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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/819,442	08/12/2022	Shai KEREN	WZIO P1839C1	7330
122066	7590	08/08/2023	EXAMINER	
M&B IP Analysts, LLC			WANG, LIANG CHE A	
150 Morristown Road			ART UNIT	PAPER NUMBER
Suite 205			2447	
Bernardsville, NJ 07924-2626			NOTIFICATION DATE	DELIVERY MODE
			08/08/2023	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):

eofficeaction@appcoll.com
pair@mb-ip.com



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APPLICATION NO.	ISSUE DATE	PATENT NO.
17/819,442	08-Aug-2023	11722554

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

EGRANT NOTIFICATION

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

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



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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/819,442	08/08/2023	11722554	WZIO P1839C1	7330

122066 7590 07/19/2023

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

ISSUE NOTIFICATION

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

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

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

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

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

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

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional inventors):

Shai KEREN, Tel Aviv, ISRAEL;
Danny SHEMESH, Tel Aviv, ISRAEL;
Roy REZNIK, Tel Aviv, ISRAEL;
Ami LUTTWAK, Binyamina, ISRAEL;
Avihai BERKOVITZ, Tel Aviv, ISRAEL;

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

Wiz, Inc., Palo Alto, CA;

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

PART B - FEE(S) TRANSMITTAL

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

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

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

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

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

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

122066 7590 03/21/2023
M&B IP Analysts, LLC
150 Morristown Road
Suite 205
Bernardsville, NJ 07924-2626

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/819,442	08/12/2022	Shai KEREN	WZIO P1839C1	7330

TITLE OF INVENTION: SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	06/21/2023

EXAMINER	ART UNIT	CLASS-SUBCLASS
WANG, LIANG CHE A	2447	709-223000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

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

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 M&B IP Analysts, LLC

2

3

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

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

WIZ, INC.

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

NEW YORK, NEW YORK, UNITED STATES OF AMERICA

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies

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

☒ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 506438

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

☐ Applicant certifying micro entity status. See 37 CFR 1.29☐ Applicant asserting small entity status. See 37 CFR 1.27☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

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

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

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

Authorized Signature /Michael Ben-Shimon/

Date 06/19/2023

Typed or printed name Michael Ben-Shimon

Registration No. 69610



ELECTRONIC PAYMENT RECEIPT

APPLICATION #
17/819,442

RECEIPT DATE / TIME
06/19/2023 03:40:05 PM ET

ATTORNEY DOCKET #
WZIO P1839C1

Title of Invention

SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT

Application Information

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

PATENT # -

CONFIRMATION # 7330

FILED BY Alyce Kavanaugh

PATENT CENTER # 62293330

AUTHORIZED BY Michael Ben-Shimon

CUSTOMER # 122066

FILING DATE 08/12/2022

CORRESPONDENCE
ADDRESS -

FIRST NAMED
INVENTOR Shai KEREN

Payment Information

PAYMENT METHOD
CARD / 8738

PAYMENT TRANSACTION ID
E202361F40446739

PAYMENT AUTHORIZED BY
Alyce Kavanaugh

FEE CODE	DESCRIPTION	ITEM PRICE(\$)	QUANTITY	ITEM TOTAL(\$)
1501	UTILITY ISSUE FEE	1200.00	1	1200.00
TOTAL AMOUNT:				\$1,200.00

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

New Applications Under 35 U.S.C. 111

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

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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



ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #
17/819,442

RECEIPT DATE / TIME
06/19/2023 03:40:05 PM ET

ATTORNEY DOCKET #
WZIO P1839C1

Title of Invention

SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT

Application Information

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

PATENT # -

CONFIRMATION # 7330

FILED BY Alyce Kavanaugh

PATENT CENTER # 62293330

FILING DATE 08/12/2022

CUSTOMER # 122066

FIRST NAMED INVENTOR Shai KEREN

CORRESPONDENCE ADDRESS -

AUTHORIZED BY Michael Ben-Shimon

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
WZIO_P1839C1_part_b_fees_20230619.pdf	1	Issue Fee Payment (PTO-85B)	175 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
WZIO_P1839C1_part_b_fees_20230619.pdf	DD0E12E5E1F9DC7BC0F27B4C6BF239DB2853E21648AA45B0A2AECBDEF8DE018809531B53E1187B4C4D8AAFA409E2398D70D25CF6123CE569157C2F5B03569242

by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

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NOTICE OF ALLOWANCE AND FEE(S) DUE

122066 7590 03/21/2023
M&B IP Analysts, LLC
150 Morristown Road
Suite 205
Bernardsville, NJ 07924-2626

EXAMINER	
WANG, LIANG CHE A	
ART UNIT	PAPER NUMBER

2447

DATE MAILED: 03/21/2023

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/819,442	08/12/2022	Shai KEREN	WZIO P1839C1	7330

TITLE OF INVENTION: SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	06/21/2023

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

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

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

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

For purposes of this notice, small entity fees are 40% the amount of undiscounted fees, and micro entity fees are 20% the amount of undiscounted fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

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

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

PART B - FEE(S) TRANSMITTAL

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

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

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

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122066 7590 03/21/2023
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150 Morristown Road
Suite 205
Bernardsville, NJ 07924-2626

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/819,442	08/12/2022	Shai KEREN	WZIO P1839C1	7330

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nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	06/21/2023

EXAMINER	ART UNIT	CLASS-SUBCLASS
WANG, LIANG CHE A	2447	709-223000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

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

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

1 _____

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

2 _____

3 _____

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

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

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

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

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

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

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

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

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

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

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

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/819,442	08/12/2022	Shai KEREN	WZIO P1839C1	7330
122066	7590	03/21/2023	EXAMINER	
M&B IP Analysts, LLC 150 Morristown Road Suite 205 Bernardsville, NJ 07924-2626			WANG, LIANG CHE A	
			ART UNIT	PAPER NUMBER
			2447	
DATE MAILED: 03/21/2023				

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

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

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

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

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

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

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

Privacy Act Statement

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

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

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

Notice of Allowability	Application No. 17/819,442	Applicant(s) KEREN et al.	
	Examiner LIANGCHE A WANG	Art Unit 2447	AIA (FITF) Status Yes

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

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

1. ☒ This communication is responsive to application filed on 8/12/2022.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

3. ☒ The allowed claim(s) is/are 1-21. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

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

Certified copies:

a) ☐ All b) ☐ Some* c) ☐ None of the:

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

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

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

* Certified copies not received: _____.

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

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

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

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

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)	5. ☒ Examiner's Amendment/Comment
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date <u>20220812</u> .	6. ☒ Examiner's Statement of Reasons for Allowance
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.	7. ☐ Other _____.
4. ☒ Interview Summary (PTO-413), Paper No./Mail Date. <u>20230313</u> .	

/LIANG CHE A WANG/ Primary Examiner, Art Unit 2447	
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Notice of Pre-AIA or AIA Status

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

EXAMINER'S AMENDMENT

1. Claims 1-21 are allowed.
2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
3. Authorization for this examiner's amendment was given in a telephone interview with MICHAEL BEN-SHIMON (Reg. No. 69,610) on 3/8/23.
4. The application has been amended as follow:

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

1. (Currently Amended) A method for determining abnormal configuration of network objects deployed in a cloud computing environment, comprising:
 - collecting network object data on a plurality of network objects deployed in the cloud computing environment;
 - constructing a network graph based on the collected network object data, wherein the network graph includes a visual representation of network objects identified in the cloud computing environment;
 - determining relationships between the identified network objects in the network graph, wherein the determined relationships between the identified network objects includes descriptions of connections between the identified network objects; and

analyzing the network graph and the determined relationships to generate insights, wherein the generated insights include at least a list of abnormal connections between the identified network objects; and

tagging network objects in the network graph for which the insight is generated.

2. (Original) The method of claim 1, wherein the cloud computing environment includes a plurality of different cloud computing platforms.

3. (Currently Amended) The method of claim 2, wherein collecting network object data further comprises:

connecting through an application programming interface (API) each of the plurality of different cloud computing platforms to collect network object data of network objects deployed in the respective cloud computing platform.

4. (Currently Amended) The method of claim 1, wherein generating insights to include at least the list of abnormal connections further comprises:

detecting any one of: a rare network configuration, a novel network configuration, a rare network event, a novel network event, a connection of a new device to a network, an unauthorized connection, a re-connection of a user device to a subnet which the user is not permitted to access, a connection ~~which displays~~ demonstrating anomalous behavior or misconfiguration, and a connection ~~displaying~~ demonstrating spikes of network activity.

5. (Original) The method of claim 4, further comprising:
determining impermissible relationships between the network objects.

6. (Original) The method of claim 1, wherein determining relationships between the identified objects further comprises:

determining the relationships using a static analytic method.

7. (Original) The method of claim 1, wherein determining the relationships between the identified network objects in further comprises:

determining the relationships using at least one of: observational methods, and active logging methods.

8. (Original) The method of claim 1, further comprising:

adding visual representations of the determined relationships to the visual representations of the network graph.

9. (Original) The method of claim 1, wherein each of the plurality of network objects includes any one of: a virtual network, a firewall, a network interface card, a proxy, a gateway, a software container, container, a management object, a virtual machine, a subnet, a hub, a virtual private network (VPN).

10. (Original) The method of claim 1, wherein a generated insight of the generated insights is generated utilizing natural language representation.

11. (Currently Amended) A non-transitory computer readable medium having stored thereon instructions for causing a processing circuitry to execute a process for determining abnormal configuration of network objects deployed in a cloud computing environment, the process comprising:

collecting network object data on a plurality of network objects deployed in the cloud computing environment;

constructing a network graph based on the collected network object data, wherein the network graph includes a visual representation of network objects identified in the cloud computing environment;

determining relationships between the identified network objects in the network graph, wherein the determined relationships between the identified network objects includes descriptions of connections between the identified network objects; and

analyzing the network graph and the determined relationships to generate insights, wherein the generated insights include at least a list of abnormal connections between the identified network objects; and

tagging network objects in the network graph for which the insight is generated.

12. (Currently Amended) A system for determining abnormal configuration of network objects deployed in a cloud computing environment, comprising:

a processing circuitry; and

a memory, the memory containing instructions that, when executed by the processing circuitry, configure the system to:

collect network object data on a plurality of network objects deployed in the cloud computing environment;

construct a network graph based on the collected network object data, wherein the network graph includes a visual representation of network objects identified in the cloud computing environment;

determine relationships between the identified network objects in the network graph, wherein the determined relationships between the identified network objects includes descriptions of connections between the identified network objects; ~~and~~

analyze the network graph and the determined relationships to generate insights, wherein the generated insights include at least a list of abnormal connections between the identified network objects; and

tagging network objects in the network graph for which the insight is generated.

13. (Original) The system of claim 12, wherein the cloud computing environment includes a plurality of different cloud computing platforms.

14. (Original) The system of claim 13, wherein the system is further configured to:
connect through an application programming interface (API) each of the plurality of different cloud computing platforms to collect network object data of network objects deployed in the respective cloud computing platform.

15. (Currently Amended) The system of claim 12, wherein the system is further configured to:

detect any one of: a rare network configuration, a novel network configuration, a rare network event, a novel network event, a connection of a new device to a network, an unauthorized connection, a re-connection of a user device to a subnet which the user is not permitted to access, a connection ~~which displays~~ demonstrating anomalous behavior or misconfiguration, and a connection ~~displaying~~ demonstrating spikes of network activity.

16. (Original) The system of claim 12, wherein the system is further configured to: determine impermissible relationships between the network objects.

17. (Original) The system of claim 12, wherein the system is further configured to: determine the relationships using a static analytic method.

18. (Original) The system of claim 12, wherein the system is further configured to: determine the relationships using at least one of: observational methods, and active logging methods.

19. (Original) The system of claim 12, wherein the system is further configured to: adding visual representations of the determined relationships to the visual representations of the network graph.

20. (Original) The system of claim 12, wherein each of the plurality of network objects includes any one of: a virtual network, a firewall, a network interface card, a proxy, a gateway, a software container, container, a management object, a virtual machine, a subnet, a hub, a virtual private network (VPN).

21. (Original) The system of claim 12, wherein a generated insight of the generated insights is generated utilizing natural language representation.

Reason for allowance

5. The following is an examiner's statement of reasons for allowance: the prior art of record does not teach or suggest, determining relationships between the identified network objects in the network graph, wherein the determined relationships between the identified network objects includes descriptions of connections between the identified network objects, analyzing the network graph and the determined relationships to generate insights, wherein the generated insights include at least a list of abnormal connections between the identified network objects, and tagging network objects in the network graph for which the insight is generated in light of other features described in independent claims 1, 11 and 12.
6. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LIANGCHE A WANG whose telephone number is (571)272-3992. The examiner can normally be reached M-F 10:00am to 6:30pm.
8. 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>.

9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joon H Hwang can be reached on 571-272-4036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.
10. Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: <https://patentcenter.uspto.gov>. Visit <https://www.uspto.gov/patents/apply/patent-center> for more information about Patent Center and <https://www.uspto.gov/patents/docx> for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Liang-che Alex Wang
March 13, 2023

/LIANG CHE A WANG/
Primary Examiner, Art Unit 2447

<i>Examiner-Initiated Interview Summary</i>	Application No. 17/819,442	Applicant(s) KEREN et al.		
	Examiner LIANGCHE A WANG	Art Unit 2447	AIA (First Inventor to File) Status Yes	Page 1 of 1

All Participants (applicant, applicants representative, PTO personnel)	Title	Type
LIANGCHE A WANG	Primary Examiner	Telephonic
MICHAEL BEN-SHIMON (Reg. No. 69,61	Attorney of Record	

Date of Interview: 08 March 2023

Issues Discussed:

Proposed Amendment(s)

The examiner and the applicant discussed the invention and the parent patents. The examiner suggests to incorporate "tagging network objects in the network graph for which the insight is generated" in the claims 1, 11, and 12, and a terminal disclaimer over the parent patent to place the application in condition for allowance. The applicant agrees.

/LIANG CHE A WANG/ Primary Examiner, Art Unit 2447	
Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04 Please further see: MPEP 713.04 Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b) 37 CFR § 1.2 Business to be transacted in writing	

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

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

Notice of References Cited	Application/Control No. 17/819,442		Applicant(s)/Patent Under Reexamination KEREN et al.	
	Examiner LIANGCHE A WANG		Art Unit 2447	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-20190095530-A1	03-2019	Booker; Austin Avery	G06F16/9024	1/1
*	B	US-20200374343-A1	11-2020	Novotny; Petr	G06F16/9024	1/1
*	C	US-7392539-B2	06-2008	Brooks; Patrick J.	H04L63/0263	709/224
*	D	US-20140157417-A1	06-2014	Grubel; Brian Christopher	H04L63/20	726/25
*	E	US-20180024981-A1	01-2018	Xia; Huang	G06F40/18	715/215
*	F	US-10924347-B1	02-2021	Narsian; Anish Sagar	H04L47/12	1/1
*	G	US-20200382539-A1	12-2020	Janakiraman; Ramsundar	H04L63/0428	1/1
*	H	US-20160359872-A1	12-2016	Yadav; Navindra	H04L63/1425	1/1
*	I	US-20170075981-A1	03-2017	Carlsson; Gunnar	H04L41/0826	1/1
*	J	US-20160373944-A1	12-2016	Jain; Anuj	H04L43/08	1/1
*	K	US-20160048556-A1	02-2016	Kelly; John W.	G06Q10/10	707/767
*	L	US-10171300-B2	01-2019	Eggen; Bertus	H04L41/0896	1/1
*	M	US-20200322227-A1	10-2020	Janakiraman; Ramsundar	H04L41/147	1/1

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

<i>Search Notes</i> 	Application/Control No. 17/819,442	Applicant(s)/Patent Under Reexamination KEREN et al.
	Examiner LIANGCHE A WANG	Art Unit 2447

CPC - Searched*		
Symbol	Date	Examiner
H04L67/10, H04L41/046, H04L41/5096, H04L49/70, H04L63/1433	03/13/2023	LW

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
709	201,204,205,217,218,219,223,224	03/13/2023	LW

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

Search Notes		
Search Notes	Date	Examiner
PE2E text search: USPAT, US PUB, EPO, JPO, DERWENT	03/13/2023	LW
NPL search: Google	03/13/2023	LW

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
709	201,204,205,217,218,219,224	03/13/2023	LW
H04L	41/046, 41/5096, 49/70, 63/1433	03/13/2023	LW

/LIANG CHE A WANG/ Primary Examiner, Art Unit 2447	
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Issue Classification 	Application/Control No. 17/819,442	Applicant(s)/Patent Under Reexamination KEREN et al.
	Examiner LIANGCHE A WANG	Art Unit 2447

CPC						
Symbol					Type	Version
H04L	/	67	/	10	F	2013-01-01
H04L	/	49	/	70	I	2013-01-01
H04L	/	63	/	1433	I	2013-01-01
H04L	/	41	/	5096	I	2013-01-01
H04L	/	41	/	046	I	2013-01-01

CPC Combination Sets					
Symbol				Type	Version
	/		/		

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	21	
/LIANG CHE A WANG/ Primary Examiner, Art Unit 2447	13 March 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

Issue Classification 	Application/Control No. 17/819,442	Applicant(s)/Patent Under Reexamination KEREN et al.
	Examiner LIANGCHE A WANG	Art Unit 2447

INTERNATIONAL CLASSIFICATION			
CLAIMED			
G06F	/	15	/ 173
NON-CLAIMED			
	/		/

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS
709	223

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					
709	201	204	207	217	218	219
709	224					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	21	
/LIANG CHE A WANG/ Primary Examiner, Art Unit 2447	13 March 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

Issue Classification 	Application/Control No. 17/819,442	Applicant(s)/Patent Under Reexamination KEREN et al.
	Examiner LIANGCHE A WANG	Art Unit 2447

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47															
CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		10		19										
	2		11		20										
	3		12		21										
	4		13												
	5		14												
	6		15												
	7		16												
	8		17												
	9		18												

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 21	
/LIANG CHE A WANG/ Primary Examiner, Art Unit 2447 (Primary Examiner) _____ (Date) 13 March 2023		O.G. Print Claim(s) 1	O.G. Print Figure 2

Bibliographic Data

Application No: 17/819,442

Foreign Priority claimed: ☐ Yes ☒ No

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

Verified and Acknowledged: /LIANG CHE A WANG/

Examiner's Signature

Initials

Title:

SYSTEM AND METHOD FOR ANALYZING NETWORK
OBJECTS IN A CLOUD ENVIRONMENT

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
08/12/2022	709	2447	WZIO P1839C1
RULE			

APPLICANTS

Wiz, Inc., Palo Alto, CA, UNITED STATES

INVENTORS

Shai KEREN, Tel Aviv, ISRAEL

Danny SHEMESH, Tel Aviv, ISRAEL

Roy REZNIK, Tel Aviv, ISRAEL

Ami LUTTWAK, Binyamina, ISRAEL

Avihai BERKOVITZ, Tel Aviv, ISRAEL

CONTINUING DATA

This application is a CON of 17109883 12/02/2020 PAT 11431786

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

08/25/2022

**** SMALL ENTITY ****

STATE OR COUNTRY

ISRAEL

ADDRESS

M&B IP Analysts, LLC

150 Morristown Road

Suite 205

Bernardsville, NJ 07924-2626

UNITED STATES

FILING FEE RECEIVED

\$880

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L501	11	firewall with gateway with interface adj card with proxy with VPN	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
L502	5	firewall with gateway with interface adj card with proxy with VPN with container	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
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L505	158775	709/201,204,205,217,2 18,219,223,224.ccls.	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
L506	255585	L160 L161	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
L508	179	network adj graph and cloud adj platform	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
L509	68	L163 and L160	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
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L511	4	"20180024981"	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
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L514	0	L166 and cloud with graph	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
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L520	1073	network adj (element node device) with visualization	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
L521	1161	network adj (element node device object) with visualization	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
L522	44	network adj (element node device object) with visualization with relationship	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
L523	42	L177 and @ad<"20201211"	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
L524	70	network adj (element node device object) with visualization and relationship and insight and tag\$5	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
L525	0	L179 and firewall with gateway with container	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
L526	0	network adj (element node device object) with visualization and relationship with insight with tag\$5	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
L527	64	L179 and @ad<"20201211"	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
L528	40	L182 and cloud	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
L529	0	network adj (element node device object) with visualization and relationship and insight with tag\$5	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
L530	0	L183 and firewall with VPN	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
L531	0	L183 and firewall with virtual adj network	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
L532	7	L182 and firewall with	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM

L533	0	virtual adj network L187 and cloud	EPO; JPO; DERWENT; IBM_TDB) (US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	12:13 PM 2023/01/12 12:13 PM
L534	29	L183 and firewall	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
L535	8	network adj (element node device object) with visualization and relationship and insight and tag\$5 with node and cloud	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:13 PM
L536	11	network adj (element node device object) with visualization and relationship and insight and tag\$5 with network adj (element node device object) and cloud	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L537	7	L190 and @ad<"20201211"	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L538	389	visualization with cloud adj platform	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L539	3	visualization with cloud adj platform with tag\$6	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L540	2	L194 and @ad<"20201211"	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L541	477	cloud adj platform with visuali\$7	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L542	3	cloud adj platform with visuali\$7 with tag\$6	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L543	2	L197 and @ad<"20201211"	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L544	3	cloud adj platform with network adj graph	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L545	1	L199 and @ad<"20201211"	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L546	179	cloud adj platform and network adj graph	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L547	4	cloud adj platform and	(US-PGPUB; USPAT;	OR	ON	ON	2023/01/12

		network adj graph with network adj (element node device)	EPO; JPO; DERWENT; IBM_TDB)				12:14 PM
L548	4	L202 and @ad<"20201211"	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L549	4	"10171300".pn.	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L550	2	L204 and cloud	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L551	1	L204 and firewall	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L552	0	L204 and VPN	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L553	2	"20200374343"	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L554	1	L208 and relation\$6	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L555	2	L208 and platform	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L556	0	L208 and tag	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L557	0	L208 and "20180024981"	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L558	6	L208 "20180024981"	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L559	4	L213 and search	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L560	2	L213 and tag	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L561	4	L213 and statistic\$6	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L562	1	L208 and cloud and graph	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L563	74	network adj graph with network adj devices	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L564	72	L218 and	(US-PGPUB; USPAT;	OR	ON	ON	2023/01/12

L565	0	@ad<"20201211"	EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	12:14 PM
		network adj graph with network adj devices with visualization	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)				2023/01/12 12:14 PM
L566	8	network adj graph with network adj devices and visualization	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L567	0	L221 and cloud	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L568	3	"20130132501"	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L569	2	"20200322227"	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L570	1	L224 and relationship	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L571	0	L224 and relationship with visualization	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L572	0	"20200322227" and platform	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L573	4	"20180024981"	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L574	4	L228 and search\$6	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L575	2	determin\$6 ADJ relationship WITH network ADJ graph WITH access ADJ permission	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L576	4	relationship WITH network ADJ graph WITH access ADJ permission	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB,	OR	ON	ON	2023/01/12 12:14 PM

			HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L577	2	231 AND @ad<"20201211"	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L578	0	identify\$6 WITH network ADJ graph WITH access ADJ permission	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L579	5	network ADJ graph WITH access ADJ permission	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L580	2	234 AND @ad<"20201211"	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L581	39	access ADJ permission WITH network ADJ objects	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L582	39	470 AND @ad<"20201211"	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L583	2	access ADJ permission WITH network ADJ	(US-PGPUB; USPAT; EPO; JPO;	OR	ON	ON	2023/01/12 12:14 PM

L584	2	objects WITH graph access ADJ permission near2 (determin\$6 identif\$6) WITH network ADJ objects	DERWENT; IBM_TDB) (US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:14 PM
L585	2	"20200322227"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:19 PM
L586	0	"20200322227" AND insight	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:21 PM
L587	2	"20200322227"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:21 PM
L588	0	"20200322227" AND abnormal	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY,	OR	ON	ON	2023/01/12 12:21 PM

			CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L589	0	"20200322227" AND warning	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:21 PM
L590	0	"20200322227" AND attention	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:21 PM
L591	1	"20200322227" AND connection	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:22 PM

L592	1	"20200322227" AND relation\$7	TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB) (US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:24 PM
L593	43	graph WITH nodes WITH (abnormal warning) near2 connection	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:48 PM
L594	4	593 AND @ad<"20201211"	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/12 12:49 PM
L595	75	"20160048556" "20160359872" "20160373944" "20170075981" "20180024981" "20190095530" "20200267175" "20200322227" "20200374343" "20200382539"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/08 01:43 PM
L596	31	"20040019803"	(US-PGPUB; USPAT;	OR	ON	ON	2023/03/08

		"20140157417" "20160044057"	USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				01:43 PM
L597	8	("10171300" "10924347" "7392539").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/08 01:44 PM
L598	171	N3 AND network ADJ (element node device object) WITH visualization	(US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/13 01:50 PM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	64409	(H04L67/10 H04L41/046 H04L41/5096 H04L49/70 H04L63/1433).cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/03/13 01:49 PM
N2	89476	709/201,204,205,217,218,219,223,224.ccls.	(US-PGPUB; USPAT)	OR	ON	ON	2023/03/13 01:49 PM
N3	148235	N1 N2	(US-PGPUB; USPAT)	OR	ON	ON	2023/03/13 01:49 PM
N4	56	N3 AND cloud WITH network ADJ graph	(US-PGPUB; USPAT)	OR	ON	ON	2023/03/13 01:49 PM
N5	176	N3 AND network ADJ graph WITH relationship	(US-PGPUB; USPAT)	OR	ON	ON	2023/03/13 01:49 PM
N6	176	N3 AND network ADJ	(US-PGPUB; USPAT)	OR	ON	ON	2023/03/13

N7	39	graph WITH relationship N3 AND visualization WITH cloud ADJ platform	(US-PGPUB; USPAT)	OR	ON	ON	01:50 PM 2023/03/13 01:50 PM
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Doc code: IDS

PTO/SB/08a (01-22)

Doc description: Information Disclosure Statement (IDS) Filed

Approved for use through 05/31/2024. OMB 0651-0031

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

Application Number

Filing Date

First Named Inventor

Art Unit

Examiner Name

Attorney Docket Number

2022-08-12

Shai KEREN

WZIO P1839C1

U.S.PATENTS

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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	10171300	B2	2019-01-01	Eggen et al.	Entire Document
	2	10924347	B1	2021-02-16	Narsian et al.	Entire Document
	3	7392539	B2	2008-06-24	BROOKS et al.	Entire Document

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	1	20040019803	A1	2004-01-29	Jahn	Entire Document
	2	20140157417	A1	2014-06-05	Grubel et al.	Entire Document
	3	20160044057	A1	2016-02-11	Chenette et al.	Entire Document

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number		
Filing Date		2022-08-12
First Named Inventor	Shai KEREN	
Art Unit		
Examiner Name		
Attorney Docket Number	WZIO P1839C1	

4	20160048556	A1	2016-02-18	Kelly et al.	Entire Document
5	20160359872	A1	2016-12-08	Yadav et al.	Entire Document
6	20160373944	A1	2016-12-22	Jain et al.	Entire Document
7	20170075981	A1	2017-03-16	Carlsson	Entire Document
8	20180024981	A1	2018-01-25	Xia et al.	Entire Document
9	20190095530	A1	2019-03-28	Booker et al.	Entire Document
10	20200267175	A1	2020-08-20	Atighetchi et al.	Entire Document
11	20200322227	A1	2020-10-08	Janakiraman	Entire Document
12	20200374343	A1	2020-11-26	Novotny et al.	Entire Document
13	20200382539	A1	2020-12-03	Janakiraman	Entire Document

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Application Number		
Filing Date		2022-08-12
First Named Inventor	Shai KEREN	
Art Unit		
Examiner Name		
Attorney Docket Number	WZIO P1839C1	

Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
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Examiner Signature	/LIANG CHE A WANG/	Date Considered	03/08/2023
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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		2022-08-12
First Named Inventor	Shai KEREN	
Art Unit		
Examiner Name		
Attorney Docket Number	WZIO P1839C1	

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).

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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)	2022-08-12
Name/Print	Michael Ben-Shimon	Registration Number	69610

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Electronic Petition Request	TERMINAL DISCLAIMER TO OBIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT	
Application Number	17819442	
Filing Date	12-Aug-2022	
First Named Inventor	Shai KEREN	
Attorney Docket Number	WZIO P1839C1	
Title of Invention	SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT	
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Wiz, Inc.	100%	
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IPR2025-01083

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Applicant claims the following fee status: ☐ Small Entity ☐ Micro Entity ☒ Regular Undiscounted	
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THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES I certify, in accordance with 37 CFR 1.4(d)(4) that I am: ☒ An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application Registration Number <u>69610</u> ☐ A sole inventor ☐ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application ☐ A joint inventor; all of whom are signing this request	
Signature	/Michael Ben-Shimon/
Name	Michael Ben-Shimon

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

Electronic Patent Application Fee Transmittal

Application Number:	17819442			
Filing Date:	12-Aug-2022			
Title of Invention:	SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT			
First Named Inventor/Applicant Name:	Shai KEREN			
Filer:	Michael Ben-Shimon/Alyce Kavanaugh			
Attorney Docket Number:	WZIO P1839C1			
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
STATUTORY OR TERMINAL DISCLAIMER	1814	1	170	170
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
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Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				170

Doc Code: DISQ.E.FILE

Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 17819442

Filing Date: 12-Aug-2022

Applicant/Patent under Reexamination: KEREN

Electronic Terminal Disclaimer filed on March 9, 2023

☒ APPROVED

This patent is subject to a terminal disclaimer

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EFS ID:	47655887
Application Number:	17819442
International Application Number:	
Confirmation Number:	7330
Title of Invention:	SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT
First Named Inventor/Applicant Name:	Shai KEREN
Customer Number:	122066
Filer:	Michael Ben-Shimon/Alyce Kavanaugh
Filer Authorized By:	Michael Ben-Shimon
Attorney Docket Number:	WZIO P1839C1
Receipt Date:	09-MAR-2023
Filing Date:	12-AUG-2022
Time Stamp:	15:34:50
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$ 170
RAM confirmation Number	E202339F34468240
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File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Terminal Disclaimer-Filed (Electronic)	eTerminal-Disclaimer.pdf	41309	no	2
			e8097d7aff3639d28f4e6dd816df5d93fc3bce4		
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2	Fee Worksheet (SB06)	fee-info.pdf	38116	no	2
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/819,442	08/12/2022	Shai KEREN	WZIO P1839C1

CONFIRMATION NO. 7330

PUBLICATION NOTICE



OC000000137001650

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

Title:SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT

Publication No.US-2022-0394082-A1

Publication Date:12/08/2022

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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.

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
17/819,442	08/12/2022	2447	880	WZIO P1839C1	21	3

CONFIRMATION NO. 7330

FILING RECEIPT



00000000136082659

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

Date Mailed: 08/29/2022

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

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Inventor(s)

Shai KEREN, Tel Aviv, ISRAEL;
Danny SHEMESH, Tel Aviv, ISRAEL;
Roy REZNIK, Tel Aviv, ISRAEL;
Ami LUTTWAK, Binyamina, ISRAEL;
Avihai BERKOVITZ, Tel Aviv, ISRAEL;

Applicant(s)

Wiz, Inc., Palo Alto, CA;

Assignment For Published Patent Application

Wiz, Inc., Palo Alto, CA

Power of Attorney: The patent practitioners associated with Customer Number 122066

Domestic Priority data as claimed by applicant

This application is a CON of 17/109,883 12/02/2020 PAT 11431786

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.

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The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/819,442**

Projected Publication Date: 12/08/2022

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT

Preliminary Class

709

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

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page 2 of 4

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 17/819,442			
APPLICATION AS FILED - PART I									
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY			
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)		
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	80		N/A			
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	350		N/A			
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	400		N/A			
TOTAL CLAIMS (37 CFR 1.16(j))	21	minus 20 = *	1	x 50 =	50				
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 = *		x 240 =	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	880		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		OR OTHER THAN SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)	
	Total (37 CFR 1.16(i))	*	Minus **	=	x =		x =		
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x =		x =		
	Application Size Fee (37 CFR 1.16(s))								
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
			TOTAL ADD'L FEE			TOTAL ADD'L FEE			
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)	
	Total (37 CFR 1.16(i))	*	Minus **	=	x =		x =		
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x =		x =		
	Application Size Fee (37 CFR 1.16(s))								
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
			TOTAL ADD'L FEE			TOTAL ADD'L FEE			
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.									

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):

Wiz, Inc.

- ☐ Inventor or Joint Inventor (title not required below)
- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)
- ☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)
- ☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature

Mr Dagan

Date (Optional) 3/16/2022

Name

Nir Dagan

Title

Legal Counsel

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 1.

IPR2025-01083

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.

Doc Description: Internet Communications Authorized/Internet Communications Authorization Withdrawn

AUTHORIZATION FOR INTERNET COMMUNICATIONS IN A PATENT APPLICATION OR REQUEST TO WITHDRAW AUTHORIZATION FOR INTERNET COMMUNICATIONS

Application No.	
Filing Date	08/12/2022
First Named Inventor	Shai KEREN
Art Unit	
Examiner Name	
Practitioner Docket No.	WZIO P1839C1

☐ * Total of _____ forms are submitted.

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.

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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.
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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
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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.	WZIO P1839C1
	First Named Inventor	Shai KEREN
	Title	SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT
	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
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>27</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>6</u>] 6. Inventor's Oath or Declaration [Total Pages <u>3</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: Internet Communications Authorized Authorization to Charge Deposit Account _____ _____ _____

***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	2022-08-12	
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.**

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

Privacy Act Statement

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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.
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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.
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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.

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:

SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT

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, **Wiz, Inc.**, having an address at **2345 Yale Street, Palo Alto, California 94306 USA** (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;

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

DECLARATION AND ASSIGNMENT FOR PATENT APPLICATIONS

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.

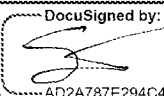
The undersigned covenants and agrees that he has full right to convey the entire interest herein assigned, and has not executed, and will not execute, any agreement in conflict herewith.

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.

1. Full name of joint inventor: **Shai KEREN**

Inventor's Signature: /  *Date: 11/29/2020*
DocuSigned by: AD2A787E294C458

Residence: Tel Aviv, ISRAEL

Post Office Address: c/o Wiz, Inc., 2345 Yale Street, Palo Alto, California 94306 USA

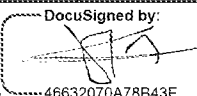
2. Full name of joint inventor: **Danny SHEMESH**

Inventor's Signature: /  *Date: 11/29/2020*
DocuSigned by: DS

Residence: Netanya, ISRAEL

Post Office Address: c/o Wiz, Inc., 2345 Yale Street, Palo Alto, California 94306 USA

3. Full name of joint inventor: **Roy REZNIK**

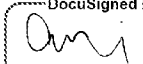
Inventor's Signature: /  *Date: 11/29/2020*
DocuSigned by: 46632070A78B43E...

Residence: Tel Aviv, ISRAEL

Post Office Address: c/o Wiz, Inc., 2345 Yale Street, Palo Alto, California 94306 USA

DECLARATION AND ASSIGNMENT FOR PATENT APPLICATIONS

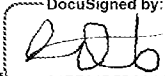
4. Full name of joint inventor: Ami LUTTWAK

Inventor's Signature: /  DocuSigned by:
24B55F6EFED24EF... | *Date:* 12/2/2020

Residence: Binyamina, ISRAEL

Post Office Address: c/o Wiz, Inc., 2345 Yale Street, Palo Alto, California 94306 USA

5. Full name of joint inventor: Avihai BERKOVITZ

Inventor's Signature: /  DocuSigned by:
34EE81D5B0A14B2... | *Date:* 11/29/2020

Residence: Tel Aviv, ISRAEL

Post Office Address: c/o Wiz, Inc., 2345 Yale Street, Palo Alto, California 94306 USA

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor: Shai KEREN
Application No.: TBD
Filed: TBD
Customer No.: 122066

Attorney Docket No.: WZIO P1839C1
Group Art Unit: TBD
Confirmation Number: TBD
Examiner: TBD

Title: **SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT**

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

Authorization to Charge Deposit Account

Commissioner:

In accordance with the Non-Provisional Application submitted herewith, the Director is hereby authorized to charge any required fee except for excess claims fees required under 37 CFR 1.492(d) and (e) and multiple dependent claim fee required under 37 CFR 1.492(f), or credit any overpayment to, deposit account **50-6438**.

Respectfully submitted,

By: /Michael Ben-Shimon/
Michael Ben-Shimon
Reg. No. 69,610

Date: August 12, 2022



ELECTRONIC PAYMENT RECEIPT

APPLICATION #
17/819,442

RECEIPT DATE / TIME
08/12/2022 03:08:04 PM ET

ATTORNEY DOCKET #
WZIO P1839C1

Title of Invention

SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT

Application Information

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

PATENT # -

CONFIRMATION # 7330

FILED BY Tyler McCormick

PATENT CENTER # 60869299

AUTHORIZED BY Michael Ben-Shimon

CUSTOMER # 122066

FILING DATE -

CORRESPONDENCE
ADDRESS -

FIRST NAMED
INVENTOR Shai KEREN

Payment Information

PAYMENT METHOD
CARD / 1247

PAYMENT TRANSACTION ID
E20228BF11271593

PAYMENT AUTHORIZED BY
Tyler McCormick

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		2022-08-12
	First Named Inventor	Shai KEREN	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	WZIO P1839C1	

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	1	10171300	B2	2019-01-01	Eggen et al.	Entire Document
	2	10924347	B1	2021-02-16	Narsian et al.	Entire Document
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	2	20140157417	A1	2014-06-05	Grubel et al.	Entire Document
	3	20160044057	A1	2016-02-11	Chenette et al.	Entire Document

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

Application Number		
Filing Date		2022-08-12
First Named Inventor	Shai KEREN	
Art Unit		
Examiner Name		
Attorney Docket Number	WZIO P1839C1	

4	20160048556	A1	2016-02-18	Kelly et al.	Entire Document
5	20160359872	A1	2016-12-08	Yadav et al.	Entire Document
6	20160373944	A1	2016-12-22	Jain et al.	Entire Document
7	20170075981	A1	2017-03-16	Carlsson	Entire Document
8	20180024981	A1	2018-01-25	Xia et al.	Entire Document
9	20190095530	A1	2019-03-28	Booker et al.	Entire Document
10	20200267175	A1	2020-08-20	Atighetchi et al.	Entire Document
11	20200322227	A1	2020-10-08	Janakiraman	Entire Document
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	First Named Inventor	Shai KEREN	
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☒ A certification statement is not submitted herewith.

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Signature	/Michael Ben-Shimon/	Date (YYYY-MM-DD)	2022-08-12
Name/Print	Michael Ben-Shimon	Registration Number	69610

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APPLICATION #
17/819,442

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WZIO P1839C1

Title of Invention

SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT

Application Information

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

PATENT # -

CONFIRMATION # 7330

FILED BY Tyler McCormick

PATENT CENTER # 60869299

FILING DATE -

CUSTOMER # 122066

FIRST NAMED
INVENTOR Shai KEREN

CORRESPONDENCE
ADDRESS -

AUTHORIZED BY Michael Ben-Shimon

Documents

TOTAL DOCUMENTS: 11

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
WZIO P1839C1_ADS_20220812.pdf f	9	Application Data Sheet	2224 KB
WZIO_General_POA_SIGNE D.pdf	2	Power of Attorney	264 KB
Warning: The PDF file has been signed with a digital signature and the legal effect of the document will be based on the contents of the file not the digital signature.			
WZIO_P1839_decl_assign_2 0201202_.pdf	3	Oath or Declaration filed	208 KB
WZIO_P1839C1_IDS_20220	5	Information Disclosure	1253 KB

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WZIO_P1839C1_Internet_Communications_20220812.pdf		2	Internet Communications Authorization	73 KB
WZIO_P1839C1_Transmittal_20220812.pdf		2	Transmittal of New Application	274 KB
WZIO_P1839C1_Authorization_to_Charge_deposit_account_2022_Template_20220812_.pdf		1	Miscellaneous Incoming Letter	342 KB
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WZIO_P1839C1_spec_drawings_approved_20220812_1-ABST.pdf	(27-27)	1	Abstract	70 KB
WZIO_P1839C1_spec_drawings_approved_20220812_1-DRW.pdf	(28-33)	6	Drawings-only black and white line drawings	614 KB

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s_approved_20220812_1- ABST.pdf	1E19D2C7566D0BE3E1CF72CF4396A457D75EE1B57E765BEB0 2A70C2D5409B0AB8FFE08011AD00B
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SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of US Patent Application No. 17/109,883 filed December 2, 2020, the contents of which are hereby incorporated by reference.

TECHNICAL FIELD

[0002] The present disclosure relates generally to network administration, in particular, to systems and methods for analyzing networks.

BACKGROUND

[0003] As businesses, governments, and other organizations expand and increase their digital presence through various computer, network, and web technologies, the same parties may be increasingly vulnerable to developing cyber-threats. While updated solutions provide for management of prior cyber-threats, the same systems may include new vulnerabilities, which attackers may seek to identify and exploit to gain access to sensitive systems and data. Specifically, as organizations transition into multi-level computing systems, implementing computing solutions at the individual, group, team, and cloud levels, these systems, and the links between the elements of the layers, as well as the links between elements of different layers, include vulnerabilities which prior solutions fail to address.

[0004] Due to the distributed nature of large, multi-layered network systems, management of network access and use may be difficult or impossible for lone administrators or teams of administrators. Management of such code-to-cloud systems, and protection of the same, may require monitoring of large numbers of devices, systems, and components. Further, as each device, system, or component of a network system may be variously connected with the other elements of the system, including connections with multiple other devices via multiple protocols, management and monitoring of individual devices and connections may be untenable.

[0005] To address the need to manage large, distributed network systems, operators and administrators may employ various solutions to provide for network analysis. Certain

network analysis solutions include manual review of devices, connections, and networks, providing for thorough, specific analysis of individual elements of a network. However, such manual solutions may require prohibitive outlays of time and effort to successfully review every component and connection of a large, multi-layer network, thus failing to provide a solution for analysis of modern network systems. In addition, various analysis solutions include solutions directed to the monitoring of specific device types, such as, for example, firewall control systems, which may provide for management of all firewalls installed in a given network. Similarly, protocol-specific analysis solutions may provide for monitoring of all traffic occurring over given protocols, within the network. However, such specialized solutions may fail to provide for streamlined monitoring and management of all components and connections of a network, where the network includes multiple types of devices communicating via multiple protocols. Further, protocol-agnostic solutions may provide for overall traffic management, providing monitoring and management solutions for all traffic arising within a network. However, such protocol-agnostic solutions may be over-broad, providing irrelevant or redundant information, and may require specification of connections to monitor, reducing efficacy in network-management contexts, while failing to provide device-specific insights, thereby failing to provide for integrated device and connection analysis within a complex, multi-layer network.

[0006] In addition, certain solutions providing for the management of large, distributed network systems may fail to provide for agentless management, non-logging solutions, and the like. Agentless management, whereby such large, distributed network systems are managed without the use of a dedicated management agent system or device, may provide for reduced maintenance requirements, as a management agent may require operation and maintenance in addition to the efforts required by the remainder of the network. In addition to failing to provide for agentless management, various solutions for the management of large, distributed network systems fail to provide for non-logging management of the same. Non-logging management, where network analyses and other management processes are executed without reference to netflow logs, provides for reductions in management computing requirements and resource dependency when compared with logging solutions, which may require, without limitation, the execution of additional processing steps or tasks to analyze or process netflow logs, the dependency

of the management solution or process on various netflow log resources or repositories, and the like. In addition to the shortcomings described above, current solutions for management of large, distributed network systems may fail to provide for agentless, non-logging management.

[0007] It would therefore be advantageous to provide a solution that would overcome the challenges noted above.

SUMMARY

[0008] 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 terms “some embodiments” or “certain embodiments” may be used herein to refer to a single embodiment or multiple embodiments of the disclosure.

[0009] Certain embodiments disclosed herein include a for determining abnormal configuration of network objects deployed in a cloud computing environment. The method comprising: collecting network object data on a plurality of network objects deployed in the cloud computing environment; constructing a network graph based on the collected network object data, wherein the network graph includes a visual representation of network objects identified in the cloud computing environment; determining relationships between the identified network objects in the network graph, wherein the determined relationships between the identified network objects includes descriptions of connections between the identified network objects; and analyzing the network graph and the determined relationships to generate insights, wherein the generated insights include at least a list of abnormal connections between the identified network objects.

[0010] In addition, certain embodiments disclosed herein include a system for determining abnormal configuration of network objects deployed in a cloud computing environment, comprising: a processing circuitry; and a memory, the memory containing instructions

that, when executed by the processing circuitry, configure the system to: collect network object data on a plurality of network objects deployed in the cloud computing environment; construct a network graph based on the collected network object data, wherein the network graph includes a visual representation of network objects identified in the cloud computing environment; determine relationships between the identified network objects in the network graph, wherein the determined relationships between the identified network objects includes descriptions of connections between the identified network objects; and analyze the network graph and the determined relationships to generate insights, wherein the generated insights include at least a list of abnormal connections between the identified network objects.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] 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.

[0012] Fig. 1A is a diagram of a cloud environment utilized to describe the various embodiments.

[0013] Fig. 1B is a network diagram depicting a network system and various associated network and external objects, according to an embodiment.

[0014] Fig. 2 is a flowchart depicting a method for constructing a network graph for a network system, according to an embodiment.

[0015] Fig. 3A is an example network graph schema, according to an embodiment.

[0016] Fig. 3B is a network graph object list, configured to provide information describing object-to-object routing within a network graph, according to an embodiment.

[0017] Fig. 4 is a hardware block diagram depicting a code compliance system, according to an embodiment.

DETAILED DESCRIPTION

[0018] 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.

[0019] The systems and methods described herein may be applicable to various systems, devices, networks, environments, layers, and the like, as well as cross-connections or multi-entity connections as may be established therebetween. The disclosed systems and methods may be applicable to provide support for various network features including, without limitation, application-layer communications, cloud-native constructs, cross-cloud and Kubernetes-to-cloud communications, third-party features, such as third-party containers and objects, container-management systems, such as Kubernetes, as may be virtualized as cloud objects, and the like, as well as any combination thereof.

[0020] Fig. 1A is an example diagram 100 of a cloud environment 103 utilized to describe the various embodiments. A cloud environment 103 represents an organization's cloud-based resources, and the various connections between such resources. The cloud environment 103 may include a number of cloud computing platforms, 104-1 through 104-n (hereinafter, "cloud platforms" 104 or "cloud platform" 104), where a cloud platform may include multiple network objects, 105-1 through 105-n (hereinafter, "network objects" 105 or "network object" 105), one or more applications (collectively referred to as applications or apps 106), and the like, as well as any combination thereof. Further, the cloud environment may be configured to connect, via a network 108, with a cyber-security system 150 for one or more purposes including, without limitation, those described hereinbelow. As is applicable to the cloud platforms 104 and network objects 105, "n" is an integer having a value greater than or equal to two. Further, it may be understood that, while a single configuration of a cloud environment 103 is shown for purposes of simplicity, a cloud environment 103 may include various combinations of platforms 104, objects 105, applications 106, and the like, as well as any combination thereof, without loss of generality or departure from the scope of the disclosure.

[0021] A cloud platform 104 is a platform, architecture, or other, like, configuration providing for connectivity of the various objects 106, applications 106, and other, like, elements

included in a cloud platform 104, as well as the execution of various processes, instructions, and the like. A cloud platform 104 may be a commercially-available cloud system, provided on a service basis, such as, as examples and without limitation, Amazon AWS®, Microsoft Azure®, and the like. A cloud platform 104 may be a private cloud, a public cloud, a hybrid cloud, and the like. In addition, a cloud platform 104 may include, without limitation, container orchestration or management systems or platforms such as, as an example and without limitation, a Kubernetes® deployment, and the like, as well as any combination thereof.

[0022] A cloud platform 104 may be implemented as a physical network of discrete, interconnected objects, and the like, a virtual network, providing for interconnection of various virtual systems and devices, as well as a hybrid physical-virtual network, including both physical and virtualized components. A cloud platform 104 may be, or may replicate or otherwise simulate or emulate, as examples, and without limitation, a local area network, a wide area network, the Internet, the World-Wide Web (WWW), and the like, as well as any combination thereof. Further, a cloud platform 104 may include one or more subnets, such as the subnets, 130, of Fig. 1B, below, wherein each subnet may be configured to serve as a cloud platform 104 for the various network objects which may be included in the subnet, while retaining the connectivity and functionalities provided by the cloud platform 104.

[0023] Network objects 105, as may be included in a cloud platform 104, are objects, systems, devices, components, applications, entities, and the like, configured to operate within the cloud platform 104 and provide various functionalities therein. Specifically, the network objects 105 may be objects configured to send, receive, or both send and receive, network data. The network objects 105 may be configured to connect with various other network objects 105, various external objects, and the like, as well as any combination thereof, for purposes including, without limitation, sending data, receiving data, monitoring data transmissions, monitoring network status and activity, and the like, as well as any combination thereof.

[0024] Examples of network objects 105, as may be relevant to the methods, processes, and descriptions provided herein include, without limitation, objects providing support for application-layer communications and systems, including application-layer

communications and systems relevant to layer seven of the open systems interconnection (OSI) model. Further examples of network objects 105, relevant to the methods, processes, and descriptions provided herein, include, without limitation, cloud-native constructs, such as private endpoints, transit gateways, tag-based rulesets and objects configured to apply such rules, Kubernetes Istio and Calico services and applications, and the like. In addition, examples of network objects 105 may include, without limitation, third-party containers and images, such as Nginx, web-access firewall (WAF), and firewall implementations, multi-object or cross-object connections, such as cross-cloud connections and Kubernetes-to-cloud connections, as well as container managers, such as Kubernetes, and connections therewith. It may also be understood that network objects 105 may include other objects similar to those described hereinabove, as well as any combination thereof. As another example, network objects may include virtual entities, devices, and the like, to process layer-7 (application layer) traffic, such as objects relevant to Amazon AWS® layer seven services and applications, Amazon Load Balancer® (ALB) layer seven services and applications, Kubernetes ingress, and the like.

[0025] The network objects 105 may be configured to include one or more communication ports, where the included communication ports provide for connection of various objects according to one or more protocols, and at different communication layers of the OSI model.

[0026] In an example configuration, the network objects 105 are virtual entities or instances of systems, devices, or components, including virtual systems, devices, or components, or any combination thereof. Examples of network objects 105 include, without limitation, virtual networks, firewalls, network interface cards, proxies, gateways, containers, container management objects, virtual machines, subnets 130, hubs, virtual private networks (VPNs), and the like, as well as any combination thereof.

[0027] The applications 106, as may be executed in one or more cloud platforms 104, are services, processes, and the like, configured to provide one or more functionalities by execution of various commands and instructions. The applications 106 may be part of a software project of an enterprise or organization. The applications 160 may interact or communicate with other applications, regardless of the platform 104 in which the applications 106 are deployed. It should be understood that a single application, including

the same application, may be both present and executed in multiple cloud platforms 104, including multiple cloud platforms 104 of the same cloud environment 103, without loss of generality or departure from the scope of the disclosure.

[0028] The network 108 is a communication system providing for the connection of the cloud environment 103, and its various components and sub-parts, with a cyber-security system 150, as well as other, like, systems, devices, and components, and any combination thereof. The network 108 may be implemented as a physical network of discrete, systems, devices, components, objects, and the like, a virtual network, providing for interconnection of various virtual systems and devices, as well as a hybrid physical-virtual network, including both physical and virtualized components. The network 108 may be, as examples, and without limitation, a local area network, a wide area network, the Internet, the World-Wide Web (WWW), and the like, as well as any combination thereof.

[0029] The cyber-security system 150 is a system, device, or component, configured to provide one or more network analysis functionalities including, without limitation, network analysis, traffic analysis, object querying, graph generation, and the like, as well as any combination thereof. The cyber-security system 150 may be configured to execute one or more instructions, methods, processes, and the like, including, without limitation, the process described with respect to Fig. 2, other, like, processes, and any combination thereof.

[0030] The cyber-security system 150 may be configured as a physical system, device, or component, as a virtual system, device, or component, or in a hybrid physical-virtual configuration. A detailed description of a cyber-security system, 150, according to an embodiment, is provided with respect to Fig. 4, below. It may be understood that, while the cyber-security system 150 is depicted in Fig. 1A as a discrete element external to the cloud environment 103, the cyber-security system 150 may be included within any of the various elements of the network system 102, including the cloud environment 103, the various cloud platforms 104, and subparts thereof, and the network 108, without loss of generality or departure from the scope of the disclosure.

[0031] Fig. 1B is an example diagram depicting a network system 100 and various associated network and external objects, according to an embodiment. The depicted network system 100 includes a cloud platform 110, where the cloud platform 110 may be a cloud platform

similar or identical to a cloud platform, 104, of Fig. 1A, above. The cloud platform 110 includes various subnets, 130-1 through 130-n (hereinafter, “subnets” 130 or “subnet” 130), and various network objects, 105-1 through 105-m (hereinafter, “network objects” 105 or “network object” 105). As applicable to the subnets 130, “n” is an integer having a value greater than or equal to two. Further, as applicable to the network objects 105, “m” is an integer having a value greater than or equal to five. In addition, while the network system 100 of Fig. 1B includes certain elements and combinations of elements, as well as connections therebetween, it may be understood that the depiction is provided for illustrative purposes, and that other, like, elements, combinations of elements, and connections therebetween may be implemented without loss of generality or departure from the scope of the disclosure. Other, like, network systems 100 may further include multiple cloud platforms 110, including variously-interconnected cloud platforms 110, and other, like, variations and configurations, without loss of generality or departure from the scope of the disclosure.

[0032]As described with respect to Fig. 1A, above, the cloud platform 110 is a platform, architecture, or other, like, configuration providing for connectivity of the various systems, devices, and components described with respect to Fig. 1B. The cloud platform 110 may be a commercially-available cloud system, provided on a service basis, such as, as examples and without limitation, Amazon AWS®, Microsoft Azure®, and the like. The cloud platform 110 may be a private cloud, a public cloud, a hybrid cloud, and the like. The cloud platform 110 may be implemented as a physical network of discrete, interconnected objects, and the like, a virtual network, providing for interconnection of various virtual systems and devices, as well as a hybrid physical-virtual network, including both physical and virtualized components. The cloud platform 110 may be, or may replicate or otherwise simulate or emulate, as examples, and without limitation, a local area network, a wide area network, the Internet, the World-Wide Web (WWW), and the like, as well as any combination thereof. Further, as described with respect to Fig. 1A, above, the cloud platform 110 may include one or more subnets 130, wherein each subnet 130 may be configured to serve as a cloud platform 110 for the various network objects 105 included in the subnet 130, while retaining the connectivities and functionalities provided by the cloud platform 110.

[0033] The cloud platform 110 may be configured to include an orchestrator 115. The orchestrator 115 is configured to provide for management of the cloud platform 110. The orchestrator 115 may be configured to provide one or more functionalities including, without limitation, monitoring of elements or components of the cloud platform 110, logging and reporting data relating to the cloud platform 110, managing cloud platform 110 updates and maintenance, generating cloud platform 110 alerts, as well as other, like, functionalities, and any combination thereof. The orchestrator 115 may be configured to report one or more data features related to the cloud platform 110, such as may be requested during the execution of network analysis processes, such as those described hereinbelow.

[0034] The network objects 105 are network objects similar or identical to those network objects, 105, of Fig. 1A, above. As described with respect to Fig. 1A, the network objects 105 are virtual entities or instances of systems, devices, or components, including virtual systems, devices, or components, or any combination thereof. Examples of network objects 105 include, without limitation, virtual networks, firewalls, network interface cards, proxies, gateways, containers, container management objects, virtual machines, subnets 130, hubs, virtual private networks (VPNs), peering connections, load balancers, route tables, and the like, as well as any combination thereof.

[0035] External objects, as may be adjacent or relevant to a cloud platform 110, are objects similar or identical to the network objects 105. The external objects may be configured to communicate with one or more network objects 105, with other, various, external objects, and the like, as well as any combination thereof.

[0036] Fig. 2 is an example flowchart 200 depicting a method for constructing a network graph for a network system, according to an embodiment.

[0037] At S210, network objects are identified, and network object data is collected. In one embodiment, network objects may be identified by querying a cloud platform, through, for example, an orchestrator (e.g., orchestrator 115, of Fig. 1B, above), and the like. In an embodiment, S210 may include submitting one or more requests to each cloud platform and collecting responses therefrom. The requests may include instructions directing the orchestrator to report information including, without limitation, the number of devices

connected to or included in the cloud platform, the names of such devices, the types of such devices, other, like, information, and any combination thereof.

[0038] In an embodiment, identification of network objects and collection of network object data at S210 includes querying each cloud platform, where such querying may include generation of one or more queries through an application programming interface (API), such as a REST API. Through the API, network objects' identities and description data are provided in response to such API queries. API queries may be pre-configured data requests, specified in the API, and configured to cause, for example, an orchestrator to return the one or more data features described herein. API queries may be generated based on one or more APIs, or the like, including generic APIs, such as REST, as well as platform-specific APIs, where such platform-specific APIs may be configured to provide for one or more predefined interactions with a cloud platform, such as Amazon AWS®, Microsoft Azure®, and the like, where such predefined interactions may include, without limitation, network object identification and data collection.

[0039] Further, at S210, network object data is collected. Network object data is data describing one or more network objects, such as those objects, 105, of Fig. 1B, above. Network object data may include data describing, as examples and without limitation, object types, object names or unique identifiers (IDs), object network addresses, object port configurations, object status, such as online, offline, busy, and available, object input signal configurations, object output signal configurations, object security or access configurations, object processing rules and the like, as well as any combination thereof. Object data may be collected at S210 from one or more sources including, without limitation, various networks, network monitors, subnets, external objects, network objects, and the like, such as the cloud platform, 110, cyber-security system, 150, subnets, 130, external objects, network objects, 105, cloud platform orchestrators, 115, all of Fig. 1B, above, and the like, as well as any combination thereof. Collection of network object data, at S210, may be executed via one or more means including, without limitation, generation and transmission of one or more API queries, such as are described hereinabove, by other, like, means, and any combination thereof.

[0040] As a first example, collection of network object data at S210 may include collection of the identities of all objects included in a cloud platform by generation and transmission of

an API query. In a second example, where a specific object, such as a given firewall, is specified in an API query, collection of network object data at S210 may include collection of object data from a firewall, including the collection of firewall rules, collection of firewall event logs, collection of firewall port configurations, and the like, as well as any combination thereof. As a third example, collection of network object data at S210 may include collection of object data from all virtual machines (VMs) in a cloud platform, where such VMs are described generally in an API query, including the collection of data resources or libraries internal to the VMs, VM port configurations, VM statuses, and the like, as well as any combination thereof.

[0041] At S220, a network graph is constructed. A network graph is a data feature describing the various objects included in, and adjacent to, a network, as well as the relationships between such objects. A network graph may be constructed based on data including, without limitation, data relevant to the objects identified at S210, from which data is collected, and the like, as well as any combination thereof. A network graph may be constructed in one or more various formats including, without limitation, a table, chart, or other, non-visual, data organization format, a list of objects, other, like, formats, and any combination thereof, where such formats may provide network object information including, without limitation, descriptions of network objects, properties, relations, and the like, as well as any combination thereof. In an embodiment, construction of a network graph, at S220, may include construction of a visual “node and link” graph. An example network graph schema, generated in a visual format and presented through a network graph utility, is described with respect to Fig. 3A, below. An additional network graph data feature, including a list of network objects, where the list is configured to describe an object-to-object path, is described with respect to Fig. 3B, below.

[0042] At S230, relationships between network objects are determined. Network object relationships are descriptions of the various connections between the network objects identified at S210. Network relationships may describe aspects of the connections between objects including, without limitation, connected objects, relevant ports of connected objects, connection bandwidths, connection durations, connection protocols, connection names or IDs, connection statuses, and the like, as well as any combination thereof.

[0043] In an embodiment, network object relationships may be determined at S230 using a static analysis process. In this embodiment, the static analysis may include analysis of object and protocol code and rules, based on simulated network operation, as collected at S210, to provide for identification of network object relationships based on network object configurations. As an example of a static analytic determination, data collected from a firewall at S210 may specify, in the firewall's port configurations, communication with a first device on a first port using a first protocol and connection with a second device on a second port using a second protocol. Further, according to the same example, the firewall object may include one or more instructions specifying transmission of a specific log file, via a third port, to a connected repository. According to the same example, network object relationships determined at S230 may include connections between the firewall and the first device, connections between the firewall and the second device, and connections between the firewall and the repository.

[0044] Determination of network object relationships at S230 may further include updating the graph or graphs constructed at S220 to include the determined relationships. Graphs may be updated at S230 by associating one or more data labels, tags, or other, like, features with a graph entry for a network object determined to have a relationship with another object. The association of data labels and tags may further include the association of labels or tags describing various aspects of the determined relationship or connection including, as examples and without limitation, connection source and destination, connection type, connection direction, connection status, connection protocol, and the like, as well as any combination thereof. Accordingly, as an example, determination, at S230, of a relationship between two objects may include the association of a data label or tag with each object included in the relationship, the data label or tag describing the same relationship for each object. Further, in an embodiment, where a graph is presented as a visual representation of a network system, such as a "node-and-link" graph, updating of the graph, at S230, based on determined relationships, may further include updating the visual graph to include visible "links" or connections between object "nodes," such as by, as examples and without limitation, updating the original visible graph to include such links, adding a second, visible overlay to the graph, including the links, and the like, as well as any combination thereof.

[0045] In addition, determination of network object relationships at S230 may include analysis of such determined relationships to identify impermissible relationships. Where determination at S230 includes such permissibility analysis, such analysis may include, without limitation, comparison of determined relationships with one or more dictionaries, or other, like, repositories of object relationship information, to determine whether a given relationship matches a predefined relationship included in the dictionary, where such a predefined relationship may be pre-tagged as “permissible,” “not permissible,” or the like. Where a determined relationship is determined to match a relationship which has been pre-defined as “not permissible” or as otherwise unacceptable, the relationship may be removed from the graph, such as by updating the graph in a manner similar to that described with respect to adding relationships to the graph, with the update providing for removal of one or more specified unacceptable relationships.

[0046] Further, in an embodiment, network object relationships may be determined at S230 by application of observational or active logging methods, such as those methods providing for detection of object-to-object connections by monitoring traffic of a network in use.

[0047] At S240, network insights are generated. Network insights are natural-language representations of aspects of the network graph constructed at S220. Network insights may include pure-text descriptions of objects and relationships. An example of a pure-text object-relationship description, generated as an insight at S240, may be *“firewall one is connected to object two, which is a VM, and object three, which is a load balancer.”* Such representations may be in a query format.

[0048] In addition, network insights may include detailed descriptions of objects, relationships, and the like, as well as any combination thereof. An example of a detailed object-relationship description, generated as an insight at S240, may be “the gateway is currently active, and is connected to the VM via the second port, using the first protocol.”

[0049] As another example, including a multiple-step relationship, an insight may be generated at S240, the insight specifying a path from “virtual machine one to load balancer five, where port eighty is routed to port 1337 on virtual machine one, then from load balancer five to firewall two, where port eighty of firewall two is open, then from firewall two to subnet sixteen, where subnet sixteen has a network address of 10.0.1.0/24,

then from subnet sixteen virtual network ten, where virtual network ten has a network address of 10.0.0.0/16, then from virtual network ten to virtual network eleven, via peering connection twelve, where peering connection twelve includes a routing rule to virtual network twelve, specifying virtual network twelve's network address, where virtual network twelve's network address is 172.31.0.0/16." The insight described with respect to the second example may be interpreted to describe a virtual machine accessible from a virtual network via a series of hops, where only specific ports and addresses are allowed and routed through the firewall.

[0050] Further, generation of network insights at S240 may include the generation of insights providing for network management or anomaly detection. Where generation of insights at S240 includes generation to provide for such functions, as well as other, similar functions, generation of insights may include, as examples and without limitation, generation of insights describing network configurations or events which are rare or novel, such as connection of a new device to a network, connections which are unauthorized, such as re-connection of a user's device to a subnet which the user is not permitted to access, connections which display anomalous behavior, such as connections displaying spikes of network activity, and the like. Such insights may be generated according to one or more pre-defined or user-defined filters, rules, and the like, as well as any combination thereof. As an example, generation of network insights at S240 may include generation of an insight specifying that "VM thirty normally connects to load balancer twenty and firewall eight but is currently only connected to load balancer twenty."

[0051] In addition, generation of network insights at S240 may include the generation of high-level insights, where high-level insights are insights similar to those described hereinabove and which are configured to include information describing one or more features of a network which may not be detectable based on the analysis of individual objects. Examples of high-level insights, as may be generated at S240, include, without limitation, "third-party networks A, B, and C currently have access to the internal network," "objects E, a database, and F, an administrator interface, are currently exposed to external networks," and "cross-environment exposure has been detected between the development and production environments."

[0052] At S250, network objects are tagged. Tagging of network objects at S250 may include, without limitation, association of one or more data labels, tags, or other, like, features, with graph entries for one or more network objects, including entries in graphs such as those described with respect to S220, above. The data labels, tags, or other, like, features, with graph entries, may include descriptions of aspects of relevant graphs, objects, relationships, and the like, as well as any combination thereof. Examples of relevant descriptions include, as examples and without limitation, insights, such as those generated at S240, object relationships, such as those determined at S230, object details, such as may be collected at S210, descriptions of whether an object appears in another graph, object type counts, per-object connection counts, graph connection counts, descriptions of an object's open ports and counts thereof, descriptions of an object's network address or addresses, descriptions of protocols relevant to an object, and other, like, descriptions, as well as any combination thereof.

[0053] In an embodiment, tagging of network objects at S250 may provide for enriched querying of graphs, such as through various network graph utilities, including a utility associated with the network graph schema described with respect to Fig. 3A, below, as well as other, like, presentations of network graph information, such as are described with respect to Fig. 3B, below, where such enriched querying may include the searching of one or more graphs for objects associated with one or more data labels or tags, including compound queries specifying multiple data labels or tags.

[0054] Fig. 3A is an example screenshot of a network graph schema 300, generated according to an embodiment. The example network graph schema 300 is generated as a visual representation of a network, such as at S230 of Fig. 2, above, and is presented through a network graph utility. A network graph utility may be an application, interface, or other, like, means of providing a visual representation of a network graph schema 300, and the like, where the provided network graph schema 300 may include various interactive features, as described hereinbelow. A network graph utility may be configured as, as examples and without limitation, a web interface, an application or executable installed on a user or administrator device, other, like, configurations, and any combination thereof.

[0055] The network graph schema 300 of Fig. 3A is a network graph visualization representing a network, such as the networks described hereinabove, wherein the various objects, systems, devices, components, and the like, of the network are represented as nodes 310, wherein such nodes are variously interconnected by links 320, representing connections between the various objects, systems, devices, components, and the like. It may be understood that while only one node 310 and one link 320 are labeled for purposes of simplicity, other, like, nodes 310 and links 320 may be so labeled without loss of generality or departure from the scope of the disclosure.

[0056] The network graph schema 300, and corresponding network graph utility, may be configured to provide for various interactive functionalities. In an embodiment, where a user interacts with a node 310, such as by clicking the node 310 with a mouse or tapping the node 310 through a touchscreen, the graph utility may be configured to display a node overview pane 315. The node overview pane 315 may be an information panel, including data relating to the given node 310 and describing various object data features, such as those object data features collected at S210 of Fig. 2, above. The node overview pane 315 may be configured to provide information relating to the various nodes 310 including, as examples and without limitation, object names, types, statuses, relevant metadata, and the like, as well as any combination thereof.

[0057] Further, the network graph schema 300, and corresponding network graph utility, may be configured to include a search tool 330, providing for location and selection of one or more user-specified nodes 310 or links 320 within the graph. The search tool 330 may be configured to provide for search functionality based on one or more user specifications including, as examples and without limitation, object names, types, IDs, statuses, labels or tags associated with various elements of the network graph schema 300, and the like, as well as any combination thereof. In addition, the network graph schema 300, and corresponding network graph utility, may be configured to include a help tool 340, providing for display of one or more resources related to the network graph schema 300 and network graph utility.

[0058] It should be noted that a network graph schema 300, shown in Fig. 3A, may be constructed in other formats including, without limitation, a table, chart, or other, non-

visual, data organization formats, a list of objects, other, like, formats, and any combination thereof.

[0059] Fig. 3B is an example network graph object list 350, configured to provide information describing object-to-object routing within a network graph, according to an embodiment. The network graph object list 350 includes a mode indicator 360, a mode-specific data display 365, and a list of objects, 370-1 through 370-n (hereinafter, “object” 370 or “objects” 370), where ‘n’ is an integer having a value greater than or equal to two. It may be understood that, while the provided network graph object list is configured to provide a list of objects 370 arranged according to a defined mode, other, like, modes and object 370 arrangements may be similarly applicable without loss of generality or departure from the scope of the disclosure.

[0060] The network graph object list 350 is a list of objects within a network, a segment of a network, a path of a network, and the like, as well as any combination thereof. A network graph object list 350 may be generated or provided as a function of one or more methods including, without limitation, those methods described herein, other, like, methods, and any combination thereof. A network graph object list 350 may be, without limitation, a feature of a network graph management tool or utility, such as a tool or utility configured to provide the network graph schema of Fig. 3A, above, a stand-alone tool or utility, and the like, as well as any combination thereof. The network graph object list 350 may be configured to list network objects 370 in one or more orders based on factors including, without limitation, object names, object types, object connection latencies, mode-specific factors, other, like, factors, and any combination thereof. Where the network graph object list 350 is configured to list network objects 370 based on mode-specific factors, the mode indicator 360 may be configured to provide information describing a specific list mode, and the mode-specific data display 365 may be configured to provide information describing the contents of the list 350 in relation to one or more selected modes.

[0061] Modes are selected list-organization profiles, configured to provide for population of a network graph object list 350 in one or more configurations. Modes may provide for configuration of a network graph object list 350, including configurations specific to, as examples and without limitation, routing paths, object utilization or availability descriptions, other, like, configurations, and any combination thereof. Where a given

mode is selected, the selected mode may be displayed via a mode indicator 360, where the mode indicator is configured to provide descriptive information regarding a selected mode. Further, where a mode is selected, the mode-specific data display 365 may be configured to display information regarding a specific network graph object list 350 populated based on the specified mode or modes.

[0062] As an example, with reference to the provided Fig. 3B, a “route” mode may be selected, providing for population of a network graph object list 350 with objects occupying a data path between a first object 370-1 and a destination object 370-n. According to the same example, the mode indicator 360 may be configured to display “Route,” indicating that the network graph object list 350 is populated to provide information describing a route between the specified objects, and the mode-specific data display 365 may be configured to display “9 hops,” indicating that a transmission from a first object 370-1 makes nine “hops,” or transmissions between objects, before reaching the destination object 370-n. Further, according to the same example, the network graph object list 350 may be configured to include and display each network object 370 through which the transmission passes, including the first object 370-1 and the destination object 370-n, in the order of transmission.

[0063] Fig. 4 is an example hardware block diagram 400 depicting a cyber-security system 150, according to an embodiment. The cyber-security system 150 includes a processing circuitry 410 coupled to a memory 420, a storage 430, and a network interface 440. In an embodiment, the components of the cyber-security system 150 may be communicatively connected via a bus 450.

[0064] The processing circuitry 410 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), graphics processing units (GPUs), tensor processing units (TPUs), 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.

[0065] The memory 420 may be volatile (e.g., random access memory, etc.), non-volatile (e.g., read only memory, flash memory, etc.), or a combination thereof.

[0066] In one configuration, software for implementing one or more embodiments disclosed herein may be stored in the storage 430. In another configuration, the memory 420 is configured to store such 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 processing circuitry 410, cause the processing circuitry 410 to perform the various processes described herein.

[0067] The storage 430 may be magnetic storage, optical storage, and the like, and may be realized, for example, as flash memory or another memory technology, compact disk-read only memory (CD-ROM), Digital Versatile Disks (DVDs), or any other medium which can be used to store the desired information.

[0068] The network interface 440 allows the cyber-security system 150 to communicate with the various components, devices, and systems described herein for network analysis, as well as other, like, purposes.

[0069] It should be understood that the embodiments described herein are not limited to the specific architecture illustrated in Fig. 4, and other architectures may be equally used without departing from the scope of the disclosed embodiments.

[0070] It should be noted that the computer-readable instructions may 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, such as in source code format, binary code format, executable code format, or any other suitable format of code. The instructions, when executed by the circuitry, cause the circuitry to perform the various processes described herein.

[0071] 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.

[0072] 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.

[0073] 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 determining abnormal configuration of network objects deployed in a cloud computing environment, comprising:
 - collecting network object data on a plurality of network objects deployed in the cloud computing environment;
 - constructing a network graph based on the collected network object data, wherein the network graph includes a visual representation of network objects identified in the cloud computing environment;
 - determining relationships between the identified network objects in the network graph, wherein the determined relationships between the identified network objects includes descriptions of connections between the identified network objects; and
 - analyzing the network graph and the determined relationships to generate insights, wherein the generated insights include at least a list of abnormal connections between the identified network objects.
2. The method of claim 1, wherein the cloud computing environment includes a plurality of different cloud computing platforms.
3. The method of claim 2, wherein collecting network object data further comprises:
 - connecting through an application programming interface each of the plurality of different cloud computing platforms to collect network object data of network objects deployed in the respective cloud computing platform.
4. The method of claim 1, wherein generating insights to include at least the list of abnormal connections further comprises:
 - detecting any one of: a rare network configuration, a novel network configuration, a rare network event, a novel network event, a connection of a new device to a network, an unauthorized connection, a re-connection of a user device to a subnet which the user

is not permitted to access, a connection which displays anomalous behavior, and a connection displaying spikes of network activity.

5. The method of claim 4, further comprising:
determining impermissible relationships between the network objects.
6. The method of claim 1, wherein determining relationships between the identified objects further comprises:
determining the relationships using a static analytic method.
7. The method of claim 1, wherein determining the relationships between the identified network objects in further comprises:
determining the relationships using at least one of: observational methods, and active logging methods.
8. The method of claim 1, further comprising:
adding visual representations of the determined relationships to the visual representations of the network graph.
9. The method of claim 1, wherein each of the plurality of network objects includes any one of: a virtual network, a firewall, a network interface card, a proxy, a gateway, a software container, container, a management object, a virtual machine, a subnet, a hub, a virtual private network (VPN).
10. The method of claim 1, wherein a generated insight of the generated insights is generated utilizing natural language representation.
11. A non-transitory computer readable medium having stored thereon instructions for causing a processing circuitry to execute a process, the process comprising:
collecting network object data on a plurality of network objects deployed in the cloud computing environment;

constructing a network graph based on the collected network object data, wherein the network graph includes a visual representation of network objects identified in the cloud computing environment;

determining relationships between the identified network objects in the network graph, wherein the determined relationships between the identified network objects includes descriptions of connections between the identified network objects; and

analyzing the network graph and the determined relationships to generate insights, wherein the generated insights include at least a list of abnormal connections between the identified network objects.

12. A system for determining abnormal configuration of network objects deployed in a cloud computing environment, comprising:

a processing circuitry; and

a memory, the memory containing instructions that, when executed by the processing circuitry, configure the system to:

collect network object data on a plurality of network objects deployed in the cloud computing environment;

construct a network graph based on the collected network object data, wherein the network graph includes a visual representation of network objects identified in the cloud computing environment;

determine relationships between the identified network objects in the network graph, wherein the determined relationships between the identified network objects includes descriptions of connections between the identified network objects; and

analyze the network graph and the determined relationships to generate insights, wherein the generated insights include at least a list of abnormal connections between the identified network objects.

13. The system of claim 12, wherein the cloud computing environment includes a plurality of different cloud computing platforms.

14. The system of claim 13, wherein the system is further configured to:

connect through an application programming interface each of the plurality of different cloud computing platforms to collect network object data of network objects deployed in the respective cloud computing platform.

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

detect any one of: a rare network configuration, a novel network configuration, a rare network event, a novel network event, a connection of a new device to a network, an unauthorized connection, a re-connection of a user device to a subnet which the user is not permitted to access, a connection which displays anomalous behavior, and a connection displaying spikes of network activity.

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

determine impermissible relationships between the network objects.

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

determine the relationships using a static analytic method.

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

determine the relationships using at least one of: observational methods, and active logging methods.

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

adding visual representations of the determined relationships to the visual representations of the network graph.

20. The system of claim 12, wherein each of the plurality of network objects includes any one of: a virtual network, a firewall, a network interface card, a proxy, a gateway, a software container, container, a management object, a virtual machine, a subnet, a hub, a virtual private network (VPN).

21. The system of claim 12, wherein a generated insight of the generated insights is generated utilizing natural language representation.

ABSTRACT

A method and system for determining abnormal configuration of network objects deployed in a cloud computing environment are provided. The method includes collecting network object data on a plurality of network objects deployed in the cloud computing environment; constructing a network graph based on the collected network object data, wherein the network graph includes a visual representation of network objects identified in the cloud computing environment; determining relationships between the identified network objects in the network graph, wherein the determined relationships between the identified network objects includes descriptions of connections between the identified network objects; and analyzing the network graph and the determined relationships to generate insights, wherein the generated insights include at least a list of abnormal connections between the identified network objects.

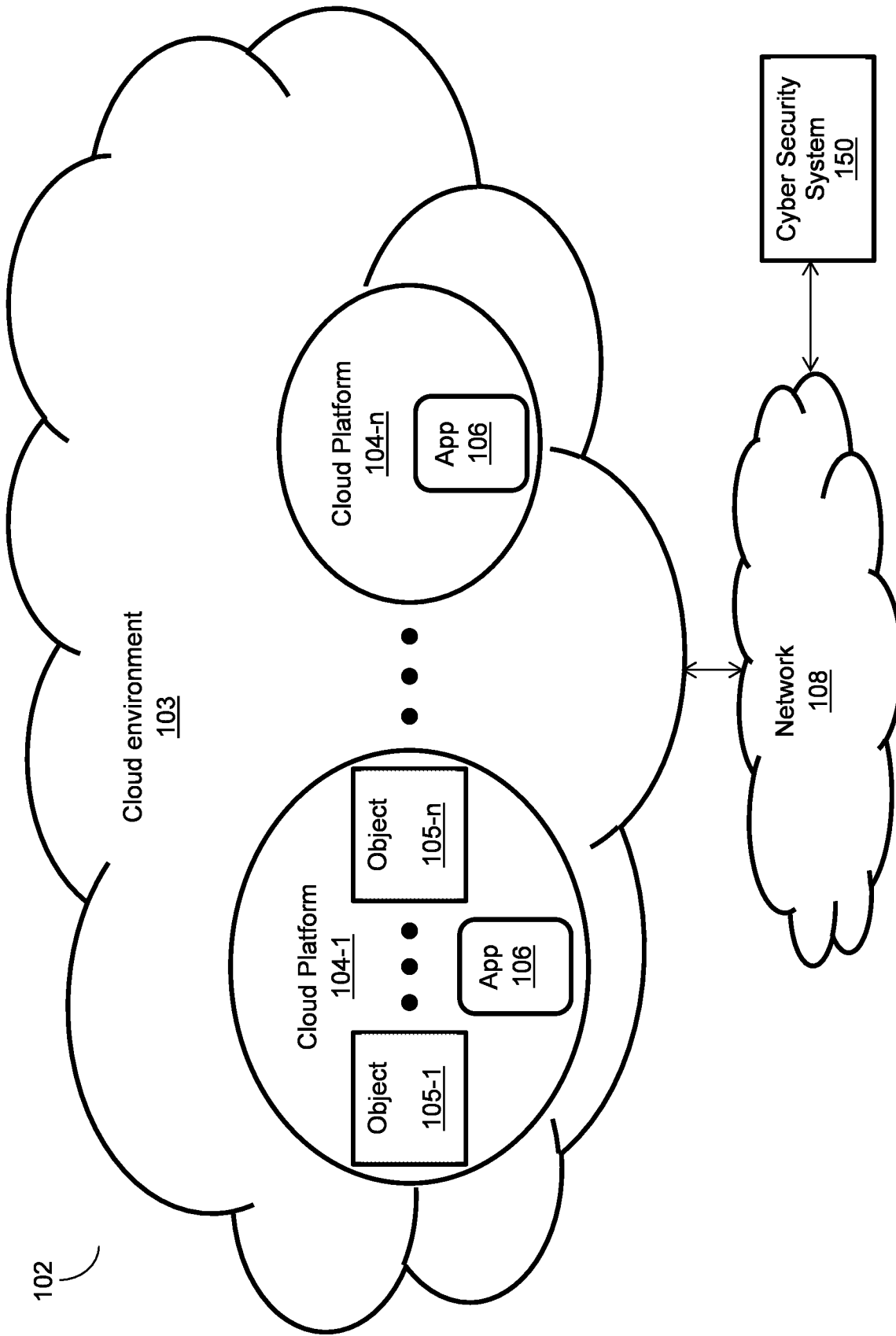


FIG. 1A

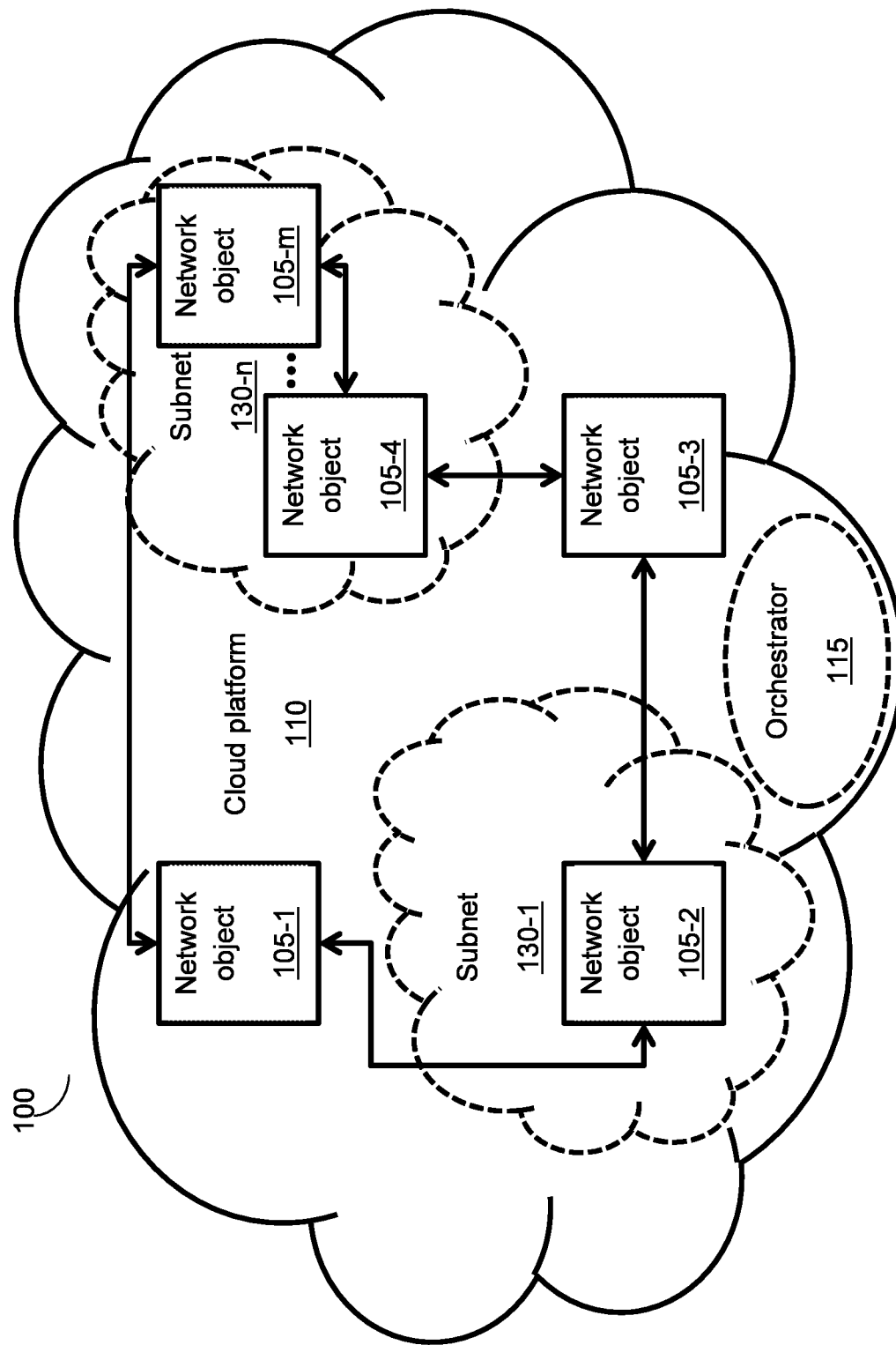


FIG. 1B

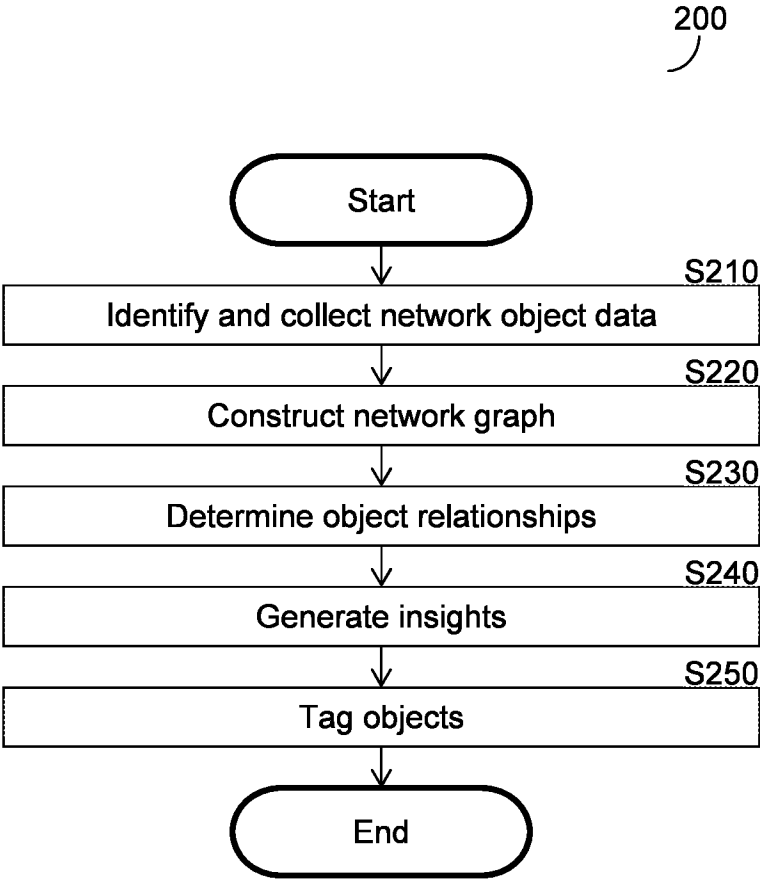


FIG. 2

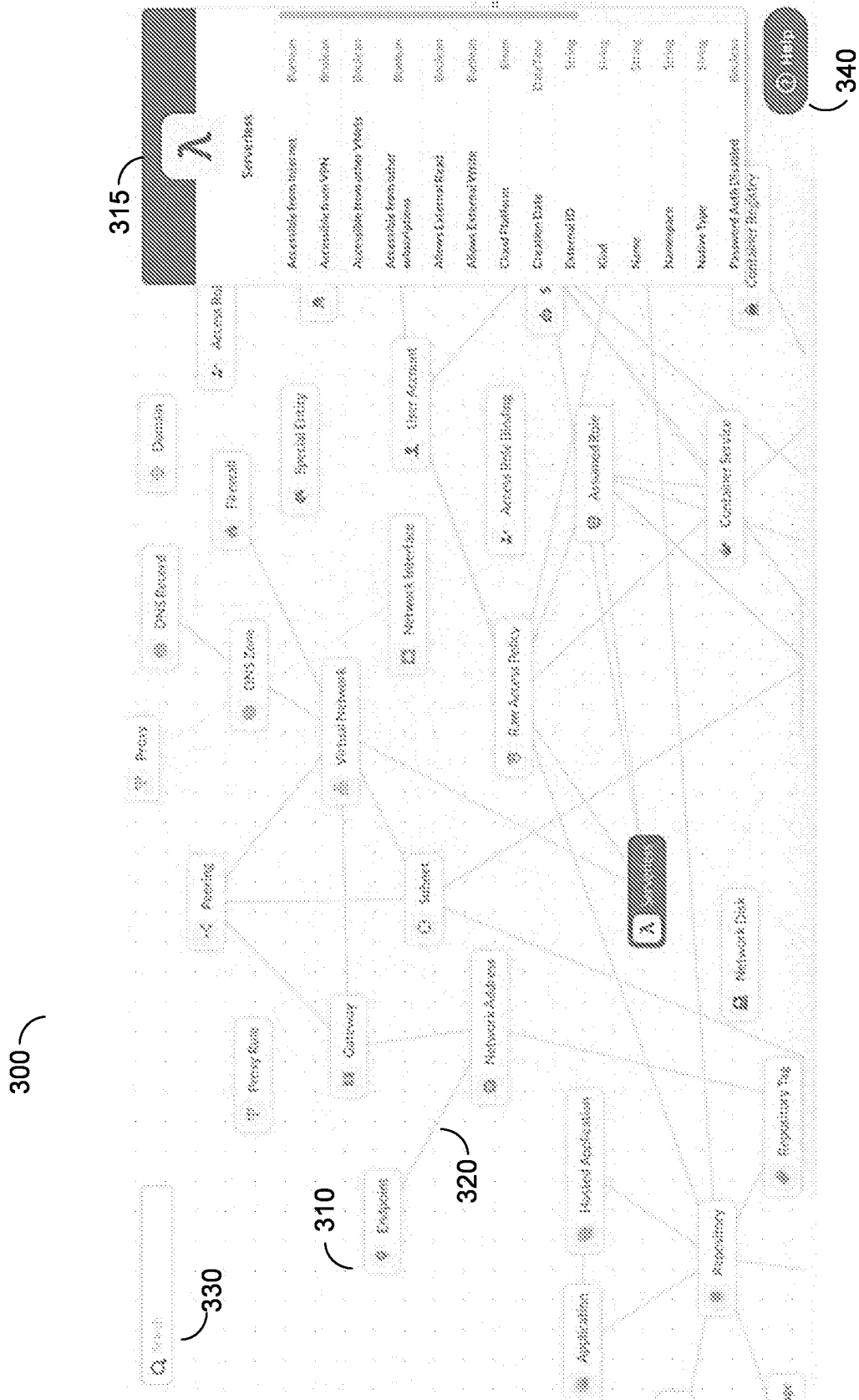


FIG. 3A

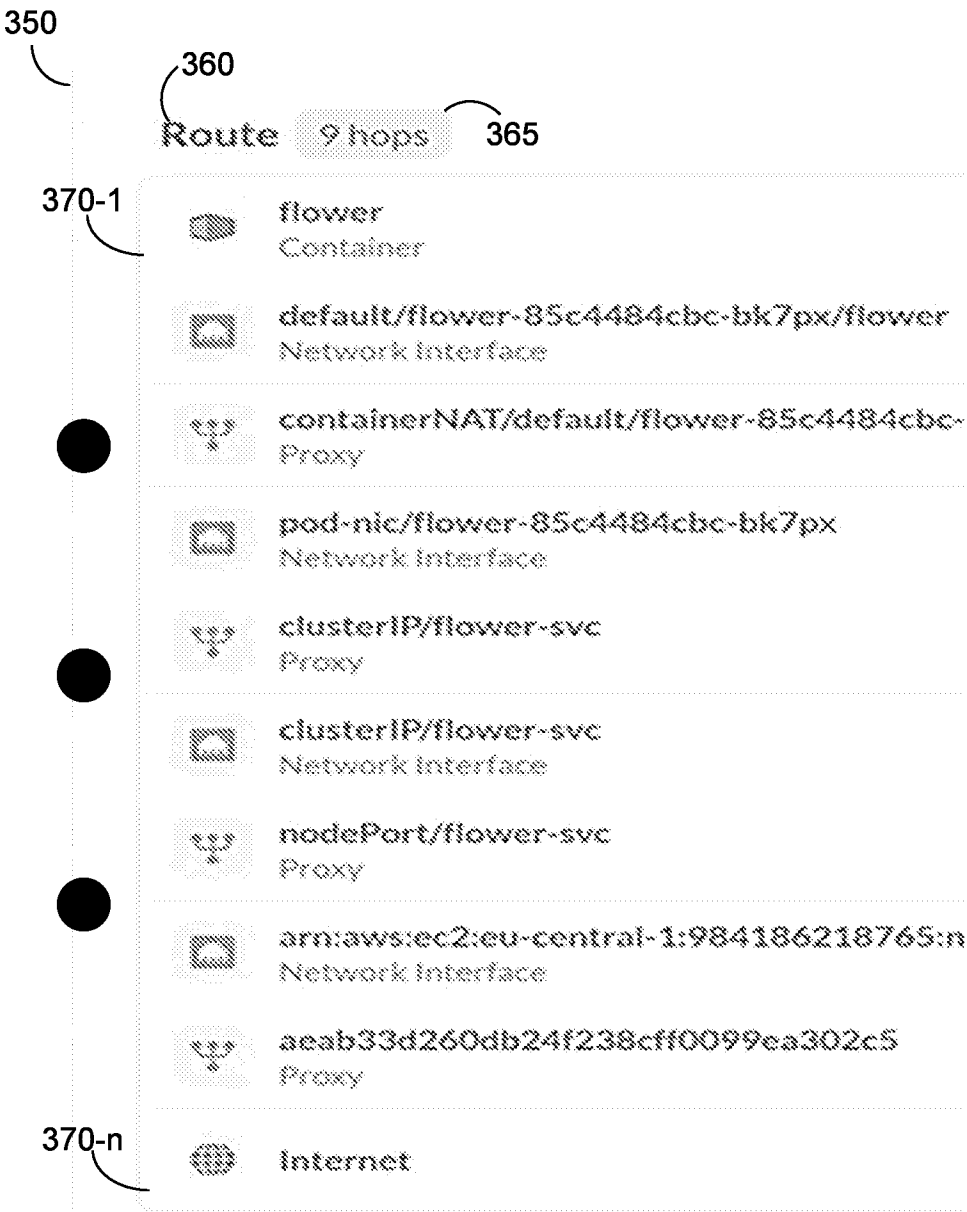
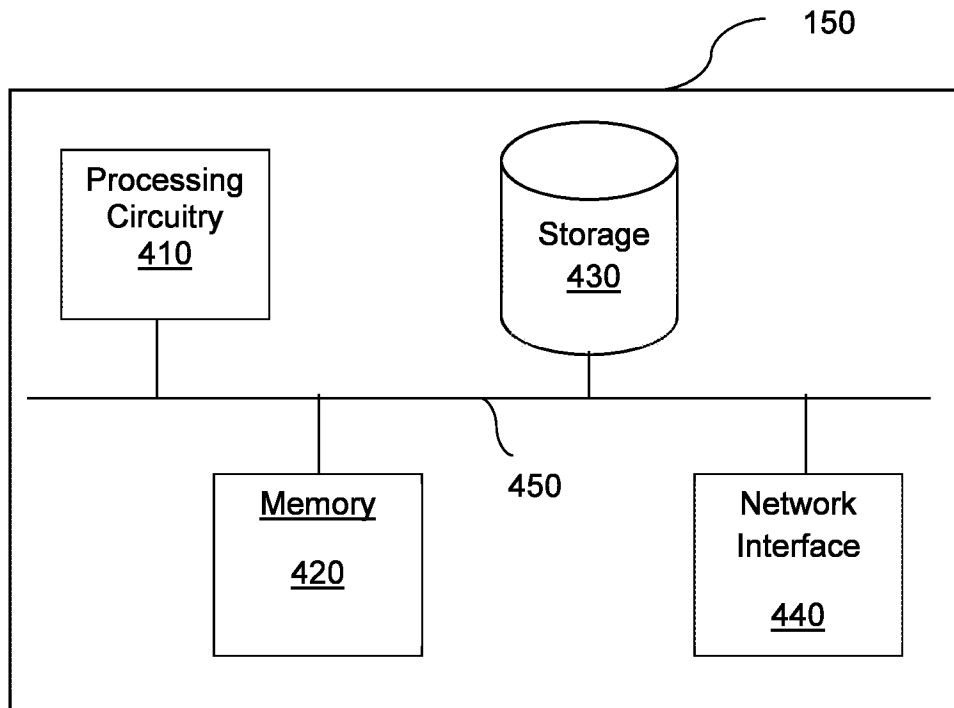


FIG. 3B

**FIG. 4**

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	WZIO P1839C1
		Application Number	
Title of Invention	SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2:

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

Inventor Information:

Inventor	1				Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Shai		KEREN		
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 Wiz, Inc.			
Address 2		2345 Yale Street			
City	Palo Alto		State/Province	CA	
Postal Code	94306		Country ⁱ	US	
Inventor	2				Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Danny		SHEMESH		
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 Wiz, Inc.			
Address 2		2345 Yale Street			
City	Palo Alto		State/Province	CA	
Postal Code	94306		Country ⁱ	US	
Inventor	3				Remove
Legal Name					

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	WZIO P1839C1
		Application Number	
Title of Invention	SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT		

Prefix	Given Name	Middle Name	Family Name	Suffix
	Roy		REZNIK	
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 Wiz, Inc.			
Address 2	2345 Yale Street			
City	Palo Alto	State/Province	CA	
Postal Code	94306	Country ⁱ	US	
Inventor	4			Remove
Legal Name				

Prefix	Given Name	Middle Name	Family Name	Suffix
	Ami		LUTTWAK	
Residence Information (Select One) US Residency ☒ Non US Residency Active US Military Service				
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Mailing Address of Inventor:

Address 1	c/o Wiz, Inc.			
Address 2	2345 Yale Street			
City	Palo Alto	State/Province	CA	
Postal Code	94306	Country ⁱ	US	
Inventor	5			Remove
Legal Name				

Prefix	Given Name	Middle Name	Family Name	Suffix
	Avihai		BERKOVITZ	
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 Wiz, Inc.			
Address 2	2345 Yale Street			
City	Palo Alto	State/Province	CA	
Postal Code	94306	Country ⁱ	US	

IPR2025-01083

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	WZIO P1839C1
		Application Number	
Title of Invention	SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT		

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

Add

Correspondence Information:

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

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

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

Application Information:

Title of the Invention	SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT		
Attorney Docket Number	WZIO P1839C1	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	6	Suggested Figure for Publication (if any)	

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.

IPR2025-01083

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	WZIO P1839C1
		Application Number	
Title of Invention	SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT		
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)
	Continuation of	17109883	2020-12-02
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.			Add

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.			Add

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

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

IPR2025-01083

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	WZIO P1839C1
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT	

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	WZIO P1839C1
		Application Number	
Title of Invention	SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT		

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	Wiz, Inc.	
Mailing Address Information For Applicant:		
Address 1	2345 Yale Street	
Address 2		
City	Palo Alto	State/Province
Country	US	Postal Code
Phone Number		Fax Number
Email Address	ami@wiz.io	
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	WZIO P1839C1
		Application Number	
Title of Invention	SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT		

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	Wiz, Inc.		
Mailing Address Information For Assignee including Non-Applicant Assignee:			
Address 1	2345 Yale Street		
Address 2			
City	Palo Alto	State/Province	CA
Country i	US	Postal Code	94306
Phone Number		Fax Number	
Email Address	ami@wiz.io		
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)	2022-08-12	
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	WZIO P1839C1
		Application Number	
Title of Invention	SYSTEM AND METHOD FOR ANALYZING NETWORK OBJECTS IN A CLOUD ENVIRONMENT		

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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SCORE Placeholder Sheet for IFW Content

Application Number: 17819442

Document Date: 08/12/2022

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