfers.

5. (Previously presented) The method of claim 1, further comprising ranking a plurality of target systems as candidates to host one or more source workloads according to compatibility scores and

a resultant target resource utilization.

6. (Previously presented) The method of claim 1, wherein the compatibility parameters comprise technical parameters, business parameters, or both technical and business parameters, at least one of which relates to the presence of licensed software, the method further comprising determining a combination of workloads running particular software applications that when combined onto the target system minimizes the software licensing costs.

7. (Previously presented) The method of claim 1, further comprising determining at least one optimal combination of workloads corresponding to virtual machines operable on the target system.

8. (Previously presented) The method of claim 7, wherein a virtual machine corresponds to an abstraction of a physical system, enabling an operating system to be independently installed on each virtual system residing on a same physical system.

9. (Previously presented) The method of claim 7, wherein a virtual machine corresponds a logical subdivision of an operating system installed on a physical system, enabling isolation in operation without executing a different operating system.

10. (Previously presented) The method of claim 1, further comprising determining at least one optimal combination of applications operable independently on the target system.

11. (Previously presented) The method of claim 10, wherein the optimal combination of applications coexist in a same operating system environment.

12. (Previously presented) The method of claim 10, wherein the optimal combination of applications is determined using a multi-dimensional analysis of inter-compatibility between the plurality of workloads and the target system.

13. (Currently amended) A non-transitory computer readable medium comprising computer executable instructions for determining compatibility of computer systems for combining source systems on target systems, the computer executable instructions comprising instructions for:

analyzing compatibility parameters for a plurality of the computer systems to determine whether ~~[[the]] a source system is systems are~~ compatible with at least one of: i) a target system,

and ii) another source system, wherein the compatibility parameters correspond to features or characteristics of the respective computer systems that can be evaluated, quantified, measured, or compared between systems each other;

analyzing source system workload data to determine which of the ~~plurality of computer~~ systems ~~[[are]] is operable together with another system~~ on the target system; and

generating an output comprising a workload placement solution based on which of the ~~plurality of computer~~ systems ~~[[are]] is operable and compatible with other systems together~~, to enable one or more ~~transfers~~ placements of source systems onto target systems to be implemented.

14. (Currently amended) The non-transitory computer readable medium of claim 13, wherein the compatibility parameters comprise technical parameters of the systems and non-technical business parameters in a computing environment comprising the computer systems.

15. (Previously presented) The non-transitory computer readable medium of claim 13, further comprising instructions for:

generating a plurality of potential workload placement solutions; and

selecting an optimal workload placement solution for the output, from the plurality of potential workload placement solutions.

16. (Previously presented) The non-transitory computer readable medium of claim 15, wherein the optimal workload placement solution is selected according to one or more criteria, the one or more criteria comprising at least one of a compatibility score, and a number of transfers.

17. (Previously presented) The non-transitory computer readable medium of claim 13, further comprising instructions for ranking a plurality of target systems as candidates to host one or more source workloads according to compatibility scores and a resultant target resource utilization.

18. (Previously presented) The non-transitory computer readable medium of claim 13, wherein the compatibility parameters comprise technical parameters, business parameters, or both technical and business parameters, at least one of which relates to the presence of licensed software, the computer executable instructions further comprising instructions for determining a combination of workloads running particular software applications that when combined onto the target system minimizes the software licensing costs.

19. (Previously presented) The non-transitory computer readable medium of claim 13, further comprising instructions for determining at least one optimal combination of workloads corresponding to virtual machines operable on the target system.

20. (Previously presented) The non-transitory computer readable medium of claim 19, wherein a virtual machine corresponds to an abstraction of a physical system, enabling an operating system to be independently installed on each virtual system residing on a same physical system.

21. (Previously presented) The non-transitory computer readable medium of claim 19, wherein a virtual machine corresponds a logical subdivision of an operating system installed on a physical system, enabling isolation in operation without executing a different operating system.

22. (Previously presented) The non-transitory computer readable medium of claim 13, further comprising instructions for determining at least one optimal combination of applications operable independently on the target system.

23. (Previously presented) The non-transitory computer readable medium of claim 22, wherein the optimal combination of applications coexist in a same operating system environment.

24. (Previously presented) The non-transitory computer readable medium of claim 22, wherein the optimal combination of applications is determined using a multi-dimensional analysis of inter-compatibility between the plurality of workloads and the target system.

Application No: 14/341,471  
Amendment Dated: October 30, 2018  
Reply to Office Action of: May 30, 2018

Docket No: 59612/00067

**IN THE UNITED STATES PATENT & TRADEMARK OFFICE**

Appln. No: **14/341,471**  
Applicant: **CiRBA Inc.**  
Filed: **July 25, 2014**  
Title: **Method and System for Determining Compatibility of Computer Systems**  
Art Unit: **2451**  
Examiner: **MEJIA, Anthony**  
Docket No: **59612/00067**

Mail Stop AF  
U.S. Patent & Trademark Office  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**RESPONSE AFTER FINAL REJECTION**

Sir:

This is further to the Office Action dated May 30, 2018. Applicant advises that a Request for Continued Examination (RCE) and petition for a two-month extension of time are being filed concurrently herewith, and wishes to amend the above-identified application as follows:

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

**Remarks:** begin on page 6 of this paper.



<b>PATENT APPLICATION FEE DETERMINATION RECORD</b> Substitute for Form PTO-875				Application or Docket Number 14/341,471		Filing Date 07/25/2014		<input type="checkbox"/> To be Mailed	
ENTITY: <input checked="" type="checkbox"/> LARGE <input type="checkbox"/> SMALL <input type="checkbox"/> MICRO									
<b>APPLICATION AS FILED - PART I</b>									
		(Column 1)		(Column 2)					
FOR		NUMBER FILED		NUMBER EXTRA		RATE (\$)		FEE (\$)	
<input type="checkbox"/> BASIC FEE (37 CFR 1.16(a), (b), or (c))		N/A		N/A		N/A			
<input type="checkbox"/> SEARCH FEE (37 CFR 1.16(k), (i), or (m))		N/A		N/A		N/A			
<input type="checkbox"/> 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 \$80 =			
INDEPENDENT CLAIMS (37 CFR 1.16(h))		minus 3 =	*			x \$420 =			
<input type="checkbox"/> 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).							
<input type="checkbox"/> 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			
<b>APPLICATION AS AMENDED - PART II</b>									
<b>AMENDMENT</b>	10/30/2018	(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))	* 24	Minus	** 24	= 0		x \$100 =		0
	Independent (37 CFR 1.16(h))	* 2	Minus	*** 3	= 0		x \$460 =		0
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))								
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE		0	
<b>AMENDMENT</b>		(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 \$0 =		
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x \$0 =		
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))								
	<input type="checkbox"/> 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.						LIE			
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".						donna D smalls logan			
*** 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.									

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.*

Document code: WFEE

United States Patent and Trademark Office  
Sales Receipt for Accounting Date: 01/17/2019

DSMALLS	SALE	#00000004	Mailroom Dt:	10/30/2018	022553	14341471
		01	FC : 1820		1,900.00	DA



# UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/341,471	07/25/2014	Andrew D. HILLIER	59612/00067	2381

27871	7590	07/23/2018
BLAKE, CASSELS & GRAYDON LLP		
COMMERCE COURT WEST		
199 BAY STREET, SUITE 4000		
TORONTO, ON M5L 1A9		
CANADA		

EXAMINER	
MEJIA, ANTHONY	

ART UNIT	PAPER NUMBER
2451	

NOTIFICATION DATE	DELIVERY MODE
07/23/2018	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):

epatent@blakes.com  
jelena.zubac@blakes.com

<b><i>Applicant-Initiated Interview Summary</i></b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	14/341,471	HILLIER ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	ANTHONY MEJIA	2451	

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

(1) ANTHONY MEJIA. (3) \_\_\_\_.

(2) MONICA JONES (Legal Asst). (4) \_\_\_\_.

Date of Interview: 17 July 2018.

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

Exhibit shown or demonstration conducted:    ☐ Yes    ☒ No.  
           If Yes, brief description: N/A.

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: 1-24.

Identification of prior art discussed: N/A.

**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...)

*Applicants' attorney's legal assistant contacted Examiner to get clarity on the Finality of the Final Office Action mailed 05/30/2018. Examiner advised that finality was proper since RCE filed 10/18/2017 was not entered since previous response was a Non-Final dated 07/28/2017 and Applicant's amendment filed 10/18/2017 necessitated the new ground(s) of rejection. Examiner noted that in the Non-Final dated 07/28/2017, that box 2b should've been marked instead of 2a on the PTOL-326 form, nonetheless the response was still processed as a non-final.*

**Applicant recordation instructions:** The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the 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

/ANTHONY MEJIA/ Primary Examiner, Art Unit 2451	
--	--

## Summary of Record of Interview Requirements

### Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

### Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

#### Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

#### 37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,  
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

### Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.



# UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/341,471	07/25/2014	Andrew D. HILLIER	59612/00067	2381

27871 7590 05/30/2018  
BLAKE, CASSELS & GRAYDON LLP  
COMMERCE COURT WEST  
199 BAY STREET, SUITE 4000  
TORONTO, ON M5L 1A9  
CANADA

EXAMINER
----------

MEJIA, ANTHONY

ART UNIT	PAPER NUMBER
----------	--------------

2451

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

05/30/2018

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):

epatent@blakes.com  
jelena.zubac@blakes.com

<b>Office Action Summary</b>	<b>Application No.</b> 14/341,471	<b>Applicant(s)</b> HILLIER ET AL.	
	<b>Examiner</b> ANTHONY MEJIA	<b>Art Unit</b> 2451	<b>AIA (First Inventor to File) Status</b> 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 10/18/2017.  
☐ 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) 1-24 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) 1-24 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](http://www.uspto.gov/patents/init_events/pph/index.jsp) or send an inquiry to [PPHfeedback@uspto.gov](mailto:PPHfeedback@uspto.gov).

**Application Papers**

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

11) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
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: \_\_\_\_.

### **DETAILED ACTION**

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

#### ***Priority***

2. This application discloses and claims only subject matter disclosed in prior U.S. AP No. **11/535,308** and now US PAT No. **7,680,754**, filed **26 September 2006**, and names the inventor or at least one joint inventor named in the prior application. Accordingly, this application constitutes as a continuation to claim the benefit of the filing date of the prior application above, attention is directed to 35 U.S.C. 120, 37 CFR 1.78, and MPEP § 211 *et seq.*

#### ***Response to Amendment***

3. Acknowledgement is made that Claims 1 and 13 have been amended and pending with Claims 2-12 and 14-24 in the instant application presented herein.

#### ***Response to Arguments***

4. Applicant's arguments, see pages 6-9 of Remarks filed **18 October 2018**, with respect to the rejection(s) of claim(s) 1-24 under 35 U.S.C. 101 have been fully considered but they are not persuasive. Applicants explicitly argue that the prior systems evaluated computing hardware capacities and sizing and did not use compatibility parameters to determine whether source systems are compatible with the a target system and/or each other , let alone determine which of the plurality of systems



are operable together. Examiner respectfully disagrees. Previously cited Vinberg discloses at par [0051] that various configuration information describing how the application and/or operating system is to be configured, as well as data to be used by the application and/or operating system when executing, can also be included in the workload. A model of the workload includes the application, operating system, configuration information, and/or data, as well as constraints of the workload such as resources and/or **other capabilities** that the virtual machine(s) **on which the workload is to be installed must have**. Examiner still fail to see how the claimed invention is directed towards a technical improvement or specific solution to a technical problem (see *McRO, Inc. dba Planet Blue v. Bandai Namco Games America Inc.*, 120 USPQ2d 1091 (Fed. Cir. 2016) and *BASCOM Global Internet Services v. AT&TMobility LLC*, 827 F.3d 1341 (Fed. Cir. 2016)). In this case, an administrator and/or developer (human) can determine compatibility of computer systems for combining source systems. Vinberg again mentions that administrators or developers can be tasked with keeping computer systems running and building configurations that are compatible between systems and meet workload constraints (see pars [0002], [0005] and [0054]). Thus it remains unclear as to what technical improvement or specific solution to a technical problem the claimed invention is disclosing. It is unclear as to what limitations recite significantly more than the abstract idea. Furthermore, the claimed steps of: "analyzing compatible parameters...and...analyzing source system workload data...operable together on the target system...generating an output..." appears to close to the steps of Comparing information regarding a sample or test subject to a control or target data

(Ambry/Myriad CAFC) and Collecting information, analyzing it, and displaying certain results of the collection and analysis (Electric Power Group).

5. Applicant's arguments, see pages 7-8, with respect to the rejection(s) of claim(s) 1-24 under 35 U.S.C. 102(b) have been fully considered and are not persuasive.

Applicants argue that the Stefaniak does not teach or suggest analyzing compatibility of systems with respect to a target and each other.

As per applicants' arguments above, Examiner respectfully disagrees. Stefaniak discloses at pars [0137-0140] a pane which provides a display showing the combined average CPU and memory utilization for servers in the system and **help with compatibility analysis**. Stefaniak discloses a pane that provides a mechanism for a user to select process or system compatibility by way of radio buttons 1104. When a user has selected system compatibility analysis, a user can select a source system, e.g., a server candidate for consolidation and one or more target systems (operable to work together). Source system processes are display, and when the Process compatibility detail choice is made in the pane, the source system processes a list box, and the user chooses one or more of the processes. The user then chooses a single target server from the Target Systems list box. Stefaniak provides a UI that displays the result of the process analysis and assists a user in determining process compatibility. A window displays a comparison of common DLL compatibility and differences on the source and target server.

***Claim Rejections - 35 USC § 101***

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 1-24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claim as a whole, considering all claim elements both individually and in combination, do not amount to significantly more than an abstract idea.

Examples of abstract ideas may include fundamental economic practices, certain methods of organizing human activities, an idea of itself, and mathematical relationships or formulas. They may also include ideas that are routine, long-prevalent, or conventional. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l et. al.*, 134 S. Ct. 2347 (2014). Step one of the Alice framework involves determining the breadth of the claims in order to determine whether the claims extend to cover a “fundamental economic practice long prevalent in our system...” *Alice*, 134 S. Ct. at 2356 (emphasis added).

Claims 1-24 are directed to the abstract ideas of “An idea of itself”, such as concepts relating to “analyzing compatibility parameters” and “analyzing source system workload data...operable together on target system” and an idea of itself where an idea standing alone, such as an un-instantiated concept, plan or scheme.

The following claim limitations are considered to be part of the abstract idea: “analyzing compatibility parameters” and “analyzing source system workload data”.

The following court cases contain similar steps as those in the present claims: concepts relating to “analyzing compatibility parameters” and “analyzing source system workload data...operable together on target system” (*Electric Power Group*; “*Ambry/Myriad CAFC*”).

In addressing the second [step 2a] analysis of *Alice*, an abstract idea does not become non-abstract by limiting the invention to a particular field of use or technological environment, such as the Internet. A simple instruction to apply an abstract idea on a computer is not enough.

In general, conventional steps, specified at a high level of generality, are insufficient to supply an inventive concept. "Analyzing compatibility parameters...and..."analyzing source system workload data...operable together on target system..."These types of steps are insufficient to transform an otherwise patent-ineligible abstract idea into patent-eligible subject matter. *Ultramercial, Inc. v. Hulu, LLC*, 09-CV-68918 at p. 11 (Fed. Cir. 2014), paraphrasing *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289 (2012).

Claims 1-24 merely recite a method for determining compatibility of computer systems for combining source systems on target systems which are not sufficient limitation and/or elements for eligibility subject matter under 35 U.S.C. 101 [abstract idea]. The client devices are used for execution of general purpose computing instructions in order to implement the abstract idea, and do not amount to more than mere data gathering and displaying. The claimed solution must be necessarily rooted in computer technology in order to overcome a problem specifically, and the steps of analyzing disclosed within the claims do not provide any improvement to the computing device or the network technology (see *McRO, Inc. dba Planet Blue v. Bandai Namco Games America Inc.*, 120 USPQ2d 1091 (Fed. Cir. 2016) and *BASCOM Global Internet Services v. AT&T Mobility LLC*, 827 F.3d 1341 (Fed. Cir. 2016). Furthermore, the recited additional features of the "clients", when taken as a whole, do not provide significantly more than the abstract idea.

The following court cases contain similar steps as those in the present claims: concepts relating to: "analyzing compatibility parameters...and..."analyzing source system workload data...operable together on target system..." (collecting information, analyzing it, displaying

certain results of the collection and analysis, comparing information regarding a sample or test subject to a target data) (*Electric Power Group*; “Ambry/Myriad CAFC”).

In addressing the second [step 2b] analysis, the office noted the present independent claims, recites additional structure, specifically a “computer systems”, do not contribute significantly to the underlying abstract idea. The additional elements or combination of elements, other than the abstract idea per se, amount to no more than mere recitation of a generic computer structure that serves to perform generic computer functions that are well-understood, routine, and conventional activities previously known. The dependent claims 2-12 also further fail to cure the deficiencies of their independent claim 1, similarly dependent claims 14-24 also fail to cure the deficiencies of their independent claim 13 as the additional elements and functions recited by the dependent claims do not provide meaningful limitations to transform the abstract idea into a patent eligible application that amounts significantly more than the abstract idea itself. Thus, claims 1-24, when taken individually or as an ordered combination fail to recite significantly more than the abstract idea itself.

### ***Claim Rejections - 35 USC § 102***

8. 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 the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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

9. Claims 1-6, 10-18, and 22-24 are rejected under pre-AIA 35 U.S.C. 102(e) as being anticipated by Stefaniak et al. (US 2006/0179171 A1) (hereinafter as Stefaniak).

Regarding Claim 1, Stefaniak teaches a method for determining compatibility of systems for combining source systems on target systems, the method comprising:

analyzing compatibility parameters for a plurality of systems to determine whether the source systems are compatible with at least one of:

- i) a target system (pars [0036-0039], and
- ii) each other (pars [0036-0039]);and

analyzing source system workload data to determine which of the plurality of systems are operable together on the target system (pars [0137-0139] and [0143]); and

generating an output comprising a workload placement solution based on which of the plurality of systems are operable together, to enable one or more transfers to be implemented (pars [0137-0140]).

Regarding Claim 2, Stefaniak further teaches wherein the compatibility parameters comprise technical and non- technical parameters (pars [0137-0139], [0143], and [0146]).

Regarding Claim 3, Stefaniak further teaches wherein the method further comprises:

generating a plurality of potential workload placement solutions (pars [0137-0139], [0143], and [0146]); and

selecting an optimal workload placement solution for the output from the plurality of potential workload placement solutions (pars [0137-0139], [0143], and [0146]).

Regarding Claim 4, Stefaniak further teaches wherein the optimal workload placement solution is selected according to one or more criteria, the one or more criteria comprising at least one of a compatibility score, and a number of transfers (pars [0098], [0137-0139], [0143], and [0146]).

Regarding Claim 5, Stefaniak further teaches ranking a plurality of target systems as candidates to host one or more source workloads according to compatibility scores and a resultant target resource utilization (pars [0098], [0134], [0137-0139], [0143], and [0146]).

Regarding Claim 6, Stefaniak further teaches wherein the compatibility parameters comprise technical parameters, business parameters, or both technical and business parameters, at least one of which relates to the presence of licensed software, the method further comprising determining a combination of workloads running particular software applications that when combined onto the target system minimizes the software licensing costs (pars [0098], [0105-0108], [0134], [0137-0139], [0143], and [0146]).

Regarding Claim 10, Stefaniak further teaches determining at least one optimal combination of applications operable independently on the target system (pars [0098], [0134], [0137-0139], [0143], and [0146]).

Regarding Claim 11, Stefaniak further teaches wherein the optimal combination of applications coexist in a same operating system environment (pars [0098], [0134], [0137-0139], [0143], and [0146]).

Regarding Claim 12, Stefaniak further teaches wherein the optimal combination of applications is determined using a multi-dimensional analysis of inter-compatibility between the plurality of workloads and the target system (pars [0098], [0134], [0137-0139], [0143], and [0146]).



Regarding Claim 13, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 1 above, same rationale of rejection is applicable.

Regarding Claim 14, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 2 above, same rationale of rejection is applicable.

Regarding Claim 15, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 3 above, same rationale of rejection is applicable.

Regarding Claim 16, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 4 above, same rationale of rejection is applicable.

Regarding Claim 17, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 5 above, same rationale of rejection is applicable.

Regarding Claim 18, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 6 above, same rationale of rejection is applicable.

Regarding Claim 22, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 10 above, same rationale of rejection is applicable.

Regarding Claim 23, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 11 above, same rationale of rejection is applicable.

Regarding Claim 24, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 12 above, same rationale of rejection is applicable.

***Claim Rejections - 35 USC § 103***

10. 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.

11. 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 negated by the manner in which the invention was made.

12. Claims 7-9 and 19-21 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Stefaniak in further view of Vinberg et al. (US 2007/0006218 A1) (hereinafter as Vinberg).

Regarding Claim 7, Stefaniak teaches the method of claim 1 above.

Stefaniak does not explicitly teach the step of determining at least one optimal combination of workloads corresponding to virtual machines operable on the target system.

However, Vinberg in a similar field of endeavor discloses a model-based virtual system including the step of:

determining at least one optimal combination of workloads corresponding to virtual machines operable on the target system (pars [0014-0021], [0048-0054], [0057], [0085], and [0094-0095]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Vinberg in the teachings Stefaniak in to derive a model that considers workload constraints. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings of Stefaniak and Vinberg to help minimize conflicts in an installation process.

Regarding Claim 8, Vinberg further teaches wherein a virtual machine corresponds to an abstraction of a physical system, enabling an operating system to be independently installed on each virtual system residing on a same physical system(pars [0014-0021], [0048-0054], [0057], [0085], and [0094-0095]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Vinberg in the teachings Steraniak in to derive a model that considers workload constraints. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings of Stefaniak and Vinberg to help minimize conflicts in an installation process.

Regarding Claim 9, Vinberg further teaches wherein a virtual machine corresponds a logical subdivision of an operating system installed on a physical system, enabling isolation in operation without executing a different operating system (pars [0014-0021], [0048-00534], [0057], [0085], and [0094-0095]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Vinberg in the teachings Steraniak in to derive a model that considers workload constraints. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings of Stefaniak and Vinberg to help minimize conflicts in an installation process.

Regarding Claim 19, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 7 above, same rationale of rejection is applicable.

Regarding Claim 20, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 8 above, same rationale of rejection is applicable.

Regarding Claim 21, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 9 above, same rationale of rejection is applicable.

### ***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **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.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY MEJIA whose telephone number is (571)270-3630. The examiner can normally be reached on Mon-Fri 10:30AM-6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Parry can be reached on 571-272-8328. 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.

/ANTHONY MEJIA/  
Primary Examiner, Art Unit 2451

<b>Notice of References Cited</b>	Application/Control No. 14/341,471		Applicant(s)/Patent Under Reexamination HILLIER ET AL.	
	Examiner ANTHONY MEJIA		Art Unit 2451	Page 1 of 2

#### U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-6,249,769 B1	06-2001	Ruffin; Michael	G06Q10/06	705/400
*	B	US-2002/0078262 A1	06-2002	Harrison, Benjamin R.	G06F9/44526	719/331
*	C	US-6,412,012 B1	06-2002	Bieganski; Paul	G06Q30/02	709/232
*	D	US-6,487,723 B1	11-2002	MacInnis; Alexander G.	A63F13/12	348/E5.006
*	E	US-2002/0199180 A1	12-2002	Donaldson, Jesse	G06F9/45537	717/178
*	F	US-2003/0154472 A1	08-2003	Daase, Detlef	G06F8/61	717/176
*	G	US-2005/0209819 A1	09-2005	Wehrs, Michael Edward	G06F9/4411	702/182
*	H	US-2006/0155912 A1	07-2006	Singh; Sumankumar A.	G06F9/5088	711/6
*	I	US-2006/0179431 A1	08-2006	Devanathan; Sriram Nmi	G06F8/61	717/168
*	J	US-2006/0184917 A1	08-2006	Troan; Lawrence Edward	G06F11/2289	717/124
*	K	US-2006/0179171 A1	08-2006	Stefaniak; Joseph Peter	G06F9/5061	710/15
*	L	US-2006/0179124 A1	08-2006	Stefaniak; Joseph Peter	G06F9/5055	709/219
*	M	US-2006/0253472 A1	11-2006	Wasserman; Theodore Jeremy	G06Q10/06	1/1

#### 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.

<b>Notice of References Cited</b>	Application/Control No. 14/341,471		Applicant(s)/Patent Under Reexamination HILLIER ET AL.	
	Examiner ANTHONY MEJIA		Art Unit 2451	Page 2 of 2

#### U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2007/0006218 A1	01-2007	Vinberg; Anders B.	G06F8/61	717/174
*	B	US-2007/0156857 A1	07-2007	King; David L.	H04L41/0806	709/220
*	C	US-7,616,583 B1	11-2009	Power; Jonathan	G06Q10/06	370/252
*	D	US-7,865,889 B1	01-2011	Bird; Mark	G06F8/60	717/168
*	E	US-8,024,743 B2	09-2011	Werner; Randolph	G06F9/541	709/203
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

#### FOREIGN PATENT DOCUMENTS


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

#### NON-PATENT DOCUMENTS

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

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



<b>Search Notes</b>  	<b>Application/Control No.</b>  14341471	<b>Applicant(s)/Patent Under Reexamination</b>  HILLIER ET AL.
	<b>Examiner</b>  ANTHONY MEJIA	<b>Art Unit</b>  2451

CPC- SEARCHED		
Symbol	Date	Examiner
H04L41/022, H04L41/0873, H04L41/0853, H04L41/0853, H04L41/0853, H04L12/24	5/23/2018	A.M.

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
709	223	5/23/2018	A.M.

\* 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
EAST Inventor and Assignee Search (See Search History)	5/23/2018	A.M.
EAST Class Limited w/Text-based Search (See Search History)	5/23/2018	A.M.
EAST Text-based Search (See Search History)	5/23/2018	A.M.

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

	/ANTHONY MEJIA/ Primary Examiner.Art Unit 2451
--	---

## EAST Search History

## EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L5	0	"14341471"	USPAT	OR	OFF	2018/05/23 16:55
L6	0	"20060179171"	USPAT	OR	OFF	2018/05/23 17:43
L7	0	"20060179171"	USPAT	OR	OFF	2018/05/23 17:43
L8	1	"20060179171"	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2018/05/23 17:43
L9	63	(Hillier near Andrew).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/23 18:00
L10	54	(Yuyitung near Tom).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/23 18:00
L11	27	(Cirba near Inc\$2).AS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/23 18:00
L12	985	(compatible compatibility) near (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/23 18:01
L13	8	(compatible compatibility) near (licenses licensing) near (software)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/05/23 18:01
L14	5	(report output display) near (solution configuration) near (compatible)	USPAT	OR	OFF	2018/05/23 18:02
S1	1	"14341471"	US-PGPUB; USPAT; USOCR;	OR	OFF	2016/10/15 17:38

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S2	3	"20050209819"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:16
S3	2	"6487723".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:16
S4	4	"6412012".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:17
S5	2	"7616583".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:17
S6	16578	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L12/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:20
S7	54	(Hillier near Andrew).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:21
S8	43	(Yuyitung near Tom).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:21
S9	26	(Cirba near Inc\$2).AS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:22
S10	30145	709/223.ccls.	US-PGPUB;	OR	OFF	2016/10/15

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			21:22
S11	7	(compatible compatibility) near (licenses licensing) near (software)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:23
S12	761	(compatible compatibility) near (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:24
S13	38	(compatible compatibility) near (operating ADJ system) near (two different)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:25
S14	100	(split divide) near (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:26
S15	0	S12 and S14	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:26
S16	3	(determin\$3) near (operable) near (together)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:27
S17	2	"20040168052"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 04:17
S18	11	("20050132331"   "20070094375"   "20070250615"   "20070250621"   "6249769"   "6557008"   "7055149"   "7616583"   "7640342"   "7680754"   "7809817"   "US-20050132331"   "US- 20070094375"   "US-20070250621"	US-PGPUB; USPAT	OR	OFF	2016/10/17 06:14

		"US-20700250615"   "US-6249769"   "US-6557008"   "US-7055149"   "US-7616583"   "US-7640342"   "US-7680754"   "US-7809817"   "US-").PN.				
S19	16578	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L12/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 06:21
S20	100	(split divide) near (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 06:21
S21	5	S19 and S20	US-PGPUB; USPAT	OR	OFF	2016/10/17 06:21
S22	94	H04L/6508.cpc. H04L/12/2863.cpc. H04L/6580.cpc. H04L/4308.cpc.	US-PGPUB; USPAT	OR	OFF	2016/10/17 07:05
S23	11	("20050132331"   "20070094375"   "20070250615"   "20070250621"   "6249769"   "6557008"   "7055149"   "7616583"   "7640342"   "7680754"   "7809817"   "US-20050132331"   "US-20070094375"   "US-20070250621"   "US-20700250615"   "US-6249769"   "US-6557008"   "US-7055149"   "US-7616583"   "US-7640342"   "US-7680754"   "US-7809817"   "US-").PN.	US-PGPUB; USPAT	OR	OFF	2016/10/17 07:29
S24	11	("20050132331"   "20070094375"   "20070250615"   "20070250621"   "6249769"   "6557008"   "7055149"   "7616583"   "7640342"   "7680754"   "7809817"   "US-20050132331"   "US-20070094375"   "US-20070250621"   "US-20700250615"   "US-6249769"   "US-6557008"   "US-7055149"   "US-7616583"   "US-7640342"   "US-7680754"   "US-7809817"   "US-").PN.	US-PGPUB; USPAT	OR	OFF	2016/10/17 07:29
S25	1	"20050209818"	US-PGPUB; USPAT	OR	OFF	2016/10/17 09:43
S26	2	"6249769".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:51
S27	144	(compatible compatibility) SAME (workload utilization) SAME (target)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:52

S28	16578	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L12/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:53
S29	11	S27 and S28	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:53
S30	4772	(compatible compatibility) SAME (workload utilization)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:54
S31	27	(rank\$3) SAME (compatible compatibility) SAME (workload utilization)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:54
S32	2	"7680754".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 10:18
S33	4	"13750444"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/15 12:22
S34	8963	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L12/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:37
S35	57	(Hillier near Andrew).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:37
S36	48	(Yuyitung near Tom).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2017/07/17 00:37

			DERWENT; IBM_TDB			
S37	27	(Cirba near Inc\$2).AS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:37
S38	2	(transfer\$4 mov\$3 migrat\$3) near (task workload job) near (compatible compatibility)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:43
S39	1684	(transfer\$4 mov\$3 migrat\$3) SAME (task workload job) SAME (compatible compatibility)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:45
S40	202442	(transfer\$4 mov\$3 migrat\$3) SAME (task workload job)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:51
S41	7680	(check\$3 verifying verifies evaluat\$3) near (compatibility compatible)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:52
S42	409	S40 and S41	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:53
S43	54421399	@ad< "20060421" @rlad< "20060421"	US-PGPUB; USPAT; USOCR; FPRS; EPO	OR	OFF	2017/07/17 00:55
S44	193	S42 and S43	US-PGPUB; USPAT; USOCR; FPRS; EPO	OR	OFF	2017/07/17 00:57
S45	34	(check\$3 verifying verifies evaluat\$3) near (compatibility compatible) near (target)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:59

S46	4	("20020078262"   "20020199180"   "20030227477"   "20060184917").PN.	US-PGPUB; USPAT	OR	OFF	2017/07/17 01:03
S47	6	(check\$3 verifying verifies evaluat\$3) near (compatibility compatible) near (job workload task)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 01:04
S48	40	(check\$3 verifying verifies evaluat\$3) SAME (compatibility compatible) SAME (back-up second another mirror) near (server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 01:06
S49	19	S43 and S48	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 01:06
S50	7680	(check\$3 verifying verifies evaluat\$3) near (compatibility compatible)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:49
S51	54421399	@ad<"20060421" @rlad<"20060421"	US-PGPUB; USPAT; USOCR; FPRS; EPO	OR	OFF	2017/07/17 10:49
S52	40	(check\$3 verifying verifies evaluat\$3) SAME (compatibility compatible) SAME (back-up second another mirror) near (server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:49
S53	19	S51 and S52	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:49
S54	7	S53 and S50	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:49
S55	19	S51 and S52	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2017/07/17 10:51



			DERWENT; IBM_TDB			
S56	19	S55 and S51	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:51
S57	3937	(check\$3 verifying verifies evaluat\$3) SAME (compatibility compatible) SAME (server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:54
S58	1747	S51 and S57	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:54
S59	1646	(check\$3 verifying verifies evaluat\$3) SAME (compatibility compatible) SAME (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 11:46
S60	339	S59 and S57	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 11:46
S61	186	S51 AND S60	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 11:46
S62	1	"14623806"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/19 11:45
S63	0	(determin\$3 analyz\$3) near (server system) near (compatible) SAME (overload\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/19 13:32
S64	77	(determin\$3 analyz\$3) same (server system) same (compatible) SAME (overload\$3)	US-PGPUB; USPAT; USOCR;	OR	OFF	2017/07/19 13:33


			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S65	1646	(check\$3 verifying verifies evaluat\$3) SAME (compatibility compatible) SAME (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/19 13:43
S66	21	(admin user administrator) near (list) near (compatible)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:19
S67	2071	(list) near (compatible compatibility)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:24
S68	9300425	@ad< "20060421" @rlad< "20060421"	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2017/07/20 18:24
S69	1024	S67 and S68	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2017/07/20 18:24
S70	192	S69 and (workload utilization)	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2017/07/20 18:27
S71	662	(compatible compatibility) near (scoring score)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:42
S72	140	S68 and S71	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:42
S73	11780	(compatible compatibility similarity) near (scoring score)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:52
S74	2	(compatible compatibility similarity) near (scoring score) near (target	US-PGPUB; USPAT;	OR	OFF	2017/07/20 18:53

		second) near (device system server)	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S75	11	("20040034577"   "20050132331"   "20070094375"   "20070250621"   "20700250615"   "6249769"   "6557008"   "7055149"   "7616583"   "7640342"   "7680754"   "7809817").PN.	US-PGPUB; USPAT	OR	OFF	2017/07/20 18:55
S76	193	(compatible compatibility similarity) near (scoring score) near (device system server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 19:01
S77	210	(compatible compatibility similarity) near (scoring score rank\$3) near (device system server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 19:48
S78	66	(compatible compatibility similarity) near (list rank\$3) near (device system server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 19:55
S79	24	S68 and S78	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 19:56
S80	1	"14436190"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 20:09
S81	5	"20020013802"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/21 16:57
S82	3	"20100322213"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/21 18:27
S83	157	(look\$3 search\$3 analyz\$3	US-PGPUB;	OR	OFF	2017/07/22

		determin\$3) near (list database listing) near (compatible compatibility)	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			15:05
S84	9300425	@ad<"20060421" @rlad<"20060421"	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2017/07/22 15:05
S85	54	S83 and S84	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/22 15:05
S86	2	"20060179171"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/23 01:34
S87	1358	("VM" (virtual ADJ machine)) near (workload utilization overload)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/23 01:48
S88	9300425	@ad<"20060421" @rlad<"20060421"	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2017/07/23 01:49
S89	52	S87 and S88	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/23 01:49
S90	44	S89 and (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/23 01:51

5/ 23/ 2018 6:04:02 PM

C:\Users\amejia\Documents\EAST\Workspaces\14341471.wsp

<b><i>Index of Claims</i></b>  	<b>Application/Control No.</b>  14341471	<b>Applicant(s)/Patent Under Reexamination</b>  HILLIER ET AL.
	<b>Examiner</b>  ANTHONY MEJIA	<b>Art Unit</b>  2451

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

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant <input type="checkbox"/> CPA <input type="checkbox"/> T.D. <input type="checkbox"/> R.1.47										
CLAIM		DATE								
Final	Original	10/17/2016	07/22/2017	05/23/2018						
	1	✓	✓	✓						
	2	✓	✓	✓						
	3	✓	✓	✓						
	4	✓	✓	✓						
	5	✓	✓	✓						
	6	✓	✓	✓						
	7	✓	✓	✓						
	8	✓	✓	✓						
	9	✓	✓	✓						
	10	✓	✓	✓						
	11	✓	✓	✓						
	12	✓	✓	✓						
	13	✓	✓	✓						
	14	✓	✓	✓						
	15	✓	✓	✓						
	16	✓	✓	✓						
	17	✓	✓	✓						
	18	✓	✓	✓						
	19	✓	✓	✓						
	20	✓	✓	✓						
	21	✓	✓	✓						
	22	✓	✓	✓						
	23	✓	✓	✓						
	24	✓	✓	✓						

Doc code: RCEX

Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-14)

Approved for use through 07/31/2016. 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.

# **REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL** **(Submitted Only via EFS-Web)**

Application Number	14/341,471	Filing Date	2014-07-25	Docket Number (if applicable)	59612/00067	Art Unit	2451
First Named Inventor	HILLIER, Andrew D.			Examiner Name	MEIJIA, Anthony		

**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, to any international application that does not comply with the requirements of 35 U.S.C. 371, 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 022553

## **SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED**

☒ Patent Practitioner Signature

Applicant Signature

Doc code: RCEX

Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-14)

Approved for use through 07/31/2016. 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	/Brett J. Slaney/	Date (YYYY-MM-DD)	2017-10-18
Name	Brett J. SLANEY	Registration Number	58772

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				
<b>Application Number:</b>		14341471		
<b>Filing Date:</b>		25-Jul-2014		
<b>Title of Invention:</b>		METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS		
<b>First Named Inventor/Applicant Name:</b>		Andrew D. HILLIER		
<b>Filer:</b>		Brett Joseph Slaney/Judith Martin		
<b>Attorney Docket Number:</b>		59612/00067		
Filed as Large Entity				
<b>Filing Fees for Utility under 35 USC 111(a)</b>				
<b>Description</b>	<b>Fee Code</b>	<b>Quantity</b>	<b>Amount</b>	<b>Sub-Total in USD(\$)</b>
<b>Basic Filing:</b>				
<b>Pages:</b>				
<b>Claims:</b>				
<b>Miscellaneous-Filing:</b>				
<b>Petition:</b>				
<b>Patent-Appeals-and-Interference:</b>				
<b>Post-Allowance-and-Post-Issuance:</b>				
<b>Extension-of-Time:</b>				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
<b>Miscellaneous:</b>				
RCE- 1st Request	1801	1	1200	1200
<b>Total in USD (\$)</b>				<b>1200</b>

## Electronic Acknowledgement Receipt

<b>EFS ID:</b>	30692415
<b>Application Number:</b>	14341471
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	2381
<b>Title of Invention:</b>	METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS
<b>First Named Inventor/Applicant Name:</b>	Andrew D. HILLIER
<b>Customer Number:</b>	27871
<b>Filer:</b>	Brett Joseph Slaney/Judith Martin
<b>Filer Authorized By:</b>	Brett Joseph Slaney
<b>Attorney Docket Number:</b>	59612/00067
<b>Receipt Date:</b>	18-OCT-2017
<b>Filing Date:</b>	25-JUL-2014
<b>Time Stamp:</b>	15:03:59
<b>Application Type:</b>	Utility under 35 USC 111(a)

### Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$1200
RAM confirmation Number	101917INTEFSW00001621022553
Deposit Account	022553
Authorized User	Brett Slaney
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		Cirba67_OA-Response.pdf	112256	yes	9
			f0ac961b4342bb898490818b3da5c3d3e1c72cc		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Amendment Submitted/Entered with Filing of CPA/RCE		1	1	
	Claims		2	5	
	Applicant Arguments/Remarks Made in an Amendment		6	9	
Warnings:					
Information:					
2	Request for Continued Examination (RCE)	Cirba67_RCE.pdf	1365132	no	3
			793d47a559528fa3c16033e2e177d2f24dc6e3b5		
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30631	no	2
			958e4b1efb945b268ec1ddc4ce15c6baff1207f6		
Warnings:					
Information:					
Total Files Size (in bytes):			1508019		

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.

Application No: 14/341,471  
Amendment Dated: October 18, 2017  
Reply to Office Action of: July 28, 2017

Docket No: 59612/00067

**IN THE UNITED STATES PATENT & TRADEMARK OFFICE**

Appln. No: **14/341,471**  
Applicant: **CiRBA Inc.**  
Filed: **July 25, 2014**  
Title: **Method and System for Determining Compatibility of Computer Systems**  
Art Unit: **2451**  
Examiner: **MEJIA, Anthony**  
Docket No: **59612/00067**

Mail Stop AF  
U.S. Patent & Trademark Office  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**RESPONSE AFTER FINAL REJECTION**

Sir:

This is further to the Office Action dated July 28, 2017. The Applicant advises that a Request for Continued Examination (RCE) is being filed concurrently herewith, and wishes to 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:** begin on page 6 of this paper.

### **Amendments to the Claims**

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

#### **Listing of claims:**

1. (Currently amended) A computer implemented method for determining compatibility of computer systems for combining source systems on target systems, the method comprising:  
analyzing compatibility parameters for a plurality of computer systems to determine whether the source systems are compatible with at least one of: i) a target system, and ii) each other; [[and]]  
analyzing source system workload data to determine which of the plurality of systems are operable together on the target system[.]; and  
generating an output comprising a workload placement solution based on which of the plurality of systems are operable together, to enable one or more transfers to be implemented.
2. (Previously presented) The method of claim 1, wherein the compatibility parameters comprise technical and non-technical parameters.
3. (Currently amended) The method of claim 1, further comprising:  
generating a plurality of potential workload placement solutions; and  
selecting an optimal workload placement solution for the output, from the plurality of potential workload placement solutions.
4. (Previously presented) The method of claim 3, wherein the optimal workload placement solution is selected according to one or more criteria, the one or more criteria comprising at least one of a compatibility score, and a number of transfers.
5. (Previously presented) The method of claim 1, further comprising ranking a plurality of target systems as candidates to host one or more source workloads according to compatibility scores and a resultant target resource utilization.
6. (Previously presented) The method of claim 1, wherein the compatibility parameters comprise technical parameters, business parameters, or both technical and business parameters, at least one of which relates to the presence of licensed software, the method further comprising determining a

combination of workloads running particular software applications that when combined onto the target system minimizes the software licensing costs.

7. (Previously presented) The method of claim 1, further comprising determining at least one optimal combination of workloads corresponding to virtual machines operable on the target system.

8. (Previously presented) The method of claim 7, wherein a virtual machine corresponds to an abstraction of a physical system, enabling an operating system to be independently installed on each virtual system residing on a same physical system.

9. (Previously presented) The method of claim 7, wherein a virtual machine corresponds a logical subdivision of an operating system installed on a physical system, enabling isolation in operation without executing a different operating system.

10. (Previously presented) The method of claim 1, further comprising determining at least one optimal combination of applications operable independently on the target system.

11. (Previously presented) The method of claim 10, wherein the optimal combination of applications coexist in a same operating system environment.

12. (Previously presented) The method of claim 10, wherein the optimal combination of applications is determined using a multi-dimensional analysis of inter-compatibility between the plurality of workloads and the target system.

13. (Currently amended) A non-transitory computer readable medium comprising computer executable instructions for determining compatibility of computer systems for combining source systems on target systems, the computer executable instructions comprising instructions for:

analyzing compatibility parameters for a plurality of computer systems to determine whether the source systems are compatible with at least one of: i) a target system, and ii) each other; [[and]]

analyzing source system workload data to determine which of the plurality of systems are operable together on the target system[.]; and

generating an output comprising a workload placement solution based on which of the plurality of systems are operable together, to enable one or more transfers to be implemented.



14. (Previously presented) The non-transitory computer readable medium of claim 13, wherein the compatibility parameters comprise technical and non-technical parameters.

15. (Currently amended) The non-transitory computer readable medium of claim 13, further comprising instructions for:

generating a plurality of potential workload placement solutions; and

selecting an optimal workload placement solution for the output, from the plurality of potential workload placement solutions.

16. (Previously presented) The non-transitory computer readable medium of claim 15, wherein the optimal workload placement solution is selected according to one or more criteria, the one or more criteria comprising at least one of a compatibility score, and a number of transfers.

17. (Previously presented) The non-transitory computer readable medium of claim 13, further comprising instructions for ranking a plurality of target systems as candidates to host one or more source workloads according to compatibility scores and a resultant target resource utilization.

18. (Previously presented) The non-transitory computer readable medium of claim 13, wherein the compatibility parameters comprise technical parameters, business parameters, or both technical and business parameters, at least one of which relates to the presence of licensed software, the computer executable instructions further comprising instructions for determining a combination of workloads running particular software applications that when combined onto the target system minimizes the software licensing costs.

19. (Previously presented) The non-transitory computer readable medium of claim 13, further comprising instructions for determining at least one optimal combination of workloads corresponding to virtual machines operable on the target system.

20. (Previously presented) The non-transitory computer readable medium of claim 19, wherein a virtual machine corresponds to an abstraction of a physical system, enabling an operating system to be independently installed on each virtual system residing on a same physical system.

21. (Previously presented) The non-transitory computer readable medium of claim 19, wherein a virtual machine corresponds a logical subdivision of an operating system installed on a physical

system, enabling isolation in operation without executing a different operating system.

22. (Previously presented) The non-transitory computer readable medium of claim 13, further comprising instructions for determining at least one optimal combination of applications operable independently on the target system.

23. (Previously presented) The non-transitory computer readable medium of claim 22, wherein the optimal combination of applications coexist in a same operating system environment.

24. (Previously presented) The non-transitory computer readable medium of claim 22, wherein the optimal combination of applications is determined using a multi-dimensional analysis of inter-compatibility between the plurality of workloads and the target system.

## **REMARKS**

The Applicant wishes to thank the Examiner for reviewing the present application.

## **Amendments**

Claim 1 has been amended inserting the step of: “generating an output comprising a workload placement solution based on which of the plurality of systems are operable together, to enable one or more transfers to be implemented”, to clarify the manner in which the results of the analyzing steps are utilized. Support for this amendment can be found in at least paragraph [0088] and claim 3 of the application as filed.

Claim 3 has been amended to be consistent with claim 1 as amended, namely by inserting: “for the output” in relation to the optimal workload placement solution that is selected.

Claim 13 has been amended in a manner consistent with claim 1 as amended, and claim 15 has been amended in a manner consistent with claim 3 as amended.

The Applicant respectfully submits that no new subject matter has been added by way of these amendments.

## **Claim Rejections – 35 U.S.C. 101**

Claims 1-24 have been rejected under 35 U.S.C. 101 for being directed to non-statutory subject matter. The Applicant respectfully traverses the rejections as follows.

While the Applicant does not necessarily agree with the re-application of these rejections, in the interest of advancing prosecution of this matter, the Applicant has amended claim 1 as indicated above, to clarify the manner in which the results of the analyzing steps are utilized. Claim 1 as amended therefore recites: “generating an output comprising a workload placement solution based on which of the plurality of systems are operable together, to enable one or more transfers to be implemented”. Such an output can be used to implement transfers such as consolidation solution, feed into a subsequent iteration towards an ideal solution, etc. That is, the output that is generated from the analyses of the data contributes to an improvement in the way the computer systems operate, particularly together.

As previously argued, prior systems did not use compatibility parameters to determine whether source systems are compatible with a target system and/or each other, let alone to determine which of the plurality of system are operable together. This improves not only the

analyses that are conducted, but also the effectiveness and efficiencies of the computing environment being analyzed, since the claimed method allows for compatibilities to be determined, e.g. for subsequent operations to have systems operating together on a target system. The aforementioned amendments clarify this by specifying the generating of the output recited above. The prior solutions simply did not address this, and have not provided a technical solution, let alone in the way recited in claim 1.

Prior systems that evaluated computing hardware capacities and sizing (e.g. Wasserman, Stefaniak, Vinberg) did not use compatibility parameters to determine whether source systems are compatible with a target system and/or each other, let alone to determine which of the plurality of system are operable together. By assessing whether compatibilities exist and whether systems are operable together on a target system, existing environments can be optimized. As stated above, this not only improves the software and computing system that is analyzing the environment, but the computing environment itself. As such, there is clearly an improvement to another technology. The amendments presented herein also provide an additional specific limitation over what is well-understood and conventional, and provide yet another meaningful limitation beyond generally linking the use of a judicial exception to a particular technological environment (see also the Applicant's previous arguments in that regard).

For at least these reasons, the Applicant respectfully submits that the claims as amended providing "significantly more" than any underlying allegedly abstract idea, and should be patent eligible under 35 U.S.C. 101.

#### **Claim Rejections – 35 U.S.C. 102 and 103**

Claims 1-6, 10-18, and 22-24 have been rejected under 35 U.S.C. 102(e) as being anticipated by Stefaniak (US 2006/0179171). Claims 7-9 and 19-21 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Stefaniak in view of Vinberg (US 2007/0006218). The Applicant respectfully traverses the rejections as follows.

Claim 1 recites in part:

"analyzing compatibility parameters for a plurality of computer systems to determine whether the source systems are compatible with at least one of: i) a target system, and ii) each other;

analyzing source system workload data to determine which of the plurality of systems are operable together on the target system; and

generating an output comprising a workload placement solution based on which of the plurality of systems are operable together, to enable one or more transfers to be implemented” [emphasis added].

Stefaniak may teach a consolidation service (115) that can be used to consolidate a first server farm (110) into a second server farm (120), but Stefaniak at most provides an example of what the claimed invention improves upon. As indicated above, prior systems failed to consider the compatibility of source systems with the target systems and each other, let alone to determine which of the plurality of systems are operable together.

For example, at paragraph [0036] in Stefaniak, the “discovered features” are only analyzed to determine redundancies and utilization of resources. This speaks to looking at usage and capacity, not compatibility. Similarly, at paragraph [0039], consolidating applications to run on a single server does not consider the compatibility of systems with the target system or each other. The Examiner has also pointed to paragraph [00143], which while it does use the term “compatibility”, this is in the context of database compatibility, e.g. for schema commonality and differences in the data in such databases. This does not, however, teach or suggest analyzing compatibility of systems with respect to a target system and each other. All that Stefaniak does in this embodiment is look at whether a 1-to-1 compatibility exists between the data held in different databases.

In addition to the above differences, Stefaniak also fails to teach or suggest generating an output comprising a workload solution based on which of a plurality of systems are operable together. As indicated above, the claimed invention improves upon prior techniques such as that disclosed by Stefaniak by looking at compatibility data for a plurality of computer systems to determine whether they are compatible with a target or each other and providing an output accordingly.

For at least these reasons, the Applicant respectfully submits that the claims are both novel and patentable over Stefaniak.

With respect to Vinberg, the Applicant notes that while Vinberg may generally suggest the use of virtual machines, Vinberg fails to teach or suggest the elements above that distinguish over Stefaniak and therefore Vinberg fails to cure the deficiencies in Stefaniak. As such, claims 7-9 and 19-21 are invention over Stefaniak and Vinberg. The other claims are similarly patentable over this combination of references.

\* \* \*

Application No: 14/341,471  
Amendment Dated: October 18, 2017  
Reply to Office Action of: July 28, 2017

Docket No: 59612/00067

The Applicant requests early reconsideration and allowance of the present application.

Respectfully submitted,

/Brett J. Slaney/

---

Brett J. Slaney  
Agent for Applicant  
Registration No. 58,772

**Date: October 18, 2017**

BLAKE, CASSELS & GRAYDON LLP  
199 Bay Street  
Suite 4000, Commerce Court West  
Toronto ON M5L 1A9  
Canada

Tel: 416-863-2518  
BS/

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.

<b>PATENT APPLICATION FEE DETERMINATION RECORD</b> Substitute for Form PTO-875				Application or Docket Number <b>14/341,471</b>		Filing Date <b>07/25/2014</b>		<input type="checkbox"/> To be Mailed	
ENTITY: <input checked="" type="checkbox"/> LARGE <input type="checkbox"/> SMALL <input type="checkbox"/> MICRO									
<b>APPLICATION AS FILED – PART I</b>									
(Column 1)		(Column 2)							
FOR		NUMBER FILED		NUMBER EXTRA		RATE (\$)		FEE (\$)	
<input type="checkbox"/> BASIC FEE (37 CFR 1.16(a), (b), or (c))		N/A		N/A		N/A			
<input type="checkbox"/> SEARCH FEE (37 CFR 1.16(k), (j), or (m))		N/A		N/A		N/A			
<input type="checkbox"/> 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 \$ =			
<input type="checkbox"/> 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).							
<input type="checkbox"/> 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			
<b>APPLICATION AS AMENDED – PART II</b>									
(Column 1)		(Column 2)		(Column 3)					
AMENDMENT	<b>10/18/2017</b>		CLAIMS REMAINING AFTER AMENDMENT			HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		
	Total (37 CFR 1.16(i))		* 24		Minus	** 24	= 0		
	Independent (37 CFR 1.16(h))		* 2		Minus	*** 3	= 0		
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))								
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
	TOTAL ADD'L FEE								
								0	
AMENDMENT			CLAIMS REMAINING AFTER AMENDMENT			HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		
	Total (37 CFR 1.16(i))		*		Minus	**	=		
	Independent (37 CFR 1.16(h))		*		Minus	***	=		
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))								
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
	TOTAL ADD'L FEE								
<p>* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.</p> <p>** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".</p> <p>*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".</p> <p>The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.</p>									

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.



# UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/341,471	07/25/2014	Andrew D. HILLIER	59612/00067	2381

27871	7590	07/28/2017
BLAKE, CASSELS & GRAYDON LLP		
COMMERCE COURT WEST		
199 BAY STREET, SUITE 4000		
TORONTO, ON M5L 1A9		
CANADA		

EXAMINER	
MEJIA, ANTHONY	

ART UNIT	PAPER NUMBER
2451	

NOTIFICATION DATE	DELIVERY MODE
07/28/2017	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):

epatent@blakes.com  
jelena.zubac@blakes.com



<b>Office Action Summary</b>	<b>Application No.</b> 14/341,471	<b>Applicant(s)</b> HILLIER ET AL.	
	<b>Examiner</b> ANTHONY MEJIA	<b>Art Unit</b> 2451	<b>AIA (First Inventor to File) Status</b> 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 04/21/2017.  
☐ 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) 1-24 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) 1-24 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](http://www.uspto.gov/patents/init_events/pph/index.jsp) or send an inquiry to [PPHfeedback@uspto.gov](mailto:PPHfeedback@uspto.gov).

**Application Papers**

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

11) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
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 12/23/2016

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

4) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

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

#### ***Priority***

2. This application discloses and claims only subject matter disclosed in prior U.S. AP No. **11/535,308** and now US PAT No. **7,680,754**, filed **26 September 2006**, and names the inventor or at least one joint inventor named in the prior application. Accordingly, this application constitutes as a continuation to claim the benefit of the filing date of the prior application above, attention is directed to 35 U.S.C. 120, 37 CFR 1.78, and MPEP § 211 *et seq.*

#### ***Response to Amendment***

3. Acknowledgement is made that Claims 1 and 13 have been amended and pending with Claims 2-12 and 14-24 in the instant application presented herein.

#### ***Response to Arguments***

4. Applicant's arguments, see pages 6-9 of Remarks filed **21 April 2017**, with respect to the rejection(s) of claim(s) 1-24 under 35 U.S.C. 101 have been fully considered but they are not persuasive. Examiner fails to see how the claimed invention is directed towards a technical improvement or specific solution to a technical problem (see *McRO, Inc. dba Planet Blue v. Bandai Namco Games America Inc.*, 120 USPQ2d 1091 (Fed. Cir. 2016) and *BASCOM Global Internet Services v. AT&T Mobility LLC*, 827

*F.3d 1341 (Fed. Cir. 2016)*. In this case, an administrator and/or developer (human) can determine compatibility of computer systems for combining source systems. For example newly discovered reference Vinberg et al. (US 2007/0006218 A1) mentions that administrators or developers can be tasked with keeping computer systems running and building configurations that are compatible between systems and meet workload constraints (see pars [0002], [0005] and [0054]). Also, Stefaniak et al. (US 2006/0179171 A1) discloses in pars [0133-0136] a user interface that indicated the amount of commonality so that a user can analyze with servers are common and workload levels. Thus it's unclear as to what technical improvement or specific solution to a technical problem the claimed invention is disclosing. Thus, it is unclear as to what limitations recite significantly more than the abstract idea. Furthermore, the claimed steps of: "analyzing compatible parameters...and...analyzing source system workload data...operable together on the target system" appears to close to the steps of Comparing information regarding a sample or test subject to a control or target data (Ambry/Myriad CAFC) and Collecting information, analyzing it, and displaying certain results of the collection and analysis (Electric Power Group).

5. Applicant's arguments, see pages 9-10, with respect to the rejection(s) of claim(s) 1-24 under 35 U.S.C. 102(b) have been fully considered and are persuasive in part. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly discovered references below.

***Claim Rejections - 35 USC § 101***

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 1-24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claim as a whole, considering all claim elements both individually and in combination, do not amount to significantly more than an abstract idea.

Examples of abstract ideas may include fundamental economic practices, certain methods of organizing human activities, an idea of itself, and mathematical relationships or formulas. They may also include ideas that are routine, long-prevalent, or conventional. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l et. al.*, 134 S. Ct. 2347 (2014). Step one of the Alice framework involves determining the breadth of the claims in order to determine whether the claims extend to cover a “fundamental economic practice long prevalent in our system...” *Alice*, 134 S. Ct. at 2356 (emphasis added).

Claims 1-24 are directed to the abstract ideas of “An idea of itself”, such as concepts relating to “analyzing compatibility parameters” and “analyzing source system workload data...operable together on target system” and an idea of itself where an idea standing alone, such as an un-instantiated concept, plan or scheme.

The following claim limitations are considered to be part of the abstract idea: “analyzing compatibility parameters” and “analyzing source system workload data”.

The following court cases contain similar steps as those in the present claims: concepts relating to “analyzing compatibility parameters” and “analyzing source system workload data...operable together on target system” (*Electric Power Group*; “*Ambry/Myriad CAFC*”).

In addressing the second [step 2a] analysis of *Alice*, an abstract idea does not become non-abstract by limiting the invention to a particular field of use or technological environment, such as the Internet. A simple instruction to apply an abstract idea on a computer is not enough.

In general, conventional steps, specified at a high level of generality, are insufficient to supply an inventive concept. "Analyzing compatibility parameters...and..."analyzing source system workload data...operable together on target system..."These types of steps are insufficient to transform an otherwise patent-ineligible abstract idea into patent-eligible subject matter. *Ultramercial, Inc. v. Hulu, LLC*, 09-CV-68918 at p. 11 (Fed. Cir. 2014), paraphrasing *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289 (2012).

Claims 1-24 merely recite a method for determining compatibility of computer systems for combining source systems on target systems which are not sufficient limitation and/or elements for eligibility subject matter under 35 U.S.C. 101 [abstract idea]. The client devices are used for execution of general purpose computing instructions in order to implement the abstract idea, and do not amount to more than mere data gathering and displaying. The claimed solution must be necessarily rooted in computer technology in order to overcome a problem specifically, and the steps of analyzing disclosed within the claims do not provide any improvement to the computing device or the network technology (see *McRO, Inc. dba Planet Blue v. Bandai Namco Games America Inc.*, 120 USPQ2d 1091 (Fed. Cir. 2016) and *BASCOM Global Internet Services v. AT&T Mobility LLC*, 827 F.3d 1341 (Fed. Cir. 2016). Furthermore, the recited additional features of the "clients", when taken as a whole, do not provide significantly more than the abstract idea.

The following court cases contain similar steps as those in the present claims: concepts relating to: "analyzing compatibility parameters...and..."analyzing source system workload data...operable together on target system..." (collecting information, analyzing it, displaying

certain results of the collection and analysis, comparing information regarding a sample or test subject to a target data) (*Electric Power Group*; “Ambry/Myriad CAFC”).

In addressing the second [step 2b] analysis, the office noted the present independent claims, recites additional structure, specifically a “computer systems”, do not contribute significantly to the underlying abstract idea. The additional elements or combination of elements, other than the abstract idea per se, amount to no more than mere recitation of a generic computer structure that serves to perform generic computer functions that are well-understood, routine, and conventional activities previously known. The dependent claims 2-12 also further fail to cure the deficiencies of their independent claim 1, similarly dependent claims 14-24 also fail to cure the deficiencies of their independent claim 13 as the additional elements and functions recited by the dependent claims do not provide meaningful limitations to transform the abstract idea into a patent eligible application that amounts significantly more than the abstract idea itself. Thus, claims 1-24, when taken individually or as an ordered combination fail to recite significantly more than the abstract idea itself.

***Claim Rejections - 35 USC § 102***

8. 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 the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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

9. Claims 1-6, 10-18, and 22-24 are rejected under pre-AIA 35 U.S.C. 102(e) as being anticipated by Stefaniak et al. (US 2006/0179171 A1) (hereinafter as Stefaniak).

Regarding Claim 1, Stefaniak teaches a method for determining compatibility of systems for combining source systems on target systems, the method comprising:

analyzing compatibility parameters for a plurality of systems to determine whether the source systems are compatible with at least one of:

- i) a target system (pars [0036-0039], and
- ii) each other (pars [0036-0039]);and

analyzing source system workload data to determine which of the plurality of systems are operable together on the target system (pars [0137-0139] and [0143]).

Regarding Claim 2, Stefaniak further teaches wherein the compatibility parameters comprise technical and non- technical parameters (pars [0137-0139], [0143], and [0146]).

Regarding Claim 3, Stefaniak further teaches wherein the method further comprises:

generating a plurality of potential workload placement solutions (pars [0137-0139], [0143], and [0146]); and

selecting an optimal workload placement solution from the plurality of potential workload placement solutions (pars [0137-0139], [0143], and [0146]).

Regarding Claim 4, Stefaniak further teaches wherein the optimal workload placement solution is selected according to one or more criteria, the one or more criteria comprising at least one of a compatibility score, and a number of transfers (pars [0098], [0137-0139], [0143], and [0146]).

Regarding Claim 5, Stefaniak further teaches ranking a plurality of target systems as candidates to host one or more source workloads according to compatibility scores



and a resultant target resource utilization (pars [0098], [0134], [0137-0139], [0143], and [0146])).

Regarding Claim 6, Stefaniak further teaches wherein the compatibility parameters comprise technical parameters, business parameters, or both technical and business parameters, at least one of which relates to the presence of licensed software, the method further comprising determining a combination of workloads running particular software applications that when combined onto the target system minimizes the software licensing costs (pars [0098], [0105-0108], [0134], [0137-0139], [0143], and [0146])).

Regarding Claim 10, Stefaniak further teaches determining at least one optimal combination of applications operable independently on the target system (pars [0098], [0134], [0137-0139], [0143], and [0146])).

Regarding Claim 11, Stefaniak further teaches wherein the optimal combination of applications coexist in a same operating system environment (pars [0098], [0134], [0137-0139], [0143], and [0146])).

Regarding Claim 12, Stefaniak further teaches wherein the optimal combination of applications is determined using a multi-dimensional analysis of inter-compatibility

between the plurality of workloads and the target system (pars [0098], [0134], [0137-0139], [0143], and [0146]).

Regarding Claim 13, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 1 above, same rationale of rejection is applicable.

Regarding Claim 14, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 2 above, same rationale of rejection is applicable.

Regarding Claim 15, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 3 above, same rationale of rejection is applicable.

Regarding Claim 16, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 4 above, same rationale of rejection is applicable.

Regarding Claim 17, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 5 above, same rationale of rejection is applicable.

Regarding Claim 18, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 6 above, same rationale of rejection is applicable.

Regarding Claim 22, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 10 above, same rationale of rejection is applicable.

Regarding Claim 23, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 11 above, same rationale of rejection is applicable.

Regarding Claim 24, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 12 above, same rationale of rejection is applicable.

***Claim Rejections - 35 USC § 103***

10. 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.

11. 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 negated by the manner in which the invention was made.

12. Claims 7-9 and 19-21 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Stefaniak in further view of Vinberg et al. (US 2007/0006218 A1) (hereinafter as Vinberg).

Regarding Claim 7, Stefaniak teaches the method of claim 1 above.

Stefaniak does not explicitly teach the step of determining at least one optimal combination of workloads corresponding to virtual machines operable on the target system.

However, Vinberg in a similar field of endeavor discloses a model-based virtual system including the step of:

determining at least one optimal combination of workloads corresponding to virtual machines operable on the target system (pars [0014-0021], [0048-0054], [0057], [0085], and [0094-0095]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Vinberg in the teachings Stefaniak in to derive a model that considers workload constraints. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings of Stefaniak and Vinberg to help minimize conflicts in an installation process.

Regarding Claim 8, Vinberg further teaches wherein a virtual machine corresponds to an abstraction of a physical system, enabling an operating system to be independently installed on each virtual system residing on a same physical system(pars [0014-0021], [0048-0054], [0057], [0085], and [0094-0095]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Vinberg in the teachings Steraniak in to derive a model that considers workload constraints. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings of Stefaniak and Vinberg to help minimize conflicts in an installation process.

Regarding Claim 9, Vinberg further teaches wherein a virtual machine corresponds a logical subdivision of an operating system installed on a physical system, enabling isolation in operation without executing a different operating system (pars [0014-0021], [0048-00534], [0057], [0085], and [0094-0095]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Vinberg in the teachings Steraniak in to derive a model that considers workload constraints. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings of Stefaniak and Vinberg to help minimize conflicts in an installation process.

Regarding Claim 19, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 7 above, same rationale of rejection is applicable.

Regarding Claim 20, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 8 above, same rationale of rejection is applicable.

Regarding Claim 21, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 9 above, same rationale of rejection is applicable.

### ***Conclusion***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY MEJIA whose telephone number is (571)270-3630. The examiner can normally be reached on Mon-Fri 10:30AM-6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Parry can be reached on 571-272-8328. 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.

Application/Control Number: 14/341,471  
Art Unit: 2451

Page 15

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.

/ANTHONY MEJIA/  
Primary Examiner, Art Unit 2451

<b>Notice of References Cited</b>	Application/Control No. 14/341,471		Applicant(s)/Patent Under Reexamination HILLIER ET AL.	
	Examiner ANTHONY MEJIA		Art Unit 2451	Page 1 of 2

#### U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-6,249,769 B1	06-2001	Ruffin; Michael	G06Q10/06	705/400
*	B	US-2002/0078262 A1	06-2002	Harrison, Benjamin R.	G06F9/44526	719/331
*	C	US-6,412,012 B1	06-2002	Bieganski; Paul	G06Q30/02	709/232
*	D	US-6,487,723 B1	11-2002	MacInnis; Alexander G.	A63F13/12	348/E5.006
*	E	US-2002/0199180 A1	12-2002	Donaldson, Jesse	G06F9/45537	717/178
*	F	US-2003/0154472 A1	08-2003	Daase, Detlef	G06F8/61	717/176
*	G	US-2005/0209819 A1	09-2005	Wehrs, Michael Edward	G06Q10/00	702/182
*	H	US-2006/0155912 A1	07-2006	Singh; Sumankumar A.	G06F9/5088	711/6
*	I	US-2006/0179431 A1	08-2006	Devanathan; Sriram Nmi	G06F8/61	717/168
*	J	US-2006/0184917 A1	08-2006	Troan; Lawrence Edward	G06F11/2289	717/124
*	K	US-2006/0179171 A1	08-2006	Stefaniak; Joseph Peter	G06F9/5061	710/15
*	L	US-2006/0179124 A1	08-2006	Stefaniak; Joseph Peter	G06F9/5055	709/219
*	M	US-2006/0253472 A1	11-2006	Wasserman; Theodore Jeremy	G06Q10/06	1/1

#### 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.



<b>Notice of References Cited</b>	Application/Control No. 14/341,471		Applicant(s)/Patent Under Reexamination HILLIER ET AL.	
	Examiner ANTHONY MEJIA		Art Unit 2451	Page 2 of 2

#### U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2007/0006218 A1	01-2007	Vinberg; Anders B.	G06F8/61	717/174
*	B	US-2007/0156857 A1	07-2007	King; David L.	H04L41/0806	709/220
*	C	US-7,616,583 B1	11-2009	Power; Jonathan	G06Q10/06	370/252
*	D	US-7,865,889 B1	01-2011	Bird; Mark	G06F8/60	717/168
*	E	US-8,024,743 B2	09-2011	Werner; Randolph	G06F9/541	709/203
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

#### FOREIGN PATENT DOCUMENTS

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

#### NON-PATENT DOCUMENTS

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

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

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> ( Not for submission under 37 CFR 1.99)	Application Number	14341471
	Filing Date	2014-07-25
	First Named Inventor	HILLIER, Andrew D.
	Art Unit	2451
	Examiner Name	MEJIA, Anthony
	Attorney Docket Number	59612/00067

U.S. PATENTS							Remove	
Examiner Initial*	Cite No	Patent Number	Kind Code <sup>1</sup>	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear		
	1							
If you wish to add additional U.S. Patent citation information please click the Add button.							Add	
U.S. PATENT APPLICATION PUBLICATIONS							Remove	
Examiner Initial*	Cite No	Publication Number	Kind Code <sup>1</sup>	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear		
	1	20040034577	A1	2004-02-19	VAN HOOSE et al.			
If you wish to add additional U.S. Published Application citation information please click the Add button.							Add	
FOREIGN PATENT DOCUMENTS							Remove	
Examiner Initial*	Cite No	Foreign Document Number <sup>3</sup>	Country Code <sup>2i</sup>	Kind Code <sup>4</sup>	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T <sup>5</sup>
	1							
If you wish to add additional Foreign Patent Document citation information please click the Add button								Add
NON-PATENT LITERATURE DOCUMENTS								Remove
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.						T <sup>5</sup>

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> ( Not for submission under 37 CFR 1.99)	Application Number	14341471
	Filing Date	2014-07-25
	First Named Inventor	HILLIER, Andrew D.
	Art Unit	2451
	Examiner Name	MEJIA, Anthony
	Attorney Docket Number	59612/00067

1	Examination report dated November 24, 2016 issued in respect of European Application No. 13169900.1.
---	--

If you wish to add additional non-patent literature document citation information please click the Add button

**EXAMINER SIGNATURE**

Examiner Signature	/ANTHONY MEJIA/	Date Considered	07/22/2017
--------------------	-----------------	-----------------	------------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> See Kind Codes of USPTO Patent Documents at [www.USPTO.GOV](http://www.USPTO.GOV) or MPEP 901.04. <sup>2</sup> Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>3</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>4</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>5</sup> Applicant is to place a check mark here if English language translation is attached.

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> ( Not for submission under 37 CFR 1.99)	Application Number	14341471
	Filing Date	2014-07-25
	First Named Inventor	HILLIER, Andrew D.
	Art Unit	2451
	Examiner Name	MEJIA, Anthony
	Attorney Docket Number	59612/00067

### CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

**OR**

☐ That 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 the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

### SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Brett J. Slaney/	Date (YYYY-MM-DD)	2016-12-23
Name/Print	Brett J. SLANEY	Registration Number	58772


This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

## 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.

<b><i>Index of Claims</i></b>  	<b>Application/Control No.</b>  14341471	<b>Applicant(s)/Patent Under Reexamination</b>  HILLIER ET AL.
	<b>Examiner</b>  ANTHONY MEJIA	<b>Art Unit</b>  2451

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

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant										<input type="checkbox"/> CPA										<input type="checkbox"/> T.D.										<input type="checkbox"/> R.1.47									
CLAIM		DATE																																					
Final	Original	10/17/2016	07/22/2017																																				
	1	✓	✓																																				
	2	✓	✓																																				
	3	✓	✓																																				
	4	✓	✓																																				
	5	✓	✓																																				
	6	✓	✓																																				
	7	✓	✓																																				
	8	✓	✓																																				
	9	✓	✓																																				
	10	✓	✓																																				
	11	✓	✓																																				
	12	✓	✓																																				
	13	✓	✓																																				
	14	✓	✓																																				
	15	✓	✓																																				
	16	✓	✓																																				
	17	✓	✓																																				
	18	✓	✓																																				
	19	✓	✓																																				
	20	✓	✓																																				
	21	✓	✓																																				
	22	✓	✓																																				
	23	✓	✓																																				
	24	✓	✓																																				

## EAST Search History

## EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	1	"14341471"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 17:38
S2	3	"20050209819"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:16
S3	2	"6487723".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:16
S4	4	"6412012".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:17
S5	2	"7616583".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:17
S6	16578	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L12/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:20
S7	54	(Hillier near Andrew).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:21
S8	43	(Yuyitung near Tom).INV.	US-PGPUB;	OR	OFF	2016/10/15

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			21:21
S9	26	(Cirba near Inc\$2).AS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:22
S10	30145	709/223.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:22
S11	7	(compatible compatibility) near (licenses licensing) near (software)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:23
S12	761	(compatible compatibility) near (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:24
S13	38	(compatible compatibility) near (operating ADJ system) near (two different)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:25
S14	100	(split divide) near (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:26
S15	0	S12 and S14	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:26
S16	3	(determin\$3) near (operable) near (together)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	OFF	2016/10/15 21:27



			IBM_TDB			
S17	2	"20040168052"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 04:17
S18	11	("20050132331"   "20070094375"   "20070250615"   "20070250621"   "6249769"   "6557008"   "7055149"   "7616583"   "7640342"   "7680754"   "7809817"   "US-20050132331"   "US- 20070094375"   "US-20070250621"   "US-20700250615"   "US-6249769"   "US-6557008"   "US-7055149"   "US- 7616583"   "US-7640342"   "US- 7680754"   "US-7809817"   "US- ").PN.	US-PGPUB; USPAT	OR	OFF	2016/10/17 06:14
S19	16578	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L12/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 06:21
S20	100	(split divide) near (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 06:21
S21	5	S19 and S20	US-PGPUB; USPAT	OR	OFF	2016/10/17 06:21
S22	94	H04L/6508.cpc. H04L/12/2863.cpc. H04L/6580.cpc. H04L/4308.cpc.	US-PGPUB; USPAT	OR	OFF	2016/10/17 07:05
S23	11	("20050132331"   "20070094375"   "20070250615"   "20070250621"   "6249769"   "6557008"   "7055149"   "7616583"   "7640342"   "7680754"   "7809817"   "US-20050132331"   "US- 20070094375"   "US-20070250621"   "US-20700250615"   "US-6249769"   "US-6557008"   "US-7055149"   "US- 7616583"   "US-7640342"   "US- 7680754"   "US-7809817"   "US- ").PN.	US-PGPUB; USPAT	OR	OFF	2016/10/17 07:29
S24	11	("20050132331"   "20070094375"   "20070250615"   "20070250621"   "6249769"   "6557008"   "7055149"   "7616583"   "7640342"   "7680754"   "7809817"   "US-20050132331"   "US- 20070094375"   "US-20070250621"   "US-20700250615"   "US-6249769"   "US-6557008"   "US-7055149"   "US- 7616583"   "US-7640342"   "US- 7680754"   "US-7809817"   "US- ").PN.	US-PGPUB; USPAT	OR	OFF	2016/10/17 07:29
S25	1	"20050209818"	US-PGPUB; USPAT	OR	OFF	2016/10/17 09:43

S26	2	"6249769".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:51
S27	144	(compatible compatibility) SAME (workload utilization) SAME (target)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:52
S28	16578	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L12/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:53
S29	11	S27 and S28	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:53
S30	4772	(compatible compatibility) SAME (workload utilization)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:54
S31	27	(rank\$3) SAME (compatible compatibility) SAME (workload utilization)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:54
S32	2	"7680754".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 10:18
S33	4	"13750444"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/15 12:22
S34	8963	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L12/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2017/07/17 00:37

			DERWENT; IBM_TDB			
S35	57	(Hillier near Andrew).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:37
S36	48	(Yuyitung near Tom).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:37
S37	27	(Cirba near Inc\$2).AS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:37
S38	2	(transfer\$4 mov\$3 migrat\$3) near (task workload job) near (compatible compatibility)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:43
S39	1684	(transfer\$4 mov\$3 migrat\$3) SAME (task workload job) SAME (compatible compatibility)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:45
S40	202442	(transfer\$4 mov\$3 migrat\$3) SAME (task workload job)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:51
S41	7680	(check\$3 verifying verifies evaluat\$3) near (compatibility compatible)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:52
S42	409	S40 and S41	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:53
S43	54421399	@ad< "20060421" @rlad< "20060421"	US-PGPUB; USPAT; USOCR;	OR	OFF	2017/07/17 00:55

			FPRS; EPO			
S44	193	S42 and S43	US-PGPUB; USPAT; USOCR; FPRS; EPO	OR	OFF	2017/07/17 00:57
S45	34	(check\$3 verifying verifies evaluat\$3) near (compatibility compatible) near (target)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 00:59
S46	4	("20020078262"   "20020199180"   "20030227477"   "20060184917").PN.	US-PGPUB; USPAT	OR	OFF	2017/07/17 01:03
S47	6	(check\$3 verifying verifies evaluat\$3) near (compatibility compatible) near (job workload task)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 01:04
S48	40	(check\$3 verifying verifies evaluat\$3) SAME (compatibility compatible) SAME (back-up second another mirror) near (server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 01:06
S49	19	S43 and S48	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 01:06
S50	7680	(check\$3 verifying verifies evaluat\$3) near (compatibility compatible)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:49
S51	54421399	@ad<"20060421" @rlad<"20060421"	US-PGPUB; USPAT; USOCR; FPRS; EPO	OR	OFF	2017/07/17 10:49
S52	40	(check\$3 verifying verifies evaluat\$3) SAME (compatibility compatible) SAME (back-up second another mirror) near (server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:49
S53	19	S51 and S52	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2017/07/17 10:49

			EPO; JPO; DERWENT; IBM_TDB			
S54	7	S53 and S50	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:49
S55	19	S51 and S52	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:51
S56	19	S55 and S51	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:51
S57	3937	(check\$3 verifying verifies evaluat\$3) SAME (compatibility compatible) SAME (server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:54
S58	1747	S51 and S57	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 10:54
S59	1646	(check\$3 verifying verifies evaluat\$3) SAME (compatibility compatible) SAME (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 11:46
S60	339	S59 and S57	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 11:46
S61	186	S51 AND S60	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/17 11:46
S62	1	"14623806"	US-PGPUB; USPAT;	OR	OFF	2017/07/19 11:45

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S63	0	(determin\$3 analyz\$3) near (server system) near (compatible) SAME (overload\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/19 13:32
S64	77	(determin\$3 analyz\$3) same (server system) same (compatible) SAME (overload\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/19 13:33
S65	1646	(check\$3 verifying verifies evaluat\$3) SAME (compatibility compatible) SAME (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/19 13:43
S66	21	(admin user administrator) near (list) near (compatible)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:19
S67	2071	(list) near (compatible compatibility)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:24
S68	9300425	@ad<"20060421" @rlad<"20060421"	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2017/07/20 18:24
S69	1024	S67 and S68	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2017/07/20 18:24
S70	192	S69 and (workload utilization)	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2017/07/20 18:27
S71	662	(compatible compatibility) near (scoring score)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:42
S72	140	S68 and S71	US-PGPUB;	OR	OFF	2017/07/20

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			18:42
S73	11780	(compatible compatibility similarity) near (scoring score)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:52
S74	2	(compatible compatibility similarity) near (scoring score) near (target second) near (device system server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 18:53
S75	11	("20040034577"   "20050132331"   "20070094375"   "20070250621"   "20700250615"   "6249769"   "6557008"   "7055149"   "7616583"   "7640342"   "7680754"   "7809817").PN.	US-PGPUB; USPAT	OR	OFF	2017/07/20 18:55
S76	193	(compatible compatibility similarity) near (scoring score) near (device system server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 19:01
S77	210	(compatible compatibility similarity) near (scoring score rank\$3) near (device system server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 19:48
S78	66	(compatible compatibility similarity) near (list rank\$3) near (device system server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 19:55
S79	24	S68 and S78	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 19:56
S80	1	"14436190"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/20 20:09

S81	5	"20020013802"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/21 16:57
S82	3	"20100322213"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/21 18:27
S83	157	(look\$3 search\$3 analyz\$3 determin\$3) near (list database listing) near (compatible compatibility)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/22 15:05
S84	9300425	@ad<"20060421" @rlad<"20060421"	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2017/07/22 15:05
S85	54	S83 and S84	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/22 15:05
S86	2	"20060179171"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/23 01:34
S87	1358	("VM" (virtual ADJ machine)) near (workload utilization overload)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/23 01:48
S88	9300425	@ad<"20060421" @rlad<"20060421"	US-PGPUB; USPAT; USOCR; EPO	OR	OFF	2017/07/23 01:49
S89	52	S87 and S88	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2017/07/23 01:49
S90	44	S89 and (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2017/07/23 01:51



## EAST Search History


			EPO; JPO; DERWENT; IBM_TDB		
--	--	--	----------------------------------	--	--

### EAST Search History (Interference)

< This search history is empty >

**7/ 24/ 2017 1:14:24 PM**

**C:\ Users\ amejia\ Documents\ EAST\ Workspaces\ 14341471.wsp**

<b>Search Notes</b>  	<b>Application/Control No.</b>  14341471	<b>Applicant(s)/Patent Under Reexamination</b>  HILLIER ET AL.
	<b>Examiner</b>  ANTHONY MEJIA	<b>Art Unit</b>  2451

CPC- SEARCHED		
Symbol	Date	Examiner
H04L41/022, H04L41/0873, H04L41/0853, H04L41/0853, H04L41/0853, H04L12/24	7/22/2017	A.M.

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
709	223	7/22/2017	A.M.

\* 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
EAST Inventor and Assignee Search (See Search History)	7/22/2017	A.M.
EAST Class Limited w/Text-based Search (See Search History)	7/22/2017	A.M.
EAST Text-based Search (See Search History)	7/22/2017	A.M.

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

	/ANTHONY MEJIA/ Primary Examiner.Art Unit 2451
--	---

Application No: 14/341,471  
Amendment Dated: April 21, 2017  
Reply to Office Action of: October 21, 2016

Docket No: 59612/00067

**IN THE UNITED STATES PATENT & TRADEMARK OFFICE**

Appln. No: **14/341,471**  
Applicant: **CiRBA Inc.**  
Filed: **July 25, 2014**  
Title: **Method and System for Determining Compatibility of Computer Systems**  
Art Unit: **2451**  
Examiner: **MEJIA, ANTHONY**  
Docket No: **59612/00067**

Mail Stop Amendment  
U.S. Patent & Trademark Office  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**RESPONSE**

Sir:

This is further to the Office Action dated October 21, 2016. Applicant advises that a petition for a three-month extension of time is being filed concurrently herewith, and wishes to 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:** begin on page 6 of this paper.

**Amendments to the Claims**

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

**Listing of claims:**

1. (Currently amended) A computer implemented method for determining compatibility of computer systems for combining source systems on target systems, the method comprising:

analyzing compatibility parameters for a plurality of computer systems to determine whether the source systems are compatible with at least one of: i) a target system, and ii) each other; and  
analyzing source system workload data to determine which of the plurality of systems are operable together on the target system.

2. (Previously presented) The method of claim 1, wherein the compatibility parameters comprise technical and non-technical parameters.

3. (Previously presented) The method of claim 1, further comprising:

generating a plurality of potential workload placement solutions; and  
selecting an optimal workload placement solution from the plurality of potential workload placement solutions.

4. (Previously presented) The method of claim 3, wherein the optimal workload placement solution is selected according to one or more criteria, the one or more criteria comprising at least one of a compatibility score, and a number of transfers.

5. (Previously presented) The method of claim 1, further comprising ranking a plurality of target systems as candidates to host one or more source workloads according to compatibility scores and a resultant target resource utilization.

6. (Previously presented) The method of claim 1, wherein the compatibility parameters comprise technical parameters, business parameters, or both technical and business parameters, at least one of which relates to the presence of licensed software, the method further comprising determining a combination of workloads running particular software applications that when combined onto the target system minimizes the software licensing costs.

7. (Previously presented) The method of claim 1, further comprising determining at least one optimal combination of workloads corresponding to virtual machines operable on the target system.

8. (Previously presented) The method of claim 7, wherein a virtual machine corresponds to an abstraction of a physical system, enabling an operating system to be independently installed on each virtual system residing on a same physical system.

9. (Previously presented) The method of claim 7, wherein a virtual machine corresponds a logical subdivision of an operating system installed on a physical system, enabling isolation in operation without executing a different operating system.

10. (Previously presented) The method of claim 1, further comprising determining at least one optimal combination of applications operable independently on the target system.

11. (Previously presented) The method of claim 10, wherein the optimal combination of applications coexist in a same operating system environment.

12. (Previously presented) The method of claim 10, wherein the optimal combination of applications is determined using a multi-dimensional analysis of inter-compatibility between the plurality of workloads and the target system.

13. (Currently amended) A non-transitory computer readable medium comprising computer executable instructions for determining compatibility of computer systems for combining source systems on target systems, the computer executable instructions comprising instructions for:  
analyzing compatibility parameters for a plurality of computer systems to determine whether the source systems are compatible with at least one of: i) a target system, and ii) each other; and  
analyzing source system workload data to determine which of the plurality of systems are operable together on the target system.

14. (Previously presented) The non-transitory computer readable medium of claim 13, wherein the compatibility parameters comprise technical and non-technical parameters.

15. (Previously presented) The non-transitory computer readable medium of claim 13, further

comprising instructions for:

generating a plurality of potential workload placement solutions; and  
selecting an optimal workload placement solution from the plurality of potential workload placement solutions.

16. (Previously presented) The non-transitory computer readable medium of claim 15, wherein the optimal workload placement solution is selected according to one or more criteria, the one or more criteria comprising at least one of a compatibility score, and a number of transfers.

17. (Previously presented) The non-transitory computer readable medium of claim 13, further comprising instructions for ranking a plurality of target systems as candidates to host one or more source workloads according to compatibility scores and a resultant target resource utilization.

18. (Previously presented) The non-transitory computer readable medium of claim 13, wherein the compatibility parameters comprise technical parameters, business parameters, or both technical and business parameters, at least one of which relates to the presence of licensed software, the computer executable instructions further comprising instructions for determining a combination of workloads running particular software applications that when combined onto the target system minimizes the software licensing costs.

19. (Previously presented) The non-transitory computer readable medium of claim 13, further comprising instructions for determining at least one optimal combination of workloads corresponding to virtual machines operable on the target system.

20. (Previously presented) The non-transitory computer readable medium of claim 19, wherein a virtual machine corresponds to an abstraction of a physical system, enabling an operating system to be independently installed on each virtual system residing on a same physical system.

21. (Previously presented) The non-transitory computer readable medium of claim 19, wherein a virtual machine corresponds a logical subdivision of an operating system installed on a physical system, enabling isolation in operation without executing a different operating system.

22. (Previously presented) The non-transitory computer readable medium of claim 13, further comprising instructions for determining at least one optimal combination of applications operable

independently on the target system.

23. (Previously presented) The non-transitory computer readable medium of claim 22, wherein the optimal combination of applications coexist in a same operating system environment.

24. (Previously presented) The non-transitory computer readable medium of claim 22, wherein the optimal combination of applications is determined using a multi-dimensional analysis of inter-compatibility between the plurality of workloads and the target system.

## REMARKS

Applicant wishes to thank the Examiner for reviewing the present application.

### **Claim Amendments**

Claim 1 has been amended to be directed to a “computer implemented” method, and to specify that the method is directed to determining compatibility of “computer” systems. Claim 13 has been amended in a manner consistent with claim 1 as amended.

Applicant respectfully submits that no new subject matter has been added by way of these amendments.

### **Claim Rejections – 35 U.S.C. 101**

Claims 1-24 have been rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter. Applicant respectfully traverses the rejections as follows.

Claim 1 recites in part:

“analyzing compatibility parameters for a plurality of computer systems to determine **whether the source systems are compatible with at least one of: i) a target system, and ii) each other;** and  
analyzing source system workload data to determine **which of the plurality of systems are operable together** on the target system”  
” [emphasis added]

### *Case Law*

Finding parallels with the technology at issue in *Enfish, LLC, v. Microsoft Corp. et. al.*, *Appeal No. 2015-1244*, (*Fed. Cir. May 12, 2016*), “*Enfish*”; Applicant submits that: i) the level of abstraction applied by the Examiner is too high given the language of the claims; and ii) the claimed invention improves the functioning of not only a computer system used to analyze the computing environment, but the computing environment itself, since the ability to assess computer system compatibilities enables that computing environment to either work more efficiently or avoid taking on too little or too much demand, adding too much or too little resource capability, etc.



*i) Level of Abstraction Applied is Too High*

In *Enfish* it was reiterated that the abstract idea asserted by Examiners during prosecution must be at a level of abstraction support by the language of the claims. In that case, it was found that the abstract idea attributed to the claims was too high a level of abstraction, since the claims were directed to a self-referential database that was a specific improvement to the way computers operate, thereby bringing the claims out of the abstract idea category.

In the present application, claim 1 is directed to a specific improvement not only to the way in which computing environments are assessed (the computer implemented operations), but also to the computing environment being assessed. By assessing compatibilities between other systems and themselves, in an existing environment, not only is the claimed method determining whether or not compatibilities exist that can be leveraged, it enables the existing environment to work more efficiently if the compatibilities can be exploited (e.g. by consolidation, virtualization, etc.). The analysis is therefore more than an abstract idea, but instead a technological operation that transforms data for compatibility parameters into a determination of which of the plurality of computer systems are operable together. Again, this not only processes and manages compatibility parameters, but also assesses whether certain source computer systems can operate together on a particular target system. In modern computing environments, efficiencies such as those that can be realized by the claimed invention are paramount to the effectiveness of those environments, and therefore the specific limitations in claim 1 are not trivial or abstract but real, tangible and directed to specific improvements.

*ii) Claimed Invention Improves Existing Technology*

While the above remarks address this issue, Applicant further notes that prior systems did not use compatibility parameters to determine whether source systems are compatible with a target system or each other, let alone to determine which of the plurality of system are operable together. This improves not only the analyses that are conducted, but also the effectiveness and efficiencies of the computing environment being analyzed, since the claimed method allows for compatibilities to be determined, e.g. for subsequent operations to have systems operating together on a target system. The prior solutions simply did not address this, and have not provided a technical solution, let alone in the way recited in claim 1.

*USPTO Guidelines*

In addition to the above, making reference to the USPTO 101 Guidelines, Applicant believes that the claimed invention should not be considered abstract and the test of “significantly more”, although satisfied, is not even required.

However, as suggested by the Examiner in the Office Action, the Guidelines consider situations in which claims do in fact add “significantly more”, including: improving another technology; effecting a transformation or reduction of a particular article to a different state or thing; adding a specific limitation other than what is well-understood, routine and conventional in the field, or adding unconventional steps that confine the claim to a particular useful application; or other meaningful limitations beyond generally linking the use of the judicial exception to a particular technological environment.

Looking at each of these situations in turn, very simply the claimed invention, as noted above, does improve another technology. Prior systems that evaluated computing hardware capacities and sizing (e.g. Wasserman) did not use compatibility parameters to determine whether source systems are compatible with a target system or each other, let alone to determine which of the plurality of system are operable together. By assessing whether compatibilities exist and whether systems are operable together on a target system, existing environments can be optimized. As stated above, this not only improves the software and computing system that is analyzing the environment, but the computing environment itself. As such, there is clearly an improvement to another technology.

With respect to transforming an article to a different state or thing, Applicant reminds the Examiner to not merely dismiss any software as being abstract, even when the transformation involves data manipulated by a computer. In the present case, the determining operation recites analyzing “compatibility data” to determine whether source systems are compatible with at least one of a target system and each other. Such an analysis is clearly a technical operation that determines compatibilities of the computer systems in the environment. This is more than a mere scheme, plan or set of rules. Instead, an analysis is performed based on the compatibility parameters, and is used to perform a further analysis of source workload data to determine which of the plurality of systems are operable together on the target system. This involves a computing device to analyze data in a particular way. That is, the operations recited in claim 1 transform data related to the current compatibilities of computer systems in a computing environment to an indication of which systems are operable together on the target system.

With respect to adding a specific limitation over what is well-understood and conventional, as

discussed above, the specific limitation of analyzing both compatibility parameters and source system workload data to ultimately determine which of the systems are operable together on a target system, is something that was not previously considered. While previous solutions analyzed sizing requirements and constraints for hardware configurations, these solutions have not assessed compatibility nor which of a plurality of systems are operable together on a target system. Therefore, a specific limitation exists in claim 1 that is added over what is known and conventional.

With respect to other meaningful limitations beyond generally linking the use of the judicial exception to a particular technological environment. Again, as detailed above, claim 1 recites more than an abstract idea applied to a computer. The method recited in claim 1 analyzes a plurality of computer systems to assess whether a plurality of systems are operable together on a target system. This not only utilizes computing power to evaluate the compatibility parameters and to conduct the analyses thus providing a computer-implemented method that is itself believed to be patent-eligible, as well as improves the operability of existing computer environments that are patent eligible.

Similar arguments apply to claim 13 and those claims dependent on claims 1 and 13.

Accordingly, even for arguments sake, the claimed invention is significantly more than an abstract idea itself. For at least these reasons, Applicant respectfully submits that claims 1-24 comply with 35 U.S.C. 101.

#### **Claim Rejections – 35 U.S.C. 102**

Claims 1-24 have been rejected under 35 U.S.C. 102(b) as being anticipated by Wasserman (US 2006/0253472). Applicant respectfully traverses the rejections as follows.

As discussed above, claim 1 recites in part:

“analyzing compatibility parameters for a plurality of computer systems to determine whether the source systems are compatible with at least one of: i) a target system, and ii) each other; and  
analyzing source system workload data to determine which of the plurality of systems are operable together on the target system”

Wasserman teaches a business intelligence hardware sizing system that determines an initial hardware configuration for a database system. While Wasserman may teach determining hardware configurations for optimal resource utilization, Wasserman does not in fact teach or

suggest looking at whether source systems are operable together on a target system, let alone by conducting an analysis using compatibility parameters for computer systems to determine whether the source systems are compatible with at least one of: i) a target system, and ii) each other. Wasserman is simply silent in that regard.

For instance paragraph [0046] of Wasserman looks at system models and configurations that meet the workload demands of a business intelligence system, but this simply provides a recommendation for a formal hardware configuration for a database tier (see paragraph [0048]), which is not the same as looking at compatibilities between systems or whether systems are operable together on a target system. It is unclear where the Examiner has found these particular features in Wasserman. For example, the other passages cited by the Examiner (e.g. paragraphs [0074] to [0078] again only look at hardware configuration from the standpoint of an initial configuration for a database tier, which is much different that looking at compatibility data for a plurality of computer systems to determine whether they are compatible with a target or each other.

In view of the above, Applicant respectfully submits that claims 1-24 are novel and patentable over Wasserman.

\* \* \*

Applicant requests early reconsideration and allowance of the present application.

Respectfully submitted,

/Brett J. Slaney/

---

Brett J. Slaney  
Agent for Applicant  
Registration No. 58,772

**Date: April 21, 2017**

BLAKE, CASSELS & GRAYDON LLP  
199 Bay Street  
Suite 4000, Commerce Court West  
Toronto ON M5L 1A9  
Canada

Tel: 416-863-2518  
BS/

Electronic Patent Application Fee Transmittal				
<b>Application Number:</b>		14341471		
<b>Filing Date:</b>		25-Jul-2014		
<b>Title of Invention:</b>		METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS		
<b>First Named Inventor/Applicant Name:</b>		Andrew D. HILLIER		
<b>Filer:</b>		Brett Joseph Slaney/Judith Martin		
<b>Attorney Docket Number:</b>		59612/00067		
Filed as Large Entity				
<b>Filing Fees for Utility under 35 USC 111(a)</b>				
<b>Description</b>	<b>Fee Code</b>	<b>Quantity</b>	<b>Amount</b>	<b>Sub-Total in USD(\$)</b>
<b>Basic Filing:</b>				
<b>Pages:</b>				
<b>Claims:</b>				
<b>Miscellaneous-Filing:</b>				
<b>Petition:</b>				
<b>Patent-Appeals-and-Interference:</b>				
<b>Post-Allowance-and-Post-Issuance:</b>				
<b>Extension-of-Time:</b>				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension - 3 months with \$0 paid	1253	1	1400	1400
<b>Miscellaneous:</b>				
<b>Total in USD (\$)</b>				<b>1400</b>

## Electronic Acknowledgement Receipt

<b>EFS ID:</b>	28996972
<b>Application Number:</b>	14341471
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	2381
<b>Title of Invention:</b>	METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS
<b>First Named Inventor/Applicant Name:</b>	Andrew D. HILLIER
<b>Customer Number:</b>	27871
<b>Filer:</b>	Brett Joseph Slaney/Judith Martin
<b>Filer Authorized By:</b>	Brett Joseph Slaney
<b>Attorney Docket Number:</b>	59612/00067
<b>Receipt Date:</b>	21-APR-2017
<b>Filing Date:</b>	25-JUL-2014
<b>Time Stamp:</b>	16:52:50
<b>Application Type:</b>	Utility under 35 USC 111(a)

### Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$1400
RAM confirmation Number	042417INTEFSW00003862022553
Deposit Account	022553
Authorized User	Brett Slaney
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		Cirba67_OA-Response.pdf	148387	yes	10
			c4e7f4efd2662e566d179844525b8bbb1065c2a4		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Amendment/Req. Reconsideration-After Non-Final Reject		1	1	
	Claims		2	5	
	Applicant Arguments/Remarks Made in an Amendment		6	10	
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30791	no	2
			5a99599a2746890957a72d81583f367786c44a64		
Warnings:					
Information:					
Total Files Size (in bytes):			179178		



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.

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.

<b>PATENT APPLICATION FEE DETERMINATION RECORD</b> Substitute for Form PTO-875				Application or Docket Number <b>14/341,471</b>		Filing Date <b>07/25/2014</b>		<input type="checkbox"/> To be Mailed	
ENTITY: <input checked="" type="checkbox"/> LARGE <input type="checkbox"/> SMALL <input type="checkbox"/> MICRO									
<b>APPLICATION AS FILED – PART I</b>									
(Column 1)		(Column 2)							
FOR	NUMBER FILED	NUMBER EXTRA			RATE (\$)	FEE (\$)			
<input type="checkbox"/> BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A			N/A				
<input type="checkbox"/> SEARCH FEE (37 CFR 1.16(k), (j), or (m))	N/A	N/A			N/A				
<input type="checkbox"/> 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 \$ =				
<input type="checkbox"/> 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).								
<input type="checkbox"/> 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				
<b>APPLICATION AS AMENDED – PART II</b>									
(Column 1)		(Column 2)		(Column 3)					
<b>AMENDMENT</b>	<b>04/21/2017</b>	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 24	Minus	** 24	= 0	X \$80 =		0	
	Independent (37 CFR 1.16(h))	* 2	Minus	*** 3	= 0	X \$420 =		0	
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))								
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE		<b>0</b>	
(Column 1)		(Column 2)		(Column 3)					
<b>AMENDMENT</b>		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$ =			
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =			
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))								
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE			
<p>* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.</p> <p>** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".</p> <p>*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".</p> <p>The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.</p>									

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.*

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> ( Not for submission under 37 CFR 1.99)	Application Number	14341471
	Filing Date	2014-07-25
	First Named Inventor	HILLIER, Andrew D.
	Art Unit	2451
	Examiner Name	MEJIA, Anthony
	Attorney Docket Number	59612/00067

U.S. PATENTS							Remove	
Examiner Initial*	Cite No	Patent Number	Kind Code <sup>1</sup>	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear		
	1							
If you wish to add additional U.S. Patent citation information please click the Add button.							Add	
U.S. PATENT APPLICATION PUBLICATIONS							Remove	
Examiner Initial*	Cite No	Publication Number	Kind Code <sup>1</sup>	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear		
	1	20040034577	A1	2004-02-19	VAN HOOSE et al.			
If you wish to add additional U.S. Published Application citation information please click the Add button.							Add	
FOREIGN PATENT DOCUMENTS							Remove	
Examiner Initial*	Cite No	Foreign Document Number <sup>3</sup>	Country Code <sup>2i</sup>	Kind Code <sup>4</sup>	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T <sup>5</sup>
	1							
If you wish to add additional Foreign Patent Document citation information please click the Add button.							Add	
NON-PATENT LITERATURE DOCUMENTS							Remove	
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.						T <sup>5</sup>

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> ( Not for submission under 37 CFR 1.99)	Application Number		14341471
	Filing Date		2014-07-25
	First Named Inventor	HILLIER, Andrew D.	
	Art Unit	2451	
	Examiner Name	MEJIA, Anthony	
	Attorney Docket Number	59612/00067	

1	Examination report dated November 24, 2016 issued in respect of European Application No. 13169900.1.
If you wish to add additional non-patent literature document citation information please click the Add button <input type="button" value="Add"/>	
<b>EXAMINER SIGNATURE</b>	
Examiner Signature	<div></div> <div>Date Considered</div> <div></div>
*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	
<small> <sup>1</sup> See Kind Codes of USPTO Patent Documents at <a href="http://www.USPTO.GOV">www.USPTO.GOV</a> or MPEP 901.04. <sup>2</sup> Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>3</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>4</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>5</sup> Applicant is to place a check mark here if English language translation is attached.         </small>	

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> ( Not for submission under 37 CFR 1.99)	Application Number	14341471
	Filing Date	2014-07-25
	First Named Inventor	HILLIER, Andrew D.
	Art Unit	2451
	Examiner Name	MEJIA, Anthony
	Attorney Docket Number	59612/00067

### CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

**OR**

☐ That 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 the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

### SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Brett J. Slaney/	Date (YYYY-MM-DD)	2016-12-23
Name/Print	Brett J. SLANEY	Registration Number	58772

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

## 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				
<b>Application Number:</b>		14341471		
<b>Filing Date:</b>		25-Jul-2014		
<b>Title of Invention:</b>		METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS		
<b>First Named Inventor/Applicant Name:</b>		Andrew D. HILLIER		
<b>Filer:</b>		Brett Joseph Slaney/Judith Martin		
<b>Attorney Docket Number:</b>		59612/00067		
Filed as Large Entity				
<b>Filing Fees for Utility under 35 USC 111(a)</b>				
<b>Description</b>	<b>Fee Code</b>	<b>Quantity</b>	<b>Amount</b>	<b>Sub-Total in USD(\$)</b>
<b>Basic Filing:</b>				
<b>Pages:</b>				
<b>Claims:</b>				
<b>Miscellaneous-Filing:</b>				
<b>Petition:</b>				
<b>Patent-Appeals-and-Interference:</b>				
<b>Post-Allowance-and-Post-Issuance:</b>				
<b>Extension-of-Time:</b>				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
<b>Miscellaneous:</b>				
Submission- Information Disclosure Stmt	1806	1	180	180
<b>Total in USD (\$)</b>				<b>180</b>



## Electronic Acknowledgement Receipt

<b>EFS ID:</b>	27895090
<b>Application Number:</b>	14341471
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	2381
<b>Title of Invention:</b>	METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS
<b>First Named Inventor/Applicant Name:</b>	Andrew D. HILLIER
<b>Customer Number:</b>	27871
<b>Filer:</b>	Brett Joseph Slaney/Judith Martin
<b>Filer Authorized By:</b>	Brett Joseph Slaney
<b>Attorney Docket Number:</b>	59612/00067
<b>Receipt Date:</b>	23-DEC-2016
<b>Filing Date:</b>	25-JUL-2014
<b>Time Stamp:</b>	15:03:24
<b>Application Type:</b>	Utility under 35 USC 111(a)

### Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$180
RAM confirmation Number	122716INTEFSW00002645022553
Deposit Account	022553
Authorized User	Brett Slaney
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 Letter	Cirba67_IDS2_Letter.pdf	23018	no	2
			097092f93be138004cfabe2ec300833bdf5c bc5e		
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	Cirba67_IDS2_SB08-Form.pdf	612267	no	4
			5756d2e9724c5054e95745a23adf2fd9611 9b7db		
Warnings:					
Information:					
3	Non Patent Literature	Cirba67_IDS2_NPL.pdf	507261	no	5
			111c9514fec77fdb21e94dae5875e452b6c2 e67f		
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	30972	no	2
			d4557d417bc48574fcb99c57554ddf6c5a5 bfe51		
Warnings:					
Information:					
Total Files Size (in bytes):			1173518		

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.

Application No. 14/341,471

**IN THE UNITED STATES PATENT & TRADEMARK OFFICE**

Appl. No.:	<b>14/341,471</b>	Art Unit:	<b>2642</b>
Applicant:	<b>CiRBA Inc.</b>	Examiner:	<b>Not yet assigned</b>
Filed:	<b>July 25, 2014</b>	Docket No.:	<b>59612/00067</b>
Title:	<b>Method and System for Determining Compatibility of Computer Systems</b>		

Mail Stop Amendment  
U.S. Patent & Trademark Office  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

**FIRST SUPPLEMENTAL**  
**INFORMATION DISCLOSURE STATEMENT**

Pursuant to the duty to disclose under 37 CFR §1.56, Applicant submits herewith a Form SB/08 listing references of which the Applicant is aware and which are brought to the attention of the Examiner. In accordance with 37 CFR §1.98(a)(2), a copy of each foreign patent document and non-patent reference document listed in the enclosed Form is submitted herewith.

Pursuant to 35 USC §120, this application relies on the earlier filing date(s) of the following prior application(s):

<u>Serial Number</u>	<u>Filing Date</u>
11/738,936	April 23, 2007
11/535,355	September 26, 2006
11/535,308	September 26, 2006

The filing of this IDS shall not be construed as a representation that a search has been made, an admission that the information cited is, or is considered to be, material for patentability, or that no other material information exists. This filing shall not be construed as an admission against interest in any matter.

23043982.1

Application No. 14/341,471

This IDS is being submitted pursuant to 37 CFR 1.97(c) prior to the issuance of a final action or a Notice of Allowance. Accordingly, pursuant to 37 CFR 1.97(c)(2), payment of the fee prescribed under 37 CFR 1.17(p) is requested to be debited from our Deposit Account Number **02-2553**. In the event of any discrepancy in the required fees, please debit or credit our Deposit Account Number **02-2553** accordingly and advise us immediately.

Applicant respectfully requests consideration of the items listed and requests the Examiner to return a copy of the attached Form after being marked as being considered by the Examiner.

Respectfully submitted,

Date: December 23, 2016

/Brett J. Slaney/

---

**Brett J. Slaney**  
Registration No. **58,772**  
Agent for Applicant

**BLAKE, CASSELS & GRAYDON LLP**  
199 Bay Street  
Suite 4000, Commerce Court West  
Toronto, Ontario, M5L 1A9  
Canada

Tel 416-863-2518  
Fax 416-863-2653

BSL/jm

(✓) enclosure



# UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/341,471	07/25/2014	Andrew D. HILLIER	59612/00067	2381
27871 7590 10/21/2016 BLAKE, CASSELS & GRAYDON LLP COMMERCE COURT WEST 199 BAY STREET, SUITE 4000 TORONTO, ON M5L 1A9 CANADA			EXAMINER MEJIA, ANTHONY	
			ART UNIT 2451	PAPER NUMBER
			NOTIFICATION DATE 10/21/2016	DELIVERY MODE 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):

epatent@blakes.com  
jelena.zubac@blakes.com

<b>Office Action Summary</b>	<b>Application No.</b> 14/341,471	<b>Applicant(s)</b> HILLIER ET AL.	
	<b>Examiner</b> ANTHONY MEJIA	<b>Art Unit</b> 2451	<b>AIA (First Inventor to File) Status</b> 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 12/08/2014.  
☐ 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) 1-24 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) 1-24 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](http://www.uspto.gov/patents/init_events/pph/index.jsp) or send an inquiry to [PPHfeedback@uspto.gov](mailto:PPHfeedback@uspto.gov).

**Application Papers**

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

11) ☒ The drawing(s) filed on 07/25/2014 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 12/08/2014.

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

4) ☐ Other: \_\_\_\_.

### **DETAILED ACTION**

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

#### ***Response to Amendment***

2. Acknowledgement is made that Claim 1 has been amended and Claims 2-24 have been added in the instant application presented herein.

#### ***Priority***

3. This application discloses and claims only subject matter disclosed in prior U.S. AP No. **11/535,308** and now US PAT No. **7,680,754**, filed **26 September 2006**, and names the inventor or at least one joint inventor named in the prior application. Accordingly, this application constitutes as a continuation to claim the benefit of the filing date of the prior application above, attention is directed to 35 U.S.C. 120, 37 CFR 1.78, and MPEP § 211 *et seq.*

#### ***Claim Rejections - 35 USC § 101***

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 1-24 are rejected under 35 USC 101 as being directed to non-statutory subject matter.

6. Claims 1-24 of the claimed invention are directed to a judicial exception (i.e., a law of nature, a natural phenomenon, or an abstract idea) without significantly more.



Art Unit: 2451

In this case, Claims 1-24 are directed to a method for determining compatibility of systems for combining source systems on target systems. The following chart explain to

Application/Control Number: 14/341,471

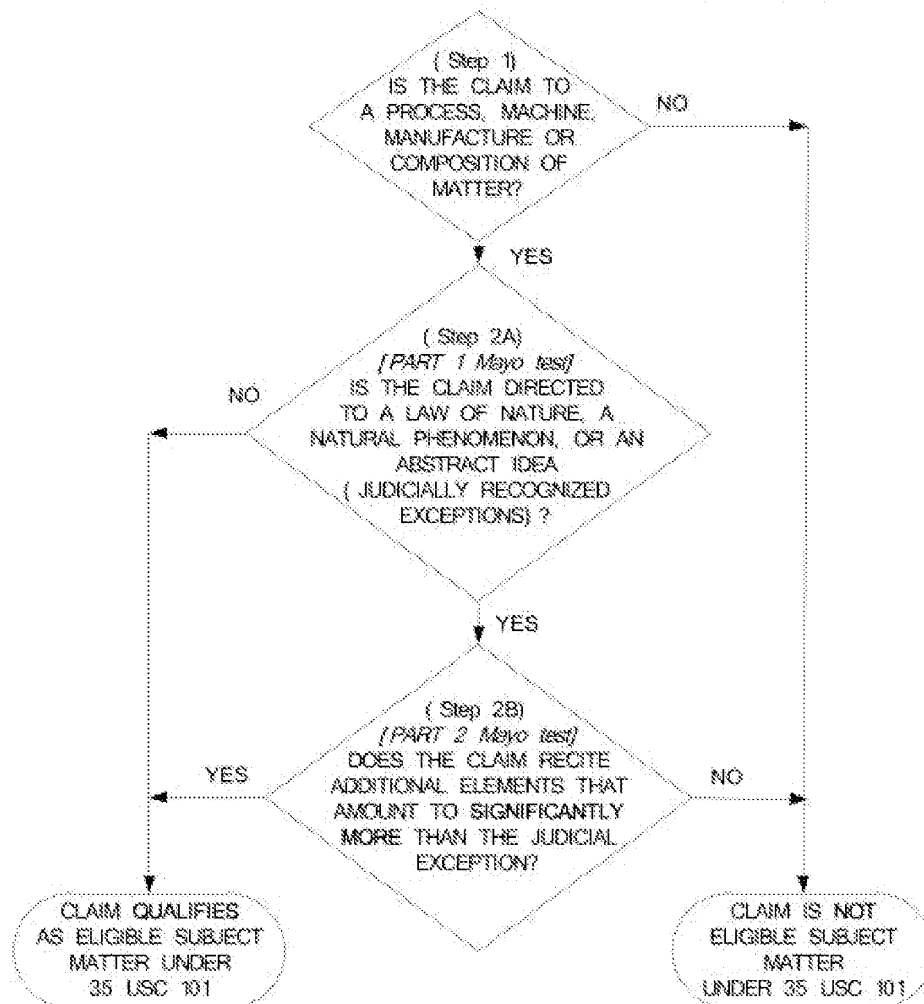
Page 4

Art Unit: 2451

determine subject matter eligibility test for product and processes.

**SUBJECT MATTER ELIGIBILITY TEST FOR  
PRODUCTS AND PROCESSES**

*PRIOR TO EVALUATING A CLAIM FOR PATENTABILITY, ESTABLISH THE  
BROADEST REASONABLE INTERPRETATION OF THE CLAIM.  
ANALYZE THE CLAIM AS A WHOLE WHEN EVALUATING FOR PATENTABILITY.*



IN ACCORDANCE WITH COMPACT PROSECUTION, ALONG WITH DETERMINING ELIGIBILITY, ALL CLAIMS ARE TO BE FULLY EXAMINED UNDER EACH OF THE OTHER PATENTABILITY REQUIREMENTS: 35 USC §§ 102, 103, 112, and 101 ( UTILITY, INVENTORSHIP, DOUBLE PATENTING) AND NON-STATUTORY DOUBLE PATENTING.

**Notable changes from prior guidance:**

- All claims ( product and process) with a judicial exception ( any type) are subject to the same steps.
- Claims including a nature-based product are analyzed in Step 2A to identify whether the claim is directed to ( recites) a "product of nature" exception. This analysis compares the nature-based product in the claim to its naturally occurring counterpart to identify markedly different characteristics based on structure, function, and/or properties. The analysis proceeds to Step 2B only when the claim is directed to an exception ( when no markedly different characteristics are shown).

STEP 1: YES

A series of steps for analyzing compatibility parameters and systems' workloads.

STEP 2: YES

Applicant's claimed invention, as described in independent claim 1 includes an abstract idea. The claimed invention is directed to a method for determining compatibility of systems for combining source systems on target systems by analyzing compatibility parameters and analyzing source system workload data (mental act: analyzing compatibility parameters and workload reports). All the significant steps of this method may be performed mentally by a human being, for example, An individual can analyze specification booklets and system workload reports and/or thresholds to determine if systems can compatibly work together to completing a task.

The following court cases contain similar steps of mental act: *Bilski v. Kappos*, 561 U.S. 593 (2010) and *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. \_\_\_, 134 S. Ct. 2347, 110 U.S.P.Q.2d 1976 (2014), which has been found by the courts to be an abstract idea.

STEP 2B: NO

The claims do not include additional elements that are sufficient to amount to significantly more than the judicial exception. The abstract idea of analyzing compatibility parameters and source system workloads has not been applied in an eligible manner. The steps or acts performed in independent claims 1 and 13 are not enough to qualify as "significantly more" than the abstract idea itself, since the abstract idea can be implemented merely with old, routine, or conventional computer

components that would enable any generic computer to implement the abstract idea. There is no improvement to another technology or technical field, no improvements to the functioning of the computer itself, and no meaningful limitations beyond generally linking the use of an abstract idea to a particular technical environment. Furthermore, claims 1 and 13 require no more than a generic computer to perform generic computer functions that are well-understood, routine and conventional. Therefore, based on the two-part Alice Corp. analysis, there are no meaningful limitations in the claims that transform the exception (i.e., abstract idea) into a patent eligible application. Accordingly, claims 1 and 13 are directed to non-statutory subject matter.

Dependent claims 2-12 and 14-24 are rejected as ineligible subject matter under 35 U.S.C. 101 based on a rationale similar to their parent claim. Each of the dependent claim recites steps or acts that can be mentally performed, there is no special implementation or any high level computer/machine.

***Claim Rejections - 35 USC § 102***

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.

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

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-24 are rejected under pre-AIA 35 U.S.C. 102(b) as being anticipated by Wasserman et al. (US 2006/0253472 A1) (hereinafter as Wasserman).

Regarding Claim 1, Wasserman teaches a method for determining compatibility of systems for combining source systems on target systems, the method comprising:

analyzing compatibility parameters for a plurality of systems to determine whether the source systems are compatible with at least one of:

- i) a target system (pars [0045-0048] and [0074-0078]), and
- ii) each other (pars [0045-0048] and [0074-0078]);and

analyzing source system workload data to determine which of the plurality of systems are operable together on the target system (pars [0045-0048]).

Regarding Claim 2, Wasserman further teaches wherein the compatibility parameters comprise technical and non- technical parameters (pars [0045-0048] and [0074-0078]).

Regarding Claim 3, Wasserman further teaches wherein the method further comprises:

generating a plurality of potential workload placement solutions (pars [0045-0048] and [0074-0078]); and

selecting an optimal workload placement solution from the plurality of potential workload placement solutions (pars [0045-0048] and [0074-0078]).

Regarding Claim 4, Wasserman further teaches wherein the optimal workload placement solution is selected according to one or more criteria, the one or more criteria comprising at least one of a compatibility score, and a number of transfers (pars [0045-0048] and [0074-0078]).

Regarding Claim 5, Wasserman further teaches ranking a plurality of target systems as candidates to host one or more source workloads according to compatibility scores and a resultant target resource utilization (pars [0045-0048] and [0074-0078]).

Regarding Claim 6, Wasserman further teaches wherein the compatibility parameters comprise technical parameters, business parameters, or both technical and

business parameters, at least one of which relates to the presence of licensed software, the method further comprising determining a combination of workloads running particular software applications that when combined onto the target system minimizes the software licensing costs (pars [0045-0048] and [0074-0078]).

Regarding Claim 7, Wasserman further teaches determining at least one optimal combination of workloads corresponding to virtual machines operable on the target system (pars [0045-0048] and [0074-0078]).

Regarding Claim 8, Wasserman further teaches wherein a virtual machine corresponds to an abstraction of a physical system, enabling an operating system to be independently installed on each virtual system residing on a same physical system (pars [0045-0048] and [0074-0078]).

Regarding Claim 9, Wasserman further teaches wherein a virtual machine corresponds a logical subdivision of an operating system installed on a physical system, enabling isolation in operation without executing a different operating system (pars [0045-0048] and [0074-0078]).

Regarding Claim 10, Wasserman further teaches determining at least one optimal combination of applications operable independently on the target system (pars [0045-0048] and [0074-0078]).



Regarding Claim 11, Wasserman further teaches wherein the optimal combination of applications coexist in a same operating system environment (pars [0045-0048] and [0074-0078]).

Regarding Claim 12, Wasserman further teaches wherein the optimal combination of applications is determined using a multi-dimensional analysis of inter-compatibility between the plurality of workloads and the target system (pars [0045-0048] and [0074-0078]).

Regarding Claim 13, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 1 above, same rationale of rejection is applicable.

Regarding Claim 14, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 2 above, same rationale of rejection is applicable.

Regarding Claim 15, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 3 above, same rationale of rejection is applicable.

Regarding Claim 16, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 4 above, same rationale of rejection is applicable.

Regarding Claim 17, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 5 above, same rationale of rejection is applicable.

Regarding Claim 18, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 6 above, same rationale of rejection is applicable.

Regarding Claim 19, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 7 above, same rationale of rejection is applicable.

Regarding Claim 20, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 8 above, same rationale of rejection is applicable.

Regarding Claim 21, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 9 above, same rationale of rejection is applicable.

Regarding Claim 22, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 10 above, same rationale of rejection is applicable.

Regarding Claim 23, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 11 above, same rationale of rejection is applicable.

Regarding Claim 24, this non-transitory computer readable medium claim comprises limitations substantially the same, as those discussed in claim 12 above, same rationale of rejection is applicable.

### ***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY MEJIA whose telephone number is (571)270-3630. The examiner can normally be reached on Mon-Fri 10:30AM-6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Parry can be reached on 571-272-8328. 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.

/ANTHONY MEJIA/  
Primary Examiner, Art Unit 2451

<b>Notice of References Cited</b>	Application/Control No. 14/341,471		Applicant(s)/Patent Under Reexamination HILLIER ET AL.	
	Examiner ANTHONY MEJIA		Art Unit 2451	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-6,249,769 B1	06-2001	Ruffin; Michael	G06Q10/06	705/400
*	B	US-6,412,012 B1	06-2002	Bieganski; Paul	H04L29/06	709/230
*	C	US-6,487,723 B1	11-2002	MacInnis; Alexander G.	A63F13/12	348/E5.006
*	D	US-2005/0209819 A1	09-2005	Wehrs, Michael Edward	G06Q10/00	702/182
*	E	US-2006/0253472 A1	11-2006	Wasserman; Theodore Jeremy	G06Q10/06	1/1
*	F	US-7,616,583 B1	11-2009	Power; Jonathan	G06Q10/06	370/252
	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.

<p><b><i>Index of Claims</i></b></p> 	<b>Application/Control No.</b> 14341471	<b>Applicant(s)/Patent Under Reexamination</b> HILLIER ET AL.
	<b>Examiner</b> ANTHONY MEJIA	<b>Art Unit</b> 2451

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

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant <input type="checkbox"/> CPA <input type="checkbox"/> T.D. <input type="checkbox"/> R.1.47										
CLAIM		DATE								
Final	Original	10/17/2016								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
	8	✓								
	9	✓								
	10	✓								
	11	✓								
	12	✓								
	13	✓								
	14	✓								
	15	✓								
	16	✓								
	17	✓								
	18	✓								
	19	✓								
	20	✓								
	21	✓								
	22	✓								
	23	✓								
	24	✓								

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(Use as many sheets as necessary)</i>				<b>Complete if Known</b>			
				Application Number		14/341,471	
				Filing Date		July 25, 2014	
				First named Inventor		HILLIER, Andrew D.	
				Art Unit		2642	
				Examiner Name			
Sheet	1	of	2	Attorney Docket Number		59612/00067	

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code <sup>2</sup> (if known)			
		US-2005/0132331 A1	06-16-2005	WOOD	
		US-2007/0094375 A1	04-26-2007	SNYDER et al.	
		US-2007/0250621 A1	10-25-2007	HILLIER	
		US-2070/0250615 A1	10-25-2007	HILLIER	
		US-6,249,769 B1	06-19-2001	RUFFIN et al.	
		US-6,557,008 B1	04-29-2003	TEMPLE, III et al.	
		US-7,055,149 B2	05-30-2006	BIRKHOLZ et al.	
		US-7,616,583 B1	11-10-2009	POWER et al.	
		US-7,640,342 B1	12-29-2009	AHARONI et al.	
		US-7,680,754 B2	03-16-2010	HILLIER	
		US-7,809,817 B2	10-05-2010	HILLIER	
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			

FOREIGN PATENT DOCUMENTS								
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind-Code <sup>5</sup> (if known)				
		EP	0498130	A2	08-12-1992	INTERNATIONAL BUSINESS MACHINE CORPORATION		
		WO	2004/084083	A1	09-30-2004	UNISYS CORPORATION		

Examiner Signature	/ANTHONY MEJIA/	Date Considered	10/17/2016
--------------------	-----------------	-----------------	------------

**EXAMINER:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup> Applicants' unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

22651769.1

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

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(Use as many sheets as necessary)</i>				<b>Complete if Known</b>	
				Application Number	14/341,471
				Filing Date	July 25, 2014
				First named Inventor	HILLIER, Andrew D.
				Art Unit	2642
				Examiner Name	
Sheet	2	of	2	Attorney Docket Number	59612/00067

### NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalogue, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	<sup>2</sup> T
		McKENNA, D.; "Systems Consolidation Framework"; 2004; pp. 1 to 21; <a href="http://www.sun.com/emrkt/campaign_docs/0904enterprise_consolidation/consolidation_framework.pdf">http://www.sun.com/emrkt/campaign_docs/0904enterprise_consolidation/consolidation_framework.pdf</a>	
		TANENBAUM, Andrew S. et al; Distributed Systems: Principles and Paradigms; US Ed edition; January 15, 2002; pp. 22-42, 326-336; Prentice Hall	
		HILLIER, Andrew; "A Quantitative and Analytical Approach to Server Consolidation" dated January 2006, published at least as early as February 3, 2006; CIRBA Inc.; Technical Whitepaper	
		HILLIER, Andrew; "Data Center Intelligence" dated March 2006, published at least as early as April 1, 2006; CIRBA Inc.; Technical Whitepaper	
		SPELLMAN, Amy et al.; "Server Consolidation Using Performance Modeling"; IT Professional; Sep/Oct 2003; pp. 31-36; Vol. 5, No. 5	
		TSAGARIS, N.; International PCT Search Report from corresponding PCT Application No. PCT/CA2007/000675; search completed June 19, 2007	
		KIELHOFER, P.; Search Report from corresponding European Application No. 13169900.1; search completed November 6, 2013	
		KIELHOFER, P.; Supplementary Partial Search Report for corresponding European Application No. 07719602.0; search completed July 7, 2010	

Examiner Signature	/ANTHONY MEJIA/	Date Considered	10/17/2016
--------------------	-----------------	-----------------	------------

**EXAMINER:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup> Applicants' unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

22651769.1

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



## EAST Search History

## EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	"20050209818"	US-PGPUB; USPAT	OR	OFF	2016/10/17 09:43
L3	2	"6249769".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:51
L4	144	(compatible compatibility) SAME (workload utilization) SAME (target)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:52
L5	16578	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L12/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:53
L6	11	4 and L5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:53
L7	4772	(compatible compatibility) SAME (workload utilization)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:54
L8	27	(rank\$3) SAME (compatible compatibility) SAME (workload utilization)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 09:54
S1	1	"14341471"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	OFF	2016/10/15 17:38


			IBM_TDB			
S2	3	"20050209819"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:16
S3	2	"6487723".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:16
S4	4	"6412012".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:17
S5	2	"7616583".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:17
S6	16578	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L12/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:20
S7	54	(Hillier near Andrew).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:21
S8	43	(Yuyitung near Tom).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:21
S9	26	(Cirba near Inc\$2).AS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:22
S10	30145	709/223.ccls.	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2016/10/15 21:22

			EPO; JPO; DERWENT; IBM_TDB			
S11	7	(compatible compatibility) near (licenses licensing) near (software)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:23
S12	761	(compatible compatibility) near (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:24
S13	38	(compatible compatibility) near (operating ADJ system) near (two different)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:25
S14	100	(split divide) near (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:26
S15	0	S12 and S14	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:26
S16	3	(determin\$3) near (operable) near (together)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/15 21:27
S17	2	"20040168052"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 04:17
S18	11	("20050132331"   "20070094375"   "20070250615"   "20070250621"   "6249769"   "6557008"   "7055149"   "7616583"   "7640342"   "7680754"   "7809817"   "US-20050132331"   "US-20070094375"   "US-20070250621"   "US-20700250615"   "US-6249769"   "US-6557008"   "US-7055149"   "US-7616583"   "US-7640342"   "US-7680754"   "US-	US-PGPUB; USPAT	OR	OFF	2016/10/17 06:14

		7809817"   "US-").PN.				
S19	16578	H04L41/022.cpc. H04L41/0873.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L41/0853.cpc. H04L12/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 06:21
S20	100	(split divide) near (operating ADJ system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/10/17 06:21
S21	5	S19 and S20	US-PGPUB; USPAT	OR	OFF	2016/10/17 06:21
S22	94	H04L/6508.cpc. H04L/12/2863.cpc. H04L/6580.cpc. H04L/4308.cpc.	US-PGPUB; USPAT	OR	OFF	2016/10/17 07:05
S23	11	("20050132331"   "20070094375"   "20070250615"   "20070250621"   "6249769"   "6557008"   "7055149"   "7616583"   "7640342"   "7680754"   "7809817"   "US-20050132331"   "US- 20070094375"   "US-20070250621"   "US-20700250615"   "US-6249769"   "US- 6557008"   "US-7055149"   "US-7616583"   "US-7640342"   "US-7680754"   "US- 7809817"   "US-").PN.	US-PGPUB; USPAT	OR	OFF	2016/10/17 07:29
S24	11	("20050132331"   "20070094375"   "20070250615"   "20070250621"   "6249769"   "6557008"   "7055149"   "7616583"   "7640342"   "7680754"   "7809817"   "US-20050132331"   "US- 20070094375"   "US-20070250621"   "US-20700250615"   "US-6249769"   "US- 6557008"   "US-7055149"   "US-7616583"   "US-7640342"   "US-7680754"   "US- 7809817"   "US-").PN.	US-PGPUB; USPAT	OR	OFF	2016/10/17 07:29

10/ 17/ 2016 10:12:20 AM

C:\Users\amejia\Documents\EAST\Workspaces\14341471.wsp

<b>Search Notes</b>  	<b>Application/Control No.</b>  14341471	<b>Applicant(s)/Patent Under Reexamination</b>  HILLIER ET AL.
	<b>Examiner</b>  ANTHONY MEJIA	<b>Art Unit</b>  2451

CPC- SEARCHED		
Symbol	Date	Examiner
H04L41/022, H04L41/0873, H04L41/0853, H04L41/0853, H04L41/0853, H04L12/24	10/17/2016	A.M.

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
709	223	10/17/2016	A.M.

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Inventor and Assignee Search (See Search History)	10/17/2016	A.M.
EAST Class Limited w/Text-based Search (See Search History)	10/17/2016	A.M.
EAST Text-based Search (See Search History)	10/17/2016	A.M.

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

	/ANTHONY MEJIA/ Primary Examiner.Art Unit 2451
--	---



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/341,471	07/25/2014	Andrew D. HILLIER	59612/00067

**CONFIRMATION NO. 2381**

**PUBLICATION NOTICE**

27871  
BLAKE, CASSELS & GRAYDON LLP  
BOX 25, COMMERCE COURT WEST  
199 BAY STREET, SUITE 4000  
TORONTO, ON M5L 1A9  
CANADA



**Title:**METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS

**Publication No.**US-2015-0081868-A1

**Publication Date:**03/19/2015

**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 publicly available Searchable Databases via the Internet at [www.uspto.gov](http://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](http://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 Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/341,471	07/25/2014	Andrew D. HILLIER	59612/00067

**CONFIRMATION NO. 2381**  
**POA ACCEPTANCE LETTER**

27871  
BLAKE, CASSELS & GRAYDON LLP  
BOX 25, COMMERCE COURT WEST  
199 BAY STREET, SUITE 4000  
TORONTO, ON M5L 1A9  
CANADA



Date Mailed: 01/30/2015

**NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY**

This is in response to the Power of Attorney filed 01/22/2015.

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.

/tulu/

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

## POWER OF ATTORNEY BY APPLICANT

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

Application Number

Filing Date

14/341,471

July 25, 2014

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)



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

27871

OR



I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above 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 (if the Applicant is a juristic entity, list the Applicant name in the box):

CIRBA Inc.



Inventor or Joint Inventor (title not required below)



Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)



Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)



Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

### SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature

Date (Optional)

Name

Andrew Hillier

Title

CTO

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



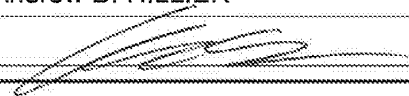
Total of forms are submitted.

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

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



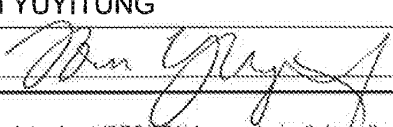
**DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN  
APPLICATION DATA SHEET (37 CFR 1.76)**

<b>Title of Invention</b>	Method and System for Determining Compatibility of Computer Systems
<p>As the below named inventor, I hereby declare that:</p> <p>This declaration is directed to: <input type="checkbox"/> The attached application, or <input checked="" type="checkbox"/> United States application or PCT international application number <u>14/341,471</u> filed on <u>July 25, 2014</u></p> <p>The above-identified application was made or authorized to be made by me.</p> <p>I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.</p> <p>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.</p> <p style="text-align: center;"><b>WARNING:</b></p> <p>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.</p> <p><b>LEGAL NAME OF INVENTOR</b></p> <p>Inventor: <u>Andrew D. HILLIER</u> Date (Optional): _____</p> <p>Signature: </p> <p>Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.</p>	

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 1 minute 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.*

## DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

<b>Title of Invention</b>	Method and System for Determining Compatibility of Computer Systems
<p>As the below named inventor, I hereby declare that:</p> <p>This declaration is directed to: <input type="checkbox"/> The attached application, or <input checked="" type="checkbox"/> United States application or PCT international application number <u>14/341,471</u> filed on <u>July 25, 2014</u></p> <p>The above-identified application was made or authorized to be made by me.</p> <p>I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.</p> <p>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.</p> <p style="text-align: center;"><b>WARNING:</b></p> <p>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.</p>	
<p><b>LEGAL NAME OF INVENTOR</b></p> <p>Inventor: <u>Tom YUYITUNG</u> Date (Optional): <u>Jan. 21, 2015</u></p> <p>Signature: </p>	
<p><small>Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.</small></p>	

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 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

Electronic Acknowledgement Receipt	
<b>EFS ID:</b>	21276389
<b>Application Number:</b>	14341471
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	2381
<b>Title of Invention:</b>	METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS
<b>First Named Inventor/Applicant Name:</b>	Andrew D. HILLIER
<b>Customer Number:</b>	27871
<b>Filer:</b>	Brett Joseph Slaney/Judith Martin
<b>Filer Authorized By:</b>	Brett Joseph Slaney
<b>Attorney Docket Number:</b>	59612/00067
<b>Receipt Date:</b>	22-JAN-2015
<b>Filing Date:</b>	25-JUL-2014
<b>Time Stamp:</b>	12:23:54
<b>Application Type:</b>	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	Cirba67_POA.pdf	101800 e38e1bcbcb8a24641968fbc9ab1071b5e9349f76f	no	1

### Warnings:

### Information:

2	Oath or Declaration filed	Cirba67_Declaration_HILLIER.pdf	83103 8245a77265776f4670a6435dd839181d36f095d1	no	1
Warnings:					
Information:					
3	Oath or Declaration filed	Cirba67_Declaration_YUYITUNG.pdf	90005 a2ad4c11a5dff1f7dd40edfca9bc48f2220802e	no	1
Warnings:					
Information:					
Total Files Size (in bytes):			274908		
<p>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.</p> <p><b><u>New Applications Under 35 U.S.C. 111</u></b> 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.</p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b> 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.</p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b> 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.</p>					

<b>PATENT APPLICATION FEE DETERMINATION RECORD</b> Substitute for Form PTO-875						Application or Docket Number 14/341,471			
<b>APPLICATION AS FILED - PART I</b>									
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY			
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)		
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280		
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A	600		
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720		
TOTAL CLAIMS (37 CFR 1.16(i))	24      minus 20 =	*	4			x    80    =	320		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2      minus 3 =	*				x    420   =	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		TOTAL	1920		
<b>APPLICATION AS AMENDED - PART II</b>									
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)	
	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))						OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						OR		
				TOTAL ADD'L FEE		TOTAL ADD'L FEE			
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)	
	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))						OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						OR		
				TOTAL ADD'L FEE		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.									



# UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/341,471	07/25/2014	Andrew D. HILLIER	59612/00067

**CONFIRMATION NO. 2381**

27871

BLAKE, CASSELS & GRAYDON LLP  
BOX 25, COMMERCE COURT WEST  
199 BAY STREET, SUITE 4000  
TORONTO, ON M5L 1A9  
CANADA

## NOTICE



Date Mailed: 12/12/2014

## INFORMATIONAL NOTICE TO APPLICANT

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

The item(s) indicated below are also required and should be submitted with any reply to this notice to avoid further processing delays.

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):  
Andrew D. HILLIER  
Tom YUYITUNG



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO.	TOT CLAIMS	IND CLAIMS
14/341,471	07/25/2014	2642	2060	59612/00067	24	2

CONFIRMATION NO. 2381

UPDATED FILING RECEIPT



\*OC000000072321599\*

27871

BLAKE, CASSELS & GRAYDON LLP  
BOX 25, COMMERCE COURT WEST  
199 BAY STREET, SUITE 4000  
TORONTO, ON M5L 1A9  
CANADA

Date Mailed: 12/12/2014

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)**

Andrew D. HILLIER, Toronto, CANADA;  
Tom YUYITUNG, Toronto, CANADA;

**Applicant(s)**

Cirba Inc., Richmond Hill, CANADA

**Power of Attorney:** None

**Domestic Priority data as claimed by applicant**

This application is a CON of 11/738,936 04/23/2007 PAT 8793679  
which is a CIP of 11/535,355 09/26/2006 PAT 7809817  
and is a CIP of 11/535,308 09/26/2006 PAT 7680754  
and said 11/535,355 09/26/2006  
claims benefit of 60/745,322 04/21/2006  
and said 11/535,308 09/26/2006  
claims benefit of 60/745,322 04/21/2006

**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.*

**If Required, Foreign Filing License Granted:** 08/04/2014

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/341,471**

**Projected Publication Date:** 03/19/2015

page 1 of 3

**Non-Publication Request:** No

**Early Publication Request:** No

**Title**

METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS

**Preliminary Class**

455

**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**

**GRANTED**

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

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

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

**NOT GRANTED**

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

---

***SelectUSA***

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 U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

Application No. 14/341,471  
Amendment Dated: December 8, 2014

**IN THE UNITED STATES PATENT & TRADEMARK OFFICE**

Appl. No.: **14/341,471**  
Applicant: **CiRBA Inc.**  
Filed: **July 25, 2014**  
Title: **Method and System for Determining Compatibility of Computer Systems**  
Art Unit: **2642**  
Examiner: **NOT YET DETERMINED**  
Docket No.: **59612/00067**

Mail Stop Amendment  
U.S. Patent & Trademark Office  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**PRELIMINARY AMENDMENT**

Sir:

Prior to consideration by an Examiner, Applicant wishes to 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:** begin on page 6 of this paper.

### **Amendments to the Claims**

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

#### **Listing of claims:**

1. (Currently amended) A computer-implemented method for determining a consolidation solution for ~~a plurality of computer systems~~ compatibility of systems for combining source systems on target systems, the method comprising:

- a) ~~obtaining a data set comprising a compatibility score for each pair of said plurality of computer systems, each said compatibility score having been computed using parameters of said plurality of computer systems to indicate a comparable compatibility of respective parameters of one of said plurality of computer systems with respect to another of said plurality of computer systems;~~
- b) ~~using said compatibility scores to determine one or more candidate transfer sets from said plurality of computer systems and, each candidate transfer set indicating one or more source computer systems having compatible parameters that enable the source computer system(s) to be transferred to a target computer system;~~
- c) ~~selecting a desired one of said one or more candidate transfer sets according to a predetermined selection criterion and adding said desired one of said one or more candidate transfer sets to a first candidate consolidation solution;~~
- d) ~~repeating b) and c) by, at each iteration, removing computer systems included in said desired one of said one or more candidate transfer sets and using said compatibility scores corresponding to remaining computer systems to generate at least one additional desired candidate transfer set to be added to said first candidate consolidation solution; and~~
- e) ~~providing said first candidate consolidation solution as a desired consolidation solution when no additional candidate transfer sets can be determined in b).~~

analyzing compatibility parameters for a plurality of systems to determine whether the source systems are compatible with at least one of: i) a target system, and ii) each other; and

analyzing source system workload data to determine which of the plurality of systems are operable together on the target system.

2. (New) The method of claim 1, wherein the compatibility parameters comprise technical and non-technical parameters.

3. (New) The method of claim 1, further comprising:

generating a plurality of potential workload placement solutions; and  
selecting an optimal workload placement solution from the plurality of potential workload placement solutions.

4. (New) The method of claim 3, wherein the optimal workload placement solution is selected according to one or more criteria, the one or more criteria comprising at least one of a compatibility score, and a number of transfers.

5. (New) The method of claim 1, further comprising ranking a plurality of target systems as candidates to host one or more source workloads according to compatibility scores and a resultant target resource utilization.

6. (New) The method of claim 1, wherein the compatibility parameters comprise technical parameters, business parameters, or both technical and business parameters, at least one of which relates to the presence of licensed software, the method further comprising determining a combination of workloads running particular software applications that when combined onto the target system minimizes the software licensing costs.

7. (New) The method of claim 1, further comprising determining at least one optimal combination of workloads corresponding to virtual machines operable on the target system.

8. (New) The method of claim 7, wherein a virtual machine corresponds to an abstraction of a physical system, enabling an operating system to be independently installed on each virtual system residing on a same physical system.

9. (New) The method of claim 7, wherein a virtual machine corresponds a logical subdivision of an operating system installed on a physical system, enabling isolation in operation without executing a different operating system.

10. (New) The method of claim 1, further comprising determining at least one optimal combination of applications operable independently on the target system.

11. (New) The method of claim 10, wherein the optimal combination of applications coexist in a same operating system environment.

12. (New) The method of claim 10, wherein the optimal combination of applications is determined using a multi-dimensional analysis of inter-compatibility between the plurality of workloads and the target system.

13. (New) A non-transitory computer readable medium comprising computer executable instructions for determining compatibility of systems for combining source systems on target systems, the computer executable instructions comprising instructions for:

analyzing compatibility parameters for a plurality of systems to determine whether the source systems are compatible with at least one of: i) a target system, and ii) each other; and

analyzing source system workload data to determine which of the plurality of systems are operable together on the target system.

14. (New) The non-transitory computer readable medium of claim 13, wherein the compatibility parameters comprise technical and non-technical parameters.

15. (New) The non-transitory computer readable medium of claim 13, further comprising instructions for:

generating a plurality of potential workload placement solutions; and

selecting an optimal workload placement solution from the plurality of potential workload placement solutions.

16. (New) The non-transitory computer readable medium of claim 15, wherein the optimal workload placement solution is selected according to one or more criteria, the one or more criteria comprising at least one of a compatibility score, and a number of transfers.

17. (New) The non-transitory computer readable medium of claim 13, further comprising instructions for ranking a plurality of target systems as candidates to host one or more source workloads according to compatibility scores and a resultant target resource utilization.

18. (New) The non-transitory computer readable medium of claim 13, wherein the compatibility parameters comprise technical parameters, business parameters, or both technical and business parameters, at least one of which relates to the presence of licensed software, the computer executable instructions further comprising instructions for determining a combination of workloads running particular software applications that when combined onto the target system minimizes the software licensing costs.

19. (New) The non-transitory computer readable medium of claim 13, further comprising instructions for determining at least one optimal combination of workloads corresponding to virtual machines operable on the target system.

20. (New) The non-transitory computer readable medium of claim 19, wherein a virtual machine corresponds to an abstraction of a physical system, enabling an operating system to be independently installed on each virtual system residing on a same physical system.

21. (New) The non-transitory computer readable medium of claim 19, wherein a virtual machine corresponds a logical subdivision of an operating system installed on a physical system, enabling isolation in operation without executing a different operating system.

22. (New) The non-transitory computer readable medium of claim 13, further comprising instructions for determining at least one optimal combination of applications operable independently on the target system.

23. (New) The non-transitory computer readable medium of claim 22, wherein the optimal combination of applications coexist in a same operating system environment.

24. (New) The non-transitory computer readable medium of claim 22, wherein the optimal combination of applications is determined using a multi-dimensional analysis of inter-compatibility between the plurality of workloads and the target system.

**REMARKS**

Applicant hereby replaces claim 1 with a rewritten claim 1 directed to determining compatibility of systems for operating on target systems and adds new claims 2-24. Support for these new claims can be found throughout the present application as filed and therefore Applicant respectfully submits that no new subject matter has been added by way of these amendments.

Applicant requests early consideration and allowance of the present application.

Respectfully submitted,

/Brett J. Slaney/

---

Brett J. Slaney  
Agent for Applicant  
Registration No. 58,772

Date: December 8, 2014

BLAKE, CASSELS & GRAYDON LLP  
199 Bay Street  
Suite 4000, Commerce Court West  
Toronto ON M5L 1A9  
Canada

Tel: 416-863-2518  
BSL/

Application No. 14/341,471

**IN THE UNITED STATES PATENT & TRADEMARK OFFICE**

Appl. No.:	<b>14/341,471</b>	Art Unit:	<b>2642</b>
Applicant:	<b>CiRBA Inc.</b>	Examiner:	<b>Not yet assigned</b>
Filed:	<b>July 25, 2014</b>	Docket No.:	<b>59612/00067</b>
Title:	<b>Method and System for Determining Compatibility of Computer Systems</b>		

Mail Stop Amendment  
U.S. Patent & Trademark Office  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

**INFORMATION DISCLOSURE STATEMENT**

Pursuant to the duty to disclose under 37 CFR §1.56, Applicant submits herewith a Form SB/08 listing references of which the Applicant is aware and which are brought to the attention of the Examiner. Copies of each of the foreign and non-patent literature documents listed on the enclosed Form have previously been submitted to the Patent Office in connection with prior Application No. 11/738,936. Accordingly, and as provided for under 37 CFR §1.98(d)(1) and §1.98(d)(2), further copies are not included with this submission.

The references listed on the Form include all of the references cited in the International Search Report from related PCT Application No. PCT/CA2007/000675. Applicant notes, however, that, pursuant to 35 USC 102(b), the two cited Hillier white papers are not citable for the purposes of the U.S. as they were published within the 12 months preceding the priority U.S. filing date.

Pursuant to 35 USC §120, this application relies on the earlier filing date(s) of the following prior application(s):

<u>Serial Number</u>	<u>Filing Date</u>
11/738,936	April 23, 2007
11/535,355	September 26, 2006
11/535,308	September 26, 2006

22651807.1



Application No. 14/341,471

The filing of this IDS shall not be construed as a representation that a search has been made, an admission that the information cited is, or is considered to be, material for patentability, or that no other material information exists. This filing shall not be construed as an admission against interest in any matter.

This IDS is submitted pursuant to 37 CFR §1.97(b) and, accordingly, no fee is believed to be due for consideration of the documents submitted herewith.

Applicant respectfully requests consideration of the items listed and requests the Examiner to return a copy of the attached Form after being marked as being considered by the Examiner.

Respectfully submitted,

Date: December 8, 2014

/Brett J. Slaney/

---

**Brett J. Slaney**  
Registration No. **58,772**  
Agent for Applicant

**BLAKE, CASSELS & GRAYDON LLP**  
199 Bay Street  
Suite 4000, Commerce Court West  
Toronto, Ontario, M5L 1A9  
Canada

Tel 416-863-2518  
Fax 416-863-2653

BSL/jm

(✓) enc.

22651807.1

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(Use as many sheets as necessary)</i>				<b>Complete if Known</b>		
				Application Number		14/341,471
				Filing Date		July 25, 2014
				First named Inventor		HILLIER, Andrew D.
				Art Unit		2642
				Examiner Name		
Attorney Docket Number		59612/00067				
Sheet	1	of	2			

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code <sup>2</sup> (if known)			
		US-2005/0132331 A1	06-16-2005	WOOD	
		US-2007/0094375 A1	04-26-2007	SNYDER et al.	
		US-2007/0250621 A1	10-25-2007	HILLIER	
		US-2070/0250615 A1	10-25-2007	HILLIER	
		US-6,249,769 B1	06-19-2001	RUFFIN et al.	
		US-6,557,008 B1	04-29-2003	TEMPLE, III et al.	
		US-7,055,149 B2	05-30-2006	BIRKHOLZ et al.	
		US-7,616,583 B1	11-10-2009	POWER et al.	
		US-7,640,342 B1	12-29-2009	AHARONI et al.	
		US-7,680,754 B2	03-16-2010	HILLIER	
		US-7,809,817 B2	10-05-2010	HILLIER	
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			

FOREIGN PATENT DOCUMENTS								
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind-Code <sup>5</sup> (if known)				
		EP	0498130	A2	08-12-1992	INTERNATIONAL BUSINESS MACHINE CORPORATION		
		WO	2004/084083	A1	09-30-2004	UNISYS CORPORATION		

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

**EXAMINER:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup> Applicants' unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(Use as many sheets as necessary)</i>				<b>Complete if Known</b>	
				Application Number	14/341,471
				Filing Date	July 25, 2014
				First named Inventor	HILLIER, Andrew D.
				Art Unit	2642
				Examiner Name	
Sheet	2	of	2	Attorney Docket Number	59612/00067

### NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalogue, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	<sup>2</sup> T
		McKENNA, D.; "Systems Consolidation Framework"; 2004; pp. 1 to 21; <a href="http://www.sun.com/emrkt/campaign_docs/0904enterprise_consolidation/consolidation_framework.pdf">http://www.sun.com/emrkt/campaign_docs/0904enterprise_consolidation/consolidation_framework.pdf</a>	
		TANENBAUM, Andrew S. et al; Distributed Systems: Principles and Paradigms; US Ed edition; January 15, 2002; pp. 22-42, 326-336; Prentice Hall	
		HILLIER, Andrew; "A Quantitative and Analytical Approach to Server Consolidation" dated January 2006, published at least as early as February 3, 2006; CIRBA Inc.; Technical Whitepaper	
		HILLIER, Andrew; "Data Center Intelligence" dated March 2006, published at least as early as April 1, 2006; CIRBA Inc.; Technical Whitepaper	
		SPELLMAN, Amy et al.; "Server Consolidation Using Performance Modeling"; IT Professional; Sep/Oct 2003; pp. 31-36; Vol. 5, No. 5	
		TSAGARIS, N.; International PCT Search Report from corresponding PCT Application No. PCT/CA2007/000675; search completed June 19, 2007	
		KIELHOFER, P.; Search Report from corresponding European Application No. 13169900.1; search completed November 6, 2013	
		KIELHOFER, P.; Supplementary Partial Search Report for corresponding European Application No. 07719602.0; search completed July 7, 2010	

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

**EXAMINER:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup> Applicants' unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

Electronic Patent Application Fee Transmittal				
<b>Application Number:</b>		14341471		
<b>Filing Date:</b>		25-Jul-2014		
<b>Title of Invention:</b>		METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS		
<b>First Named Inventor/Applicant Name:</b>		Andrew D. HILLIER		
<b>Filer:</b>		Brett Joseph Slaney/Judith Martin		
<b>Attorney Docket Number:</b>		59612/00067		
Filed as Large Entity				
<b>Filing Fees for Utility under 35 USC 111(a)</b>				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
<b>Basic Filing:</b>				
Utility application filing	1011	1	280	280
Utility Search Fee	1111	1	600	600
Utility Examination Fee	1311	1	720	720
<b>Pages:</b>				
<b>Claims:</b>				
Claims in Excess of 20	1202	4	80	320
<b>Miscellaneous-Filing:</b>				
Late Filing Fee for Oath or Declaration	1051	1	140	140

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
<b>Petition:</b>				
<b>Patent-Appeals-and-Interference:</b>				
<b>Post-Allowance-and-Post-Issuance:</b>				
<b>Extension-of-Time:</b>				
Extension - 2 months with \$0 paid	1252	1	600	600
<b>Miscellaneous:</b>				
<b>Total in USD (\$)</b>				<b>2660</b>

## Electronic Acknowledgement Receipt

<b>EFS ID:</b>	20896096
<b>Application Number:</b>	14341471
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	2381
<b>Title of Invention:</b>	METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS
<b>First Named Inventor/Applicant Name:</b>	Andrew D. HILLIER
<b>Customer Number:</b>	27871
<b>Filer:</b>	Brett Joseph Slaney/Judith Martin
<b>Filer Authorized By:</b>	Brett Joseph Slaney
<b>Attorney Docket Number:</b>	59612/00067
<b>Receipt Date:</b>	08-DEC-2014
<b>Filing Date:</b>	25-JUL-2014
<b>Time Stamp:</b>	16:25:53
<b>Application Type:</b>	Utility under 35 USC 111(a)

### Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 2660
RAM confirmation Number	3190
Deposit Account	022553
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)					
Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)					
Charge any Additional Fees required under 37 C.F.R. Section 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		Cirba67_MP-Response.pdf	393176 d729ec19be9a4d71834f541b3a9e3c744ce04135	yes	15
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Applicant Response to Pre-Exam Formalities Notice		1	4	
	Drawings-only black and white line drawings		5	15	
Warnings:					
Information:					
2		Cirba67_prelim-amendment.pdf	30761 6f763f8234ee53d9b1a9fb5f090b2a9bc579d3b9	yes	6
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Preliminary Amendment		1	1	
	Claims		2	5	
	Applicant Arguments/Remarks Made in an Amendment		6	6	
Warnings:					
Information:					
3		Cirba67_IDS.pdf	58023 5991e5a0a22b242c9bd82f17ace8b67e205e3446	yes	4
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Transmittal Letter		1	2	
	Information Disclosure Statement (IDS) Form (SB08)		3	4	
Warnings:					
Information:					

4	Fee Worksheet (SB06)	fee-info.pdf	40544 b5757003f46a06d092807f64666de498bb35c885	no	2
<b>Warnings:</b>					
<b>Information:</b>					
<b>Total Files Size (in bytes):</b>				522504	
<p><b>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.</b></p> <p><b><u>New Applications Under 35 U.S.C. 111</u></b>  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.</p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b>  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.</p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b>  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.</p>					



Application No. **14/341,471**

**IN THE UNITED STATES PATENT & TRADEMARK OFFICE**

Appl. No.: **14/341,471**

Applicant: **CiRBA Inc.**

Filed: **July 25, 2014**

Title: **Method and System for Determining Compatibility of Computer Systems**

Art Unit: **2642**

Examiner: **Not yet assigned**

Docket No.: **59612/00067**

Mail Stop Missing Parts  
U.S. Patent & Trademark Office  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**RESPONSE TO NOTICE TO FILE MISSING PARTS  
OF NONPROVISIONAL APPLICATION**

In response to the Notice to File Missing Parts of Nonprovisional Application dated August 6, 2014, Applicant encloses the following:

1. Copy of Notice to File Missing Parts Of Nonprovisional Application;
2. Replacement drawings – Figures 1, 2, 9 to 11, 14, 15, 17, 23, 24(a), and 25.

The drawings have been revised to bring them in to compliance with 37 CFR 1.84 and 37 CFR 1.121(d). No new subject matter has been introduced.

Applicant advises that the present response is being filed concurrently with a preliminary amendment.

Application No. **14/341,471**

Accordingly, the prescribed application fees have been calculated as follows:

- Utility application basic fee                      \$ 280
- Surcharge    \$ 140
- Search fee    \$ 600
- Examination fee                                      \$ 720
- Additional claim fees for:  
    4 claims over 20                                  \$ 320

to be paid by deposit account via EFS-Web. Should any additional fees be required the Office is authorized to charge Deposit Account No. 02-2553.

Respectfully submitted,

/Brett J. Slaney/

---

Brett J. Slaney  
Agent for Applicant  
Registration No. 58,772

Date: December 8, 2014

BLAKE, CASSELS & GRAYDON LLP  
199 Bay Street  
Suite 4000, Commerce Court West  
Toronto ON M5L 1A9  
Canada

Tel: 416-863-2518

BSL/jm



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/341,471	07/25/2014	Andrew D. HILLIER	59612/00067

CONFIRMATION NO. 2381

FORMALITIES LETTER



27871  
BLAKE, CASSELS & GRAYDON LLP  
BOX 25, COMMERCE COURT WEST  
199 BAY STREET, SUITE 4000  
TORONTO, ON M5L 1A9  
CANADA

Date Mailed: 08/06/2014

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

*Filing Date Granted*

**Items Required To Avoid Abandonment:**

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.
- The application search fee must be submitted.
- The application examination fee must be submitted.

The application is informal since it does not comply with the regulations for the reason(s) indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- Replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121(d) are required. The drawings submitted are not acceptable because:
  - Numbers, letters, and reference characters on the drawings must measure at least 0.32 cm (1/8 inch) in height. See Figure(s) 1-2, 9-11, 14, 25.
  - The drawings submitted to the Office are not electronically reproducible because portions of figures 15, 17, 23, 24(a) are missing and/or blurry.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

- Surcharge as set forth in 37 CFR 1.16(f) must be submitted.  
The surcharge is due for any one of:
  - late submission of the basic filing fee, search fee, or examination fee,
  - late submission of inventor's oath or declaration,
  - filing an application that does not contain at least one claim on filing, or
  - submission of an application filed by reference to a previously filed application.

**SUMMARY OF FEES DUE:**

The fee(s) required within **TWO MONTHS** from the date of this Notice to avoid abandonment is/are itemized below. No entity status discount is in effect. If applicant is qualified for small entity status, a written assertion of small entity status must be submitted to establish small entity status. (See 37 CFR 1.27). If applicant is qualified for micro entity status, an acceptable Certification of Micro Entity Status must be submitted to establish micro entity status. (See 37 CFR 1.29 and forms PTO/SB/15A and 15B.)

- \$ **280** basic filing fee.
- \$ **140** surcharge.
- \$ **600** search fee.
- \$ **720** examination fee.
- \$( **0**) previous unapplied payment amount.
- \$ **1740** TOTAL FEE BALANCE DUE.

**Items Required To Avoid Processing Delays:**

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):  
Andrew D. HILLIER  
Tom YUYITUNG

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts  
Commissioner for Patents  
P.O. Box 1450  
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice".  
<https://portal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/tnghuyen/

---

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

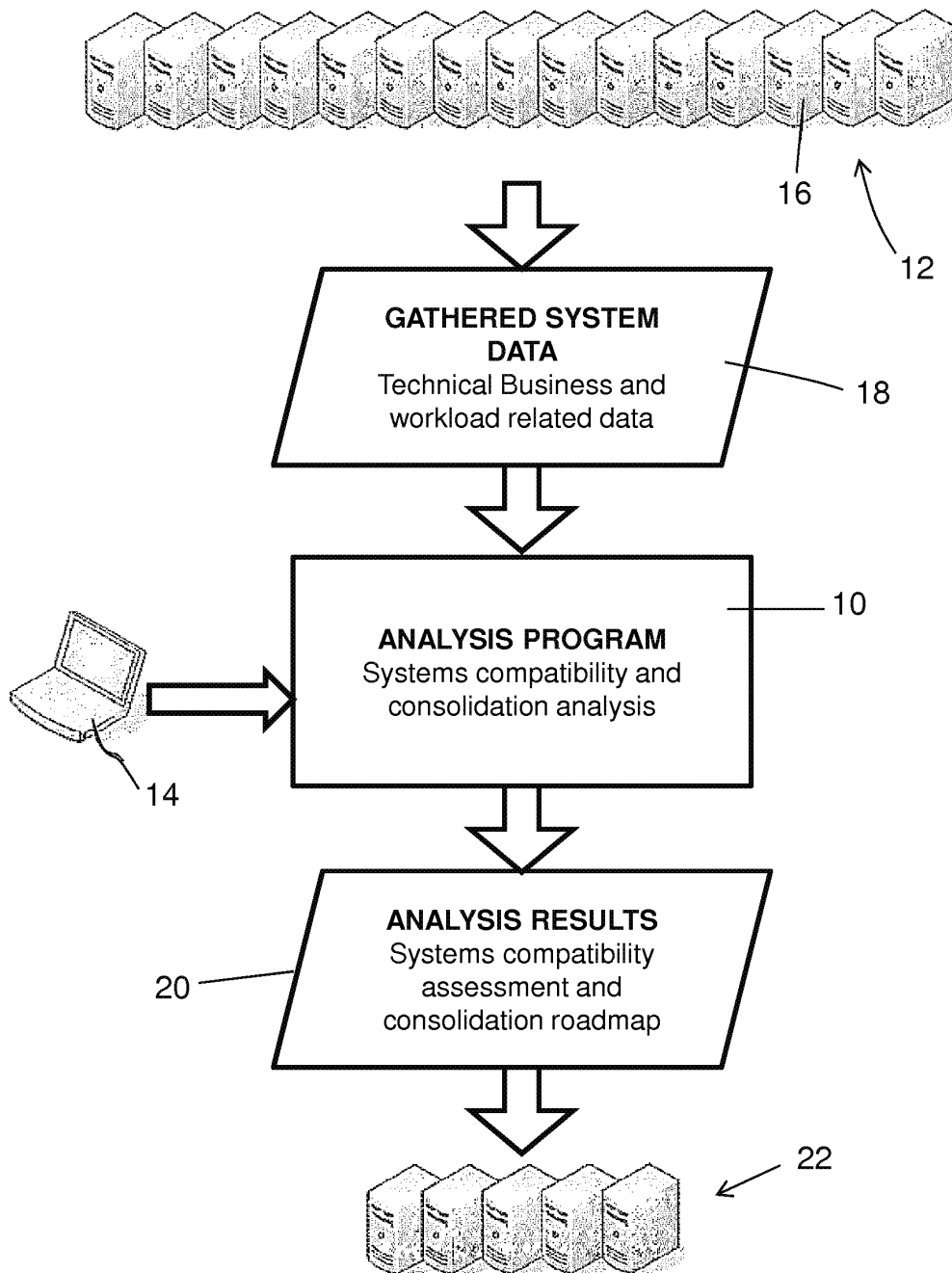


Figure 1

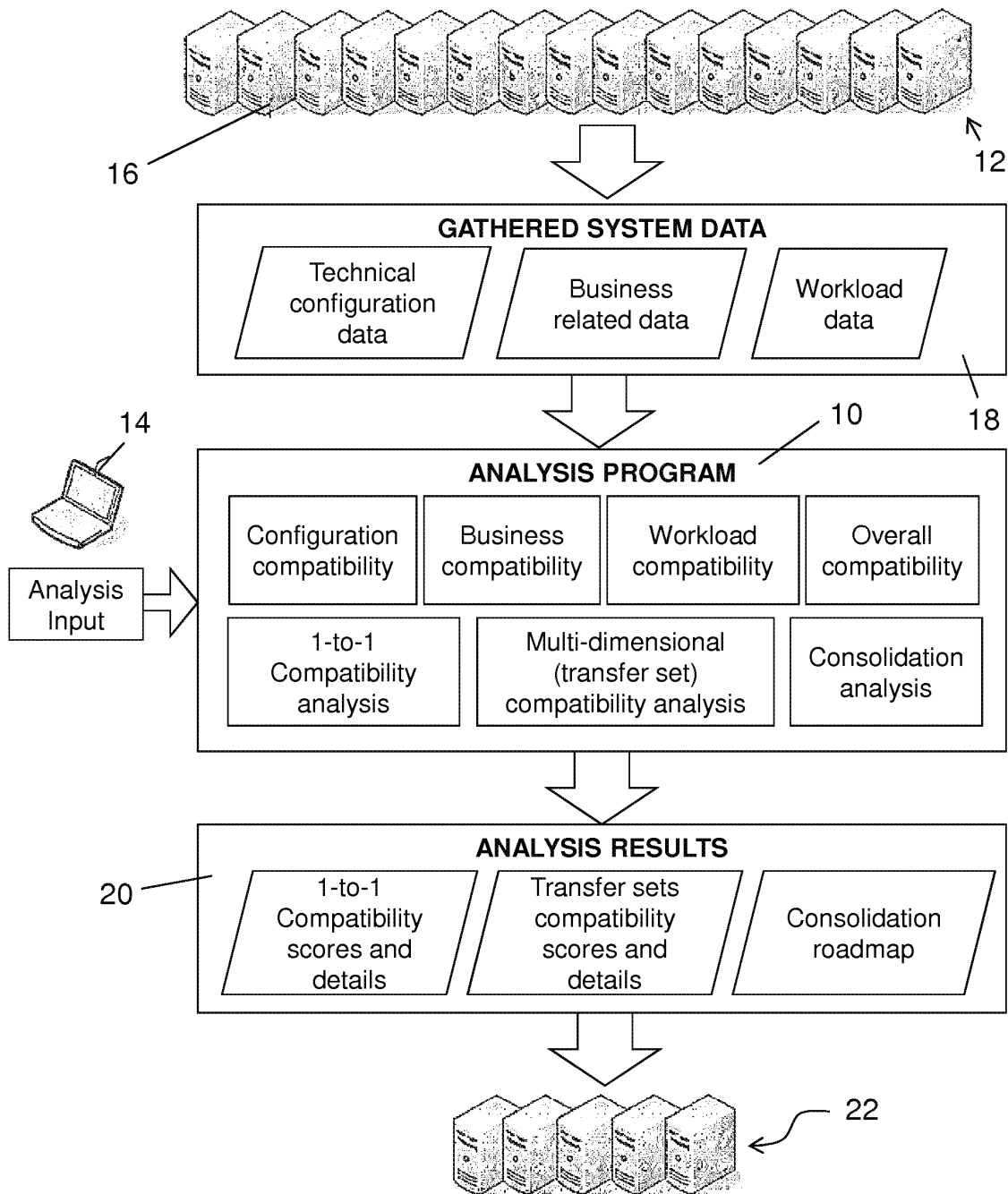
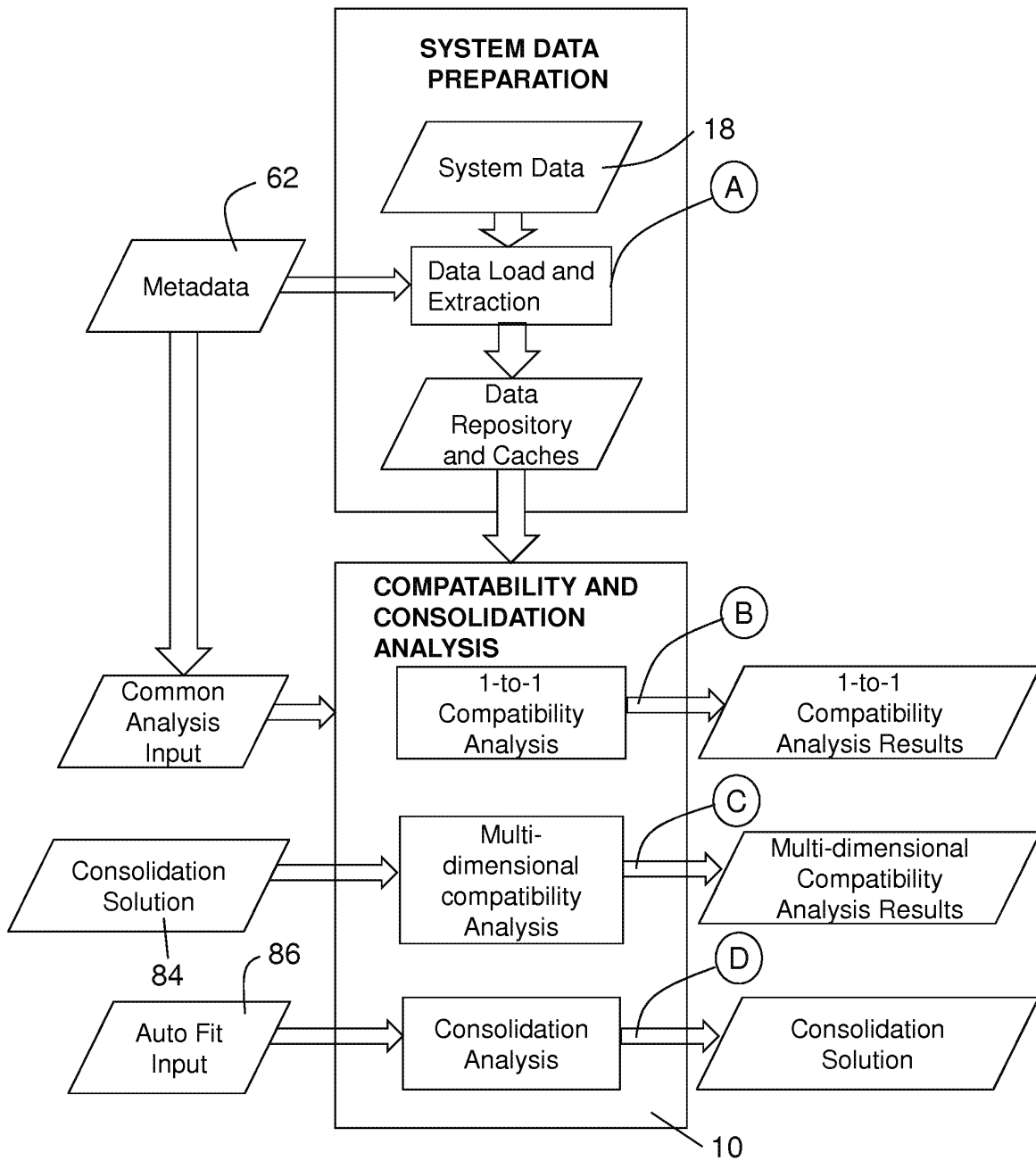
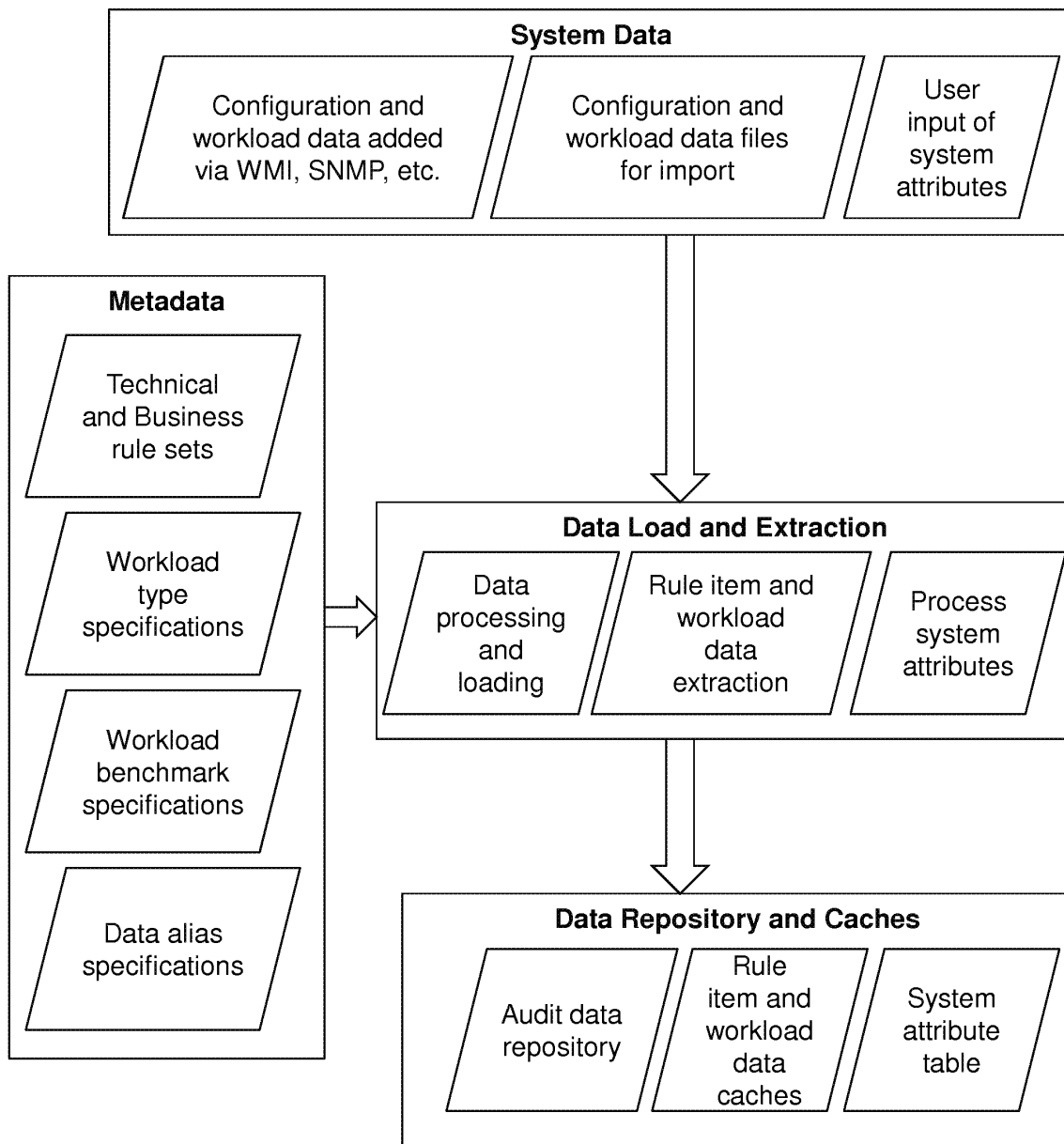


Figure 2

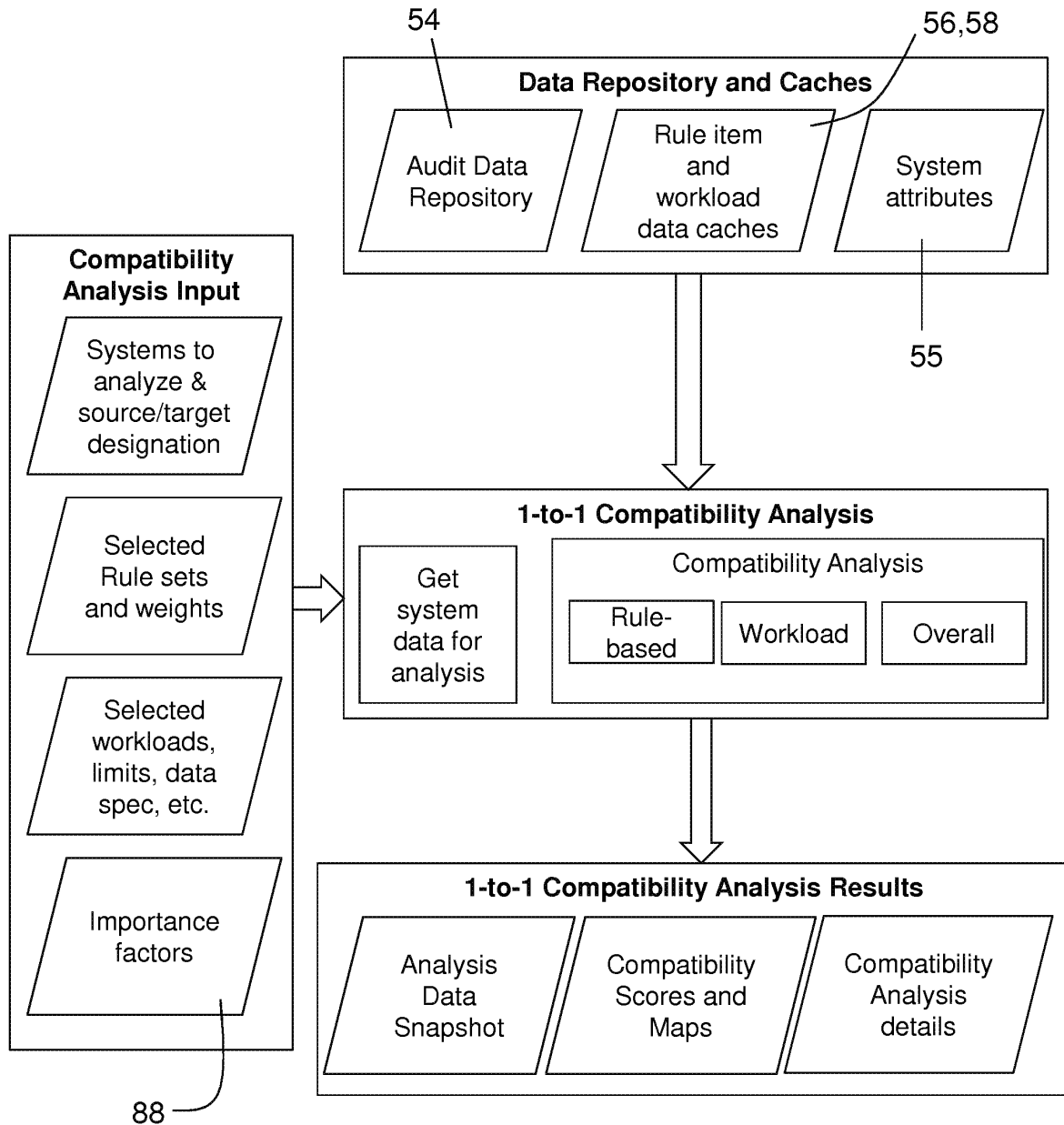


**Figure 9**

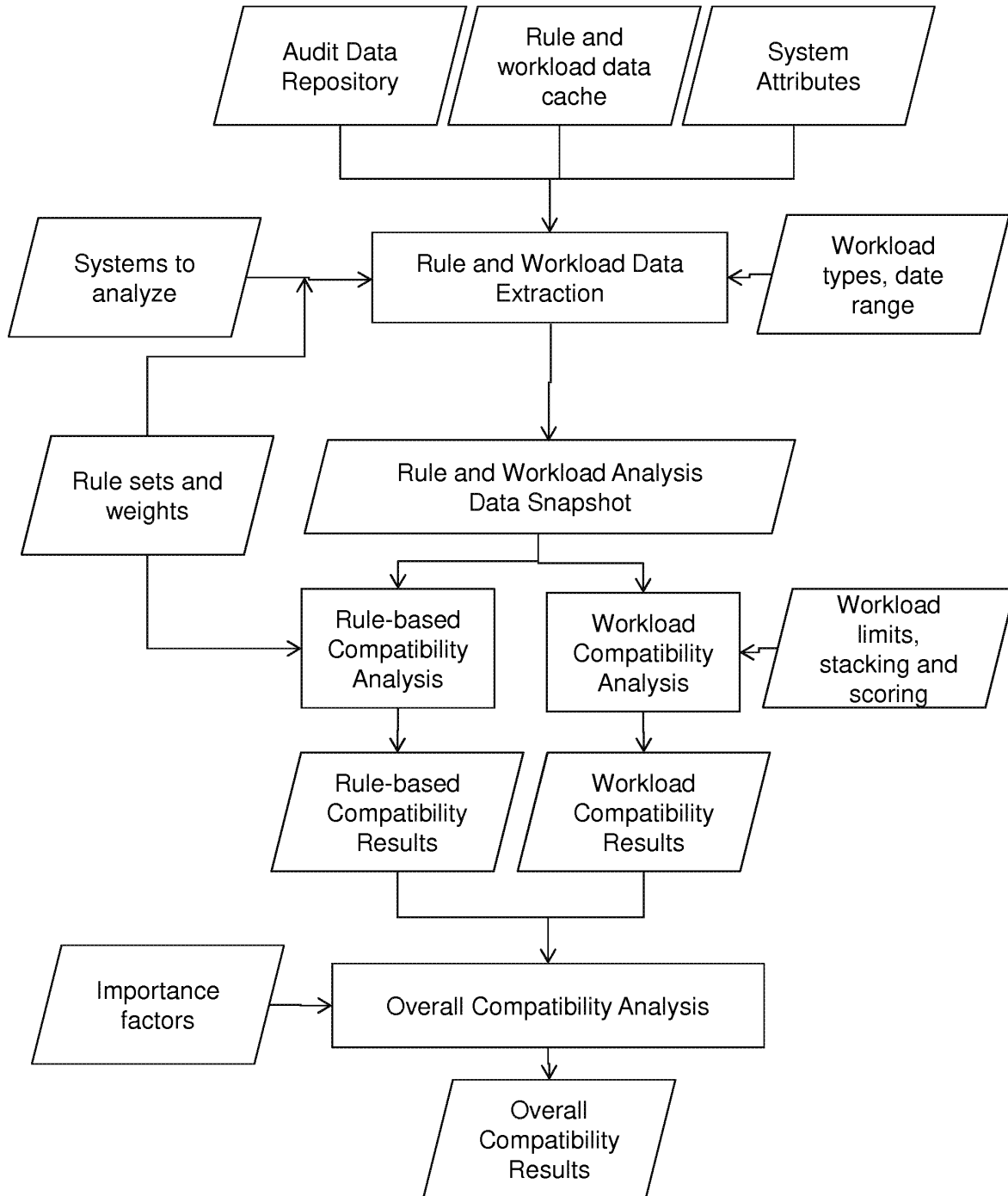


**Figure 10**

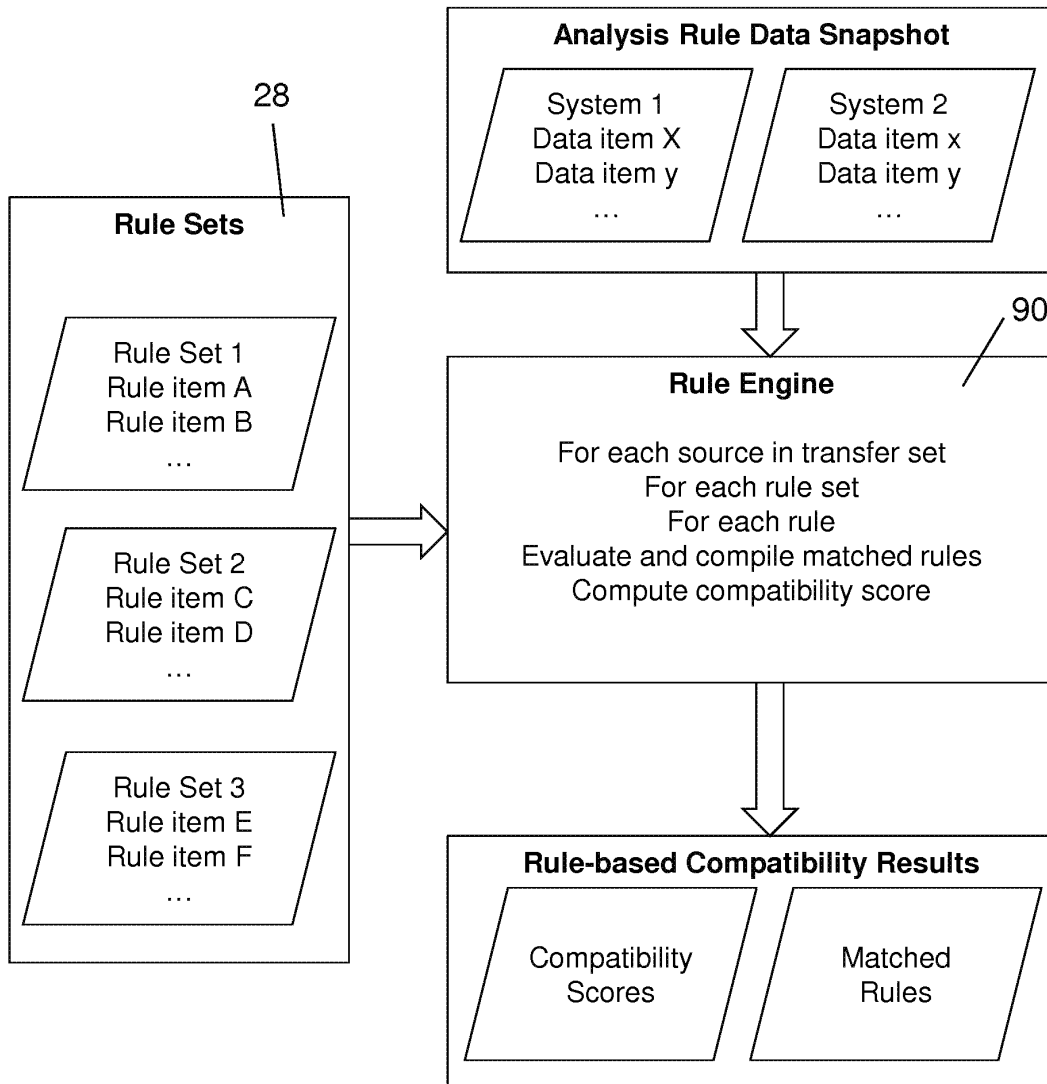




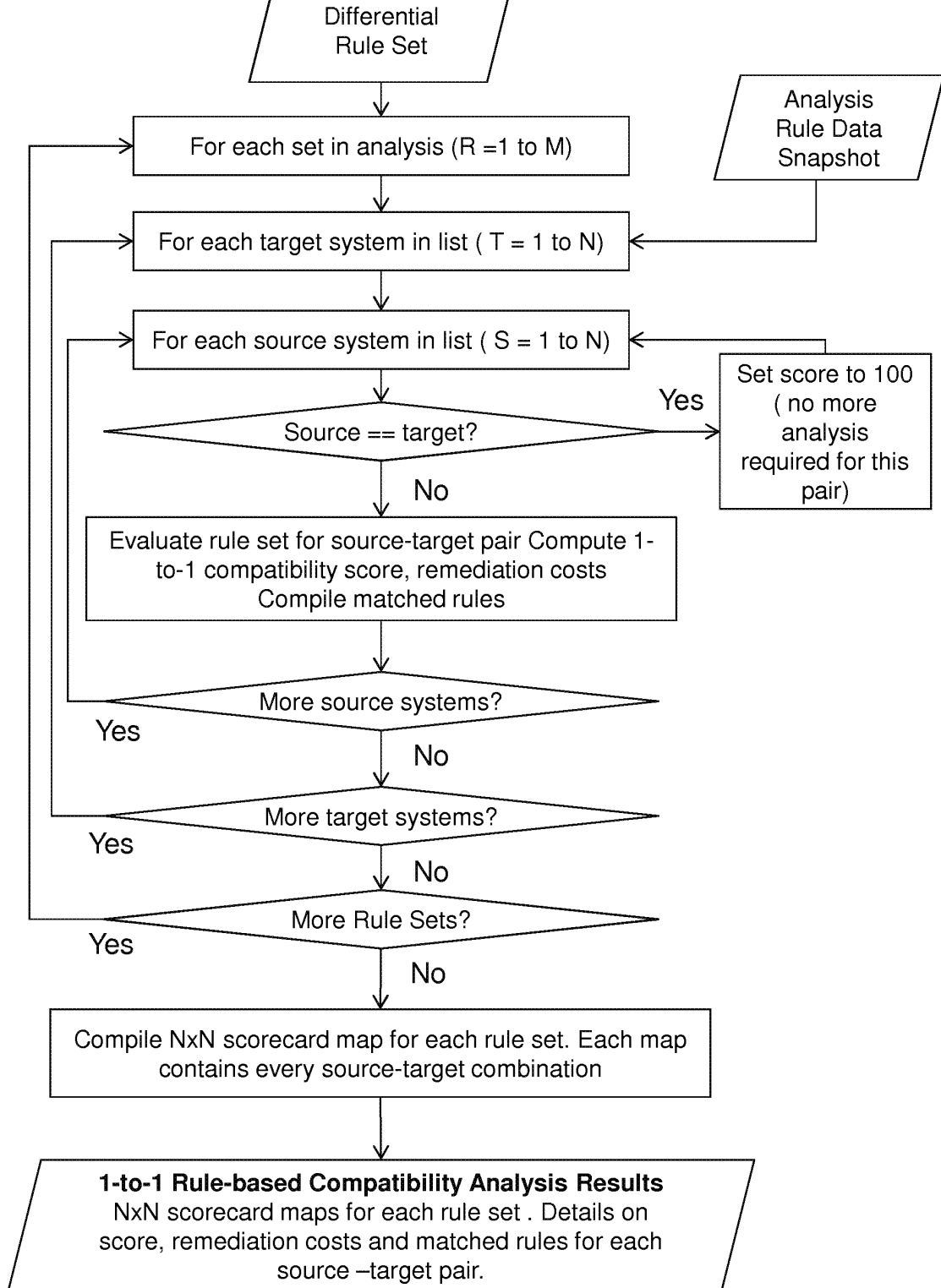
**Figure 11**



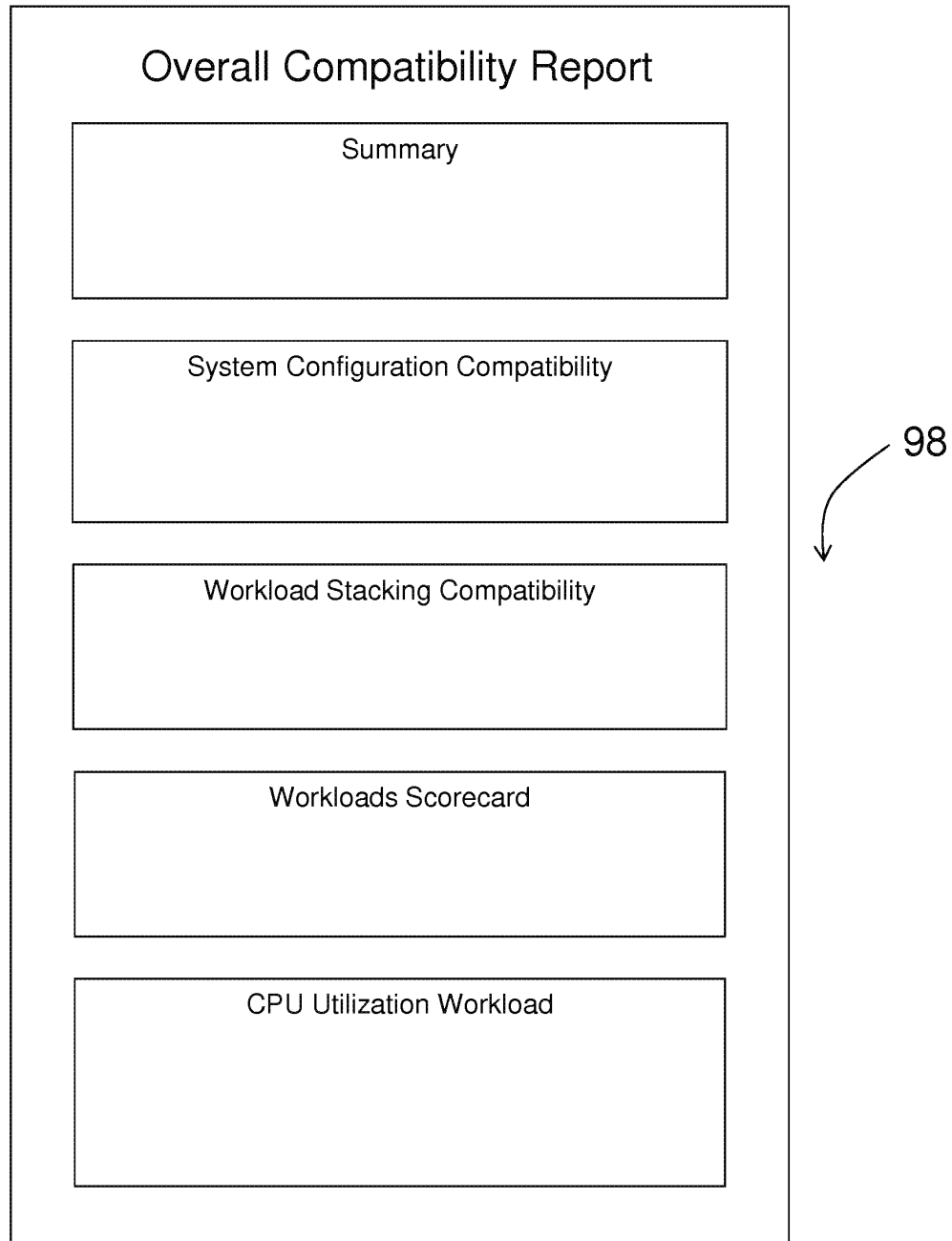
**Figure 14**



**Figure 15**



**Figure 17**



**Figure 23**

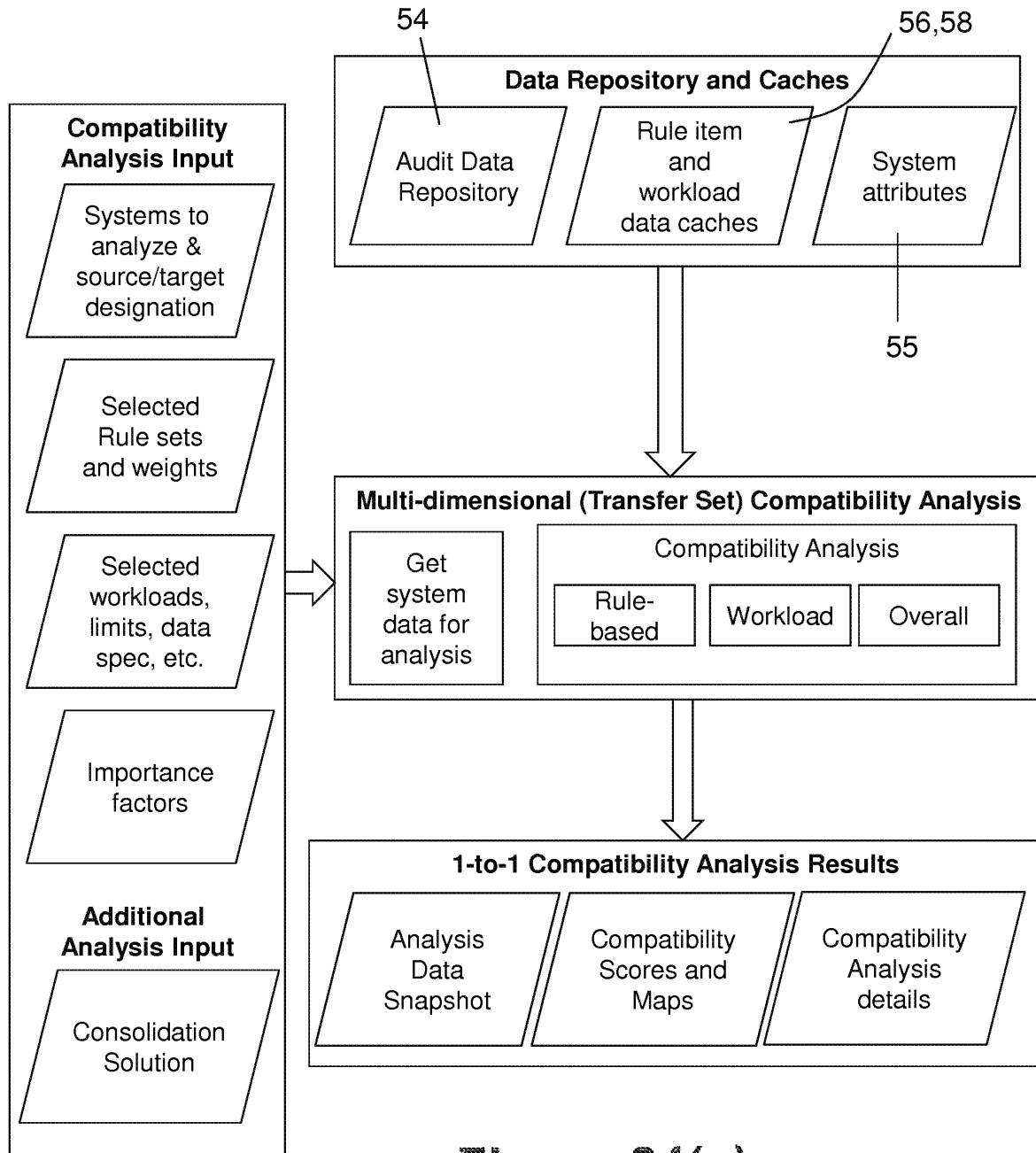
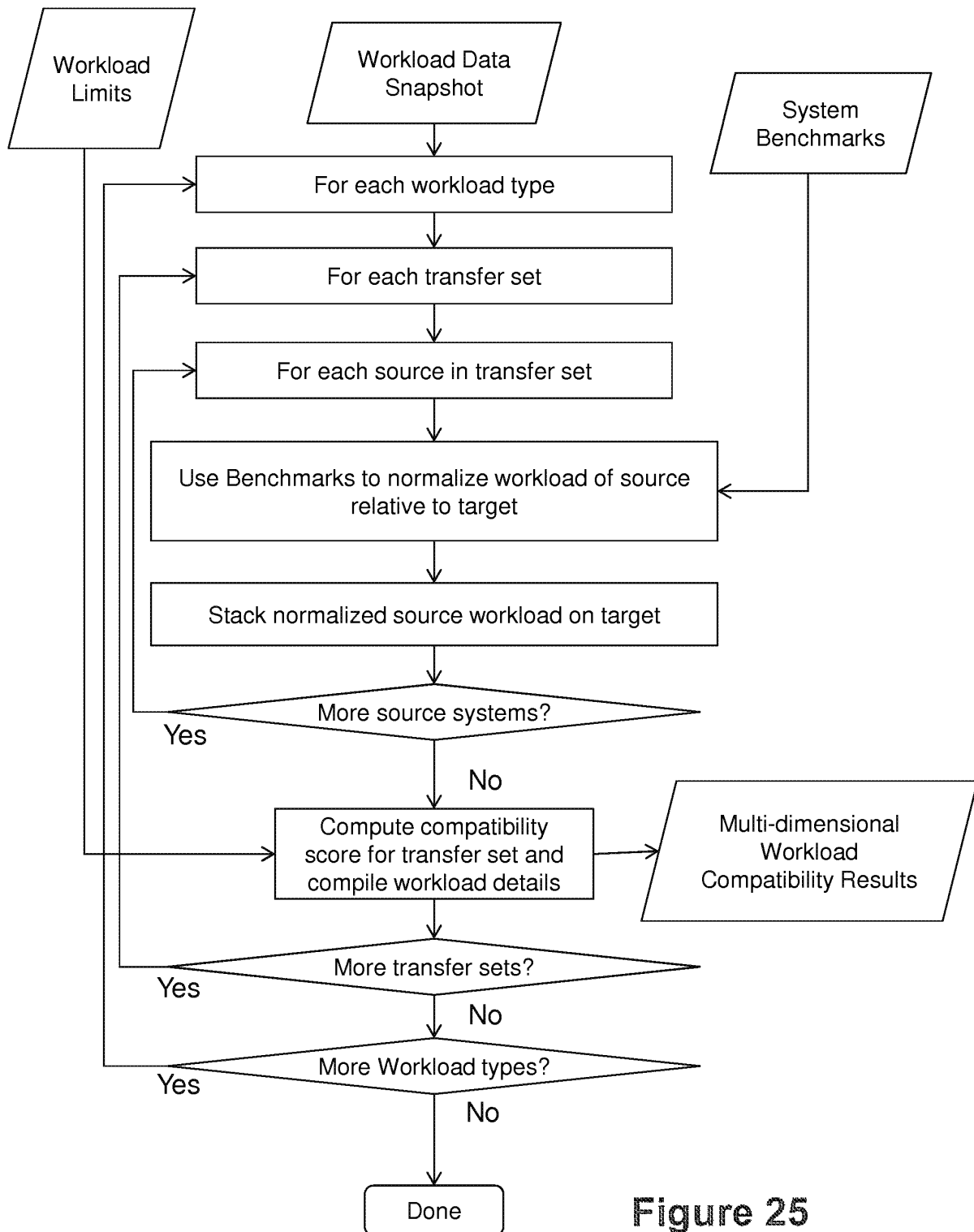


Figure 24(a)



**Figure 25**



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO.	TOT CLAIMS	IND CLAIMS
14/341,471	07/25/2014	2642	0.00	59612/00067	1	1

CONFIRMATION NO. 2381

FILING RECEIPT



\*OC000000070024214\*

27871  
BLAKE, CASSELS & GRAYDON LLP  
BOX 25, COMMERCE COURT WEST  
199 BAY STREET, SUITE 4000  
TORONTO, ON M5L 1A9  
CANADA

Date Mailed: 08/06/2014

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)

Andrew D. HILLIER, Toronto, CANADA;  
Tom YUYITUNG, Toronto, CANADA;

Applicant(s)

Cirba Inc., Richmond Hill, CANADA

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 11/738,936 04/23/2007 PAT 8793679  
which is a CIP of 11/535,355 09/26/2006 PAT 7809817  
and is a CIP of 11/535,308 09/26/2006 PAT 7680754  
and said 11/535,355 09/26/2006  
claims benefit of 60/745,322 04/21/2006  
and said 11/535,308 09/26/2006  
claims benefit of 60/745,322 04/21/2006

**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.*

**If Required, Foreign Filing License Granted:** 08/04/2014

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/341,471**

**Projected Publication Date:** To Be Determined - pending completion of Missing Parts

page 1 of 3



**Non-Publication Request:** No

**Early Publication Request:** No  
**Title**

METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS

**Preliminary Class**

455

**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**

**GRANTED**

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

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

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

**NOT GRANTED**

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

---

***SelectUSA***

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 U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.



UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/341,471	07/25/2014	Andrew D. HILLIER	59612/00067

CONFIRMATION NO. 2381

FORMALITIES LETTER



27871  
BLAKE, CASSELS & GRAYDON LLP  
BOX 25, COMMERCE COURT WEST  
199 BAY STREET, SUITE 4000  
TORONTO, ON M5L 1A9  
CANADA

Date Mailed: 08/06/2014

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

*Filing Date Granted*

**Items Required To Avoid Abandonment:**

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.
- The application search fee must be submitted.
- The application examination fee must be submitted.

The application is informal since it does not comply with the regulations for the reason(s) indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- Replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121(d) are required. The drawings submitted are not acceptable because:
  - Numbers, letters, and reference characters on the drawings must measure at least 0.32 cm (1/8 inch) in height. See Figure(s) 1-2, 9-11, 14, 25.
  - The drawings submitted to the Office are not electronically reproducible because portions of figures 15, 17, 23, 24(a) are missing and/or blurry.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

- Surcharge as set forth in 37 CFR 1.16(f) must be submitted.  
The surcharge is due for any one of:
  - late submission of the basic filing fee, search fee, or examination fee,
  - late submission of inventor's oath or declaration,
  - filing an application that does not contain at least one claim on filing, or
  - submission of an application filed by reference to a previously filed application.

**SUMMARY OF FEES DUE:**

The fee(s) required within **TWO MONTHS** from the date of this Notice to avoid abandonment is/are itemized below. No entity status discount is in effect. If applicant is qualified for small entity status, a written assertion of small entity status must be submitted to establish small entity status. (See 37 CFR 1.27). If applicant is qualified for micro entity status, an acceptable Certification of Micro Entity Status must be submitted to establish micro entity status. (See 37 CFR 1.29 and forms PTO/SB/15A and 15B.)

- \$ **280** basic filing fee.
- \$ **140** surcharge.
- \$ **600** search fee.
- \$ **720** examination fee.
- \$( **0**) previous unapplied payment amount.
- \$ **1740** TOTAL FEE BALANCE DUE.

**Items Required To Avoid Processing Delays:**

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):  
Andrew D. HILLIER  
Tom YUYITUNG

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts  
Commissioner for Patents  
P.O. Box 1450  
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice".  
<https://portal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/tnghuyen/

---

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

<b>PATENT APPLICATION FEE DETERMINATION RECORD</b> Substitute for Form PTO-875						Application or Docket Number 14/341,471			
<b>APPLICATION AS FILED - PART I</b>									
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY			
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)		
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280		
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A	600		
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720		
TOTAL CLAIMS (37 CFR 1.16(i))	1      minus 20 =	*			OR	x    80    =	0.00		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1      minus 3    =	*				x    420   =	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		
			TOTAL			TOTAL	1600		
* If the difference in column 1 is less than zero, enter "0" in column 2.									
<b>APPLICATION AS AMENDED - PART II</b>									
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)	
	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))						OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						OR		
			TOTAL ADD'L FEE			OR	TOTAL ADD'L FEE		
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)	
	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))						OR		
	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.									

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.

<b>Application Data Sheet 37 CFR 1.76</b>		<b>Attorney Docket Number</b>	59612/00067
		<b>Application Number</b>	
<b>Title of Invention</b>	METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS		
<p>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.</p> <p>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.</p>			

## 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:

<b>Inventor 1</b>					<b>Remove</b>
<b>Legal Name</b>					
<b>Prefix</b>	<b>Given Name</b>	<b>Middle Name</b>	<b>Family Name</b>	<b>Suffix</b>	
	Andrew	D.	HILLIER		
<b>Residence Information (Select One)</b> <input type="radio"/> US Residency <input checked="" type="radio"/> Non US Residency <input type="radio"/> Active US Military Service					
<b>City</b>	Toronto		<b>Country of Residence i</b>	CA	
<b>Mailing Address of Inventor:</b>					
<b>Address 1</b>		107 Hilton Avenue			
<b>Address 2</b>					
<b>City</b>	Toronto		<b>State/Province</b>	ON	
<b>Postal Code</b>	M5R 3E8		<b>Country i</b>	CA	
<b>Inventor 2</b>					<b>Remove</b>
<b>Legal Name</b>					
<b>Prefix</b>	<b>Given Name</b>	<b>Middle Name</b>	<b>Family Name</b>	<b>Suffix</b>	
	Tom		YUYITUNG		
<b>Residence Information (Select One)</b> <input type="radio"/> US Residency <input checked="" type="radio"/> Non US Residency <input type="radio"/> Active US Military Service					
<b>City</b>	Toronto		<b>Country of Residence i</b>	CA	
<b>Mailing Address of Inventor:</b>					
<b>Address 1</b>		355 Brookdale Avenue			
<b>Address 2</b>					
<b>City</b>	Toronto		<b>State/Province</b>	ON	
<b>Postal Code</b>	M5M 1P9		<b>Country i</b>	CA	
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the <b>Add</b> button.					<b>Add</b>

## Correspondence Information:

<b>Application Data Sheet 37 CFR 1.76</b>		Attorney Docket Number	59612/00067
		Application Number	
Title of Invention	METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS		

<b>Enter either Customer Number or complete the Correspondence Information section below.</b> <b>For further information see 37 CFR 1.33(a).</b>			
<input type="checkbox"/> <b>An Address is being provided for the correspondence information of this application.</b>			
Customer Number	27871		
Email Address	IP@blakes.com	<input type="button" value="Add Email"/>	<input type="button" value="Remove Email"/>

### Application Information:

Title of the Invention	METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS		
Attorney Docket Number	59612/00067	Small Entity Status Claimed	<input type="checkbox"/>
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	54	Suggested Figure for Publication (if any)	1

### 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:

<input type="checkbox"/> Request Early Publication (Fee required at time of Request 37 CFR 1.219)
<input type="checkbox"/> <b>Request Not to Publish.</b> 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 <b>has not and will not</b> 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:	<input checked="" type="radio"/> Customer Number	<input type="radio"/> US Patent Practitioner	<input type="radio"/> Limited Recognition (37 CFR 11.9)
Customer Number	27871		

<b>Application Data Sheet 37 CFR 1.76</b>		Attorney Docket Number	59612/00067
		Application Number	
Title of Invention	METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS		

### Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(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		Pending		<a href="#">Remove</a>	
Application Number		Continuity Type		Prior Application Number	Filing Date (YYYY-MM-DD)
		Continuation of		11738936	2007-04-23
Prior Application Status		Patented		<a href="#">Remove</a>	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
11738936	Continuation in part of	11535355	2006-09-26	7809817	2010-10-05
Prior Application Status		Patented		<a href="#">Remove</a>	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
11738936	Continuation in part of	11535308	2006-09-26	7680754	2010-03-16
Prior Application Status		Expired		<a href="#">Remove</a>	
Application Number		Continuity Type		Prior Application Number	Filing Date (YYYY-MM-DD)
11535355		Claims benefit of provisional		60745322	2006-04-21
Prior Application Status		Expired		<a href="#">Remove</a>	
Application Number		Continuity Type		Prior Application Number	Filing Date (YYYY-MM-DD)
11535308		Claims benefit of provisional		60745322	2006-04-21
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the <b>Add</b> button. <span style="float: right;"><a href="#">Add</a></span>					

### 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(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) <sup>i</sup>the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(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).

<a href="#">Remove</a>			
Application Number	Country <sup>i</sup>	Filing Date (YYYY-MM-DD)	Access Code <sup>j</sup> (if applicable)
Additional Foreign Priority Data may be generated within this form by selecting the <b>Add</b> button. <span style="float: right;"><a href="#">Add</a></span>			



<b>Application Data Sheet 37 CFR 1.76</b>		Attorney Docket Number	59612/00067
		Application Number	
Title of Invention	METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS		

## Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

<p>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.</p> <p><input type="checkbox"/> 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.</p>
--

## Authorization to Permit Access:

<p><input type="checkbox"/> Authorization to Permit Access to the Instant Application by the Participating Offices</p> <p>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 instant patent application is filed access to the instant 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 instant patent application is filed to have access to the instant patent application.</p> <p>In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant 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 instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.</p> <p>In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.</p>
---

## Applicant Information:

<p>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.</p>
--

<b>Application Data Sheet 37 CFR 1.76</b>	Attorney Docket Number	59612/00067
	Application Number	
<b>Title of Invention</b> METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS		

<b>Applicant 1</b> <span style="float: right; border: 1px solid black; padding: 2px;">Remove</span>			
<small>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.</small>			
<span style="border: 1px solid black; padding: 2px;">Clear</span>			
<input checked="" type="radio"/> Assignee		<input type="radio"/> Legal Representative under 35 U.S.C. 117	
		<input type="radio"/> Joint Inventor	
<input type="radio"/> Person to whom the inventor is obligated to assign.		<input type="radio"/> 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 : <span style="border: 1px solid black; display: inline-block; width: 300px; height: 20px; vertical-align: middle;"></span>			
If the Applicant is an Organization check here. <input checked="" type="checkbox"/>			
Organization Name		Cirba Inc.	
<b>Mailing Address Information:</b>			
Address 1		5 Vogell Road, Suite 600	
Address 2			
City		Richmond Hill	State/Province      ON
Country <sup>i</sup>	CA	Postal Code	L4B 3P6
Phone Number		Fax Number	
Email Address			
Additional Applicant Data may be generated within this form by selecting the Add button. <span style="float: right; border: 1px solid black; padding: 2px;">Add</span>			

## Assignee Information including Non-Applicant Assignee Information:

<small>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.</small>	
<b>Assignee 1</b>	
<small>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.</small>	
<span style="border: 1px solid black; padding: 2px;">Remove</span>	
If the Assignee or Non-Applicant Assignee is an Organization check here. <input type="checkbox"/>	

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.

<b>Application Data Sheet 37 CFR 1.76</b>		Attorney Docket Number	59612/00067
		Application Number	
Title of Invention	METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS		

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.

Add

**Signature:**

Remove

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

<b>Signature</b>	/Brett J. Slaney/		<b>Date (YYYY-MM-DD)</b>	2014-07-25	
<b>First Name</b>	Brett J.	<b>Last Name</b>	SLANEY	<b>Registration Number</b>	58772

Additional Signature may be generated within this form by selecting the Add button.

Add

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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.**

## 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.

1     **METHOD AND SYSTEM FOR DETERMINING COMPATIBILITY OF COMPUTER SYSTEMS**

2  
3     **CROSS-REFERENCE TO RELATED APPLICATIONS**

4  
5     **[0001]**     This application is a continuation of U.S. Patent Application No. 11/738,936 filed on  
6     April 23, 2007, which is a continuation-in-part of U.S. Patent Application Nos. 11/535,355 and  
7     11/535,308 filed on September 26, 2006, both of which claim priority from U.S. Provisional  
8     Patent Application No. 60/745,322 filed April 21, 2006, all incorporated herein by reference.

9     **TECHNICAL FIELD**

10  
11    **[0002]**     The present invention relates to information technology infrastructures and has  
12    particular utility in determining compatibility of computer systems in such infrastructures.

13    **BACKGROUND**

14    **[0003]**     As organizations have become more reliant on computers for performing day to day  
15    activities, so to has the reliance on networks and information technology (IT) infrastructures  
16    increased. It is well known that large organizations having offices and other facilities in different  
17    geographical locations utilize centralized computing systems connected locally over local area  
18    networks (LAN) and across the geographical areas through wide-area networks (WAN).

19    **[0004]**     As these organizations grow, the amount of data to be processed and handled by the  
20    centralized computing centers also grows. As a result, the IT infrastructures used by many  
21    organizations have moved away from reliance on centralized computing power and towards  
22    more robust and efficient distributed systems. Distributed systems are decentralized computing  
23    systems that use more than one computer operating in parallel to handle large amounts of data.  
24    Concepts surrounding distributed systems are well known in the art and a complete discussion  
25    can be found in, e.g., "Distributed Systems: Principles and Paradigms"; Tanenbaum Andrew S.;  
26    Prentice Hall; Amsterdam, Netherlands; 2002.

27    **[0005]**     While the benefits of a distributed approach are numerous and well understood,  
28    there has arisen significant practical challenges in managing such systems for optimizing  
29    efficiency and to avoid redundancies and/or under-utilized hardware. In particular, one  
30    challenge occurs due to the sprawl that can occur over time as applications and servers  
31    proliferate. Decentralized control and decision making around capacity, the provisioning of new

1 applications and hardware, and the perception that the cost of adding server hardware is  
2 generally inexpensive, have created environments with far more processing capacity than is  
3 required by the organization.

4 **[0006]** When cost is considered on a server-by-server basis, the additional cost of having  
5 underutilized servers is often not deemed to be troubling. However, when multiple servers in a  
6 large computing environment are underutilized, having too many servers can become a burden.  
7 Moreover, the additional hardware requires separate maintenance considerations; separate  
8 upgrades and requires the incidental attention that should instead be optimized to be more cost  
9 effective for the organization. Heat production and power consumption can also be a concern.  
10 Even considering only the cost of having redundant licenses, removing even a modest number  
11 of servers from a large computing environment can save a significant amount of cost on a yearly  
12 basis.

13 **[0007]** As a result, organizations have become increasingly concerned with such  
14 redundancies and how they can best achieve consolidation of capacity to reduce operating  
15 costs. The cost-savings objective can be evaluated on the basis of consolidation strategies  
16 such as, but not limited to: virtualization strategies, operating system (OS) level stacking  
17 strategies, database consolidation strategies, application stacking strategies, physical  
18 consolidation strategies, and storage consolidation strategies.

19 **[0008]** Virtualization involves virtualizing a physical system as a separate guest OS  
20 instance on a host machine. This enables multiple virtualized systems to run on a single  
21 physical machine, e.g. a server. Examples of virtualization technologies include VMware™,  
22 Microsoft Virtual Server™, IBM LPAR™, Solaris Containers™, Zones™, etc.

23 **[0009]** OS-Level application stacking involves moving the applications and data from one or  
24 more systems to the consolidated system. This can effectively replace multiple operating  
25 system instances with a single OS instance, e.g. system A running application X and system B  
26 running application Y are moved onto system C running application Z such that system C runs  
27 applications X, Y and Z, and system A and B are no longer required. This strategy is applicable  
28 to all operation system types, e.g. Windows™, Linux™, Solaris™, AIX™, HP-UX™, etc.

1   **[0010]**     Database stacking combines one or more database instances at the database server  
2   level, e.g. Oracle™, Microsoft SQL Server™, etc. Database stacking combines data within a  
3   database instance, namely at the table level. Application stacking combines one or more  
4   database instances at the application server level, e.g. J2EE™ application servers, Weblogic™,  
5   WebSphere™, JBoss™, etc.

6   **[0011]**     Physical consolidation moves physical systems at the OS level to multi-system  
7   hardware platforms such as Blade Servers™, Dynamic System Domains™, etc. Storage  
8   consolidation centralizes system storage through storage technologies such as Storage Area  
9   Networks (SAN), Network Attached Storage (NAS), etc.

10   **[0012]**     The consolidation strategies to employ and the systems and applications to be  
11   consolidated are to be considered taking into account the specific environment. Consolidation  
12   strategies should be chosen carefully to achieve the desired cost savings while maintaining or  
13   enhancing the functionality and reliability of the consolidated systems. Moreover, multiple  
14   strategies may often be required to achieve the full benefits of a consolidation initiative.

15   **[0013]**     Complex systems configurations, diverse business requirements, dynamic workloads  
16   and the heterogeneous nature of distributed systems can cause incompatibilities between  
17   systems. These incompatibilities limit the combinations of systems that can be consolidated  
18   successfully. In enterprise computing environments, the virtually infinite number of possible  
19   consolidation permutations which include suboptimal and incompatibility system combinations  
20   make choosing appropriate consolidation solutions difficult, error-prone and time consuming.

21   **[0014]**     It is therefore an object of the following to obviate or mitigate the above-described  
22   disadvantages.

## 23   SUMMARY

24   **[0015]**     In one aspect, a method for determining a consolidation solution for a plurality of  
25   computer systems is provided comprising obtaining a data set comprising a compatibility score  
26   for each pair of the plurality of computer systems, each the compatibility score being indicative  
27   of the compatibility of one of the plurality of computer systems with respect to another of the  
28   plurality of computer systems; determining one or more candidate transfer sets each indicating

1 one or more of the computer systems capable of being transferred to a target computer system;  
2 selecting a desired one of the one or more candidate transfer sets; and providing the desired  
3 one as a consolidation solution.

4 **[0016]** In another aspect, there is provided method for determining compatibilities for a  
5 plurality of computer systems comprising: obtaining at least one transfer set indicating one or  
6 more of the computer systems capable of being transferred to a target computer system;  
7 evaluating compatibilities of the one or more computer systems against the target computer  
8 system to obtain a first compatibility score; evaluating compatibilities of each the one or more of  
9 the computer systems against each other to obtain a second compatibility score; and computing  
10 an overall compatibility score for the transfer set using the first and second compatibility scores.

11 **[0017]** In yet another aspect, there is provided a computer program for determining  
12 compatibilities for a plurality of computer systems comprising an audit engine for obtaining  
13 information pertaining to the compatibility of the plurality of computer systems; an analysis  
14 engine for generating a compatibility score for each pair of the plurality of systems based on the  
15 information that is specific to respective pairs; and a client for displaying the compatibility score  
16 on an interface, the interface being configured to enable a user to specify parameters  
17 associated with a map summarizing the compatibility scores and to define and initiate a transfer  
18 of one or more of the computer systems to a target computer system.

#### 19 BRIEF DESCRIPTION OF THE DRAWINGS

20 **[0018]** An embodiment of the invention will now be described by way of example only with  
21 reference to the appended drawings wherein:

22 **[0019]** Figure 1 is a block diagram of an analysis program for evaluating the compatibility of  
23 computer systems to identify consolidation solutions.

24 **[0020]** Figure 2 is a more detailed diagram of the analysis program depicted in Figure 1.

25 **[0021]** Figure 3 is a block diagram illustrating a sample consolidation solution comprised of  
26 multiple transfers.

27 **[0022]** Figure 4 is an example of a rule-based compatibility analysis map.



- 1    **[0023]**    Figure 5 is an example of a workload compatibility analysis map.
- 2    **[0024]**    Figure 6 is an example of an overall compatibility analysis map.
- 3    **[0025]**    Figure 7 is a schematic block diagram of an underlying architecture for implementing  
4    the analysis program of Figure 1.
- 5    **[0026]**    Figure 8 is a table mapping audit data sources with consolidation strategies.
- 6    **[0027]**    Figure 9 is a process flow diagram of the compatibility and consolidation analyses.
- 7    **[0028]**    Figure 10 is a process flow diagram illustrating the loading of system data for  
8    analysis.
- 9    **[0029]**    Figure 11 is a high level process flow diagram for a 1-to-1 compatibility analysis.
- 10   **[0030]**    Figure 12 is a table showing example rule sets.
- 11   **[0031]**    Figure 13 is a table showing example workload types.
- 12   **[0032]**    Figure 14 is a process flow diagram for the 1-to-1 compatibility analysis.
- 13   **[0033]**    Figure 15 is a flow diagram illustrating operation of the rule engine analysis.
- 14   **[0034]**    Figure 16 shows an example rule set.
- 15   **[0035]**    Figure 17 is a flow diagram of the 1-to-1 rule-based compatibility analysis.
- 16   **[0036]**    Figure 18 is a flow diagram illustrating the evaluation of a rule set.
- 17   **[0037]**    Figure 19 is an example of the rule-based compatibility analysis result details.
- 18   **[0038]**    Figure 20 is a flow diagram of workload data extraction process.
- 19   **[0039]**    Figure 21 is a flow diagram of the 1-to-1 workload compatibility analysis.
- 20   **[0040]**    Figure 22 is an example of the workload compatibility analysis result details.

- 1    **[0041]**    Figure 23 is an example of the overall compatibility analysis result details.
- 2    **[0042]**    Figure 24(a) is a high level process flow diagram of the multi-dimensional  
3    compatibility analysis.
- 4    **[0043]**    Figure 24(b) is a flow diagram showing the multi-dimensional analysis.
- 5    **[0044]**    Figure 24(c) is a flow diagram showing use of a rule set in an N-to-1 compatibility  
6    analysis.
- 7    **[0045]**    Figure 24(d) is a flow diagram showing use of a rule set in an N-by-N compatibility  
8    analysis.
- 9    **[0046]**    Figure 25 is a process flow diagram of the multi-dimensional workload compatibility  
10    analysis.
- 11   **[0047]**    Figure 26 is an example multi-dimensional compatibility analysis map.
- 12   **[0048]**    Figure 27 is an example of the multi-dimensional compatibility analysis result details  
13   for a rule set.
- 14   **[0049]**    Figure 28 is an example of the multi-dimensional workload compatibility analysis  
15   result details.
- 16   **[0050]**    Figure 29 is a process flow diagram of the consolidation analysis.
- 17   **[0051]**    Figure 30 is a process flow diagram of an auto fit algorithm used by the consolidation  
18   analysis.
- 19   **[0052]**    Figure 31 is an example of a consolidation solution produced by the consolidation  
20   analysis.
- 21   **[0053]**    Figure 32 shows an example hierarchy of analysis folders and analyses.
- 22   **[0054]**    Figure 33 shows the screen for creating and editing the analysis input parameters.
- 23   **[0055]**    Figure 34 shows an example of the rule set editor screen.

- 1    **[0056]**    Figure 35 shows an example of the screen for editing workload settings.
- 2    **[0057]**    Figure 36 shows an example screen to edit the importance factors used to compute  
3    the overall compatibility score.
- 4    **[0058]**    Figure 37 is an example 1-to-1 compatibility map.
- 5    **[0059]**    Figure 38 is example configuration compatibility analysis details.
- 6    **[0060]**    Figure 39 is an example 1-to-1 compatibility map for business constraints.
- 7    **[0061]**    Figure 40 is an example 1-to-1 workload compatibility map.
- 8    **[0062]**    Figure 41 is an example workload compatibility report.
- 9    **[0063]**    Figure 42 is an example workload details report with stacked workloads.
- 10   **[0064]**    Figure 43 is an example of a 1-to-1 overall compatibility map.
- 11   **[0065]**    Figure 44 is an example of the 1-to-1 overall compatibility details report.
- 12   **[0066]**    Figure 45 shows the workload details of the overall compatibility report.
- 13   **[0067]**    Figure 46 shows example transfers on a compatibility map with net effect off.
- 14   **[0068]**    Figure 47 shows example transfers on a compatibility map with net effect on.
- 15   **[0069]**    Figure 48 is an example multi-dimensional compatibility details report.
- 16   **[0070]**    Figure 49 shows an example of the consolidation analysis (auto fit) input screen.
- 17   **[0071]**    Figure 50 is an example overall compatibility map for the consolidation solution.
- 18   **[0072]**    Figure 51 is an example consolidation summary report.
- 19   **[0073]**    Figure 52 shows the example transfers that comprise the consolidation solution.

1 DETAILED DESCRIPTION OF THE DRAWINGS

2 **Analysis Program Overview**

3 [0074] A block diagram of an analysis program 10 for determining compatibilities in  
4 computing environment 12 is provided in Figure 1. The analysis program 10, accessed through  
5 a computer station 14, gathers data 18 pertaining to a collection of systems to be consolidated  
6 16. The analysis program 10 uses the gathered data 18 to evaluate the compatibility of the  
7 computer systems 28 and provide a roadmap 20 specifying how the original set of systems can  
8 be consolidated to a smaller number of systems 22.

9 [0075] The following provides an overview of the principles and functionality related to the  
10 analysis program 10 and its environment depicted in Figure 2.

11 **System Data Parameters**

12 [0076] A distinct data set is obtained for each system 16 to contribute to the combined  
13 system data 18 shown in Figure 2. Each data set comprises one or more parameters that relate  
14 preferably to technical 24, business 26 and workload 28 characteristics or features of the  
15 respective system 16. The parameters can be evaluated by scrutinizing program definitions,  
16 properties, objects, instances and any other representation or manifestation of a component,  
17 feature or characteristic of the system 16. In general, a parameter is anything related to the  
18 system 16 that can be evaluated, quantified, measured, compared etc.

19 [0077] Examples of technical parameters relevant of the consolidation analysis include the  
20 operating system, OS version, patches, application settings, hardware devices, etc.

21 [0078] Examples of business parameters of systems relevant to the consolidation analysis  
22 include the physical location, organization department, data segregation requirements, owner,  
23 service level agreements, maintenance windows, hardware lease agreements, software  
24 licensing agreements, etc.

25 [0079] Examples of workload parameters relevant to consolidation analysis include various  
26 resource utilization and capacity metrics related to the system processor, memory, disk storage,  
27 disk I/O throughput and network bandwidth utilization.

1   **System and Entity Models**

2   **[0080]**     The system data parameters associated with a system 16 comprise the system  
3   model used in the analyses.

4   **[0081]**     In the following examples, a source system refers to a system from which  
5   applications and/or data are to be moved, and a target server or system is a system to which  
6   such applications and/or data are to be moved. For example, an underutilized environment  
7   having two systems 16 can be consolidated to a target system (one of the systems) by moving  
8   applications and/or data from the source system (the other of the systems) to the target system.

9   **[0082]**     The computer systems 16 may be physical systems, virtual systems or hypothetical  
10   models. In contrast to actual physical systems, hypothetical systems do not currently exist in  
11   the computing environment 12. Hypothetical systems can be defined and included in the  
12   analysis to evaluate various types of “what if” consolidation scenarios. Hypothetical targets can  
13   be used to simulate a case where the proposed consolidation target systems do not exist in the  
14   environment 12, e.g. for adding a system 16. Similarly, hypothetical source systems can be  
15   used to simulate the case where a new application is to be introduced into the environment 12  
16   and “forward consolidated” onto existing target systems 16.

17   **[0083]**     Hypothetical systems can be created through data imports, cloning from actual  
18   systems models, and manual specification by users, etc. The system model can be minimal  
19   (sparse) or include as much data as an actual system model. These system models may also  
20   be further modified to address the analysis requirements.

21   **[0084]**     The compatibility analysis can also be generalized to evaluate entities beyond  
22   physical, virtual or hypothetical systems. For example, entities can be components that  
23   comprise systems such as applications and database instances. By analysing the compatibility  
24   of database instances and database servers with database stacking rule sets, database  
25   consolidation can also be assessed. Similarly, application consolidation can be evaluated by  
26   analyzing application servers and instances with application stacking rules. The entity could  
27   also be a logical application system and technical data can pertain to functional aspects and  
28   specifications of the entity.

1 [0085] It will therefore be appreciated that a “system” or “computer system” hereinafter  
2 referred, can encompass any entity which is capable of being analysed for any type of  
3 compatibility and should not be considered limited to existing or hypothetical physical or virtual  
4 systems etc.

## 5 **Consolidation and Transfers**

6 [0086] Consolidation as described above can be considered to include one or more  
7 “transfers”. The actual transfer describes the movement of a single source entity onto a target,  
8 wherein the specification identifies the source, target and transfer type. The transfer type (or  
9 consolidation strategy) describes how a source entity is transferred onto a target, e.g.  
10 virtualization, OS stacking etc.

11 [0087] A transfer set 23 (see Figure 3) can be considered one or more transfers that involve  
12 a common target, wherein the set specifies one or more source entities, the target and a  
13 transfer type.

14 [0088] A consolidation solution (or roadmap) is one or more transfer sets 23 based on a  
15 common pool of source and target entities. As can be seen in Figure 2, the consolidation  
16 roadmap can be included in the analysis results 20. Each source or target entity is referenced  
17 at most one time by the transfer sets that comprise the solution.

18 [0089] Figure 3 shows how an example pool 24 of 5 systems (S1, S2, S3, S4 and S5) can  
19 be consolidated through 2 transfer sets 23: stack S1 and S2 onto S3, and stack S4 onto S5.  
20 The transfer sets 23 include 3 transfers, and each system 16 is referenced by the transfer sets  
21 23 only once. In the result, a consolidated pool 26 of 2 systems is achieved.

22 [0090] It will be appreciated that the principles described herein support many  
23 transformation strategies and consolidation is only one example.

## 24 **Compatibility Analyses**

25 [0091] The following discusses compatibilities between systems 16 based on the  
26 parameters to determine if efficiencies can be realized by consolidating either entire systems 16  
27 or aspects or components thereof.

1 [0092] The analyses employ differential rule sets 28 to evaluate and quantify the  
2 compatibility of systems 16 with respect to technical configuration and business related factors  
3 comprised in the gathered system data 18. Similarly, workload compatibility of a set of systems  
4 16 is assessed using workload stacking and scoring algorithms 30. The results of configuration,  
5 business and workload compatibility analyses are combined to produce an overall compatibility  
6 score for a set of systems 16.

7 [0093] In addition to compatibility scores, the analysis provides details that account for the  
8 actual scores. The scores can be presented in color coded maps 32, 34 and 36 that illustrate  
9 patterns of the compatibility amongst the analyzed systems as shown in Figures 4, 5 and 6  
10 respectively.

## 11 **Analysis Modes**

12 [0094] A collection of systems 16 to be consolidated can be analyzed in one of three  
13 modes: 1-to-1 compatibility, multi-dimensional compatibility and consolidation analyses. These  
14 analyses share many common aspects but can be performed independently.

15 [0095] The 1-to-1 compatibility analysis evaluates the compatibility of every possible  
16 source-target pair combination in the collection of systems 16 on a 1-to-1 basis. This analysis is  
17 useful in assessing single transfer consolidation candidates. In practice, it may be prudent to  
18 consolidate systems 16 incrementally and assess the impact of each transfer before proceeding  
19 with additional transfers.

20 [0096] The multi-dimensional compatibility analysis evaluates the compatibility of transfer  
21 sets that can involve multiple sources being transferred to a common target. The analysis  
22 produces a compatibility score for each specified transfer set 23 by evaluating the compatibility  
23 of the systems 16 that comprise the transfer set 23.

24 [0097] The consolidation analysis searches for a consolidation solution that minimizes the  
25 number of remaining source and target entities after the proposed transfers are applied, while  
26 meeting requisite compatibility constraints. This analysis employs the multi-dimensional  
27 compatibility analysis described above to evaluate the compatibility of postulated transfer sets.

1 [0098] The analysis program 10 performs consolidation analyses for virtualization and  
2 stacking strategies as will be explained in greater detail below, however, it will be appreciated  
3 that other consolidation strategies may be performed according to similar principles.

#### 4 **Analysis Program Architecture**

5 [0099] A block diagram of the analysis program 10 is shown in Figure 7. The flow of data  
6 18 through the program 10 begins as an audit engine 40 pulls audit data 18 from audited  
7 environments 42. The data works its way up to the web client 44 which displays an output on a  
8 user interface, e.g. on computer 14. The program 10 is preferably a client-server application  
9 that is accessed via the web client 44.

10 [00100] An audit engine 40 communicates over one or more communication protocols with  
11 audited environments 42 comprised of the actual systems 16 being analysed. The audit engine  
12 40 typically uses data acquisition adapters to communicate directly with the end points (e.g.  
13 servers) or through software systems that manage the end points (e.g. management  
14 frameworks 46 and/or agent instrumentation 48 and/or direct access 50).

15 [00101] Alternatively, system data 18 can be imported from third party tools, e.g. inventory  
16 applications, performance monitoring tools etc., or can be obtained through user data entry.  
17 Examples of such third-party data having file formats that can be imported include comma  
18 separated values (CSV), extensible markup language (XML) and well formatted text files such  
19 as those generated by the UNIX™ system activity reporter (SAR).

20 [00102] The audit engine 40, uses a set of audit request templates 52 that define the data 18  
21 to acquire from the systems 16. Once collected, the data 18 is stored in an audit data repository  
22 54. Data 18 referenced by the analysis rule sets 28 and required by the workload analysis 30  
23 are extracted and stored in separate data caches 56 and 58 respectively.

24 [00103] Aliases 60, differential rule sets 28, workload data types 30 and benchmark  
25 specifications comprise some of the analysis-related metadata 62 definitions used by the  
26 program 10. Aliases 60 extract and normalize system data 18 from a variety of data sources to  
27 a common model for analysis. Rule sets 28 examine system compatibility with respect to



1 technical configuration and business-related factors. The workload definitions 30 specify the  
2 system resource parameters and benchmarks for analyzing workload compatibility.

3 **[00104]** An analysis engine 64 is also provided, which comprises compatibility and  
4 consolidation analysis engines 66 and 68 respectively. The compatibility analysis evaluates the  
5 compatibility of systems 16 through rule sets 28 and workload stacking algorithms 30. The  
6 consolidation analysis engine 68 leverages the compatibility analysis and employs constraint-  
7 based optimization algorithms to find consolidation solutions that allows the environment 12 to  
8 operate with fewer systems 16.

9 **[00105]** The program 10 has a report engine 70 that utilizes report templates 72 for  
10 generating reports that convey the analysis results. Typically, the program 10 includes a web  
11 interface layer 74 that allows web client 44 users to enter settings, initiate an audit or analysis,  
12 view reports etc.

### 13 **Analysis Data Sources**

14 **[00106]** The audit data 18 can be acquired using tools such as the table 76 shown in Figure 8  
15 that illustrate the various types of configuration settings that are of interest and from which  
16 sources they can be obtained. Figure 8 also provides a mapping to where the sample workload  
17 data can be obtained. In Figure 8, a number of strategies 78 and sub-strategies 80 map to  
18 various configuration and workload sources, collectively referred to by numeral 82. As  
19 discussed making reference to Figure 8, the strategies 78 may relate to database consolidation,  
20 OS-level stacking, application server stacking, virtualization, and many others. Each strategy  
21 78 includes a set of sub-strategies 80, which in turn map to specific rule sets 28. The rule sets  
22 28, which will be explained in greater detail below, determine whether or not a particular setting  
23 or system criterion/criteria have been met and thus how different one system 16 is to the next.  
24 The rule sets 28 can also indicate the cost of remediating such differences.

25 **[00107]** The table 76 lists the supported consolidation strategies and the relevant data  
26 sources that should be audited to perform the corresponding consolidation analysis. In general,  
27 collecting more basis data 18 improves the analysis results. The table 76 enables the analysis  
28 program 10 to locate the settings and information of interest based on the strategy 78 or sub-  
29 strategy 80 (and in turn the rule set 28) that is to be used to evaluate the systems 16 in the

1 environment 12. The results can be used to determine source/target candidates for analysing  
2 the environment for the purpose of, e.g. consolidation, compliance measures etc.

### 3 **Analysis Process Overview**

4 **[00108]** Referring now to Figure 9, a process flow diagram illustrates the data flow for  
5 performing the compatibility and consolidation analyses discussed above. The flow diagram  
6 outlines four processes: a data load and extraction process (A), a 1-to-1 compatibility analysis  
7 process (B), a multi-dimensional compatibility analysis process (C), and a consolidation analysis  
8 process (D).

9 **[00109]** In process A, the system data 18 collected via audits or imports as discussed above  
10 is prepared for use by the analyses. The compatibility and consolidation analyses processes B,  
11 C and D can be performed independently. The analyses share a common analysis input  
12 specification and get system data 18 from the data repository 54 and caches 56 and 58. The  
13 multi-dimensional compatibility and consolidation analyses take additional inputs in the form of a  
14 consolidation solution and auto fit input parameters 84 and 86 respectively.

15 **[00110]** The 1-to-1 compatibility analysis process B evaluates the compatibility of each  
16 system pair on a 1-to-1 basis. In contrast, the multi-dimensional analysis process C evaluates  
17 the compatibility of each transfer set 23 in the consolidation solution that was specified as part  
18 of its input.

19 **[00111]** The consolidation analysis process D searches for the best consolidation solution  
20 that fulfills the constraints defined by the auto fit input 86. The consolidation analysis employs  
21 the multi-dimensional compatibility analysis C to assess potential transfer set candidates.

### 22 **Data Load and Extraction**

23 **[00112]** A process flow diagram for the data load and extraction process A is illustrated in  
24 Figure 10. System data including technical configuration, business related and workload  
25 collected through audits, data import and user input are prepared for use by the analyses  
26 processes B, C and D.

1 [00113] When system data 18 and attributes are loaded into the analysis program 10, they  
2 are stored in the audit data repository 54 and system attribute table 55, respectively. As well,  
3 system data 18 referenced by rule set items 28, workload types 30 and benchmarks are  
4 extracted and loaded into their respective caches 56, 58. Alias specifications 60 describe how  
5 data can be extracted and if necessary, normalized from a variety of data sources.

6 [00114] The data repository 54 and caches 56 and 58 thus store audited data 18, system  
7 attributes, the latest rule set data, historical workload data and system workload benchmarks.

## 8 **1-to-1 Compatibility Analysis**

9 [00115] A high level flow diagram of the 1-to-1 compatibility analysis is shown in Figure 11.  
10 The 1-to-1 compatibility analysis can take into account analysis input, including input regarding  
11 the systems 16 to be analyzed, rule set related parameters, workload related parameters,  
12 workload benchmarks and importance factors 88 used to compute overall scores.

13 [00116] The compatibility analysis evaluates the compatibility of every specified system as  
14 source-target pairs on a 1-to-1 basis. This analysis produces a compatibility score for each  
15 system pair so that analyzing a collection of ten (10) systems 16 produces 10x10 scores. The  
16 compatibility analysis is based on the specified rule sets and workload types.

17 [00117] An analysis may be based upon zero or more rule sets and zero or more workload  
18 types, such that at least one rule set or workload type is selected. Example rule sets 28 and  
19 corresponding descriptions are shown in Figure 12, and example workload types 30 and  
20 corresponding descriptions are shown in Figure 13.

21 [00118] The selection of rule sets 28 and workload types 30 for an analysis depends on the  
22 systems 28 and the consolidation strategy to analyze. For example, to assess the consolidation  
23 of a set of UNIX™ systems 16, an analysis may employ the UNIX™ application stacking,  
24 location, maintenance window and ownership rule sets 28, and CPU, memory, disk space, disk  
25 I/O and network I/O workload types 30.

## 26 **1-to-1 Compatibility Analysis Process Flow**

1   **[00119]**   A process flow diagram of the 1-to-1 compatibility analysis is shown in Figure 14.  
2   The analysis generally comprises four stages.

3   **[00120]**   In the first stage, data referenced by the selected rule sets 28 and workload types 30  
4   for the specified date range are retrieved from the data repository 54 and caches 56, 58 for  
5   each system 16 to be analyzed. This analysis data is saved as a snapshot and can be used for  
6   subsequent analyses.

7   **[00121]**   In the second stage, technical and business related compatibility may be analyzed  
8   the using the specified rule sets 28 and weights. Next, workload compatibility is evaluated  
9   based the specified workload types 30 and input parameters. Finally, the overall compatibility  
10   scores are computed for each pair of systems 16.

11   **[00122]**   Upon completion of the compatibility analysis, the results 20 are provided to the user.  
12   The results 20 include rule item and workload data snapshots, 1-to-1 compatibility score maps  
13   for each rule set 28 and workload type 30 as well as an overall score map. Analysis details for  
14   each map may also be provided.

15   **[00123]**   As noted above, the differential rule sets 28 are used to evaluate the compatibility of  
16   systems as they relate to technical and business related constraints. The rule set 28 defines  
17   which settings are important for determining compatibility. The rule set 28 typically defines a set  
18   of rules which can be revised as necessary based on the specific environment 12. The rule set  
19   28 is thus preferably compiled according to the systems 16 being analysed and prior knowledge  
20   of what makes a system 16 compatible with another system 16 for a particular purpose. As will  
21   be discussed below, the rule sets 28 are a form of metadata 62.

## 22   **Differential Rule Sets**

23   **[00124]**   Further detail regarding the differential rules and differential rule sets 28 is now  
24   described making reference to Figures 15 and 16, as also described in co-pending U.S. Patent  
25   Application No. 11/535,308 filed on September 26, 2006, and entitled "Method for Evaluating  
26   Computer Systems", the contents of which are incorporated herein by reference.

1   **[00125]**   With respect to the following description of the rule sets 28 and the general  
2   application of the rule sets 28 for detecting system incompatibilities by evaluating differences  
3   between data parameters of systems 16, the following alternative nomenclature may be used.  
4   A target system refers to a system being evaluated, and a baseline system is a system to which  
5   the target system is being compared. The baseline and target systems may be the same  
6   system 16 at different instances in time (baseline = prior, target = now) or may be different  
7   systems 16 being compared to each other. As such, a single system 16 can be evaluated  
8   against itself to indicate changes with respect to a datum as well as how it compares to its  
9   peers. It will be appreciated that the terms "source system" and "baseline system" are herein  
10   generally synonymous, whereby a source system is a type of baseline system.

11   **[00126]**   Figure 1 illustrates the relationships between system data 18 and the analysis  
12   program 10. Data 18 is obtained from the source and target computer systems 16 and is used  
13   to analyze the compatibility between the systems 16. In this example, the parameters are  
14   evaluated to determine system compatibilities for a consolidation strategy. A distinct data set 18  
15   is preferably obtained for each system 16 (or instance in time for the same system 16 as  
16   required).

17   **[00127]**   Rule sets 28 are computer readable and storable so that they may be accessed by  
18   the program 10 and modified if necessary, for use in evaluating the computer systems 16.

19   **[00128]**   Rule sets 28 are groupings of rules that represent higher-level considerations such  
20   as business objectives or administrative concerns that are taken into account when reporting on  
21   or analysing the systems 16. In Figure 15, six rules 43, A, B C, D, E and F are grouped into  
22   three rule sets 28, Rule Set 1, 2 and 3. It will be appreciated that there may be any number of  
23   rules in any number of rule sets 28 and those shown in Figure 15 are for illustrative purposes  
24   only.

25   **[00129]**   Rules evaluate data parameters according to rule definitions to determine  
26   incompatibilities due to differences (or contentious similarities) between the baseline and target  
27   systems. The rule definitions include penalty weights that indicate the importance of the  
28   incompatibility as they relate to the operation of the systems 16. The penalty weights are  
29   applied during an evaluation if the incompatibility is detected. The evaluation may include the

1 computation of a score or generation of other information indicative of nature of the  
2 incompatibilities between the baseline and target systems.

3 **[00130]** Rules comprised by a rule set 28 may reference common parameters but perform  
4 different tests to identify different forms of incompatibilities that may have different levels of  
5 importance. For example a version four operating system versus a version three operating  
6 system may be considered less costly to remedy and thus less detrimental than a version five  
7 operating system compared to a version one operating system. As can be seen, even though  
8 the operating systems are different in both cases, the nature of the difference can also be  
9 considered and different weights and/or remedies applied accordingly.

10 **[00131]** Rules can also test for similarities that indicate contentions which can result in  
11 incompatibilities between systems. For example, rules can check for name conflicts with  
12 respect to system names, database instance names, user names, etc.

13 **[00132]** The flow of data for applying exemplary rule sets 28 is shown in Figure 15. In this  
14 example, the system data gathered from a pair of systems 16 are evaluated using three rule  
15 sets. The rule engine 90 (see also Figure 7) evaluates the data parameters of the systems 16  
16 by applying rule sets 1, 2 and 3 which comprise of the exemplary rules A, B, C, D, E and F. The  
17 evaluation of the rules results in compatibility scores and zero or more matched rule items for  
18 each rule set 28. These results can be used for subsequent analyses, such as combining with  
19 workload compatibility results to obtain overall compatibility scores.

## 20 **Rule Set Specification**

21 **[00133]** Each rule set 28 has a unique rule set identifier (UUID), rule set name, rule set  
22 description, rule set version, rule set type (e.g. controlled by system 10 or by user), and a rule  
23 set category (e.g. generic rule set categorization such as business, configuration etc.).

24 **[00134]** As described above, each rule set 28 is also comprised of one or more rules.

## 25 **Rule Definition**

26 **[00135]** A rule is conceptually a form of metadata 62 that specifies a parameter, tests to  
27 detect an incompatibility between the baseline and target systems 16, the relative importance of

- 1 the incompatibility, and the costs associated with the remediating the incompatibility. Each rule  
2 is defined by a fixed number of fields as listed in Table 1 below.

Field	Description
Name	Rule name
Description	Rule description
Data Query Type	Query type to get data parameter (e.g. URI, Attribute, Alias)
Query Value	Data query specification based on query type
Baseline Test	Baseline test specification
Target Test	Target test specification
Weight	Rule penalty weight
Mutex Flag	Y/N – This flag is used at multiple levels as described below
Match Flag	Rule match name referenced by suppress flag
Suppress Flag	Rule dependency expression to determine whether to suppress rule
Remediation Costs	Estimated remediation costs for rule item if true.
Enabled Flag	True/False

3 *Table 1 – Rule Item Field Specification*

- 4 **[00136]** The name and description fields are lay descriptions of the condition or discrepancy  
5 detected by the rule. These fields are used to provide management-level summaries when  
6 processing rule sets 28. The fields can provide as much or as little information as required by  
7 the application.

## 8 **Rule Query Specification**

- 9 **[00137]** The data query type and value identify the data parameter to be evaluated by the  
10 rule. The query type specifies whether the rule applies to audited data directly (UriQuery),  
11 normalized values (AliasQuery) or attributes (AttrQuery). The query value specifies the  
12 parameter specification based on the query type. For UriQuery, AliasQuery and AttrQuery  
13 types, query values specify URI, alias and attribute names, respectively.

- 14 **[00138]** The URI value conforms to a URI-like format used for accessing parameters from  
15 the native audit data model. The URI can specify the module, object and property of the data  
16 object or property that is being requested. The optional URI fragment (i.e. the portion after the  
17 “#” symbol) specifies the specific object instance (table row) that is being evaluated, with “\*”  
18 denoting a wildcard that matches all instances.

1

2  
3  
4  
5  
6  
7  
8  
9

10  
1112

13

13  
14

## 15

16  
17  
18



1 environment 12, with 100% being an “absolute constraint” that indicates complete  
2 incompatibility.

### 3 **Mutex Flag**

4 **[00143]** The mutex flag field can be used to avoid multiple penalties that would otherwise  
5 skew the scores. A “Y” in the mutex flag field specifies that multiple matches of the same rule  
6 43 will incur only a single penalty on the overall score (as specified in the weight field), as  
7 opposed to multiple accumulating penalties (which is the default behaviour).

8 **[00144]** The mutex flag can be interpreted at multiple levels. When comparing a target and  
9 source system, should the rule specifier expand to a list (e.g. software list), the rule is evaluated  
10 for each instance. In this case, if the flag is a “Y”, the score is penalized by the rule weight a  
11 maximum of one time, even if the rule was true for multiple instances. If the flag is “N”, the  
12 score should be penalized for each instance that was evaluated to be true. Furthermore, when  
13 computing multi-dimensional compatibility scores (multiple sources transferred to a single  
14 target), the calculation is based on the union of the rule items that were true. In this case, the  
15 flag is used to determine whether to penalize the multi-stack score once or for each unique rule  
16 instance. The multi-dimensional compatibility analysis is described in detail below.

### 17 **Rule Dependency**

18 **[00145]** The match flag field enables an optional symbolic flag to be “set” when a rule  
19 matches, and which can subsequently be used to suppress other rules (through the “Suppress  
20 Flags” field). This effectively allows rule dependencies to be modeled in the rule set 28. The  
21 suppress flag field allows symbolic flags (as specified in the “Match Flag” field) to be used to  
22 suppress the processing of rules. This allows specific checks to be skipped if certain higher-  
23 level conditions exist. For example, if the operating systems are different, there is no need to  
24 check the patches. It should be noted that this allows any arbitrary logic to be constructed, such  
25 as how logic can be built from NAND gates.

26 **[00146]** The remediation cost field is preferably optional. The remediation field represents  
27 the cost of “fixing” the system(s) (i.e. eliminating the condition or discrepancy detected by the  
28 rule 43). When analyzing differences between (or changes to) IT systems this is used to

1 represent hardware/software upgrade costs, administrative costs and other costs associated  
2 with making the required changes to the target systems. The calculations behind this field vary  
3 based on the nature of the system and the parameter that would need to be added, upgraded  
4 etc.

5 **[00147]** Each rule can include a true/false enable flag for enabling and disabling the rule  
6 item.

## 7 **Rule Set Example**

8 **[00148]** Figure 16 provides an example rule set 28, which includes a number of rules. The  
9 following refers to the number indicated in the leftmost column of Figure 16.

10 **[00149]** Rule 1 scrutinizes the normalized (AliasQuery) representation of the operating  
11 systems (e.g. Windows™, Solaris™, AIX™, Linux™, etc.) on both the source and target  
12 systems and heavily penalizes cases where these are different as evident from the high weight  
13 factor (70%). Rule 2 penalizes systems that have different operating system versions (e.g.  
14 Windows™ NT vs Windows™ 2000), and is suppressed (i.e. not processed) in cases where the  
15 systems have different overall operating systems (as detected in the previous rule). Rule 3  
16 detects if systems are in different time zones. Rule 4 penalizes combinations of systems where  
17 the target has less memory than the source (this is what is referred to as a directional rule,  
18 which can give differing results if sources and targets are reversed, e.g. asymmetric results).  
19 Rule 5 operates directly against audit data and detects cases where the operating system patch  
20 level differs. This rule is not processed if either the operating system or the operating system  
21 version are different (since this renders the comparison of patches meaningless).

22 **[00150]** Rule 6 scrutinizes the lists of all patches applied to the source and target systems  
23 and penalizes cases where they differ. The mutex flag is set, indicating that the penalty is  
24 applied only once, no matter how many patch differences exist. This rule is ignored in cases  
25 where either the operating system or operating system version are different. Rule 7 penalizes  
26 system combinations of servers that are running the same OS but are configured to run a  
27 different number of kernel bits (e.g. 64-bit vs 32-bit). Rule 8 penalizes combinations where  
28 there are kernel parameters defined on the source that are not defined on the target. This rule  
29 is not applied if the operating systems are different.

1   **[00151]**     Rule 9 scrutinizes a specific kernel setting (SHMMAX, the setting that specifies how  
2   much shared memory a system can have) and penalizes combinations where it is set to a lower  
3   value on the target than it is on the source system. Rule 10 penalizes combinations of systems  
4   that are running different database version, e.g. Oracle™ 9 vs. Oracle™ 8. Rule 11 penalizes  
5   combinations of systems that are running different versions of Oracle™. Rule 11 is suppressed  
6   if the more specific Rule 10 is true. It should be noted that the remediation cost is relatively  
7   high, owing to the fact that it will take a software upgrade to eliminate this discrepancy. In some  
8   cases the remediation cost can be low where the upgrade is less expensive. Rule 12 penalizes  
9   combinations of systems that are running different versions of Apache. It should be noted that  
10   the remediation cost is relatively low, as apache is an open source product and the cost of  
11   upgrade is based on the hourly cost of a system administrator and how long it will take to  
12   perform the upgrade.

13   **[00152]**     Rule 13 scrutinizes a windows-specific area of the audit data to determine if the  
14   source and target systems are running different service pack levels. It should be noted that this  
15   rule closely mirrors rule 5, which uses a rule specifier that scrutinizes the UNIX™/Linux™ area  
16   of the audit data. Rule 14 scrutinizes the lists of all hotfixes applied to the source and target  
17   systems and penalizes cases where they differ. This rule closely mirrors rule 6, which  
18   scrutinizes patches on UNIX™ and Linux™. Rule 15 detects differing startup commands  
19   between systems. Rule 16 is a rule to detect differing Paths between systems, and rule 17  
20   detects differing System Paths between systems.

21   **[00153]**     Rule 18 penalizes system combinations where there are services installed on the  
22   source that are not installed on the target. This rule has the mutex flag set, and will therefore  
23   only penalize a system combination once, no matter how many services are missing. Rule 19  
24   penalizes system combinations where there are services started on the source that are not  
25   started on the target. It should be noted that both the weight and the remediation cost are lower  
26   than the previous rule, owing to the fact that it is generally easier and less expensive to start a  
27   service than install it. Finally, rule 20 penalizes combinations where the target system is  
28   missing the virus scanner software.

29   **[00154]**     It will be appreciated that the above described rules and rule set 28 are shown for  
30   illustrative purposes only and that any combination of rules can be used to achieve specific

goals. For example, rules that are applicable to the OS can be grouped together to evaluate how a system compares to its peers. Similarly, rules pertaining to database, Java applications etc. can also be grouped.

[00155] As discussed above, Figure 12 provides a table listing several additional example rule sets and associated descriptions.

[00156] The system consolidation analysis computes the compatibility of a set of systems based not only on technical and workload constraints as exemplified above, but also business constraints. The business constraints can be expressed in rule sets 28, similar to the technical constraints discussed above.

#### Rule Specification Enhancements

[00157] In another embodiment, the rule test specification shown above in Table 1 can be extended to support the "NOT" expression, e.g. "!X" where "!" indicates not equal to; and to support regular expression patterns, e.g. "rx:Pattern" or "!rx:Pattern". An example is shown in Table 3 below.

Target	Baseline	Description
X	!Y	Target = X and Baseline != Y
!X		Target != X
	!Y	Baseline != Y
rx:P1	!rx:P2	Target matches P1 and Baseline does not match P2
rx:P1		Target matches P1
	!rx:P2	Baseline does not match P2
X	rx:P2	Target = X and Baseline matches P2
!X	rx:P2	Target != X and Baseline matches P2

Table 3: Extended Rule Test Specification

[00158] In yet another embodiment, an advanced rule set specification may also be used to support more flexible rule logic by considering the following rule item specification shown in Table 4.

Field	Description
Name	As before
Description	As before
Data Query Type	As before

Field	Description
Query Value	As before
<b>Test</b>	Test expression
Weight	As before
Mutex Flag	As before
Match Flag	As before
<b>Match Test</b>	Rule dependency expression to determine whether to perform the corresponding match action
<b>Match Action</b>	Action (run/suppress/stop) to execute based on match test result
Remediation Costs	As before
Enabled Flag	As before

Table 4: Advanced Rule Item Specification

[00159] The **highlighted** fields above are incorporated to include a test expression and match test and corresponding match action to be executed according to the match test result.

[00160] In the advanced rule specification, the following elements are supported: variables, such as target, source etc.; regular expressions, e.g. regex("pattern"); constants, such as quoted string values "lala", "1" etc.; test operators, =, !=, <, <=, >, >=, ~, !~; logical operators, AND &&, OR, ||; and logical operator precedence, ( ) for nested expressions.

[00161] For example:

[00162] Target != Source;

[00163] Target >= Source && > "1024";

[00164] Target = regex("Windows") && Source != regex("Solaris|AIX"); and

[00165] (Target = "X" && Source = "Y") || (Target = "A" && Source = "B").

[00166] The test expression supports the following elements: match flag names; logical operators, AND &&, OR, ||; test operator, NOT !; and logical operator precedence, ( ) for nested expressions. Examples assuming match flags of A, B, C, D, etc. are as follows:

[00167] A

1    **[00168]**    A || B

2    **[00169]**    A && B

3    **[00170]**    (A && IB) || C

4    **[00171]**    The match action specifies the action to perform if the match test rule is true.  
5    Possible actions are: run, evaluate the rule item; suppress, do not evaluate the rule item; and  
6    stop.

7    **[00172]**    Where basic and advanced rule sets are available for the same analysis program,  
8    there are a number of options for providing compatibility. The rule set specification can be  
9    extended to include a property indicating the minimum required rule engine version that is  
10   compatible with the rule set. In addition, the basic rule sets can be automatically migrated to the  
11   advanced rule set format since the advanced specification provides a super set of functionality  
12   relative to the basic rule set specification. It will be appreciated that as new rules and rule  
13   formats are added, compatibility can be achieved in other ways so long as legacy issues are  
14   considered where older rule versions are important to the analysis.

#### 15   **1-to-1 Rule-based Compatibility Analysis**

16   **[00173]**    An exemplary process flow for a rule-based compatibility analysis is shown in greater  
17   detail in Figures 17 and 18. When analyzing system compatibility, the list of target and source  
18   systems 16 are the same. The compatibility is evaluated in two directions, e.g. for a Server A  
19   and a Server B, migrating A to B is considered as well as migrating B to A.

20   **[00174]**    Turning first to Figure 17, for each rule set R (R = 1 to M where M is the number of  
21   rule sets) and for each target system T (T = 1 to N where N is the number of systems), the rule  
22   engine 90 first looks at each source system S (S = 1 to N). If the source=target then the  
23   configuration compatibility score for that source is set to 100, no further analysis is required and  
24   the next pair is analyzed. If the source and target are different, the rules are evaluated against  
25   the source/target pair to compute the compatibility score, remediation cost and to compile the  
26   associated rule details. Estimated remediation costs are optionally specified with each rule  
27   item. As part of the rule evaluation and subsequent compatibility score calculation, if a rule is

1 true, the corresponding cost to address the deficiency is added to the remediation cost for the  
2 pair of systems 16 being analysed.

3 **[00175]** The evaluation of the rules is shown in Figure 18. The evaluation of the rules  
4 considers the snapshot data 18 for the source system and the target system, as well as the  
5 differential rule set 28 that being applied. For each rule in the set 28, the data referenced by the  
6 rule is obtained for both the target and source. The rule is evaluated by having the rule engine  
7 90 compare the data. If the rule is not true (i.e. if the systems 16 are the compatible according  
8 to the rule definition) then the data 18 is not considered in the compatibility score and the next  
9 rule is evaluated. If the rule is true, the rule details are added to an intermediate result. The  
10 intermediate result includes all true rules.

11 **[00176]** Preferably, a suppression tag is included with each rule. As discussed above, the  
12 suppression tag indicates other rules that are not relevant if that rule is true. The suppression  
13 flag allows the program 10 to avoid unnecessary computations. A mutex flag is also preferably  
14 used to avoid unfairly reducing the score for each true rule when the rules are closely affected  
15 by each other.

16 **[00177]** Once each rule has been evaluated, a list of matched rules is created by removing  
17 suppressed rule entries from the intermediate results based on rule dependencies, which are  
18 defined by rule matching and suppression settings (e.g. match flags and suppression tags).  
19 The compatibility score for that particular source/target pair is then computed based on the  
20 matched rules, weights and mutex settings. Remediation costs are also calculated based on  
21 the cost of updating/upgrading etc. and the mutex settings.

22 **[00178]** Turning back to Figure 17, the current target is then evaluated against all remaining  
23 sources and then the next target is evaluated. As a result, an N x N map 32 can be created that  
24 shows a compatibility score for each system against each other system. The map 32 can be  
25 sorted by grouping the most compatible systems. The sorted map 32 is comprised of every  
26 source/target combination and thus provides an organized view of the compatibilities of the  
27 systems 16.

28 **[00179]** Preferably, configuration compatibility results are then generated for each rule set  
29 28, comprising the map 32 (e.g. Figure 4) and for each source-target pair details available

1 pertaining to the configuration compatibility scoring weights, remediation costs and applicable  
2 rules. The details can preferably be pulled for each source/target pair by selecting the  
3 appropriate cell 92 (see Figure 19).

#### 4 **1-to-1 Workload Compatibility Analysis**

5 **[00180]** The workload compatibility analysis evaluates the compatibility of each source-target  
6 pair with respect to one or more workload data types 30. The analysis employs a workload  
7 stacking model to combine the source workloads onto the target system. The combined  
8 workloads are then evaluated using threshold and a scoring algorithm to calculate a  
9 compatibility score for each workload type.

#### 10 **Workload Data Types and Benchmarks**

11 **[00181]** System workload constraints must be assessed when considering consolidation to  
12 avoid performance bottlenecks. Workload types representing particularly important system  
13 resources include % CPU utilization, memory usage, disk space used, disk I/O throughput and  
14 network I/O throughput. The types of workload analyzed can be extended to support additional  
15 performance metrics. As noted above, example workload types are summarized in the table  
16 shown in Figure 13.

17 **[00182]** Each workload type can be defined by the properties listed in Table 5 below:

Property	Description	Examples
Name	Workload key name	CPU_Utilization
Display Name	Workload display name for UI	CPU Utilization
Benchmark Type	Benchmark type corresponding to workload type	cpu
Alias Name	Alias to get workload values from repository	CpuDays
Alias File	Alias file containing above alias	cpu_workload_alias.xml
Description	Short description of workload type	CPU Utilization
Unit	Unit of workload value	%
Test as	Boolean flag indicating whether to test the	true



Property	Description	Examples
percent?	workload against a threshold as a percentage (true) or as an absolute value (false)	

Table 5: Workload Type Definition

**[00183]** Workload values can be represented as percentages (e.g. %CPU used) or absolute values (e.g. disk space used in MB, disk I/O in MB/sec).

**[00184]** The term workload benchmark refers to a measure of a system's capability that may correspond to one or more workload types. Workload benchmarks can be based on industry benchmarks (e.g. CINT2000 for processing power) or the maximum value of a system resource (e.g. total disk space, physical memory, network I/O bandwidth, maximum disk I/O rate). Benchmarks can be used to normalize workload types that are expressed as a percentage (e.g. %CPU used) to allow direct comparison of workloads between different systems 16.

**[00185]** Benchmarks can also be used to convert workload types 30 that are expressed as absolute values (e.g. disk space used in MB) to a percentage (e.g. % disk space used) for comparison against a threshold expressed as a percentage. Each benchmark type can be defined by the following in Table 6:

Property	Description	Example
Name	Benchmark name	cpu
Default value	Default benchmark value if not resolved by the other means (optional)	<none>
Alias name	Alias to get benchmark value for specific system (optional)	cpuBenchmark
Alias file	File containing alias specified above	benchmark_alias.xml
Attribute name	System attribute value to lookup to get benchmark value (optional)	CINT2000
Use alias first	Boolean flag indicating whether to try the alias or the attribute lookup first	true

Table 6: Workload Benchmark Definition

1 [00186] System benchmarks can normalize workloads as follows. For systems X and Y, with  
2 CPU benchmarks of 200 and 400 respectively (i.e. Y is 2x more powerful than X), if systems X  
3 and Y have average CPU utilizations of 10% and 15% respectively, the workloads can be  
4 normalized through the benchmarks as follows. To normalize X's workload to Y, multiply X's  
5 workload by the benchmark ratio X/Y, i.e.  $10\% \times 200/400 = 5\%$ .

6 [00187] Stacking X onto Y would then yield a total workload of  $5\% + 15\% = 20\%$ .  
7 Conversely, stacking Y onto X would yield the following total workload:  $10\% + 15\% \times 400/200 =$   
8  $40\%$ .

#### 9 Workload Data Model

10 [00188] As discussed above, workload data is collected for each system 16 through various  
11 mechanisms including agents, standard instrumentation (e.g. Windows Performance Monitor™,  
12 UNIX™ System Activity Reporter), custom scripts, third party performance monitoring tools, etc.  
13 Workload data is typically collected as discrete time series data. Higher sample frequencies  
14 provide better accuracy for the analysis (5 minute interval is typical). The workload data values  
15 should represent the average values over the sample period rather than instantaneous values.  
16 An hour of CPU workload data for three fictional systems (A, B and C) is listed below in Table 7:

Timestamp	%CPU used (A)	%CPU used (B)	%CPU used (C)
03/01/07 00:00:00	10	0	0
03/01/07 00:05:00	12	0	0
03/01/07 00:10:00	18	10	4
03/01/07 00:15:00	22	10	6
03/01/07 00:20:00	25	15	7
03/01/07 00:25:00	30	25	8
03/01/07 00:30:00	30	35	12
03/01/07 00:35:00	35	39	15
03/01/07 00:40:00	39	45	19
03/01/07 00:45:00	41	55	21

Timestamp	%CPU used (A)	%CPU used (B)	%CPU used (C)
03/01/07 00:50:00	55	66	28
03/01/07 00:55:00	80	70	30

Table 7: Sample Workload Data (Time series)

[00189] Data from different sources may need to be normalized to common workload data types 30 to ensure consistency with respect to what and how the data is measured. For example, %CPU usage may be reported as Total %CPU utilization, %CPU idle, %CPU system, %CPU user, %CPU I/O, etc. Disk utilization may be expressed in different units such as KB, MB, blocks, etc.

[00190] The time series workload data can be summarized into hourly quartiles. Specifically, the minimum, 1<sup>st</sup> quartile, median, 3<sup>rd</sup> quartile, maximum, and average values are computed for each hour. Based on the workload data from the previous example, the corresponding summarized workload statistics are listed below in Table 8:

System	Hour	%CPU (Avg)	%CPU (Min)	%CPU (Q1)	%CPU (Q2)	%CPU (Q3)	%CPU (Max)
A	0	33.1	10	20	30	40	80
B	0	30.8	0	10	30	50	70
C	0	12.5	0	5	10	20	30

Table 8: Summarized Workload Data (Quartiles) for Hour 0

[00191] The compatibility analysis for workload uses the hourly quartiles. These statistics allow the analysis to emphasize the primary operating range (e.g. 3<sup>rd</sup> quartile) while reducing sensitivity to outlier values.

## Workload Data Extraction

[00192] Workload data is typically collected and stored in the workload data cache 58 for each system 16 for multiple days. At least one full day of workload data should be available for the analysis. When analyzing workloads, users can specify a date range to filter the workload

1 data under consideration. A representative day is selected from this subset of workload data for  
2 the analysis. The criteria for selecting a representative day should be flexible. A preferable  
3 default assessment of the workload can select the worst day as the representative day based  
4 on average utilization. A less conservative assessment may consider the N<sup>th</sup> percentile (e.g.  
5 95<sup>th</sup>) day to eliminate outliers. Preferably, the worst days (based on daily average) for each  
6 system and for each workload type are chosen as the representative days.

7 **[00193]** The data extraction process flow for the workload compatibility analysis is shown in  
8 Figure 20. Preferably, the workload data cache 58 includes data obtained during one or more  
9 days. For each system 16 in the workload data set, for each workload data type 30, get the  
10 workload data for the specified date range, determine the most representative day of data, (e.g.  
11 if it is the worst day) and save it in the workload data snapshot. In the result, a snapshot of a  
12 representative day of workload data is produced for each system 16.

### 13 **Workload Stacking**

14 **[00194]** To evaluate the compatibility of one or more systems with respect to server  
15 consolidation, the workloads of the source systems are combined onto the target system. Some  
16 types of workload data are normalized for the target system. For example, the %CPU utilization  
17 is normalized using the ratio of target and source CPU processing power benchmarks. The  
18 consolidated workload for a specific hour in the representative day is approximated by  
19 combining the hourly quartile workloads.

20 **[00195]** There are two strategies for combining the workload quartiles, namely original and  
21 cascade. The original strategy simply adds like statistical values (i.e. maximum, third quartile,  
22 medians, etc.) of the source systems to the corresponding values of the target system. For  
23 example, combining the normalized CPU workloads of systems A and B onto C (from Table 8),  
24 the resulting consolidated workload statistics for hour 0 are:

25 **[00196]** Maximum =  $\text{Max}_A + \text{Max}_B + \text{Max}_C$  = 180%

26 **[00197]** 3<sup>rd</sup> Quartile =  $Q3_A + Q3_B + Q3_C$  = 110%

27 **[00198]** Median =  $Q2_A + Q2_B + Q2_C$  = 70%

$$1 \quad [00199] \quad 1^{\text{st}} \text{ Quartile} = Q1_A + Q1_B + Q1_C = 35\%$$
$$2 \quad [00200] \text{ Minimum} = \text{Min}_A + \text{Min}_B + \text{Min}_C = 10\%$$

3 **[00201]** The resulting sums can exceed theoretical maximum capacity/benchmark values  
4 (e.g. >100% CPU used).

5    **[00202]**    The cascade strategy processes the statistical values in descending order, starting  
6    with the highest statistical value (i.e. maximum value). The strategy adds like statistical values  
7    as with original, but may clip the resulting sums if they exceed a configurable limit and cascades  
8    a portion of the excess value to the *next statistic* (i.e. the excess of sum of the maximum values  
9    is cascaded to 3<sup>rd</sup> quartile). The relevant configuration properties for the cascade calculation  
10    are listed below in Table 9.

Property	Description	Example
wci.cascade_overflow	Boolean flag indicating whether to apply cascade (true) or original (false) strategy	true false
wci.cascade_overflow_proportion	Fraction of overflow to cascade to next value	0.5
wci.clip_type	Flag indicating whether to use benchmark value (max) or analysis workload threshold (limit) as the clipping limit	limit max
wci.clip_limit_ratio	If clip_type is limit, this is the ratio to apply to workload limit to determine actual clipping limit	2

11 *Table 9: Workload Cascade Configuration*

12   **[00203]**   The following example applies cascade calculation to the example workload data  
13   from Table 2 with the following settings:

```
14  [00204] wci.cascade overflow = true
```

```
15  [00205] wci.cascade overflow proportion      =      0.5
```

16 [00206] wci.clip type = max

1 [00207] The *max* clip type indicates that the clipping level is the maximum value of the  
2 workload type. In this example, the clipping level is 100% since the workload type is expressed  
3 as a percentage (%CPU). The overflow proportion indicates that 0.5 of the excess amount  
4 above the clipping level should be cascaded to the next statistic. The consolidated workload  
5 statistics are computed as follows:

6 [00208]  $\text{Max}_{\text{Original}} = \text{Max}_A + \text{Max}_B + \text{Max}_C$

7 [00209]  $= 180\%$

8 [00210]  $\text{Max}_{\text{Clipped}} = \text{Minimum of } (\text{Max}_{\text{Original}}, \text{clipping level})$

9 [00211]  $= \text{Minimum of } (180, 100)$

10 [00212]  $= 100\%$

11 [00213]  $\text{Max}_{\text{Excess}} = \text{Max}_{\text{Original}} - \text{Max}_{\text{Clipped}}$

12 [00214]  $= 180\% - 100\%$

13 [00215]  $= 80\%$

14 [00216]  $\text{Max}_{\text{Overflow}} = \text{Max}_{\text{Excess}} * \text{wci.cascade\_overflow\_proportion}$

15 [00217]  $= 80\% * 0.5$

16 [00218]  $= 40\%$

17 [00219]  $\text{Q3}_{\text{Original}} = \text{Q3}_A + \text{Q3}_B + \text{Q3}_C$

18 [00220]  $= 110\%$

19 [00221]  $\text{Q3}_{\text{Cascade}} = \text{Q3}_{\text{Original}} + \text{Max}_{\text{Overflow}}$

20 [00222]  $= 110\% + 40\%$

21 [00223]  $= 150\%$

1	[00224]	$Q3_{\text{Clipped}}$	=	Minimum of ( $Q3_{\text{Cascade}}$ , clipping level)
2	[00225]		=	Minimum of (150, 100)
3	[00226]		=	100%
4	[00227]	$Q3_{\text{Excess}}$	=	50%
5	[00228]	$Q3_{\text{Overflow}}$	=	25%
6	[00229]	$Q2_{\text{Original}}$	=	70%
7	[00230]	$Q2_{\text{Cascade}}$	=	$Q2_{\text{Original}} + Q3_{\text{Overflow}}$
8	[00231]		=	70% + 25%
9	[00232]		=	95%
10	[00233]	$Q2_{\text{Clipped}}$	=	Minimum of ( $Q2_{\text{Cascade}}$ , clip level)
11	[00234]		=	Minimum of (95, 100)
12	[00235]		=	95%
13	[00236]	$Q2_{\text{Overflow}}$	=	0%
14	[00237]	$Q1_{\text{Original}}$	=	35%
15	[00238]	$Q1_{\text{Cascade}}$	=	35%
16	[00239]	$Q1_{\text{Clipped}}$	=	35%
17	[00240]	$Q1_{\text{Overflow}}$	=	0%
18	[00241]	$\text{Min}_{\text{Original}}$	=	10%
19	[00242]	$\text{Min}_{\text{Clipped}}$	=	10%

- 1 [00243] The consolidated statistics for the above example are summarized in the following  
 2 Table 10. The *clipped* values are net results of the analysis, namely the new answer.

Statistic	Original	Cascade	<i>Clipped</i>	Excess	Overflow
Max	180	180	<b>100</b>	80	40
Q3	110	150	<b>100</b>	50	25
Q2	70	95	<b>95</b>	0	0
Q1	35	35	<b>35</b>	0	0
Min	10	10	<b>10</b>	0	0

3 *Table 10: Cascaded Statistics (Example 1)*

- 4 [00244] Similarly, the following example applies cascade calculation to the example workload  
 5 data from Table 7 with the following settings:

6 [00245] wci.cascade\_overflow = true

7 [00246] wci.cascade\_overflow\_proportion = 0.5

8 [00247] wci.clip\_type = limit

9 [00248] wci.clip\_limit\_ratio = 2

- 10 [00249] This example specifies a *limit* clip type to indicate that the clipping level is based on  
 11 the analysis threshold for the workload type. The *clip\_limit\_ratio* specifies the ratio to apply to  
 12 the threshold to calculate the actual clipping level. For instance, if the threshold is 80% and the  
 13 clip limit ratio is 2, the clipping level is 160%. The consolidated workload statistics based on the  
 14 above settings listed below in Table 11.

Statistic	Original	Cascade	<i>Clipped</i>	Excess	Overflow
Max	180	180	<i>160</i>	20	10
Q3	110	120	<i>120</i>	0	0
Q2	70	70	<i>70</i>	0	0
Q1	35	35	<i>35</i>	0	0



Min	10	10	10	0	0
-----	----	----	----	---	---

Table 11: Cascaded Statistics (Example 2)

## Workload Compatibility Scoring

**[00250]** Workload compatibility scores quantify the compatibility of consolidating one or more source systems onto a target system. The scores range from 0 to 100 with higher scores indicating better compatibility. The scores are computed separately for each workload type and are combined with the system configuration and business-related compatibility scores to determine the overall compatibility scores for the systems. The workload scores are based on the following: combined system workload statistics at like times and worst case, user-defined workload thresholds, penalty calculation, score weighting factors, and workload scoring formula.

**[00251]** Workloads are assessed separately for two scenarios: like-times and worst case. The like times scenario combines the workload of the systems at like times (i.e. same hours) for the representative day. This assumes that the workload patterns of the analyzed systems are constant. The worst case scenario time shifts the workloads for one or more systems to determine the peak workloads. This simulates the case where the workload patterns of the analyzed systems may occur earlier or be delayed independently. The combined workload statistics (maximum, 3<sup>rd</sup> quartile, median, 1<sup>st</sup> quartile and minimum) are computed separately for each scenario.

**[00252]** For a specific analysis, workload thresholds are specified for each workload type. The workload scores are penalized as a function of the amount the combined workload exceeds the threshold. Through the workload type definition (Table 6), the workload data (Table 7) and corresponding thresholds can be specified independently as percentages or absolute values. The workload data type is specified through the *unit* property and the threshold data type is specified by the *test as percent* flag. The common workload/threshold data type permutations are handled as follows.

**[00253]** If the workload is expressed as a percentage and *test as percent* is true (e.g. %CPU), normalize workload percentage using the benchmark and compare as percentages.

1   **[00254]**    If the workload is expressed as an absolute value and *test as percent* is true (e.g.  
2    disk space), convert the workload to a percentage using benchmark and compare as  
3    percentages.

4   **[00255]**    If workload unit is expressed as an absolute value and *test as percent* if false (e.g.  
5    network I/O), compare workload value against threshold as absolute values.

6   **[00256]**    A penalty value ranging from 0 to 1 can be calculated for each workload statistic and  
7    for each scenario as a function of the threshold and the clipping level. The penalty value is  
8    computed as follows:

9   **[00257]**    If Workload         $\leq$         Threshold,

10   **[00258]**        Penalty = 0

11   **[00259]**    If Workload         $\geq$         Clipping Level,

12   **[00260]**        Penalty = 1

13   **[00261]**    If Threshold         $<$         Workload         $<$         Clipping Level,

14   **[00262]**        Penalty = (Workload Value - Threshold) / (Clipping level – Threshold)

15   **[00263]**    Using Example 2 from above (threshold = 80%, clipping level = 160%), the sliding  
16    scale penalty values are computed as follows:

17   **[00264]**    Penalty<sub>Max</sub> =        (160 – 80) / (160 – 80)

18   **[00265]**        =        1

19   **[00266]**    Penalty<sub>Q3</sub> =        (120 – 80) / (160 – 80)

20   **[00267]**        =        0.5

21   **[00268]**    Penalty<sub>Q2</sub> =        0        [since 70 < 80]

22   **[00269]**    Penalty<sub>Q1</sub> =        0        [since 35 < 80]

1 [00270]  $\text{Penalty}_{\text{Min}} = 0$  [since  $10 < 80$ ]

2

3 [00271] The workload score is composed of the weighted penalty values. Penalty weights  
4 can be defined for each statistic and scenario as shown in Table 12 below.

Statistic	Scenario	Property	Example
Maximum	Like Times	wci.score.max_like_times	0.2
Maximum	Worst Times	wci.score.max_worst_times	0.1
3 <sup>rd</sup> Quartile	Like Times	wci.score.q3_like_times	0.4
3 <sup>rd</sup> Quartile	Worst Times	wci.score.q3_worst_times	0.3
Median	Like Times	wci.score.q2_like_times	0
Median	Worst Times	wci.score.q2_worst_times	0
1 <sup>st</sup> Quartile	Like Times	wci.score.q1_like_times	0
1 <sup>st</sup> Quartile	Worst Times	wci.score.q1_worst_times	0
Minimum	Like Times	wci.score.min_like_times	0
Minimum	Worst Times	wci.score.min_worst_times	0

5

6 *Table 12: Score Weighting Factors*

7 [00272] The weights are used to compute the workload score from the penalty values. If the  
8 sum of the weights exceeds 1, the weights should be normalized to 1.

9 [00273] The actual score is computed for a workload type by subtracting the sum of the  
10 weighted penalties from 1 and multiplying the result by 100:

11 [00274]  $\text{Score} = 100 * (1 - \text{Sum}(\text{Weight} * \text{Penalty}))$

12 [00275] Using the previous example and assuming that the like times are the same as the  
13 worst times, the score is calculated as follows:

14 [00276]  $\text{Score} = 100 * (1 - (\text{Weight}_{\text{Max Worst}} * \text{Penalty}_{\text{Max Worst}} + \text{Weight}_{\text{Max Like}} * \text{Penalty}_{\text{Max Like}} +$

15  $\text{Weight}_{\text{Q3 Worst}} * \text{Penalty}_{\text{Q3 Worst}} + \text{Weight}_{\text{Q3 Like}} * \text{Penalty}_{\text{Q3 Like}} +$

16  $\text{Weight}_{\text{Q2 Worst}} * \text{Penalty}_{\text{Q2 Worst}} + \text{Weight}_{\text{Q2 Like}} * \text{Penalty}_{\text{Q2 Like}} +$

17  $\text{Weight}_{\text{Q1 Worst}} * \text{Penalty}_{\text{Q1 Worst}} + \text{Weight}_{\text{Q1 Like}} * \text{Penalty}_{\text{Q1 Like}} +$

18  $\text{Weight}_{\text{Min Worst}} * \text{Penalty}_{\text{Min Worst}} + \text{Weight}_{\text{Min Like}} * \text{Penalty}_{\text{Min Like}}))$

1     **[00281]**           = 100 \* (1 – (0.1\*1 + 0.2\*1 + 0.3\*0.5 + 0.4\*0.5))

2     **[00282]**           = 30

### 3     **1-to-1 Workload Compatibility Analysis Process Flow**

4     **[00283]**     A flow chart illustrating a workload compatibility analysis is shown in Figure 21.  
5     When analyzing 1-to-1 workload compatibility, the list of target and source systems 16 is the  
6     same. The compatibility is evaluated in two directions, e.g. for Server A and Server B, migrating  
7     A to B is considered as well as migrating B to A.

8     **[00284]**     The workload analysis considers one or more workload types, e.g. CPU busy, the  
9     workload limits 94, e.g. 75% of the CPU being busy, and the system benchmarks 96, e.g.  
10    relative CPU power. Each system 16 in the workload data set is considered as a target (T = 1  
11    to N) and compared to each other system 16 in the data set 18 as the source (S = 1 to N). The  
12    analysis engine 64 first determines if the source and target are the same. If yes, then the  
13    workload compatibility score is set to 100 and no additional analysis is required for that pair. If  
14    the source and target are different, the system benchmarks are then used to normalize the  
15    workloads (if required). The normalized source workload histogram is then stacked on the  
16    normalized target system.

17    **[00285]**     System benchmarks can normalize workloads as follows. For systems X and Y, with  
18    CPU benchmarks of 200 and 400 respectively (i.e. Y is 2x more powerful than X), if systems X  
19    and Y have average CPU utilization of 10% and 15% respectively, the workloads can be  
20    normalized through the benchmarks as follows. To normalize X's workload to Y, multiply X's  
21    workload by the benchmark ratio X/Y, i.e. 10% x 200/400 = 5%. Stacking X onto Y would then  
22    yield a total workload of 5% + 15% = 20%. Conversely, stacking Y onto X would yield the  
23    following total workload: 10% + 15% x 400/200 = 40%.

24    **[00286]**     Using the stacked workload data, the workload compatibility score is then computed  
25    for each workload type as described above.

26    **[00287]**     Each source is evaluated against the target, and each target is evaluated to produce  
27    an N x N map 34 of scores, which can be sorted to group compatible systems (see Figure 5).

1 Preferably, a workload compatibility results is generated that includes the map 34 and workload  
2 compatibility scoring details and normalized stacked workload histograms that can be viewed by  
3 selecting the appropriate cell 92 (see Figure 22). The workload compatibility results are then  
4 combined with the rule-based compatibility results to produce the overall compatibility scores,  
5 described below.

#### 6 **1-to-1 Overall Compatibility Score Calculation**

7 **[00288]** The results of the rule and workload compatibility analyses are combined to compute  
8 an overall compatibility score for each server pair. These scores preferably range from 0 to  
9 100, where higher scores indicate greater compatibility and 100 indicating complete or 100%  
10 compatibility.

11 **[00289]** As noted above, the analysis input can include importance factors. For each rule set  
12 28 and workload type 30 included in the analysis, an importance factor 88 can be specified to  
13 adjust the relative contribution of the corresponding score to the overall score. The importance  
14 factor 88 is an integer, preferably ranging from 0 to 10. A value of 5 has a neutral effect on the  
15 contribution of the component score to the overall score. A value greater than 5 increase the  
16 importance whereas a value less than 5 decreases the contribution.

17 **[00290]** The overall compatibility score for the system pair is computed by combining the  
18 individual compatibility scores using a formula specified by an overlay algorithm which performs  
19 a mathematical operation such as multiply or average, and the score is recorded.

20 **[00291]** Given the individual rule and workload compatibility scores, the overall compatibility  
21 score can be calculated by using the importance factors as follows for a “multiply” overlay:

$$22 \quad O = 100 * \frac{100 - (100 - S_1) * \frac{F_1}{5}}{100} * \frac{100 - (100 - S_2) * \frac{F_2}{5}}{100} * \dots * \frac{100 - (100 - S_n) * \frac{F_n}{5}}{100}$$

23 **[00292]** where  $O$  is the overall compatibility score,  $n$  is the total number of rule sets 28 and  
24 workload types 30 included in the analysis,  $S_i$  is the compatibility score of the  $i^{\text{th}}$  rule set 28 or  
25 workload type 30 and  $F_i$  is the importance factor of the  $i^{\text{th}}$  rule set 28 or workload type 30.

[00293] It can be appreciated that setting the importance factor 88 to zero eliminates the contribution of the corresponding score to the overall score. Also, setting the importance factor to a value less than 5 reduces the score penalty by 20% to %100 of its original value.

[00294] For example, a compatibility score of 90 implies a score penalty of 10 (i.e.  $100 - 90 = 10$ ). Given an importance factor of 1, the adjusted score is 98 (i.e.  $100 - 10 * 1/5 = 100 - 2 = 98$ ). On the other hand, setting the importance factor to a value greater than 5 increases the score penalty by 20% to 100% of its original value. Using the above example, given a score of 90 and an importance factor of 10, the adjusted score would be 80 (i.e.  $100 - 10 * 10/5 = 100 - 20 = 80$ ). The range of importance factors 88 and their impact on the penalty scores are summarized below in Table 13.

Importance Factor	Affect on Score Penalty	Original Score	Original Score Penalty	Adjusted Penalty Score	Adjusted Score
0	-100%	90	10	0	100
1	-80%	90	10	2	98
2	-60%	90	10	4	96
3	-40%	90	10	6	94
4	-20%	90	10	8	92
5	0	90	10	10	90
6	+20%	90	10	12	88
7	+40%	90	10	14	86
8	+60%	90	10	16	84
9	+80%	90	10	18	82
10	+100%	90	10	20	80

Table 13: Importance Factors

[00295] If more systems 16 are to be examined, the above process is repeated. When overall compatibility analysis scores for all server pairs have been computed, the map 36 is displayed graphically (see Figure 6) and each cell 92 is linked to a scorecard 98 that provides further information (Figure 23). The further information can be viewed by selecting the cell 92. A sorting algorithm is then preferably executed to configure the map 36 as shown in Figure 6.

### Visualization and Mapping of Compatibility Scores

[00296] As mentioned above, the 1-to-1 compatibility analyses of N system computes NxN compatibility scores by individually considering each system 16 as a consolidation source and

1 as a target. Preferably, the scores range from 0 to 100 with higher scores indicating greater  
2 system compatibility. The analysis will thus also consider the trivial cases where systems 16  
3 are consolidated with themselves and would be given a maximum score, e.g. 100. For display  
4 and reporting purposes, the scores are preferably arranged in an NxN map form.

## 5 **Rule-based Compatibility Analysis Visualization**

6 **[00297]** An example of a rule-based compatibility analysis map 32 is shown in Figure 4. The  
7 compatibility analysis map 32 provides an organized graphical mapping of system compatibility  
8 for each source/target system pair on the basis of configuration data. The map 32 shown in  
9 Figure 4 is structured having each system 16 in the environment 12 listed both down the  
10 leftmost column and along the uppermost row. Each row represents a consolidation source  
11 system, and each column represents the possible consolidation target. Each cell 92 contains  
12 the score corresponding to the case where the row system is consolidated onto the column  
13 (target) system 16.

14 **[00298]** The preferred output shown in Figure 4 arranges the systems 16 in the map 32 such  
15 that a 100% compatibility exists along the diagonal where each server is naturally 100%  
16 compatible with itself. The map 32 is preferably displayed such that each cell 92 includes a  
17 numerical score and a shade of a certain colour. As noted above, the higher the score (from  
18 zero (0) to one hundred (100)), the higher the compatibility. The scores are pre-classified into  
19 predefined ranges that indicate the level of compatibility between two systems 16. Each range  
20 maps to a corresponding colour or shade for display in the map 32. For example, the following  
21 ranges and colour codes can be used: score = 100, 100% compatible, dark green; score = 75-  
22 99, highly compatible, green; score = 50-74, somewhat compatible, yellow; score = 25-49, low  
23 compatibility, orange; and score = 0-24, incompatible, red.

24 **[00299]** The above ranges are only one example. Preferably, the ranges can be adjusted to  
25 reflect more conservative and less conservative views on the compatibility results. The ranges  
26 can be adjusted using a graphical tool similar to a contrast slider used in graphics programs.  
27 Adjustment of the slider would correspondingly adjust the ranges and in turn the colours. This  
28 allows the results to be tailored to a specific situation.

1 [00300] It is therefore seen that the graphical output of the map 32 provides an intuitive  
2 mapping between the source/target pairs in the environment 12 to assist in visualizing where  
3 compatibilities exist and do not exist. In Figure 4, it can be seen that a system pair having a  
4 score = 100 indicates complete compatibility between the two systems 16 for the particular  
5 strategy being observed, e.g. based on a chosen rule set(s) 28. It can also be seen that a  
6 system pair with a relatively lower score such as 26 is relatively less compatible for the strategy  
7 being observed.

8 [00301] The detailed differences shown in Figures 19 can be viewed by clicking on the  
9 relevant cell 92. Selecting a particular cell 92 accesses the detailed differences table 100  
10 shown in Figure 19 which shows the important differences between the two systems, the rules  
11 and weights that were applied and preferably a remediation cost for making the servers more  
12 compatible. As shown in Figure 19, a summary differences table 102 may also be presented  
13 when selecting a particular cell 92, which lists the description of the differences and the weight  
14 applied for each difference, to give a high level overview of where the differences arise.

## 15 **System Workload Compatibility Visualization**

16 [00302] An example workload compatibility analysis map 34 is shown in Figure 5. The map  
17 34 is the analog of the map 32 for workload analyses. The map 34 includes a similar graphical  
18 display that indicates a score and a colour or shading for each cell to provide an intuitive  
19 mapping between candidate source/target server pairs. The workload data is obtained using  
20 tools such as the table 76 shown in Figure 8 and corresponds to a particular workload factor,  
21 e.g. CPU utilization, network I/O, disk I/O, etc. A high workload score indicates that the  
22 candidate server pair being considered has a high compatibility for accommodating the  
23 workload on the target system. The specific algorithms used in determining the score are  
24 discussed in greater detail below. The servers are listed in the upper row and leftmost column  
25 and each cell 92 represents the compatibility of its corresponding server pair in the map. It can  
26 be appreciated that a relatively high score in a particular cell 92 indicates a high workload  
27 compatibility for consolidating to the target server, and likewise, relatively lower scores, e.g. 42  
28 indicate lower workload compatibility for a particular system pair.



1 **[00303]** The workload analysis details shown in Figures 22 can be viewed by clicking on the  
2 relevant cell 92. Selecting a particular cell 92 accesses the information about the workload  
3 analysis that generated the score shown in Figure 22, which shows the key stacked workload  
4 values, the workload benchmarks that were applied and preferably workload charts for each  
5 system separately, and stacked together.

6

## 7 **Overall Compatibility Visualization**

8 **[00304]** An example overall compatibility analysis map 36 is shown in Figure 6. The map 36  
9 comprises a similar arrangement as the maps 32 and 34, which lists the servers in the  
10 uppermost row and leftmost column to provide 100% compatibility along the diagonal.  
11 Preferably the same scoring and shading convention is used by all types of compatibility maps.  
12 The map 36 provides a visual display of scoring for candidate system pairs that considers the  
13 rule-based compatibility maps 32 and the workload compatibility maps 34.

14 **[00305]** The score provided in each cell 92 indicates the overall compatibility for  
15 consolidating systems 16. It should be noted that in some cases two systems 16 can have a  
16 high configuration compatibility but a low workload compatibility and thus end up with a reduced  
17 or relatively low overall score. It is therefore seen that the map 36 provides a comprehensive  
18 score that considers not only the compatibility of systems 28 at the setting level but also in its  
19 utilization. By displaying the configuration maps 32, business maps, workload maps 34 and  
20 overall map 36 in a consolidation roadmap, a complete picture of the entire system can be  
21 ascertained in an organized manner. The maps 32, 34 and 36 provide a visual representation  
22 of the compatibilities and provide an intuitive way to evaluate the likelihood that systems can be  
23 consolidated, to analyse compliance and drive remediation measures to modify systems 16 so  
24 that they can become more compatible with other systems 16 in the environment 12. It can  
25 therefore be seen that a significant amount of quantitative data can be analysed in a convenient  
26 manner using the graphical maps 32, 34 and 36, and associated reports and graphs (described  
27 below).

28 **[00306]** For example, a system pair that is not compatible only for the reason that certain  
29 critical software upgrades have not been implemented, the information can be uncovered by the

map 32, and then investigated, so that upgrades can be implemented, referred to herein as remediation. Remediation can be determined by modeling cost of implementing upgrades, fixes etc that are needed in the rule sets. If remediation is then implemented, a subsequent analysis may then show the same server pair to be highly compatible and thus suitable candidates for consolidation.

**[00307]** The overall analysis details 98 shown in Figures 23 can be viewed by clicking on the relevant cell 92. Selecting a particular cell 92 accesses the information about the rule-based and workload analyses that generated the score shown in Figure 23, which shows the key differences and stacked workload values and charts.

### **Sorting Examples**

**[00308]** The maps 32, 34 and 36 can be sorted in various ways to convey different information. For example, sorting algorithms such as a simple row sort, a simple column sort and a sorting by group can be used.

**[00309]** A simple row sort involves computing the total scores for each source system (by row), and subsequently sorting the rows by ascending total scores. In this arrangement, the highest total scores are indicative of source systems that are the best candidates to consolidate onto other systems.

**[00310]** A simple column sort involves computing the total scores for each target system (by column) and subsequently sorting the columns by ascending total score. In this arrangement, the highest total scores are indicative of the best consolidation target systems.

**[00311]** Sorting by group involves computing the difference between each system pair, and arranging the systems to minimize the total difference between each pair of adjacent systems in the map. The difference between a system pair can be computed by taking the square root of the sum of the squares of the difference of a pair's individual compatibility score against each other system in the analysis. In general, the smaller the total difference between two systems, the more similar the two systems with respect to their compatibility with the other systems. The group sort promotes the visualization of the logical breakdown of an environment by producing clusters of compatible systems 18 around the map diagonal. These clusters are indicative of

1 compatible regions in the environment 12. In virtualization analysis, these are often referred to  
2 as “affinity regions.”

### 3 **Analysis Results-User Interaction**

4 **[00312]** It can also be seen that users can customize and interact with the analysis program  
5 10 during the analysis procedure to sort map scores, modify colour coding (as discussed  
6 above), show/specify source/targets, adjust weights and limits etc., and to show workload  
7 charts. This interaction enables the user to modify certain parameters in the analysis to take  
8 into account differences in objectives and different environments to provide a more accurate  
9 analysis.

### 10 **Multi-Dimensional Compatibility Analysis**

11 **[00313]** The high level process flow of the multi-dimensional compatibility analysis is  
12 illustrated in Figure 24(a). In addition to the common compatibility analysis input, this analysis  
13 takes a consolidation solution as input. In contrast to the 1-to-1 compatibility analysis that  
14 evaluates the compatibility of each system pair, this multi-dimensional compatibility analysis  
15 evaluates the compatibility of each transfer set 23 specified in the consolidation solution.

16 **[00314]** The multi-dimensional compatibility analysis extends the original 1-to-1 compatibility  
17 analysis that assessed the transfer of a single source entity to a target. As with the 1-to-1  
18 compatibility analysis, the multi-dimensional analysis produces an overall compatibility  
19 scorecard 98 based on technical, business and workload constraints. Technical and business  
20 compatibility are evaluated through one or more rule sets 28. Workload compatibility is  
21 assessed through one or more workload types 30.

22 **[00315]** This produces multi-dimensional compatibility analysis results, which includes multi-  
23 dimensional compatibility scores, maps and details based on the proposed transfer sets 23.

24 **[00316]** For each transfer set 23, a compatibility score is computed for each rule set 28 and  
25 workload type 30. An overall compatibility score the transfer set 23 is then derived from the  
26 individual scores. For example, consider an analysis comprised of 20 systems, 3 rule sets, 2  
27 workload types and 5 transfer sets 23:

- 1       • Systems: S1, S2, S3, ... S20
- 2       • Analyzed with rule sets: R1, R2, R3
- 3       • Analyzed with workload types: W1, W2
- 4       • Transfer sets:
  - 5           ○ T1 (S1, S2, S3 stacked onto S4)
  - 6           ○ T2 (S5, S6, S7, S8, S9 stacked onto S10)
  - 7           ○ T3 (S11, S12, S13 stacked onto S14)
  - 8           ○ T4 (S15 stacked onto S16)
  - 9           ○ T5 (S17 stacked onto S18)
- 10      • Unaffected systems: S19, S20

11   **[00317]**   For the above example, the multi-dimensional compatibility analysis would comprise  
12   5 overall compatibility scores (one for each transfer set), 15 rule-based compatibility scores (5  
13   transfer sets x 3 rule sets), and 10 workload compatibility scores (5 transfer sets x 2 workload  
14   types).

15   **[00318]**   The systems 16 referenced in the transfer sets 23 of the consolidation solution  
16   correspond to the systems 16 specified in the analysis input. Typically, the consolidation  
17   solution is manually specified by the user, but may also be based on the consolidation analysis,  
18   as described later.

19   **[00319]**   In addition to evaluating the compatibility of the specified transfer sets, the  
20   compatibility analysis can evaluate the incremental effect of adding other source systems  
21   (specified in the analysis input) to the specified transfer sets. From the above example  
22   consisting of systems S1 to S20, the compatibility of the source systems S5 to S20 can be  
23   individually assessed against the transfer set T1. Similarly, the compatibility of the source  
24   systems S1 to S4 and S11 to S20 can be assessed with respect to the transfer set T2.

25   **[00320]**   Similar to the 1-to-1 compatibility analysis, this analysis involves 4 stages. The first  
26   stage is gets the system data 18 required for the analysis to produce the analysis data  
27   snapshot. The second stage performs a multi-dimensional compatibility analysis for each rule  
28   set 28 for each transfer set 23. Next, the workload compatibility analysis is performed for each  
29   workload type 30 for each transfer set 23. Finally, these analysis results are combined to  
30   determine overall compatibility of each transfer set.

1   **[00321]**   The multi-dimensional rule-based compatibility analysis differs from the 1-to-1  
2   compatibility analysis since a transfer set can include multiple sources (N) to be transferred to  
3   the target, the analysis may evaluate the compatibility of sources amongst each other (N-by-N)  
4   as well as each source against the target (N-to-1) as will be explained in greater detail below.  
5   The multi-dimensional workload and overall compatibility analysis algorithms are analogous to  
6   their 1-to-1 analysis counterparts.

## 7   **Multi-dimensional Rule-based Compatibility Analysis**

8   **[00322]**   To assess the compatibility of transferring multiple source entities (N) to a target (1),  
9   the rule-based analysis can compute a compatibility score based on a combination of N-to-1  
10   and N-by-N compatibility analyses. An *N-to-1 intercompatibility* analysis assesses each source  
11   system against the target. An *N-by-N intracompatibility* analysis evaluates each source system  
12   against each of the other source systems. This is illustrated in a process flow diagram in Figure  
13   24(b).

14   **[00323]**   Criteria used to choose when to employ an N-to-1, N-by-N or both compatibility  
15   analyses depend upon the target type (concrete or malleable), consolidation strategy (stacking  
16   or virtualization), and nature of the rule item.

17   **[00324]**   Concrete target models are assumed to rigid with respect to their configurations and  
18   attributes such that source entities to be consolidated are assumed to be required to conform to  
19   the target. To assess transferring source entities onto a concrete target, the N-to-1 inter-  
20   compatibility analysis is performed. Alternatively, malleable target models are generally  
21   adaptable in accommodating source entities to be consolidated. To assess transferring source  
22   entities onto a malleable target, the N-to-1 inter-compatibility analysis can be limited to the  
23   aspects that are not malleable.

24   **[00325]**   When *stacking* multiple source entities onto a target, the source entities and targets  
25   coexist in the same operating system environment. Because of this inherent sharing, there is  
26   little flexibility in accommodating individual application requirements, and thus the target is  
27   deemed to be concrete. As such, the multi-dimensional analysis considers the N-to-1 inter-  
28   compatibility between the source entities and the target as the primary analysis mechanism, but,

1 depending on the rule sets in use, may also consider the N-by-N intra-compatibility of the  
2 source entities amongst each other.

3 **[00326]** When virtualizing multiple source entities onto a target, the source entities are often  
4 transferred as separate virtual images that run on the target. This means that there is high  
5 isolation between operating system-level parameters, and causes virtualization rule sets to  
6 generally ignore such items. What is relevant, however, is the affinity between systems at the  
7 hardware, storage and network level, and it is critical to ensure that the systems being  
8 combined are consistent in this regard. In general, this causes the multi-dimensional analysis to  
9 focus on the N-to-N compatibility within the source entities, although certain concrete aspects of  
10 the target systems (such as processor architecture) may still be subjected to (N-to-1) analysis.

#### 11 **N-to-1 Intercompatibility Score Calculation**

12  
13 **[00327]** N-to-1 intercompatibility scores reflect the compatibility between N source entities  
14 and a single target as defined by a transfer set 23 as shown in Figure 24(c). This analysis is  
15 performed with respect to a given rule set and involves: 1) Separately evaluate each source  
16 entity against the target with the rule set to compile a list of the union of all matched rule items;  
17 2) For each matched rule item, use the rule item's mutex (mutually exclusive) flag to determine  
18 whether to count duplicate matched rule items once or multiple times; and 3) Compute the score  
19 based on the product of all the penalty weights associated with the valid matched rule items:

20 **[00328]**  $S = 100 * (1 - w_1) * (1 - w_2) * (1 - w_3) * \dots * (1 - w_n);$

21 **[00329]** where S is the score and  $w_i$  is the penalty weight of the  $i^{th}$  matched item.

#### 22 **N-to-1 Score Example**

23  
24 **[00330]** For example, assuming a transfer set t1 comprises of systems s1, s2 and s3 stacked  
25 onto s16, the union of matched rule items is based on evaluating s1 against s16, s2 against s16  
26 and s3 against s16. Assuming this analysis produces a list of matched items comprising those  
27 shown below in Table 14:

#	Source	Target	Rule Item	Source Value	Target Value	Mutex	Weight
1	S1	S16	Different Patch Levels	SP2	SP3	Y	0.03

2	S1	S16	Different Default Gateways	10.0.0.1	192.168.0.1	N	<b>0.02</b>
3	S2	S16	Different Patch Levels	SP2	SP3	Y	0.03
4	S3	S16	Different Patch Levels	SP4	SP3	Y	0.03
5	S3	S16	Different Default Gateways	10.0.0.1	192.168.0.1	N	0.02
6	S3	S16	Different Boot Settings	TRUE	FALSE	N	<b>0.01</b>

*Table 14: Matched Items – Multi-Dimensional N-to-1 example*

**[00331]** Although the target and source values vary, items 1, 3 and 4 apply to the same rule item and are treated as duplicates due to the enabled mutex flag so that the penalty weight is applied only once. Items 2 and 5 apply to the same item and are exact duplicates (same values) so the penalty weight is applied only once, even though the mutex flag is not enabled for this item. As such, the compatibility score is computed as follows:

**[00332]**  $S = 100 * (1 - 0.03) * (1 - 0.02) * (1 - 0.01) = 94$

#### **N-by-N Intracompatibility Score Calculation**

**[00333]** N-by-N intracompatibility scores reflect the compatibility amongst N source entities with respect to a given rule set as shown in Figure 24(d). This analysis involves: 1) Separately evaluate each source entity against the other source entities with the rule set to compile a list of the union of all matched rule items; 2) For each matched rule item, use the rule item's mutex (mutually exclusive) flag to determine whether to count duplicate matched rule items once or multiple times; and 3) Compute the score based on the product of all the penalty weights associated with the valid matched rule items:

**[00334]**  $S = 100 * (1 - w_1) * (1 - w_2) * (1 - w_3) * \dots * (1 - w_n);$

**[00335]** where S is the score and  $w_i$  is the penalty weight of the  $i^{th}$  matched item.

#### **N-by-N Score Example**

**[00336]** For example, assuming a transfer set t1 comprises of systems s1, s2 and s3 stacked onto s16, the union of matched rule items is based on evaluating s1 against s2, s2 against s1,

- 1 s2 against s3, s3 against s2, s1 against s3 and s3 against s1. Assuming this analysis produces  
2 a list of matched items comprising those shown below in Table 15:

#	Source	Target	Rule Item	Source Value	Target Value	Mutex	Weight
1	S1	S3	Different Patch Levels	SP2	SP4	Y	<b>0.03</b>
2	S3	S1	Different Patch Levels	SP4	SP2	Y	0.03
3	S2	S3	Different Patch Level	SP2	SP4	Y	0.03
4	S3	S2	Different Patch Level	SP4	SP2	Y	0.03
5	S1	S2	Different Default Gateways	10.0.0.1	192.168.0.1	N	<b>0.02</b>
6	S2	S1	Different Default Gateways	192.168.0.1	10.0.0.1	N	0.02
7	S3	S2	Different Default Gateways	10.0.0.1	192.168.0.1	N	0.02
8	S2	S3	Different Default Gateways	192.168.0.1	10.0.0.1	N	0.02
9	S1	S3	Different Boot Settings	TRUE	FALSE	N	<b>0.01</b>
10	S3	S1	Different Boot Settings	FALSE	TRUE	N	0.01
11	S2	S3	Different Boot Settings	TRUE	FALSE	N	0.01
12	S3	S2	Different Boot Settings	FALSE	TRUE	N	0.01

3  
4 *Table 15: Matched Items – Multi-Dimensional N-by-N example*  
5

- 6 **[00337]** Items 1-4, 5-8 and 9-12, respectively are duplicates as they apply to the same rule  
7 items and have the same values. The compatibility score is computed as follows:

- 8 **[00338]**  $S = 100 * (1 - 0.03) * (1 - 0.02) * (1 - 0.01) = 94.$

## 9 **Multi-dimensional Workload Compatibility Analysis**

- 10 **[00339]** A procedure for stacking the workload of multiple source systems on a target system  
11 is shown in Figure 25. The multi-stacking procedure considers the workload limits that is  
12 specified using the program 150, the per-system workload benchmarks (e.g. CPU power), and  
13 the data snapshot containing the workload data for the source and target systems 16 that  
14 comprise the transfer sets 23 to analyze. The analysis may evaluate transfer sets 23 with any  
15 number of sources stacked on a target for more than one workload type 30.



1 [00340] For each workload type 30, each transfer set 23 is evaluated. For each source in the  
2 transfer set 23, the system benchmarks are used to normalize the workloads as discussed  
3 above, and the source workload is stacked on the target system. Once every source in the set  
4 is stacked on the target system, the workload compatibility score is computed as discussed  
5 above. The above is repeated for each transfer set 23. A multi-stack report may then be  
6 generated, which gives a workload compatibility scorecard for the transfer sets along with  
7 workload compatibility scoring details and normalized multi-stacked workload charts.

8 [00341] Sample multi-dimensional compatibility analysis results are shown in Figure 26-28.  
9 Figure 26 shows a compatibility score map 110 with the analyzed transfer sets. Figures 27 and  
10 28 show the summary 112 and charts 114 from the multi-stack workload compatibility analysis  
11 details.

## 12 **Consolidation Analysis**

13 [00342] The consolidation analysis process flow is illustrated as D in Figure 9. Using the  
14 common compatibility analysis input and additional auto fit inputs, this analysis seeks the  
15 consolidation solution that maximizes the number of transfers while still fulfilling the several pre-  
16 defined constraints. The consolidation analysis repeatedly employs the multi-dimensional  
17 compatibility analysis to assess potential transfer set candidates. The result of the consolidation  
18 analysis comprises of the consolidation solution and the corresponding multi-dimensional  
19 compatibility analysis.

20 [00343] A process flow of the consolidation analysis is shown in Figure 29.

21 [00344] The auto fit input includes the following parameters: transfer type (e.g. virtualize or  
22 stacking), minimum allowable overall compatibility score for proposed transfer sets, minimum  
23 number of source entities to transfer per target, maximum number of source entities to transfer  
24 per target, and quick vs. detailed search for the best fit. Target systems can also be designated  
25 as malleable or concrete models.

26 [00345] As part of a compatibility analysis input specification, systems can be designated for  
27 consideration as a source only, as a target only or as either a source or a target. These  
28 designations serve as constraints when defining transfers in the context of a compatibility

1 analysis. The analysis can be performed on an analysis with pre-existing source-target  
2 transfers. Analyses containing systems designated as source or target-only (and no source or  
3 target designations) are referred to as “directed analysis.”

4 **[00346]** The same transfer type may be assumed for all automatically determined transfers  
5 within an analysis. The selected transfer type affects how the compatibility analysis is  
6 performed. The minimum overall compatibility score dictates the lowest allowable score  
7 (sensitivity) for the transfer sets to be included in the consolidation solution. Lowering the  
8 minimum allowable score permits a greater degree of consolidation and potentially more  
9 transfers. The minimum and maximum limits for source entities to be transferred per target  
10 (cardinality) define additional constraints on the consolidation solution. The quick search  
11 performs a simplified form of the auto fit calculation, whereas the detailed search performs a  
12 more exhaustive search for the optimal solution. This distinction is provided for quick  
13 assessments of analyses containing a large numbers of systems to be analyzed.

14 **[00347]** The transfer auto fit problem can be considered as a significantly more complex form  
15 of the classic bin packing problem. The bin packing problem involves packing objects of  
16 different volumes into a finite number of bins of varying volumes in a way that minimizes the  
17 number of bins used. The transfer auto fit problem involves transferring source entities onto a  
18 finite number of targets in a way that maximizes the number of transfers. The basis by which  
19 source entities are assessed to “fit” onto targets is based on the highly nonlinear compatibility  
20 scores of the transfer sets. As a further consideration, which can increase complexity, some  
21 entities may be either source or targets. The auto fit problem is a combinatorial optimization  
22 problem that is computationally expensive to solve through a brute force search of all possible  
23 transfer set permutations. Although straightforward to implement, this exhaustive algorithm is  
24 impractical due to its excessive computational and resource requirements for medium to large  
25 data sets. Consequently, this class of problem is most efficiently solved through heuristic  
26 algorithms that yield good but likely suboptimal solutions.

27 **[00348]** There are four variants of the heuristic auto fit algorithm that searches for the best  
28 consolidation solution:

29 **[00349]** Quick Stack – quick search for a stacking-based consolidation solution;

1 [00350] Detailed Stack – more comprehensive search for a stacking-based consolidation  
2 solution;

3 [00351] Quick Virtualization – quick search for a virtualization-based consolidation solution;  
4 and

5 [00352] Detailed Virtualization – more comprehensive search for a virtualization-based  
6 consolidation solution.

7 [00353] The auto fit algorithms are iterative and involve the following common phases:

8 **Compile Valid Source and Target Candidates**  
9

10 [00354] The initial phase filters the source and target lists by eliminating invalid entity  
11 combinations based on the 1-to-1 compatibility scores that are less than the minimum allowable  
12 compatibility score. It also filters out entity combinations based on the source-only or target-  
13 only designations.

14 **Set up Auto Fit Parameters**

15 [00355] The auto fit algorithm search parameters are then set up. The parameters can vary  
16 for each algorithm. Example search parameters include the order by which sources and targets  
17 are processed and the criteria for choosing the best transfer set 23.

18 **Compile Candidate Transfer Sets**  
19

20 [00356] The next phase compiles a collection of candidate transfer sets 23 from the available  
21 pool of sources and targets. The candidate transfer sets 23 fulfill the auto fit constraints (e.g.  
22 minimum allowable score, minimum transfers per transfer set, maximum transfers per transfer  
23 set). The collection of candidate transfer sets may not represent a consolidation solution (i.e.  
24 referenced sources and targets may not be mutually exclusive amongst transfer sets 23). The  
25 algorithms vary in the criteria employed in composing the transfer sets. In general, the detailed  
26 search algorithms generate more candidate transfer sets than quick searches in order to assess  
27 more transfer permutations.

28 **Choose Best Candidate Transfer Set**  
29

1 [00357] The next phase compares the candidate transfer sets 23 and chooses the “best”  
2 transfer set 23 amongst the candidates. The criteria employed to select the best transfer set 23  
3 varies amongst the algorithms. Possible criteria include the number of transfers, the  
4 compatibility score, general compatibility of entities referenced by set and whether the transfer  
5 set target is a target-only.

#### 6 **Add Transfer Set to Consolidation Solution**

7 [00358] Once a transfer set is chosen, it is added to the intermediate consolidation solution.  
8 The entities referenced by the transfer set are removed from the list of available sources and  
9 targets and the three preceding phases are repeated until the available sources or targets are  
10 consumed.

#### 11 **Compile Consolidation Solution Candidates**

12

13 [00359] Once all the sources or targets are consumed or ruled out, the consolidation solution  
14 is considered complete and added to a list of candidate solutions. Additional consolidation  
15 solutions can be compiled by iterating from the second phase with variations to the auto fit  
16 parameters for compiling and choosing candidate transfer sets.

#### 17 **Choose Best Consolidation Solution**

18

19 [00360] The criteria used to stop compiling additional solutions can be based on detecting  
20 that the solution is converging on a pre-defined maximum number of iterations.

21 [00361] Finally, the best candidate consolidation solution can be selected based on some  
22 criteria such as the largest reduction of systems with the highest average transfer set scores.  
23 The general algorithm is shown in the flow diagram depicted in Figure 30.

#### 24 **Auto Fit Example**

25 [00362] The following example demonstrates how a variant of the auto fit algorithm searches  
26 for a consolidation solution for a compatibility analysis comprised of 20 systems (S1, S2, S3, ...  
27 S20) where 15 systems (S1-15) have been designated to be source-only and 5 (S16-20) to be  
28 target-only. For this example, the auto fit input parameters are: 1) Transfer type: stacking; 2)

1 Minimum allowable compatibility score: 80; 3) Minimum sources per target: 1; 4) Maximum  
2 sources per target: 5; and 6) Search type: quick.

3 **[00363]** The auto fit would be performed as follows:

4 **1 – Compile Valid Source and Target Candidates**  
5

6 **[00364]** For each target (S16-S20), compile the list of possible sources. Since some of the 1-  
7 to-1 source-target compatibility scores are less than 80 (specified minimum allowed score), the  
8 following source-target candidates are found as shown in Table 16.

Target	Sources (1-to-1 scores)
S16	S1 (100), S2 (95), S3 (90), S4 (88), S5 (88), S6 (85), S7 (82), S8 (81)
S17	S1, S2, S3, S5, S6, S7, S8, S9, S10
S18	S1, S2, S3, S6, S7, S8, S9, S10, S11
S19	S9, S10, S11, S12, S13, S14, S15
S20	S9, S10, S11, S12, S13, S14, S15

9 *Table 16: Target-Source Candidates*  
10

11 **2 – Setup Auto Fit Parameters**  
12

13 **[00365]** The auto fit search parameters initialized for this iteration assume the following: 1)  
14 When compiling candidate transfer sets 23, sort source systems in descending order when  
15 stacking onto target; and 2) When choosing the best transfer set 23, choose set with most  
16 transfers and if there is a tie, choose the set 23 with the higher score.

17 **3 – Compile Candidate Transfer Sets**  
18

19 **[00366]** The candidate transfer sets 23 are then compiled from the source-target candidates.  
20 For each target, the candidate sources are sorted in descending order and are incrementally  
21 stacked onto the target. The transfer set score is computed as each source is stacked and if  
22 the score is above the minimum allowable score, the source is added to the transfer set 23. If  
23 the score is below the minimum allowable, the source is not included in the set. This process is  
24 repeated until all the sources have been attempted or the maximum number of sources per  
25 target has been reached.

26 **[00367]** For this quick search algorithm, only a single pass is performed for each target so  
27 that only one transfer set candidate is created per target. Other search algorithms can perform

1 multiple passes per target to assess more transfer permutations. The candidate transfer sets  
 2 23 are shown below in Table 17.

Transfer Set	Target	Sources	# Sources	Score
T1	S16	S1, S2, S3, S4, S5	5	82
T2	S17	S1, S2, S3, S5	4	81
T3	S18	S1, S2, S3, S6, S7, S10	6	85
T4	S19	S9, S10, S11, S12, S13, S14	6	83
T5	S20	S9, S10, S11, S12, S13, S14	6	84

Table 17: Candidate Transfer Sets

#### 4 – Choose Best Candidate Transfer Set

[00368] The transfer set T3 is chosen as the best transfer set from the candidates. For this example, the criteria are the greatest number of sources and if tied, the highest score.

#### 5 – Add Transfer Set to Consolidation Solution

[00369] The transfer set T3 is added to the consolidation solution, and the entities referenced by this transfer set are removed from the target-source candidates list. The updated target-source candidates are shown below in Table 18.

Target	Sources (1-to-1 scores)
S16	S4, S5, S8
S17	S5, S8, S9
S19	S9, S11, S12, S13, S14, S15
S20	S9, S11, S12, S13, S14, S15

Table 18: Updated Target-Source Candidates

[00370] Since there are available target-source candidates, another iteration to compile candidate transfer sets and choose the best set is performed. These iterations are repeated until there are no more target-source candidates, at which time a consolidation solution is considered complete. The consolidation solution candidates are shown below in Table 19.

Target	Sources	# Sources	Score
S16	S4, S5, S8	3	86
S18	S1, S2, S3, S6, S7, S10	6	85
S19	S9, S11, S12, S15	6	83
S20	S13, S14	2	87

Table 19: Consolidation Solution Candidates

## 6 – Compile Consolidation Solution Candidates

[00371] The consolidation solution is then saved, and if warranted by the selected algorithm, another auto fit can be performed with a different search parameters (e.g. sort source systems in ascending order before stacking onto target) to generate another consolidation solution.

## 7 – Choose Best Consolidation Solution

[00372] The consolidation solution candidates are compared and the best one is chosen based on some pre-defined criteria. A sample consolidation solution summary 116 is shown in Figure 31.

## Example Compatibility Analysis

[00373] Compatibility and consolidation analyses are described by way of example only below to illustrate an end-to-end data flow in conducting complete analyses for an arbitrary environment 12. These analyses are performed through the web client user interface 74. These examples assume that the requisite system data 18 for the analyses have already been collected and loaded into the data repository 54 and caches 56 and 58.

### 1-to-1 Compatibility Analysis Example

[00374] This type of analysis typically involves of the following steps: 1) Create a new analysis in the desired analysis folder; 2) Specify the mandatory analysis input; 3) Optionally, adjust analysis input parameters whose default values are not desired; 4) Run the analysis; and 5) View the analysis results.

[00375] The analysis can be created in an analysis folder on a computer 14, to help organize the analyses. Figure 32 shows an example analysis folder hierarchy containing existing analyses.

[00376] An analysis is created through a web page dialog as shown in the screen shot in Figure 33. The analysis name is preferably provided along with an optional description. Other analysis inputs comprise a list of systems 16 to analyze and one or more rule sets 28 and/or workload types 30 to apply to evaluate the 1-to-1 compatibility of the systems 16.

1 [00377] In this example, two rule sets 28 and one workload type 30 are selected. The  
2 following additional input may also be specified if the default values are not appropriate: 1)  
3 Adjustment of one or more rule weights, disable rules, or modify remediation costs in one or  
4 more of the selected rule sets; 2) Adjustment of the workload data date range; 3) Adjustment of  
5 one or more workload limits of the selected workload types; 4) Selection of different workload  
6 stacking and scoring parameters; and 5) Changing the importance factors for computing the  
7 overall scores. Figures 34, 35 and 36 show the pages used to customize rule sets 28,  
8 workloads 30 and importance factors 88, respectively. Once the analysis input is specified, the  
9 analysis can be executed. The analysis results can be viewed through the web client user  
10 interface 44/74. The results include the 1-to-1 compatibility maps for the overall and one for  
11 each rule set 28 and workload type 30. Such compatibility maps and corresponding analysis  
12 map details are shown in Figures 37 to 45.

### 13 **Multi-dimensional Compatibility Analysis Example**

14 [00378] Continuing with the above example, one or more transfer sets 23 can be defined and  
15 the transfer sets 23 evaluated through a multi-dimensional compatibility analysis. The transfer  
16 sets 23 can be defined through the user interface, and are signified by one or more arrows that  
17 connect the source to the target. The color of the arrow can be used to indicate the transfer  
18 type (see Figure 46). Once the transfer sets 23 have been defined, the net effect mode may be  
19 selected to run the multi-dimensional analysis. In the resulting compatibility maps, the score in  
20 the cells that comprise the transfer set 23 reflects the multi-dimensional compatibility score (see  
21 Figure 47).

22 [00379] The corresponding overall compatibility details report is shown in Figure 48. Note  
23 that there are two sources transferred to the single target.

### 24 **Consolidation Analysis Example**

25 [00380] Again continuing from the above example; a consolidation analysis may be  
26 performed to search for a consolidation solution by automating the analysis of the multi-  
27 dimensional scenarios. The input screen for the consolidation analysis is shown in Figure 49.  
28 Users can specify several parameters including the minimum allowable overall compatibility  
29 score and the transfer type. As well, users can choose to keep or remove existing transfer sets  
30 before performing the consolidation analysis.



1   **[00381]**   Once specified, the consolidation analysis can be executed and the chosen transfer  
2   sets 23 are presented in the map as shown in Figure 50. The multi-dimensional compatibility  
3   score calculations are also used. Finally, a consolidation summary is provided as shown in  
4   Figures 51 and 52. Figure 51 shows that should the proposed transfers be applied, 28 systems  
5   would be consolidated to 17 systems, resulting in a 39% reduction of systems. Figure 52 lists  
6   the actual transfers proposed by the consolidation analysis.

## 7   **Commentary**

8   **[00382]**   Accordingly, the compatibility and consolidation analyses can be performed on a  
9   collection of system to 1) evaluate the 1-to-1 compatibility of every source-target pair, 2)  
10   evaluate the multi-dimensional compatibility of specific transfer sets, and 3) to determine the  
11   best consolidation solution based on various constraints including the compatibility scores of the  
12   transfer sets. Though these analyses share many common elements, they can be performed  
13   independently.

14   **[00383]**   These analyses are based on collected system data related to their technical  
15   configuration, business factors and workloads. Differential rule sets and workload compatibility  
16   algorithms are used to evaluate the compatibility of systems. The technical configuration,  
17   business and workload related compatibility results are combined to create an overall  
18   compatibility assessment. These results are visually represented using color coded scorecard  
19   maps.

20   **[00384]**   It will be appreciated that although the system and workload analyses are performed  
21   in this example to contribute to the overall compatibility analyses, each analysis is suitable to be  
22   performed on its own and can be conducted separately for finer analyses. The finer analysis  
23   may be performed to focus on the remediation of only configuration settings at one time and  
24   spreading workload at another time. As such, each analysis and associated map may be  
25   generated on an individual basis without the need to perform the other analyses.

26   **[00385]**   It will be appreciated that each analysis and associated map discussed above may  
27   instead be used for purposes other than consolidation such as capacity planning, regulatory  
28   compliance, change, inventory, optimization, administration etc. and any other purpose where  
29   compatibility of systems is useful for analyzing systems 16. It will also be appreciated that the

1 program 10 may also be configured to allow user-entered attributes (e.g. location) that are not  
2 available via the auditing process and can factor such attributes into the rules and subsequent  
3 analysis.

4 **[00386]** It will further be appreciated that although the examples provided above are in the  
5 context of a distributed system of computer servers, the principles and algorithms discusses are  
6 applicable to any system having a plurality of sub-systems where the sub-systems perform  
7 similar tasks and thus are capable theoretically of being consolidation. For example, a local  
8 network having a number of personal computers (PCs) could also benefit from a consolidation  
9 analysis.

10 **[00387]** Although the invention has been described with reference to certain specific  
11 embodiments, various modifications thereof will be apparent to those skilled in the art without  
12 departing from the spirit and scope of the invention as outlined in the claims appended hereto.

**Claims:**

1. A computer-implemented method for determining a consolidation solution for a plurality of computer systems comprising:

a) obtaining a data set comprising a compatibility score for each pair of said plurality of computer systems, each said compatibility score having been computed using parameters of said plurality of computer systems to indicate a comparable compatibility of respective parameters of one of said plurality of computer systems with respect to another of said plurality of computer systems;

b) using said compatibility scores to determine one or more candidate transfer sets from said plurality of computer systems and, each candidate transfer set indicating one or more source computer systems having compatible parameters that enable the source computer system(s) to be transferred to a target computer system;

c) selecting a desired one of said one or more candidate transfer sets according to a predetermined selection criterion and adding said desired one of said one or more candidate transfer sets to a first candidate consolidation solution;

d) repeating b) and c) by, at each iteration, removing computer systems included in said desired one of said one or more candidate transfer sets and using said compatibility scores corresponding to remaining computer systems to generate at least one additional desired candidate transfer set to be added to said first candidate consolidation solution; and

e) providing said first candidate consolidation solution as a desired consolidation solution when no additional candidate transfer sets can be determined in b).

1    ABSTRACT

2

3    Compatibility and consolidation analyses can be performed on a collection of systems to  
4    evaluate the 1-to-1 compatibility of every source-target pair, evaluate the multi-dimensional  
5    compatibility of specific transfer sets, and to determine the best consolidation solution based on  
6    various constraints including the compatibility scores of the transfer sets. The analyses can be  
7    done together or be performed independently. These analyses are based on collected system  
8    data related to their technical configuration, business factors and workloads. Differential rule  
9    sets and workload compatibility algorithms are used to evaluate the compatibility of systems.  
10   The technical configuration, business and workload related compatibility results are combined to  
11   create an overall compatibility assessment. These results are visually represented using color  
12   coded scorecard maps

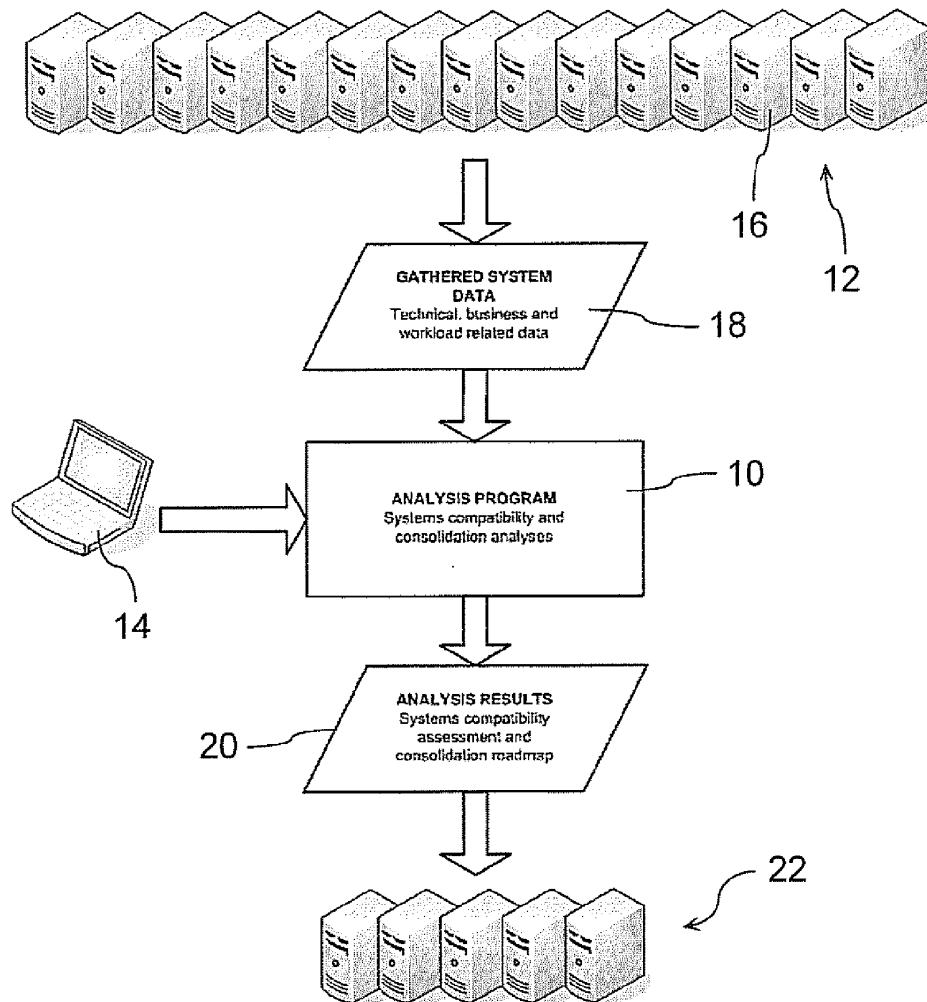


Figure 1

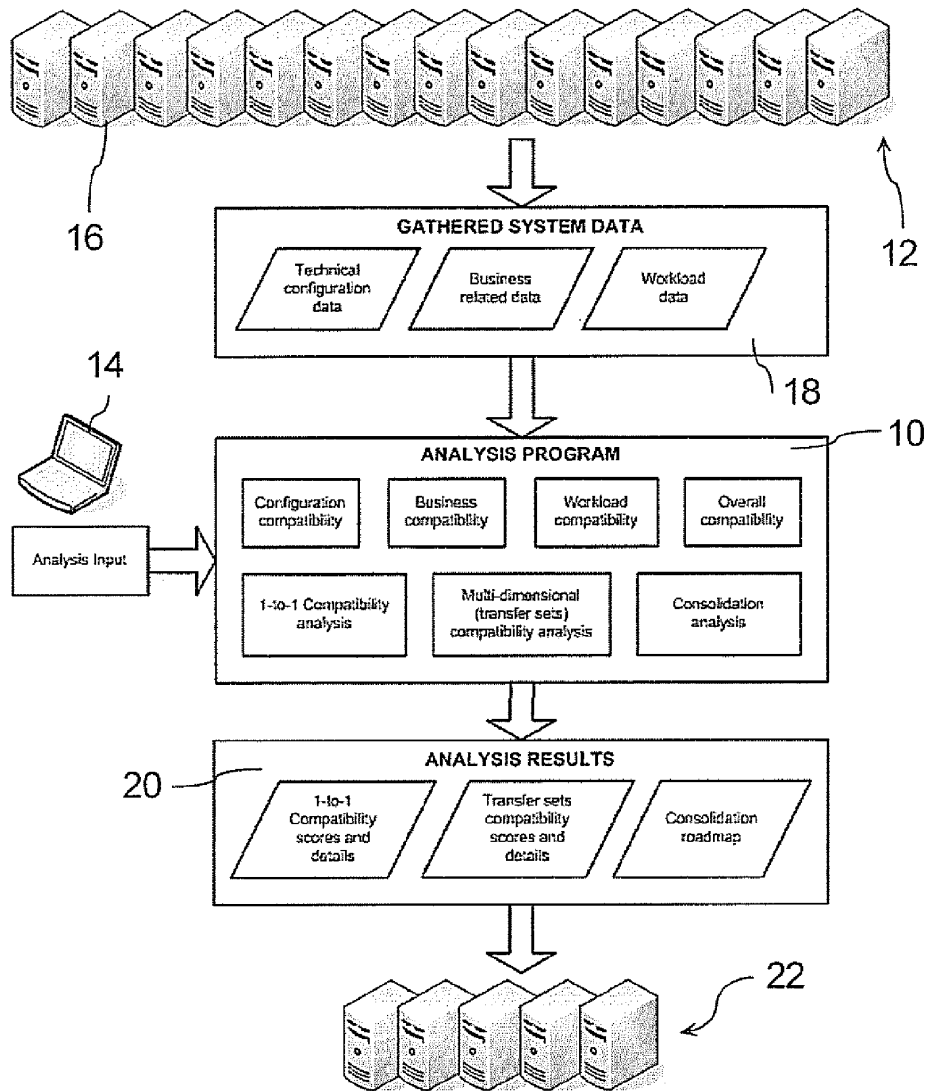


Figure 2

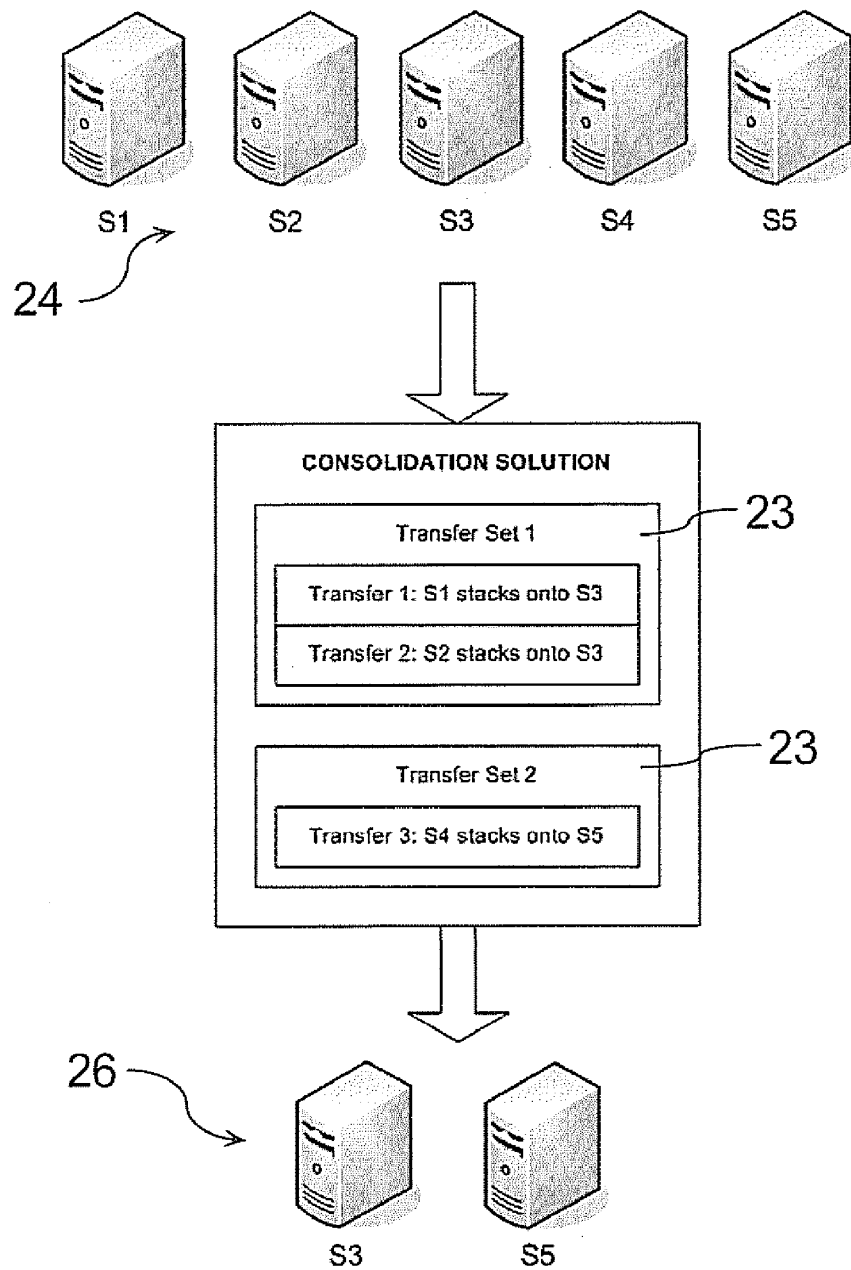


Figure 3

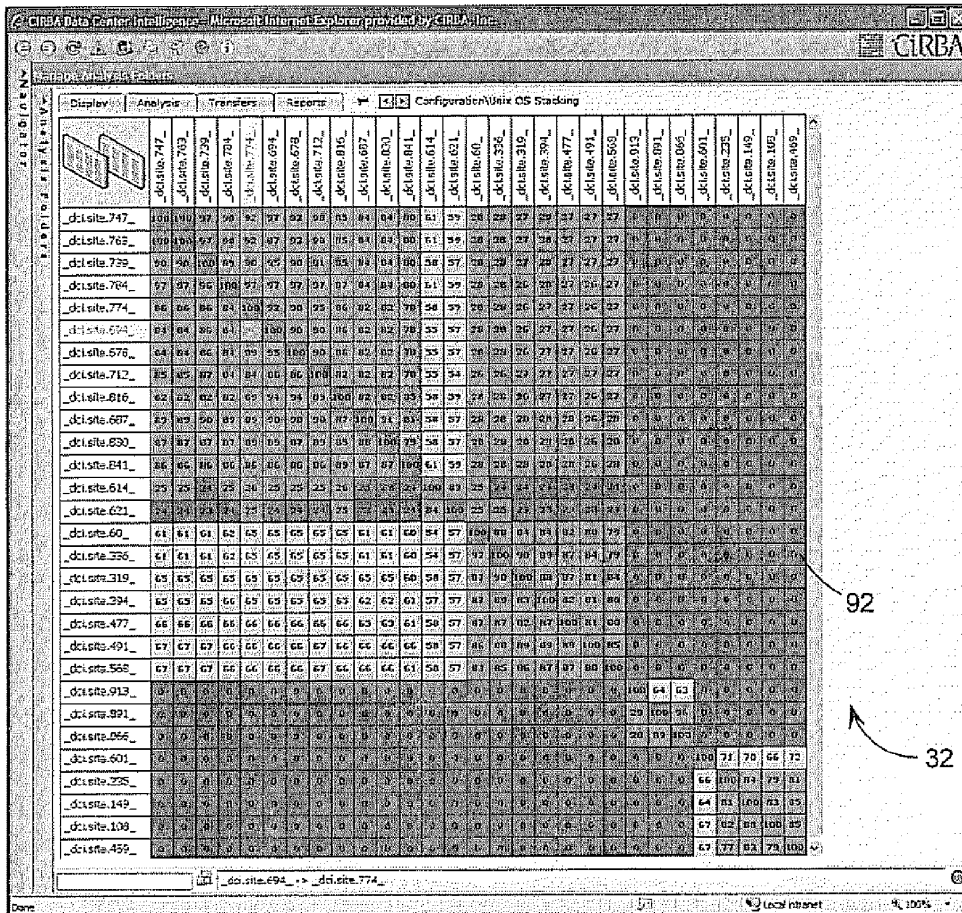
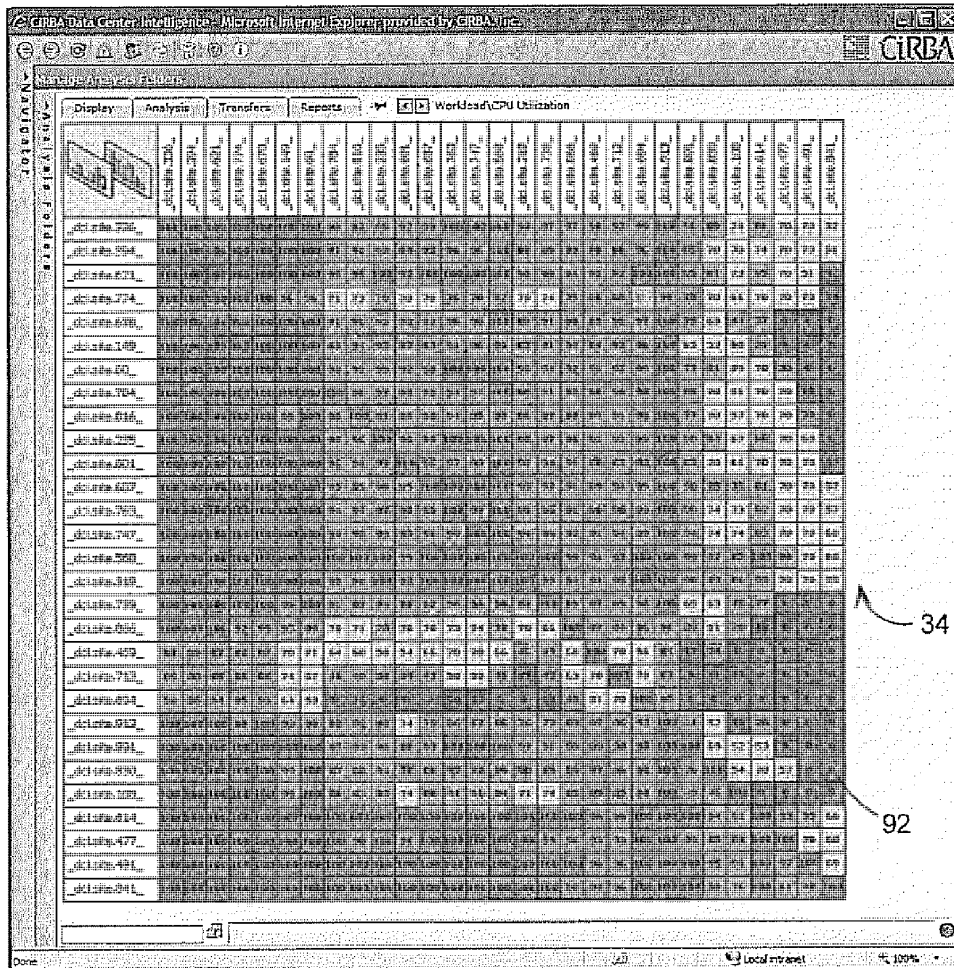
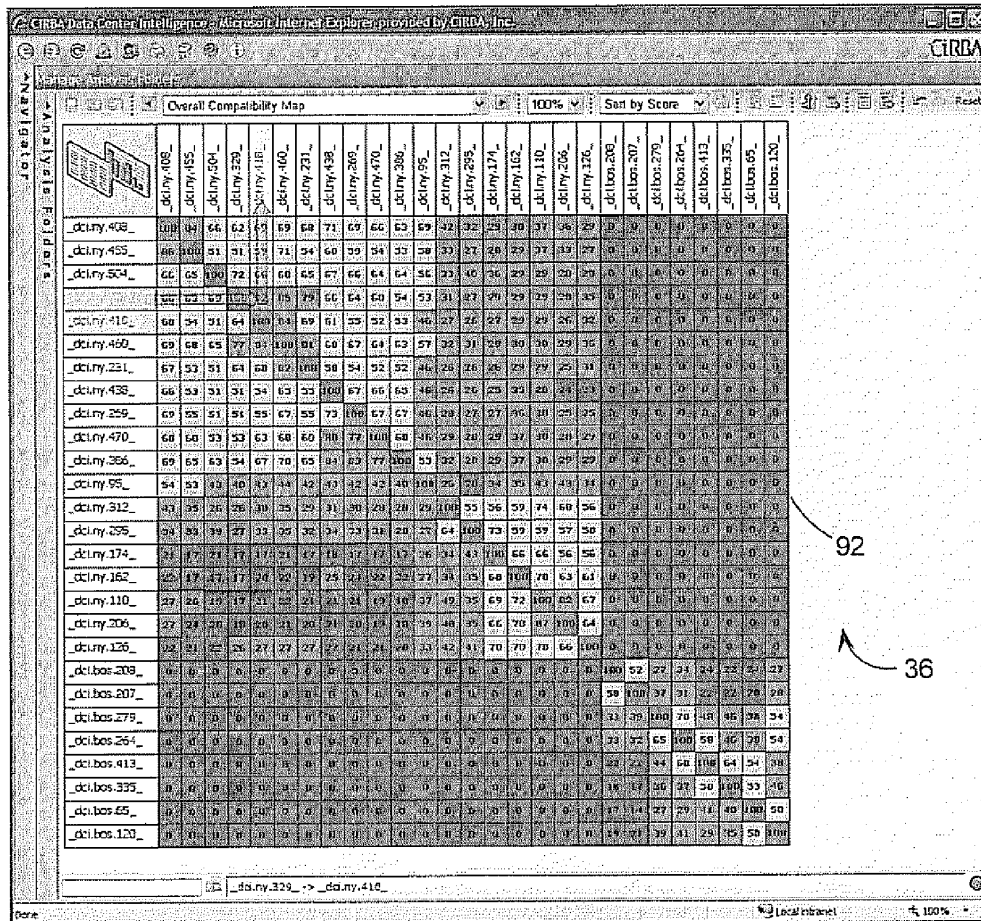


Figure 4





### Figure 5



### Figure 6

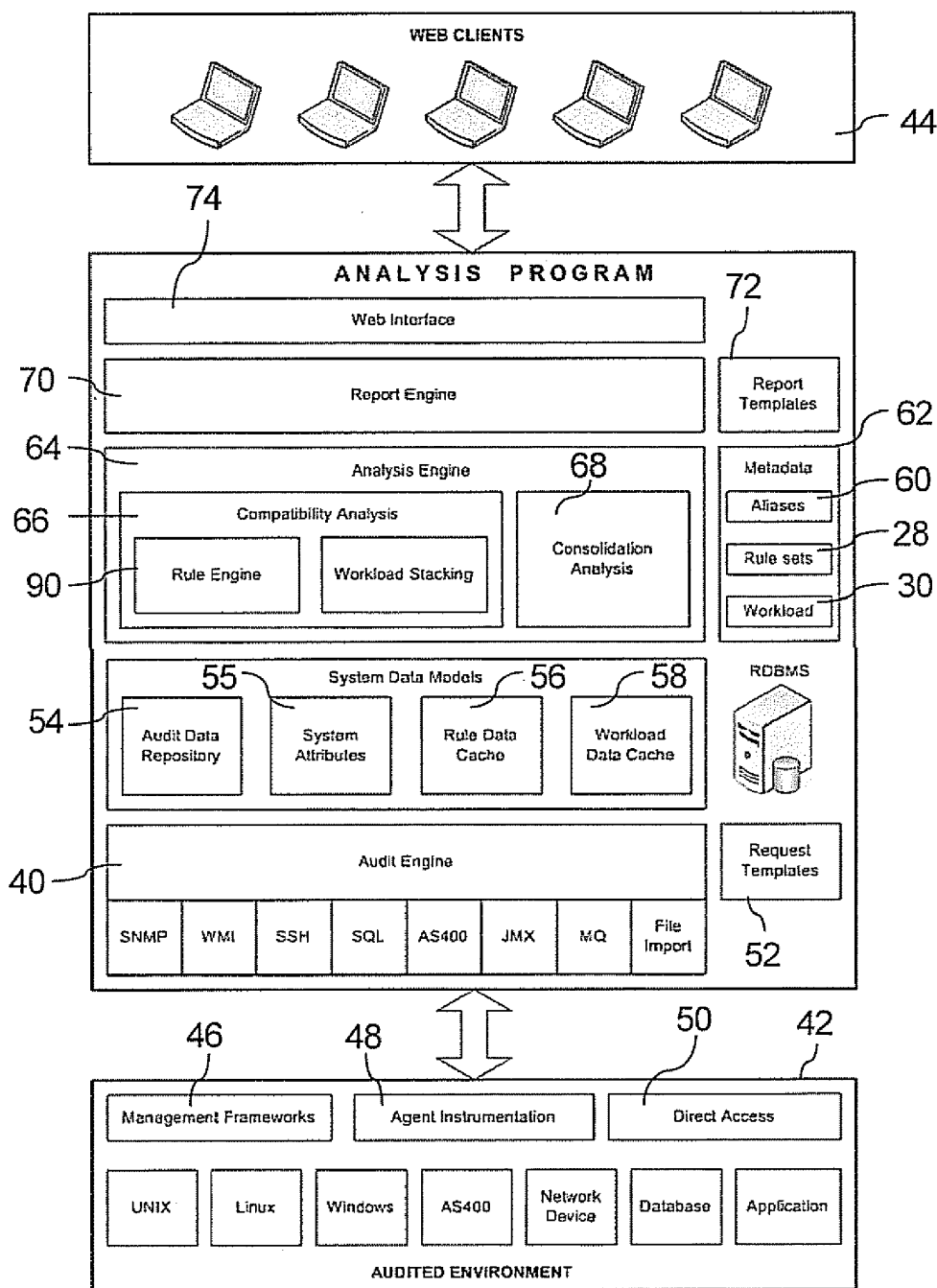


Figure 7

82

Consolidation & Virtualization Analysis Strategy  
Instrumentation Enablement

Key:

- Detailed Coverage
- Partial Coverage or Requires Customization

78

80

Database Consolidation

Oracle database stacking

Oracle table stacking

Sybase database stacking

Sybase table stacking

SQL Server - database stacking

SQL Server - table stacking

OS-Level Stacking

UNIX Binary Compatibility

Linux Binary Compatibility

UNIX Apps with file-based configurations

UNIX Apps with database-resident configurations

Windows Binary Compatibility

Windows Apps with file-based configurations

Windows Apps with WMI-based configurations

Windows Apps with database-resident configurations

Application Server Stacking

WebLogic

WebSphere

IIS

Jboss

Apache Tomcat

Virtualization Analysis

UNIX Hardware Variance

Linux Hardware Variance

UNIX Shared OS (Zone) Analysis

Wintel Hardware Variance

Windows Shared OS (Zone) Analysis

Configuration Sources (SCI Analysis)

CIRBA Agent	CIRBA Agentless					Third-Party Agents (Direct Audit)						CIRBA Framework Adapters				Data Import			
	SNMP Agent	SSH	WMI	SQL	JMX	Compaq IM	Dell OM	IBM Director	Concord, etc	VMware ESX	Tivoli TME	BMC	SumoC	TADDM	Tivoli CM				
SNMP Agent	•																		
WMI Provider																			
	</																		

Figure 8

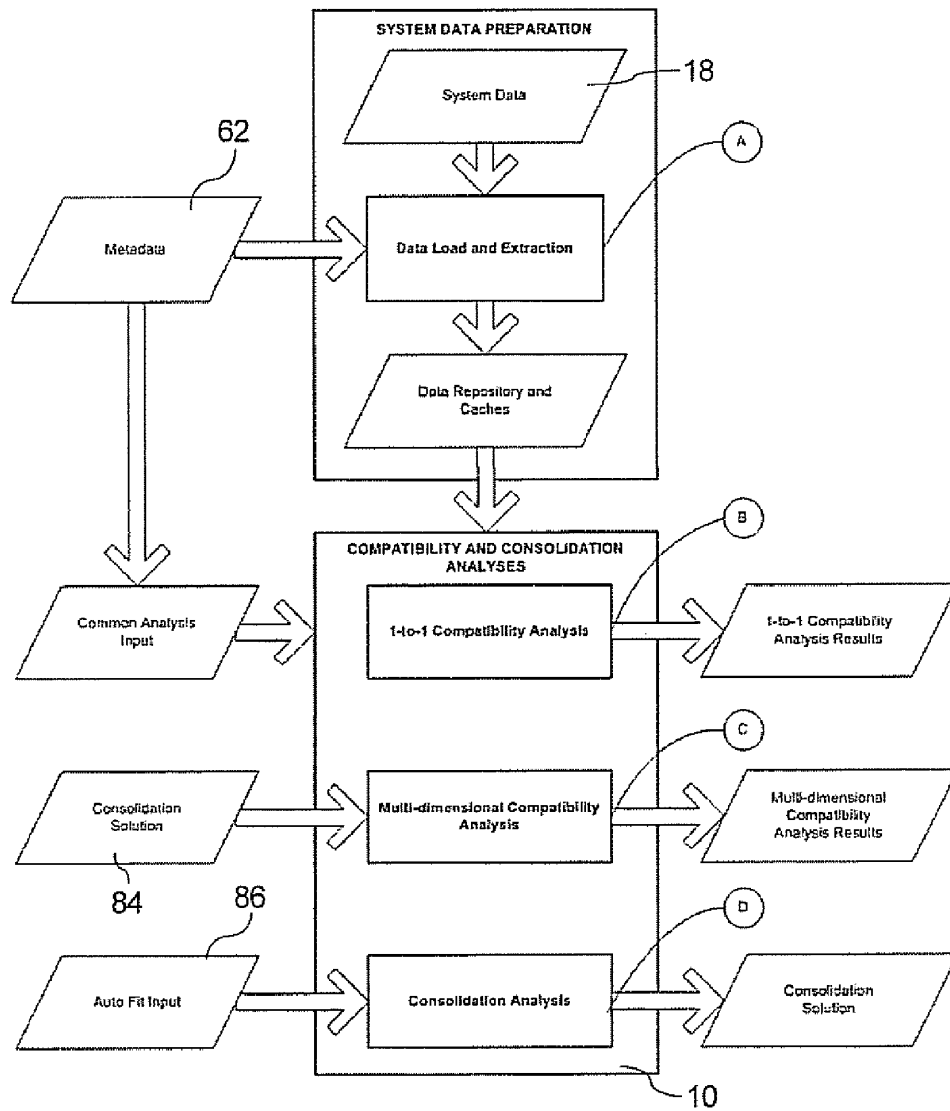


Figure 9

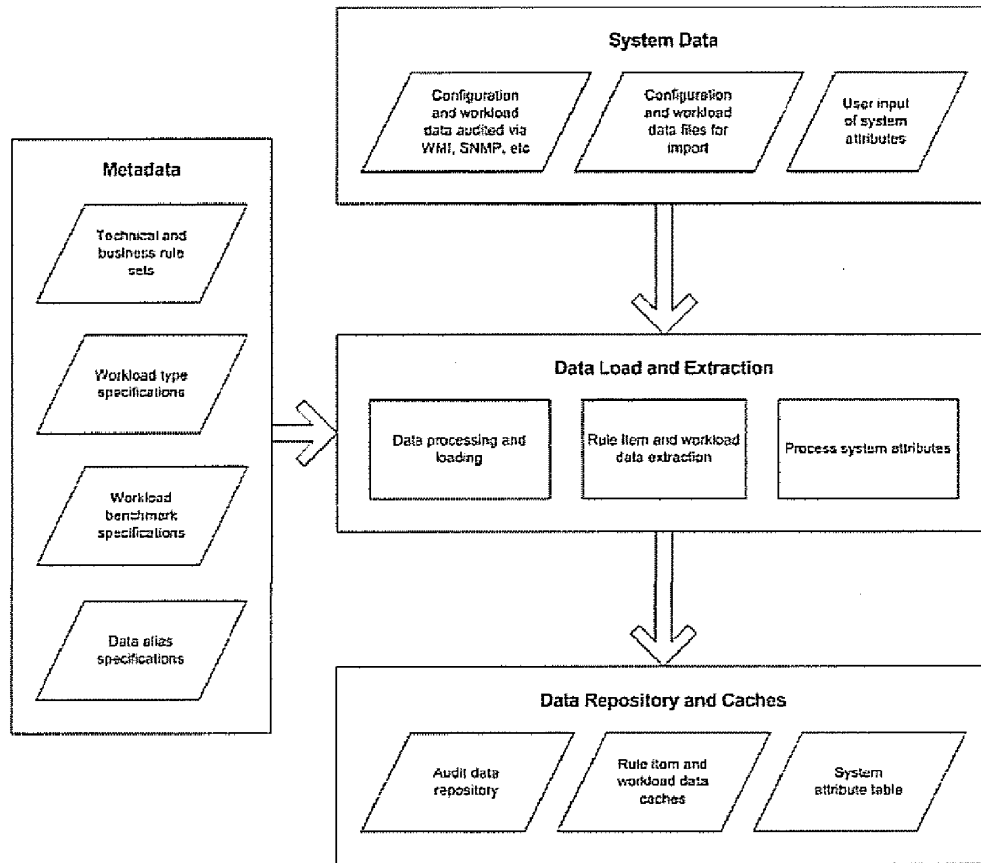


Figure 10

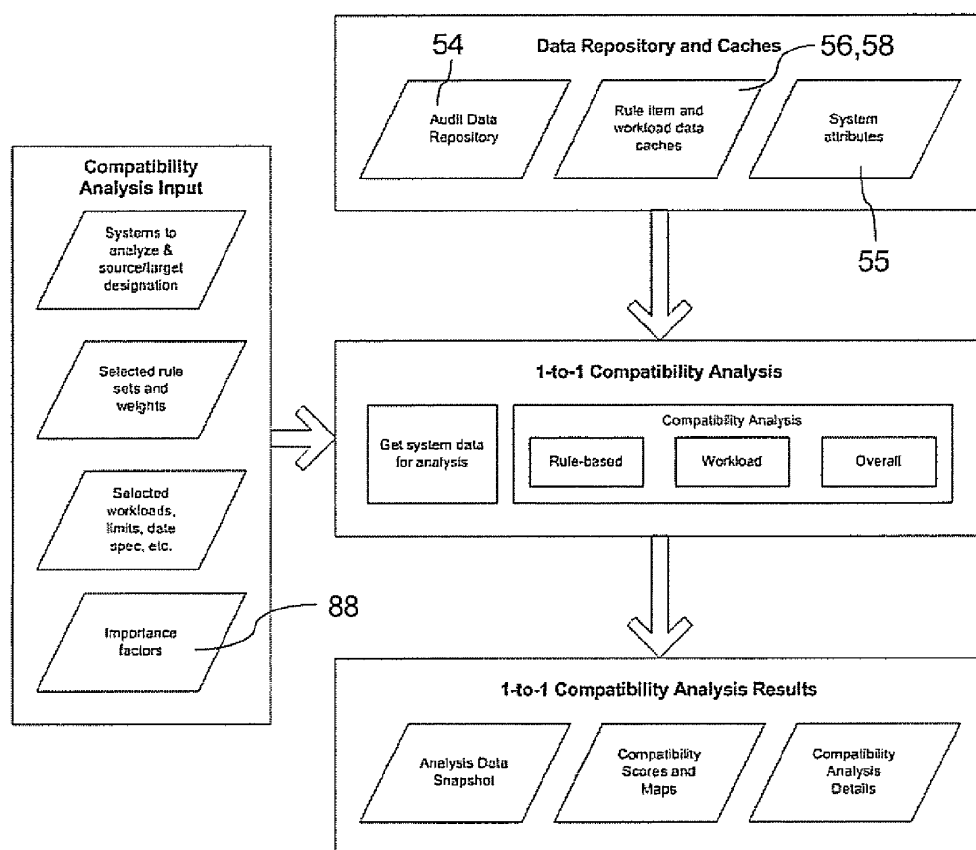


Figure 11

**Sheet 12 of 54**

Name	Description
Solaris Kernel Settings	Detailed Analysis of Solaris Kernel Settings
Solaris Name Service Settings	Detailed Analysis of Solaris Name Service Settings
Solaris NVRAM Settings	Detailed Analysis of Solaris EEPROM Settings
UNIX Application Stacking	Detailed analysis rules for OS-level stacking of UNIX apps onto existing or new systems
UNIX Forward Consolidation	Detailed analysis rules for forward consolidation of UNIX applications onto existing infrastructure
WebLogic J2EE App Stacking	WebLogic J2EE Application Stacking Ruleset
Windows Compatibility	Assess compatibility between Windows systems
Acquisition Date	Group servers based on acquisition date
Application Tier	Prevent consolidating servers across application tiers.
Availability Target	Prevent combining servers with differing availability (uptime) targets
Backup Window	Prevent combining servers with differing backup windows
Building	Prevent consolidating servers between buildings
Business Service	Prevent consolidating servers across business services
Combined Constraints	Combined business constraint ruleset
Department	Prevent consolidating servers across departments
DR Strategy	Prevent combining servers with inconsistent DR strategies
Lease Renewal Date	Group servers based on lease renewal date
Location	Prevent consolidating servers across physical locations
Maintenance Window	Prevent consolidating servers with contentious maintenance windows
Operational Environment	Prevent consolidating servers between environments
Operational Role	Prevent consolidating servers that have differing functional roles
Ownership	Prevent combining servers that belong to different owners
Primary Application	Prevent combining servers that are servicing different applications
Service Plan	Prevent consolidating servers that have different service plans
UPS Profile	Prevent combining servers that have differing UPS requirements
Oracle Stacking Analysis Data Validation	Determine data coverage for app stacking analysis
UNIX Analysis Data Validation	Determine data coverage for app stacking analysis
Windows Analysis Data Validation	Determine data coverage for windows stacking and virtualization analysis
Oracle Data Stacking	Assess data consolidation potential between Oracle instances
Oracle Instance Stacking	Assess affinity for instance-level stacking
SQL Server 2000 (WMI)	Map out data-level consolidation opportunities in MS SQL 2000 environments
Windows File and Print Consolidation	Analyze compatibility of file and print servers
Hardware Models	Map out manufacturers and models
Macro Analysis	Combined Macro Analysis ruleset
OS Map	Map out OS Types, Versions and kernel patch levels
OS Map (with Kernel Bits)	Map out high-level OS affinity regions

**Figure 12**



Name	Description
CPU Utilization	CPU resource constraints
Disk I/O	Disk I/O constraints
Network I/O	Network I/O constraints
Disk capacity	Available disk space
Memory	Available memory resources

Figure 13

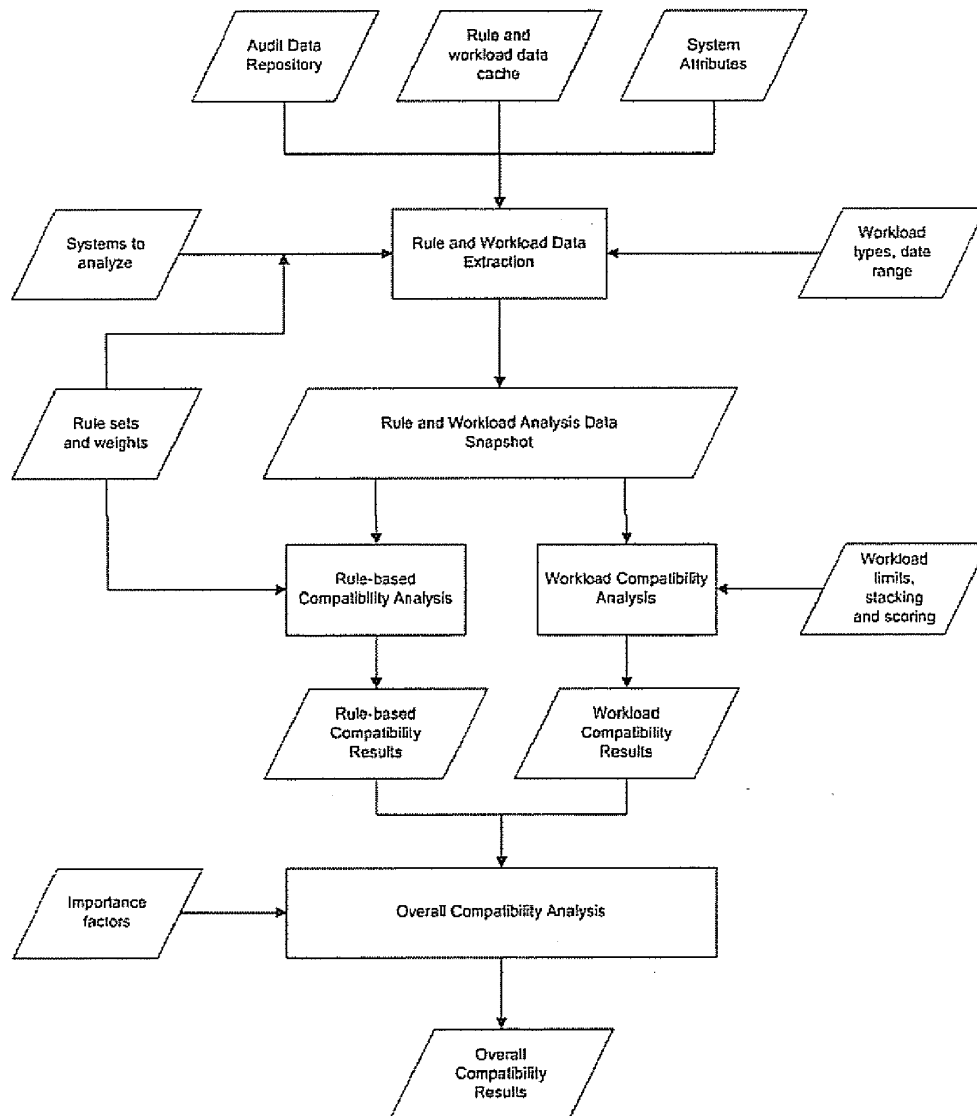


Figure 14

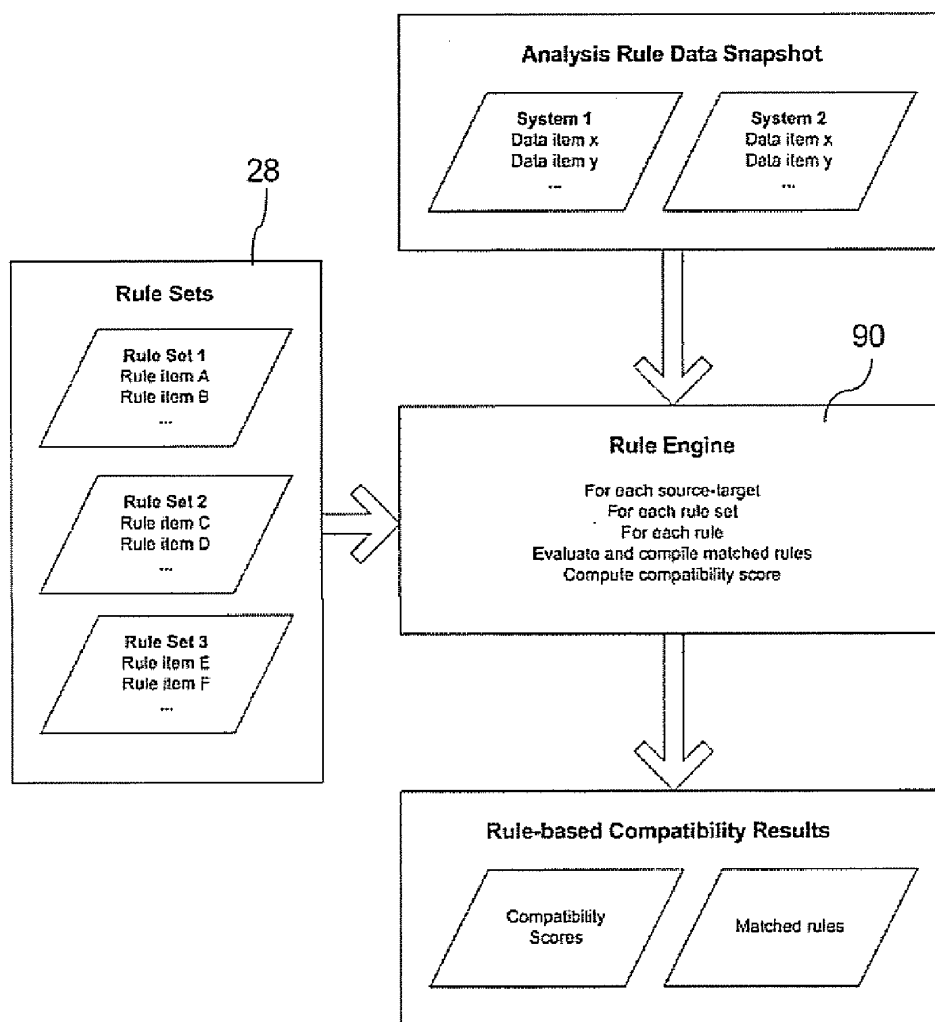


Figure 15

	Rule Type	Rule Specifier	Source	Target	Weight	Mutex Flag	Match Flag	Suppress Flags	Remediation Cost	Description
1	AliasQuery	OS			70%		OS		\$1,200	Different Operating Systems
2	AliasQuery	OS Version			30%		VER	OS	\$320	Different Operating System Versions are in Different Time Zones
3	AliasQuery	Time Zone			20%				\$320	Target Has Less Memory
4	AliasQuery	Total memory		<	5%		PATC		\$350	Different Patch Levels
5	UriQuery	cirba-cm/ServerInformation/OSPatchLevel			5%		H	OS VER	\$160	Patch Differences Between Systems
6	UriQuery	cirba-pa/patchesTable#			5%	Y		OS VER	\$80	
7	UriQuery	cirba-cm/ServerInformation/OSKernelBits			10%			OS	\$80	Not Running Same Kernel Bits
8	UriQuery	cirba-cm/KernelParametersTable#	present	absent	5%	Y		OS	\$80	Some Kernel Parameters are Absent
9	UriQuery	cirba-cm/KernelParametersTable/Setting#SHMMAX		<	5%				\$80	Maximum Shared Memory Settings Differ
10	UriQuery	cirba-si/appInvTableTable.appInvTableTable/version#oracle	9	8	4%		ORA		\$1,500	Different Version of Oracle
11	UriQuery	cirba-si/appInvTableTable.appInvTableTable/version#oracle			5%			ORA	\$3,500	Different Version of Oracle
12	UriQuery	cirba-si/appInvTableTable.appInvTableTable/version#apache			2%		PATC		\$80	Different Version of Apache
13	UriQuery	win32-os/Win32_OperatingSystem/ServicePackMajorVersion			5%		H	OS VER	\$160	Different Service Pack Levels
14	UriQuery	win32-quickfix/win-hotfix#	present	absent	5%	Y		OS VER	\$80	Patch Differences Between Systems
15	UriQuery	win32-os/Win32_StartupCommand#			2%	Y		OS	\$80	Startup Commands are Different
16	UriQuery	win32-misc/Win32_Environment/VariableValue#Path			2%			OS	\$80	Global Path is Different
17	UriQuery	win32-misc/Win32_Environment/VariableValue#Path <SYSTEM>			2%			OS	\$80	System Path is Different
18	UriQuery	win32-os/Win32_Service#	present	absent	5%	Y		OS	\$160	Some Services not On Target
19	UriQuery	win32-os/Win32_Service/Started			1%	Y		OS	\$80	Some Services not Started On Target
20	UriQuery	win32-application/win-products/McAfee_VirusScan_Enterprise	present	absent	5%			OS	\$200	McAfee Not On Target

Figure 16

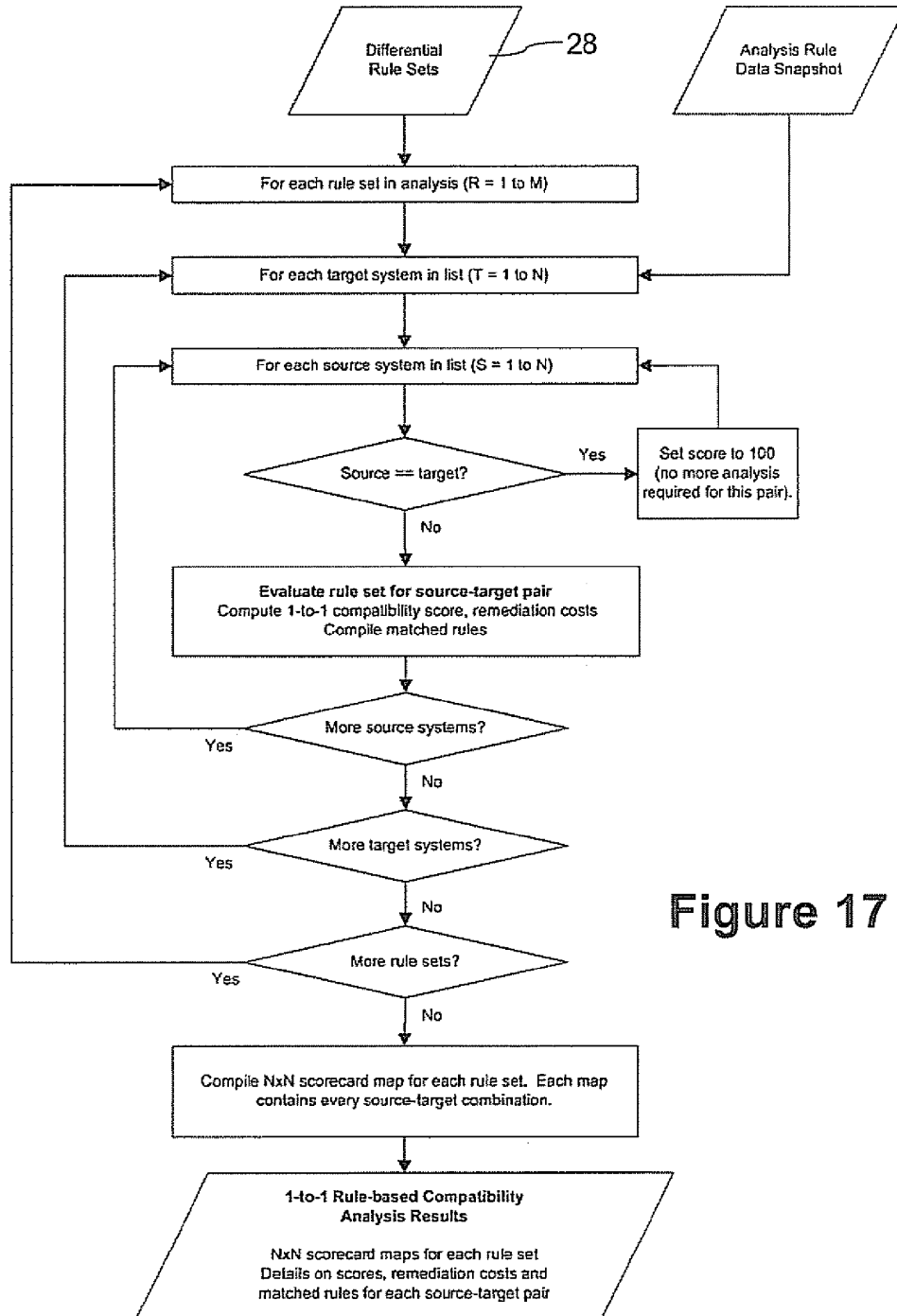


Figure 17

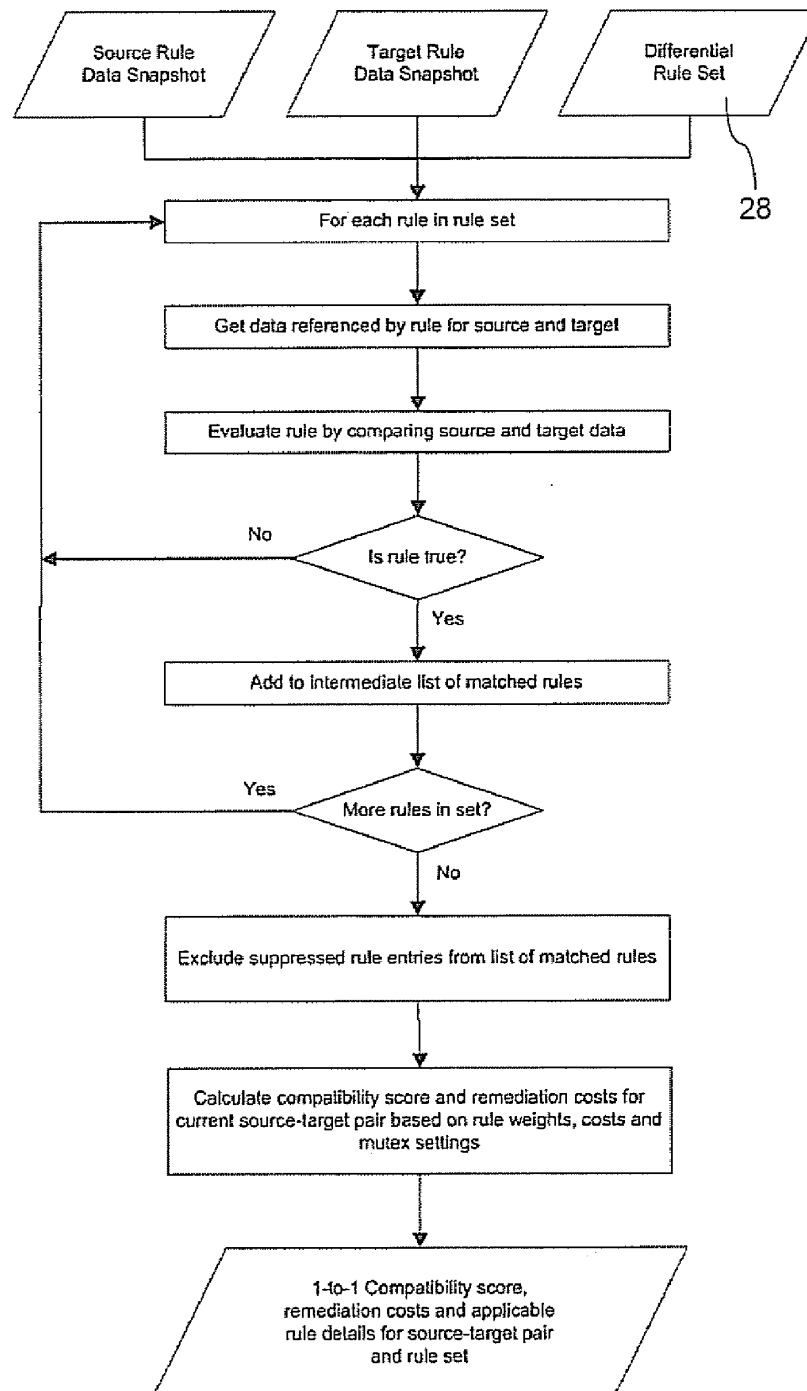


Figure 18

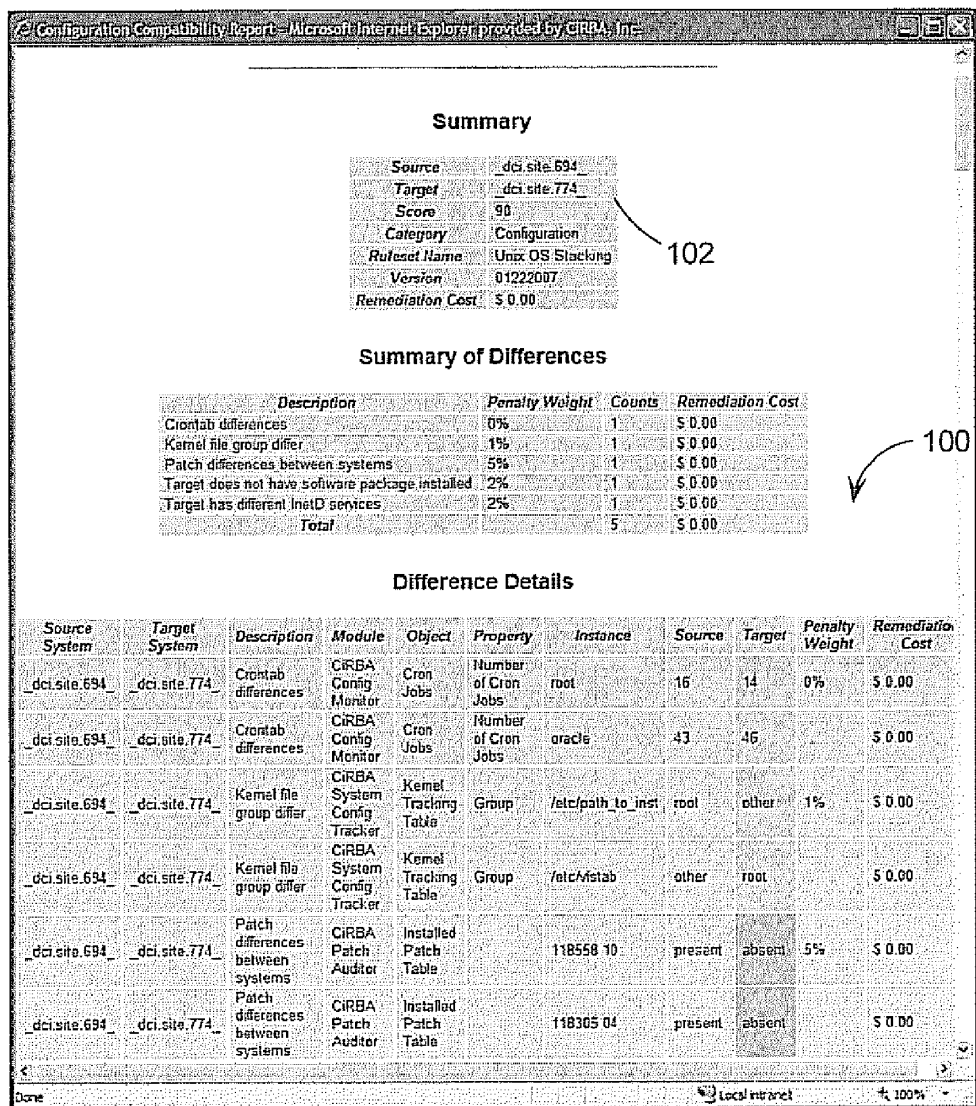


Figure 19

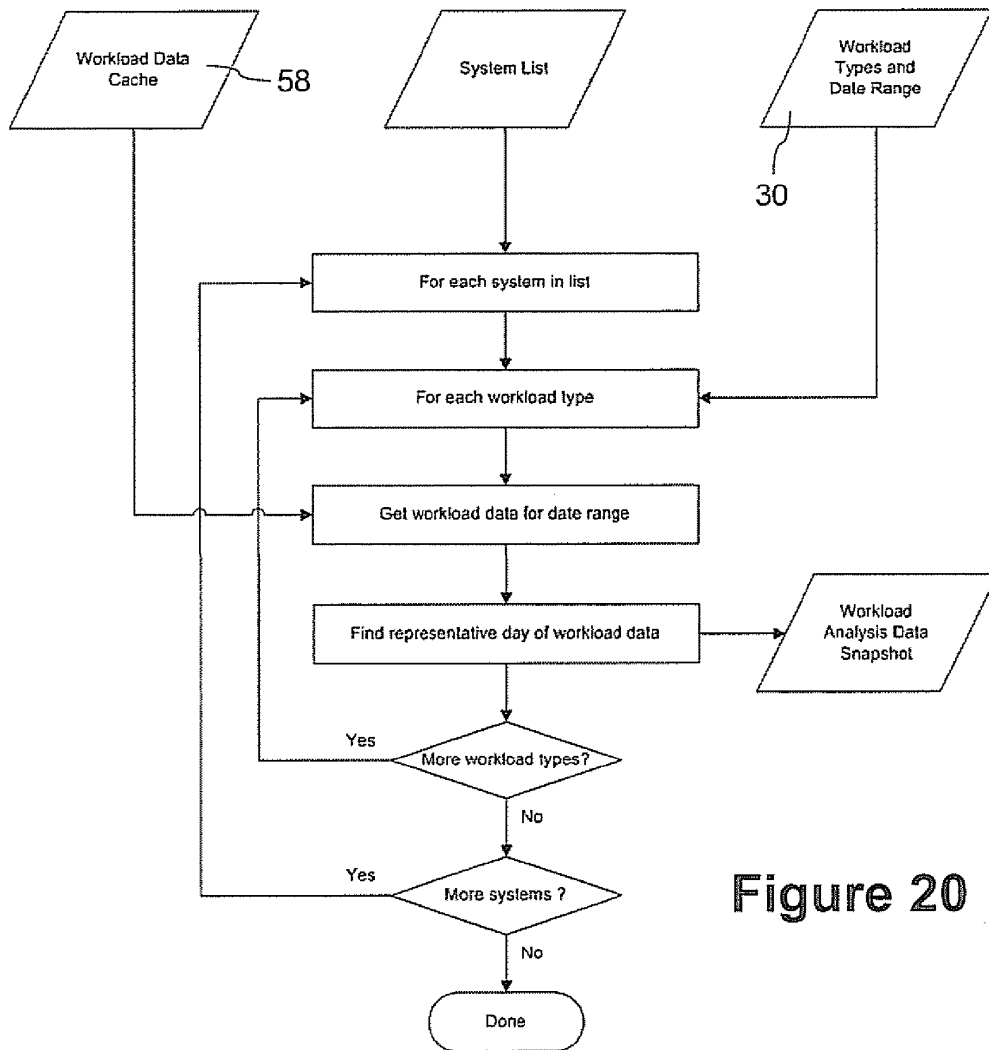


Figure 20



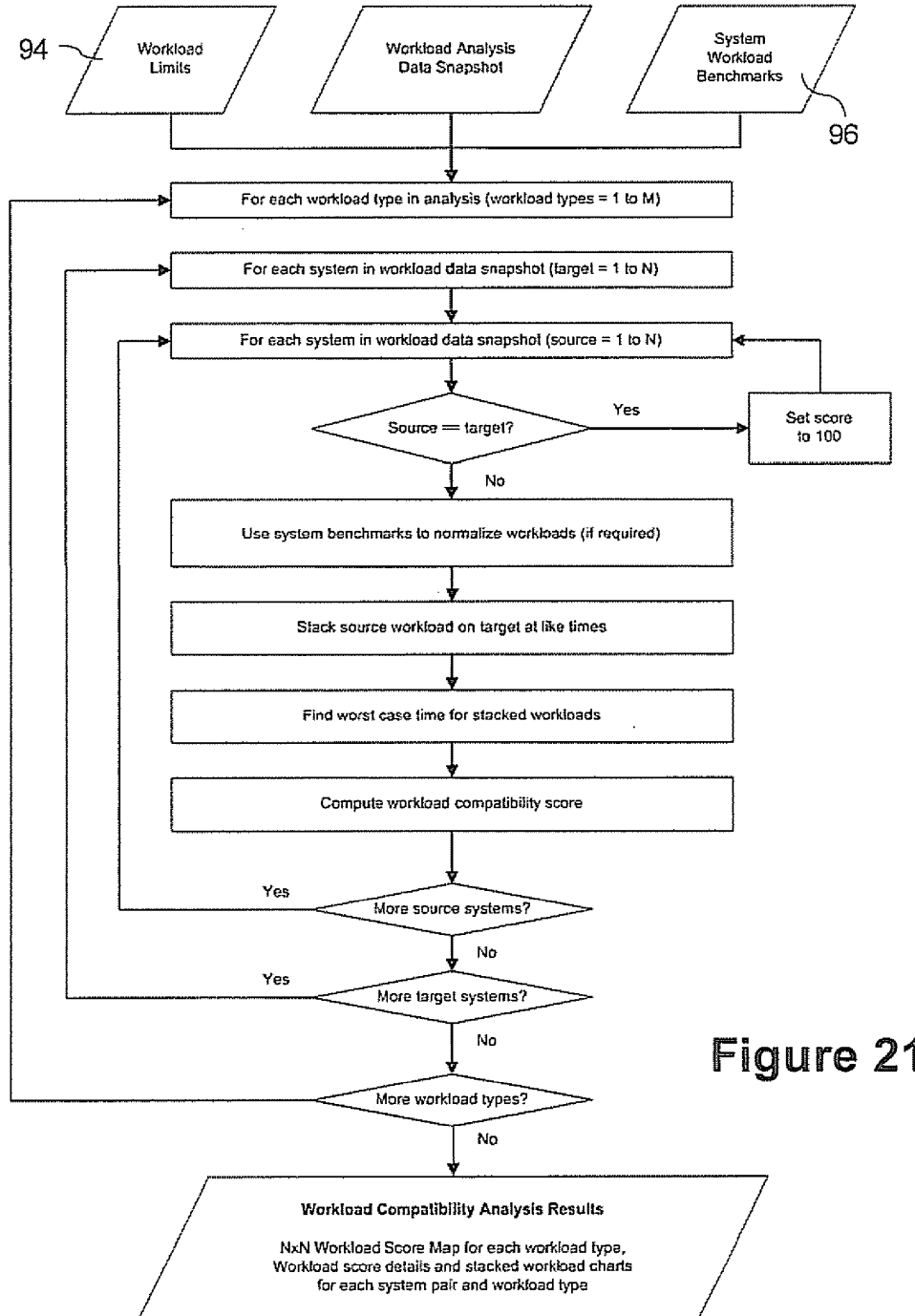


Figure 21

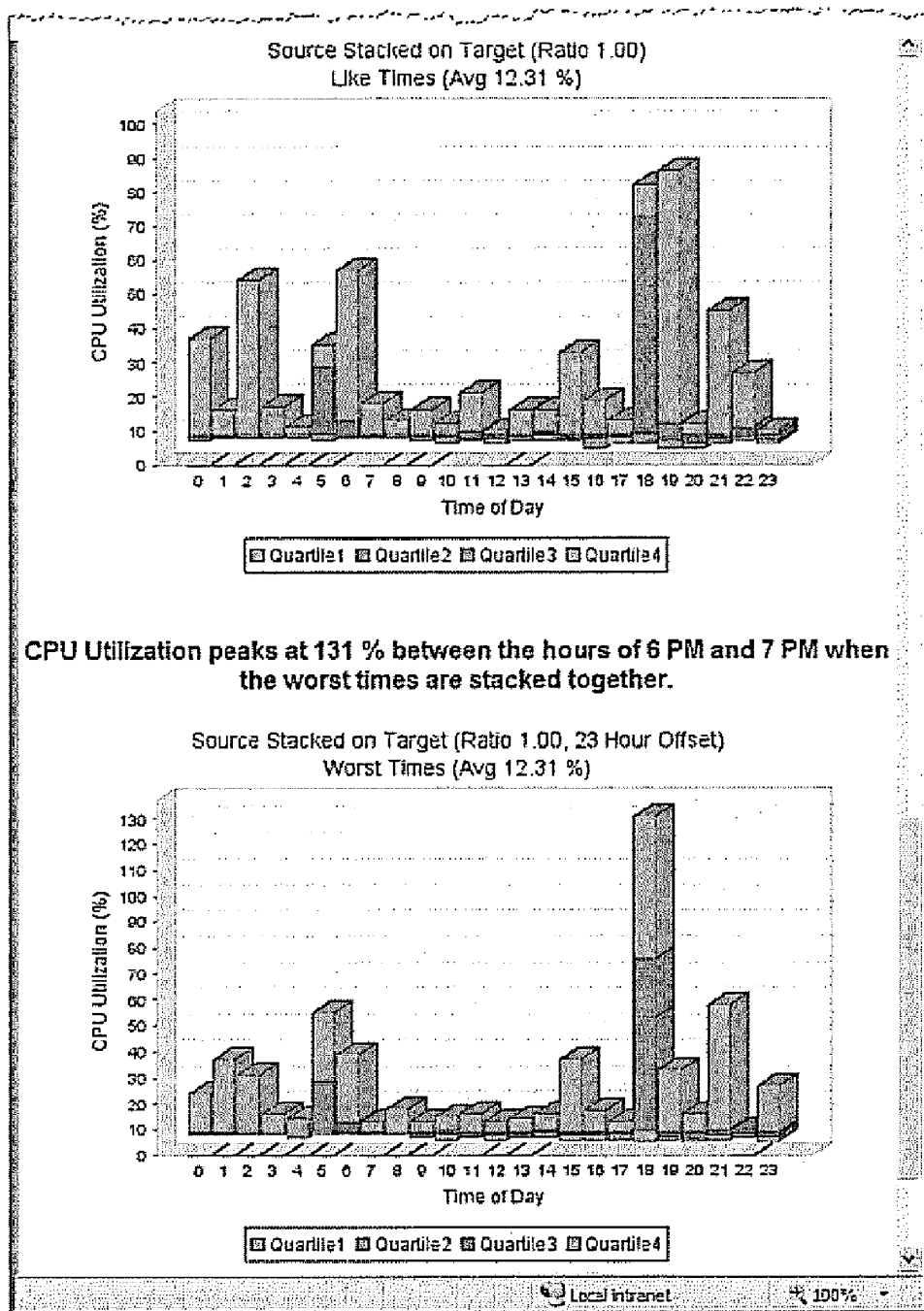


Figure 22



### Figure 23

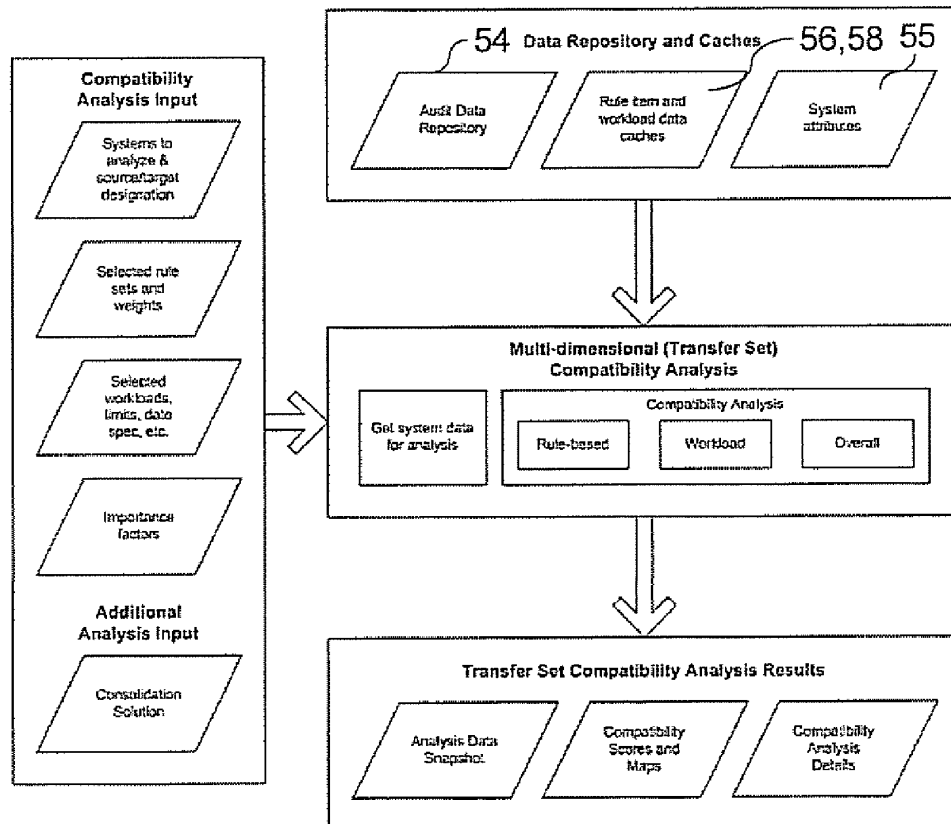


Figure 24(a)

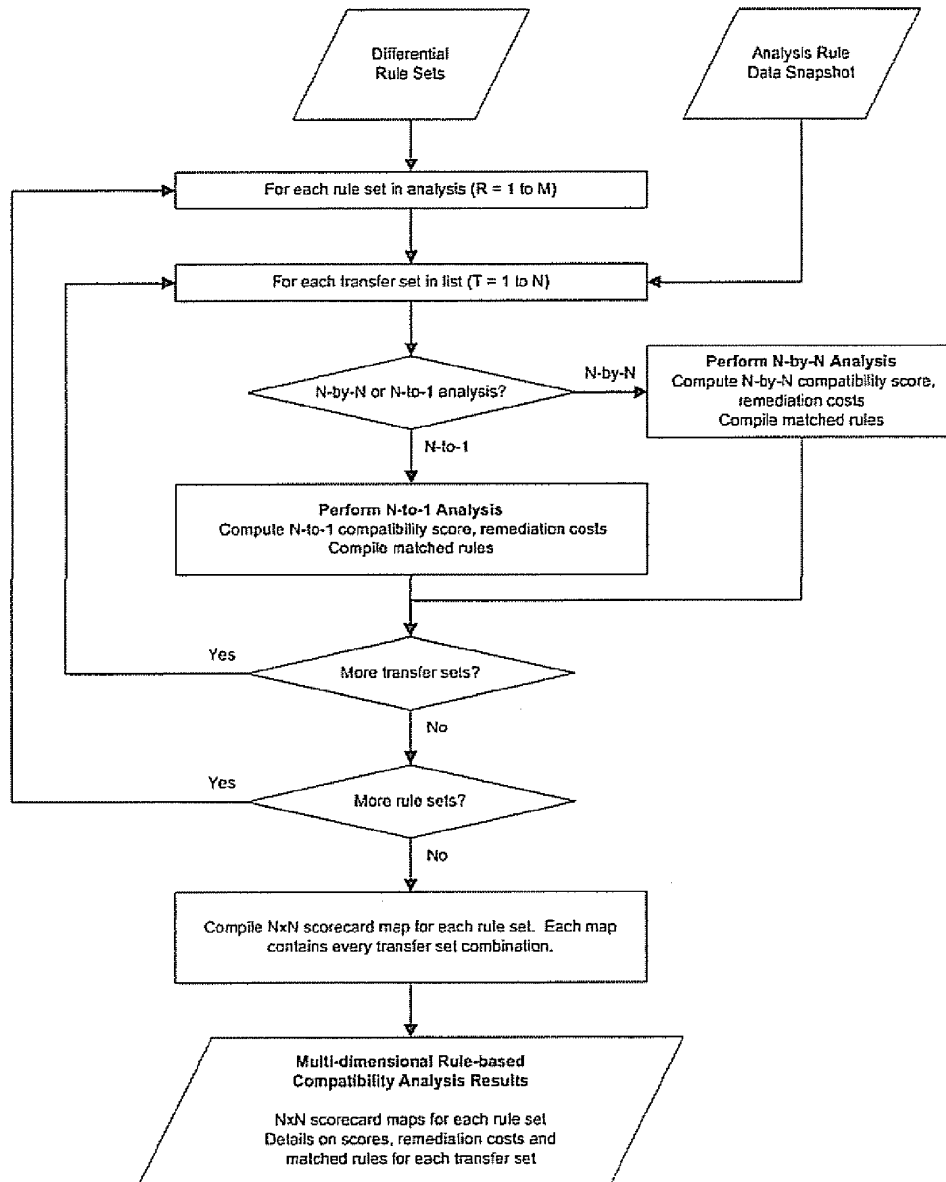


Figure 24(b)

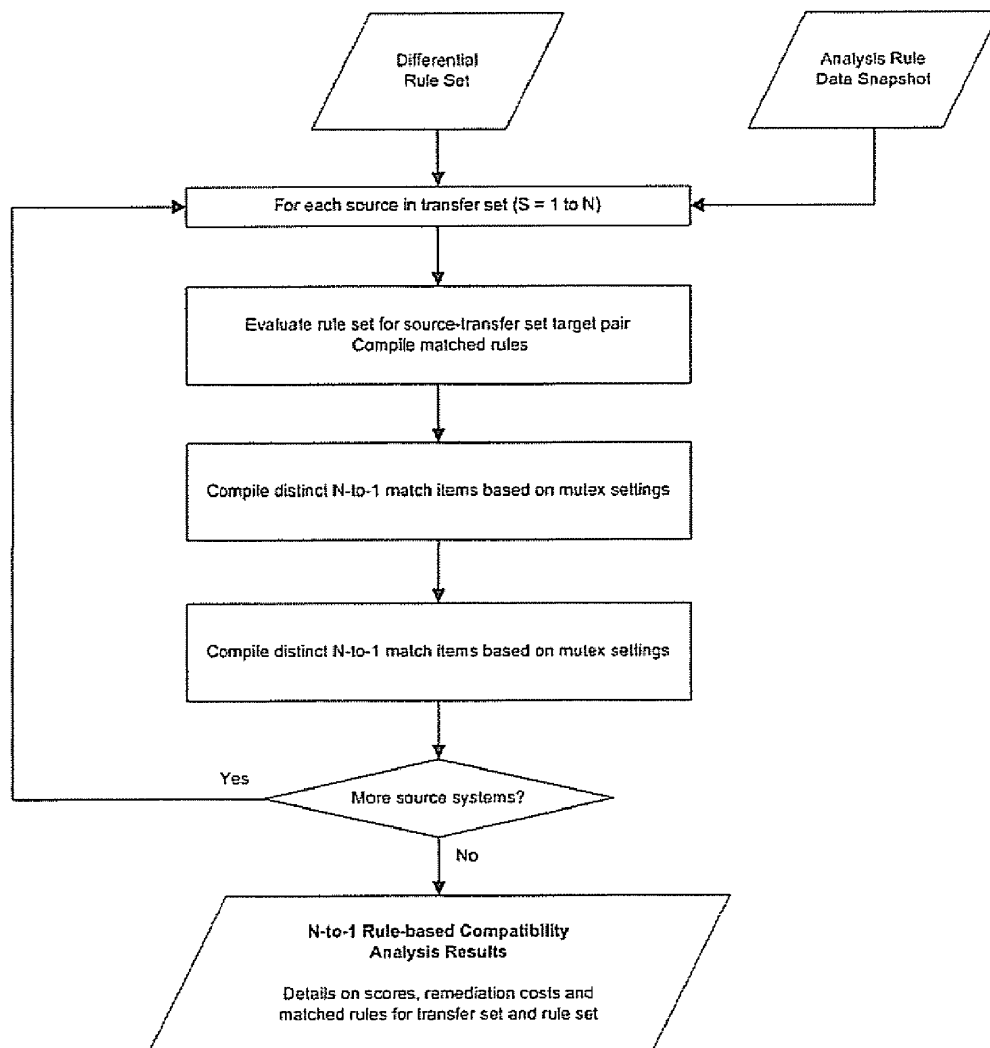


Figure 24(c)

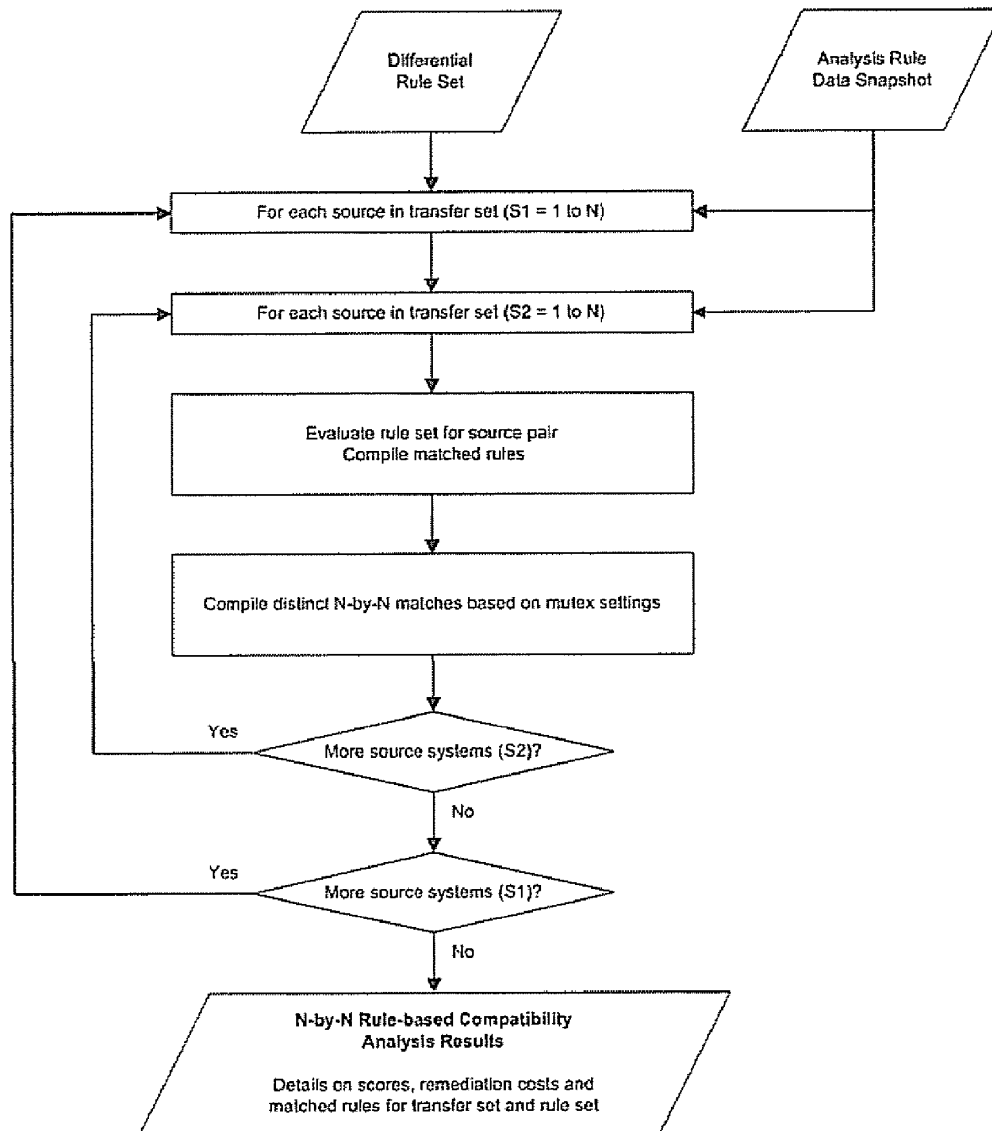


Figure 24(d)

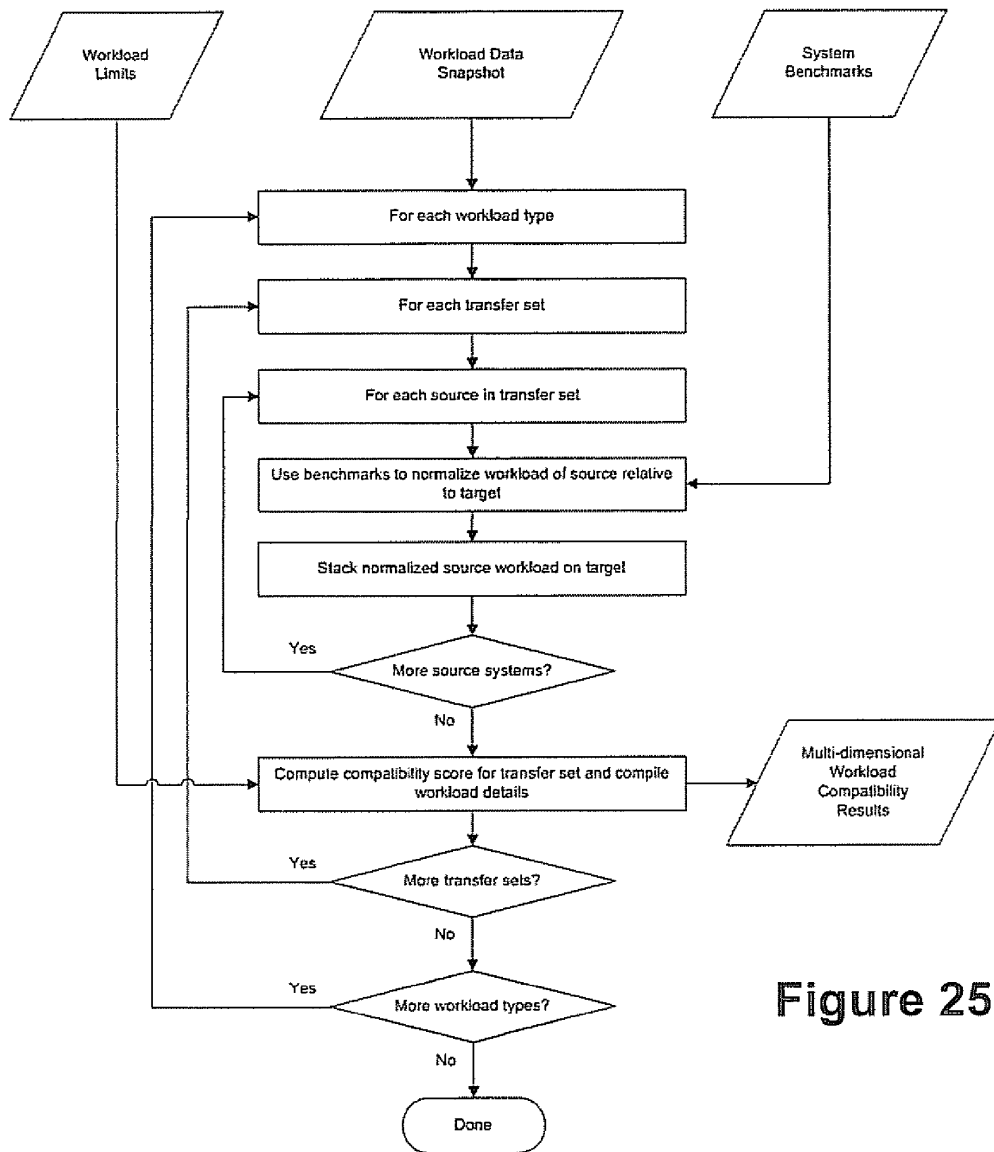


Figure 25



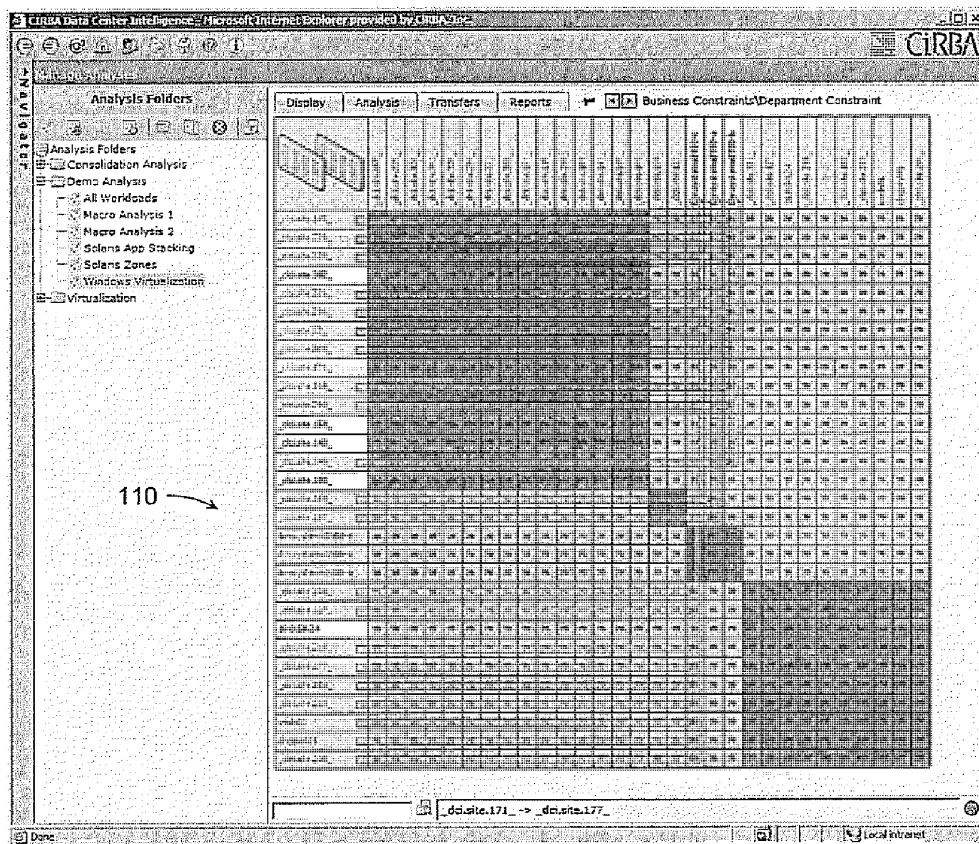


Figure 26

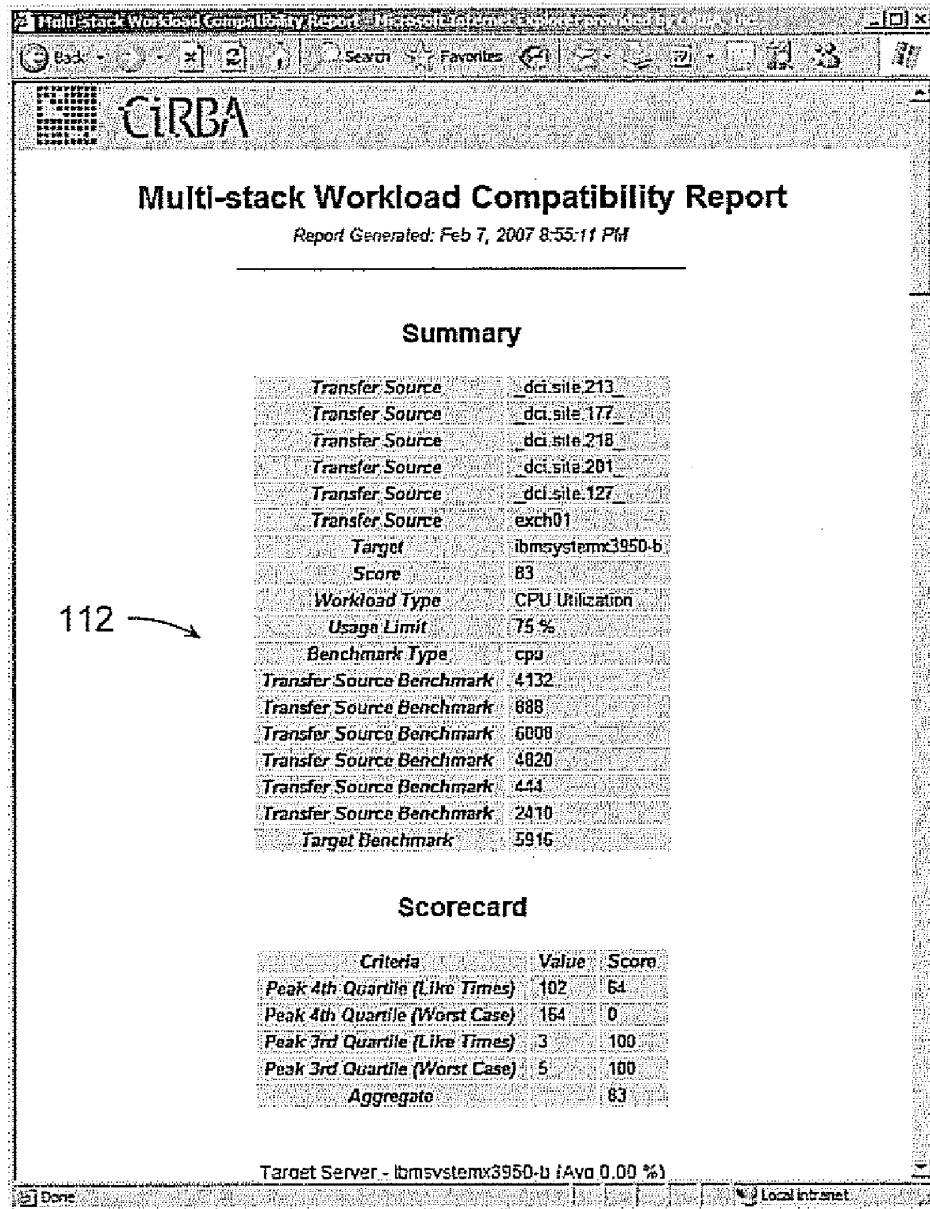


Figure 27

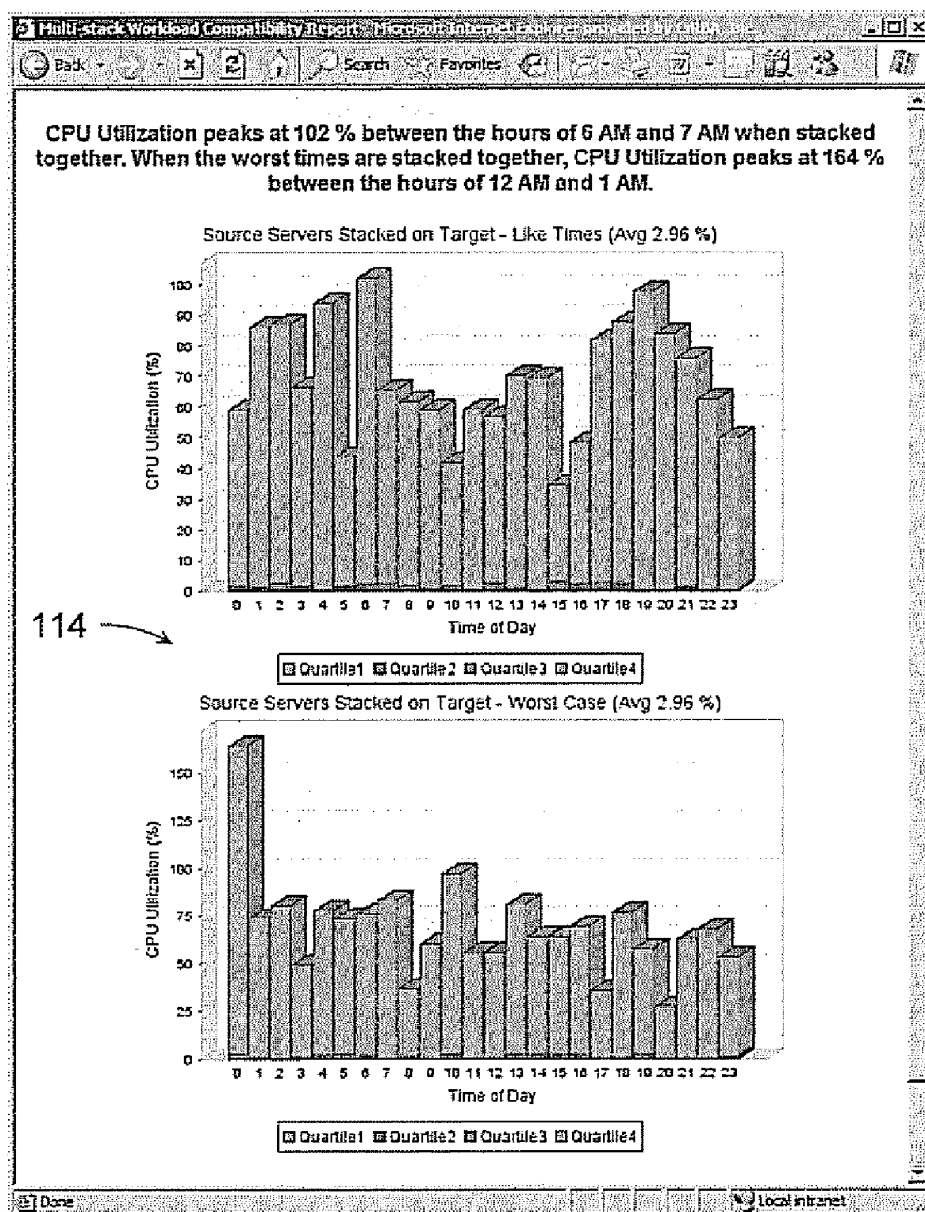


Figure 28

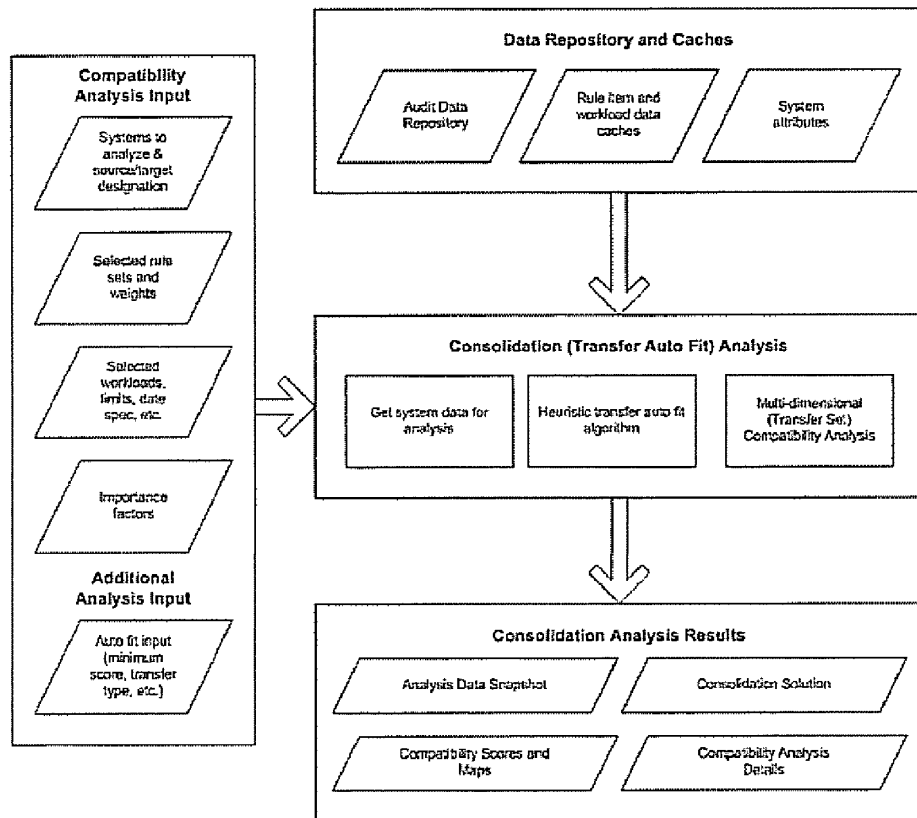


Figure 29

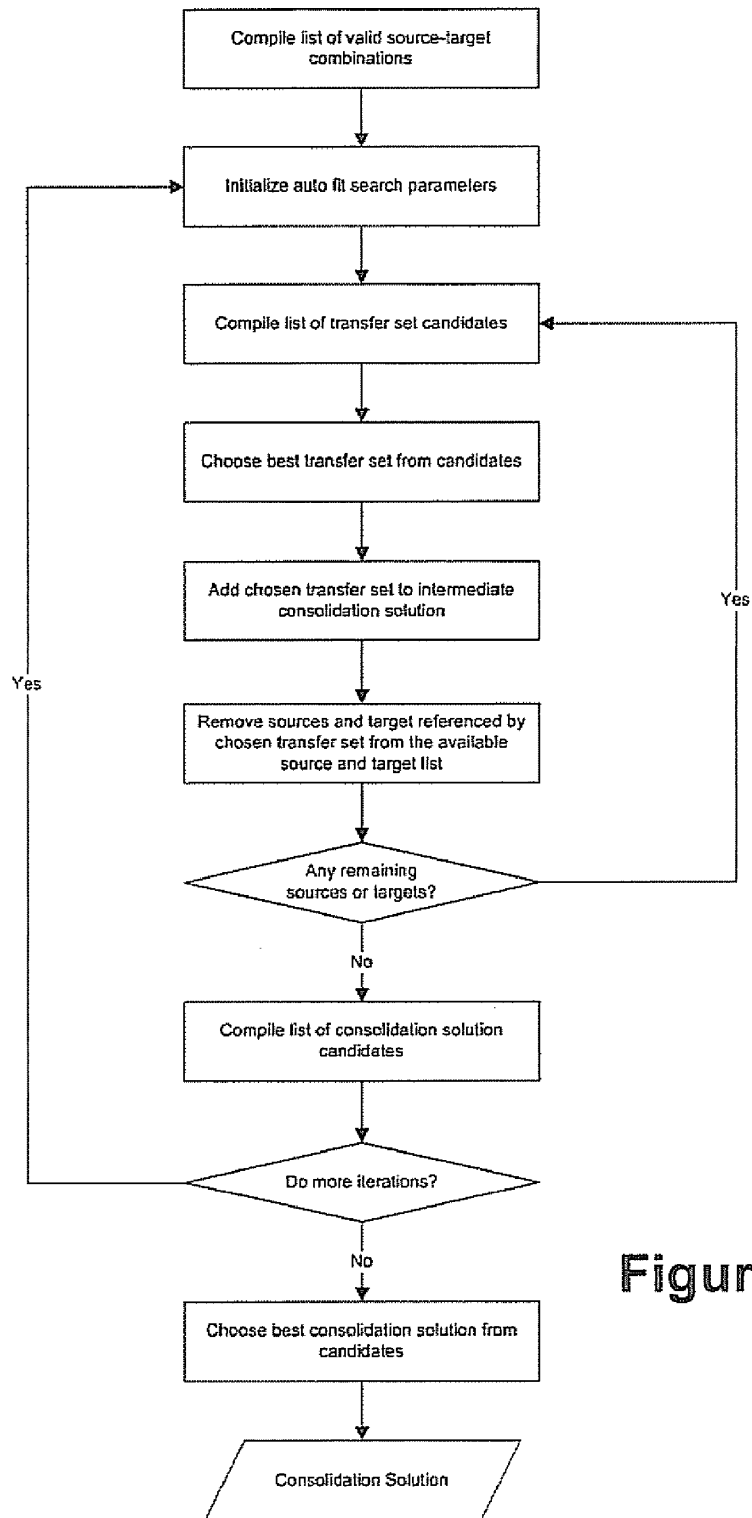


Figure 30

Analysis Summary - Microsoft Internet Explorer provided by CIRBA, Inc.		
	Initial State	After Transfers
Total Systems	27	21
Consolidation %s	-	22.23% reduction
Consolidation %s (Net of Targets)	-	22.23% reduction
Consolidated Systems	-	6
Transferred Systems	-	6
Sources Only	0	0
Targets Only	0	0
Sources And Targets	27	21

Rulesets			
Name	Category	Version	Importance
Unix	Configuration	1	3
Combined Business Constraints	Business Constraints	01052007	5

Workload Types		
Name	Limit	Importance
CPU_Utilization	90	1

Workload Settings	
Workload Source Name	All available workload data
Workload Days Included	Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday

Transfers		
Source	Transfer	Target
_dci.ny.206_	Stacks onto	_dci.ny.116_
_dci.ny.455_	Stacks onto	_dci.ny.406_
_dci.ny.231_	Stacks onto	_dci.ny.460_
_dci.ny.329_	Stacks onto	_dci.ny.418_
_dci.ny.470_	Stacks onto	_dci.ny.438_
_dci.ny.386_	Stacks onto	_dci.ny.269_

116 ↗

Figure 31

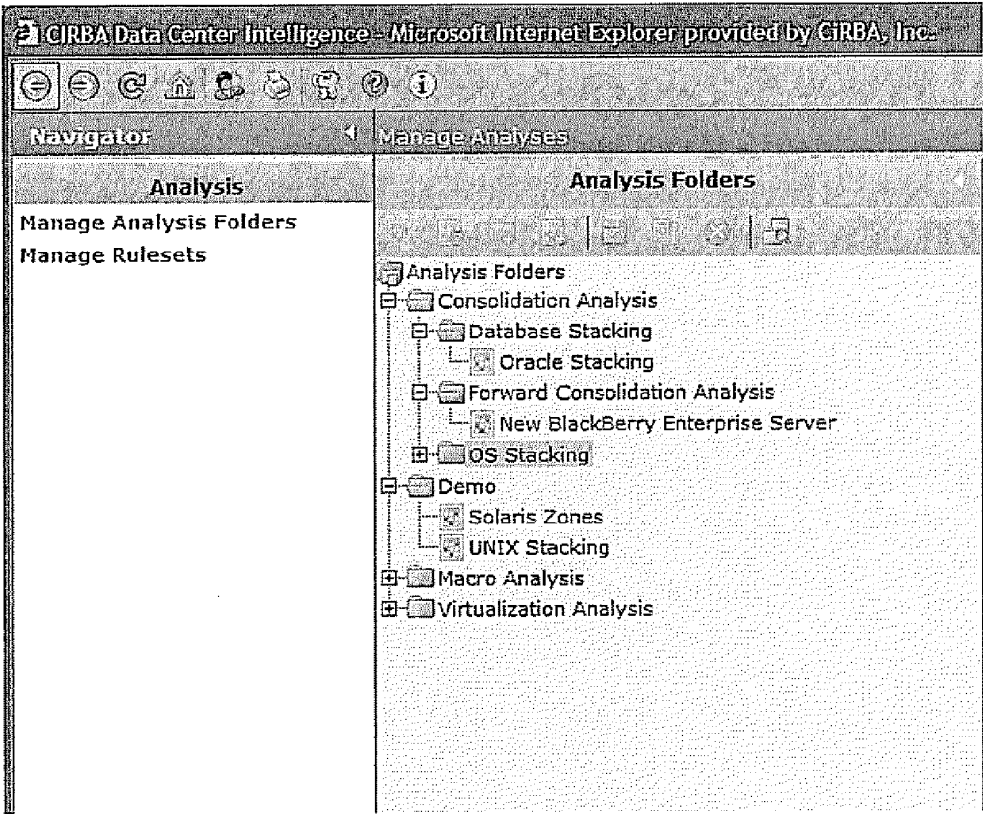


Figure 32

**Demo Stacking — Web Page Dialog**

Options **Importance Factors**

Name: Demo Stacking

Description:

---

**System Selection** Edit

System Groups

Add > Add All >> Search ...

Systems to Analyze

dc1.unix.3809\_  
dc1.unix.3995\_  
dc1.unix.4657\_  
dc1.unix.4925\_  
dc1.unix.16588\_  
dc1.unix.16830\_

Remove Remove all

---

**Configuration Compatibility Map** Edit

Ruleset

Add > Copy > Add All >>

Rules to Apply

Configuration/Unix OS Stacking  
Business Constraints/Combined Business

Remove Remove all

---

**Workload Stacking Map** Edit

Workload Types

CPU System  
CPU User  
Network I/O  
Memory Utilization  
Disk I/O  
Disk Space Usage

Add > Add All >>

Workload Types to Apply

CPU Utilization

Remove Remove all

OK Cancel

Figure 33



Ruleset Editor - Web Page Dialog

Ruleset Category: Configuration

Ruleset Name: Unix OS Stacking

Description: Detailed UNIX Analysis rules

Version: 84202007

Ruleset is User Defined

Ruleset Items

Item	Description	Weight	Score
<input checked="" type="checkbox"/> OS	Different OS	100	0.00
<input checked="" type="checkbox"/> Older OS Version	Target running older version of OS	70	0.00
<input checked="" type="checkbox"/> Newer OS Version	Target running newer version of OS	30	0.00
<input checked="" type="checkbox"/> Patch Level	Different Patch Levels	5	0.00
<input checked="" type="checkbox"/> Kernel Bits	Different kernel bits	5	0.00
<input checked="" type="checkbox"/> Time Zones	Systems are in different time zones	5	0.00
<input checked="" type="checkbox"/> Tape Drives	Target does not have tape drive	2	0.00
<input checked="" type="checkbox"/> Memory	Target Has Less Memory	2	0.00
<input checked="" type="checkbox"/> Patches	Patch differences between systems	2	0.00
<input checked="" type="checkbox"/> Installed Software	Target does not have software package installed	1	0.00
<input checked="" type="checkbox"/> Software Versions	Different software versions	2	0.00
<input checked="" type="checkbox"/> About Kernel Parameters	Target has different kernel parameters	1	0.00

Save Apply Cancel

Figure 34

Workload Settings - Web Page Dialog

**Audit Date Range**

☒ All available workload data

☐ Last 14 Days (Input value of 0 means today)

☐ Between 29/12/2006 and 8/1/2007 (dd/mm/yyyy)

**Only include workload data for the following days**

☒ Monday ☒ Tuesday ☒ Wednesday ☒ Thursday ☒ Friday ☒ Saturday ☒ Sunday

**Workload Type Limits**

CPU Utilization 90 %

Figure 35

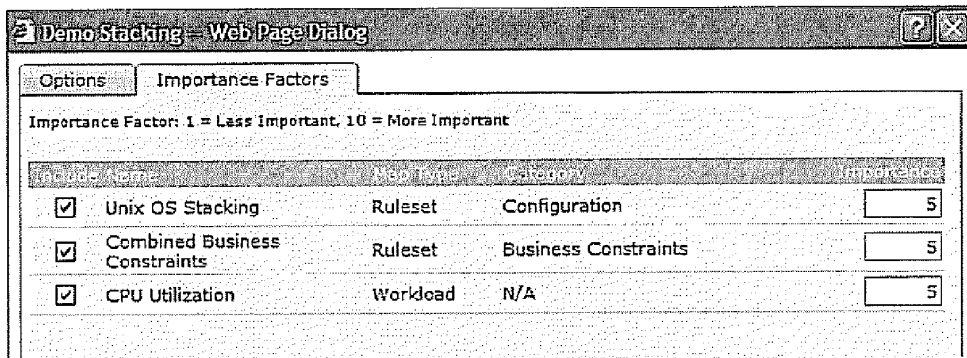


Figure 36

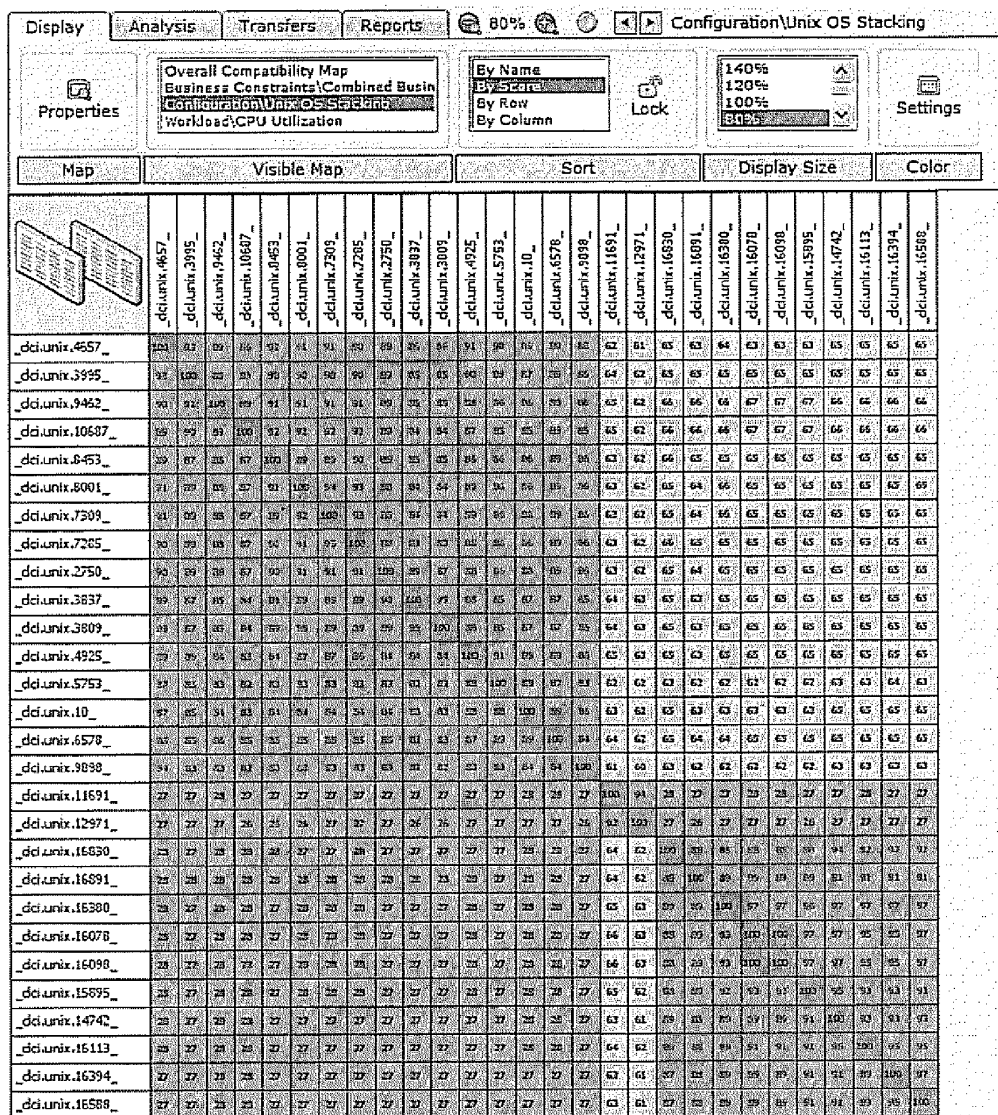


Figure 37

Configuration Compatibility Report

Report Generated: Apr 21, 2007 11:47:10 AM

Summary

Source	_dc1.unix.7309_
Target	_dc1.unix.11691_
Score	63
Category	Configurables
Ruleset Name	Unix OS Stacking
Version	04200007
Remediation Cost	\$ 0.00

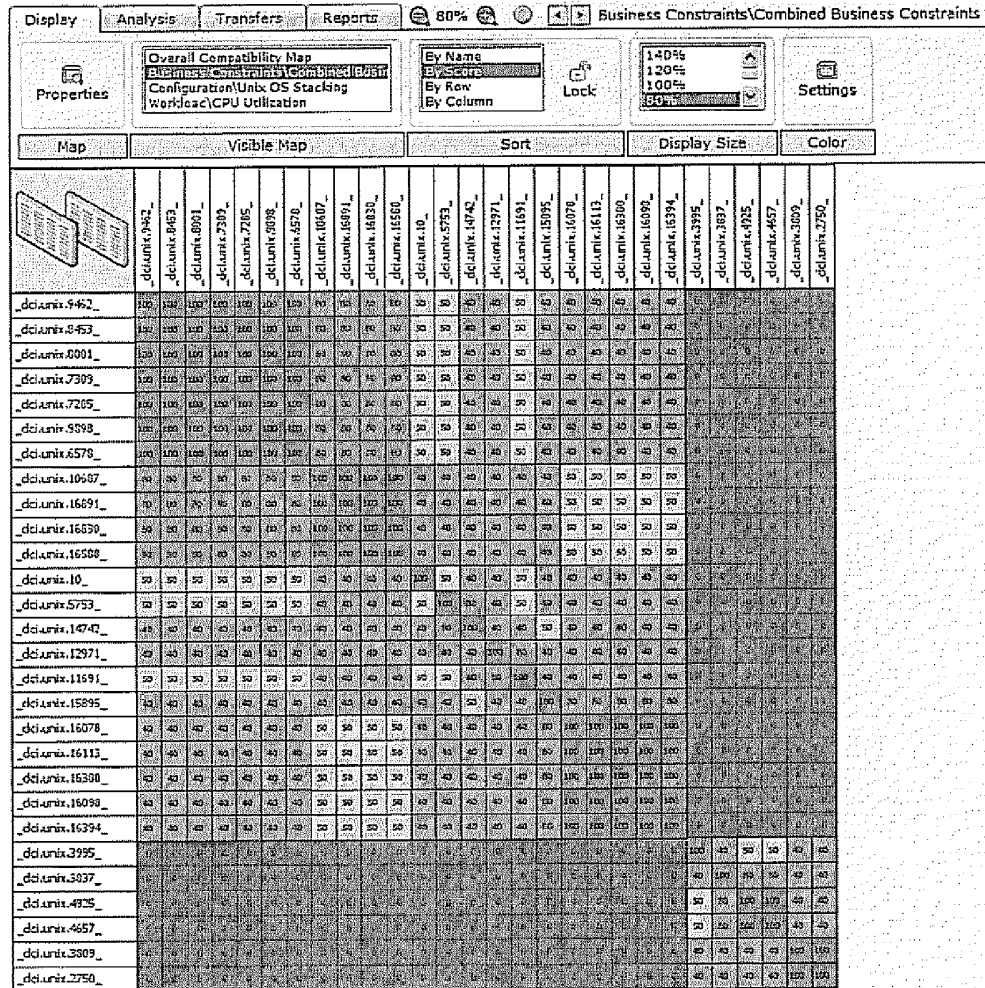
Summary of Differences

Description	Penalty Weight	Counts	Remediation Cost
/dev/tcp settings differ	3%	1	\$ 0.00
/dev/tcp settings differ	0%	1	\$ 0.00
Kernel file group differ	1%	1	\$ 0.00
Kernel file permissions differ	1%	1	\$ 0.00
Target has different initd services	2%	1	\$ 0.00
Target has different initd services settings	2%	1	\$ 0.00
Target running newer version of OS	30%	1	\$ 0.00
tcp_max_bud settings are different	1%	1	\$ 0.00
Total		6	\$ 0.00

Difference Details

Source System	Target System	Description	Module	Object	Property	Instance	Source	Target	Penalty Weight	Remediation Cost
_dc1.unix.7309_	_dc1.unix.11691_	/dev/tcp settings differ	CIRBA Solaris	CIRBA Solaris IOB Table (dev/tcp)	Devicex Value	tcp_time_wait_timeout	240000	60000	3%	\$ 0.00
_dc1.unix.7309_	_dc1.unix.11691_	/dev/tcp settings differ	CIRBA Solaris	CIRBA Solaris NOD Table (dev/tcp)	Devicex Value	tcp_maxsiz_multiplier	2	10		\$ 0.00
_dc1.unix.7309_	_dc1.unix.11691_	/dev/tcp settings differ	CIRBA Solaris	CIRBA Solaris NOD Table (dev/tcp)	Devicex Value	tcp_rmat_huast	16384	49152		\$ 0.00
_dc1.unix.7309_	_dc1.unix.11691_	/dev/tcp settings differ	CIRBA Solaris	CIRBA Solaris NOD Table (dev/tcp)	Devicex Value	tcp_recv_bufsiz	24676	49152		\$ 0.00
_dc1.unix.7309_	_dc1.unix.11691_	/dev/tcp settings differ	CIRBA Solaris	CIRBA Solaris NOD Table (dev/tcp)	Devicex Value	tcp_sliding_ios	2	1		\$ 0.00
_dc1.unix.7309_	_dc1.unix.11691_	/dev/tcp settings differ	CIRBA Solaris	CIRBA Solaris NOD Table (dev/tcp)	Devicex Value	tcp_wscale_always	0	1		\$ 0.00

Figure 38



### Figure 39

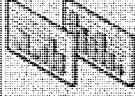
Display	Analysis	Transfers	Reports	80%	Workload/CPU Utilization
					
_del.unix.4657_	100	100	100	100	100
_del.unix.7309_	100	100	100	100	100
_del.unix.16113_	100	100	100	100	100
_del.unix.16570_	100	100	100	100	100
_del.unix.16098_	100	100	100	100	100
_del.unix.5901_	100	100	100	100	100
_del.unix.16607_	100	100	100	100	100
_del.unix.16030_	100	100	100	100	100
_del.unix.16302_	100	100	100	100	100
_del.unix.15995_	100	100	100	100	100
_del.unix.16594_	100	100	100	100	100
_del.unix.2995_	100	100	100	100	100
_del.unix.8463_	100	100	100	100	100
_del.unix.115991_	100	100	100	100	100
_del.unix.12971_	100	100	100	100	100
_del.unix.30029_	100	100	100	100	100
_del.unix.2637_	100	100	100	100	100
_del.unix.8463_	100	100	100	100	100
_del.unix.2750_	100	100	100	100	100
_del.unix.2750_	100	100	100	100	100
_del.unix.32995_	100	100	100	100	100
_del.unix.38838_	100	100	100	100	100
_del.unix.4925_	100	100	100	100	100
_del.unix.86794_	100	100	100	100	100
_del.unix.14743_	100	100	100	100	100
_del.unix.52753_	100	100	100	100	100
_del.unix.86588_	100	100	100	100	100
_del.unix.10670_	100	100	100	100	100
_del.unix.10_	100	100	100	100	100

Figure 40

Workload Stacking Report

Report Generated: Apr 21, 2007 11:44:16 AM

Summary

Source	_dc1.unix.16113_
Target	_dc1.unix.16076_
Score	79
Workload Type	CPU Utilization
Usage Limit	90 %
Benchmark Type	cpu
Source Benchmark	2972
Target Benchmark	1355

Scorecard

Criteria	Value	Score
Peak 4th Quartile (Like Times)	155	28
Peak 4th Quartile (Worst Case)	161	21
Peak 3rd Quartile (Like Times)	9	100
Peak 3rd Quartile (Worst Case)	10	100
Aggregate		79

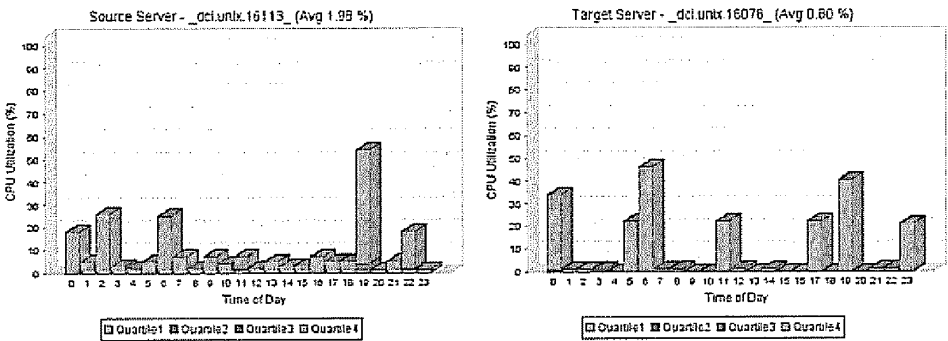
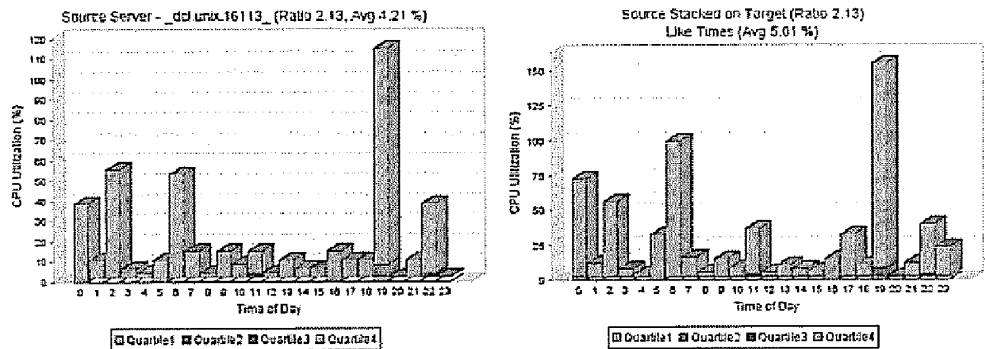
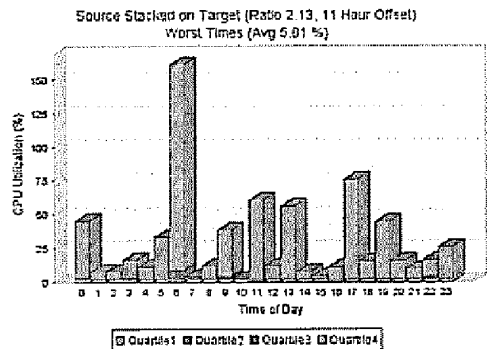


Figure 41



CPU Utilization peaks at 161 % between the hours of 6 AM and 7 AM when the worst times are stacked together.

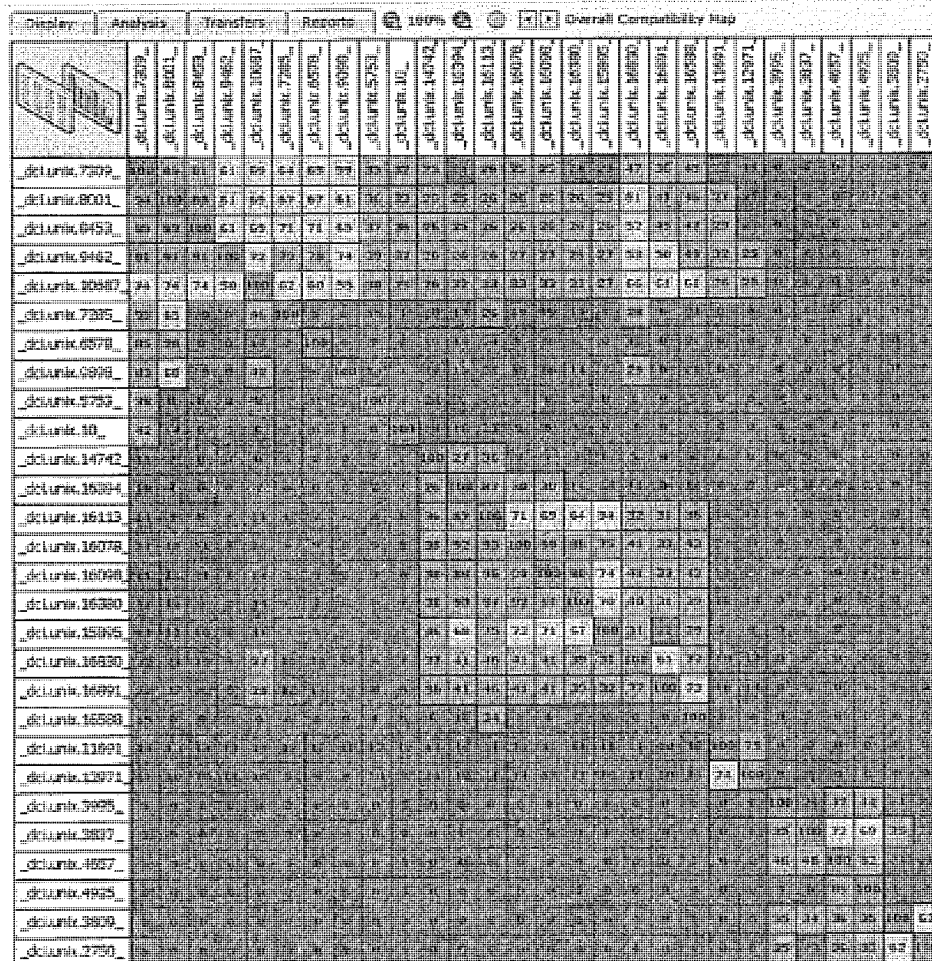


Audit Information

Type	System	Audit	Audit Timestamp	Family	#
Source	_dc.unix.16113_	Solaris9.2	Jan 11, 2007 12:00:00 AM	Solaris	_dc.unix.16049_
Target	_dc.unix.16078_	Solaris9.2	Jan 11, 2007 12:00:00 AM	Solaris	_dc.unix.16040_

Figure 42





### Figure 43

## Overall Compatibility Report

Report Generated: Apr 21, 2007 11:48:34 AM

### Summary

Source	dcl.unix.8453
Target	dcl.unix.9462
Overall Score	61

Category	Name	Importance	Score	Remediation Cost
Business Constraints	Combined Business Constraints	5	100	\$ 0.00
Configuration	Unix OS Stacking	5	88	\$ 0.00
Workload	CPU Utilization	5	70	
<b>Total</b>				\$ 0.00

### System Configuration Compatibility

#### Combined Business Constraints Ruleset Summary \*

Overall Score: 100

Description	Penalty Weight	Count	Remediation Cost
<b>Total</b>	100	0	\$ 0.00

#### Unix OS Stacking Ruleset Summary \*

Overall Score: 88

Description	Penalty Weight	Count	Remediation Cost
Different software versions	2%	1	\$ 0.00
Kernel configuration file does not exist on target	2%	1	\$ 0.00
Kernel file group differ	1%	1	\$ 0.00
Patch differences between systems	2%	1	\$ 0.00
Target Has Less Memory	2%	1	\$ 0.00
Target does not have software package installed	2%	1	\$ 0.00
Target has different InetD services	2%	1	\$ 0.00
Target has less allowable processes	0%	1	\$ 0.00
<b>Total</b>	88	8	\$ 0.00

Figure 44

Workload Stacking Compatibility

Workloads Summary

Workload Type	Usage Limit	Benchmark	Source Benchmark	Target Benchmark
CPU_Utilization	90 %	cpu	540	161

Workloads Scorecard

	Peak 4th Quartile (Like Times)		Peak 4th Quartile (Worst Case)		Peak 3rd Quartile (Like Times)		Peak 3rd Quartile (Worst Case)		Aggregate Workload
	Value	Score	Value	Score	Value	Score	Value	Score	Score
CPU_Utilization	374	0	374	0	29	100	30	100	70
Overall									70

CPU\_Utilization Workload

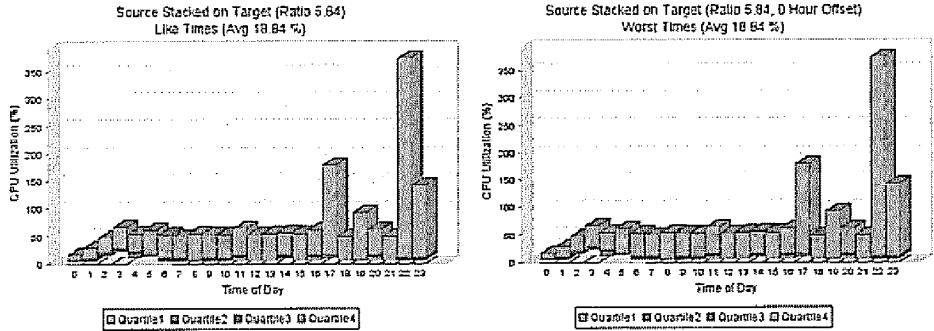


Figure 45

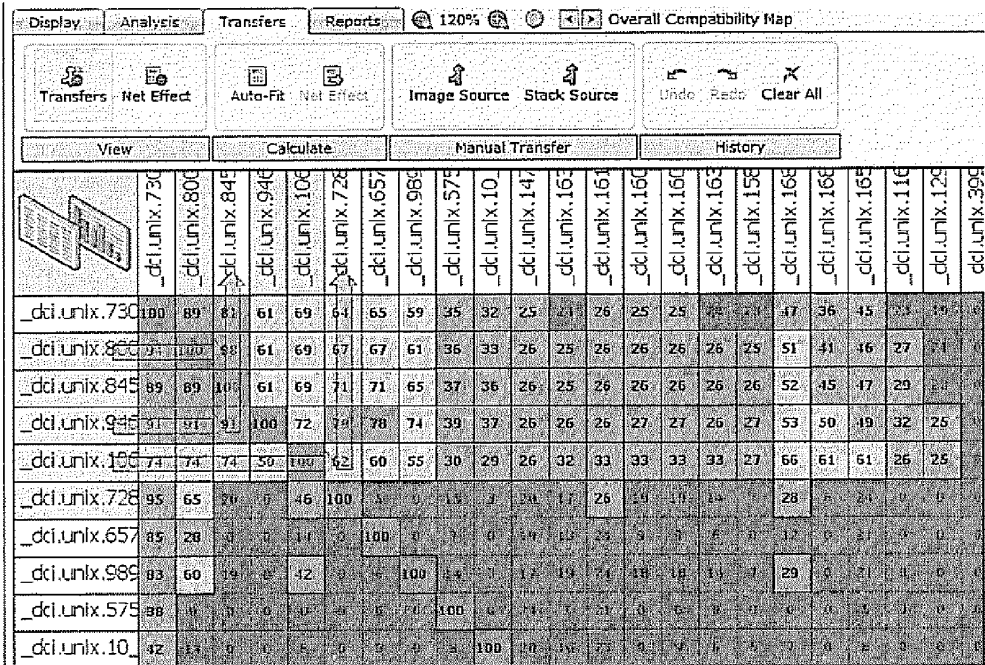


Figure 46

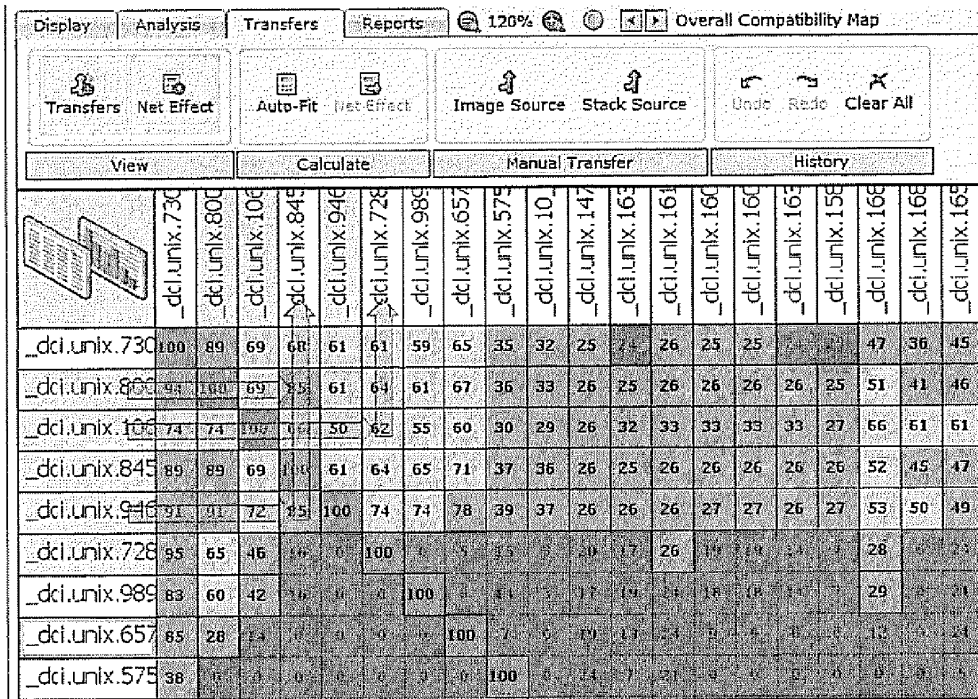


Figure 47

## Overall Compatibility Report

Report Generated: Apr 21, 2007 11:54:26 AM

### Summary

Transfer Source	_dcf.unix.5462_
Transfer Source	_dcf.unix.6001_
Target	_dcf.unix.8453_
Overall Score	91

Category	Name	Importance	Score	Remediation Cost
Business Constraints	Combined Business Constraints	5	100	\$ 0.00
Configuration	Unix OS Slacking	5	89	\$ 0.00
Workload	CPU Utilization	5	95	
Total				\$ 0.00

### System Configuration Compatibility

#### Combined Business Constraints Ruleset Summary \*

Overall Score: 100

Description	Penalty Weight	Count	Remediation Cost
Total	100	0	\$ 0.00

#### Unix OS Slacking Ruleset Summary \*

Overall Score: 89

Description	Penalty Weight	Count	Remediation Cost
Different software versions	2%	1	\$ 0.00
Kernel file group differ	1%	1	\$ 0.00
Patch differences between systems	2%	1	\$ 0.00
Target Has Less Memory	2%	1	\$ 0.00
Target does not have software package installed	2%	1	\$ 0.00
Target has different inetD services	2%	1	\$ 0.00
Total	89	6	\$ 0.00

# Figure 48

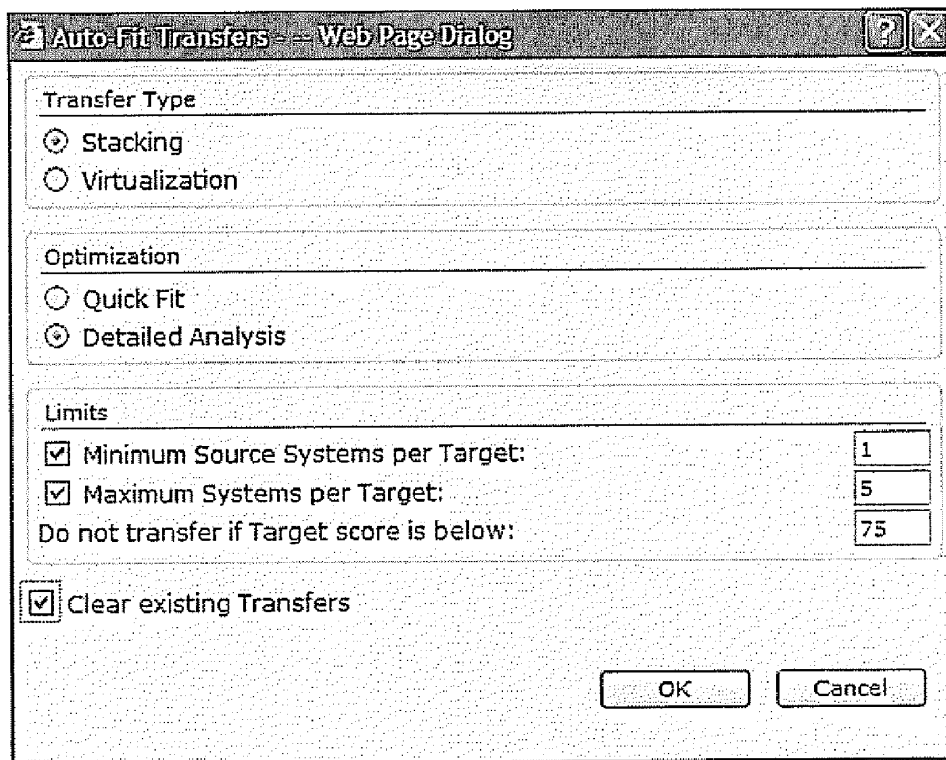


Figure 49

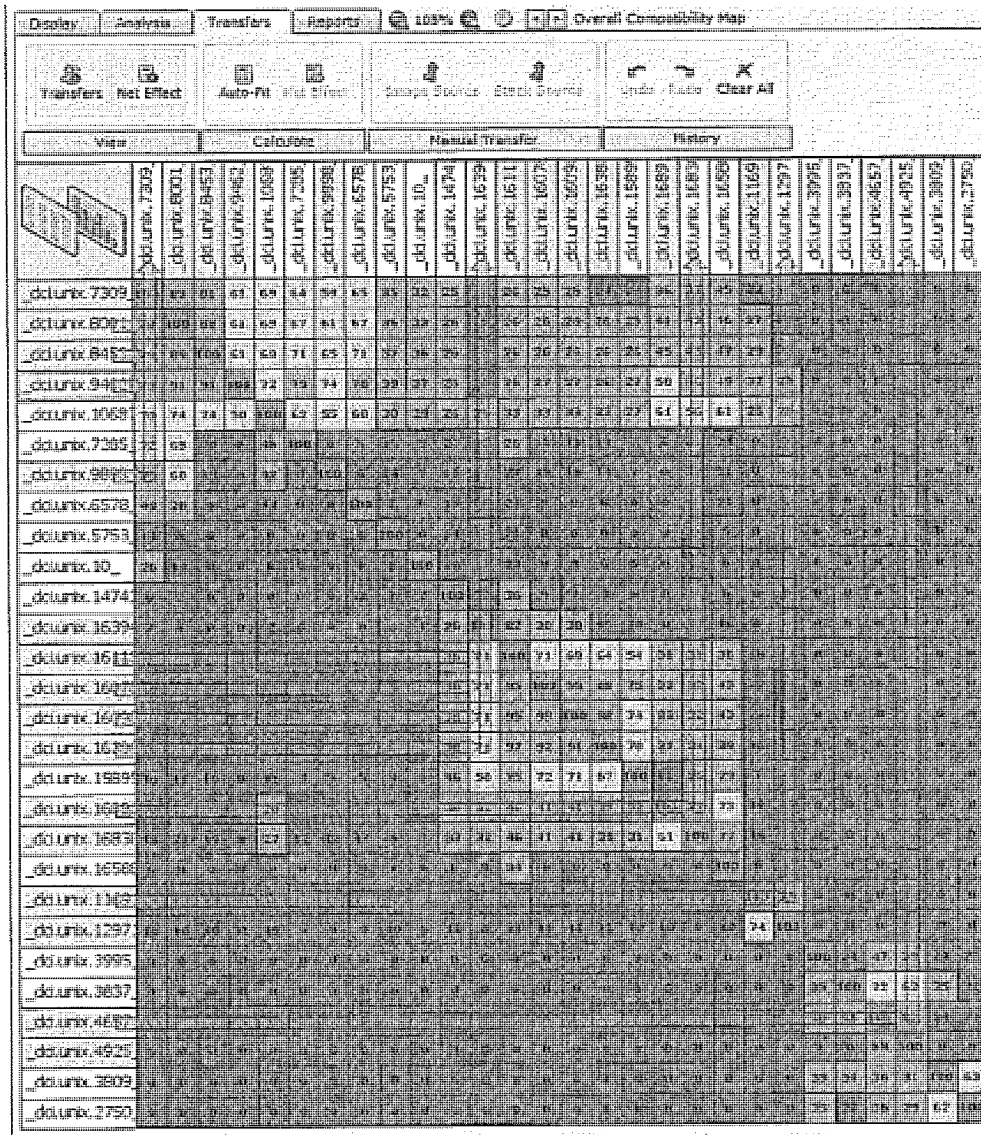


Figure 50



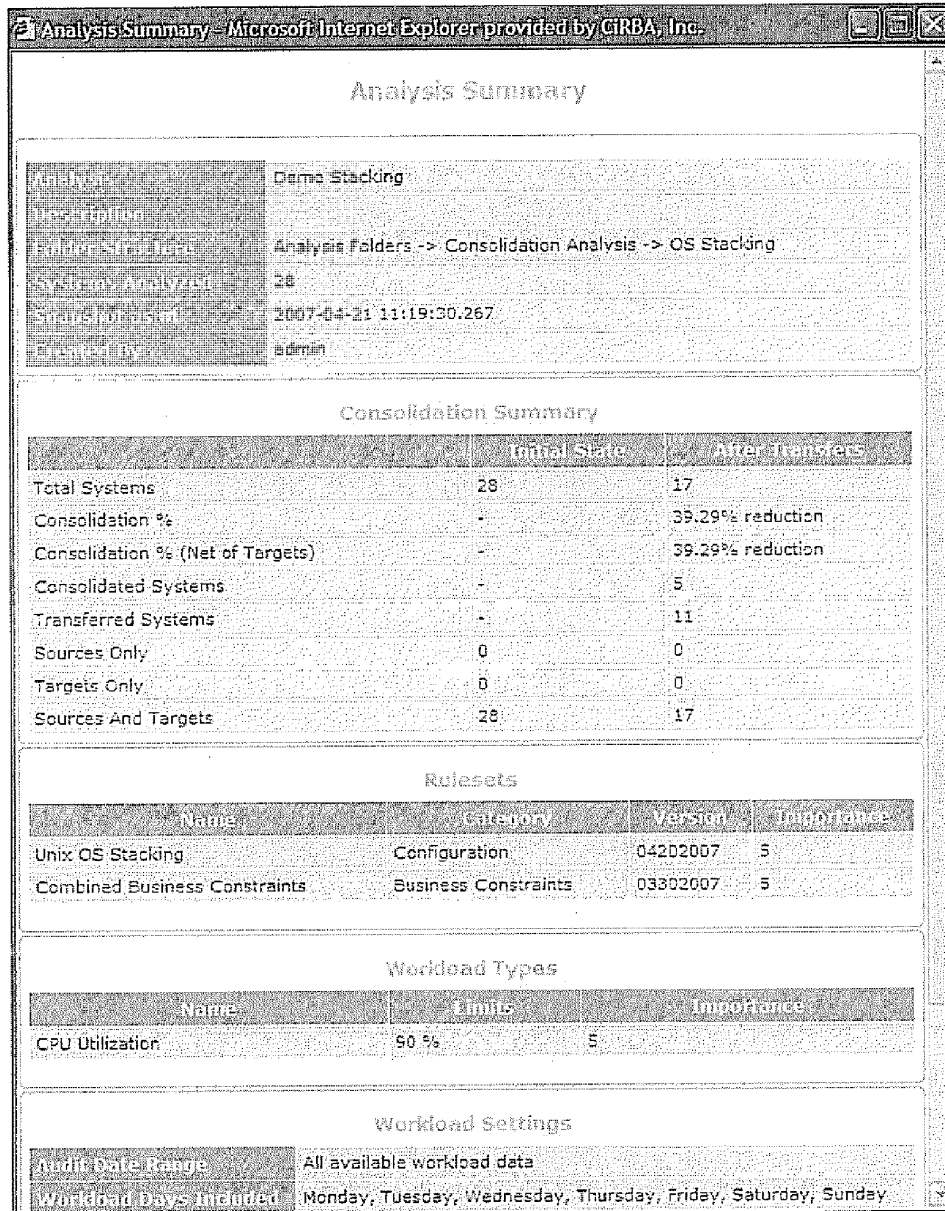


Figure 51

Transfers		
Source	Transfer	Target
_dci.unix.9898_	Stacks onto	_dci.unix.7309_
_dci.unix.8453_	Stacks onto	_dci.unix.7309_
_dci.unix.9462_	Stacks onto	_dci.unix.7309_
_dci.unix.8001_	Stacks onto	_dci.unix.7309_
_dci.unix.16113_	Stacks onto	_dci.unix.16394_
_dci.unix.16096_	Stacks onto	_dci.unix.16394_
_dci.unix.16380_	Stacks onto	_dci.unix.16394_
_dci.unix.16078_	Stacks onto	_dci.unix.16394_
_dci.unix.4657_	Stacks onto	_dci.unix.4925_
_dci.unix.16891_	Stacks onto	_dci.unix.16830_
_dci.unix.11691_	Stacks onto	_dci.unix.12971_

Figure 52

## Electronic Acknowledgement Receipt

<b>EFS ID:</b>	19690575
<b>Application Number:</b>	14341471
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	2381
<b>Title of Invention:</b>	Method and System for Determining Compatibility of Computer Systems
<b>First Named Inventor/Applicant Name:</b>	Andrew D. HILLIER
<b>Customer Number:</b>	27871
<b>Filer:</b>	Brett Joseph Slaney/Judith Martin
<b>Filer Authorized By:</b>	Brett Joseph Slaney
<b>Attorney Docket Number:</b>	59612/00067
<b>Receipt Date:</b>	25-JUL-2014
<b>Filing Date:</b>	
<b>Time Stamp:</b>	17:27:03
<b>Application Type:</b>	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	Application Data Sheet	Cirba67_ADS.pdf	1566315 9621bda4b70cc21c95efc8071b7086177687db12	no	7

### Warnings:

### Information:

2		Cirba67_Appln.pdf	305966 84323de818e7f27ba6ca340a830d012ea24b0dd7	yes	64
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	62	
	Claims		63	63	
	Abstract		64	64	
Warnings:					
Information:					
3	Drawings-only black and white line drawings	Cirba67_Drawings.pdf	6971830 d2905ba96c63d30132d0fb62556d2e817f291123	no	54
Warnings:					
Information:					
Total Files Size (in bytes):			8844111		
<p>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.</p> <p><b><u>New Applications Under 35 U.S.C. 111</u></b> 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.</p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b> 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.</p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b> 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.</p>					