

SCORE Placeholder Sheet for IFW Content

Application Number: 16750556

Document Date: 01/23/2020

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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:

122066

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 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.

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.

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.

UTILITY PATENT APPLICATION TRANSMITTAL <i>(Only for new nonprovisional applications under 37 CFR 1.53(b))</i>		Attorney Docket No. ORCA P1558	
		First Named Inventor Avi SHUA	
		Title TECHNIQUES FOR SECURING VIRTUAL...	
		Priority Mail Express® Label No.	

APPLICATION ELEMENTS <i>See MPEP chapter 600 concerning utility patent application contents.</i>	Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450
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1. ☐ Fee Transmittal Form (PTO/SB/17 or equivalent) 2. ☒ Applicant asserts small entity status. See 37 CFR 1.27 3. ☐ Applicant certifies micro entity status. See 37 CFR 1.29. Applicant must attach form PTO/SB/15A or B or equivalent. 4. ☒ Specification [Total Pages <u>21</u>] Both the claims and abstract must start on a new page. (See MPEP § 608.01(a) for information on the preferred arrangement) 5. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets <u>4</u>] 6. Inventor's Oath or Declaration [Total Pages <u>2</u>] (including substitute statements under 37 CFR 1.64 and assignments serving as an oath or declaration under 37 CFR 1.63(e)) a. ☒ Newly executed (original or copy) b. ☐ A copy from a prior application (37 CFR 1.63(d)) 7. ☒ Application Data Sheet * See note below. See 37 CFR 1.76 (PTO/AIA/14 or equivalent) 8. CD-ROM or CD-R in duplicate, large table, or Computer Program (Appendix) ☐ Landscape Table on CD 9. Nucleotide and/or Amino Acid Sequence Submission (if applicable, items a. – c. are required) a. ☐ Computer Readable Form (CRF) b. ☐ Specification Sequence Listing on: i. ☐ CD-ROM or CD-R (2 copies); or ii. ☐ Paper c. ☐ Statements verifying identity of above copies	ACCOMPANYING APPLICATION PAPERS 10. ☐ Assignment Papers (cover sheet & document(s)) Name of Assignee _____ 11. ☐ 37 CFR 3.73(c) Statement ☒ Power of Attorney (when there is an assignee) 12. ☐ English Translation Document (if applicable) 13. ☒ Information Disclosure Statement (PTO/SB/08 or PTO-1449) ☐ Copies of citations attached 14. ☐ Preliminary Amendment 15. ☐ Return Receipt Postcard (MPEP § 503) (Should be specifically itemized) 16. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed) 17. ☐ Nonpublication Request Under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent. 18. ☐ Other: _____ _____ _____ _____
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***Note:** (1) Benefit claims under 37 CFR 1.78 and foreign priority claims under 1.55 **must** be included in an Application Data Sheet (ADS).
 (2) For applications filed under 35 U.S.C. 111, the application must contain an ADS specifying the applicant if the applicant is an assignee, person to whom the inventor is under an obligation to assign, or person who otherwise shows sufficient proprietary interest in the matter. See 37 CFR 1.46(b).

19. CORRESPONDENCE ADDRESS				
☒ The address associated with Customer Number: <u>122066</u> OR ☐ Correspondence address below				
Name				
Address				
City	State	Zip Code		
Country	Telephone	Email		

Signature	/Michael Ben-Shimon/	Date	2020-01-23
Name (Print/Type)	Michael Ben-Shimon	Registration No. (Attorney/Agent)	69610

This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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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.

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	ORCA P1558
		Application Number	
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL CLOUD ASSETS AT REST AGAINST CYBER THREATS		
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.)
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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	L	
Mailing Address of Inventor:					
Address 1		c/o Orca Security LTD.			
Address 2		65 Yigal Alon St.			
City	Tel Aviv		State/Province		
Postal Code	6744316		Country ⁱ	IL	
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.					

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	122066		
Email Address	pair@mb-ip.com	Add Email	Remove Email

Application Information:

Title of the Invention	TECHNIQUES FOR SECURING VIRTUAL CLOUD ASSETS AT REST AGAINST CYBER THREATS		
Attorney Docket Number	ORCA P1558	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	4	Suggested Figure for Publication (if any)	

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	ORCA P1558
		Application Number	
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL CLOUD ASSETS AT REST AGAINST CYBER THREATS		

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	122066		

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)
	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.

[Add](#)

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	ORCA P1558
		Application Number	
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL CLOUD ASSETS AT REST AGAINST CYBER THREATS		

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).

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 ORCA P1558	
	Application Number	
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL CLOUD ASSETS AT REST AGAINST CYBER THREATS	

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	ORCA P1558
		Application Number	
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL CLOUD ASSETS AT REST AGAINST CYBER THREATS		

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	65 Yigal Alon St.	
Address 2		
City	Tel Aviv	State/Province
Country	IL	Postal Code
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	ORCA P1558
		Application Number	
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL CLOUD ASSETS AT REST AGAINST CYBER THREATS		

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	/Michael Ben-Shimon/		Date (YYYY-MM-DD)	2020-01-23
First Name	Michael	Last Name	Ben-Shimon	Registration Number
				69610
Additional Signature may be generated within this form by selecting the Add button. Add				

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	ORCA P1558
		Application Number	
Title of Invention	TECHNIQUES FOR SECURING VIRTUAL CLOUD ASSETS AT REST AGAINST CYBER THREATS		

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.**

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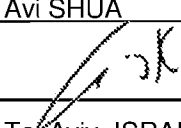
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Full name of inventor: Avi SHUA

Inventor's Signature:  **Date:** 01-21-2020

Residence: Tel Aviv, ISRAEL

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

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TECHNIQUES FOR SECURING VIRTUAL CLOUD ASSETS AT REST AGAINST CYBER THREATS

[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 plays 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 that the server may not expose the necessary data in the response. Further, the network scanner usually communicates with the server, and the network configuration may prevent such communication. 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 for 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 resource management, governance, and performance. For example, installing agents in a large data center may take months.

[0011] Further, traffic monitoring does not allow detection of vulnerabilities in data at rest. Data at rest, in information technology, means inactive data that is stored physically in any digital form. Data at rest may include data, services, and/or services that are inactive but can be accessed or executed as needed. Similarly, in cloud computing, some machines (e.g., virtual machines) may also be at rest. Some machines are configured with applications or services which are infrequently executed. For example, such a

machine may be utilized during one month of the year and remain inactive for the rest in the year. While at rest, the machines are powered off, and are not inspected for vulnerabilities, simply because scanners and/or installed monitoring agents cannot operate on a powered-off machine.

[0012] Another attempt would be to scan a machine at rest when the machine is powered on and preserving a log of its latest status. However, this would require keeping an updated log of the machine's configurations and all its applications. Further, as threats constantly evolve, scanning based on past information may not be relevant. As such, when data or a machine at rest becomes active, undetected vulnerabilities can pose cyber threats.

[0013] It would therefore be advantageous to provide a security solution that would overcome the deficiencies noted above.

SUMMARY

[0014] 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.

[0015] Certain embodiments disclosed herein include a method for securing virtual cloud assets at rest against cyber threats. The method comprises determining a location of a view of at least one virtual disk of a protected virtual cloud asset, wherein the virtual cloud asset is at rest and, when activated, instantiated in the cloud computing environment; accessing the view of the virtual disk based on the determined location; analyzing the view of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset, wherein the virtual cloud asset is inactive during the analysis; and alerting detected potential cyber threats based on a determined priority.

[0016] Certain embodiments disclosed herein also include a system for securing virtual cloud assets at rest 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 view of at least one virtual disk of a protected virtual cloud asset, wherein the virtual cloud asset is at rest and, when activated, instantiated in a cloud computing environment; access the view of the virtual disk based on the determined location; analyze the view of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset, wherein the virtual cloud asset is inactive during the analysis; and alert detected potential cyber threats based on a determined priority.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] The subject matter disclosed herein is particularly pointed out and distinctly claimed in the claims at the conclusion of the specification. 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.

[0018] Figures 1A and 1B are network diagrams utilized to describe the various embodiments.

[0019] 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.

[0020] Figure 3 is an example block diagram of the security system according to an embodiment.

DETAILED DESCRIPTION

[0021] 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.

[0022] Various techniques disclosed herein include techniques for securing data at rest or machines at rest (collectively referred to as “machines at rest”). Data at rest may include inactive data that is stored physically in any digital form. Machines at rest may include a virtual machine configured service(s) and/or application(s) that are inactive but can be accessed or executed as needed. The applications and/or services in such machines at rest are infrequently executed. The disclosed techniques are utilized to scan for embedded vulnerabilities in machines at rest, when the machine is powered off. For example, a machine at rest may be utilized during one month of the year and remain inactive for the rest in the year. According to the disclosed embodiments, the machine is scanned for vulnerabilities when it is in its inactive step.

[0023] 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 of a public cloud include, but are not limited to, AWS® by Amazon®, Microsoft Azure®, Google Cloud®, and the like. In some configurations, the disclosed embodiments may be operable in on-premises virtual machine 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.

[0024] 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 one or more virtual machines (VMs). In the example Fig. 1B, two VMs 119-1 and 119-2 are shown, and both are protected entities. It should be noted that such a protected entity may be any virtual cloud asset including, but not limited to, a software container, a micro-service, a serverless function, and the like. For the sake of the discussion and without limiting the scope of the disclosed embodiments, VM-119-1 is an active machine and VM 119-2 is a machine at rest. That is, VM 119-2 is mostly in an inactive state (e.g., being execute a day in a month, a month in a year, and remains inactive otherwise).

[0025] The storage 117 emulates virtual discs for the VMs 119-1 and 119-2 executed in by the server 115. The storage 117 is typically connected to the server 115 through a high-speed connection, such as optical 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, a virtual disk 118-1 is allocated for the VM 119-1 and the virtual disk 118-2 is allocated for the VM 119-2. The server 115, and, hence, the VMs 119-1 and 119-2, may be executed in a client environment 130 within the platform 110.

[0026] 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 embodiments, the client environment 130 may be part of a virtualized environment or on-premises virtualization environment, such as a VMware® based solution.

[0027] 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.

[0028] 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.

[0029] In the deployment, illustrated in Figs. 1A and 1B, 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 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.

[0030] 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.

[0031] In an embodiment, the security system 140 is configured to detect vulnerabilities and other cyber threats related to the execution VM 119-1. The detection is performed while the VM 119-1 is live, without using any agent installed in the server 115 or the VM 119-1, and without relying on cooperation from the guest OS of the VM 119-1.

[0032] According to another embodiment, the security system 140 is configured to detect vulnerabilities and other cyber threats related to the execution VM 119-2. i.e., the machine at rest. The detection is performed while the VM 119-2 is powered off.

[0033] In both embodiments, the security system 140 can scan and detect vulnerable software, non-secure configurations, exploitation attempts, compromised assets, 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.

[0034] In some embodiments, the security system 140 is configured to query the cloud management console 150 for the address of the virtual disks 118-1 and 118-2, respectively serving the VM 119-1, VM 119-2, 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.

[0035] In an embodiment, a view, or a materialized view, of the virtual disk 118-2 associated with the VM 119-2 is accessed. A view is a stored query that consumes limited-to-no space, consuming only the space required to store the text of the query in the data dictionary. A materialized view is a both a stored query and a segment. That is, a stored query is executed, and the results are materialized into the segment. For the sake of simplicity, but without limiting the scope of the disclosed embodiments, the inspection of VM (VM 119-2) is based on a view stored in the virtual disk 118-2, while the inspection of the active (VM 119-1) is based on a snapshot stored in the virtual disk 118-1.

[0036] The snapshot of the VM 119-1 is located and may be saved from the virtual disk 118-1 for access by the security system 140. In an embodiment, the VM's 119-1 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 on 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.

[0037] The view of the VM 119-2 is located and may be saved from the virtual disk 118-2 for access by the system 140. In an embodiment, the VM's 119-2 view may be copied to the system 140. If such a view does not exist, the system 140 may generate a query to create a new VM 119-2. The view may be taken when the VM 119-2 is about to transition into an inactive state or when the same VM 119-2 is at rest. It should be noted that when the view is taken or copied, the VM 119-2 may be at rest (i.e., inactive and powered off).

[0038] It should be noted that the snapshots and/or views of the virtual disk 118-1 and/or 118-2 may not necessarily be stored in the storage 117, but, for ease of discussion, it is assumed that the snapshot is saved in the storage 117. It should be further noted that the snapshots and/or views are accessed without cooperation of the guest, virtual OS of the virtual machine.

[0039] 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 119-1. 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 119-1.

[0040] Further, the view is parsed and analyzed by the security system 140 to detect vulnerabilities. This analysis of the views does not require any interaction and/or information from the VM 119-2. In fact, the VM 119-2 is in its inactive state (at rest) during the analysis. As further demonstrated herein, the analysis of the view by the system 140 does not require any agent installed on the server 115 or VM 119-2.

[0041] Various techniques can be utilized to analyze the views and 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.

[0042] In an embodiment, the security system 140 is configured to detect whether there is vulnerable code executed by the VMs 119-1 and 119-2. In an embodiment, the VM 119-2 being analyzed is shut down, being, therefore, at rest. The VM 119-1 may be running or paused. In an embodiment, to detect vulnerabilities existing in the VM 119-2, 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.

[0043] In yet another embodiment, the security system 140 is configured to verify whether the vulnerability is relevant to the VM 119-2. For example, if there is a vulnerable version or module not in use, the priority of that issue is reduced dramatically.

[0044] To this end, the security system 140 may be configured to check the configuration files of the applications and operating system of the VM 119-2 to verify access times to files by the operating system and/or to analyze the application and/or system logs in order to deduce what applications and modules are running.

[0045] In yet another embodiment, the security system 140 may instantiate a copy of the VM 119-2 and/or a subset of applications of the VM 119-2 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 instance. 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 said subset in order to assess its security posture. This may include, but is not limited to, actively communicating with the VM 119-2 and using either legitimate communication and/or attack attempts to assess posture and, by that, deriving the security posture of the entire VM 119-2.

[0046] In order to determine if the vulnerability is relevant to the VM 119-2, 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 119-2. It should be noted that analyzing pages would be available only when VM 119-2 hibernates.

[0047] 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 disabled 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.

[0048] In an embodiment, the security system 140 may further monitor changes in sensitive machine areas, and alert on unexpected changes, such as 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.

[0049] 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.

[0050] In an embodiment, any detected cyber threats related to sensitive data, including personally identifiable information, or 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.

[0051] 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 119-2 logs as saved in the virtual disk, and can be derived from the view.

[0052] In an example embodiment, the security system 140 may cause an execution of one or more mitigation actions. Examples for such actions may include disabling the VM 119-2 from execution, updating the VM 119-2 with recent patches, and so on.

[0053] The above examples for detecting vulnerabilities may be applicable also for a VM 119-1 and may be performed when the VM 119-1 will be started later on. For the active VM 119-1 the mitigation 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.

[0054] It should be noted that the example implementation shown in Fig. 1 is described with respect to a single cloud computing platform 110 hosting two VMs 119-1 and 119-2 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.

[0055] Fig. 2 shows an example flowchart 200 illustrating a method for detecting cyber threats including potential vulnerabilities in virtual machines at rest, according to some embodiments. The method may be performed by the security system 140.

[0056] At S210, a request, for example, to scan a VM, at rest, for vulnerabilities, is received. A VM at rest is a machine that is currently powered off, i.e., not in an operational state. A VM at rest is executed at predefined time period but remains inactive (powered off) when not executed. The request, received at S210, may be received, or otherwise triggered, at 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, without limitation, requests to run the VM 119-2 not according to a schedule, access by an authorized user, and the like. The request may at least designate an identifier of the VM to be scanned.

[0057] At S220, a location of a view of the VM, at rest, 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 view. As noted above, this can be achieved by querying a cloud management console. In an embodiment, a snapshot of the VM, at rest, is accessed. At S230, a snapshot of the virtual disk is accessed, or otherwise copied.

[0058] At S240, the view is analyzed to detect cyber threats and potential vulnerabilities. S240 may also include detecting cyber threats that do not represent vulnerabilities. Examples for cyber threats and vulnerabilities are provided above.

[0059] In an embodiment, S240 may include comparing the view 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.

[0060] 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 for reduction of the number of alerts reported to the user. The filtering can be 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 on the contents stored or on other assets accessible from the VM .

[0061] 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, preventing its launch and the like.

[0062] 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.

[0063] 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.

[0064] The memory 320 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.

[0065] 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 role vulnerabilities in serverless functions.

[0066] The storage 330 may be magnetic storage, optical storage, and the like, and may be realized, for example, as flash memory or as another other memory technology, as CD-ROMs, Digital Versatile Disks (DVDs), hard-drives, SSDs, 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.

[0067] 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.

[0068] 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.

[0069] 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.

[0070] 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.

[0071] 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 at rest against cyber threats, comprising:
 - determining a location of a view of at least one virtual disk of a protected virtual cloud asset, wherein the virtual cloud asset is at rest and, when activated, instantiated in the cloud computing environment;
 - accessing the view of the virtual disk based on the determined location;
 - analyzing the view of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset, wherein the virtual cloud asset is inactive during the analysis; and
 - alerting detected potential cyber threats based on a determined priority.
2. The method of claim 1, further comprising:
 - prioritizing each detection 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 view of at least one virtual disk further comprises:
 - determining a virtual disk allocated to the protected virtual cloud asset.
4. The method of claim 3, further comprising:
 - querying a cloud management console of the cloud computing platform to determine the location of the view and the location of the virtual disk.
5. The method of claim 1, further comprising:
 - requesting the cloud computing platform to create a new view of the protected virtual cloud asset, when an existing snapshot cannot be located.

6. The method of claim 1, wherein analyzing the view of the protected virtual cloud asset further comprises:
 - parsing a copy of the view; 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.
7. The method of claim 6, wherein scanning the parsed copy further comprises any one of:
 - checking configuration files of each application, operating system, and 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; and
 - analyzing machine memory stored in the view to deduce what applications and modules executed in the protected virtual cloud asset.
8. The method of claim 6, further comprising:
 - instantiating an instance copy of the protected virtual cloud asset from the view;
 - and
 - monitoring all activity performed by the instance of the protected virtual cloud asset.
9. The method of claim 1, wherein the protected virtual cloud asset includes any one of: a virtual machine, a software container, a micro-service.
10. A non-transitory computer readable medium having stored thereon instructions for causing a processing circuitry to execute a process for securing virtual cloud assets at rest against cyber threats, the process comprising:

determining a location of a view of at least one virtual disk of a protected virtual cloud asset, wherein the virtual cloud asset is at rest and, when activated, instantiated in a cloud computing environment;

accessing the view of the virtual disk based on the determined location;

analyzing the view of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset, wherein the virtual cloud asset is inactive during the analysis; and

alerting detected potential cyber threats based on a determined priority.

11. A system for securing virtual cloud assets at rest 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 view of at least one virtual disk of a protected virtual cloud asset, wherein the virtual cloud asset is at rest and, when activated, instantiated in a cloud computing environment;

access the view of the virtual disk based on the determined location;

analyze the view of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset, wherein the virtual cloud asset is inactive during the analysis; and

alert detected potential cyber threats based on a determined priority.

12. The system of claim 11, wherein the system is further configured to:

prioritize each detection 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.

13. The system of claim 11, wherein determining the location of the view of at least one virtual disk further comprises:

determining a virtual disk allocated to the protected virtual cloud asset.

14. 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 view and the location of the virtual disk.
15. The system of claim 11, wherein the system is further configured to:
requesting the cloud computing platform to create a new view of the protected virtual cloud asset, when an existing snapshot cannot be located.
16. The system of claim 11, wherein analyzing the view of the protected virtual cloud asset further comprises:
parsing a copy of the view; 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.
17. The system of claim 16, wherein scanning the parsed copy further comprises any one of:
checking configuration files of each application, operating system, and 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; and
analyzing machine memory stored in the view to deduce what applications and modules executed in the protected virtual cloud asset.
18. The system of claim 16, wherein the system is further configured to:
instantiate an instance copy of the protected virtual cloud asset from the view; and
monitor all activity performed by the instance of the protected virtual cloud asset.

19. The system of claim 11, wherein the protected virtual cloud asset includes any one of: a virtual machine, a software container, a micro-service.

ABSTRACT

A method and system for securing virtual cloud assets at rest against cyber threats. The method comprises determining a location of a view of at least one virtual disk of a protected virtual cloud asset, wherein the virtual cloud asset is at rest and, when activated, instantiated in the cloud computing environment; accessing the view of the virtual disk based on the determined location; analyzing the view of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset, wherein the virtual cloud asset is inactive during the analysis; and alerting detected potential cyber threats based on a determined priority.

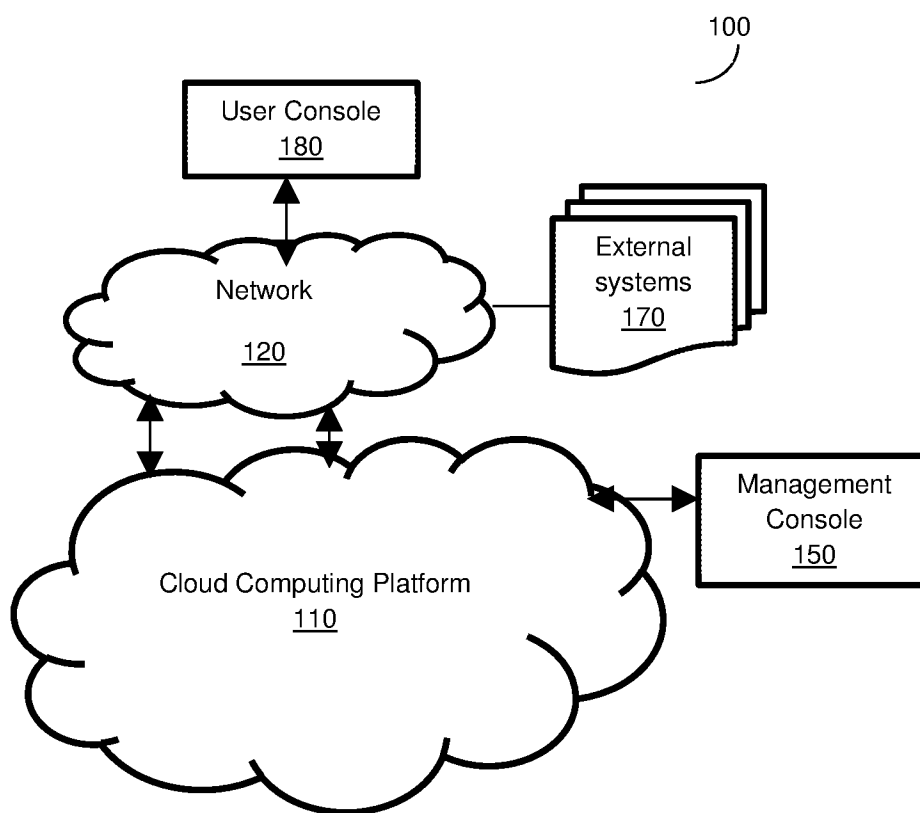


FIG. 1A

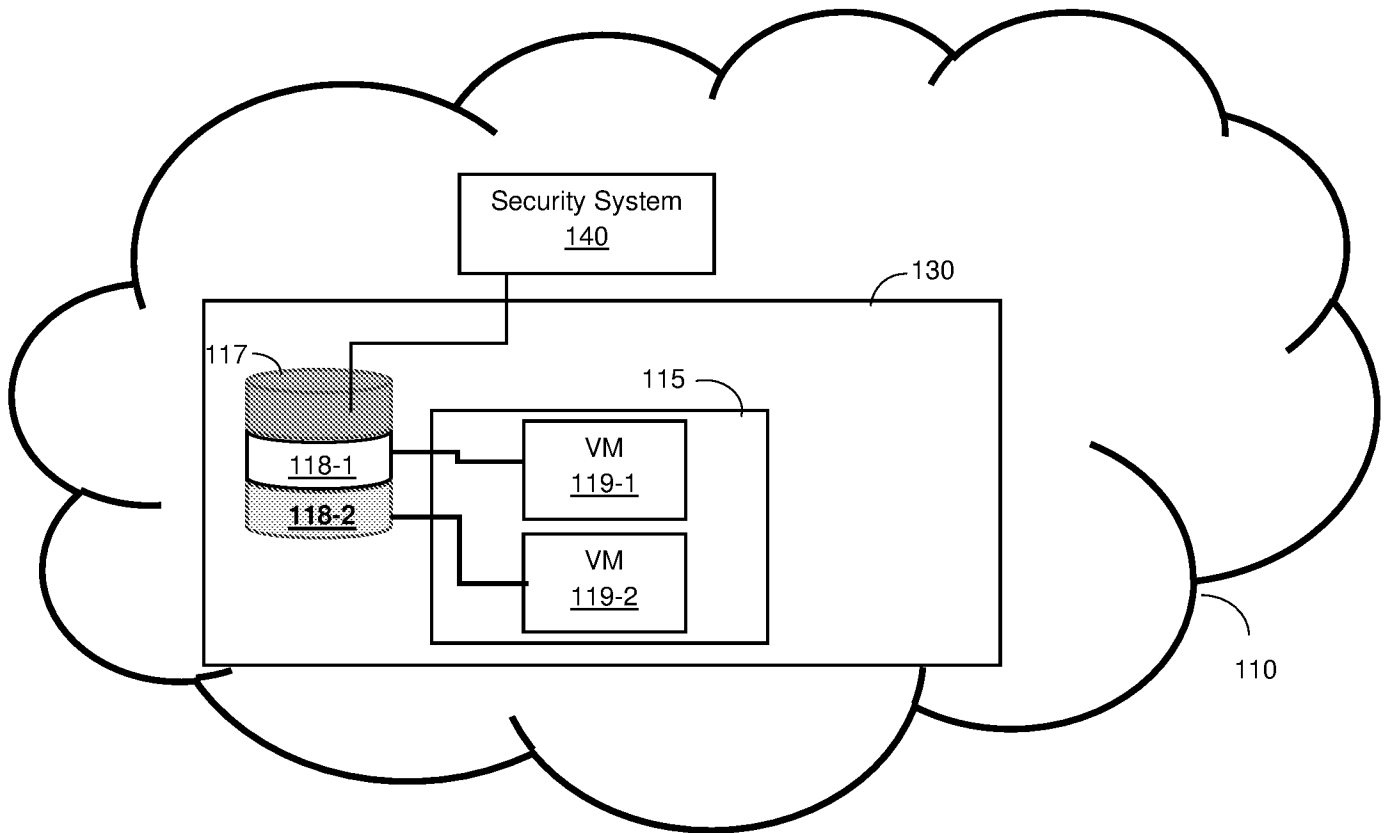
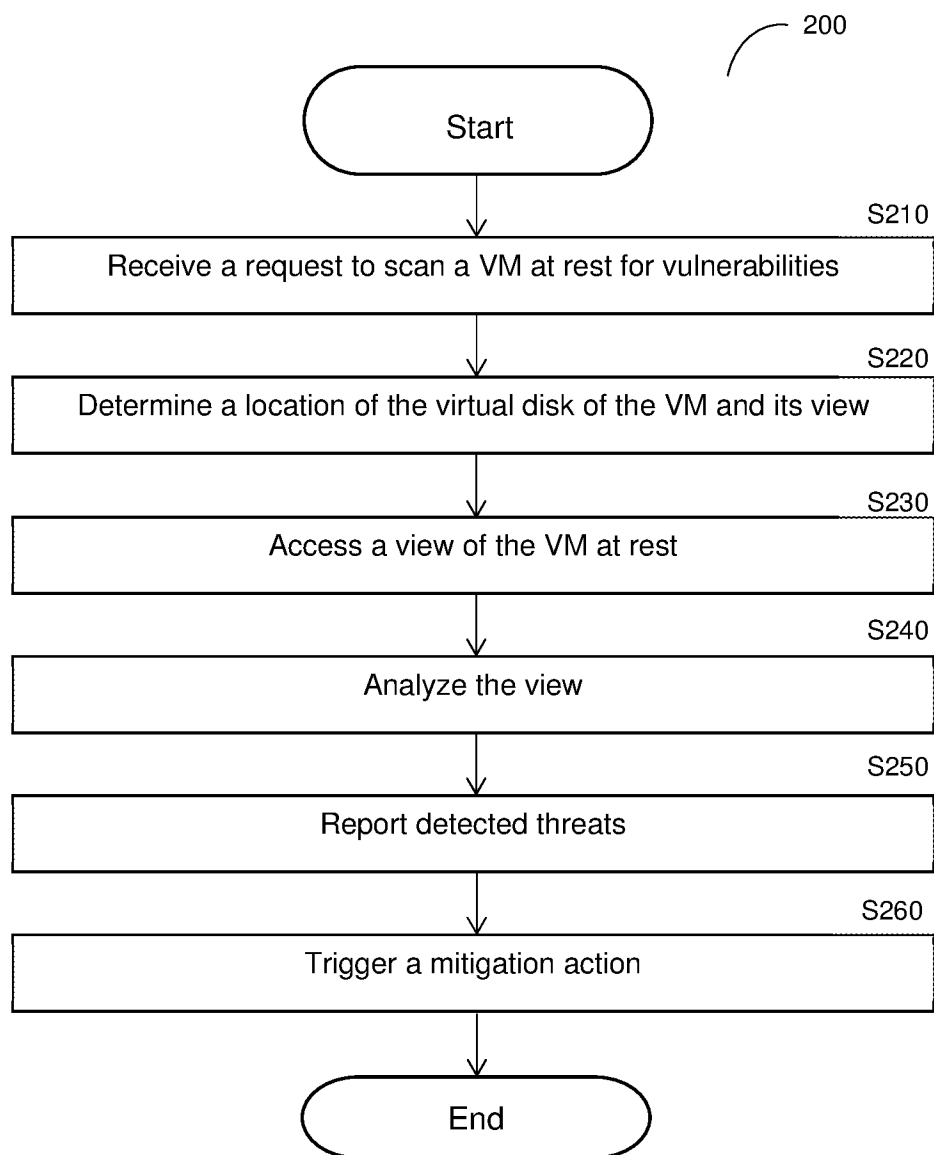


FIG. 1B

**FIG. 2**

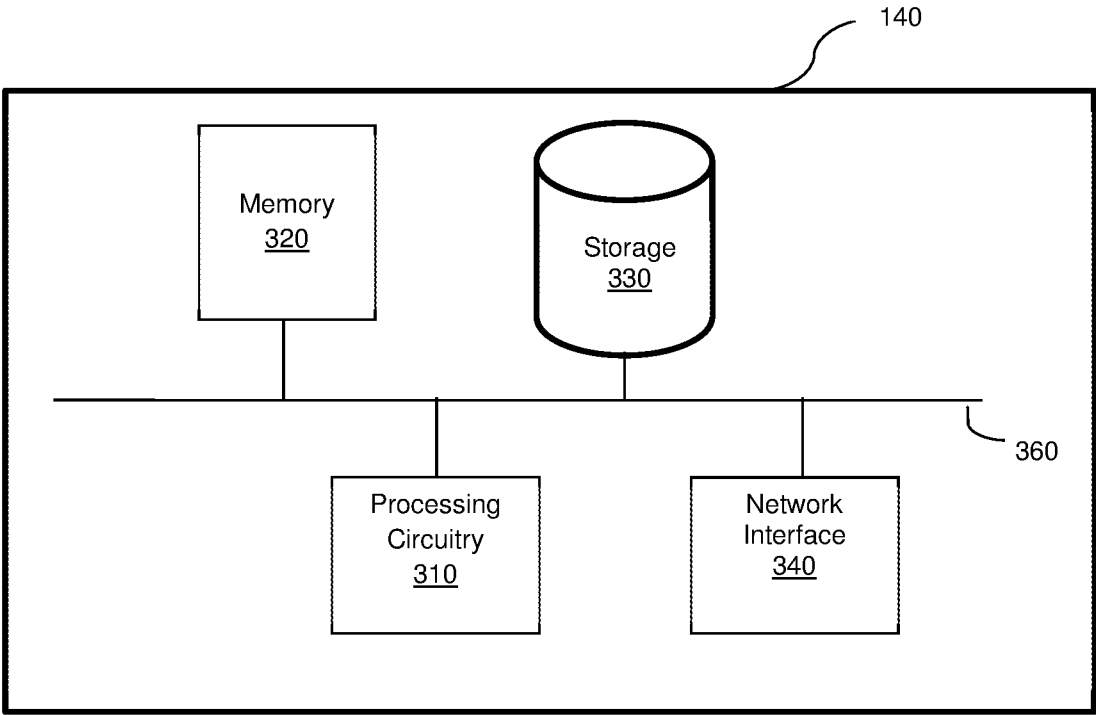


FIG. 3

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		TECHNIQUES FOR SECURING VIRTUAL CLOUD ASSETS AT REST AGAINST CYBER THREATS		
First Named Inventor/Applicant Name:		Avi SHUA		
Filer:		Michael Ben-Shimon/Wendy Perrault		
Attorney Docket Number:		ORCA P1558		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	75	75
UTILITY SEARCH FEE	2111	1	330	330
UTILITY EXAMINATION FEE	2311	1	380	380
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				785

Electronic Acknowledgement Receipt

EFS ID:	38376053
Application Number:	16750556
International Application Number:	
Confirmation Number:	1071
Title of Invention:	TECHNIQUES FOR SECURING VIRTUAL CLOUD ASSETS AT REST AGAINST CYBER THREATS
First Named Inventor/Applicant Name:	Avi SHUA
Customer Number:	122066
Filer:	Michael Ben-Shimon/Wendy Perrault
Filer Authorized By:	Michael Ben-Shimon
Attorney Docket Number:	ORCA P1558
Receipt Date:	23-JAN-2020
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RAM confirmation Number	E20201MF17353436
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal of New Application	ORCA_P1558_aia0015_transmittal_20200123.pdf	314941	no	2
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Information:					
2	Application Data Sheet	ORCA_P1558_ads_20200123.pdf	1256013	no	8
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3	Oath or Declaration filed	ORCA_P1558_decl_assign_20200123.pdf	53015	no	2
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4	Power of Attorney	ORCA_P1558_poa_aia0082_20200123.pdf	121490	no	2
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5	Information Disclosure Statement (IDS) Form (SB08)	orca_P1558_ids_20200123.pdf	1053634	no	5
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	Specification	1	15
	Claims	16	20
	Abstract	21	21
	Drawings-only black and white line drawings	22	25

Warnings:

Information:

7	Fee Worksheet (SB06)	fee-info.pdf	35166	no	2
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Warnings:

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Total Files Size (in bytes):	2974379
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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

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 ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT5925729

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT
CONVEYING PARTY DATA	
Name	Execution Date
AVI SHUA	01/21/2020
RECEIVING PARTY DATA	
Name:	ORCA SECURITY LTD.
Street Address:	65 YIGAL ALON ST.
City:	TEL AVIV
State/Country:	ISRAEL
Postal Code:	6744316
PROPERTY NUMBERS Total: 1	
Property Type	Number
Application Number:	16750556
CORRESPONDENCE DATA	
Fax Number:	(908)274-3113
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>	
Phone:	908-274-3111
Email:	pair@mb-ip.com
Correspondent Name:	M&B IP ANALYSTS, LLC
Address Line 1:	500 HEADQUARTERS PLAZA
Address Line 4:	MORRISTOWN, NEW JERSEY 07960-7070
ATTORNEY DOCKET NUMBER:	ORCA P1558
NAME OF SUBMITTER:	MICHAEL BEN-SHIMON
SIGNATURE:	/Michael Ben-Shimon/
DATE SIGNED:	01/23/2020
This document serves as an Oath/Declaration (37 CFR 1.63).	
Total Attachments: 2	
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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 CLOUD ASSETS AT REST AGAINST CYBER THREATS

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.

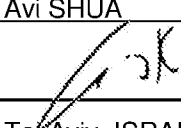
The undersigned covenants and agrees that he has full right to convey the entire interest herein assigned, and has not executed, and will not execute, any agreement in conflict herewith.

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.

The undersigned hereby grants the practitioners of M&B IP Analysts, LLC the power to insert any further identification which may be necessary or desirable in order to comply with the rules of the U.S. Patent and Trademark Office.

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

Full name of inventor: Avi SHUA

Inventor's Signature:  **Date:** 01-21-2020

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

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
16/750,556	01/23/2020		785	ORCA P1558	19	3

CONFIRMATION NO. 1071

FILING RECEIPT

122066
M&B IP Analysts, LLC
500 Headquarters Plaza
Morristown, NJ 07960-7070



Date Mailed: 03/19/2020

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 122066

Domestic Priority data as claimed by applicant

This appln 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: 03/18/2020

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/750,556**

Projected Publication Date: 07/30/2020

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

TECHNIQUES FOR SECURING VIRTUAL CLOUD ASSETS AT REST AGAINST CYBER
THREATS

Preliminary Class

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

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

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

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

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

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

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 16/750,556	
APPLICATION AS FILED - PART I							
(Column 1)		(Column 2)		SMALL ENTITY		OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	75		N/A	
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	330		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	380		N/A	
TOTAL CLAIMS (37 CFR 1.16(j))	19	minus 20 = *	x 50 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 = *	x 230 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
			TOTAL	785		TOTAL	
* If the difference in column 1 is less than zero, enter "0" in column 2.							
APPLICATION AS AMENDED - PART II							
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)
	Total (37 CFR 1.16(i))	*	Minus **	=	x =	OR	x =
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x =	OR	x =
	Application Size Fee (37 CFR 1.16(s))					OR	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					OR	
				TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)
	Total (37 CFR 1.16(i))	*	Minus **	=	x =	OR	x =
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x =	OR	x =
	Application Size Fee (37 CFR 1.16(s))					OR	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					OR	
				TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.							



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/750,556	01/23/2020	Avi SHUA	ORCA P1558

CONFIRMATION NO. 1071

PUBLICATION NOTICE



OC000000118849093

122066
M&B IP Analysts, LLC
500 Headquarters Plaza
Morristown, NJ 07960-7070

Title:TECHNIQUES FOR SECURING VIRTUAL CLOUD ASSETS AT REST AGAINST CYBER THREATS

Publication No.US-2020-0244692-A1

Publication Date:07/30/2020

NOTICE OF PUBLICATION OF APPLICATION

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

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

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

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

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

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

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	16/750,556
Filing Date	January 23, 2020
First Named Inventor	Avi SHUA
Title	TECHNIQUES FOR SECURING VIRTUAL CLOUD ASSETS AT REST AGAINST CYBER THREATS
Art Unit	3600
Examiner Name	Not Yet Assigned
Attorney Docket Number	15635.0002-00000

SIGNATURE of Applicant or Patent Practitioner

Signature	/Wei Yuan/	Date (Optional)	
Name	Wei Yuan	Registration Number	71772
Title (if Applicant is a juristic entity)	Patent Attorney		
Applicant Name (if Applicant is a juristic entity)	Orca Security LTD.		

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.**

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.

Privacy Act Statement

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

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

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

Electronic Acknowledgement Receipt

EFS ID:	42752285
Application Number:	16750556
International Application Number:	
Confirmation Number:	1071
Title of Invention:	TECHNIQUES FOR SECURING VIRTUAL CLOUD ASSETS AT REST AGAINST CYBER THREATS
First Named Inventor/Applicant Name:	Avi SHUA
Customer Number:	122066
Filer:	Wei Yuan/Maria Poulakos
Filer Authorized By:	Wei Yuan
Attorney Docket Number:	ORCA P1558
Receipt Date:	18-MAY-2021
Filing Date:	23-JAN-2020
Time Stamp:	14:27:10
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	As_filed_POA_15635_0002_00.pdf	177952 ec02f5e04a89791d0a458e5defa2a29556886b98	no	3

Warnings:

Information:	
Total Files Size (in bytes):	177952
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.	



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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/750,556	01/23/2020	Avi SHUA	ORCA P1558

CONFIRMATION NO. 1071

POWER OF ATTORNEY NOTICE



OC000000125717524

122066
M&B IP Analysts, LLC
150 Morristown Road
Suite 205
Bernardsville, NJ 07924-2626

Date Mailed: 05/21/2021

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 05/18/2021.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

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

/mtklemichael/



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
16/750,556	01/23/2020	Avi SHUA	15635.0002-00000

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

CONFIRMATION NO. 1071
POA ACCEPTANCE LETTER



Date Mailed: 05/21/2021

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 05/18/2021.

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

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

/mtklemichael/



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Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/750,556	01/23/2020	Avi SHUA	15635.0002-00000	1071
22852	7590	07/21/2022	EXAMINER	
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413			ZAIDI, SYED A	
			ART UNIT	PAPER NUMBER
			2432	
			NOTIFICATION DATE	DELIVERY MODE
			07/21/2022	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.

16/750,556

Applicant(s)

SHUA, Avi

Examiner

SYED A ZAIDI

Art Unit

2432

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 1/23/2020.

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

2a) ☐ This action is **FINAL**.

2b) ☒ This action is non-final.

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

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

Disposition of Claims*

5) ☒ Claim(s) 1-19 is/are pending in the application.

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

6) ☐ Claim(s) ____ is/are allowed.

7) ☒ Claim(s) 1-19 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 1/23/2020 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)

3) ☐ Interview Summary (PTO-413)

Paper No(s)/Mail Date ____.

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)

4) ☐ Other: ____.

Paper No(s)/Mail Date ____.

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.

DETAILED ACTION

This is a reply to the application filed on 1/23/2020, in which, **claims 1-19** are pending. Claims 1, 10, and 11 are independent.

When making claim amendments, the applicant is encouraged to consider the references in their entirety, including those portions that have not been cited by the examiner and their equivalents as they may most broadly and appropriately apply to any particular anticipated claim amendments.

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

1. The drawings filed on 1/23/2020 are accepted.

Specification

1. The disclosure filed on 1/23/2020 is accepted.

Claim Construction

1. View: Applicant's disclosure provides an ambiguous definition of view: [0035] In an embodiment, a view, or a materialized view, of the virtual disk 118-2 associated with the VM 119-2 is accessed. A view is a stored query that consumes limited-to-no space, consuming only the space required to store the text of the query in the data dictionary. A materialized view is a both a stored query and a segment. That is, a stored query is executed, and the results are materialized into the segment. For the sake of simplicity, but without limiting the scope of the disclosed embodiments, the inspection of VM (VM 119-2) is based on a view stored in the virtual disk 118-2, while the inspection of the active (VM 119-1) is based on a snapshot stored in the virtual disk 118-1. (Emphasis added). However, else where in the disclosure and some of the claims, view is construed to be a snapshot of a VM. See e.g., claim 5: "The method of claim 1, further comprising: requesting the cloud computing platform to create a new view of the protected virtual cloud asset, when an existing snapshot cannot be located." Note Fig 2 and associated disclosure ¶57-¶59 indicates view to be a snapshot that is analyzed "[0059] In an embodiment, S240 may

include comparing the view 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.” (Emphasis added) Thus, based on Fig. 2, associated disclosure ¶57-¶59 and claim 5, the broadest reasonable interpretation of a view as recited in the claims is a snapshot of a VM.

Claim Rejections - 35 USC § 103

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

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

Office action:

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth

in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries for establishing a background for determining obviousness under 35 U.S.C. 103 are summarized as follows:

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

4. Claim(s) 1, 3-5, 9-11, 13-15, and 19 is/are rejected under 35 U.S.C. 103 as being unpatentable over US 20130262801 A1 (hereinafter 'Sancheti') in view of US 10339011 B1 (hereinafter 'Bansal') in view of US 10536471 B1 (hereinafter 'Derbeko').

As regards **claim 1**, Sancheti (US 20130262801 A1) discloses A method for securing virtual cloud assets at rest against cyber threats, comprising: determining a location of a view of at least one virtual disk of a protected virtual cloud asset (Sancheti: Figs. 4, 6A-B, 7, ¶95-¶97, i.e., the location of the snapshot i.e., view, of the VD of the a VM),

However, Sancheti does not teach: wherein the virtual cloud asset is at rest.

Bansal in analogous art teaches (see Bansal: col.4:65 to col.5:5) taking snapshots of VMS, including the virtual disks associated with the VMs, at various states of the VM including when the VM is powered-off (i.e., at rest. Note: Per Applicant's disclosure ¶11, rest state is when the VM is powered off).

Before the effective filing date of the claimed invention, it would have been obvious to one of ordinary skill in the art to modify Sancheti to include taking snapshots of VMS, including the virtual disks associated with the VMs, at various states of the VM including when the VM is powered-off (i.e., at rest) as taught by Bansal with the motivation to ensure data lossless backups of VMs (Bansal: Abstract)

Sancheti et al combination further discloses: when activated, instantiated in the cloud computing environment; (Sancheti: ¶47-¶50)

accessing the view of the virtual disk based on the determined location; (Sancheti: Figs. 1A-1B, 2, 4, 6A-B, 7, ¶29-¶43, i.e., interface and APIs are provided to access and identify the virtual disks/LUNs and associated VMs, wherein, ¶93-¶97, i.e., APIs are provided to locate the VMs and associated disks and to take snapshots)

Snacheti discloses analyzing the snapshots (Snacheti: ¶77), however, Snacheti et al do not but in analogous art Derbeko (US 10536471 B1) teaches: analyzing the view of the protected virtual cloud asset to detect potential cyber threats risking the protected virtual cloud asset (Derbeko: Fig. 6, Abstract, col. 5:46 to col. 6:23, col. 7:25-41, i.e., detecting malware i.e., vulnerabilities, by analyzing the snapshots at various points in time), wherein the virtual cloud asset is inactive during the analysis; and (Derbeko: col. 4:35-54, i.e., analyzing the snapshot in isolation when VM is not running as well as analyzing the snapshot during VM runtime to detect malware causing changes to memory)

alerting detected potential cyber threats based on a determined priority. (Derbeko: col. 4:10-23, i.e., reporting the vulnerability to an operator if malware detected in the snapshot)

Before the effective filing date of the claimed invention, it would have been obvious to one of ordinary skill in the art to modify Snacheti to include analyzing snapshots for malware/vulnerabilities and to alert operators if any malware/vulnerabilities are found as taught by Derboko with the motivation to determine if anomalies exists in VMs (Derbeko: Abstract)

Claims 10 and 11 recite substantially the same features recited in claim 1 above and are rejected based on the aforementioned rationale discussed in the rejection.

As regards **claim 3**, Sancheti et al combination discloses the method of claim 1, wherein determining the location of the view of at least one virtual disk further comprises: determining a virtual disk allocated to the protected virtual cloud asset.
(Sancheti: Figs. 4, 6A-B, 7, ¶¶95-¶97)

Claim 13 recites substantially the same features recited in claim 3 above and is rejected based on the aforementioned rationale discussed in the rejection.

As regards **claim 4**, Sancheti et al combination discloses the method of claim 3, further comprising: querying a cloud management console of the cloud computing platform to determine the location of the view and the location of the virtual disk.
(Sancheti: Figs. 4, 6A-B, 7, ¶¶95-¶97)

Claim 14 recites substantially the same features recited in claim 4 above and is rejected based on the aforementioned rationale discussed in the rejection.

As regards **claim 5**, Sancheti et al combination discloses the method of claim 1, further comprising: requesting the cloud computing platform to create a new view of the protected virtual cloud asset, when an existing snapshot cannot be located.
(Sancheti: ¶24)

Claim 15 recites substantially the same features recited in claim 5 above and is rejected based on the aforementioned rationale discussed in the rejection.

As regards **claim 9**, Sancheti et al combination discloses the method of claim 1, wherein the protected virtual cloud asset includes any one of: a virtual machine, a software container, a micro-service. (Sancheti: Abstract, ¶6-¶7, ¶38)

Claim 19 recites substantially the same features recited in claim 9 above and is rejected based on the aforementioned rationale discussed in the rejection.

5. Claim(s) 2 and 12 is/are rejected under 35 U.S.C. 103 as being unpatentable over Sancheti in view of Bansal in view of Derbeko in view of US 20090007100 A1 (hereinafter 'Field').

As regards **claim 2**, Sancheti et al combination discloses the method of claim 1, further comprising: prioritizing each detection of potential cyber threats based on their respective risk to the protected virtual cloud asset; (Derbeko: col. 1:40-50, col.4:1-23, col.6:9-24, i.e., detecting threshold level of suspicious/malware of the snapshot)

Before the effective filing date of the claimed invention, it would have been obvious to one of ordinary skill in the art to modify Sancheti to include analyzing snapshots for malware/vulnerabilities and to alert operators if any malware/vulnerabilities are found as taught by Derboko with the motivation to determine if anomalies exist in VMs (Derboko: Abstract)

However, Sancheti et al do not but in analogous art, Field (US 20090007100 A1) teaches: mitigating a potential cyber threat posing a risk to the protected virtual cloud asset. (Field: Figs 3-4, ¶8, ¶34-¶37, i.e., inspecting snapshot of VM and associated disks for potential virus and taking remedial action)

Before the effective filing date of the claimed invention, it would have been obvious to one of ordinary skill in the art to modify Sancheti to include inspecting snapshot of VMs for potential malware and performing remedial actions as taught by Field with the motivation to perform remedial actions when an anomaly is found in VMs (Field: ¶8)

Claim 12 recites substantially the same features recited in claim 2 above and is rejected based on the aforementioned rationale discussed in the rejection.

6. **Claim(s) 6-8 and 16-18 is/are rejected under 35 U.S.C. 103 as being unpatentable over Sancheti in view of Bansal in view of Derbeko in view of US 20080263658 A1 (hereinafter 'Michael') in view of US 20140173723 A1 (hereinafter 'Singla').**

As regards **claim 6**, Sancheti et al combination discloses the method of claim 1. However, Sancheti et al do not but in analogous art, Michael (US 20080263658 A1) teaches: wherein analyzing the view of the protected virtual cloud asset further comprises: parsing a copy of the view; and (Michael: Fig. 4, ¶9, ¶43, i.e., snapshot image of the VM disks is rendered i.e., parsed for information to for scanning to detect vulnerabilities in the VM) scanning the parsed copy to detect the potential cyber threats, (Michael: Fig. 4, ¶9, ¶43-¶52, i.e., snapshot image of the VM disks is rendered i.e., parsed for information to for scanning to detect vulnerabilities in the VM)

Before the effective filing date of the claimed invention, it would have been obvious to one of ordinary skill in the art to modify Sancheti et al to include rendering a snapshot image

of a VM to scan the information to detect malware as taught by Michael with the motivation to discover potential malware in the image and to make appropriate remedies (Michael: ¶9-¶10)

However, Sancheti et al do not but in analogous art, Singla (US 20140173723 A1) teaches: wherein the potential cyber threats include known and unknown vulnerabilities, and wherein the detection is based on a type of vulnerability. (Singla: ¶24, i.e., detecting for known and unknown anomalies)

Before the effective filing date of the claimed invention, it would have been obvious to one of ordinary skill in the art to modify Sancheti et al to include detecting known and unknown anomalies by scanning data associated with a device as taught by Singla with the motivation to discover potential malware and to make appropriate remedies (Singla: ¶24)

Claim 16 recites substantially the same features recited in claim 6 above and is rejected based on the aforementioned rationale discussed in the rejection.

As regards **claim 7**, Sancheti et al combination discloses the method of claim 6, wherein scanning the parsed copy further comprises any one of: checking configuration files of each application, operating system, and system installed in the protected virtual cloud asset; (Michael: Fig. 3-4, ¶9, ¶43-¶52,

i.e., snapshot image of the VM disks is rendered i.e., parsed for information to for scanning to detect vulnerabilities in the VM) verifying access times to files by the operating system installed in the operating system; (Michael: Fig. 3-4, ¶9, ¶43-¶52, i.e., snapshot image of the VM disks is rendered i.e., parsed for information to for scanning to detect vulnerabilities in the VM) analyzing system logs to deduce what applications and modules executed in the protected virtual cloud asset; and (Michael: Fig. 3-4, ¶9, ¶43-¶52, i.e., snapshot image of the VM disks is rendered i.e., parsed for information to for scanning to detect vulnerabilities in the VM) analyzing machine memory stored in the view to deduce what applications and modules executed in the protected virtual cloud asset. (Michael: Fig. 3-4, ¶9, ¶43-¶52, i.e., snapshot image of the VM disks is rendered i.e., parsed for information to for scanning to detect vulnerabilities in the VM)

Before the effective filing date of the claimed invention, it would have been obvious to one of ordinary skill in the art to modify Sancheti et al to include rendering a snapshot image of a VM to scan the information to detect malware as taught by Michael with the motivation to discover potential malware in the image and to make appropriate remedies (Michael: ¶9-¶10)

Claim 17 recites substantially the same features recited in claim 7 above and is rejected based on the aforementioned rationale discussed in the rejection.

As regards **claim 8**, Sancheti et al combination discloses the method of claim 6, further comprising: instantiating an instance copy of the protected virtual cloud asset from the view; and (Michael: Fig. 3-5, ¶9, ¶54-¶59, reinstating and running a VM suing one of the scanned snapshot images of a VM) monitoring all activity performed by the instance of the protected virtual cloud asset. (Michael: Fig. 3-5, ¶9, ¶43-¶52, ¶54-¶59, monitoring the VM)

Before the effective filing date of the claimed invention, it would have been obvious to one of ordinary skill in the art to modify Sancheti et al to include rendering a snapshot image of a VM to scan the information to detect malware as taught by Michael with the motivation to discover potential malware in the image and to make appropriate remedies (Michael: ¶9-¶10)

Claim 18 recites substantially the same features recited in claim 8 above and is rejected based on the aforementioned rationale discussed in the rejection.

Conclusion

1. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SYED A ZAIDI whose telephone number is (571)270-5995. The examiner can normally be reached Monday-Thursday: 5:30AM-5:30PM.

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, Jeffrey Nickerson can be reached on (469) 295-9235. 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

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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.

/SYED A ZAIDI/
Primary Examiner, Art Unit 2432

<i>Notice of References Cited</i>	Application/Control No. 16/750,556		Applicant(s)/Patent Under Reexamination SHUA, Avi	
	Examiner SYED A ZAIDI		Art Unit 2432	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-20130262801-A1	10-2013	Sancheti; Ashwin Gautamchand	H04L67/1095	711/162
*	B	US-10339011-B1	07-2019	Bansal; Aaditya Rakesh	G06F16/2246	1/1
*	C	US-10536471-B1	01-2020	Derbeko; Philip	G06F21/53	1/1
*	D	US-20090007100-A1	01-2009	Field; Scott A.	G06F21/566	718/1
*	E	US-20080263658-A1	10-2008	Michael; Michael L.	G06F21/562	726/22
*	F	US-20140173723-A1	06-2014	Singla; Anurag	H04L63/1425	726/22
	G					
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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	NPL Search Terms (Year: 2022)
	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. 16/750,556	Applicant(s)/Patent Under Reexamination SHUA, Avi
	Examiner SYED A ZAIDI	Art Unit 2432

CPC - Searched*		
Symbol	Date	Examiner
H04L63/1433	07/16/2022	saz
G06F9/45558	07/16/2022	saz
G06F2009/45562	07/16/2022	saz
G06F2009/45591	07/16/2022	saz
G06F2201/84	07/16/2022	saz

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
H04L63/1433	07/16/2022	saz
G06F9/45558	07/16/2022	saz
G06F2009/45562	07/16/2022	saz
G06F2009/45591	07/16/2022	saz
G06F2201/84	07/16/2022	saz
Prior art/NPL searches; classification/CPC search using keywords; IDS search; Double patenting search - see attachments	07/16/2022	saz

/SYED A ZAIDI/ Primary Examiner, Art Unit 2432	
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<i>Search Notes</i> 	Application/Control No. 16/750,556	Applicant(s)/Patent Under Reexamination SHUA, Avi
	Examiner SYED A ZAIDI	Art Unit 2432

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

/SYED A ZAIDI/ Primary Examiner, Art Unit 2432	
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PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L36	15	"9286182"	(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); DERWENT)	NEAR	ON	ON	2022/07/15 01:52 PM
L37	3	"20120323853"	(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); DERWENT)	NEAR	ON	ON	2022/07/15 01:53 PM
L38	68	(L22 AND (analy\$4 WITH (snapshot OR scan\$4) WITH (malware OR vulnerabi\$4 OR attack OR virus))) AND (mitigat\$4 OR remed\$4)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DK, EA, EE, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, 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	2022/07/15 01:55 PM
L39	36	((snapshot OR (snapshot)) WITH virtual\$4 WITH (disk OR volume)) AND (analy\$4 WITH (snapshot OR scan\$4) WITH (malware OR vulnerabi\$4 OR attack OR virus))) AND	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DK, EA, EE, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL,	OR	ON	ON	2022/07/15 02:04 PM

L40	92	((((snapshot OR (snapshot)) WITH virtual\$4 WITH (disk OR volume)) AND ((detect\$4 OR analy\$4) WITH (snapshot OR scan\$4) WITH (malware OR vulnerabi\$4 OR attack OR virus OR anomal\$4))) AND (mitigat\$4 OR remed\$4))	NO, NZ, 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	2022/07/15 02:16 PM
L41	208	((known WITH unknown) WITH (threat OR vulnerabi\$4 OR anomal\$4) WITH detect\$4 WITH (scan\$4 OR analyz\$4))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DK, EA, EE, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, 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	2022/07/16 07:15 AM
L42	2949	((snapshot OR (snapshot) OR image) WITH (vm OR (virtual machine)) WITH (offline OR rest OR inactive OR power\$4))	(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); DERWENT)	NEAR	ON	ON	2022/07/16 07:15 AM
L43	1	L42 AND L41	(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,	NEAR	ON	ON	2022/07/16 07:15 AM

L44	62709	((snapshot OR (snapshot) OR image) WITH (vm OR (virtual machine)))	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); DERWENT) (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); DERWENT)	NEAR	ON	ON	2022/07/16 07:16 AM
L45	2949	L44 AND L42	(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); DERWENT)	NEAR	ON	ON	2022/07/16 07:16 AM
L46	1	L45 AND L41	(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); DERWENT)	NEAR	ON	ON	2022/07/16 07:16 AM
L47	118	((vulnerabi\$4 OR malware OR virus) WITH (vm OR (virtual machine))) AND (analy\$4 WITH snapshot WITH (malware OR vulnerabi\$4))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DK, EA, EE, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2022/07/16 08:33 AM

L48	6753	((vulnerabi\$4 OR malware OR virus) WITH (vm OR (virtual machine)))) AND (H04L63/1433 OR G06F9/45558 OR G06F2009/45562 OR G06F2009/45591 OR G06F2201/84).cpc.	MA, MC, MD, MY, NL, NO, NZ, 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	2022/07/16 08:36 AM
L49	133427	(H04L63/1433 OR G06F9/45558 OR G06F2009/45562 OR G06F2009/45591 OR G06F2201/84).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DK, EA, EE, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, 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	2022/07/16 08:36 AM
L50	1138	L42 AND L49	(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); DERWENT)	NEAR	ON	ON	2022/07/16 08:36 AM
L51	13396835	@rlad<="20200123"	(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,	NEAR	ON	ON	2022/07/16 08:36 AM

L52	472	L51 AND L50	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); DERWENT)	NEAR	ON	ON	2022/07/16 08:37 AM
L53	9	((("SHUA") near3 ("Avi"))).INV.	(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); DERWENT)	OR	ON	ON	2022/07/16 08:41 AM
L54	0	((("ORCA") near3 ("SECURITY") near3 ("LTD"))).AS,AANM.	(USPAT)	OR	ON	ON	2022/07/16 08:41 AM
L55	14	L53 OR L54	(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); DERWENT)	NEAR	ON	ON	2022/07/16 08:41 AM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

Doc code: IDS

PTO/SB/08a (02-18)

Doc description: Information Disclosure Statement (IDS) Filed

Approved for use through 11/30/2020. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)

Application Number

Filing Date

First Named Inventor

Avi SHUA

Art Unit

Examiner Name

Attorney Docket Number

ORCA P1558

U.S.PATENTS

Remove

Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	10412109	B2	2019-09-10	Loureiro et al.	Entire Document
	2	9177145	B2	2015-11-03	Todorović	Entire Document
	3	9519781	B2	2016-12-13	Golshan et al.	Entire Document
	4	9563777	B2	2017-02-07	Deng et al.	Entire Document
	5	9798885	B2	2017-10-24	Deng et al.	Entire Document

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U.S.PATENT APPLICATION PUBLICATIONS

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Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20070266433	A1	2007-11-15	Moore	Entire Document

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.A.Z/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)

Application Number		
Filing Date		
First Named Inventor	Avi SHUA	
Art Unit		
Examiner Name		
Attorney Docket Number	ORCA P1558	

2	20140137190	A1	2014-05-15	Carey et al.	Entire Document
3	20150052520	A1	2015-02-19	Crowell et al.	Entire Document
4	20170011138	A1	2017-01-12	Venkatesh et al.	Entire Document
5	20180255080	A1	2018-09-06	Paine	Entire Document
6	20180293374	A1	2018-10-11	Chen	Entire Document

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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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number		
Filing Date		
First Named Inventor	Avi SHUA	
Art Unit		
Examiner Name		
Attorney Docket Number	ORCA P1558	

EXAMINER SIGNATURE

Examiner Signature	/SYED A ZAIDI/	Date Considered	07/16/2022
--------------------	----------------	-----------------	------------

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)

Application Number		
Filing Date		
First Named Inventor	Avi SHUA	
Art Unit		
Examiner Name		
Attorney Docket Number	ORCA P1558	

CERTIFICATION STATEMENT

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

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

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

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

☒ A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Michael Ben-Shimon/	Date (YYYY-MM-DD)	2020-01-23
Name/Print	Michael Ben-Shimon	Registration Number	69610

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

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

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

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
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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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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.

Bibliographic Data

Application No: 16/750,556

Foreign Priority claimed: ☐ Yes ☒ No

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

Verified and Acknowledged:

/SYED A ZAIDI/

Examiner's Signature

Initials

Title:

TECHNIQUES FOR SECURING VIRTUAL CLOUD ASSETS AT
REST AGAINST CYBER THREATS

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
01/23/2020	726	2432	15635.0002-00000
RULE			

APPLICANTS

Orca Security LTD., Tel Aviv, ISRAEL

INVENTORS

Avi SHUA, Tel Aviv, ISRAEL

CONTINUING DATA

This application has PRO of 62797718 01/28/2019

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

03/18/2020

**** SMALL ENTITY ****

STATE OR COUNTRY

ISRAEL

ADDRESS

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER

LLP

901 NEW YORK AVENUE, NW

WASHINGTON, DC 20001-4413

UNITED STATES

FILING FEE RECEIVED

\$785

INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				Complete if Known	
				Application Number	16/750,556
				Filing Date	January 23, 2020
				First Named Inventor	Avi SHUA
				Group Art Unit	2432
				Examiner Name	Zaidi, Syed A
Sheet	1	of	1	Attorney Docket Number	15635.0002-00000

U.S. PATENTS					
Examiner Initials [*]	Cite No. ¹	Document Number	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
		Number-Kind Code ² (if known)			
		US-10,339,011 B1	07-2019	Bansal, Aaditya Rakesh	
		US-10,536,471 B1	01-2020	Derbeko, Philip	
		US-10,552,610 B1	02-2020	Vashisht, Sai Omkar	

U.S. PUBLISHED PATENT APPLICATIONS					
Examiner Initials [*]	Cite No. ³	Document Number	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
		Number-Kind Code ⁴ (if known)			
		US-2013/0262801 A1	10-1013	Sancheti, Ashwin Gautamchand	
		US-2008/0263658 A1	10-2008	Michael, Michael L.	
		US-2010/0070726 A1	03-2010	Ngo, David	

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	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
		Country Code ⁵ Number ⁶ Kind Code ⁷ (if known)				

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
		U.S. Patent and Trademark Office, Final Office Action, dated March 14, 2022, 24 pp. for U.S. 17/400,364 (filing date August 12, 2021) (Our Ref. 15635.0002-01000)	
		U.S. Patent and Trademark Office, Non-final Office Action, dated December 3, 2021, 26 pp. for U.S. 17/400,364 (filing date August 12, 2021) (Our Ref. 15635.0002-01000)	

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.

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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.**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	)	
Avi SHUA	)	Group Art Unit: 2432
	)	
Application No.: 16/750,556	)	Examiner: Zaidi, Syed A
	)	
Filed: January 23, 2020	)	Confirmation No.: 1071
	)	
For: TECHNIQUES FOR SECURING	)	Filed Via EFS-Web
VIRTUAL CLOUD ASSETS AT	)	
REST AGAINST CYBER THREATS	)	

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

Dear Commissioner:

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 documents on the attached listing. This Information Disclosure Statement is accompanied by a fee of \$180.00 as specified under § 1.17(p). 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.

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.

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 9, 2022

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



UNITED STATES
PATENT AND TRADEMARK OFFICE

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

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #
16/750,556

RECEIPT DATE / TIME
08/09/2022 05:10:24 PM ET

ATTORNEY DOCKET #
15635.0002-00000

Title of Invention

TECHNIQUES FOR SECURING VIRTUAL CLOUD ASSETS AT REST AGAINST CYBER THREATS

Application Information

APPLICATION TYPE Utility - Nonprovisional Application
under 35 USC 111(a)

PATENT # -

CONFIRMATION # 1071

FILED BY Wanda Whittington

PATENT CENTER # 60857533

FILING DATE 01/23/2020

CUSTOMER # 22852

FIRST NAMED
INVENTOR Avi SHUA

CORRESPONDENCE
ADDRESS -

AUTHORIZED BY Christopher Johns

Documents

TOTAL DOCUMENTS: 5

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
15635-0002-00000Parent Non-Final Rejection-7-21- 2022.pdf	24	Non Patent Literature	1954 KB
15635-0002-00SB08-8-9- 2022.pdf	2	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.			
15635-0002- 00IDSTRANSMITTAL8-9- 2022.pdf	2	Transmittal Letter	23 KB

15635-0002-01000 Examiner Refs. Non-Final Rejection-12- 3-2021.pdf	26	Non Patent Literature	2319 KB
15635-0002-01000 Examiner Refs. Final Rejection-3-14- 2022.pdf	24	Non Patent Literature	1849 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
15635-0002-00000Parent Non- Final Rejection-7-21-2022.pdf	313C7EA7FB7171BF8E1E5AF9DFDA7623B674EE2688E4C2697 4E9DB5129CED134021C324F68EBD5E787B93695B416869F0B 6E9CC0BDC44CB61283C69FCFFFD0A6
15635-0002-00SB08-8-9- 2022.pdf	03F65169E2C96EA08CF0C1D612E33B371AFE11C92650A0BA8 43F9956F3396AE51F8DCC3A07C3953307A8ABE73DBB896B8B 144E87AAEE456DB7D604BED2FE98FA
15635-0002- 00IDSTRANSMITTAL8-9- 2022.pdf	FCC6876933F20B0FD5A0A291183785A65D153995821B53BEB9 CEB63FD548C393ACBF4B0C05B4FE02D7AB0E975B17977D3E 2AB9A872C47ADA15008133E182D879
15635-0002-01000 Examiner Refs. Non-Final Rejection-12-3- 2021.pdf	552E2EAF65821998D1468413EE7C540392DFE48FCFC4911DB E3C65042A871AB2C019A12923DF6E4C8A1A25FC11CFE53A16 349A397B68C97D0CFE2DC0AAE41E3A
15635-0002-01000 Examiner Refs. Final Rejection-3-14- 2022.pdf	2AB5BD7BFE336663FBBDF2CC4A848ACE2820290AB483139E4 124EDDB39239DBD1D944E620EBB412D9716F03077403C2374 B8A138F57541B5354E80F369DC7432

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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

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



ELECTRONIC PAYMENT RECEIPT

APPLICATION #
16/750,556

RECEIPT DATE / TIME
08/09/2022 05:10:24 PM ET

ATTORNEY DOCKET #
15635.0002-00000

Title of Invention

TECHNIQUES FOR SECURING VIRTUAL CLOUD ASSETS AT REST AGAINST CYBER THREATS

Application Information

APPLICATION TYPE Utility - Nonprovisional Application
under 35 USC 111(a)

PATENT # -

CONFIRMATION # 1071

FILED BY Wanda Whittington

PATENT CENTER # 60857533

AUTHORIZED BY Christopher Johns

CUSTOMER # 22852

FILING DATE 01/23/2020

CORRESPONDENCE
ADDRESS -

FIRST NAMED
INVENTOR Avi SHUA

Payment Information

PAYMENT METHOD
CARD / 1007

PAYMENT TRANSACTION ID
E202289H11440937

PAYMENT AUTHORIZED BY
Wanda Whittington

FEE CODE	DESCRIPTION	ITEM PRICE(\$)	QUANTITY	ITEM TOTAL(\$)
2806	SUBMISSION OF AN INFORMATION DISCLOSURE STATEMENT	130.00	1	130.00
TOTAL AMOUNT:				\$130.00

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/750,556	01/23/2020	Avi SHUA	15635.0002-00000	1071
22852	7590	01/30/2023		
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413			EXAMINER ZAIDI, SYED A	
			ART UNIT	PAPER NUMBER
			2432	
			NOTIFICATION DATE	DELIVERY MODE
			01/30/2023	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

Notice of Abandonment	Application No.	Applicant(s)
	16/750,556	SHUA, Avi
	Examiner	Art Unit
	SYED A ZAIDI	2432

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

This application is abandoned in view of:

1. ☒ Applicant's failure to timely file a proper reply to the Office letter mailed on 21 July 2022.
 - (a) ☐ A reply was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply (including a total extension of time of _____ month(s)) which expired on _____.
 - (b) ☐ A proposed reply was received on _____, but it does not constitute a proper reply under 37 CFR 1.113 to the final rejection. (A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) if this is utility or plant application, a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. Note that RCEs are not permitted in design applications.)
 - (c) ☐ A reply was received on _____ but it does not constitute a proper reply, or a *bona fide* attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 8 below).
 - (d) ☒ No reply has been received.
2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
 - (a) ☐ The issue fee and publication fee, if applicable, was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
 - (b) ☐ The submitted fee of \$ _____ is insufficient. A balance of \$ _____ is due.
The issue fee required by 37CFR 1.18 is \$ _____. The publication fee, if required by 37 CFR 1.18(d), is \$ _____.
 - (c) ☐ The issue fee and publication fee, if applicable, has not been received.
3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
 - (a) ☐ Proposed corrected drawings were received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply.
 - (b) ☐ No corrected drawings have been received.
4. ☐ The letter of express abandonment which is signed by the attorney or agent of record or other party authorized under 37 CFR 1.33 (b). See 37 CFR 1.138(b).
5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34) upon the filing of a continuing application.
6. ☐ The decision by the Patent Trial and Appeal Board rendered on _____ and because the period for seeking court review of the decision has expired and there are no allowed claims.
7. ☐ The dismissal of the appeal in an application having no allowed claims. (When an appeal is dismissed in an application having no allowed claims the application stands abandoned. See MPEP 1215.04 subsections I-V for an explanation of the reasons why an appeal is dismissed.)
8. ☐ The reason(s) below:

/SYED A ZAIDI/
Primary Examiner, Art Unit 2432

Petitions to revive under 37 CFR 1.137, or requests to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.