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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/821,345	08/22/2022	Avi Shua	15635.0003-03000	2249

22852 7590 01/09/2024

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER	
SAADOUN, HASSAN	

ART UNIT	PAPER NUMBER
2435	

NOTIFICATION DATE	DELIVERY MODE
01/09/2024	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):

regional-desk@finnegan.com

WIZ, Inc. EXHIBIT - 1004
WIZ, Inc. v. Orca Security LTD.
01

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	ISSUE DATE	PATENT NO.
17/821,345	09-Jan-2024	11868798

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EGRANT NOTIFICATION

Your electronic patent grant (eGrant) is now available, which can be accessed via Patent Center at https://patentcenter.uspto.gov

The electronic patent grant is the official patent grant under 35 U.S.C. 153. For more information, please visit https://www.uspto.gov/electronicgrants

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/821,345	01/09/2024	11868798	15635.0003-03000	2249

22852 7590 12/20/2023

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

ISSUE NOTIFICATION

The projected patent number and issue date are specified above. The patent will issue electronically. The electronically issued patent is the official patent grant pursuant to 35 U.S.C. § 153. The patent may be accessed on or after the issue date through Patent Center at https://patentcenter.uspto.gov/. The patent will be available in both the public and the private sides of Patent Center. Further assistance in electronically accessing the patent, or about Patent Center, is available by calling the Patent Electronic Business Center at 1-888-217-9197.

The USPTO is implementing electronic patent issuance with a transition period, during which period the USPTO will mail a ceremonial paper copy of the electronic patent grant to the correspondence address of record. Additional copies of the patent (i.e., certified and presentation copies) may be ordered for a fee from the USPTO's Certified Copy Center at https://certifiedcopycenter.uspto.gov/index.html. The Certified Copy Center may be reached at (800)972-6382.

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

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

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

Applicant will be able to obtain more detailed information by accessing the Patent Center (https://patentcenter.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 Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PATENT CENTER site https://patentcenter.uspto.gov for additional inventors):

Avi Shua, Tel Aviv, ISRAEL;

APPLICANT(s) (Please see PATENT CENTER site https://patentcenter.uspto.gov for additional applicants):

Orca Security Ltd., Tel Aviv, ISRAEL;

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.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/821,345	08/22/2022	Avi Shua	15635.0003-03000	2249

22852 7590 12/12/2023

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER	
SAADOUN, HASSAN	

ART UNIT	PAPER NUMBER
2435	

NOTIFICATION DATE	DELIVERY MODE
12/12/2023	ELECTRONIC

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

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

regional-desk@finnegan.com

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
P.O. Box 1450
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In re Application of	:	
Orca Security Ltd.	:	
Application No. 17/821,345	:	
Filed: 22 Aug 2022	:	DECISION ON PETITION
For: TECHNIQUES FOR SECURING VIRTUAL MACHINES	:	

This is a decision on the constructive petition under 37 CFR 1.78(c), filed October 6, 2023, to accept an unintentionally delayed claim under 35 U.S.C. 119(e) for the benefit of priority to the prior-filed provisional application listed in the concurrently filed Application Data Sheet (ADS).

The petition under 37 CFR 1.78(c) is **GRANTED**.

A petition for acceptance of a claim for late priority under 37 CFR 1.78(c) is required in this application because a proper benefit claim will be filed after the expiration of the period specified in 37 CFR 1.78(a)(4) – within 4 months of the filing of the nonprovisional application or 16 months of the filing of the provisional application. Therefore, a petition under 37 CFR 1.78(c) is required. The petition under 37 CFR 1.78(c) must be accompanied by:

(1) the reference required by 35 U.S.C. 119(c) and 37 CFR 1.78(a)(3) of the prior-filed application, which must be filed in an Application Data Sheet, unless previously submitted;
(2) the petition fee set forth in § 1.17(m); and
(3) a statement that the entire delay between the date the claim was due under 37 CFR 1.78(a)(4) and the date the claim was filed was unintentional. The Director may require additional where there is a question whether the delay was unintentional.

A nonprovisional application in the benefit chain claiming benefit of the prior-filed provisional application must have been filed within twelve months of the filing date of the prior-filed provisional application.

An ADS listing a proper reference of the prior-filed provisional application and the $840 petition fee were filed on October 6, 2023. 37 CFR 1.78(c) requires a statement that the entire delay between the date the claim was due under 37 CFR 1.78(a)(4) and the date the claim was filed was unintentional. Since the statements appearing in the petition vary from the required

language, the statements are being construed as the statement required by 37 CFR 1.78(a)(4). If this is not a correct reading of the statements appearing in the petition, petitioner should promptly notify the Office.

All the above requirements having been satisfied, the late claim for benefit of priority under 35 U.S.C. 119(e) is accepted as being unintentionally delayed.

Petitioner is advised that this decision grants the petition to accept the unintentionally delayed domestic benefit claim to the prior filed application because the petition requirements of 37 CFR 1.78(c) and the formal requirements for claiming domestic benefit (see MPEP 211.01 et. seq.) have been met. This acceptance should not be construed as meaning that this application is entitled to the benefit of the prior-filed application. Whether a claimed invention in a nonprovisional application is entitled to the benefit of the filing date of a prior-filed application on the basis of the disclosure thereof is determined during examination if it becomes necessary to do so (e.g., intervening reference and interference proceeding). See MPEP 211.05.

A replacement filing receipt, which includes the priority claim to the prior-filed provisional application, will be mailed separately.

Any questions concerning this decision may be directed to the undersigned at (571) 272-3230.

/SHIRENE W BRANTLEY/
Attorney Advisor, OPET

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/821,345	08/22/2022	2435	1530	15635.0003-03000	34	2

CONFIRMATION NO. 2249

REPLACEMENT FILING RECEIPT

22852
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

OC0000006549617 9

Date Mailed: 12/07/2023

Receipt is acknowledged of this non-provisional utility 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 FIRST INVENTOR, 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 corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction 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 provided that the request is grantable.

Inventor(s)

Avi Shua, Tel Aviv, ISRAEL;

Applicant(s)

Orca Security Ltd., Tel Aviv, ISRAEL;

Assignment For Published Patent Application

Orca Security Ltd., Tel Aviv, ISRAEL

Power of Attorney: The patent practitioners associated with Customer Number 22852

Domestic Priority data as claimed by applicant

This application is a CON of 16/585,967 09/27/2019 PAT 11,431,735
which claims benefit of 62/797,718 01/28/2019

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

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

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

If Required, Foreign Filing License Granted: 09/12/2022

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/821,345**

Projected Publication Date: 12/29/2022

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

TECHNIQUES FOR SECURING VIRTUAL MACHINES

Preliminary Class

726

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 AssetsControl, 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).

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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.

PATENT
Attorney Docket No. 15635.0003-03000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	)	
Avi SHUA et al.	)	Group Art Unit: 2435
	)	
Application No.: 17/821,345	)	Examiner: Hassan SAADOUN
	)	
Filed: August 22, 2022	)	Confirmation No.: 2249
	)	
For: TECHNIQUES FOR SECURING VIRTUAL MACHINES	)	
	)	

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

Dear Commissioner:

COMMENTS ON STATEMENT OF REASONS FOR ALLOWANCE

Applicant thanks the Examiner for the Notice of Allowance mailed on August 23, 2023. Without withdrawing allowed claims 22 to 55 from issue, Applicant submits these comments for the record.

In the Examiner's Statement of Reasons for Allowance that was included with the Notice of Allowability, the Examiner makes numerous conclusions regarding alleged reasons why the claims are allowable and paraphrases the claims. Although Applicant agrees with the Examiner's ultimate conclusion that the pending claims are patentable, Applicant does not necessarily agree with each of the characterizations and assertions made in the Examiner's Statement, and submits that the claims are allowable for different and/or additional reasons.

Should the Examiner disagree with Applicant's comments on the Examiner's Statement of Reasons for Allowance, the Examiner is invited to contact the undersigned, in order to resolve such disagreement.

If there are any fees due in connection with the filing of this paper, please charge the fees to Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: October 18, 2023

By: /Christopher C. Johns/
Christopher C. Johns
Reg. No. 68,664
(202) 408-4000

UNITED STATES
PATENT AND TRADEMARK OFFICE

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Alexandria, VA 22313 - 1450
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ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/821,345	**10/18/2023 11:43:48 AM ET**	**15635.0003-03000**

Title of Invention

TECHNIQUES FOR SECURING VIRTUAL MACHINES

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	2249	FILED BY	Michelle Daniels
PATENT CENTER #	63021918	AUTHORIZED BY	Christopher Johns
CUSTOMER #	22852	FILING DATE	08/22/2022
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Avi Shua

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
CARD / 1007	**E20230HB45268415**	**Michelle Daniels**

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
2501	UTILITY ISSUE FEE	480.00	1	480.00
			TOTAL AMOUNT:	**$480.00**

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

New Applications Under 35 U.S.C. 111

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

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

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage

submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

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

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 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. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

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

22852 7590 08/23/2023

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

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.
17/821,345	08/22/2022	Avi Shua	15635.0003-03000	2249

TITLE OF INVENTION: TECHNIQUES FOR SECURING VIRTUAL MACHINES

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0.00	$0.00	$480	11/24/2023

EXAMINER	ART UNIT	CLASS-SUBCLASS
SAADOUN, HASSAN	2435	726-023000

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/AIA/122 or PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Finnegan, Henderson,
2 Farabow, Garrett &
3 Dunner, L.L.P.

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document 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: **Orca Security Ltd.**

(B) RESIDENCE: (CITY and STATE OR COUNTRY): **Tel Aviv, ISRAEL**

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)

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

☒ Electronic Payment via Patent Center or 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. 06-0916

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

☐ Applicant certifying micro entity status. See 37 CFR 1.29

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.

☐ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

☐ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

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 /Christopher C. Johns/ Date 18 October 2023

Typed or printed name Christopher C. Johns Registration No. 68,664

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/821,345	**10/18/2023 11:43:48 AM ET**	**15635.0003-03000**

Title of Invention

TECHNIQUES FOR SECURING VIRTUAL MACHINES

Application Information

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CUSTOMER #	22852	FIRST NAMED INVENTOR	Avi Shua
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Christopher Johns

Documents

TOTAL DOCUMENTS: 2

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
cj1_Issue Fee Transmittal.pdf	1	Issue Fee Payment (PTO-85B)	374 KB
Comments on Statement of Reasons for Allowance - 0003-03000.pdf	2	Post Allowance Communication - Incoming	15 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
cj1_Issue Fee Transmittal.pdf	51D8F2D807DF82F6B70E37A8C80AA94A31F545C1D7244224C C9615C17F915E749390BFA30975F98898A5E4B78DAB01467A6

31C13A00BAB74764F428F1AE15C2C

Comments on Statement of Reasons for Allowance - 0003-03000.pdf	0240E0AEEE774458201DBF97EA6C52C7601D265A8DE4D2D7FE5A3AB1F5206ECD1EBCFA79352A71DD96B80E106846C5DE464C2082E2DD1457C51379E47770245B

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/821,345	**10/06/2023 03:36:08 PM ET**	**15635.0003-03000**

Title of Invention

TECHNIQUES FOR SECURING VIRTUAL MACHINES

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	2249	FILED BY	Sylvia Helms
PATENT CENTER #	62946618	AUTHORIZED BY	Yasir Diab
CUSTOMER #	22852	FILING DATE	08/22/2022
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Avi Shua

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
CARD / 1007	**E202306F39306005**	**Sylvia Helms**

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
2454	PETITION FOR THE DELAYED SUBMISSION OF A PRIORITY OR BENEFIT CLAIM, OR TO RESTORE THE RIGHT OF PRIORITY OR BENEFIT	840.00	1	840.00
			TOTAL AMOUNT:	**$840.00**

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

New Applications Under 35 U.S.C. 111

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

Receipt will establish the filing date of the application

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

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

New International Application Filed with the USPTO as a Receiving Office

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

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/821,345	**10/06/2023 03:36:08 PM ET**	**15635.0003-03000**

Title of Invention

TECHNIQUES FOR SECURING VIRTUAL MACHINES

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CONFIRMATION #	2249	FILED BY	Sylvia Helms
PATENT CENTER #	62946618	FILING DATE	08/22/2022
CUSTOMER #	22852	FIRST NAMED INVENTOR	Avi Shua
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Yasir Diab

Documents

TOTAL DOCUMENTS: 2

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
Petition to Accept Unintentionally Delayed Priority Claims_as-filed.pdf	3	Petition for review/processing depending on status	126 KB
Corrected ADS.pdf	8	Application Data Sheet	181 KB

Warning: This is not a USPTO supplied ADS fillable form. Data in the form cannot be automatically loaded to other USPTO systems.

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)

Petition to Accept Unintentionally Delayed Priority Claims_as-filed.pdf	5400ED219C3A0494C263F8EF1A6A1B277E59D6EBC079D8574433A481AD3A883B07A1406EA06F5252F3CC59991C728D700FA3BD27747360B701A3FC40DBD69992
Corrected ADS.pdf	8DF929B7A7FD1BCED361FADD99D5A32C77CFAB4CCE8C241A7C7B88DA851EB2ABC5CBE775D048F611550A1738E8DEC1FDB9D2FF0F4FB387CBEFE55AAB08FD2B95

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

PATENT
Attorney Docket No. 15635.0003-03000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	)	
Avi Shua	)	Group Art Unit: 2435
	)	
Application No.: 17/821,345	)	Examiner: SAADOUN, HASSAN
	)	
Filed: August 22, 2022	)	Confirmation No.: 2249
	)	
For: TECHNIQUES FOR SECURING VIRTUAL MACHINES	)	
	)	

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

Commissioner:

PETITION UNDER 37 C.F.R. § 1.78 TO ACCEPT AN UNINTENTIONALLY DELAYED BENEFIT CLAIM AND SUBMISSION FOR CORRECTED APPLICATION DATA SHEET

Pursuant to 37 C.F.R. § 1.78, Applicants petitions the Director to accept an unintentionally delayed claim for priority. The Application Data Sheet filed August 22, 2022, for this patent application erroneously omitted U.S. Provisional Application No. 62/797,718, filed January 28, 2019 from the "Domestic Benefit/National Stage Information" section. The attached Corrected ADS corrects this omission.

The entire delay between the date the benefit claim was due and the date of this petition was unintentional.

This Petition is accompanied by a Corrected Application Data Sheet and fulfills the requirement for submission under 37 C.F.R. § 1.114. See M.P.E.P. § 211.02(a).

Grounds for Petition

The present application (U.S. Patent Application No. 17/821,345) was filed on August 22, 2022, claiming benefit of U.S. Provisional Application No. 62/797,718, filed January 28, 2019, as indicated in the first paragraph of the as-filed Specification.

However, the Domestic Benefit/National Stage Information section of the Application Data Sheet filed concurrently with the present application inadvertently omitted the provisional application information.

Therefore, the benefit claim was not granted.

Accordingly, Applicant hereby petitions the Office to accept the unintentionally delayed benefit of priority claim in the present Application. Applicant submits herewith a Corrected Application Data Sheet that includes the omitted information, with the appropriate markup.

Applicant submits that the entire delay between the due date for making a benefit claim under 37 C.F.R. § 1.78(d)(3) and the date of this filing was unintentional. *See* 37 C.F.R. § 1.78(e)(3). Accordingly, Applicant respectfully requests that this Petition be accepted and the patent application be corrected to include the above claim for the benefit of priority. This Petition is accompanied by the $840.00 fee set forth in 37 CFR 1.17(m).

Please grant any extensions of time required to enter this Petition and charge any additional required fees to Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: 6 October 2023

By: /Christopher C. Johns/
Christopher C. Johns
Reg. No. 68,664
(202) 408-4000

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	17/821,345
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 — Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Avi		Shua	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Tel Aviv	Country of Residence	IL

Mailing Address of Inventor:

Address 1	HaMasger St 66		
Address 2			
City	Tel Aviiv	State/Province	
Postal Code	6721714	Country	IL

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	22852		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES		
Attorney Docket Number	15635.0003-03000	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	4	Suggested Figure for Publication (if any)	3

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	17/821,345
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	22852		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim 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" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	16585967	2019-09-27

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	17/821,345
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
16585967	Claims benefit of provisional	62797718	2019-01-28
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.			

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			Remove
Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.			

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	17/821,345
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	17/821,345
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

◉ Assignee	○ Legal Representative under 35 U.S.C. 117	○ Joint Inventor
○ Person to whom the inventor is obligated to assign.	○ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:	
If the Applicant is an Organization check here.	☒
Organization Name	Orca Security Ltd.

Mailing Address Information For Applicant:

Address 1	~~HaMasger St 66~~ Tushiya St 3		
Address 2			
City	Tel Aviv	**State/Province**	
Country	IL	Postal Code	6721714
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	17/821,345
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☒

Organization Name	Orca Security Ltd.

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1	~~65 Yigal Alon St.~~ Tushiya St 3		
Address 2			
City	Tel Aviv	**State/Province**	
Country i	IL	Postal Code	6744316
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Christopher C. Johns/			Date (YYYY-MM-DD)	2023-10-06
First Name	Christopher	Last Name	Johns	Registration Number	68664

Additional Signature may be generated within this form by selecting the Add button.

PTO/AIA/14 (01-22)
Approved for use through 05/31/2024. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	17/821,345
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

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 CooperationTreaty.

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.

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
17/821,345	08/22/2022	Avi Shua	15635.0003-03000

CONFIRMATION NO. 2249

22852
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

IMPROPER CFR REQUEST

OC000000062401976

Date Mailed: 09/26/2023

RESPONSE TO REQUEST FOR CORRECTED FILING RECEIPT

Continuity, Priority Claims, Petitions, and Non-Publication Requests

In response to your request for a corrected Filing Receipt, the Office is unable to comply with your request because:

- The priority or continuity claim has not been entered because it was not filed during the required time period. Applicant may wish to consider filing a petition to accept an unintentionally delayed claim for priority. See 37 CFR 1.55 or 1.78.

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

/ylueng/

PTO/AIA/14 (01-22)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	17/821,345
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Avi		Shua	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Tel Aviv	Country of Residence i	IL

Mailing Address of Inventor:

Address 1	HaMasger St 66		
Address 2			
City	Tel Aviiv	State/Province	
Postal Code	6721714	Country i	IL

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	22852		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES		
Attorney Docket Number	15635.0003-03000	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	4	Suggested Figure for Publication (if any)	3

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	17/821,345
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	22852		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim 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" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	16585967	2019-09-27

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	17/821,345
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
16585967	Claims benefit of provisional	62797718	2019-01-28
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.			

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			Remove
Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.			

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	17/821,345
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	17/821,345
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

◉ Assignee	○ Legal Representative under 35 U.S.C. 117	○ Joint Inventor
○ Person to whom the inventor is obligated to assign.	○ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:	

If the Applicant is an Organization check here. ☒

Organization Name	Orca Security Ltd.

Mailing Address Information For Applicant:

Address 1	~~HaMasger St 66~~ Tushiya St 3		
Address 2			
City	Tel Aviv	**State/Province**	
Country	IL	Postal Code	6721714
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	17/821,345
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☒

Organization Name	Orca Security Ltd.

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1	~~65 Yigal Alon St.~~ Tushiya St 3		
Address 2			
City	Tel Aviv	**State/Province**	
Country i	IL	Postal Code	6744316
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Christopher C. Johns/			Date (YYYY-MM-DD)	2023-09-20
First Name	Christopher	Last Name	Johns	Registration Number	68664

Additional Signature may be generated within this form by selecting the Add button.

PTO/AIA/14 (01-22)
Approved for use through 05/31/2024. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	17/821,345
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

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 CooperationTreaty.

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.

PATENT
Attorney Docket No. 15635.0003-03000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	)	
Avi SHUA	)	Group Art Unit: 2435
	)	
Application No.: 17/821,345	)	Examiner: Hassan SAADOUN
	)	
Filed: August 22, 2022	)	
	)	
For: TECHNIQUES FOR SECURING VIRTUAL MACHINES	)	Confirmation No.: 2249
	)	

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

Commissioner:

SUBMISSION OF CORRECTED APPLICATION DATA SHEET AND REQUEST FOR CORRECTED FILING RECEIPT

Applicant submits herewith a Corrected Application Data Sheet ("ADS") to which has markings to reflect an update in the domestic priority information. Applicant respectfully request that the Office issue an Updated Filing Receipt to acknowledge that the records have been changed to reflect the requested corrections as soon as possible. A marked-up copy of the Filing Receipt is also being filed concurrently with this Submission.

If any fees are necessary for the submission of the Corrected Application Data Sheet, please charge our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: 20 September 2023

By: /Christopher C. Johns/
Christopher C. Johns
Reg. No. 68,664
(202) 408-4000

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
17/821,345	08/22/2022	2435	1530	15635.0003-03000	34	2

CONFIRMATION NO. 2249

REPLACEMENT FILING RECEIPT

22852
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

Date Mailed: 08/29/2023

Receipt is acknowledged of this non-provisional utility 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 FIRST INVENTOR, 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 corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction 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 provided that the request is grantable.

Inventor(s)

Avi Shua, Tel Aviv, ISRAEL;

Applicant(s)

Orca Security Ltd., Tel Aviv, ISRAEL;

Assignment For Published Patent Application

Orca Security Ltd., Tel Aviv, ISRAEL

Power of Attorney: The patent practitioners associated with Customer Number 22852

Domestic Priority data as claimed by applicant

This application is a CON of 16/585,967 09/27/2019 PAT 11,431,735 and claims the benefit of 62/797,718, filed 01/28/2019

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

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

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

If Required, Foreign Filing License Granted: 09/12/2022

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/821,345**

Projected Publication Date: 12/29/2022

Non-Publication Request: No

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

TECHNIQUES FOR SECURING VIRTUAL MACHINES

Preliminary Class

726

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 AssetsControl, 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

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/821,345	**09/20/2023 01:29:19 PM ET**	**15635.0003-03000**

Title of Invention

TECHNIQUES FOR SECURING VIRTUAL MACHINES

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	2249	FILED BY	Sylvia Helms
PATENT CENTER #	62831155	FILING DATE	08/22/2022
CUSTOMER #	22852	FIRST NAMED INVENTOR	Avi Shua
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Christopher Johns

Documents

TOTAL DOCUMENTS: 2

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
Corrected ADS.pdf	8	Application Data Sheet	179 KB
Warning: This is not a USPTO supplied ADS fillable form. Data in the form cannot be automatically loaded to other USPTO systems.			
Submission of Corrected ADS and Request for Corrected FR.pdf	5	Transmittal Letter	254 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)

Corrected ADS.pdf	B1A6160311A70C7053385BCE5D212C5AAD11761B6D8C75676023A4C308C466A0A935BF5B37CC6335D8468621F20AA2CFE1D16EC8CB619157E74C9FB95F21B311
Submission of Corrected ADS and Request for Corrected FR.pdf	55E46A5B8C74D87FD4C5CD24FE5EE40259060ECE4D9F92B3BC1E1B1069966C8153BB073AEAA9A89AC38D432AC15ED04A103BB325F97F2AB44B540BC5744CAF75

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

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
17/821,345	08/22/2022	2435	1530	15635.0003-03000	34	2

CONFIRMATION NO. 2249

REPLACEMENT FILING RECEIPT

22852
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413



Date Mailed: 08/29/2023

Receipt is acknowledged of this non-provisional utility 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 FIRST INVENTOR, 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 corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction 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 provided that the request is grantable.

Inventor(s)

Avi Shua, Tel Aviv, ISRAEL;

Applicant(s)

Orca Security Ltd., Tel Aviv, ISRAEL;

Assignment For Published Patent Application

Orca Security Ltd., Tel Aviv, ISRAEL

Power of Attorney: The patent practitioners associated with Customer Number 22852

Domestic Priority data as claimed by applicant

This application is a CON of 16/585,967 09/27/2019 PAT 11,431,735

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

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

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

If Required, Foreign Filing License Granted: 09/12/2022

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/821,345**

Projected Publication Date: 12/29/2022

Non-Publication Request: No

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

TECHNIQUES FOR SECURING VIRTUAL MACHINES

Preliminary Class

726

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 AssetsControl, 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
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Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

22852 7590 08/23/2023

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER	
SAADOUN, HASSAN	
ART UNIT	**PAPER NUMBER**
2435	

DATE MAILED: 08/23/2023

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/821,345	08/22/2022	Avi Shua	15635.0003-03000	2249

TITLE OF INVENTION: TECHNIQUES FOR SECURING VIRTUAL MACHINES

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0.00	$0.00	$480	11/24/2023

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 40% the amount of undiscounted fees, and micro entity fees are 20% the amount of undiscounted 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. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

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

PART B - FEE(S) TRANSMITTAL

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

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

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

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence 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. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

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

22852 7590 08/23/2023

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

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.
17/821,345	08/22/2022	Avi Shua	15635.0003-03000	2249

TITLE OF INVENTION: TECHNIQUES FOR SECURING VIRTUAL MACHINES

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0.00	$0.00	$480	11/24/2023

EXAMINER	ART UNIT	CLASS-SUBCLASS
SAADOUN, HASSAN	2435	726-023000

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/AIA/122 or PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document 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)

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

❑ Electronic Payment via Patent Center or 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

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.

❑ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

❑ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

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
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/821,345	08/22/2022	Avi Shua	15635.0003-03000	2249

22852 7590 08/23/2023

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER	
SAADOUN, HASSAN	

ART UNIT	PAPER NUMBER
2435	

DATE MAILED: 08/23/2023

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

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

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

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

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

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

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

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

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

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

Notice of Allowability	Application No. 17/821,345	Applicant(s) Shua, Avi	
	Examiner HASSAN SAADOUN	Art Unit 2435	AIA (FITF) Status Yes

-- 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 07/12/2023.
   ☐ 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 22-55 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

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

   Certified copies:

   a) ☐ All b) ☐ Some* c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

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

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☑ Notice of References Cited (PTO-892)
2. ☑ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 05/30/2023.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☑ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/HASSAN SAADOUN/ Examiner, Art Unit 2435	/JOSEPH P HIRL/ Supervisory Patent Examiner, Art Unit 2435

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

2. **Note:** The 6 terminal disclaimers filed on **07/12/2023** disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted on all 6 applications' numbers **17/330,998**, **16/585,967, 18/055,150**, **18/055,181**, **18/055,201** and **18/055,220** have been reviewed and is accepted. The terminal disclaimers have been recorded.

Response to Amendment

3. The Amendment filed on **07/12/2023** has been entered. Claims **22-55** are pending in this application.

Response to Argument

4. Applicant's representative filed a Terminal Disclaimer on **07/12/2023**, disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted on all 6 applications' numbers **17/330,998**, **16/585,967, 18/055,150**, **18/055,181**, **18/055,201** and **18/055,220,** to overcome the Non-Statutory Double Patenting rejection. The rejection has been withdrawn.

Allowable Subject Matter

5. Claims **22-55** are allowed.

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

7. The closest prior arts made of records are, Golan et al. (U.S Patent No. **10,944,778 B1**, referred to as **Golan**), Derbeko et al. (U.S Patent No. **10,536,471 B1**, referred to as **Derbeko**) and Deng et al. (U.S Pub No. **2017/0103212 A1**, referred to as **Deng**).

Golan discloses a method and system for implementing risk-based cyber security. Specifically, the disclosed method and system entail evaluating risk as a decision threshold for conducting cyber security assessments of system images within cloud computing environments. Further, the disclosed method and system pivot on intelligence pertaining to the latest cyber threats and/or vulnerabilities found worldwide.

Derbeko discloses a system and a method of detecting malware in a virtual machine (VM), the method comprising periodically creating snapshots of the VM, analyzing each of the snapshots in comparison to one or more previous snapshots to determine whether anomalies exist, and based on a threshold amount of anomalies detected, scanning the VM to determine whether malware is detected.

Deng discloses determining which snapshot deltas tend to occur in: (i) healthy virtual machines (VMs) that have been subject to an attack yet remained healthy, and/or (ii) unhealthy VMs that have apparently been adversely affected by an attack. Snapshot deltas that occur in at least some (or more preferably all) of the healthy VM subset provide information about software changes (for example, updates, configuration

changes) that may be helpful. Snapshot deltas that occur in at least some (or more preferably all) of the unhealthy VM subsets provide information about software changes (for example, updates, configuration changes) that may be unhelpful.

8. However, regarding claim **22**, the prior art of **Golan**, **Derbeko** and **Deng** when taken in the context of the claim as a whole do not disclose nor suggest, "analyzing the snapshot of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset; and alerting detected potential cyber threats based on filtering or prioritizing using a determined risk of each detected threat.".

9. Regarding claim **39**, the prior art of **Golan**, **Derbeko** and **Deng** when taken in the context of the claim as a whole do not disclose nor suggest, "analyze the snapshot of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset; and alert detected potential cyber threats based on filtering or prioritizing using a determined risk of each detected threat.".

10. **Claims 23-38** depend on **claim 22** and **claims 40-55** depend on **claim 39** and are of consequence allowed.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HASSAN SAADOUN whose telephone number is (571)272-8408. The examiner can normally be reached Mon-Fri 9:00-5:00.

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, Joseph Hirl can be reached on 571-272-3685. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HASSAN SAADOUN/
Examiner, Art Unit 2435

/JOSEPH P HIRL/
Supervisory Patent Examiner, Art Unit 2435

Notice of References Cited	Application/Control No. 17/821,345	Applicant(s)/Patent Under Reexamination Shua, Avi	
	Examiner HASSAN SAADOUN	Art Unit 2435	Page 1 of 1

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-10944778-B1	03-2021	Golan; Oron	H04L63/1491	1/1
*	B	US-10536471-B1	01-2020	Derbeko; Philip	G06F21/53	1/1
*	C	US-20170103212-A1	04-2017	Deng; Yu	G06F3/0619	1/1
*	D	US-11068353-B1	07-2021	Ved; Amber	G06F9/45558	1/1
*	E	US-20160094568-A1	03-2016	Balasubramanian; Swaminathan	G06F9/45558	726/23
*	F	US-20160004449-A1	01-2016	LAKSHMAN; Avinash	G06F3/0604	711/162
*	G	US-20130191643-A1	07-2013	Song; Zhexuan	H04L9/3265	713/176
*	H	US-10552610-B1	02-2020	Vashisht; Sai Omkar	G06F3/0619	1/1
*	I	US-20120072968-A1	03-2012	Wysopal; Christopher J.	G06F21/577	726/1
*	J	US-20140089916-A1	03-2014	Gross; Miron	G06F11/0727	718/1
	K					
	L					
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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

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

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

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/821,345	Shua, Avi
	Examiner	Art Unit
	HASSAN SAADOUN	2435

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

CLAIMS

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

CLAIM		DATE								
Final	Original	05/18/2023	08/17/2023							
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	55	✓	=							

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/821,345	Shua, Avi
	Examiner	Art Unit
	HASSAN SAADOUN	2435

CPC - Searched*		
Symbol	**Date**	**Examiner**
CPC Classification Search(G06F9/45558 or G06F11/1464 or G06F16/128 or H04L63/1416 or H04L63/1433 or H04L63/1441 or G06F2009/45562 or G06F2009/45583 or G06F2009/45587 or G06F2009/45591 or G06F2009/45595 or G06F2201/84 or G06F2201/815 or G06F2201/86 or G06F11/1451 or G06F11/301 or G06F11/3476 or H04L63/1408 or H04L63/1425) limited with text.	05/18/2023	HS
CPC Classification Search(G06F9/45558 or G06F11/1464 or G06F16/128 or H04L63/1416 or H04L63/1433 or H04L63/1441 or G06F2009/45562 or G06F2009/45583 or G06F2009/45587 or G06F2009/45591 or G06F2009/45595 or G06F2201/84 or G06F2201/815 or G06F2201/86 or G06F11/1451 or G06F11/301 or G06F11/3476 or H04L63/1408 or H04L63/1425) limited with text.	08/17/2023	HS

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

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

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

/HASSAN SAADOUN/ Examiner, Art Unit 2435	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/821,345	Shua, Avi
	Examiner	Art Unit
	HASSAN SAADOUN	2435

Search Notes		
Search Notes	**Date**	**Examiner**
PE2E class limited with text search. (See Search History).	05/18/2023	HS
PE2E inventor and assignee search. (See Search History).	05/18/2023	HS
PE2E text search. (See Search History).	05/18/2023	HS
PE2E Similarity and More Like This Document Search. (See Search History).	05/18/2023	HS
PE2E Interference Search. (See Search History).	05/18/2023	HS
NPL search. (Google Scholar). (See Search History).	05/18/2023	HS
PE2E class limited with text search. (See Search History).	08/17/2023	HS
PE2E inventor and assignee search. (See Search History).	08/17/2023	HS
PE2E text search. (See Search History).	08/17/2023	HS
PE2E Similarity and More Like This Document Search. (See Search History).	08/17/2023	HS
PE2E Interference Search. (See Search History).	08/17/2023	HS
NPL search. (Google Scholar). (See Search History).	08/17/2023	HS

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**
G06F	9/45558, 11/1464, 16/128, 2009/45562, 2009/45583, 2009/45587, 2009/45591, 2009/45595, 2201/84, 2201/815, 2201/86, 11/1451, 11/301, 11/3476.	05/18/2023	HS
H04L	63/1416, 63/1433, 63/1441, 63/1408, 63/1425.	05/18/2023	HS
G06F	9/45558, 11/1464, 16/128, 2009/45562, 2009/45583, 2009/45587, 2009/45591, 2009/45595, 2201/84, 2201/815, 2201/86, 11/1451, 11/301, 11/3476.	08/17/2023	HS
H04L	63/1416, 63/1433, 63/1441, 63/1408, 63/1425.	08/17/2023	HS

/HASSAN SAADOUN/ Examiner, Art Unit 2435	

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/821,345	Shua, Avi
	Examiner	**Art Unit**
	HASSAN SAADOUN	2435

CPC						
Symbol					**Type**	**Version**
G06F	/	9	/	45558	F	2013-01-01
H04L	/	63	/	1416	I	2013-01-01
H04L	/	63	/	1441	I	2013-01-01
G06F	/	16	/	128	I	2019-01-01
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G06F	/	21	/	554	I	2013-01-01
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G06F	/	2009	/	45583	A	2013-01-01
G06F	/	2009	/	45587	A	2013-01-01
G06F	/	2009	/	45595	A	2013-01-01
G06F	/	2009	/	45562	A	2013-01-01
G06F	/	2009	/	45591	A	2013-01-01
G06F	/	2201	/	84	A	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
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/HASSAN SAADOUN/ Examiner, Art Unit 2435 (Assistant Examiner)	17 August 2023 (Date)	**Total Claims Allowed:** 34	
/JOSEPH P HIRL/ Supervisory Patent Examiner, Art Unit 2435 (Primary Examiner)	17 August 2023 (Date)	O.G. Print Claim(s) 22	O.G. Print Figure 2

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/821,345	Shua, Avi
	Examiner	**Art Unit**
	HASSAN SAADOUN	2435

INTERNATIONAL CLASSIFICATION					
CLAIMED					
H04L	/	9	/	40	
G06F	/	21	/	55	

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**
726	23

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

/HASSAN SAADOUN/ Examiner, Art Unit 2435 (Assistant Examiner)	17 August 2023 (Date)	**Total Claims Allowed:** 34	
/JOSEPH P HIRL/ Supervisory Patent Examiner, Art Unit 2435 (Primary Examiner)	17 August 2023 (Date)	O.G. Print Claim(s) 22	O.G. Print Figure 2

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
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	Examiner	**Art Unit**
	HASSAN SAADOUN	2435

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

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
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	30		39		48										

/HASSAN SAADOUN/ Examiner, Art Unit 2435	17 August 2023	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	34	
/JOSEPH P HIRL/ Supervisory Patent Examiner, Art Unit 2435	17 August 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	22	2

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)				Complete if Known	
				Application Number	17/821,345
				Filing Date	August 22, 2022
				First Named Inventor	Avi Shua
				Art Unit	2435
				Examiner Name	SAADOUN, HASSAN
Sheet	1	of	1	Attorney Docket Number	15635.0003-03000

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Examiner Initials*	Cite No.	Document Number Number-Kind Code (if known)	Issue Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-10,812,521-B1	10-20-2020	Sharifi Mehr	
		US-11,431,735 B2	08-2022	Shua	
		US-11,516,231 B2	11-2022	Shua	

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		US-2013/0247133 A1	09-19-2013	Price et al.	
		US-2016/0241573 A1	08-18-2016	Mixer	
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		US-2023/0087080 A1	03-23-2023	Shua	

Note: Submission of copies of U.S. Patents and published U.S. Patent Applications is not required.

NON PATENT LITERATURE DOCUMENTS

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, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation
		Notice of Allowance Application No. 17/361,861 dated May 10, 2023, in the United States Patent and Trademark Office. (15635.0003-02000)	N/A

Examiner Signature	/HASSAN SAADOUN/	Date Considered	08/17/2023

*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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H..S./

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	1	"17821345"	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/17 09:37 AM
L2	10	"16585967"	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/17 09:37 AM
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L5	29	((("SHUA") near3 ("Avi"))).INV.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2023/05/17 09:40 AM
L6	46	("10079842" OR "10402560" OR "10534915" OR "10782952" OR "11120124" OR "11216563" OR "11431735" OR "11516231" OR "20080263658" OR "20090007100" OR "20100017512" OR "20120323853" OR "20140096135" OR "20200042707" OR "9069983" OR "9229758" OR "9268689" OR "9734325" OR "9756070" OR "9858105" OR "10412109" OR "20070266433" OR	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/17 09:40 AM

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L7	38	(Artificial Intelligence) More like doc: US-20220417270-A1 Text: (US-20200244678-A1 OR US-11431735-B2 OR US-11516231-B2 OR US-20210336976-A1 OR US-20230087080-A1 OR US-20230093527-A1 OR US-20200244692-A1 OR US-20230092220-A1 OR US-20230089313-A1 OR US-20210377287-A1 OR US-20210329019-A1 OR US-10503895-B2 OR US-10552610-B1 OR CN-109074450-B OR US-20170098072-A1 OR US-20180260574-A1 OR US-10922418-B2 OR US-10601807-B2 OR CN-111866027-A OR CN-111866027-B).did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 09:41 AM
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		(US-20220417270-A1 OR US-20200244678-A1 OR US-11516231-B2 OR US-11431735-B2 OR US-20210336976-A1 OR US-20200244692-A1 OR US-20230087080-A1 OR US-20230093527-A1 OR US-20230092220-A1 OR US-20230089313-A1 OR US-20210377287-A1 OR US-20210329019-A1 OR US-20140317746-A1 OR EP-3369232-A1 OR WO-2017074747-A1 OR WO-2021044407-A1 OR EP-4004787-A1 OR US-20180152473-A1 OR US-10757133-B2 OR US-20210273958-A1 OR US-20200106793-A1 OR US-9762605-B2 OR EP-3654582-B1 OR US-9866581-B2 OR EP-3528463-A1 OR US-20190260779-A1 OR EP-3369232-B1 OR CA-3034176-A1 OR EP-3161999-B1 OR US-20190188385-A1 OR US-20190129739-A1 OR US-10310888-B2 OR US-20200050475-A1 OR WO-2019118153-A1 OR US-20180124069-A1 OR US-10681068-B1 OR US-20220043716-A1 OR EP-3707631-B1 OR US-20210279087-A1 OR US-11170107-B2 OR CN-111183425-A OR US-20220382575-A1 OR US-11397649-B2 OR US-20200057668-A1 OR US-10528383-B2 OR US-10884783-B2 OR US-10769281-B2 OR US-20210224091-A1 OR WO-2022222602-A1 OR US-11138075-	EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN))				

		B2).did.					
L9	45	(Artificial Intelligence) Publication Status Unavailable from Similarity Search Text: (CN-102473220-A OR US-11516231-B2 OR US-20210336976-A1 OR US-11431735-B2 OR US-20230092220-A1 OR US-20200244692-A1 OR US-20220417270-A1 OR US-20230087080-A1 OR US-20190205523-A1 OR US-20160321096-A1 OR US-20210377287-A1 OR US-20200244678-A1 OR US-20140317746-A1 OR US-10853190-B1 OR EP-4004787-A1 OR US-20180152473-A1 OR US-10757133-B2 OR WO-2017074747-A1 OR EP-3369232-A1 OR EP-3654582-B1 OR US-9866581-B2 OR US-20210273958-A1 OR EP-3161999-B1 OR US-9762605-B2 OR EP-3528463-A1 OR US-20190260779-A1 OR US-10360371-B1 OR US-11170107-B2 OR US-20180124069-A1 OR WO-2019118153-A1 OR EP-3707631-B1 OR EP-3369232-B1 OR CA-3034176-A1 OR US-20200106793-A1 OR US-20160036835-A1 OR CN-109564612-A OR EP-3175431-A1 OR US-20210326046-A1 OR CA-2955069-A1 OR AU-2015296801-B2 OR US-9516044-B2 OR US-10681068-B1 OR CA-2955069-C OR US-20220043716-A1 OR US-20220278993-A1 OR CN-111183425-A OR US-20220382575-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN))	OR	ON	ON	2023/05/17 09:42 AM

		A1 OR US-8776235-B2 OR US-20210279087-A1 OR US-20160248798-A1).did.					
L11	10	((("Orca") near3 ("Security") near3 ("Ltd"))).AS,AANM. AND (determin$3 identif$5 monitor$3) near3 (snapshot snap?shot image copy picture replicat$3 clon$3) adj7 (virtual$3 "VM")	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/17 09:52 AM
L12	8	((("Orca") near3 ("Security") near3 ("Ltd"))).AS,AANM. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj7 (virtual$3 "VM")).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/17 09:52 AM
L13	8	((("SHUA") near3 ("Avi"))).INV. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj7 (virtual$3 "VM")).clm.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2023/05/17 09:55 AM
L14	3965	(G06F9/45558 OR G06F11/1464 OR G06F16/128 OR H04L63/1416 OR H04L63/1433 OR H04L63/1441 OR G06F2009/45562 OR G06F2009/45583 OR G06F2009/45587 OR G06F2009/45591 OR G06F2009/45595 OR G06F2201/84 OR G06F2201/815 OR G06F2201/86 OR G06F11/1451 OR G06F11/301 OR G06F11/3476 OR H04L63/1408 OR H04L63/1425).cpc. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj7 (virtual$3	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 09:56 AM

		"VM"))					
L15	2202	(G06F9/45558 OR G06F11/1464 OR G06F16/128 OR H04L63/1416 OR H04L63/1433 OR H04L63/1441 OR G06F2009/45562 OR G06F2009/45583 OR G06F2009/45587 OR G06F2009/45591 OR G06F2009/45595 OR G06F2201/84 OR G06F2201/815 OR G06F2201/86 OR G06F11/1451 OR G06F11/301 OR G06F11/3476 OR H04L63/1408 OR H04L63/1425).cpc. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj3 (virtual$3 "VM"))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 09:56 AM
L16	329	(G06F9/45558 OR G06F11/1464 OR G06F16/128 OR H04L63/1416 OR H04L63/1433 OR H04L63/1441 OR G06F2009/45562 OR G06F2009/45583 OR G06F2009/45587 OR G06F2009/45591 OR G06F2009/45595 OR G06F2201/84 OR G06F2201/815 OR G06F2201/86 OR G06F11/1451 OR G06F11/301 OR G06F11/3476 OR H04L63/1408 OR H04L63/1425).cpc. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj3 (virtual$3 "VM") adj7 (disk asset))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 09:57 AM
L17	15	(G06F9/45558 OR G06F11/1464 OR G06F16/128 OR H04L63/1416 OR	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2023/05/17 10:06 AM

		H04L63/1433 OR H04L63/1441 OR G06F2009/45562 OR G06F2009/45583 OR G06F2009/45587 OR G06F2009/45591 OR G06F2009/45595 OR G06F2201/84 OR G06F2201/815 OR G06F2201/86 OR G06F11/1451 OR G06F11/301 OR G06F11/3476 OR H04L63/1408 OR H04L63/1425).cpc. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj3 (virtual$3 "VM") adj7 (disk asset) AND (analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) SAME (threat$3 risk$3 malware attack$3 vulnerab$5))	CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L18	2	("10079842" OR "10402560" OR "10534915" OR "10782952" OR "11120124" OR "11216563" OR "11431735" OR "11516231" OR "20080263658" OR "20090007100" OR "20100017512" OR "20120323853" OR "20140096135" OR "20200042707" OR "9069983" OR "9229758" OR "9268689" OR "9734325" OR "9756070" OR "9858105" OR "10412109" OR "20070266433" OR "20140137190" OR "20150052520" OR "20170011138" OR "20170031704" OR "20170111384" OR	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/17 10:09 AM

		"20180255080" OR "20180293374" OR "9177145" OR "9519781" OR "9563777" OR "9798885" OR "0000002" OR "10469304" OR "10536471" OR "10944778" OR "11068353" OR "20080189788" OR "20110289584" OR "20130191643" OR "20160004449" OR "20160094568" OR "20160364255" OR "20170103212" OR "20180137032").pn. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj3 (virtual$3 "VM") adj7 (disk asset))					
L19	17	(US-20200244678-A1 OR US-11431735-B2 OR US-11516231-B2 OR US-20210336976-A1 OR US-20230087080-A1 OR US-20230093527-A1 OR US-20200244692-A1 OR US-20230092220-A1 OR US-20230089313-A1 OR US-20210377287-A1 OR US-20210329019-A1 OR US-10503895-B2 OR US-10552610-B1 OR CN-109074450-B OR US-20170098072-A1 OR US-20180260574-A1 OR US-10922418-B2 OR US-10601807-B2 OR CN-111866027-A OR CN-111866027-B).did. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj3 (virtual$3 "VM") adj7 (disk asset))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 10:10 AM

L20	7	(CN-102473220-A OR US-11516231-B2 OR US-20210336976-A1 OR US-11431735-B2 OR US-20230092220-A1 OR US-20200244692-A1 OR US-20220417270-A1 OR US-20230087080-A1 OR US-20190205523-A1 OR US-20160321096-A1 OR US-20210377287-A1 OR US-20200244678-A1 OR US-20140317746-A1 OR US-10853190-B1 OR EP-4004787-A1 OR US-20180152473-A1 OR US-10757133-B2 OR WO-2017074747-A1 OR EP-3369232-A1 OR EP-3654582-B1 OR US-9866581-B2 OR US-20210273958-A1 OR EP-3161999-B1 OR US-9762605-B2 OR EP-3528463-A1 OR US-20190260779-A1 OR US-10360371-B1 OR US-11170107-B2 OR US-20180124069-A1 OR WO-2019118153-A1 OR EP-3707631-B1 OR EP-3369232-B1 OR CA-3034176-A1 OR US-20200106793-A1 OR US-20160036835-A1 OR CN-109564612-A OR EP-3175431-A1 OR US-20210326046-A1 OR CA-2955069-A1 OR AU-2015296801-B2 OR US-9516044-B2 OR US-10681068-B1 OR CA-2955069-C OR US-20220043716-A1 OR US-20220278993-A1 OR CN-111183425-A OR US-20220382575-A1 OR US-8776235-B2 OR US-20210279087-A1 OR US-20160248798-A1).did. AND (determin$3 identif$5 monitor$3) near3 ((snapshot	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO))	OR	ON	ON	2023/05/17 10:12 AM

		snap?shot image copy picture replicat$3 clon$3) adj3 (virtual$3 "VM") adj7 (disk asset))					
L21	109	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 11:11 AM
L22	19	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5).ti,ab,bsum, clm.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 11:12 AM
L23	89	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5) AND l3	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 11:15 AM
L24	58	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2023/05/17 11:16 AM

		clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5) AND L3 AND (@ad<"20190128")	EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L25	2	"20170103212"	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/17 12:16 PM
L26	6	("10079842" OR "10402560" OR "10534915" OR "10782952" OR "11120124" OR "11216563" OR "11431735" OR "11516231" OR "20080263658" OR "20090007100" OR "20100017512" OR "20120323853" OR "20140096135" OR "20200042707" OR "9069983" OR "9229758" OR "9268689" OR "9734325" OR "9756070" OR "9858105" OR "10412109" OR "20070266433" OR "20140137190" OR "20150052520" OR "20170011138" OR "20170031704" OR "20170111384" OR "20180255080" OR "20180293374" OR "9177145" OR "9519781" OR "9563777" OR "9798885" OR "0000002" OR "10469304" OR "10536471" OR "10944778" OR "11068353" OR "20080189788" OR "20110289584" OR "20130191643" OR "20160004449" OR "20160094568" OR "20160364255" OR	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/17 12:20 PM

		"20170103212" OR "20180137032").pn. AND (analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5)					
L27	65	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 report$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5) AND L3 AND (@ad<"20190128")	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 12:55 PM
L28	30	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 report$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5).ti,ab,bsum, clm.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 02:19 PM
L29	13	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL,	OR	ON	ON	2023/05/17 02:20 PM

		report$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5).clm.	NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L30	13	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 report$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5).clm. AND l3	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 02:20 PM
L31	75	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 report$3 notif$5) near7 (threat$3 risk$3 malware attack$3 vulnerab$5)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/18 05:59 AM
L32	16	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") SAME (alert$3 warn$3 report$3 notif$5) near7 (threat$3 risk$3 malware attack$3 vulnerab$5)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/18 05:59 AM
L33	12	((analy$5 filter$3 scan$4 inspect$3	(US-PGPUB; USPAT; USOCR; FIT (AP, AT,	OR	ON	ON	2023/05/18 06:03 AM

		search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") SAME (alert$3 warn$3 report$3 notif$5) near7 (threat$3 risk$3 malware attack$3 vulnerab$5)).ti,ab,bsum,clm.	AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L35	12	((analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") SAME (alert$3 warn$3 report$3 notif$5) near7 (threat$3 risk$3 malware attack$3 vulnerab$5) SAME (prioritiz$4 order$3 filter$3 analy$5 scan$4 inspect$3 search$3)).ti,ab,bsum,clm.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/18 06:18 AM
L36	1	"17821345"	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/17 06:11 AM
L37	13	"16585967"	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/17 06:11 AM
L38	371432	(G06F9/45558 OR G06F11/1464 OR G06F16/128 OR H04L63/1416 OR H04L63/1433 OR H04L63/1441 OR G06F2009/45562 OR G06F2009/45583 OR G06F2009/45587 OR G06F2009/45591 OR G06F2009/45595 OR G06F2201/84 OR G06F2201/815 OR G06F2201/86 OR G06F11/1451 OR G06F11/301 OR G06F11/3476 OR H04L63/1408 OR H04L63/1425).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/17 06:11 AM

L39	11	((("Orca") near3 ("Security") near3 ("Ltd"))).AS,AANM.	(USPAT)	OR	ON	ON	2023/08/17 06:11 AM
L40	34	((("SHUA") near3 ("Avi"))).INV.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2023/08/17 06:11 AM
L41	46	("10079842" OR "10402560" OR "10534915" OR "10782952" OR "11120124" OR "11216563" OR "11431735" OR "11516231" OR "20080263658" OR "20090007100" OR "20100017512" OR "20120323853" OR "20140096135" OR "20200042707" OR "9069983" OR "9229758" OR "9268689" OR "9734325" OR "9756070" OR "9858105" OR "10412109" OR "20070266433" OR "20140137190" OR "20150052520" OR "20170011138" OR "20170031704" OR "20170111384" OR "20180255080" OR "20180293374" OR "9177145" OR "9519781" OR "9563777" OR "9798885" OR "0000002" OR "10469304" OR "10536471" OR "10944778" OR "11068353" OR "20080189788" OR "20110289584" OR "20130191643" OR "20160004449" OR "20160094568" OR "20160364255" OR "20170103212" OR "20180137032").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/17 06:11 AM
L42	33	(Artificial Intelligence) More like doc: US-20220417270-A1 Text: (US-11431735-B2 OR	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2023/08/17 06:11 AM

		US-20200244678-A1 OR US-20210336976-A1 OR US-11516231-B2 OR US-20230214488-A1 OR US-20230087080-A1 OR US-20230093527-A1 OR US-20200244692-A1 OR US-20230092220-A1 OR US-11663032-B2 OR US-20230089313-A1 OR US-20210329019-A1 OR US-20210377287-A1 OR US-11663031-B2 OR US-11693685-B2 OR US-10853185-B1 OR WO-2023094931-A1 OR US-20230161614-A1 OR US-20230161870-A1 OR US-20230164164-A1).did.	EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L43	47	(Artificial Intelligence) Similar to: 17/821,345 with 0 CPC Selections and 0 Text Selections Text: (US-20220417270-A1 OR US-20200244678-A1 OR US-11516231-B2 OR US-11431735-B2 OR US-20210336976-A1 OR US-20200244692-A1 OR US-20230087080-A1 OR US-20230093527-A1 OR US-20230092220-A1 OR US-20230089313-A1 OR US-20210377287-A1 OR US-20210329019-A1 OR US-20140317746-A1 OR EP-3369232-A1 OR WO-2017074747-A1 OR WO-2021044407-A1 OR EP-4004787-A1 OR US-20180152473-A1 OR US-10757133-B2 OR US-20210273958-A1 OR US-20200106793-A1 OR US-9762605-B2 OR	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN))	OR	ON	ON	2023/08/17 06:11 AM

		EP-3654582-B1 OR US-9866581-B2 OR EP-3528463-A1 OR US-20190260779-A1 OR EP-3369232-B1 OR CA-3034176-A1 OR EP-3161999-B1 OR US-20190188385-A1 OR US-20190129739-A1 OR US-10310888-B2 OR US-20200050475-A1 OR WO-2019118153-A1 OR US-20180124069-A1 OR US-10681068-B1 OR US-20220043716-A1 OR EP-3707631-B1 OR US-20210279087-A1 OR US-11170107-B2 OR CN-111183425-A OR US-20220382575-A1 OR US-11397649-B2 OR US-20200057668-A1 OR US-10528383-B2 OR US-10884783-B2 OR US-10769281-B2 OR US-20210224091-A1 OR WO-2022222602-A1 OR US-11138075-B2).did.					
L44	45	(Artificial Intelligence) Similar to: 17/821,345 with 11 CPC Selections and 1 Text Selection Text: (CN-102473220-A OR US-11516231-B2 OR US-20210336976-A1 OR US-11431735-B2 OR US-20230092220-A1 OR US-20200244692-A1 OR US-20220417270-A1 OR US-20230087080-A1 OR US-20190205523-A1 OR US-20160321096-A1 OR US-20210377287-A1 OR US-20200244678-A1 OR US-20140317746-A1 OR US-10853190-B1 OR EP-4004787-A1 OR US-20180152473-A1	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN))	OR	ON	ON	2023/08/17 06:11 AM

		OR US-10757133-B2 OR WO-2017074747-A1 OR EP-3369232-A1 OR EP-3654582-B1 OR US-9866581-B2 OR US-20210273958-A1 OR EP-3161999-B1 OR US-9762605-B2 OR EP-3528463-A1 OR US-20190260779-A1 OR US-10360371-B1 OR US-11170107-B2 OR US-20180124069-A1 OR WO-2019118153-A1 OR EP-3707631-B1 OR EP-3369232-B1 OR CA-3034176-A1 OR US-20200106793-A1 OR US-20160036835-A1 OR CN-109564612-A OR EP-3175431-A1 OR US-20210326046-A1 OR CA-2955069-A1 OR AU-2015296801-B2 OR US-9516044-B2 OR US-10681068-B1 OR CA-2955069-C OR US-20220043716-A1 OR US-20220278993-A1 OR CN-111183425-A OR US-20220382575-A1 OR US-8776235-B2 OR US-20210279087-A1 OR US-20160248798-A1).did.					
L45	14	((("Orca") near3 ("Security") near3 ("Ltd"))).AS,AANM. AND (determin$3 identif$5 monitor$3) near3 (snapshot snap?shot image copy picture replicat$3 clon$3) adj7 (virtual$3 "VM")	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/17 06:11 AM
L46	11	((("Orca") near3 ("Security") near3 ("Ltd"))).AS,AANM. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj7 (virtual$3 "VM")).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/17 06:11 AM
L47	11	((("SHUA") near3	(US-PGPUB; USPAT;	OR	ON	ON	2023/08/17

		("Avi"))).INV. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj7 (virtual$3 "VM")).clm.	USOCR; EPO; JPO; DERWENT)				06:11 AM
L48	4065	(G06F9/45558 OR G06F11/1464 OR G06F16/128 OR H04L63/1416 OR H04L63/1433 OR H04L63/1441 OR G06F2009/45562 OR G06F2009/45583 OR G06F2009/45587 OR G06F2009/45591 OR G06F2009/45595 OR G06F2201/84 OR G06F2201/815 OR G06F2201/86 OR G06F11/1451 OR G06F11/301 OR G06F11/3476 OR H04L63/1408 OR H04L63/1425).cpc. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj7 (virtual$3 "VM"))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/17 06:11 AM
L49	2258	(G06F9/45558 OR G06F11/1464 OR G06F16/128 OR H04L63/1416 OR H04L63/1433 OR H04L63/1441 OR G06F2009/45562 OR G06F2009/45583 OR G06F2009/45587 OR G06F2009/45591 OR G06F2009/45595 OR G06F2201/84 OR G06F2201/815 OR G06F2201/86 OR G06F11/1451 OR G06F11/301 OR G06F11/3476 OR H04L63/1408 OR H04L63/1425).cpc. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/17 06:11 AM

		clon$3) adj3 (virtual$3 "VM"))					
L50	339	(G06F9/45558 OR G06F11/1464 OR G06F16/128 OR H04L63/1416 OR H04L63/1433 OR H04L63/1441 OR G06F2009/45562 OR G06F2009/45583 OR G06F2009/45587 OR G06F2009/45591 OR G06F2009/45595 OR G06F2201/84 OR G06F2201/815 OR G06F2201/86 OR G06F11/1451 OR G06F11/301 OR G06F11/3476 OR H04L63/1408 OR H04L63/1425).cpc. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj3 (virtual$3 "VM") adj7 (disk asset))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/17 06:11 AM
L51	19	(G06F9/45558 OR G06F11/1464 OR G06F16/128 OR H04L63/1416 OR H04L63/1433 OR H04L63/1441 OR G06F2009/45562 OR G06F2009/45583 OR G06F2009/45587 OR G06F2009/45591 OR G06F2009/45595 OR G06F2201/84 OR G06F2201/815 OR G06F2201/86 OR G06F11/1451 OR G06F11/301 OR G06F11/3476 OR H04L63/1408 OR H04L63/1425).cpc. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj3 (virtual$3 "VM") adj7 (disk asset) AND (analy$5 filter$3 scan$4 inspect$3 search$3)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/17 06:11 AM

		near3(snapshot snap?shot image copy picture replicat$3 clon$3) SAME (threat$3 risk$3 malware attack$3 vulnerab$5))					
L52	2	("10079842" OR "10402560" OR "10534915" OR "10782952" OR "11120124" OR "11216563" OR "11431735" OR "11516231" OR "20080263658" OR "20090007100" OR "20100017512" OR "20120323853" OR "20140096135" OR "20200042707" OR "9069983" OR "9229758" OR "9268689" OR "9734325" OR "9756070" OR "9858105" OR "10412109" OR "20070266433" OR "20140137190" OR "20150052520" OR "20170011138" OR "20170031704" OR "20170111384" OR "20180255080" OR "20180293374" OR "9177145" OR "9519781" OR "9563777" OR "9798885" OR "0000002" OR "10469304" OR "10536471" OR "10944778" OR "11068353" OR "20080189788" OR "20110289584" OR "20130191643" OR "20160004449" OR "20160094568" OR "20160364255" OR "20170103212" OR "20180137032").pn. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj3 (virtual$3	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/17 06:11 AM

		"VM") adj7 (disk asset))					
L53	17	(US-20200244678-A1 OR US-11431735-B2 OR US-11516231-B2 OR US-20210336976-A1 OR US-20230087080-A1 OR US-20230093527-A1 OR US-20200244692-A1 OR US-20230092220-A1 OR US-20230089313-A1 OR US-20210377287-A1 OR US-20210329019-A1 OR US-10503895-B2 OR US-10552610-B1 OR CN-109074450-B OR US-20170098072-A1 OR US-20180260574-A1 OR US-10922418-B2 OR US-10601807-B2 OR CN-111866027-A OR CN-111866027-B).did. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj3 (virtual$3 "VM") adj7 (disk asset))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/17 06:11 AM
L54	7	(CN-102473220-A OR US-11516231-B2 OR US-20210336976-A1 OR US-11431735-B2 OR US-20230092220-A1 OR US-20200244692-A1 OR US-20220417270-A1 OR US-20230087080-A1 OR US-20190205523-A1 OR US-20160321096-A1 OR US-20210377287-A1 OR US-20200244678-A1 OR US-20140317746-A1 OR US-10853190-B1 OR EP-4004787-A1 OR US-20180152473-A1 OR US-10757133-B2 OR WO-2017074747-A1 OR EP-3369232-A1 OR EP-3654582-B1 OR US-9866581-B2 OR US-20210273958-A1	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO))	OR	ON	ON	2023/08/17 06:11 AM

		OR EP-3161999-B1 OR US-9762605-B2 OR EP-3528463-A1 OR US-20190260779-A1 OR US-10360371-B1 OR US-11170107-B2 OR US-20180124069-A1 OR WO-2019118153-A1 OR EP-3707631-B1 OR EP-3369232-B1 OR CA-3034176-A1 OR US-20200106793-A1 OR US-20160036835-A1 OR CN-109564612-A OR EP-3175431-A1 OR US-20210326046-A1 OR CA-2955069-A1 OR AU-2015296801-B2 OR US-9516044-B2 OR US-10681068-B1 OR CA-2955069-C OR US-20220043716-A1 OR US-20220278993-A1 OR CN-111183425-A OR US-20220382575-A1 OR US-8776235-B2 OR US-20210279087-A1 OR US-20160248798-A1).did. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj3 (virtual$3 "VM") adj7 (disk asset))					
L55	116	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/17 06:11 AM
L56	25	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2023/08/17 06:11 AM

		picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5).ti,ab,bsum, clm.	CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L57	95	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5) AND l3	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/17 06:11 AM
L58	58	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5) AND L3 AND (@ad<"20190128")	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/17 06:11 AM
L59	5	"20170103212"	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/17 06:11 AM
L60	6	("10079842" OR "10402560" OR "10534915" OR "10782952" OR "11120124" OR "11216563" OR "11431735" OR "11516231" OR "20080263658" OR "20090007100" OR "20100017512" OR	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/17 06:11 AM

		"20120323853" OR "20140096135" OR "20200042707" OR "9069983" OR "9229758" OR "9268689" OR "9734325" OR "9756070" OR "9858105" OR "10412109" OR "20070266433" OR "20140137190" OR "20150052520" OR "20170011138" OR "20170031704" OR "20170111384" OR "20180255080" OR "20180293374" OR "9177145" OR "9519781" OR "9563777" OR "9798885" OR "0000002" OR "10469304" OR "10536471" OR "10944778" OR "11068353" OR "20080189788" OR "20110289584" OR "20130191643" OR "20160004449" OR "20160094568" OR "20160364255" OR "20170103212" OR "20180137032").pn. AND (analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5)					
L61	65	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL,	OR	ON	ON	2023/08/17 06:11 AM

		report$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5) AND L3 AND (@ad<"20190128")	NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L62	36	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 report$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5).ti,ab,bsum, clm.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/17 06:11 AM
L63	17	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 report$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5).clm.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/17 06:11 AM
L64	17	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 report$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5).clm. AND l3	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/17 06:11 AM
L65	81	(analy$5 filter$3 scan$4 inspect$3 search$3)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT,	OR	ON	ON	2023/08/17 06:11 AM

		near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 report$3 notif$5) near7 (threat$3 risk$3 malware attack$3 vulnerab$5)	AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L66	20	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") SAME (alert$3 warn$3 report$3 notif$5) near7 (threat$3 risk$3 malware attack$3 vulnerab$5)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/17 06:11 AM
L67	16	((analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") SAME (alert$3 warn$3 report$3 notif$5) near7 (threat$3 risk$3 malware attack$3 vulnerab$5)).ti,ab,bsum,clm.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/17 06:11 AM
L68	16	((analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") SAME (alert$3 warn$3 report$3 notif$5) near7	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE,	OR	ON	ON	2023/08/17 06:11 AM

		(threat$3 risk$3 malware attack$3 vulnerab$5) SAME (prioritiz$4 order$3 filter$3 analy$5 scan$4 inspect$3 search$3)).ti,ab,bsum,clm.	SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L69	14	("0000002"|"10469304"|"10536471"|"10944778"|"11068353"|"20080189788"|"20110289584"|"20130191643"|"20160004449"|"20160094568"|"20160364255"|"20170103212"|"20180137032"|"9268689").PN.	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/17 06:21 AM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	0	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 report$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5).clm. AND l3	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/17 02:20 PM
N2	0	((analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") SAME (alert$3 warn$3 report$3 notif$5) near7 (threat$3 risk$3 malware attack$3 vulnerab$5)).clm. AND l3	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/18 06:01 AM
N3	0	((analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/18 06:19 AM

		picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") SAME (alert$3 warn$3 report$3 notif$5) near7 (threat$3 risk$3 malware attack$3 vulnerab$5) SAME (prioritiz$4 order$3 filter$3 analy$5 scan$4 inspect$3 search$3)).clm. AND l3					
N7	8	((analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") SAME (alert$3 warn$3 report$3 notif$5) near7 (threat$3 risk$3 malware attack$3 vulnerab$5) SAME (prioritiz$4 order$3 filter$3 analy$5 scan$4 inspect$3)).clm. AND L3	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/17 06:08 AM
N8	8	((analy$5 filter$3 scan$4 inspect$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") SAME (alert$3 warn$3 report$3 notif$5) near7 (threat$3 risk$3 malware attack$3 vulnerab$5)).clm. AND L3	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/17 06:10 AM
N9	13	(analy$5 filter$3 scan$4 inspect$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 report$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/17 06:10 AM

		vulnerab$5).clm. AND L3					

PE2E SEARCH - Search History (Similarity Search)

Ref #	Sort and Retrieval Information	Text Selections	CPC Selections
L43	Sort results by: Similarity to Application # 17/821,345 Retrieve results by: Application # 17/821,345	No selections	No selections
L44	Sort results by: Similarity to Application # 17/821,345 Retrieve results by: Application # 17/821,345	(Claims) A method for securing virtual cloud assets in a cloud computing environment against cyber threats, comprising: taking a snapshot of at least one virtual disk of a protected virtual cloud asset, wherein the virtual cloud asset is instantiated in the cloud computing environment; accessing the snapshot of the at least one virtual disk; analyzing the snapshot of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset; and alerting detected potential cyber threats based on filtering or prioritizing using a determined risk of each detected threat.	(H04L63/1433) Vulnerability analysis (G06F16/128) Details of file system snapshots on the file-level, e.g. snapshot creation, administration, deletion (G06F11/1451) Management of the data involved in backup or backup restore by selection of backup contents (G06F11/1464) Management of the backup or restore process for networked environments (G06F11/301) Monitoring arrangements specially adapted to the computing system or computing system component being monitored where the computing system is a virtual computing platform, e.g. logically partitioned systems (G06F2009/45587) Isolation or security of virtual machine instances (G06F2009/45583) Memory management, e.g. access or allocation (G06F2009/45562) Creating, deleting, cloning virtual machine instances (G06F11/3476) Data logging (G06F2009/45595) Network integration; Enabling network access in virtual machine instances (G06F2201/84) Using snapshots, i.e. a logical point-in-time copy of the data

Cybercrime **threat** intelligence: A systematic multi-vocal literature review
G Cascavilla, DA Tamburri, WJ Van Den Heuvel - Computers & Security, 2021 - Elsevier
... **Analysis** to **identify** and **analyze** the most relevant **threat** ... **analysis** mentioned above effectively provided a **photograph** of ... Due to the novelty of the **cybersecurity threats** and the lack of ...
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Cyber Security Threats, Vulnerabilities, and Security Solutions Models in Banking
D Gheiani, TK Hua, SKR Koduru - Authorea Preprints, 2022 - authorea.com
... **threat** behaviours from an intrusion **detection** system, the filtering and **analyzing threats** within a time **snapshot**, and ... payoff that increases an attacker's **drive** to infiltrate as many network ...
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Fileless malware **threats**: Recent advances, **analysis** approach through memory forensics and research challenges
I Kara - Expert Systems with Applications, 2022 - Elsevier
... a memory **analysis** approach in the **detection** and **analysis** of ... We worked with a **cyber security** firm in Turkey to come up ... The only correct way to get a **snapshot** (copy) of the contents of ...
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A survey on automated dynamic malware-**analysis** techniques and tools
M Egele, T Scholte, E Kirda, C Kruegel - ACM computing surveys (CSUR ..., 2008 - dl.acm.org
... a new **threat** is **detected**, it needs to be **analyzed**, and ... monly support taking and loading **snapshots** of a running system... resulting binary to **disk**, making it available for **analysis**. Prior to ...
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A survey on gaps, **threat** remediation challenges and some thoughts for proactive attack **detection** in cloud computing
MT Khorshed, ABMS Ali, SA Wasimi - Future Generation computer systems, 2012 - Elsevier
... To emphasize the importance of monitoring **cyber attacks** we ... of the future **threats** may still be unknown, we can always **analyze** the ... performance plots at the time of taking this **snapshot**. ...
☆ Save 99 Cite Cited by 421 Related articles All 7 versions Import into EndNote

Mimosa: Reducing malware **analysis** overhead with coverings
M Ahmadi, K Leach, R Dougherty, S Forrest ... - arXiv preprint arXiv ..., 2021 - arxiv.org
... a lynchpin of **computer security** and **analysis** applications [?], ... We propose using coverings to **find** a small set of **analysis** ... generated previously and maps VM **snapshots** to nodes in the ...
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An effective ransomware **detection** approach in a cloud environment using volatile memory features
Prachi, S Kumar - Journal of Computer Virology and Hacking Techniques, 2022 - Springer
... the literature for **detecting** the ransomware or **analyzing** the ... when an investigator is **analyzing** hard **drive** of a system. In 2005... to perform reliable **analysis** of **snapshots** taken from VMs by ...
☆ Save 99 Cite Cited by 5 Related articles Import into EndNote

Ransomware, **threat** and **detection** techniques: A review
S Kok, A Abdullah, N Jhanjhi, M Supramaniam
Int. J. Comput. Sci. Netw. Secur - 2019
sciap.taylors.edu.my
[PDF] taylors.edu.my

Automatic ransomware **detection** and **analysis** based on dynamic API calls flow graph
ZG Chen, HS Kang, SN Yin, SR Kim
Proceedings of the international confer... - 2017
dl.acm.org
[PDF] acm.org

Static malware **analysis** to **identify** ransomware properties
D Vidyarthi, CRS Kumar, S Rakshit, S Chans...
International Journal of Computer Scie ... - 2019
search.proquest.com
[HTML] proquest.com

A survey on malware **analysis** and mitigation techniques
SG Chakkaravarthy, D Sangeetha, V Vaidehi - Computer Science Review, 2019 - Elsevier
... on signatures and static **analysis** fail to **identify** these APTs. The ... This paper contributes a novel System and **Network Security** ... capture and **analyze** live memory using **snapshot** manager. ...
☆ Save 99 Cite Cited by 144 Related articles All 2 versions Import into EndNote

Trusted system-calls **analysis** methodology aimed at **detection** of compromised **virtual** machines using sequential mining
N Nissim, Y Lapidot, A Cohen, Y Elovici - Knowledge-Based Systems, 2018 - Elsevier
... , **virtual**-servers are constantly targeted by **cyber-attacks**, and ... the **disk**, but was easily **detected** by examining the memory. ... of our solution; we **analyzed** the whole **picture**, including all of ...
☆ Save 99 Cite Cited by 42 Related articles All 3 versions Import into EndNote

Introduction to Malware and Malware **Analysis**: A brief overview

A Ray, A Nath - International Journal, 2018 - researchgate.net

... to the new generation **cyber security threats** and attacks to be ... how static **analysis** alone is not enough to **detect** malware. ... It is also wise to take a **snapshot** of the **virtual** machine before ...

☆ Save 99 Cite Cited by 15 Related articles All 2 versions Import into EndNote »

Bibliographic Data

Application No: 17/821,345

Foreign Priority claimed: ○ Yes ◉ No

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

Verified and Acknowledged: /HASSAN SAADOUN/ (Examiner's Signature) ____ (Initials)

Title: TECHNIQUES FOR SECURING VIRTUAL MACHINES

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
08/22/2022	726	2435	15635.0003-03000
RULE			

APPLICANTS

Orca Security Ltd., Tel Aviv, ISRAEL

INVENTORS

Avi Shua, Tel Aviv,

CONTINUING DATA

This application is a CON of 16585967 09/27/2019 PAT 11431735

FOREIGN APPLICATIONS

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09/12/2022

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UNITED STATES

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Application Number	Application/Control No.	Applicant(s)/Patent under Reexamination	
* 17/821,345 *	17/821,345	Shua, Avi	
	Examiner	**Art Unit**	
	SAADOUN, HASSAN	2435	

Document Code - DISQ	**Internal Document - DO NOT MAIL**

TERMINAL DISCLAIMER	☑ APPROVED	☐ DISAPPROVED
Date Filed: 12 July 2023	**This patent is subject to a Terminal Disclaimer**	

Approved/Disapproved by:

/FELICIA D ROBERTS/

Technology Center: OPLC

Telephone: (571)272-0550

6 TDs approved with this filing date

PTO/SB/26 (08-08)
Approved for use through 09/30/2008. OMB 0651-0031
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TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT	Docket Number (Optional) 15635.0003-03000

In re Application of: Avi Shua

Application No.: 17/821,345

Filed: August 22, 2022

For: TECHNIQUES FOR SECURING VIRTUAL MACHINES

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2. ☑ The undersigned is an attorney or agent of record. Reg. No. 68,664

/Christopher C. Johns/ — Signature
11 July 2023 — Date

Christopher C. Johns — Typed or printed name

(202) 408-4155 — Telephone Number

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/821,345	**07/12/2023 09:59:00 AM ET**	**15635.0003-03000**

Title of Invention

TECHNIQUES FOR SECURING VIRTUAL MACHINES

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	2249	FILED BY	Sylvia Helms
PATENT CENTER #	62425546	FILING DATE	08/22/2022
CUSTOMER #	22852	FIRST NAMED INVENTOR	Avi Shua
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Christopher Johns

Documents

TOTAL DOCUMENTS: 8

DOCUMENT		PAGES	DESCRIPTION	SIZE (KB)
15635.0003-0300 Response to non-Final Office Action.pdf		4	-	181 KB
15635.0003-0300 Response to non-Final Office Action-A....pdf	(1-1)	1	Amendment/Request for Reconsideration-After Non-Final Rejection	88 KB
15635.0003-0300 Response to non-Final Office Action-REM.pdf	(2-4)	3	Applicant Arguments/Remarks Made in an Amendment	161 KB
Prior Patent Terminal Disclaimer - 18055150_11663032.pdf		2	Claims	156 KB

Prior Patent Terminal Disclaimer - 16585967_11431735.pdf	2	Claims	156 KB
Prior Patent Terminal Disclaimer - 17330998_11516231.pdf	2	Claims	156 KB
Terminal Disclaimer_18055201.pdf	2	Claims	256 KB
Terminal Disclaimer - 18055220.pdf	2	Claims	256 KB
Terminal Disclaimer - 18055181.pdf	2	Claims	256 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
15635.0003-0300 Response to non-Final Office Action.pdf	75CBFF395A9C71E30851233CA9126DE92C2E05E3BFE0C6A8C993BE3E1144B915E512C1CFA64F873FCCC65C682A7D4A436340461CE3C635559465B83E82434302
15635.0003-0300 Response to non-Final Office Action-A....pdf	419F1409D310560DCE7DAF6C04B8CC1E28CF8D89C9CDB28EC2183C80082E6113C4BCB065A418179FC7943C30636FBE85AD26BACAA7BADE0831D6E196ECEB8587
15635.0003-0300 Response to non-Final Office Action-REM.pdf	24788EAE777B702731846344503204D12337B12E1205DC157B2E14DC33AD695B56F3F054A66769885E0FDB151136751972F9F416BB8DCE01FA83B516D3F35510
Prior Patent Terminal Disclaimer - 18055150_11663032.pdf	F0A1E49B2E85EE554A66C38C3A0CAA11AFB2909199B7EA18FE9C54D38FCEDC937667C1CBA98974C75917F59038B217BA5473FC6F03725E5301C4B10A6AA5C175
Prior Patent Terminal	8B557D8A8C444C53784CE4212B56DFFA2032516069D14A68A0

Disclaimer - 16585967_11431735.pdf	1FB8EE12536893B412CF1E9635B18022D8E994A6A97DE3073DC0923AD4536C8CD507870C41945B
Prior Patent Terminal Disclaimer - 17330998_11516231.pdf	29D5AD084EA00596BBD945D363FF323F2942BDFEC8BDD48B470729B5A661622B77BCC489F385A89BB1AB3E2E0845314B2D936CA8275DDB0D9FE37EE234160069
Terminal Disclaimer_18055201.pdf	13599AAA2CF28DD50296AFA44F5FD2BF8D1CB58DAA9F86B846CB7D553ECB564D8135E3A421A7FD8C4102631AB88FAA354178715B15CD62E65A0D7A7FDEF51431
Terminal Disclaimer - 18055220.pdf	55E852EA0BF9DB3990D07D4AA24314653A637397C04450BE9AB80084F52E68F68947B4713B34DBC2953AE36DC33976862FBDCE2063D3816391CBBD2F741FE54B
Terminal Disclaimer - 18055181.pdf	4197ED20B1E8EC079D36C091181F4C5CF5F9E5AACBF331930979567942CAFBED3DE63105B26F24AEE2CB61E039E712E3855C578BBC8554EFF6E99120807ACB1B

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

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TERMINAL DISCLAIMER TO OBVIATE A PROVISIONAL DOUBLE PATENTING REJECTION OVER A PENDING "REFERENCE" APPLICATION	Docket Number (Optional) 15635.0003-03000

In re Application of: Avi Shua

Application No.: 17/821,345

Filed: August 22, 2022

For: TECHNIQUES FOR SECURING VIRTUAL MACHINES

The owner*, Orca Security Ltd., of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of any patent granted on pending **reference** Application Number 18/055,220, filed November 14, 2022, as the term of any patent granted on said **reference** application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending **reference** application. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and any patent granted on the **reference** application are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2. ☑ The undersigned is an attorney or agent of record. Reg. No. 68,664

/Christopher C. Johns/ — Signature
2 June 2023 — Date

Christopher C. Johns — Typed or printed name

(202) 408-4155 — Telephone Number

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TERMINAL DISCLAIMER TO OBVIATE A PROVISIONAL DOUBLE PATENTING REJECTION OVER A PENDING "REFERENCE" APPLICATION	Docket Number (Optional) 15635.0003-03000

In re Application of: Avi Shua

Application No.: 17/821,345

Filed: August 22, 2022

For: TECHNIQUES FOR SECURING VIRTUAL MACHINES

The owner*, Orca Security Ltd., of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of any patent granted on pending **reference** Application Number 18/055,201, filed November 14, 2022, as the term of any patent granted on said **reference** application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending **reference** application. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and any patent granted on the **reference** application are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

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/Christopher C. Johns/ — Signature
2 June 2023 — Date

Christopher C. Johns — Typed or printed name

(202) 408-4155 — Telephone Number

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Additional Uses

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

PTO/SB/26 (08-08)
Approved for use through 09/30/2008. 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 displays a valid OMB control number.

TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT	Docket Number (Optional) 15635.0003-03000

In re Application of: Avi Shua

Application No.: 17/821,345

Filed: August 22, 2022

For: TECHNIQUES FOR SECURING VIRTUAL MACHINES

The owner*, Orca Security Ltd., of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term **prior patent** No. 11,431,735 as the term of said prior patent is defined in 35 U.S.C. 154 and 173, and as the term of said **prior patent** is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the **prior patent** are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. 154 and 173 of the **prior patent**, "as the term of said **prior patent** is presently shortened by any terminal disclaimer," in the event that said **prior patent** later:

expires for failure to pay a maintenance fee;
is held unenforceable;
is found invalid by a court of competent jurisdiction;
is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
has all claims canceled by a reexamination certificate;
is reissued; or
is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. ☐ For submissions on behalf of a business/organization (e.g., corporation, partnership, university, government agency, etc.), the undersigned is empowered to act on behalf of the business/organization.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2. ☑ The undersigned is an attorney or agent of record. Reg. No. 68,664

/Christopher C. Johns/ — Signature
11 July 2023 — Date

Christopher C. Johns — Typed or printed name

(202) 408-4155 — Telephone Number

☑ Terminal disclaimer fee under 37 CFR 1.20(d) included.

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.

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

This collection of information is required by 37 CFR 1.321. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

Privacy Act Statement

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

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

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

PATENT
Attorney Docket No. 15635.0003-03000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	)	
Avi SHUA	)	Group Art Unit: 2435
	)	
Application No.: 17/821,345	)	Examiner: Hassan SAADOUN
	)	
Filed: 08/22/2022	)	
	)	
For: TECHNIQUES FOR SECURING VIRTUAL MACHINES	)	Confirmation No.: 2249
	)	

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

Commissioner:

REPLY TO OFFICE ACTION

Applicant is appreciative of the U.S. Patent and Trademark Office's indication in the Office Action mailed May 25, 2023, that the pending claims contain patentable subject matter and will be allowed following submissions of Terminal Disclaimers. Applicant therefore responds as follows.

Remarks follow the amendments section of this paper.

REMARKS

I. Status of the Claims

In the Office Action mailed May 25, 2023, the Office:

a) Rejected claims 22-55 on the ground of nonstatutory obviousness-type double patenting over claims 1-4, 6-15, and 17-21 of any patents granted on application number 17/330,998;

b) Rejected claims 22-55 on the ground of nonstatutory obviousness-type double patenting over claims 1-4, 6-15 and 17-21 of any patents granted on application No. 16/585,967;

c) Rejected claims 22-55 on the ground of nonstatutory obviousness-type double patenting over claims 22-46 of co-pending application No. 18/055,150;

d) Rejected claims 22-55 on the ground of nonstatutory obviousness-type double patenting over claims 22-24, 26 and 28-51 of co-pending application No. 18/055,181;

e) Rejected claims 22-55 on the ground of nonstatutory obviousness-type double patenting over claims 22-44 of co-pending application No. 18/055,201; and

f) Rejected claims 22-55 on the grounds of of nonstatutory obviousness-type double patenting over claims 22, 26-38 and 41 of co-pending application No. 18/055,220.

g) Indicated that claims 22-55 are allowable over the prior art. In view of the foregoing remarks, Applicant respectfully requests reconsideration of this application and the timely allowance of the pending claims.

II. Non-statutory Double-Patenting Rejection

The Office rejects claims 22-55 on the ground of non-statutory double patenting as being unpatentable over claims 1-4, 6-15, and 17-21 of any patents granted on

application number 17/330,998, 1-4, 6-15 and 17-21 of any patents granted on application No. 16/585,967, over claims 22-46 of co-pending application No. 18/055,150; over claims 22-24, 26 and 28-51 of co-pending application No. 18/055,181; over claims 22-44 of co-pending application No. 18/055,201, and over claims 22, 26-38 and 41 of co-pending application No. 18/055,220. Office Action at 5. While the Applicant disagrees with the rejection, in order to expedite patent grant, terminal disclaimers over the patents that issued from the named application numbers are filed herewith.[1]

It is therefore respectfully requested that the pending non-statutory double patenting rejections be withdrawn.

CONCLUSION

In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account No. 06-0916.

[1] The filing of the Terminal Disclaimer in no way manifests an admission by Applicants as to the propriety of the double patenting rejection. *See* MPEP § 804.02, citing *Quad Environmental Techs. Corp. v. Union Sanitary District,* 946 F.2d 870, 20 USPQ2d 1392 (Fed Cir. 1991).

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: July 12, 2023

By: /Christopher C. Johns/

Christopher C. Johns
Reg. No. 68,664
(202) 408-4000

PTO/SB/26 (08-08)
Approved for use through 09/30/2008. 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 displays a valid OMB control number.

TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT	Docket Number (Optional) 15635.0003-03000

In re Application of: Avi Shua

Application No.: 17/821,345

Filed: August 22, 2022

For: TECHNIQUES FOR SECURING VIRTUAL MACHINES

The owner*, Orca Security Ltd., of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term **prior patent** No. 11,663,032 as the term of said prior patent is defined in 35 U.S.C. 154 and 173, and as the term of said **prior patent** is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the **prior patent** are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

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is found invalid by a court of competent jurisdiction;
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/Christopher C. Johns/ — Signature
11 July 2023 — Date

Christopher C. Johns — Typed or printed name

(202) 408-4155 — Telephone Number

☑ Terminal disclaimer fee under 37 CFR 1.20(d) included.

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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.
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UNITED STATES
PATENT AND TRADEMARK OFFICE

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ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/821,345	**07/12/2023 09:59:00 AM ET**	**15635.0003-03000**

Title of Invention

TECHNIQUES FOR SECURING VIRTUAL MACHINES

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	2249	FILED BY	Sylvia Helms
PATENT CENTER #	62425546	AUTHORIZED BY	Christopher Johns
CUSTOMER #	22852	FILING DATE	08/22/2022
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Avi Shua

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
CARD / 1007	**E20237BA02315214**	**Sylvia Helms**

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
2814	STATUTORY DISCLAIMER, INCLUDING TERMINAL DISCLAIMER	170.00	6	1020.00
			TOTAL AMOUNT:	**$1,020.00**

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(Use as many sheets as necessary)*				***Complete if Known***	
				Application Number	17/821,345
				Filing Date	August 22, 2022
				First Named Inventor	Avi Shua
				Art Unit	2435
				Examiner Name	SAADOUN, HASSAN
Sheet	1	of	1	*Attorney Docket Number*	15635.0003-03000

U.S. PATENTS

Examiner Initials*	Cite No.	Document Number Number-Kind Code *(if known)*	Issue Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-10,812,521-B1	10-20-2020	Sharifi Mehr	
		US-11,431,735 B2	08-2022	Shua	
		US-11,516,231 B2	11-2022	Shua	

U.S. PUBLISHED PATENT APPLICATIONS

Examiner Initials*	Cite No.	Document Number Number-Kind Code *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-2013/0247133 A1	09-19-2013	Price et al.	
		US-2016/0241573 A1	08-18-2016	Mixer	
		US-2018/0052762 A1	02-22-2018	Vyas et al.	
		US-2019/0065754 A1	02-28-2019	Ochs et al.	
		US-2020/0065487 A1	02-27-2020	Timashev et al.	
		US-2020/0244692 A1	07-30-2020	Shua	
		US-2020/0244678 A1	07-30-2020	Shua	
		US-2021/0336976 A1	10-28-2021	Shua	
		US-2021/0377287 A1	12-02-2021	Shua	
		US-2022/0417270 A1	12-29-2022	Shua	
		US-2023/0093527 A1	03-23-2023	Shua	
		US-2023/0092220 A1	03-23-2023	Shua	
		US-2023/0089313 A1	03-23-2023	Shua	
		US-2023/0087080 A1	03-23-2023	Shua	

Note: Submission of copies of U.S. Patents and published U.S. Patent Applications is not required.

NON PATENT LITERATURE DOCUMENTS

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, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation
		Notice of Allowance Application No. 17/361,861 dated May 10, 2023, in the United States Patent and Trademark Office. (15635.0003-02000)	N/A

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.

PATENT
Customer No. 22852
Attorney Docket No. **15635.0003-03000**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	)	
Avi Shua	)	Group Art Unit: 2435
	)	
Application No.: 17/821,345	)	Examiner: SAADOUN, HASSAN
	)	
Filed: August 22, 2022	)	Confirmation No.: 2249
	)	
For: TECHNIQUES FOR SECURING VIRTUAL MACHINES	)	
	)	
	)	

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

Commissioner:

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. § 1.97(c)

Pursuant to 37 C.F.R. §§ 1.56 and 1.97(c), Applicant brings to the attention of the Examiner the listed document on the attached Form PTO/SB/08. This Information Disclosure Statement is being filed after the mailing date of a first Office Action on the merits for the above-referenced application, but before the mailing date of a final action under § 1.113, a notice of allowance under § 1.311, or any action that otherwise closes prosecution in the application.

In accordance with 37 C.F.R. § 1.97(c)(2), the fee in § 1.17(p) is enclosed.

A copy of the non-patent literature document is attached.

Applicant respectfully requests that the Examiner consider the documents listed on attached Form PTO/SB/08 and indicate that they were considered by making appropriate notations on the attached form.

This submission does not represent that a search has been made or that no better art exists and does not constitute an admission that each or all of the listed documents are material or constitute "prior art." If the Examiner applies any of the documents as prior art against any claim in the application and Applicant determines that the cited documents do not constitute "prior art" under United States law, Applicant reserves the right to present to the U.S. Patent and Trademark Office the relevant facts and law regarding the appropriate status of such documents.

Applicant further reserves the right to take appropriate action to establish the patentability of the disclosed invention over the listed documents, should one or more of the documents be applied against the claims of the present application.

If there is any fee due in connection with the filing of this Statement, please charge the fee to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: 30 May 2023

By: /Christopher C. Johns/
Christopher C. Johns
Reg. No. 68,664
(202) 408-4000

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/821,345	**05/30/2023 05:48:58 PM ET**	**15635.0003-03000**

Title of Invention

TECHNIQUES FOR SECURING VIRTUAL MACHINES

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	2249	FILED BY	Michelle Daniels
PATENT CENTER #	62177346	FILING DATE	08/22/2022
CUSTOMER #	22852	FIRST NAMED INVENTOR	Avi Shua
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Christopher Johns

Documents

TOTAL DOCUMENTS: 3

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
15635.0003-03000-IDS before OA.pdf	2	Transmittal Letter	17 KB
15635.0003-03000-sb08.pdf	1	Information Disclosure Statement (IDS) Form (SB08)	32 KB
Warning: This is not a USPTO supplied IDS fillable form. Data in the form cannot be automatically loaded to other USPTO systems.			
Notice of Allowance 5-10-2023-15635.0003-02000.pdf	14	Non Patent Literature	3169 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
15635.0003-03000-IDS before OA.pdf	4A7209C5D0AF70756BB1BCD1855DF329A62619FA04808C554 6382DBF9B59085A97385626F20F8214AD7FC51351A9270E4D3 1285741CA01548BE67936370E9E7D
15635.0003-03000-sb08.pdf	7AC38A5DBE3B799D9B1D460C3DBD38F054ACEE9A07B37410 7B8825DD4E692E6C34B0E18E9E906D7B0A8718127CDD6B7A6 65A9B0BAB4B5AAE1E2E713C22F61722
Notice of Allowance 5-10-2023-15635.0003-02000.pdf	9F4E342335BD5E09E4D297B359D76EF8A1EE1CEE607CB8FD A368DAEEEC7A9A0F85460351689BD238CE31FBFE4DF3A6943 B69423AA2369E725298D77620856C7F

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/821,345	05/30/2023 05:48:58 PM ET	15635.0003-03000

Title of Invention

TECHNIQUES FOR SECURING VIRTUAL MACHINES

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	2249	FILED BY	Michelle Daniels
PATENT CENTER #	62177346	AUTHORIZED BY	Christopher Johns
CUSTOMER #	22852	FILING DATE	08/22/2022
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Avi Shua

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
CARD / 1007	E20235TH49598195	Michelle Daniels

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
2806	SUBMISSION OF AN INFORMATION DISCLOSURE STATEMENT	104.00	1	104.00
			TOTAL AMOUNT:	$104.00

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

New Applications Under 35 U.S.C. 111

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

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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
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/821,345	08/22/2022	Avi Shua	15635.0003-03000	2249

22852 7590 05/25/2023

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER	
SAADOUN, HASSAN	

ART UNIT	PAPER NUMBER
2435	

NOTIFICATION DATE	DELIVERY MODE
05/25/2023	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):

regional-desk@finnegan.com

Office Action Summary	Application No. 17/821,345	Applicant(s) Shua, Avi	
	Examiner HASSAN SAADOUN	Art Unit 2435	AIA (FITF) Status Yes

-- 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 08/22/2022.

☐ 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) 22-55 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) 22-55 is/are rejected.

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

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

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

Application Papers

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

11)☑ The drawing(s) filed on 08/22/2022 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 08/25/2022, 11/22/2022 and 01/20/2023.

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

4) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the application filed on **08/22/2023. Claims 22-55** are pending and are examined.

Notice of Pre-AIA or AIA Status

2. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Priority

3. Applicant's benefit claim is hereby acknowledged of the U.S patent application No. **16/585,967**, filed September 27, 2019, which claims the benefit of U.S. Provisional Application No. **62/797,718** filed on January 28, 2019 which papers have been placed on record in the file.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140

F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

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

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. **Claims 22-55** are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over **claims 1-4, 6-15 and 17-21** of any patents granted on application No. **17/330,998** and **claims 1-4, 6-15 and 17-21** of any patents granted on application No. **16/585,967** and also over **claims 22-46** of co-pending application No. **18/055,150**, **claims 22-24, 26 and 28-51** of co-pending application No. **18/055,181**, **claims 22-44** of co-pending application No. **18/055,201** and **claims 22, 26-38 and 41** of co-pending application No. **18/055,220**

6. Although the claims at issue are not identical, they are not patentably distinct from each other because they are both claiming a common subject matter, “analyzing the snapshot of the protected virtual cloud asset to detect potential cyber threats or

vulnerabilities risking the protected virtual cloud asset and alerting detected potential cyber threats or vulnerabilities based on a determined priority.".

Allowable Subject Matter

7. Claims **22-55** would be allowable if they overcome the nonstatutory double patenting rejection, set forth in this office action.

8. The following is an examiner's statement of reasons for identifying allowable subject matter.

9. The closest prior arts made of records are, Golan et al. (U.S Patent No. **10,944,778 B1**, referred to as **Golan**), Derbeko et al. (U.S Patent No. **10,536,471 B1**, referred to as **Derbeko**) and Deng et al. (U.S Pub No. **2017/0103212 A1**, referred to as **Deng**).

Golan discloses a method and system for implementing risk-based cyber security. Specifically, the disclosed method and system entail evaluating risk as a decision threshold for conducting cyber security assessments of system images within cloud computing environments. Further, the disclosed method and system pivot on intelligence pertaining to the latest cyber threats and/or vulnerabilities found worldwide.

Derbeko discloses a system and a method of detecting malware in a virtual machine (VM), the method comprising periodically creating snapshots of the VM, analyzing each of the snapshots in comparison to one or more previous snapshots to

determine whether anomalies exist, and based on a threshold amount of anomalies detected, scanning the VM to determine whether malware is detected.

Deng discloses determining which snapshot deltas tend to occur in: (i) healthy virtual machines (VMs) that have been subject to an attack yet remained healthy, and/or (ii) unhealthy VMs that have apparently been adversely affected by an attack. Snapshot deltas that occur in at least some (or more preferably all) of the healthy VM subset provide information about software changes (for example, updates, configuration changes) that may be helpful. Snapshot deltas that occur in at least some (or more preferably all) of the unhealthy VM subsets provide information about software changes (for example, updates, configuration changes) that may be unhelpful.

10. However, regarding claim **22**, the prior art of **Golan**, **Derbeko** and **Deng** when taken in the context of the claim as a whole do not disclose nor suggest, "analyzing the snapshot of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset; and alerting detected potential cyber threats based on filtering or prioritizing using a determined risk of each detected threat.".

11. Regarding claim **39**, the prior art of **Golan**, **Derbeko** and **Deng** when taken in the context of the claim as a whole do not disclose nor suggest, "analyze the snapshot of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset; and alert detected potential cyber threats based on filtering or prioritizing using a determined risk of each detected threat.".

12. **Claims 23-38** depend on **claim 22** and **claims 40-55** depend on **claim 39** and are of consequence identified as allowable.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HASSAN SAADOUN whose telephone number is (571)272-8408. The examiner can normally be reached Mon-Fri 9:00-5:00.

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, Joseph Hirl can be reached on 571-272-3685. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197

(toll-free). If you would like assistance from a USPTO Customer Service

Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HASSAN SAADOUN/
Examiner, Art Unit 2435

/JOSEPH P HIRL/
Supervisory Patent Examiner, Art Unit 2435

Notice of References Cited	Application/Control No. 17/821,345	Applicant(s)/Patent Under Reexamination Shua, Avi	
	Examiner HASSAN SAADOUN	Art Unit 2435	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-10944778-B1	03-2021	Golan; Oron	H04L63/1491	1/1
*	B	US-10536471-B1	01-2020	Derbeko; Philip	G06F21/53	1/1
*	C	US-20170103212-A1	04-2017	Deng; Yu	G06F3/0619	1/1
*	D	US-11068353-B1	07-2021	Ved; Amber	G06F9/45558	1/1
*	E	US-20160094568-A1	03-2016	Balasubramanian; Swaminathan	G06F9/45558	726/23
*	F	US-20160004449-A1	01-2016	LAKSHMAN; Avinash	G06F3/0604	711/162
*	G	US-20130191643-A1	07-2013	Song; Zhexuan	H04L9/3265	713/176
*	H	US-10552610-B1	02-2020	Vashisht; Sai Omkar	G06F3/0619	1/1
*	I	US-20120072968-A1	03-2012	Wysopal; Christopher J.	G06F21/577	726/1
*	J	US-20140089916-A1	03-2014	Gross; Miron	G06F11/0727	718/1
	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.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/821,345	Shua, Avi
	Examiner	Art Unit
	HASSAN SAADOUN	2435

CPC - Searched*		
Symbol	**Date**	**Examiner**
CPC Classification Search(G06F9/45558 or G06F11/1464 or G06F16/128 or H04L63/1416 or H04L63/1433 or H04L63/1441 or G06F2009/45562 or G06F2009/45583 or G06F2009/45587 or G06F2009/45591 or G06F2009/45595 or G06F2201/84 or G06F2201/815 or G06F2201/86 or G06F11/1451 or G06F11/301 or G06F11/3476 or H04L63/1408 or H04L63/1425) limited with text.	05/18/2023	HS

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

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

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

Search Notes		
Search Notes	**Date**	**Examiner**
PE2E class limited with text search. (See Search History).	05/18/2023	HS
PE2E inventor and assignee search. (See Search History).	05/18/2023	HS
PE2E text search. (See Search History).	05/18/2023	HS
PE2E Similarity and More Like This Document Search. (See Search History).	05/18/2023	HS
PE2E Interference Search. (See Search History).	05/18/2023	HS
NPL search. (Google Scholar). (See Search History).	05/18/2023	HS

/HASSAN SAADOUN/ Examiner, Art Unit 2435	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/821,345	Shua, Avi
	Examiner	Art Unit
	HASSAN SAADOUN	2435

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**
G06F	9/45558, 11/1464, 16/128, 2009/45562, 2009/45583, 2009/45587, 2009/45591, 2009/45595, 2201/84, 2201/815, 2201/86, 11/1451, 11/301, 11/3476.	05/18/2023	HS
H04L	63/1416, 63/1433, 63/1441, 63/1408, 63/1425.	05/18/2023	HS

/HASSAN SAADOUN/ Examiner, Art Unit 2435	

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/821,345	Shua, Avi
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	HASSAN SAADOUN	2435

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

CLAIMS

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

CLAIM		DATE								
Final	Original	05/18/2023								
	22	✓								
	23	✓								
	24	✓								
	25	✓								
	26	✓								
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)				Complete if Known	
				Application Number	17/821,345
				Filing Date	August 22, 2022
				First Named Inventor	Avi Shua
				Art Unit	Not Yet Assigned
				Examiner Name	Not Yet Assigned
Sheet	1	of	2	Attorney Docket Number	15635.0003-03000

U.S. PATENTS

Examiner Initials*	Cite No.	Document Number / Number-Kind Code (if known)	Issue Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-10,412,109-B2	09-10-2019	Loureiro et al.	
		US-9,177,145-B2	11-03-2015	Todorović	
		US-9,519,781-B2	12-13-2016	Golshan et al.	
		US-9,563,777-B2	02-07-2017	Deng et al.	
		US-9,798,885-B2	10-24-2017	Deng et al.	

U.S. PUBLISHED PATENT APPLICATIONS

Examiner Initials*	Cite No.	Document Number / Number-Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-2017/0111384-A1	04-20-2017	Loureiro et al.	
		US-2017/0031704-A1	02-02-2017	Sudhakaran et al.	
		US-2007/0266433-A1	11-15-2007	Moore	
		US-2014/0137190-A1	05-15-2014	Carey et al.	
		US-2015/0052520-A1	02-19-2015	Crowell et al.	
		US-2017/0011138-A1	01-12-2017	Venkatesh et al.	
		US-2018/0255080-A1	09-06-2018	Paine	
		US-2018/0293374-A1	10-11-2018	Chen	

Note: Submission of copies of U.S. Patents and published U.S. Patent Applications is not required.

NON PATENT LITERATURE DOCUMENTS

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, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation
		Non-Final Office Action Application No. 16/585,967 dated February 3, 2022, in the United States Patent and Trademark Office. (15635.0003-00000)	N/A
		Notice of Allowance Application No. 16/585,967 dated July 7, 2022, in the United States Patent and Trademark Office. (15635.0003-00000)	N/A
		Non-Final Office Action Application No. 17/330,998 dated March 4, 2022, in the United States Patent and Trademark Office. (15635.0003-01000)	N/A
		Final Office Action Application No. 17/330,998 dated June 30, 2022, in the United States Patent and Trademark Office. (15635.0003-01000)	N/A
		Notice of Allowance Application No. 17/330,998 dated August 10, 2022, in the United States Patent and Trademark Office. (15635.0003-01000)	N/A
		Non-Final Office Action Application No. 17/361,861 dated August 29, 2022, in the United States Patent and Trademark Office. (15635.0003-02000)	N/A
		Advisory Action Application No. 17/361,861 dated May 20, 2022, in the United States Patent and Trademark Office. (15635.0003-02000)	N/A

Examiner Signature	/HASSAN SAADOUN/	Date Considered	05/17/2023

*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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H..S./

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				Filing Date	August 22, 2022
				First Named Inventor	Avi Shua
				Art Unit	Not Yet Assigned
				Examiner Name	Not Yet Assigned
Sheet	2	of	2	Attorney Docket Number	15635.0003-03000

NON PATENT LITERATURE DOCUMENTS			
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, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation
		Final Office Action Application No. 17/361,861 dated March 8, 2022, in the United States Patent and Trademark Office. (15635.0003-02000)	N/A
		Non-Final Office Action Application No. 17/361,861 dated October 25, 2021, in the United States Patent and Trademark Office. (15635.0003-02000)	N/A

Examiner Signature	/HASSAN SAADOUN/	Date Considered	05/17/2023

*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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H..S./

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				Application Number	17/821,345
				Filing Date	August 22, 2022
				First Named Inventor	Avi SHUA
				Group Art Unit	Not yet assigned
				Examiner Name	Not yet assigned
Sheet	1	of	1	Attorney Docket Number	15635.0003-03000

U.S. PATENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (if known)	Issue or Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-10,944,778 B1	03-09-2021	Golan, Oron	
		US-10,536,471 B1	01-14-2020	Derbeko, Philip	
		US-11,068,353 B1	07-20-2021	Ved, Amber	
		US-9,268,689 B1	02-23-2016	Chen, Grace Jing	
		US-10,469,304 B1	11-05-2019	Kempe, Gregory Jonathan	

U.S. PUBLISHED PATENT APPLICATIONS

Examiner Initials*	Cite No.[3]	Document Number Number-Kind Code[4] (if known)	Issue or Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-2017/0103212 A1	04-13-2017	Deng, Yu	
		US-2016/0094568 A1	03-31-2016	Balasubramanian, Swaminathan	
		US-2016/0004449 A1	01-07-2016	Lakshman, Avinash	
		US-2013/0191643 A1	07-25-2013	Song, Zhexuan	
		US-2018/0137032 A1	05-17-2018	Tannous, Samuel Joseph	
		US-2008/0189788 A1	08-07-2008	Bahl, Pradeep	
		US-2016/0364255 A1	12-15-2016	Chefalas, Thomas E.	
		US-2011/0289584 A1	11-24-2011	Palagummi, Siva Sai Prasad	

Note: Submission of copies of U.S. Patents and published U.S. Patent Applications is not required.

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Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[5] Number[6] Kind Code[7] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	Translation[8]

NONPATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	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, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation[6]

Examiner Signature	/HASSAN SAADOUN/	Date Considered	05/17/2023

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[5] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3).
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[7] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible.
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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 CFR 1.14. This collection is estimated to take 2 hours 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**.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H..S./

A survey on automated dynamic malware-**analysis** techniques and tools
M Egele, T Scholte, E Kirda, C Kruegel - ACM computing surveys (CSUR ..., 2008 - dl.acm.org
... Thus, whenever a new **threat** is **detected**, it needs to be **analyzed**, ... **snapshots** in VMMs, hardware solutions exist that redirect **all** ... Similar techniques may be applied to **filter** modules that ...
☆ Save 99 Cite Cited by 1167 Related articles All 19 versions Import into EndNote

Barecloud: Bare-metal **analysis-based** evasive malware **detection**
D Kirat, G Vigna, C Kruegel - ... } Security Symposium ({USENIX} Security ..., 2014 - usenix.org
... is **analyzed** without the use of any **detectable** component. ... Early **detection** of these **threats** is a top **priority** for enterprises... **-based** copy-on-write **snapshots** to host the remote **disk** used ...
☆ Save 99 Cite Cited by 304 Related articles All 11 versions Import into EndNote »

Information **security risks** management framework–A step towards mitigating **security risks** in university network
C Joshi, UK Singh - Journal of Information Security and Applications, 2017 - Elsevier
... This paper **analyzed** the **security threats** specifically evolve in ... where information **security risk** assessment is major and high **priority** job are ... 5 shows the **snapshot** of Nmap host scan. ...
☆ Save 99 Cite Cited by 110 Related articles All 3 versions Import into EndNote

The CERT guide to insider **threats**: how to prevent, **detect**, and respond to information technology crimes (Theft, Sabotage, Fraud)
DM Cappelli, AP Moore, RF Trzeciak - 2012 - books.google.com
... assertion, and demonstrate the **danger** posed by insiders in both ... ensure that we consider the "big **picture**" of the problem, not just ... an **analysis** of insiders with connections to the **Internet** ...
☆ Save 99 Cite Cited by 402 Related articles All 3 versions Import into EndNote »

A framework for zero-day vulnerabilities **detection** and **prioritization**
UK Singh, C Joshi, D Kanellopoulos - Journal of Information Security and ..., 2019 - Elsevier
... a layered architecture for **detection** and **analysis** of zero-day ... measuring the **risk** level of vulnerabilities using **Hazard** metric ... 7 shows the **snapshot** of Wireshark. Wireshark sniffs essential ...
☆ Save 99 Cite Cited by 38 Related articles All 2 versions Import into EndNote

Ransomware **detection based** on V-detector negative selection algorithm
T Lu, L Zhang, S Wang, Q Gong - ... on security, pattern analysis ..., 2017 - ieeexplore.ieee.org
... It is known to **prioritize** certain folders when searching for ... be harmless if the **virtual** executing environment is **detected**. As a ... an initial **snapshot**, after **analysis each** executable the **virtual** ...
☆ Save 99 Cite Cited by 35 Related articles Import into EndNote

An integrated approach for **detecting** ransomware using static and dynamic **analysis**
DF Netto, KM Shony, ER Laison
2018 International CET Conference on ... - 2018
ieeexplore.ieee.org

Particle swarm optimization: A wrapper-**based** feature selection method for ransomware **detection** and classification
MS Abbasi, H Al-Sahaf, I Welch
Applications of Evolutionary Computatio... - 2020
link.springer.com

[PDF] al-sahaf.com

Cybercrime **threat** intelligence: A systematic multi-vocal literature review
G Cascavilla, DA Tamburri, WJ Van Den Heuvel - Computers & Security, 2021 - Elsevier
... **Analysis** to identify and **analyze** the most relevant **threat** ... **analysis** mentioned above effectively provided a **photograph** ... core concepts **discovered** as part of our **analysis** (Definition ...
☆ Save 99 Cite Cited by 44 Related articles All 3 versions Import into EndNote

Applied network **security** monitoring: collection, **detection**, and **analysis**

C Sanders, J Smith - 2013 - books.google.com

... As time progressed, scientists **found** that ulcers were caused by ... packet **filtering** techniques using Berkeley Packet **Filters** and ... Fast-forward to the modern era and the **picture** isn't painted ...

☆ Save 99 Cite Cited by 103 Related articles All 6 versions Import into EndNote »

Dynamic **security risk** management using Bayesian **attack** graphs

N Poolsappasit, R Dewri, I Ray - IEEE Transactions on ..., 2011 - ieeexplore.ieee.org

... for static and dynamic **analysis** of **risks** in networked systems. The ... 2 depicts a clear **picture** of 20 different **attack** scenarios. ... the **priority** of **risks** identified earlier during static **analysis**, and ...

☆ Save 99 Cite Cited by 710 Related articles All 12 versions Import into EndNote »

Wedgetail: An intrusion prevention system for the data plane of software defined networks

A Shaghaghi, MA Kaafar, S Jha - ... and Communications Security, 2017 - dl.acm.org

... should **prioritize** this task to improve **detection** performance. Here... We discuss how WedgeTail **detects** attacks targeting the ... system **analyzes snapshots** and the stability of **snapshots** may ...

☆ Save 99 Cite Cited by 58 Related articles All 6 versions Import into EndNote

Bibliographic Data

Application No: 17/821,345

Foreign Priority claimed: ○ Yes ◉ No

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

Verified and Acknowledged: /HASSAN SAADOUN/ (Examiner's Signature) ____ (Initials)

Title: TECHNIQUES FOR SECURING VIRTUAL MACHINES

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
08/22/2022	726	2435	15635.0003-03000
RULE			

APPLICANTS

Orca Security Ltd., Tel Aviv, ISRAEL

INVENTORS

Avi Shua, Tel Aviv,

CONTINUING DATA

This application is a CON of 16585967 09/27/2019 PAT 11431735

FOREIGN APPLICATIONS

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)				Complete if Known	
				Application Number	17/821,345
				Filing Date	August 22, 2022
				First Named Inventor	Avi Shua
				Art Unit	2435
				Examiner Name	CENTRAL, DOCKET
Sheet	1	of	2	Attorney Docket Number	15635.0003-03000

U.S. PATENTS

Examiner Initials*	Cite No.	Document Number Number-Kind Code (if known)	Issue Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-11,431,735 B2	08-30-2022	Shua	
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		US-11,120,124 B2	09-14-2021	Fusenig et al.	
		US-10,402,560 B2	09-03-2019	Gilbert	
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		US-10,534,915 B2	01-14-2020	Cherny et al.	

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Examiner Initials*	Cite No.	Document Number Number-Kind Code (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-2020/0042707 A1	02-06-2020	Kucherov et al.	
		US-2012/0323853 A1	12-20-2012	Fries et al.	
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		US-2009/0007100 A1	01-01-2009	Field et al.	
		US-2008/0263658 A1	10-23-2008	Michael et al.	
		US 2010/0017512 A1	01-21-2010	Ciano et al.	

Note: Submission of copies of U.S. Patents and published U.S. Patent Applications is not required.

NON PATENT LITERATURE DOCUMENTS

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, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation
		Rani et al.; "An Efficient Approach to Forensic Investigation in Cloud using VM Snapshots", 2015 International Conference on Pervasive Computing (ICPC), 5 pages, (2015).	N/A
		Wei et al., "Managing Security of Virtual Machine Images in a Cloud Environment", CCSW'09, pp. 91-96, November 13, 2009	N/A

Examiner Signature	/HASSAN SAADOUN/	Date Considered	05/17/2023

*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.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)				Complete if Known	
				Application Number	17/821,345
				Filing Date	August 22, 2022
				First Named Inventor	Avi Shua
				Art Unit	2435
				Examiner Name	CENTRAL, DOCKET
Sheet	2	of	2	Attorney Docket Number	15635.0003-03000

NON PATENT LITERATURE DOCUMENTS

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, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation
		Almulla et al., "Digital Forensic of a Cloud Based Snapshot", The Sixth International Conference on Innovative Computing Technology (INTECH 2016), pp. 724-729, (2016)	N/A
		Pandey et al., "An Approach for Virtual Machine Image Security", Computer Science and Engineering MNNIT, Allahabad, 2014 International Conference on Signal Propagation and Computer Technology (ICSPCT), pp. 616-623, (2014)	N/A
		Rajasekaran et al., "Scalable Cloud Security via Asynchronous Virtual Machine Introspection", 8th USENIX Workshop on Hot Topics in Cloud Computing, Cover page and pages 1-6, (2016)	N/A
		Kaur et al., "Secure VM Backup and Vulnerability Removal in Infrastructure Clouds", 2014 International Conference on Advances in Computing, Communications and Informatics (ICACCI), pp. 1217-1226, (2014)	N/A
		Fernandez et al., "Two patterns for cloud computing: Secure Virtual Machine Image Repository and Cloud Policy Management Point", PLoP '13: Proceedings of the 20th Conference on Pattern Languages of Programs October 2013 Article No.: 15, Association for Computing Machinery (ACM), Cover sheet and pages 1-11, (2013)	N/A
		Fernandez et al. "Building a security reference architecture for cloud systems", Springer, Requirements Eng, vol. 21, pp. 225-249, (2016)	N/A
		Ammons et al., "Virtual machine images as structured data: the Mirage image library", IBM Research, Cover sheet 2 pages and pages 1-6, (2011)	N/A
		"IBM Point of View Security and Cloud Computing", IBM SmartCloud Enterprise, Cloud Computing White Paper, 13 sheets of cover pages and pages 1-20, (2009)	N/A
		Cui et al., "A Less Resource-Consumed Security Architecture on Cloud Platform", Wuhan University Journal of Natural Sciences, vol. 21, no. 5, pp. 407-414, (2016)	N/A
		Bugiel et al., "AmazonIA: When Elasticity Snaps Back", CCS' 11, ACM, pp. 389-400, (2011)	N/A

Examiner Signature	/HASSAN SAADOUN/	Date Considered	05/17/2023

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PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	1	"17821345"	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/17 09:37 AM
L2	10	"16585967"	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/17 09:37 AM
L3	364606	(G06F9/45558 OR G06F11/1464 OR G06F16/128 OR H04L63/1416 OR H04L63/1433 OR H04L63/1441 OR G06F2009/45562 OR G06F2009/45583 OR G06F2009/45587 OR G06F2009/45591 OR G06F2009/45595 OR G06F2201/84 OR G06F2201/815 OR G06F2201/86 OR G06F11/1451 OR G06F11/301 OR G06F11/3476 OR H04L63/1408 OR H04L63/1425).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 09:38 AM
L4	7	((("Orca") near3 ("Security") near3 ("Ltd"))).AS,AANM.	(USPAT)	OR	ON	ON	2023/05/17 09:39 AM
L5	29	((("SHUA") near3 ("Avi"))).INV.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2023/05/17 09:40 AM
L6	46	("10079842" OR "10402560" OR "10534915" OR "10782952" OR "11120124" OR "11216563" OR "11431735" OR "11516231" OR "20080263658" OR "20090007100" OR "20100017512" OR "20120323853" OR "20140096135" OR "20200042707" OR "9069983" OR "9229758" OR "9268689" OR "9734325" OR "9756070" OR "9858105" OR "10412109" OR "20070266433" OR	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/17 09:40 AM

		"20140137190" OR "20150052520" OR "20170011138" OR "20170031704" OR "20170111384" OR "20180255080" OR "20180293374" OR "9177145" OR "9519781" OR "9563777" OR "9798885" OR "0000002" OR "10469304" OR "10536471" OR "10944778" OR "11068353" OR "20080189788" OR "20110289584" OR "20130191643" OR "20160004449" OR "20160094568" OR "20160364255" OR "20170103212" OR "20180137032").pn.					
L7	38	(Artificial Intelligence) More like doc: US-20220417270-A1 Text: (US-20200244678-A1 OR US-11431735-B2 OR US-11516231-B2 OR US-20210336976-A1 OR US-20230087080-A1 OR US-20230093527-A1 OR US-20200244692-A1 OR US-20230092220-A1 OR US-20230089313-A1 OR US-20210377287-A1 OR US-20210329019-A1 OR US-10503895-B2 OR US-10552610-B1 OR CN-109074450-B OR US-20170098072-A1 OR US-20180260574-A1 OR US-10922418-B2 OR US-10601807-B2 OR CN-111866027-A OR CN-111866027-B).did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 09:41 AM
L8	47	(Artificial Intelligence) Similar to: 17/821,345 with 0 CPC Selections and 0 Text Selections	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2023/05/17 09:41 AM

		Text: (US-20220417270-A1 OR US-20200244678-A1 OR US-11516231-B2 OR US-11431735-B2 OR US-20210336976-A1 OR US-20200244692-A1 OR US-20230087080-A1 OR US-20230093527-A1 OR US-20230092220-A1 OR US-20230089313-A1 OR US-20210377287-A1 OR US-20210329019-A1 OR US-20140317746-A1 OR EP-3369232-A1 OR WO-2017074747-A1 OR WO-2021044407-A1 OR EP-4004787-A1 OR US-20180152473-A1 OR US-10757133-B2 OR US-20210273958-A1 OR US-20200106793-A1 OR US-9762605-B2 OR EP-3654582-B1 OR US-9866581-B2 OR EP-3528463-A1 OR US-20190260779-A1 OR EP-3369232-B1 OR CA-3034176-A1 OR EP-3161999-B1 OR US-20190188385-A1 OR US-20190129739-A1 OR US-10310888-B2 OR US-20200050475-A1 OR WO-2019118153-A1 OR US-20180124069-A1 OR US-10681068-B1 OR US-20220043716-A1 OR EP-3707631-B1 OR US-20210279087-A1 OR US-11170107-B2 OR CN-111183425-A OR US-20220382575-A1 OR US-11397649-B2 OR US-20200057668-A1 OR US-10528383-B2 OR US-10884783-B2 OR US-10769281-B2 OR US-20210224091-A1 OR WO-2022222602-	EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN))				

		A1 OR US-11138075-B2).did.					
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		OR CN-111183425-A OR US-20220382575-A1 OR US-8776235-B2 OR US-20210279087-A1 OR US-20160248798-A1).did.					
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L12	8	((("Orca") near3 ("Security") near3 ("Ltd"))).AS,AANM. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj7 (virtual$3 "VM")).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/17 09:52 AM
L13	8	((("SHUA") near3 ("Avi"))).INV. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj7 (virtual$3 "VM")).clm.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2023/05/17 09:55 AM
L14	3965	(G06F9/45558 OR G06F11/1464 OR G06F16/128 OR H04L63/1416 OR H04L63/1433 OR H04L63/1441 OR G06F2009/45562 OR G06F2009/45583 OR G06F2009/45587 OR G06F2009/45591 OR G06F2009/45595 OR G06F2201/84 OR G06F2201/815 OR G06F2201/86 OR G06F11/1451 OR G06F11/301 OR G06F11/3476 OR H04L63/1408 OR H04L63/1425).cpc. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 09:56 AM

		picture replicat$3 clon$3) adj7 (virtual$3 "VM"))					
L15	2202	(G06F9/45558 OR G06F11/1464 OR G06F16/128 OR H04L63/1416 OR H04L63/1433 OR H04L63/1441 OR G06F2009/45562 OR G06F2009/45583 OR G06F2009/45587 OR G06F2009/45591 OR G06F2009/45595 OR G06F2201/84 OR G06F2201/815 OR G06F2201/86 OR G06F11/1451 OR G06F11/301 OR G06F11/3476 OR H04L63/1408 OR H04L63/1425).cpc. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj3 (virtual$3 "VM"))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 09:56 AM
L16	329	(G06F9/45558 OR G06F11/1464 OR G06F16/128 OR H04L63/1416 OR H04L63/1433 OR H04L63/1441 OR G06F2009/45562 OR G06F2009/45583 OR G06F2009/45587 OR G06F2009/45591 OR G06F2009/45595 OR G06F2201/84 OR G06F2201/815 OR G06F2201/86 OR G06F11/1451 OR G06F11/301 OR G06F11/3476 OR H04L63/1408 OR H04L63/1425).cpc. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj3 (virtual$3 "VM") adj7 (disk asset))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 09:57 AM
L17	15	(G06F9/45558 OR G06F11/1464 OR	(US-PGPUB; USPAT; USOCR; FIT (AP, AT,	OR	ON	ON	2023/05/17 10:06 AM

		G06F16/128 OR H04L63/1416 OR H04L63/1433 OR H04L63/1441 OR G06F2009/45562 OR G06F2009/45583 OR G06F2009/45587 OR G06F2009/45591 OR G06F2009/45595 OR G06F2201/84 OR G06F2201/815 OR G06F2201/86 OR G06F11/1451 OR G06F11/301 OR G06F11/3476 OR H04L63/1408 OR H04L63/1425).cpc. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj3 (virtual$3 "VM") adj7 (disk asset) AND (analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) SAME (threat$3 risk$3 malware attack$3 vulnerab$5))	AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L18	2	("10079842" OR "10402560" OR "10534915" OR "10782952" OR "11120124" OR "11216563" OR "11431735" OR "11516231" OR "20080263658" OR "20090007100" OR "20100017512" OR "20120323853" OR "20140096135" OR "20200042707" OR "9069983" OR "9229758" OR "9268689" OR "9734325" OR "9756070" OR "9858105" OR "10412109" OR "20070266433" OR "20140137190" OR "20150052520" OR "20170011138" OR	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/17 10:09 AM

		"20170031704" OR "20170111384" OR "20180255080" OR "20180293374" OR "9177145" OR "9519781" OR "9563777" OR "9798885" OR "0000002" OR "10469304" OR "10536471" OR "10944778" OR "11068353" OR "20080189788" OR "20110289584" OR "20130191643" OR "20160004449" OR "20160094568" OR "20160364255" OR "20170103212" OR "20180137032").pn. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj3 (virtual$3 "VM") adj7 (disk asset))					
L19	17	(US-20200244678-A1 OR US-11431735-B2 OR US-11516231-B2 OR US-20210336976-A1 OR US-20230087080-A1 OR US-20230093527-A1 OR US-20200244692-A1 OR US-20230092220-A1 OR US-20230089313-A1 OR US-20210377287-A1 OR US-20210329019-A1 OR US-10503895-B2 OR US-10552610-B1 OR CN-109074450-B OR US-20170098072-A1 OR US-20180260574-A1 OR US-10922418-B2 OR US-10601807-B2 OR CN-111866027-A OR CN-111866027-B).did. AND (determin$3 identif$5 monitor$3) near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj3 (virtual$3 "VM") adj7	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 10:10 AM

		(disk asset))					
L20	7	(CN-102473220-A OR US-11516231-B2 OR US-20210336976-A1 OR US-11431735-B2 OR US-20230092220-A1 OR US-20200244692-A1 OR US-20220417270-A1 OR US-20230087080-A1 OR US-20190205523-A1 OR US-20160321096-A1 OR US-20210377287-A1 OR US-20200244678-A1 OR US-20140317746-A1 OR US-10853190-B1 OR EP-4004787-A1 OR US-20180152473-A1 OR US-10757133-B2 OR WO-2017074747-A1 OR EP-3369232-A1 OR EP-3654582-B1 OR US-9866581-B2 OR US-20210273958-A1 OR EP-3161999-B1 OR US-9762605-B2 OR EP-3528463-A1 OR US-20190260779-A1 OR US-10360371-B1 OR US-11170107-B2 OR US-20180124069-A1 OR WO-2019118153-A1 OR EP-3707631-B1 OR EP-3369232-B1 OR CA-3034176-A1 OR US-20200106793-A1 OR US-20160036835-A1 OR CN-109564612-A OR EP-3175431-A1 OR US-20210326046-A1 OR CA-2955069-A1 OR AU-2015296801-B2 OR US-9516044-B2 OR US-10681068-B1 OR CA-2955069-C OR US-20220043716-A1 OR US-20220278993-A1 OR CN-111183425-A OR US-20220382575-A1 OR US-8776235-B2 OR US-20210279087-A1 OR US-20160248798-A1).did. AND (determin$3 identif$5 monitor$3)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO))	OR	ON	ON	2023/05/17 10:12 AM

		near3 ((snapshot snap?shot image copy picture replicat$3 clon$3) adj3 (virtual$3 "VM") adj7 (disk asset))					
L21	109	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 11:11 AM
L22	19	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5).ti,ab,bsum, clm.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 11:12 AM
L23	89	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5) AND l3	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 11:15 AM
L24	58	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2023/05/17 11:16 AM

		picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5) AND L3 AND (@ad<"20190128")	CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L25	2	"20170103212"	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/17 12:16 PM
L26	6	("10079842" OR "10402560" OR "10534915" OR "10782952" OR "11120124" OR "11216563" OR "11431735" OR "11516231" OR "20080263658" OR "20090007100" OR "20100017512" OR "20120323853" OR "20140096135" OR "20200042707" OR "9069983" OR "9229758" OR "9268689" OR "9734325" OR "9756070" OR "9858105" OR "10412109" OR "20070266433" OR "20140137190" OR "20150052520" OR "20170011138" OR "20170031704" OR "20170111384" OR "20180255080" OR "20180293374" OR "9177145" OR "9519781" OR "9563777" OR "9798885" OR "0000002" OR "10469304" OR "10536471" OR "10944778" OR "11068353" OR "20080189788" OR "20110289584" OR "20130191643" OR "20160004449" OR "20160094568" OR	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/17 12:20 PM

		"20160364255" OR "20170103212" OR "20180137032").pn. AND (analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5)					
L27	65	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 report$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5) AND L3 AND (@ad<"20190128")	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 12:55 PM
L28	30	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 report$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5).ti,ab,bsum, clm.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 02:19 PM
L29	13	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM")	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2023/05/17 02:20 PM

		AND (alert$3 warn$3 report$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5).clm.	MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L30	13	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 report$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5).clm. AND l3	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/17 02:20 PM
L31	75	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 report$3 notif$5) near7 (threat$3 risk$3 malware attack$3 vulnerab$5)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/18 05:59 AM
L32	16	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") SAME (alert$3 warn$3 report$3 notif$5) near7 (threat$3 risk$3 malware attack$3 vulnerab$5)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/18 05:59 AM
L33	12	((analy$5 filter$3	(US-PGPUB; USPAT;	OR	ON	ON	2023/05/18

		scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") SAME (alert$3 warn$3 report$3 notif$5) near7 (threat$3 risk$3 malware attack$3 vulnerab$5)).ti,ab,bsum,clm.	USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				06:03 AM
L35	12	((analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") SAME (alert$3 warn$3 report$3 notif$5) near7 (threat$3 risk$3 malware attack$3 vulnerab$5) SAME (prioritiz$4 order$3 filter$3 analy$5 scan$4 inspect$3 search$3)).ti,ab,bsum,clm.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/18 06:18 AM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	0	(analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") AND (alert$3 warn$3 report$3 notice notif$5) SAME (threat$3 risk$3 malware attack$3 vulnerab$5).clm. AND l3	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/17 02:20 PM
N2	0	((analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/18 06:01 AM

		snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") SAME (alert$3 warn$3 report$3 notif$5) near7 (threat$3 risk$3 malware attack$3 vulnerab$5)).clm. AND l3					
N3	0	((analy$5 filter$3 scan$4 inspect$3 search$3) near3(snapshot snap?shot image copy picture replicat$3 clon$3) adj4 ((virtual$3 adj3(machine disk asset cloud server)) "VM") SAME (alert$3 warn$3 report$3 notif$5) near7 (threat$3 risk$3 malware attack$3 vulnerab$5) SAME (prioritiz$4 order$3 filter$3 analy$5 scan$4 inspect$3 search$3)).clm. AND l3	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/18 06:19 AM

PE2E SEARCH - Search History (Similarity Search)

Ref #	Sort and Retrieval Information	Text Selections	CPC Selections
L8	Sort results by: Similarity to Application # 17/821,345 Retrieve results by: Application # 17/821,345	No selections	No selections
L9	Sort results by: Similarity to Application # 17/821,345 Retrieve results by: Application # 17/821,345	(Claims) A method for securing virtual cloud assets in a cloud computing environment against cyber threats, comprising: taking a snapshot of at least one virtual disk of a protected virtual cloud asset, wherein the virtual cloud asset is instantiated in the cloud computing environment; accessing the snapshot of the at least one virtual disk; analyzing the snapshot of the protected virtual cloud asset to	(H04L63/1433) Vulnerability analysis (G06F16/128) Details of file system snapshots on the file-level, e.g. snapshot creation, administration, deletion (G06F11/1451) Management of the data involved in backup or backup restore by selection of backup contents (G06F11/1464) Management of the backup or restore process for networked environments (G06F11/301) Monitoring arrangements specially adapted to the computing system or computing system component being monitored where the computing system is a virtual computing platform, e.g. logically

		detect potential cyber threats risking the protected virtual cloud asset; and alerting detected potential cyber threats based on filtering or prioritizing using a determined risk of each detected threat.	partitioned systems (G06F2009/45587) Isolation or security of virtual machine instances (G06F2009/45583) Memory management, e.g. access or allocation (G06F2009/45562) Creating, deleting, cloning virtual machine instances (G06F11/3476) Data logging (G06F2009/45595) Network integration; Enabling network access in virtual machine instances (G06F2201/84) Using snapshots, i.e. a logical point-in-time copy of the data

INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(Use as many sheets as necessary)*				***Complete if Known***	
				Application Number	17/821,345
				Filing Date	August 22, 2022
				First Named Inventor	Avi Shua
				Art Unit	2435
				Examiner Name	CENTRAL, DOCKET
Sheet	1	of	2	*Attorney Docket Number*	15635.0003-03000

U.S. PATENTS

Examiner Initials*	Cite No.	Document Number Number-Kind Code *(if known)*	Issue Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-11,431,735 B2	08-30-2022	Shua	
		US-11,516,231 B2	11-29-2022	Shua	
		US-11,120,124 B2	09-14-2021	Fusenig et al.	
		US-10,402,560 B2	09-03-2019	Gilbert	
		US-10,079,842 B1	09-18-2018	Brandwine et al.	
		US-9,229,758 B2	01-05-2016	Ammons et al.	
		US-9,734,325 B1	08-15-2017	Neumann et al.	
		US-11,216,563 B1	01-04-2022	Veselov et al.	
		US-9,756,070 B1	09-05-2017	Crowell et al.	
		US-9,858,105 B1	01-02-2018	Upadhyay et al.	
		US-10,782,952 B1	09-22-2020	Doring et al.	
		US-9,069,983 B1	06-30-2015	Nijjar	
		US-9,268,689 B1	02-23-2016	Chen et al.	
		US-10,534,915 B2	01-14-2020	Cherny et al.	

U.S. PUBLISHED PATENT APPLICATIONS

Examiner Initials*	Cite No.	Document Number Number-Kind Code *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-2020/0042707 A1	02-06-2020	Kucherov et al.	
		US-2012/0323853 A1	12-20-2012	Fries et al.	
		US-2014/0096135 A1	04-03-2014	Kundu et al.	
		US-2009/0007100 A1	01-01-2009	Field et al.	
		US-2008/0263658 A1	10-23-2008	Michael et al.	
		US 2010/0017512 A1	01-21-2010	Ciano et al.	

Note: Submission of copies of U.S. Patents and published U.S. Patent Applications is not required.

NON PATENT LITERATURE DOCUMENTS

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, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation
		Rani et al.; "An Efficient Approach to Forensic Investigation in Cloud using VM Snapshots", 2015 International Conference on Pervasive Computing (ICPC), 5 pages, (2015).	N/A
		Wei et al., "Managing Security of Virtual Machine Images in a Cloud Environment", CCSW'09, pp. 91-96, November 13, 2009	N/A

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.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(Use as many sheets as necessary)*				***Complete if Known***	
				Application Number	17/821,345
				Filing Date	August 22, 2022
				First Named Inventor	Avi Shua
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Sheet	2	of	2	*Attorney Docket Number*	15635.0003-03000

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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, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation
		Almulla et al., "Digital Forensic of a Cloud Based Snapshot", The Sixth International Conference on Innovative Computing Technology (INTECH 2016), pp. 724-729, (2016)	N/A
		Pandey et al., "An Approach for Virtual Machine Image Security", Computer Science and Engineering MNNIT, Allahabad, 2014 International Conference on Signal Propagation and Computer Technology (ICSPCT), pp. 616-623, (2014)	N/A
		Rajasekaran et al., "Scalable Cloud Security via Asynchronous Virtual Machine Introspection", 8th USENIX Workshop on Hot Topics in Cloud Computing, Cover page and pages 1-6, (2016)	N/A
		Kaur et al., "Secure VM Backup and Vulnerability Removal in Infrastructure Clouds", 2014 International Conference on Advances in Computing, Communications and Informatics (ICACCI), pp. 1217-1226, (2014)	N/A
		Fernandez et al., "Two patterns for cloud computing: Secure Virtual Machine Image Repository and Cloud Policy Management Point", PLoP '13: Proceedings of the 20th Conference on Pattern Languages of Programs October 2013 Article No.: 15, Association for Computing Machinery (ACM), Cover sheet and pages 1-11, (2013)	N/A
		Fernandez et al. "Building a security reference architecture for cloud systems", Springer, Requirements Eng, vol. 21, pp. 225-249, (2016)	N/A
		Ammons et al., "Virtual machine images as structured data: the Mirage image library", IBM Research, Cover sheet 2 pages and pages 1-6, (2011)	N/A
		"IBM Point of View Security and Cloud Computing", IBM SmartCloud Enterprise, Cloud Computing White Paper, 13 sheets of cover pages and pages 1-20, (2009)	N/A
		Cui et al., "A Less Resource-Consumed Security Architecture on Cloud Platform", Wuhan University Journal of Natural Sciences, vol. 21, no. 5, pp. 407-414, (2016)	N/A
		Bugiel et al., "AmazonIA: When Elasticity Snaps Back", CCS' 11, ACM, pp. 389-400, (2011)	N/A

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/821,345	**01/20/2023 06:24:41 PM ET**	**15635.0003-03000**

Title of Invention

TECHNIQUES FOR SECURING VIRTUAL MACHINES

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	2249	FILED BY	Michelle Daniels
PATENT CENTER #	61471724	FILING DATE	08/22/2022
CUSTOMER #	22852	FIRST NAMED INVENTOR	Avi Shua
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Christopher Johns

Documents

TOTAL DOCUMENTS: 14

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
15635.0003-03000-IDS before OA.pdf	2	Transmittal Letter	17 KB
15635.0003-03000-sb08.pdf	2	Information Disclosure Statement (IDS) Form (SB08)	40 KB
Warning: This is not a USPTO supplied IDS fillable form. Data in the form cannot be automatically loaded to other USPTO systems.			
NPL-Fernandez - Building a Security Reference Architecture.pdf	25	Non Patent Literature	22917 KB
NPL-Fernandez et al. Two	12	Non Patent Literature	5569 KB

Patterns for Cloud Computing.pdf			
NPL-Kaur et al..pdf	10	Non Patent Literature	10148 KB
NPL-Pandey et al..pdf	8	Non Patent Literature	13829 KB
NPL-Rajasekaran et al..pdf	7	Non Patent Literature	6077 KB
NPL-Rani et al..pdf	5	Non Patent Literature	3087 KB
NPL-WEB-ARCHIVE - IBM - SmartCloud.pdf	33	Non Patent Literature	12233 KB
NPL-Wei et al..pdf	6	Non Patent Literature	6285 KB
NPL-Almulla et al..pdf	6	Non Patent Literature	5700 KB
NPL-Ammons et al..pdf	8	Non Patent Literature	7102 KB
NPL-Bugiel et al..pdf	12	Non Patent Literature	12358 KB
NPL-Cui et al..pdf	8	Non Patent Literature	5180 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
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15635.0003-03000-sb08.pdf	4ADBF9EE60B1FF5E4A2E44D646B2DA456307479D66833EBEE0FB316F6FA5104C7E09F7095E876CC7535678EADF016E77E9C7189EB4F572AD5C8CD54C66CBC205
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Architecture.pdf	CD1E3793A776D5FE19DA4962A3BC3
NPL-Fernandez et al. Two Patterns for Cloud Computing.pdf	15BACFCB6E27481DD20EA4F6D2151DA3575C9EC290F1BFBB0BF64BA331DD5879754276BEFCC62C3DB4E5860674DA9CFBB077B9067D240262330AD97738370467
NPL-Kaur et al..pdf	D3C013C12B359601247549A613F32188D7B3C06B18252DA9A86640769DB19748DB40DB133193E99444284A6BBF7C6A37DF9BAE0A85E84303F642FD164FA83A4B
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NPL-WEB-ARCHIVE - IBM - SmartCloud.pdf	7FA0D1BBE9E11351BB64A9BA65809AD0A1A3A5E426EE581A715E8775EE5E4D1C3FCC9084A4A5D2709C3EE0DD09F0DE1465DE039F7BEEE196A12A3BF12E3737B6
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NPL-Almulla et al..pdf	6F090A77C7C05DA6CF6503DFF5D07BB2EFE06C5DD5268AC3945C984F2C695DB6CB92F718AECB17400CEB6C57CDA1EA503CB2AD762FD4D5FE11566BE4872593CD
NPL-Ammons et al..pdf	747103FEF5246626D8D179C457238BAF76C36D62AD2A0514D6190FF22BA536D2572405A42326282628490A389826B53DE623DCAB8019E232707604B8BB822415
NPL-Bugiel et al..pdf	AA12649F8EFE06E31721B40EC057B2A2F579D3DA3DDDBFE0C4562D7FD00B2E28223A9DDA1E50ACFE4156D524C2B4BE4E

	D7E4D470A0C8F4C335043E038E3A649D
NPL-Cui et al..pdf	2B17CE2E6324A4871FCBF55D89B45E3274BCBA16DA1932A78ECF1247867416EF29C70C8CF0457EF8F04AA13792B7BB1AA59EB9D55B859B352856C0D1ED6CE4B4

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

PATENT
Customer No. 22852
Attorney Docket No. **15635.0003-03000**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	)	
Avi Shua	)	Group Art Unit: 2435
	)	
Application No.: 17/821,345	)	Examiner: CENTRAL, DOCKET
	)	
Filed: August 22, 2022	)	Confirmation No.: 2249
	)	
For: TECHNIQUES FOR SECURING VIRTUAL MACHINES	)	
	)	

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

Commissioner:

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. § 1.97(b)

Pursuant to 37 C.F.R. §§ 1.56 and 1.97(b), Applicant brings to the attention of the Examiner the listed document on the attached Form PTO/SB/08. This Information Disclosure Statement is being filed before the mailing date of a first Office Action on the merits for the above-referenced application.

Copies of the non-patent literature documents are attached.

Applicant respectfully requests that the Examiner consider the documents listed on attached Form PTO/SB/08 and indicate that they were considered by making appropriate notations on the attached form.

This submission does not represent that a search has been made or that no better art exists and does not constitute an admission that each or all of the listed documents are material or constitute "prior art." If the Examiner applies any of the

documents as prior art against any claim in the application and Applicant determines that the cited documents do not constitute "prior art" under United States law, Applicant reserves the right to present to the U.S. Patent and Trademark Office the relevant facts and law regarding the appropriate status of such documents.

Applicant further reserves the right to take appropriate action to establish the patentability of the disclosed invention over the listed documents, should one or more of the documents be applied against the claims of the present application.

If there is any fee due in connection with the filing of this Statement, please charge the fee to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: 20 January 2023

By: /Christopher C. Johns/
Christopher C. Johns
Reg. No. 68,664
(202) 408-4000

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/821,345	08/22/2022	Avi Shua	15635.0003-03000

CONFIRMATION NO. 2249

22852
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

PUBLICATION NOTICE

OC000000137116912

Title:TECHNIQUES FOR SECURING VIRTUAL MACHINES

Publication No.US-2022-0417270-A1
Publication Date:12/29/2022

NOTICE OF PUBLICATION OF APPLICATION

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

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(Use as many sheets as necessary)*				***Complete if Known***	
				Application Number	17/821,345
				Filing Date	August 22, 2022
				First Named Inventor	Avi Shua
				Art Unit	Not Yet Assigned
				Examiner Name	Not Yet Assigned
Sheet	1	of	2	*Attorney Docket Number*	15635.0003-03000

U.S. PATENTS

Examiner Initials*	Cite No.	Document Number Number-Kind Code *(if known)*	Issue Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-10,412,109-B2	09-10-2019	Loureiro et al.	
		US-9,177,145-B2	11-03-2015	Todorović	
		US-9,519,781-B2	12-13-2016	Golshan et al.	
		US-9,563,777-B2	02-07-2017	Deng et al.	
		US-9,798,885-B2	10-24-2017	Deng et al.	

U.S. PUBLISHED PATENT APPLICATIONS

Examiner Initials*	Cite No.	Document Number Number-Kind Code *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-2017/0111384-A1	04-20-2017	Loureiro et al.	
		US-2017/0031704-A1	02-02-2017	Sudhakaran et al.	
		US-2007/0266433-A1	11-15-2007	Moore	
		US-2014/0137190-A1	05-15-2014	Carey et al.	
		US-2015/0052520-A1	02-19-2015	Crowell et al.	
		US-2017/0011138-A1	01-12-2017	Venkatesh et al.	
		US-2018/0255080-A1	09-06-2018	Paine	
		US-2018/0293374-A1	10-11-2018	Chen	

Note: Submission of copies of U.S. Patents and published U.S. Patent Applications is not required.

NON PATENT LITERATURE DOCUMENTS

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, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation
		Non-Final Office Action Application No. 16/585,967 dated February 3, 2022, in the United States Patent and Trademark Office. (15635.0003-00000)	N/A
		Notice of Allowance Application No. 16/585,967 dated July 7, 2022, in the United States Patent and Trademark Office. (15635.0003-00000)	N/A
		Non-Final Office Action Application No. 17/330,998 dated March 4, 2022, in the United States Patent and Trademark Office. (15635.0003-01000)	N/A
		Final Office Action Application No. 17/330,998 dated June 30, 2022, in the United States Patent and Trademark Office. (15635.0003-01000)	N/A
		Notice of Allowance Application No. 17/330,998 dated August 10, 2022, in the United States Patent and Trademark Office. (15635.0003-01000)	N/A
		Non-Final Office Action Application No. 17/361,861 dated August 29, 2022, in the United States Patent and Trademark Office. (15635.0003-02000)	N/A
		Advisory Action Application No. 17/361,861 dated May 20, 2022, in the United States Patent and Trademark Office. (15635.0003-02000)	N/A

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.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(Use as many sheets as necessary)*				***Complete if Known***	
				Application Number	17/821,345
				Filing Date	August 22, 2022
				First Named Inventor	Avi Shua
				Art Unit	Not Yet Assigned
				Examiner Name	Not Yet Assigned
Sheet	2	of	2	*Attorney Docket Number*	15635.0003-03000

NON PATENT LITERATURE DOCUMENTS			
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		Final Office Action Application No. 17/361,861 dated March 8, 2022, in the United States Patent and Trademark Office. (15635.0003-02000)	N/A
		Non-Final Office Action Application No. 17/361,861 dated October 25, 2021, in the United States Patent and Trademark Office. (15635.0003-02000)	N/A

Examiner Signature		Date Considered	

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PATENT
Customer No. 22852
Attorney Docket No. **15635.0003-03000**

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	)	
Avi Shua	)	Group Art Unit: 2435
	)	
Application No.: 17/821,345	)	Examiner: CENTRAL, DOCKET
	)	
Filed: August 22, 2022	)	Confirmation No.: 2249
	)	
For: TECHNIQUES FOR SECURING VIRTUAL MACHINES	)	
	)	

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

Commissioner:

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A copy of the non-patent literature documents is attached.

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Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: 22 November 2022

By: /Christopher C. Johns/
Christopher C. Johns
Reg. No. 68,664
(202) 408-4000

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

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17/821,345	**11/22/2022 05:50:38 PM ET**	**15635.0003-03000**

Title of Invention

TECHNIQUES FOR SECURING VIRTUAL MACHINES

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	2249	FILED BY	Michelle Daniels
PATENT CENTER #	61212656	FILING DATE	08/22/2022
CUSTOMER #	22852	FIRST NAMED INVENTOR	Avi Shua
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Christopher Johns

Documents

TOTAL DOCUMENTS: 11

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
15635.0003-03000-IDS Transmittal.pdf	2	Transmittal Letter	17 KB
15635.0003-03000-sb08.pdf	2	Information Disclosure Statement (IDS) Form (SB08)	43 KB
Warning: This is not a USPTO supplied IDS fillable form. Data in the form cannot be automatically loaded to other USPTO systems.			
NPL-Non-Final Office Action 02-03-22 - 16585967 - 15635.0003-00000.pdf	13	Non Patent Literature	481 KB
NPL-Notice of Allowance 7-7-	11	Non Patent Literature	395 KB

2022- 16585967 - 15635.0003-00000.pdf			
NPL-Non-Final Rejection-3-4-2022- 17330998 - 15635.0003-01000.pdf	11	Non Patent Literature	401 KB
NPL-Final Rejection-6-30-2022- 17330998 - 15635.0003-01000.pdf	10	Non Patent Literature	303 KB
NPL-Notice of Allowance -8-10-2022- 17330998 - 15635.0003-01000.pdf	10	Non Patent Literature	377 KB
NPL-Advisory Action-5-20-2022-17361861-15635.0003-02000.pdf	3	Non Patent Literature	225 KB
NPL-Non-Final Office Action-17361861 -15635.0003-02000.pdf	15	Non Patent Literature	855 KB
NPL-Final Rejection-3-8-2022-17361861 -15635.0003-02000.pdf	18	Non Patent Literature	426 KB
NPL-Non-Final Rejection-10-25-2021-17361861-15635.0003-02000.pdf	21	Non Patent Literature	525 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
15635.0003-03000-IDS Transmittal.pdf	297CE68A2B9DD8C9D9FEB35D341A9C51314F6C800D6D1C58F40D0130B449D2C59A70B5BB75530976FE3906CBC1AA353EC4825EBE6F90B4D4867B5198E05713A5

15635.0003-03000-sb08.pdf	4982E4BC36720BD97C9080D52A23117FFC8BF5C2C8B9F715471C263AA01EAB00C9C7178F264D0EF753E69EA8B7B7622EA427DD663A3D0D67D28D7785E1372B69
NPL-Non-Final Office Action 02-03-22 - 16585967 - 15635.0003-00000.pdf	CC9B517FFF297F74F00696E10BF408CE945C1A49CBC40F71A3AD9A57015FBA94DA39638CA2670A5E0DFC51CC52DFC11B371581F925CEB19F8421A7A1CE176D9A
NPL-Notice of Allowance 7-7-2022- 16585967 - 15635.0003-00000.pdf	2E03BAB252AA0B1C030738818EE64F3B5B04DF2C3B7E5EF052B6F40865663A1DCCD7C6D31B0980E2F6ABD7F17469A93F1364CF64B74B8D40D02AE69896F7DC31
NPL-Non-Final Rejection-3-4-2022- 17330998 -15635.0003-01000.pdf	4C77E6C23B127BD93FDD3C63F0F5308176CF09C99B5F68233E46CAC0F635BFF5FD15621A470D34C96511E51F869E8A5278BDA501FED823878FCB6ACF1B2DA440
NPL-Final Rejection-6-30-2022-17330998 -15635.0003-01000.pdf	46A81BDEDEB84C8F6461DB640B9DF1D5A1290452F0295B241538795B0AA8D66139A8FAB54B3F83E277E201831811B92614FA0B3A17AE630C60538EC6A91C4830
NPL-Notice of Allowance -8-10-2022- 17330998 -15635.0003-01000.pdf	649D3649AE31F6C5D77FFA475394F0963C9FC17B363056024E436094E5ADC32842A8A3885E25B73FFDD9150DDE282F4D8E464471794D0C2E236C5B70D3266183
NPL-Advisory Action-5-20-2022-17361861-15635.0003-02000.pdf	4E2DF538A90E693FE0FE684B5D4E845B7A7A5FB4747C6B7DE9704B24BDBDE2667F15374B782588241E036DE1E81D558BBC20E3C12F569812088566A47A4542BD
NPL-Non-Final Office Action-17361861 -15635.0003-02000.pdf	5FE7855AC6B2434583ECCB7C343FF46C5629A45BE0F1EB149AF55F50A5CC9681DCB2B44C53F9F9EFEC271880A5081A3AD75FDDB14602C2342A16821106B801A0
NPL-Final Rejection-3-8-2022-17361861 -15635.0003-02000.pdf	AC3128DE746E54FEFAB7B7569AB3BCF5D3B75DB60F2FA3673C34B3F6C1EB439F03097F621E8E9697E3FB5873D0443AACE59CFD28017F834CCE3B3E4A4FA62045
NPL-Non-Final Rejection-10-25-2021-17361861-15635.0003-02000.pdf	98E1DEFD92D6CD7BD691591F6226BB232499739F0AE52174DB40C7E303D990DDF24CBA1D652DDD64D8B3ADD2D8EDDD5E7294F53D8A38E58AFEC4B0ADA4133B1F

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for 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

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www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/821,345	08/22/2022	2435	1530	15635.0003-03000	34	2

CONFIRMATION NO. 2249

CORRECTED FILING RECEIPT

22852
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413



Date Mailed: 10/17/2022

Receipt is acknowledged of this non-provisional utility 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 FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

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Inventor(s)

Avi Shua, Tel Aviv;

Applicant(s)

Orca Security Ltd., Tel Aviv, ISRAEL;

Assignment For Published Patent Application

Orca Security Ltd., Tel Aviv, ISRAEL

Power of Attorney: The patent practitioners associated with Customer Number 22852

Domestic Priority data as claimed by applicant

This application is a CON of 16/585,967 09/27/2019 PAT 11,431,735

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

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

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

If Required, Foreign Filing License Granted: 09/12/2022

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/821,345**

Projected Publication Date: 12/29/2022

Non-Publication Request: No

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

TECHNIQUES FOR SECURING VIRTUAL MACHINES

Preliminary Class

726

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

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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.

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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).

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Title 37, Code of Federal Regulations, 5.11 & 5.15

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/821,345	08/22/2022	Avi Shua	15635.0003-03000

CONFIRMATION NO. 2249

NEW OR REVISED PPD NOTICE

22852
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

OC000000136373735

NOTICE OF NEW OR REVISED PROJECTED PUBLICATION DATE

The above-identified application has a new or revised projected publication date. The current projected publication date for this application is 12/29/2022. If this is a new projected publication date (there was no previous projected publication date), the application has been cleared by Licensing & Review or a secrecy order has been rescinded and the application is now in the publication queue.

If this is a revised projected publication date (one that is different from a previously communicated projected publication date), the publication date has been revised due to processing delays in the USPTO or the abandonment and subsequent revival of an application. The application is anticipated to be published on a date that is more than six weeks different from the originally-projected publication date.

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/821,345	08/22/2022		1530	15635.0003-03000	34	2

CONFIRMATION NO. 2249

FILING RECEIPT

22852
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Date Mailed: 09/20/2022

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Applicant(s)

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Assignment For Published Patent Application

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Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

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Projected Publication Date: 12/29/2022

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
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TECHNIQUES FOR SECURING VIRTUAL MACHINES

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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 17/821,345

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	80		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	350		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	400		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	34 minus 20 =	* 14	x 50 =	700	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2 minus 3 =	*	x =	0			
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			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	830		TOTAL	

APPLICATION AS AMENDED - PART II

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

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

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)				Complete if Known	
				Application Number	17/821,345
				Filing Date	August 22, 2022
				First Named Inventor	Avi SHUA
				Group Art Unit	Not yet assigned
				Examiner Name	Not yet assigned
Sheet	1	of	1	*Attorney Docket Number*	15635.0003-03000

U.S. PATENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Issue or Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-10,944,778 B1	03-09-2021	Golan, Oron	
		US-10,536,471 B1	01-14-2020	Derbeko, Philip	
		US-11,068,353 B1	07-20-2021	Ved, Amber	
		US-9,268,689 B1	02-23-2016	Chen, Grace Jing	
		US-10,469,304 B1	11-05-2019	Kempe, Gregory Jonathan	

U.S. PUBLISHED PATENT APPLICATIONS

Examiner Initials*	Cite No.[3]	Document Number Number-Kind Code[4] *(if known)*	Issue or Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-2017/0103212 A1	04-13-2017	Deng, Yu	
		US-2016/0094568 A1	03-31-2016	Balasubramanian, Swaminathan	
		US-2016/0004449 A1	01-07-2016	Lakshman, Avinash	
		US-2013/0191643 A1	07-25-2013	Song, Zhexuan	
		US-2018/0137032 A1	05-17-2018	Tannous, Samuel Joseph	
		US-2008/0189788 A1	08-07-2008	Bahl, Pradeep	
		US-2016/0364255 A1	12-15-2016	Chefalas, Thomas E.	
		US-2011/0289584 A1	11-24-2011	Palagummi, Siva Sai Prasad	

Note: Submission of copies of U.S. Patents and published U.S. Patent Applications is not required.

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[5] Number[6] Kind Code[7] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	Translation[8]

NONPATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	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, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation[6]

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.

PTO Notes regarding this form:

[1] Applicant's unique citation designation number (optional).
[2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04.

[3] Applicant's unique citation designation number (optional).
[4] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04.
[5] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3).
[6] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.
[7] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible.
[8] Applicant is to place a check mark here if English language Translation is attached.
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 CFR 1.14. This collection is estimated to take 2 hours 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**.

PATENT
Attorney Docket No. 15635.0003-03000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	)	
Avi SHUA	)	Group Art Unit: Not yet assigned
	)	
Application No.: 17/821,345	)	Examiner: Not yet assigned
	)	
Filed: August 22, 2022	)	Confirmation No.: 2249
	)	
For: TECHNIQUES FOR SECURING VIRTUAL MACHINES	)	Filed Via EFS-Web
	)	

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

Dear Commissioner:

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. § 1.97(b)

Pursuant to 37 C.F.R. §§ 1.56 and 1.97(b), Applicant brings to the attention of the Examiner the documents on the attached listing. This Information Disclosure Statement is being filed within three months of the filing date of the above-referenced application.

Applicant respectfully requests that the Examiner consider the listed documents and indicate that they were considered by making appropriate notations on the attached form.

This submission does not represent that a search has been made or that no better art exists and does not constitute an admission that each or all of the listed documents are material or constitute "prior art." If the Examiner applies any of the

documents as prior art against any claim in the application and Applicant determines that the cited documents do not constitute "prior art" under United States law, Applicant reserves the right to present to the U.S. Patent and Trademark Office the relevant facts and law regarding the appropriate status of such documents.

Please charge any fee due in connection with the filing of this Statement to Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: August 25, 2022

By: /Christopher C. Johns/
Christopher C. Johns
Reg. No. 68,664
(202) 408-4000

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/821,345	**08/25/2022 01:21:11 PM ET**	**15635.0003-03000**

Title of Invention

TECHNIQUES FOR SECURING VIRTUAL MACHINES

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	2249	FILED BY	Wanda Whittington
PATENT CENTER #	60906984	FILING DATE	-
CUSTOMER #	22852	FIRST NAMED INVENTOR	Avi Shua
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Christopher Johns

Documents

TOTAL DOCUMENTS: 2

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
15635-0003-03000-IDSTRANSMITTAL-08-25-2022.pdf	2	Transmittal Letter	23 KB
15635-0003-03000SB08FORM-08-25-2022.pdf	2	Information Disclosure Statement (IDS) Form (SB08)	31 KB

Warning: This is not a USPTO supplied IDS fillable form. Data in the form cannot be automatically loaded to other USPTO systems.

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
15635-0003-03000-IDSTRANSMITTAL-08-25-2022.pdf	219CE42B055E2266C62B56FDD7FB85B0404D9933BE35F30274440164BA2AF47C71F1B13FA9C05E69C2FDC1D985D81B425C198CF3924C75350C7AC1EA98C392F0
15635-0003-03000SB08FORM-08-25-2022.pdf	6BCECF08BFB48FA6A6640F3A2F864DE7AEBE0B8FB4DD19CD817CA225693A09B37A764DC1C31C34472487612CE0579C8CCA8B211B67A42C66A287C78281C7F3C7

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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

Commissioner:

This is a request for filing a Continuation Application under 37 C.F.R. § 1.53(b) of pending Prior Application No. 16/585,967, filed September 27, 2019, of Avi SHUA for TECHNIQUES FOR SECURING VIRTUAL MACHINES.

1. Application having 23 pages is enclosed.

2. Drawings including 4 sheets of drawings (Figures 1A, 1B, 2, and 3) are enclosed.

3. An Application Data Sheet (ADS) is enclosed.

4. A Preliminary Amendment is enclosed.

5. An oath or declaration for the inventor is enclosed.

6. Small entity status is appropriate for this application.

7. The prior application has been assigned to Orca Security LTD.

8. The power of attorney is to FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P., **Customer No. 22,852.**

9. Please address all correspondence to FINNEGAN, HENDERSON, FARABOW, GARRETT and DUNNER, L.L.P., **Customer Number 22,852**

10. The filing fee (for a small entity) is calculated as follows.

Basic Utility Application Filing Fee					$80	$80.00
Search Fee					$350	$350.00
Examination Fee					$400	$400.00
	Number of Claims		Basic	Extra		
Total Claims	34	-	20	14	**X $50** =	$700
Independent Claims	3	-	3	0	**X $240** =	$0
Size Fee: EFS-Web Filing Total Application Pages (specification, drawings, preliminary amendment filed with original application)	**26 X .75 - 100 + 50 = 0* X $210** = *Rounded up to next whole number					$0
					TOTAL FEES DUE	$1,530.00

11. The fee of $1,530.00 is submitted herewith.

12. The Commissioner is hereby authorized to charge any fees which may be required including fees due under 37 C.F.R. § 1.16 and any other fees due under 37 C.F.R. § 1.17, or credit any overpayment during the pendency of this application to Deposit Account No. 06-0916.

PETITION FOR EXTENSION OF TIME. If any extension of time is necessary for the filing of this application, including any extension in parent Application No. 16/585,967, for the purpose of maintaining copendency between the parent application and this application, and such extension has not otherwise been requested, such an extension is hereby requested, and the Commissioner is authorized to charge necessary fees for such an extension to Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

By: /Christopher C. Johns/
Christopher C. Johns
Reg. No. 68,664
(202) 408-4000

Dated: August 22, 2022

DECLARATION AND ASSIGNMENT FOR PATENT APPLICATIONS

As a below named inventor (designated as "the undersigned"), I hereby declare that:

This declaration is directed to: ☒ The attached application, or

☐ United States Application No.__ filed on _

The application is entitled:

TECHNIQUES FOR SECURING VIRTUAL MACHINES

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I have reviewed and understand the contents of the above-identified application.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations § 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

POWER OF ATTORNEY: I hereby appoint all attorneys and agents of **M&B IP ANALYSTS, LLC** who are listed under the USPTO Customer Number shown below as my attorneys to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith.

Address all correspondence to **CUSTOMER NUMBER 122066**.

The undersigned hereby acknowledges 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.

ASSIGNMENT

WHEREAS, **Orca Security LTD.**, having an address at **65 Yigal Alon St., Tel Aviv 6744316 ISRAEL** (hereinafter "ASSIGNEE"), is desirous of acquiring the entire right, title and interest in, to and under the above-identified application and invention, and to any Letters Patent(s) that may be granted therefor.

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, the undersigned has sold, assigned, transferred and set over, and by these presents does hereby sell, assign, transfer and set over, unto the said ASSIGNEE, its successors, legal representatives and assigns, the entire right, title and interest in, to and under the said invention, and the said United States application and all divisions, renewals and continuations thereof, and all Patents of the United States which may be granted thereon and all reissues and extensions thereof; and all applications for industrial property protection, including, without limitation, all applications for patents, utility models, and designs which may hereafter be filed for said invention in any country or countries foreign to the United States, together with the right to file such applications and the right to claim for the same the priority rights derived from said United States application under the Patent Laws of the United States, the International Convention for the Protection of Industrial Property, or any other international agreement or the domestic laws of the country in which any such application is filed, as may be applicable; and all forms of industrial property protection, including, without limitation, patents, utility models, inventor's certificates and designs which may be granted for said invention in any country or countries foreign to the United States and all extensions, renewals and reissues thereof;

DECLARATION AND ASSIGNMENT FOR PATENT APPLICATIONS

The undersigned authorizes and requests the Commissioner of Patents and Trademarks of the United States, and any Official of any country or countries foreign to the United States, whose duty it is to issue patents or other evidence or forms of industrial property protection on applications as aforesaid, to issue the same to the said ASSIGNEE, its successors, legal representatives and assigns, in accordance with the terms of this instrument.

The undersigned covenants and agrees that he has full right to convey the entire interest herein assigned, and has not executed, and will not execute, any agreement in conflict herewith.

The undersigned further covenants and agrees that he will communicate to the said ASSIGNEE, its successors, legal representatives and assigns, any facts known respecting said invention, and testify in any legal proceeding, sign all lawful papers, execute all divisional, continuing, reissue and foreign applications, make all rightful oaths, and generally do everything possible to aid the said ASSIGNEE, its successors, legal representatives and assigns, to obtain and enforce proper protection for said invention in all countries.

In witness whereof, executed by the undersigned on the date opposite the undersigned name.

Full name of inventor: Avi SHUA

Inventor's Signature: _____ ***Date:*** 09/26/2019

Residence: Tel Aviv, ISRAEL

Post Office Address: c/o Orca Security LTD., 65 Yigal Alon St., Tel Aviv 6744316 ISRAEL

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/821,345	**08/22/2022 05:07:00 PM ET**	**15635.0003-03000**

Title of Invention

TECHNIQUES FOR SECURING VIRTUAL MACHINES

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	2249	FILED BY	Dena Bohannon
PATENT CENTER #	60895402	FILING DATE	-
CUSTOMER #	22852	FIRST NAMED INVENTOR	Avi Shua
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Christopher Johns

Documents

TOTAL DOCUMENTS: 12

DOCUMENT		PAGES	DESCRIPTION	SIZE (KB)
ADS.pdf		8	Application Data Sheet	2174 KB
ParentAppln.pdf		23	-	3477 KB
ParentAppln-SPEC.pdf	(1-13)	13	Specification	2577 KB
ParentAppln-CLM.pdf	(14-18)	5	Claims	658 KB
ParentAppln-ABST.pdf	(19-19)	1	Abstract	84 KB
ParentAppln-DRW.pdf	(20-23)	4	Drawings-only black and white line drawings	156 KB
PreliminaryAmendment.pdf		10	-	39 KB

PreliminaryAmendment-A.PE.pdf	(1-1)	1	Preliminary Amendment	13 KB
PreliminaryAmendment-SPEC.pdf	(2-2)	1	Specification	13 KB
PreliminaryAmendment-CLM.pdf	(3-9)	7	Claims	29 KB
PreliminaryAmendment-REM.pdf	(10-10)	1	Applicant Arguments/Remarks Made in an Amendment	13 KB
Declaration.pdf		2	Oath or Declaration filed	448 KB
POA.pdf		4	List-up to 10 attys appointed in a POA	901 KB
ApplnTrans.pdf		3	Transmittal of New Application	23 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
ADS.pdf	2A8A2F15B3F07B16C31E78F8A6663CB2627EB8A426C2C5C8CBD6720F2C80435DE360C3B1ECD2D6C9CBFA5E1CAEE962A9D0E507B44DA227561594ED6AED924CF7
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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

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

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

New International Application Filed with the USPTO as a Receiving Office

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PTO/AIA/82A (07-13)
Approved for use through 11/30/2014. OMB 0651-0051
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

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

Application Number	To be assigned
Filing Date	Herewith
First Named Inventor	Avi Shua
Title	TECHNIQUES FOR SECURING VIRTUAL MACHINES
Art Unit	To be assigned
Examiner Name	To be assigned
Attorney Docket Number	15635.0003-03000

SIGNATURE of Applicant or Patent Practitioner

Signature	/Christopher C. Johns/	Date (Optional)	8/22/2022
Name	Christopher C. Johns	Registration Number	68664
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

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

☑ *Total of 1 forms are submitted.

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

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

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

PTO/AIA/82B (07-13)
Approved for use through 03/31/2021. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number

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

(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: 22852

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):

Orca Security LTD.

☐ 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	Avi Shua		
Title	CEO		

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 1 forms are submitted.

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

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

PTO/AIA/82C (07-13)
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POWER OF ATTORNEY BY APPLICANT

No more than ten (10) patent practitioners total may be appointed as set forth below by name and registration number. This page need not be submitted if appointing the Patent Practitioner(s) associated with a Customer Number (see form PTO/AIA/82B):

Name	Registration 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 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.

PATENT
Attorney Docket No.15635.0003-03000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	)	
Avi SHUA	)	Group Art Unit: To Be Assigned
	)	
Application No.:	)	Examiner: To Be Assigned
Continuation of 16/585,967	)	
	)	Confirmation No.: To Be Assigned
Filed: Herewith	)	***VIA EFS-WEB***
	)	
For: TECHNIQUES FOR SECURING VIRTUAL MACHINES	)	

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

Dear Commissioner:

PRELIMINARY AMENDMENT

Prior to the examination of the above application, please amend this application as follows:

Amendments to the Specification begin on page 2.

Amendments to the Claims are reflected in the listing of claims of this paper.

Remarks follow the amendments section of this paper.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 — Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Avi		Shua	

Residence Information (Select One) US Residency ● Non US Residency Active US Military Service

City	Tel Aviv	Country of Residence i	IL

Mailing Address of Inventor:

Address 1	HaMasger St 66		
Address 2			
City	Tel Aviiv	**State/Province**	
Postal Code	6721714	**Country** i	IL

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	22852		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES		
Attorney Docket Number	15635.0003-03000	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	4	**Suggested Figure for Publication (if any)**	3

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	● Customer Number	US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	22852		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim 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" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	16585967	2019-09-27

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1 — Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

● Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.	Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name	Orca Security Ltd.		
Mailing Address Information For Applicant:			
Address 1	HaMasger St 66		
Address 2			
City	Tel Aviv	**State/Province**	
Country	IL	Postal Code	6721714
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☒

Organization Name	Orca Security Ltd.

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1	65 Yigal Alon St.		
Address 2			
City	Tel Aviv	**State/Province**	
Country i	IL	Postal Code	6744316
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 Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Christopher C. Johns/			Date (YYYY-MM-DD)	2022-08-22
First Name	Christopher	Last Name	Johns	Registration Number	68664

Additional Signature may be generated within this form by selecting the Add button. Add

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	15635.0003-03000
	Application Number	
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL MACHINES	

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

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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 CooperationTreaty.

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.

Amendments to the Specification:

Please amend the Specification at page 1, paragraph [001] as follows:

[001] This application is a continuation of U.S. Application No. 16/585,967 (now allowed), filed September 27, 2019, which claims the benefit of U.S. Provisional Application No. 62/797,718 filed on January 28, 2019, the contents of each of which are hereby by reference in their entireties.

AMENDMENTS TO THE CLAIMS:

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

1-21. (Canceled)

22. (New) A method for securing virtual cloud assets in a cloud computing environment against cyber threats, comprising:

taking a snapshot of at least one virtual disk of a protected virtual cloud asset, wherein the virtual cloud asset is instantiated in the cloud computing environment;

accessing the snapshot of the at least one virtual disk;

analyzing the snapshot of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset; and

alerting detected potential cyber threats based on filtering or prioritizing using a determined risk of each detected threat.

23. (New) The method of claim 22, further comprising:

prioritizing each of the detected potential cyber threats based on their respective risk to the protected virtual cloud asset.

24. (New) The method of claim 22, wherein analyzing the snapshot of the protected virtual cloud asset further comprises:

parsing a copy of the snapshot; and

scanning the parsed copy to detect the potential cyber threats, wherein the potential cyber threats include known and unknown vulnerabilities, and wherein the detection is based on a type of vulnerability.

25. (New) The method of claim 24, wherein scanning the parsed copy further comprises any one of:

checking configuration files of applications and operating system installed in the protected virtual cloud asset;

verifying access times to files by the operating system installed in the operating system;

analyzing system logs to deduce what applications and modules executed in the protected virtual cloud asset; or

analyzing machine memory stored in the snapshot to deduce what applications and modules executed in the protected virtual cloud asset.

26. (New) The method of claim 22, further comprising:

instantiating an instance copy of the protected virtual cloud asset from the snapshot; and

monitoring all activity performed by the instance copy of the protected virtual cloud asset.

27. (New) The method of claim 24, wherein scanning the parsed copy further comprises any one of:

reading process identification number (PID) files; and

checking if the at least access times of the PID files match against process descriptors.

28. (New) The method of claim 24, wherein scanning the parsed copy further comprises:

matching at least one installed application list against a list of vulnerable applications;

matching at least one application file against a database of files of vulnerable applications;

matching sub-modules of an application against a database of sub-modules; or

reading installation logs of package managers.

29. (New) The method of claim 22, wherein the protected virtual cloud asset includes any one of: a virtual machine, a software container, or a micro-service.

30. (New) The method of claim 22, wherein taking the snapshot is performed at a predefined schedule.

31. (New) The method of claim 22, wherein taking the snapshot is performed based on receiving a request to take the snapshot.

32. (New) The method of claim 22, wherein taking the snapshot is performed based on detection of a network event or an abnormal event.

33. (New) The method of claim 22, further comprising mitigating a potential cyber threat posing a risk to the protected virtual cloud asset.

34. (New) The method of claim 22, wherein analyzing the snapshot to detect potential cyber threats includes detecting cyber threats that do not represent vulnerabilities.

35. (New) The method of claim 22, wherein analyzing the snapshot to detect potential cyber threat includes detecting a vulnerable application file by comparing a hash value of the vulnerable application file against a database of known application files.

36. (New) The method of claim 22, wherein analyzing the snapshot to detect potential cyber threats includes looking for cyber threats inside containers stored on the virtual disk.

37. (New) The method of claim 22, wherein analyzing the snapshot to detect potential cyber threat includes looking for sensitive data including at least one of personal identifiable information or private keys.

38. (New) The method of claim 22, wherein the virtual cloud asset is a server or a storage system in a cloud computing platform.

39. (New) A system for securing virtual cloud assets in a cloud computing environment against cyber threats, comprising:

at least one hardware processor; and

a storage device comprising computer readable instructions, to cause the at least one hardware processor to:

take a snapshot of at least one virtual disk of a protected virtual cloud asset, wherein the virtual cloud asset is instantiated in the cloud computing environment;

access the snapshot of the at least one virtual disk;

analyze the snapshot of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset; and

alert detected potential cyber threats based on filtering or prioritizing using a determined risk of each detected threat.

40. (New) The system of claim 39, wherein the instructions further cause the at least one hardware processor to:

prioritize each of the detected potential cyber threats based on their respective risk to the protected virtual cloud asset.

41. (New) The system of claim 39, wherein analyzing the snapshot of the protected virtual cloud asset further comprises:

parsing a copy of the snapshot; and

scanning the parsed copy to detect the potential cyber threats, wherein the potential cyber threats include known and unknown vulnerabilities, and wherein the detection is based on a type of vulnerability.

42. (New) The system of claim 41, wherein scanning the parsed copy further comprises any one of:

checking configuration files of applications and operating system installed in the protected virtual cloud asset;

verifying access times to files by the operating system installed in the operating system;

analyzing system logs to deduce what applications and modules executed in the protected virtual cloud asset; or

analyzing machine memory stored in the snapshot to deduce what applications and modules executed in the protected virtual cloud asset.

43. (New) The system of claim 39, wherein the instructions further cause the at least one hardware processor to:

instantiating an instance copy of the protected virtual cloud asset from the snapshot; and

monitoring all activity performed by the instance copy of the protected virtual cloud asset.

44. (New) The system of claim 41, wherein scanning the parsed copy further comprises any one of:

reading process identification number (PID) files; and

checking if the at least access times of the PID files match against process descriptors.

45. (New) The system of claim 41, wherein scanning the parsed copy further comprises:

matching at least one installed application list against a list of vulnerable applications;

matching at least one application file against a database of files of vulnerable applications;

matching sub-modules of an application against a database of sub-modules; or

reading installation logs of package managers.

46. (New) The system of claim 39, wherein the protected virtual cloud asset includes any one of: a virtual machine, a software container, or a micro-service.

47. (New) The system of claim 39, wherein taking the snapshot is performed at a predefined schedule.

48. (New) The system of claim 39, wherein taking the snapshot is performed based on receiving a request to take the snapshot.

49. (New) The system of claim 39, wherein taking the snapshot is performed based on detection of a network event or an abnormal event.

50. (New) The system of claim 39, further comprising mitigating a potential cyber threat posing a risk to the protected virtual cloud asset.

51. (New) The system of claim 39, wherein analyzing the snapshot to detect potential cyber threats includes detecting cyber threats that do not represent vulnerabilities.

52. (New) The system of claim 39, wherein analyzing the snapshot to detect potential cyber threat includes detecting a vulnerable application file by comparing a hash value of the vulnerable application file against a database of known application files.

53. (New) The system of claim 39, wherein analyzing the snapshot to detect potential cyber threats includes looking for cyber threats inside containers stored on the virtual disk.

54. (New) The system of claim 39, wherein analyzing the snapshot to detect potential cyber threat includes looking for sensitive data including at least one of personal identifiable information or private keys.

55. (New) The system of claim 39, wherein the virtual cloud asset is a server or a storage system in a cloud computing platform.

REMARKS

Applicant cancels claims 1-21 without prejudice or disclaimer of the subject matter thereof, and adds new claims 22-55. No new matter is presented with these claims.

Applicant respectfully requests consideration of claims 22-55 and the allowance thereof.

Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account No. 06-0916.

Respectfully submitted,

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Dated: August 22, 2022

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ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
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Title of Invention

TECHNIQUES FOR SECURING VIRTUAL MACHINES

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	2249	FILED BY	Dena Bohannon
PATENT CENTER #	60895402	AUTHORIZED BY	Christopher Johns
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CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Avi Shua

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FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
2111	UTILITY PATENT APPL. SEARCH FEE	350.00	1	350.00
4011	BASIC FILING FEE- UTILITY	80.00	1	80.00
2311	EXAMINATION OF ORIGINAL PATENT APPLICATION	400.00	1	400.00
2202	EACH CLAIM IN EXCESS OF 20	50.00	14	700.00
			TOTAL AMOUNT:	$1,530.00

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.

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

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

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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.

TECHNIQUES FOR SECURING VIRTUAL MACHINES

[001] This application claims the benefit of U.S. Provisional Application No. 62/797,718 filed on January 28, 2019, the contents of which are hereby incorporated by reference.

TECHNICAL FIELD

[002] This disclosure relates generally to cyber-security systems and, more specifically, to techniques for securing virtual machines.

BACKGROUND

[003] Organizations have increasingly adapted their applications to be run from multiple cloud computing platforms. Some leading public cloud service providers include Amazon®, Microsoft®, Google®, and the like.

[004] Virtualization is a key role in a cloud computing, allowing multiple applications and users to share the same cloud computing infrastructure. For example, a cloud storage service can maintain data of multiple different users.

[005] In one instance, virtualization can be achieved by means of virtual machines. A virtual machine emulates a number of "computers" or instances, all within a single physical device. In more detail, virtual machines provide the ability to emulate a separate operating system (OS), also referred to as a guest OS, and therefore a separate computer, from an existing OS (the host). This independent instance is typically isolated as a completely standalone environment.

[006] Modern virtualization technologies are also adapted by cloud computing platforms. Examples for such technologies include virtual machines, software containers, and serverless functions. With their computing advantages, applications and virtual machines running on top of virtualization technologies are also vulnerable to some cyber threats. For example, virtual machines can execute vulnerable software applications or infected operating systems.

[007] Protection of a cloud computing infrastructure, and particularly of virtual machines can be achieved via inspection of traffic. Traditionally, traffic inspection is performed by a network device connected between a client and a server (deployed in a cloud computing

platform or a data center) hosting virtual machines. Traffic inspection may not provide an accurate indication of the security status of the server due to inherent limitations, such as encryption and whether the necessary data is exposed in the communication.

[008] Furthermore, inspection of computing infrastructure may be performed by a network scanner deployed out of path. The scanner queries the server to determine if the server executes an application that possess a security threat, such as vulnerability in the application. The disadvantage of such a scanner is that the server may not respond to all queries by the scanner, or not expose the necessary data in the response. Further, the network scanner usually communicates with the server, and the network configuration may prevent it. In addition, some types of queries may require credentials to access the server. Such credentials may not be available to the scanner.

[009] Traffic inspection may also be performed by a traffic monitor that listens to traffic flows between clients and the server. The traffic monitor can detect some cyber threats, e.g., based on the volume of traffic. However, the monitor can detect threats only based on the monitored traffic. For example, misconfiguration of the server may not be detected by the traffic monitor. As such, traffic monitoring would not allow detection of vulnerabilities in software executed by the server.

[0010] To overcome the limitations of traffic inspection solutions, some cyber-security solutions, such as vulnerability management and security assessment solutions are based on agents installed in each server in a cloud computing platform or data center. Using agents is a cumbersome solution for a number of reasons, including IT resources management, governance, and performance. For example, installing agents in a large data center may take months.

[0011] It would therefore be advantageous to provide a security solution that would overcome the deficiencies noted above.

SUMMARY

[0012] A summary of several example embodiments of the disclosure follows. This summary is provided for the convenience of the reader to provide a basic understanding of such embodiments and does not wholly define the breadth of the disclosure. This summary is not an extensive overview of all contemplated embodiments, and is intended to neither identify key or critical elements of all embodiments nor to delineate the scope

of any or all aspects. Its sole purpose is to present some concepts of one or more embodiments in a simplified form as a prelude to the more detailed description that is presented later. For convenience, the term “some embodiments” or “certain embodiments” may be used herein to refer to a single embodiment or multiple embodiments of the disclosure.

[0013] Certain embodiments disclosed herein include a method for securing virtual cloud assets in a cloud computing environment against cyber threats, comprising: determining a location of a snapshot of at least one virtual disk of a protected virtual cloud asset, wherein the virtual cloud asset is instantiated in the cloud computing environment; accessing the snapshot of the virtual disk based on the determined location; analyzing the snapshot of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset; and alerting detected potential cyber threats based on a determined priority.

[0014] Certain embodiments disclosed herein also include a non-transitory computer readable medium having stored thereon instructions for causing a processing circuitry to execute a process, the process comprising: determining a location of a snapshot of at least one virtual disk of a protected virtual cloud asset, wherein the virtual cloud asset is instantiated in the cloud computing environment; accessing the snapshot of the virtual disk based on the determined location; analyzing the snapshot of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset; and alerting detected potential cyber threats based on a determined priority.

[0015] Certain embodiments disclosed herein also include a system for securing virtual cloud assets in a cloud computing environment against cyber threats, comprising: a processing circuitry; and a memory, the memory containing instructions that, when executed by the processing circuitry, configure the system to: determine a location of a snapshot of at least one virtual disk of a protected virtual cloud asset, wherein the virtual cloud asset is instantiated in the cloud computing environment; access the snapshot of the virtual disk based on the determined location; analyze the snapshot of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset; and alert detected potential cyber threats based on a determined priority.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The foregoing and other objects, features, and advantages of the disclosed embodiments will be apparent from the following detailed description taken in conjunction with the accompanying drawings.

[0017] Figures 1A and 1B are network diagrams utilized to describe the various embodiments.

[0018] Figure 2 is a flowchart illustrating a method detecting cyber threats, including potential vulnerabilities in virtual machines executed in a cloud computing platform according to some embodiments.

[0019] Figure 3 is an example block diagram of the security system according to an embodiment.

DETAILED DESCRIPTION

[0020] It is important to note that the embodiments disclosed herein are only examples of the many advantageous uses of the innovative teachings herein. In general, statements made in the specification of the present application do not necessarily limit any of the various claimed embodiments. Moreover, some statements may apply to some inventive features but not to others. In general, unless otherwise indicated, singular elements may be in plural and vice versa with no loss of generality. In the drawings, like numerals refer to like parts through several views.

[0021] Figs. 1A and 1B show an example network diagram 100 utilized to describe the various embodiments. A cloud computing platform 110 is communicably connected to a network 120. Examples of the cloud computing platform 110 may include a public cloud, a private cloud, a hybrid cloud, and the like. Examples for a public cloud, but are not limited to, AWS® by Amazon®, Microsoft Azure®, Google Cloud®, and the like. In some configurations, the disclosed embodiments operable in on premise virtual machines environments. The network 120 may be the Internet, the world-wide-web (WWW), a local area network (LAN), a wide area network (WAN), and other networks.

[0022] The arrangement of the example cloud computing platform 110 is shown in Fig. 1B. As illustrated, the platform 110 includes a server 115 and a storage 117, serving as the storage space for the server 115. The server 115 is a physical device hosting at least one virtual machine (VM) 119. The VM 119 is a protected VM, which may be any

virtual cloud asset including, but not limited to, a software container, a micro-service, a serverless function, and the like.

[0023] The storage 117 emulates virtual discs for the VMs executed in by the server 115. The storage 117 is typically connected to the server 115 through a high-speed connection, such as optic fiber allowing fast retrieval of data. In other configurations, the storage 117 may be part of the server 115. In this example illustrated in Fig. 1B, virtual disk 118-1 is allocated for the VM 119. The server 115, and hence the VM 119, may be executed in a client environment 130 within the platform 110.

[0024] The client environment 130 is an environment within the cloud computing platform 110 utilized to execute cloud-hosted applications of the client. A client may belong to a specific tenant. In some example embodiment, the client environment 130 may be part of a virtualized environment or on-premises virtualization environment, such as a VMware® based solution.

[0025] Also deployed in the cloud computing platform 110 is a security system 140 configured to perform the various disclosed embodiments. In some embodiments, the system 140 may be part of the client environment 130. In an embodiment, the security system 140 may be realized as a physical machine configured to execute a plurality of virtual instances, such as, but not limited to virtual machines executed by a host server. In yet another embodiment, the security system 140 may be realized as a virtual machine executed by a host server. Such a host server is a physical machine (device) and may be either the server 115, a dedicated server, a different shared server, or another virtualization-based computing entity, such as a serverless function.

[0026] In an embodiment, the interface between the client environment 130 and the security system 140 can be realized using APIs or services provided by the cloud computing platform 110. For example, in AWS, a cross account policy service can be utilized to allow interfacing the client environment 130 with the security system 140.

[0027] In the deployment, illustrated in Fig. 1, the configuration of resources of the cloud computing platform 110 is performed by means of the management console 150. As such, the management console 150 may be queried on the current deployment and settings of resources in the cloud computing platform 110. Specifically, the management console 150 may be queried, by the security system 140, about as the location (e.g., virtual

address) of the virtual disk 118-1 in the storage 117. The system 140 is configured to interface with the management console 150 through, for example, an API.

[0028] In some example embodiments, the security system 140 may further interface with the cloud computing platform 110 and external systems 170. The external systems may include intelligence systems, security information and event management (SIEM) systems, and mitigation tools. The external intelligence systems may include common vulnerabilities and exposures (CVE®) databases, reputation services, security systems (providing feeds on discovered threats), and so on. The information provided by the intelligence systems may detect certain known vulnerabilities identified in, for example, a CVE database.

[0029] According to the disclosed embodiments, the security system 140 is configured to detect vulnerabilities and other cyber threats related to the execution VM 119. The detection is performed while the VM 119 is live, without using any agent installed in the server 115 or the VM 119, and without relying on cooperation from VM 119 guest OS. Specifically, the security system 140 can scan and detect vulnerable software, non-secure configuration, exploitation attempts, compromised asserts, data leaks, data mining, and so on. The security system 140 may be further utilized to provide security services, such as incident response, anti-ransomware, and cyber insurance by accessing the security posture.

[0030] In some embodiments, the security system 140 is configured to query the cloud management console 150 for the address of the virtual disk 118-1 serving the VM 119 and a location of the snapshot. A VM's snapshot is a copy of the machine's virtual disk (or disk file) at a given point in time. Snapshots provide a change log for the virtual disk and are used to restore a VM to a particular point in time when a failure error occurs. Typically, any data that was writable on a VM becomes read-only when the snapshot is taken. Multiple snapshots of a VM can be created at multiple possible point-in-time restore points. When a VM reverts to a snapshot, current disk and memory states are deleted and the snapshot becomes the new parent snapshot for that VM.

[0031] The snapshot of the VM 119 is located and may be saved from the virtual disk 118-1 is accessed by the system 140. In an embodiment, the VM's 119 snapshot may be copied to the system 140. If such a snapshot does not exist, the system 140 may take a

new snapshot, or request such an action. The snapshots may be taken at a predefined schedule or upon predefined events (e.g., a network event or abnormal event). Further, the snapshots may be accessed or copied on a predefined schedule or upon predefined events. It should be noted that when the snapshot is taken or copied, the VM 119 still runs.

[0032] It should be noted that the snapshot of the virtual disk 118-1 may not be necessary stored in the storage 117, but for ease of the discussion it is assumed that the snapshot is saved in the storage 117. It should be further noted that the snapshot is being accessed without cooperation of the guest, virtual OS of the virtual machine.

[0033] The snapshot is parsed and analyzed by the security system 140 to detect vulnerabilities. This analysis of the snapshot does not require any interaction and/or information from the VM 119. As further demonstrated herein, the analysis of the snapshot by the system 140 does not require any agent installed on the server 115 or VM 119.

[0034] Various techniques can be utilized to analyze the snapshots, depending on the type of vulnerability and cyber threats to be detected. Following are some example embodiments for techniques that may be implemented by the security system 140.

[0035] In an embodiment, the security system 140 is configured to detect whether there is vulnerable code executed by the VM 119. The VM 119 being checked may be running, paused, or shutdown. To this end, the security system 140 is configured to match installed application lists, with their respective versions, to a known list of vulnerable applications. Further, the security system 140 may be configured to match the application files, either directly (using binary comparison) or by computing a cryptographic hash against database of files in vulnerable applications. The matching may be also on sub-modules of an application. Alternatively, the security system 140 may read installation logs of package managers used to install the packages of the application.

[0036] In yet another embodiment, the security system 140 is configured to verify whether the vulnerability is relevant to the VM 119. For example, if there is a vulnerable version or module not in use, the priority of that issue is reduced dramatically.

[0037] To this end, the security system 140 may be configured to check the configuration files of the applications and operating system of the VM 119; to verify access times to

files by the operating system; and/or to analyze the active application and/or system logs in order to deduce what applications and modules are running.

[0038] In yet another embodiment, the security system 140 may instantiate a copy of the VM 119 and/or a subset of applications of the VM 119 on the server 115 or a separate server and monitor all activity performed by the instance of the VM. The execution of the instance of the VM is an isolated sandbox, which can be a full VM or subset of it, such as a software container (e.g., Docker® container) or another virtualized instances. The monitored activity may be further analyzed to determine abnormality. Such analysis may include monitoring of API activity, process creation, file activity, network communication, registry changes, and active probing of the said subset in order to assess its security posture. This may include, but not limited to, actively communicating with the VM 119, using either legitimate communicate and/or attack attempts, to assess its posture and by that deriving the security posture of the entire VM 119.

[0039] In order to determine if the vulnerability is relevant to the VM 119, the security system 140 is configured to analyze the machine memory, as reflected in the page file. The page file is saved in the snapshot and extends how much system-committed memory (also known as “virtual memory”) a system can back. In an embodiment, analyzing the page file allows deduction of running applications and modules by the VM 119.

[0040] In an embodiment, the security system 140 is configured to read process identification number (PID) files and check their access or write times, which are matched against process descriptors. The PID can be used to deduce which processes are running, and hence the priority of vulnerabilities detected in processes existing on the disk. It should be noted the PID files are also maintained in the snapshot.

[0041] In yet another embodiment, the security system 140 is configured to detect cyber threats that do not represent vulnerabilities. For example, the security system 140 may detect and alert on sensitive data not being encrypted on the logical disk, private keys found on the disks, system credentials stored clearly on the disk, risky application features (e.g., support of weak cipher suites or authentication methods), weak passwords, weak encryption schemes, a disable address space layout randomization (ASLR) feature, suspicious manipulation to a boot record, suspicious PATH, LD_LIBRARY_PATH, or LD_PRELOAD definitions, services running on startup, and the like.

[0042] In an embodiment, the security system 140 may further monitor changes in sensitive machine areas, and alert on unexpected changes (e.g., added or changed application files without installation). In an example embodiment, this can be achieved by computing a cryptographic hash of the sensitive areas in the virtual disk and checking for differences over time.

[0043] In some embodiments, the detected cyber threats (including vulnerabilities) are reported to a user console 180 and/or a security information and event management (SIEM) system (not shown). The reported cyber threats may be filtered or prioritized based in part on their determined risk. Further, the reported cyber threats may be filtered or prioritized based in part on the risk level of the machine. This also reduces the number of alerts reported to the user.

[0044] In an embodiment, any detected cyber threats related to sensitive data (including personally identifiable information, PII) is reported at a higher priority. In an embodiment, such data is determined by searching for the PII, analyzing the application logs to determine whether the machine accessed PII/PII containing servers, or whether the logs themselves contain PII, and searching the machine memory, as reflected in the page file, for PII.

[0045] In an embodiment, the security system 140 may determine the risk of the VM 119 based on communication with an untrusted network. This can be achieved by analyzing the VM's 119 logs as saved in the virtual disk and can be derived from the snapshot.

[0046] In an example embodiment, the security system 140 may cause an execution of one or more mitigation actions. Examples of such actions may include blocking traffic from untrusted networks, halting the operation of the VM, quarantining an infected VM, and the like. The mitigation actions may be performed by a mitigation tool and not the system 140.

[0047] It should be noted that the example implementation shown in Fig. 1 is described with respect to a single cloud computing platform 110 hosting a single VM 119 in a single server 115, merely for simplicity purposes and without limitation on the disclosed embodiments. Typically, virtual machines are deployed and executed in a single cloud computing platform, a virtualized environment, or data center and can be protected without departing from the scope of the disclosure. It should be further noted that the

disclosed embodiments can operate using multiple security systems 140, each of which may operate in a different client environment.

[0048] Fig. 2 shows an example flowchart 200 illustrating a method for detecting cyber threats including potential vulnerabilities in virtual machines executed in a cloud computing platform according to some embodiments. The method may be performed by the security system 140.

[0049] At S210, a request, for example, to scan a VM for vulnerabilities is received. The request may be received, or otherwise triggered every predefined time interval or upon detection of an external event. An external event may be a preconfigured event, such as a network event or abnormal event including, but not limited to, changes to infrastructure such as instantiation of an additional container on existing VM, image change on a VM, new VM created, unexpected shutdowns, access requests from unauthorized users, and the like. The request may at least designate an identifier of the VM to be scanned.

[0050] At S220, a location of a snapshot of a virtual disk of the VM to be scanned is determined. In an embodiment, S220 may include determining the virtual disk allocated for the VM, prior to determining the location of the snapshot. As noted above, this can be achieved by querying a cloud management console. At S230, a snapshot of the virtual disk is accessed, or otherwise copied.

[0051] At S240, the snapshot is analyzed to detect cyber threats and potential vulnerabilities. S240 may be also include detecting cyber threats that do not represent vulnerabilities. Examples for cyber threats and vulnerabilities are provided above.

[0052] In an embodiment, S240 may include comparing the snapshot to some baseline, which may include, but is not limited to, a copy of the image used to create the VM, (e.g., lists of applications, previous snapshots), cryptographic hashes gathered in the previous scan, analyzing logs of the VMs, instantiating a copy of the VM and executing the instance or applications executed by the VM in a sandbox, analyzing the machine memory, as reflected in the page file, or any combination of these techniques. Some example embodiments for analyzing the snapshots and the types of detected vulnerabilities and threats are provided above.

[0053] At S250, the detected cyber threats and/or vulnerabilities are reported, for example, as alerts. In an embodiment, S250 may include filtering and prioritizing the

reported alerts. In an embodiment, the prioritization is based, in part, on the risk level of a vulnerable machine. The filtering and prioritizing allow to reduce the number of alerts reported to the user. The filtering can be done performed on external intelligence on the likelihood of this vulnerability being exploited, analyzing the machine configuration in order to deduce the vulnerability relevancy, and correlating the vulnerability with the network location, and by weighting the risk of this machine being taken over by the attacker by taking into consideration the criticality of the machine in the organization based by the contents stored or other assets accessible from the VM 110.

[0054] At optional S260, a mitigation action may be triggered to mitigate a detected threat or vulnerability. A mitigation action may be executed by a mitigation tool and triggered by the system 140. Such an action may include blocking traffic from untrusted networks, halting the operation of the VM, quarantining an infected VM, and the like.

[0055] Fig. 3 is an example block diagram of the security system 140 according to an embodiment. The security system 140 includes a processing circuitry 310 coupled to a memory 320, a storage 330, and a network interface 340. In an embodiment, the components of the security system 140 may be communicatively connected via a bus 360.

[0056] The processing circuitry 310 may be realized as one or more hardware logic components and circuits. For example, and without limitation, illustrative types of hardware logic components that can be used include field programmable gate arrays (FPGAs), application-specific integrated circuits (ASICs), application-specific standard products (ASSPs), system-on-a-chip systems (SOCs), general-purpose microprocessors, microcontrollers, digital signal processors (DSPs), and the like, or any other hardware logic components that can perform calculations or other manipulations of information.

[0057] The memory 310 may be volatile (e.g., RAM, etc.), non-volatile (e.g., ROM, flash memory, etc.), or a combination thereof. In one configuration, computer readable instructions to implement one or more embodiments disclosed herein may be stored in the storage 330.

[0058] In another embodiment, the memory 320 is configured to store software. Software shall be construed broadly to mean any type of instructions, whether referred to as

software, firmware, middleware, microcode, hardware description language, or otherwise. Instructions may include code (e.g., in source code format, binary code format, executable code format, or any other suitable format of code). The instructions, when executed by the one or more processors, cause the processing circuitry 310 to perform the various processes described herein. Specifically, the instructions, when executed, cause the processing circuitry 310 to determine over-privileged roles vulnerabilities in serverless functions.

[0059] The storage 330 may be magnetic storage, optical storage, and the like, and may be realized, for example, as flash memory or other memory technology, CD-ROM, Digital Versatile Disks (DVDs), hard-drives, SSD, or any other medium which can be used to store the desired information. The storage 330 may store communication consumption patterns associated with one or more communications devices.

[0060] The network interface 340 allows the security system 140 to communicate with the external systems, such as intelligence systems, SIEM systems, mitigation systems, a cloud management console, a user console, and the like.

[0061] It should be understood that the embodiments described herein are not limited to the specific architecture illustrated in Fig. 3, and other architectures may be equally used without departing from the scope of the disclosed embodiments.

[0062] The various embodiments disclosed herein can be implemented as hardware, firmware, software, or any combination thereof. Moreover, the software is preferably implemented as an application program tangibly embodied on a program storage unit or computer readable medium consisting of parts, or of certain devices and/or a combination of devices. The application program may be uploaded to, and executed by, a machine comprising any suitable architecture. Preferably, the machine is implemented on a computer platform having hardware such as one or more central processing units ("CPUs"), a memory, and input/output interfaces. The computer platform may also include an operating system and microinstruction code. The various processes and functions described herein may be either part of the microinstruction code or part of the application program, or any combination thereof, which may be executed by a CPU, whether or not such a computer or processor is explicitly shown. In addition, various other peripheral units may be connected to the computer platform such as an additional data storage unit

and a printing unit. Furthermore, a non-transitory computer readable medium is any computer readable medium except for a transitory propagating signal.

[0063] As used herein, the phrase "at least one of" followed by a listing of items means that any of the listed items can be utilized individually, or any combination of two or more of the listed items can be utilized. For example, if a system is described as including "at least one of A, B, and C," the system can include A alone; B alone; C alone; A and B in combination; B and C in combination; A and C in combination; or A, B, and C in combination.

[0064] All examples and conditional language recited herein are intended for pedagogical purposes to aid the reader in understanding the principles of the disclosed embodiment and the concepts contributed by the inventor to furthering the art, and are to be construed as being without limitation to such specifically recited examples and conditions. Moreover, all statements herein reciting principles, aspects, and embodiments of the disclosed embodiments, as well as specific examples thereof, are intended to encompass both structural and functional equivalents thereof. Additionally, it is intended that such equivalents include both currently known equivalents as well as equivalents developed in the future, i.e., any elements developed that perform the same function, regardless of structure.

CLAIMS

What is claimed is:

1. A method for securing virtual cloud assets in a cloud computing environment against cyber threats, comprising:

determining a location of a snapshot of at least one virtual disk of a protected virtual cloud asset, wherein the virtual cloud asset is instantiated in the cloud computing environment;

accessing the snapshot of the virtual disk based on the determined location;

analyzing the snapshot of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset; and

alerting detected potential cyber threats based on a determined priority.

2. The method of claim 1, further comprising:

prioritizing each detected of potential cyber threats based on their respective risk to the protected virtual cloud asset; and

mitigating a potential cyber threat posing a risk to the protected virtual cloud asset.

3. The method of claim 1, wherein determining the location of the snapshot of at least one virtual disk further comprises:

determining a virtual disk allocated to the protected virtual cloud asset.

4. The method of claim 2, further comprising:

querying a cloud management console of the cloud computing platform to determine the location of the snapshot and the location of the virtual disk.

5. The method of claim 1, further comprising:

taking a new snapshot of the protected virtual cloud asset, when an existing snapshot cannot be located.

6. The method of claim 1, wherein analyzing the snapshot of the protected virtual machine further comprises:

parsing a copy of the snapshot; and

scanning the parsed copy to detect the potential cyber threats, wherein the potential cyber threats include known and unknow vulnerabilities, and wherein the detection is based on a type of vulnerability.

7. The method of claim 6, wherein scanning the parsed copy further comprises any one of:

checking configuration files of applications and operating system installed in the protected virtual machine;

verifying access times to files by the operating system installed in the operating machine;

analyzing system logs to deduce what applications and modules executed in the protected virtual cloud asset; and

analyzing machine memory stored in the snapshot to deduce what applications and modules executed in the protected virtual cloud asset.

8. The method of claim 6, further comprising:

instantiating a copy of the protected virtual machine from the snapshot; and

monitoring all activity performed by the instance of the protected virtual cloud asset.

9. The method of claim 6, wherein scanning the parsed copy further comprises any one of:

reading process identification number (PID) files; and

checking if the at least the PID files access times match against process descriptors.

10. The method of claim 1, wherein the protected virtual cloud asset includes any one of: a virtual machine, a software container, a micro-service.

11. A non-transitory computer readable medium having stored thereon instructions for causing a processing circuitry to execute a process, the process comprising:

determining a location of a snapshot of at least one virtual disk of a protected virtual cloud asset, wherein the virtual cloud asset is instantiated in the cloud computing environment;

accessing the snapshot of the virtual disk based on the determined location;

analyzing the snapshot of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset; and

alerting detected potential cyber threats based on a determined priority.

12. A system for securing virtual cloud assets in a cloud computing environment against cyber threats, comprising:

a processing circuitry; and

a memory, the memory containing instructions that, when executed by the processing circuitry, configure the system to:

determine a location of a snapshot of at least one virtual disk of a protected virtual cloud asset, wherein the virtual cloud asset is instantiated in the cloud computing environment;

access the snapshot of the virtual disk based on the determined location;

analyze the snapshot of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset; and

alert detected potential cyber threats based on a determined priority.

13. The system of claim 12, wherein the system is further configured to:

prioritize each detected of potential cyber threats based on their respective risk to the protected virtual cloud asset; and

mitigate a potential cyber threat posing a risk to the protected virtual cloud asset.

14. The system of claim 12, wherein determining the location of the snapshot of at least one virtual disk further comprises:

determining a virtual disk allocated to the protected virtual cloud asset.

15. The system of claim 13, wherein the system is further configured to:

query a cloud management console of the cloud computing platform to determine the location of the snapshot and the location of the virtual disk.

16. The system of claim 12, wherein the system is further configured to:

take a new snapshot of the protected virtual cloud asset, when an existing snapshot cannot be located.

17. The system of claim 12, wherein analyzing the snapshot of the protected virtual machine further comprises:

parsing a copy of the snapshot; and

scanning the parsed copy to detect the potential cyber threats, wherein the potential cyber threats include known and unknow vulnerabilities, and wherein the detection is based on a type of vulnerability.

18. The system of claim 17, wherein scanning the parsed copy further comprises any one of:

checking configuration files of applications and operating system installed in the protected virtual machine;

verifying access times to files by the operating system installed in the operating machine;

analyzing system logs to deduce what applications and modules executed in the protected virtual cloud asset; and

analyzing machine memory stored in the snapshot to deduce what applications and modules executed in the protected virtual cloud asset.

19. The system of claim 17, wherein the system is further configured to:

instantiate a copy of the protected virtual machine from the snapshot; and

monitor all activity performed by the instance of the protected virtual cloud asset.

20. The system of claim 17, wherein scanning the parsed copy further comprises any one of:

reading process identification number (PID) files; and

checking if the at least the PID files access times match against process descriptors.

21. The system of claim 12, wherein the protected virtual cloud asset includes any one of: a virtual machine, a software container, a micro-service.

ABSTRACT

A system and method for securing virtual cloud assets in a cloud computing environment against cyber threats. The method includes: determining a location of a snapshot of at least one virtual disk of a protected virtual cloud asset, wherein the virtual cloud asset is instantiated in the cloud computing environment; accessing the snapshot of the virtual disk based on the determined location; analyzing the snapshot of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset; and alerting detected potential cyber threats based on a determined priority.

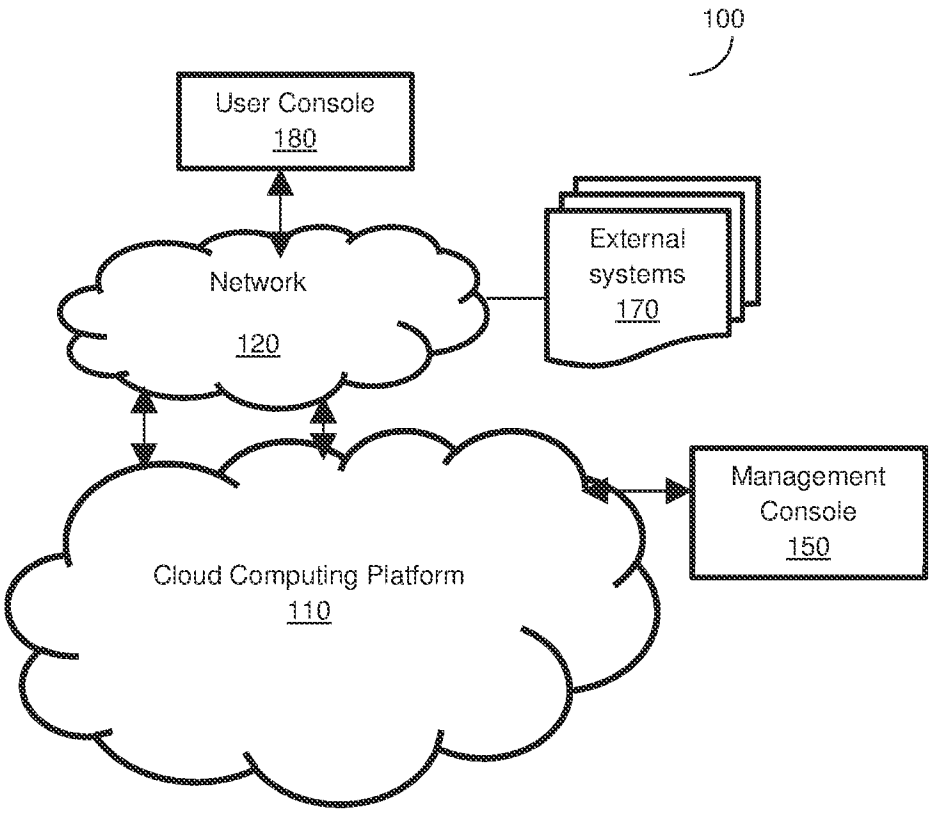

100
User Console
180
External
systems
170
Network
120
Management
Console
150
Cloud Computing Platform
110

FIG. 1A

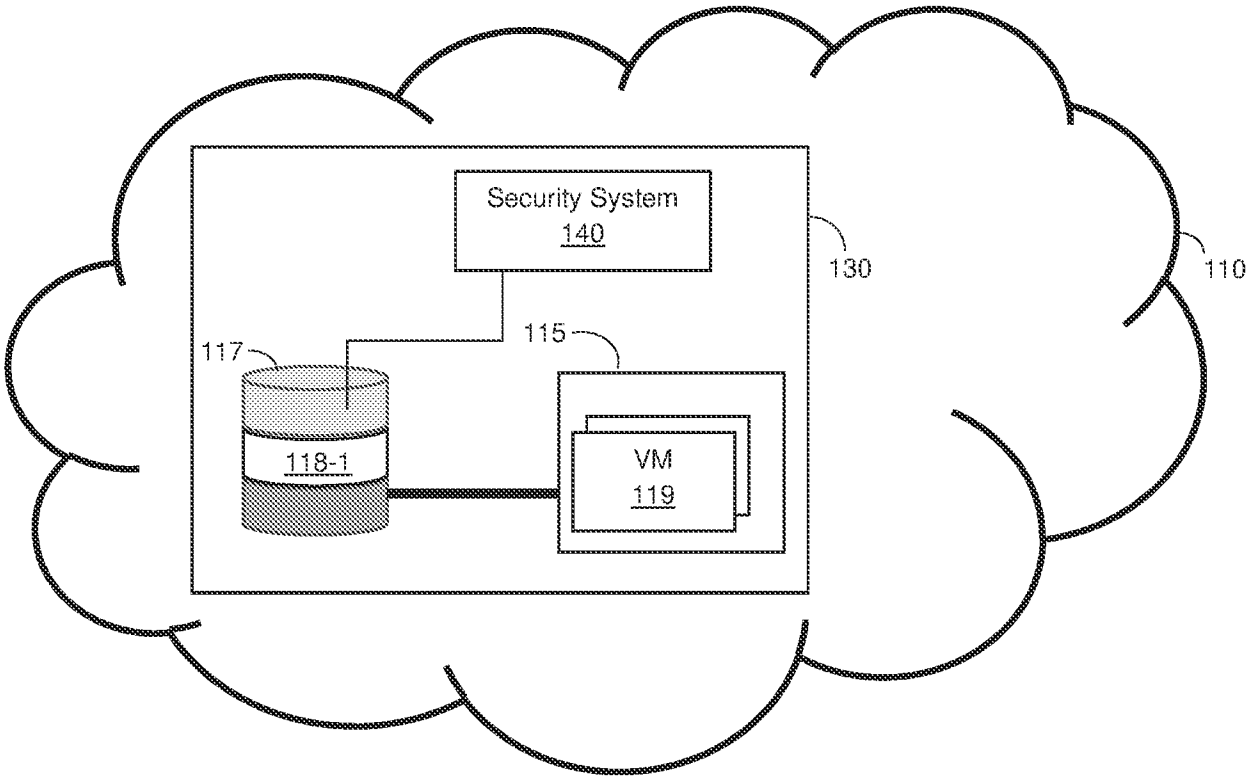


FIG. 1B

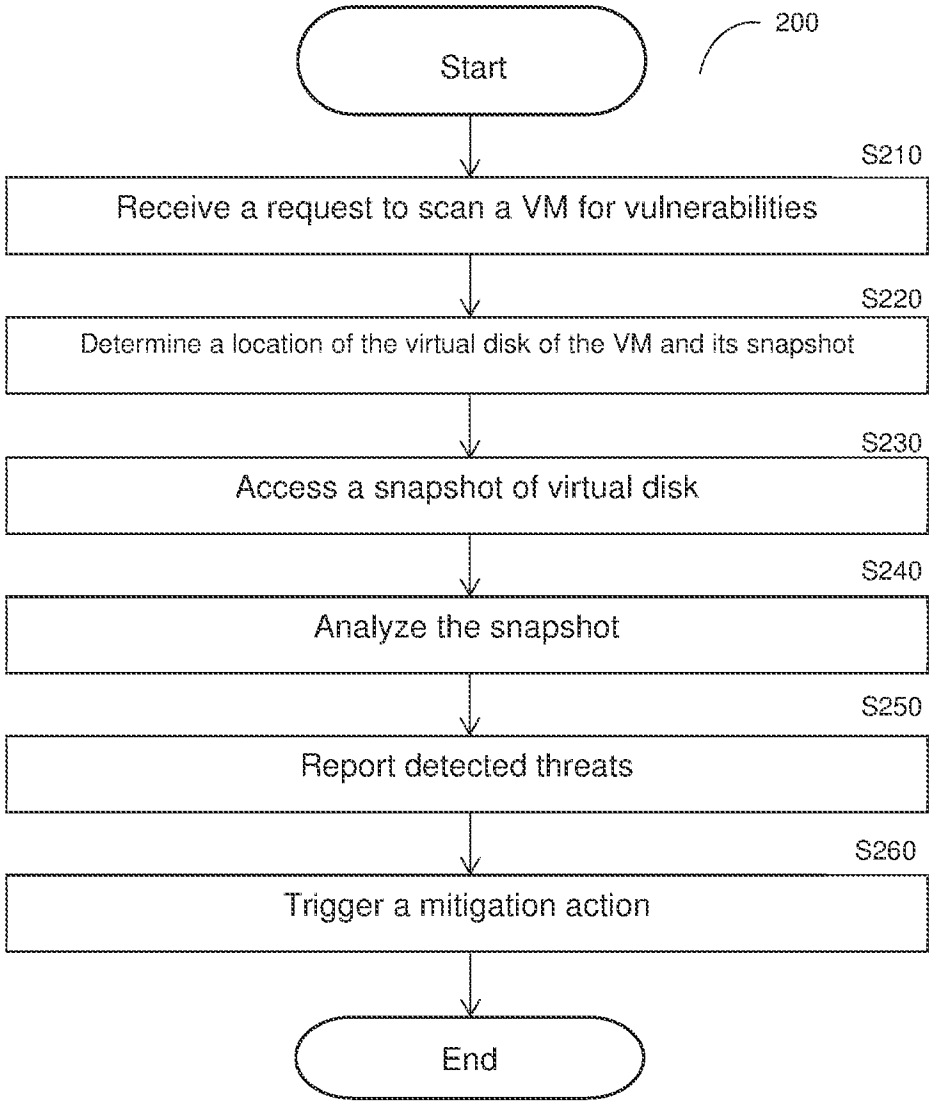

200
Start
S210
Receive a request to scan a VM for vulnerabilities
S220
Determine a location of the virtual disk of the VM and its snapshot
S230
Access a snapshot of virtual disk
S240
Analyze the snapshot
S250
Report detected threats
S260
Trigger a mitigation action
End

FIG. 2

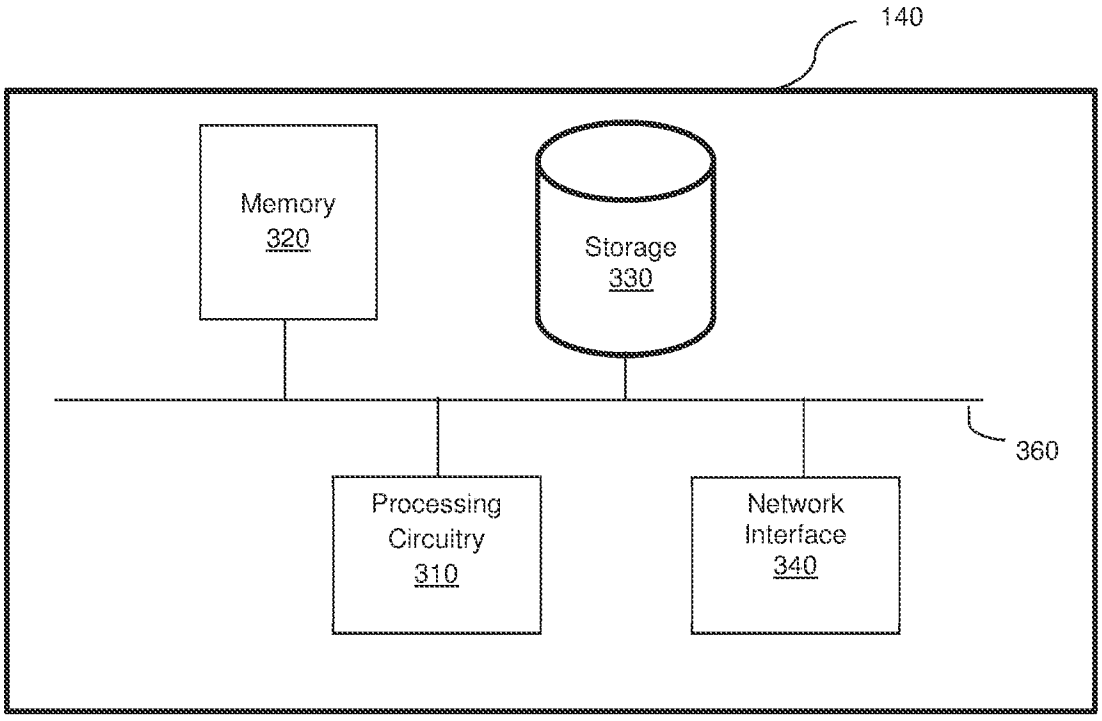

140
Memory
320
Storage
330
360
Processing
Circuitry
310
Network
Interface
340

FIG. 3