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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/360,234	11/23/2016	Weiping XU	2520.1122	1769

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EXAMINER
ZAIDI, IQBAL

ART UNIT	PAPER NUMBER
2464	

NOTIFICATION DATE	DELIVERY MODE
04/20/2018	ELECTRONIC

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

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

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

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Office Action Summary	Application No. 15/360,234	Applicant(s) XU ET AL.	
	Examiner IQBAL ZAIDI	Art Unit 2464	AIA (First Inventor to File) Status Yes

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/23/2016*.

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

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

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

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

Disposition of Claims*

5)☒ Claim(s) *1-20* is/are pending in the application.

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

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1,10 and 19* is/are rejected.

8)☒ Claim(s) *2-9,11-18,20 and 21* is/are objected to.

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

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

Application Papers

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

11)☒ The drawing(s) filed on *11/23/2016* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

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

Certified copies:

a)☒ All b)☐ Some** c)☐ None of the:

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

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

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

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

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

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

4) ☐ Other: _____.

DETAILED ACTION

1. The instant application having application No 15/360234 filed on 11/23/2016 is presented for examination by the examiner.

Oath/Declaration

2. The applicant's oath/declaration has been reviewed by the examiner and is found to conform to the requirements prescribed in 37 C.F.R 1.63.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 02/07/2018, 06/29/2017 and 11/23/2016. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Examiner Notice

4. **Claim 1** would be allowable if (i) claim 2 is incorporated into the independent claim 1, (ii) if 112 2nd rejection resolved.

5. **Claim 10** would be allowable if (i) claim 11 is incorporated into the independent claim 10, (ii) if 112 2nd rejection resolved.

6. **Claim 19** would be allowable if (i) claim 20 or 21 is incorporated into the independent claim 19, (ii) if 112 2nd rejection resolved.

Claim Rejections - 35 USC § 112

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

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

8. **Claims 2-9** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim 1 recites the limitation "**an SFE**" in line 82. There is a lack of antecedent basis for this limitation in the claim.

10. Claim 20 recites the limitation "**a first SF node"** in line 2. There is a lack of antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

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

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102 of this title, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

11. **Claims 1, 10 and 19** are rejected under 35 U.S.C. 103 as being unpatentable over Rajagopal et al. (US 20150227404, Aug. 13, 2015) in view of JOKELA et al. (US 20160254998, Sep. 1, 2016).

Regarding **Claim 1**, Rajagopal discloses a first fault tracing detection request packet, and then determining to communicate with a first service function (SF) node *(page 2, par(0023), line 1-10, Upon obtaining fault related data, agent device generate the central fault report, and provide it to diagnostics server (service function node) for fault detection)*,

wherein the first fault tracing detection request packet comprises a path identifier (ID) and an address of a device for initiating fault detection, and the path ID is used to identify a path of a service chain *(page 5, par (0052), line 1-10, When SDS receives a central fault report perform service fault segregation to identify fault nodes where a fault have occurred, and rules to be executed by RE to identify remediation measures. SDS use service chain information and other received service faults to identify the nodes, SDS be able to identify dependencies between central fault records submitted by different SAs, a fault in one node because several SAs linked to nodes with which the faulty node communicates to generate and send central fault records. SDS use the segregation procedure to identify the faulty node based on the multiple central fault records from the multiple linked SAs)*;

sending, by the SFE, a first fault tracing detection response packet to the device for initiating fault detection, wherein the first fault tracing detection response

packet comprises the path ID, the ID of the first SF node, and the address of the device for initiating fault detection*(page 5, par (0052), line 1-10, When SDS receives a central fault report perform service fault segregation to identify fault nodes where a fault have occurred, and rules to be executed by RE to identify remediation measures. SDS (wherein SDS which is smart diagnostic server does the SFS function obtain the fault information and sending the information) use service chain information and other received service faults to identify the nodes, SDS be able to identify dependencies between central fault records submitted by different SAs, a fault in one node cause several SAs linked to nodes with which the faulty node communicates to generate and send central fault records. SDS use the segregation procedure to identify the faulty node based on the multiple central fault records from the multiple linked SAs)*.

Rajagopal discloses all aspects of the claimed invention, except *a service chain fault detection method, wherein the method comprises obtaining, by a service forwarding entity (SFE), obtaining, by the SFE, an ID of the first SF node*.

JOKELA is the same field of invention teaches a service chain fault detection method, wherein the method comprises obtaining, by a service forwarding entity (SFE) *(page 3, par (0040), line 10-20, the SPEs in each node is operatively coupled to a Service Forwarding Entity (SFE), which routes the data packets to their intended physical and virtual nodes from an SFE point of view, the SPEs appears as virtual/physical nodes when a forwarding decisions is made based on an iBF of a data packet)*, obtaining, by the SFE, an ID of the first SF node *(page 9, par (0088), line 1-10,*

the SFE receives an updated iBF where one more link identifiers as indicated in the complementing information has been included such that the data packet can be forwarded to its intended node, the SFE of the network node updates the iBF, the updated iBF is added to the data packet accordingly and forwarded to its intended destination).

Rajagopal and JOKELA are analogous art because they are from the same field of endeavor of access to a service device.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teaching of Rajagopal to include the teaching of JOKELA because it is providing iBF, determine that a service is to be provided by the virtual node SPE, before deriving the final destination from the iBF, which subsequently will deliver the data packet to its intended destination node.

Regarding **Claim 10**, Rajagopal discloses a service forwarding apparatus, wherein the service forwarding apparatus comprising a memory storing instructions; and a processor coupled to the memory to execute the instructions to obtain a first fault tracing detection request packet, and then determine to communicate with a first service function (SF) node*(page 2, par(0023), line 1-10, Upon obtaining fault related data, agent device generate the central fault report, and provide it to diagnostics server (service function node) for fault detection)*, wherein the first fault tracing detection request packet comprises a path identifier (ID) and an address of a device for initiating fault detection, and the path ID is used to identify a path of a service chain*(page 5, par (0052), line 1-*

10, When SDS receives a central fault report perform service fault segregation to identify fault nodes where a fault have occurred, and rules to be executed by RE to identify remediation measures. SDS use service chain information and other received service faults to identify the nodes, SDS be able to identify dependencies between central fault records submitted by different SAs, a fault in one node cause several SAs linked to nodes with which the faulty node communicates to generate and send central fault records. SDS use the segregation procedure to identify the faulty node based on the multiple central fault records from the multiple linked SAs);

send a first fault tracing detection response packet to the device for initiating fault detection, wherein the first fault tracing detection response packet comprises the path ID, the ID of the first SF node, and the address of the device for initiating fault detection*(page 5, par (0052), line 1-10, When SDS receives a central fault report perform service fault segregation to identify fault nodes where a fault have occurred, and rules to be executed by RE to identify remediation measures. SDS (wherein SDS which is smart diagnostic server does the SFS function obtain the fault information and sending the information) use service chain information and other received service faults to identify the nodes, SDS be able to identify dependencies between central fault records submitted by different SAs, a fault in one node cause several SAs linked to nodes with which the faulty node communicates to generate and send central fault records. SDS use the segregation procedure to identify the faulty node based on the multiple central fault records from the multiple linked SAs)*.

Rajagopal discloses all aspects of the claimed invention, except *obtain an ID of the first SF node.*

JOKELA is the same field of invention teaches obtain an ID of the first SF node *(page 9, par (0088), line 1-10, the SFE receives an updated iBF where one more link identifiers as indicated in the complementing information has been included such that the data packet can be forwarded to its intended node, the SFE of the network node updates the iBF, the updated iBF is added to the data packet accordingly and forwarded to its intended destination).*

Rajagopal and JOKELA are analogous art because they are from the same field of endeavor of access to a service device.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teaching of Rajagopal to include the teaching of JOKELA because it is providing iBF, determine that a service is to be provided by the virtual node SPE, before deriving the final destination from the iBF, which subsequently will deliver the data packet to its intended destination node.

Regarding **Claim 19**, Rajagopal discloses wherein the first fault tracing detection request packet comprises a path identifier ID and an address of a device for initiating fault detection, and the path ID is used to identify a path of a service chain *(page 5, par (0052), line 1-10, When SDS receives a central fault report perform service fault segregation to identify fault nodes where a fault have occurred, and rules to be executed by RE to identify remediation measures. SDS use service chain information*

and other received service faults to identify the nodes, SDS be able to identify dependencies between central fault records submitted by different SAs, a fault in one node cause several SAs linked to nodes with which the faulty node communicates to generate and send central fault records. SDS use the segregation procedure to identify the faulty node based on the multiple central fault records from the multiple linked SAs);

and wherein the second fault tracing detection request packet comprises the path ID and the address of the device for initiating fault detection*(page 5, par (0052), line 1-10, When SDS receives a central fault report perform service fault segregation to identify fault nodes where a fault have occurred, and rules to be executed by RE to identify remediation measures. SDS (wherein SDS which is smart diagnostic server does the SFS function obtain the fault information and sending the information) use service chain information and other received service faults to identify the nodes, SDS be able to identify dependencies between central fault records submitted by different SAs, a fault in one node cause several SAs linked to nodes with which the faulty node communicates to generate and send central fault records. SDS use the segregation procedure to identify the faulty node based on the multiple central fault records from the multiple linked SAs)*.

Rajagopal discloses all aspects of the claimed invention, except *the SF apparatus comprising a memory storing instructions; and a processor coupled to the memory to execute the instructions to: receive a first fault tracing detection request packet from a service forwarding entity (SFE), send a second fault tracing detection request packet to the SFE*.

JOKELA is the same field of invention teaches the SF apparatus comprising a memory storing instructions; and a processor coupled to the memory to execute the instructions to: receive a first fault tracing detection request packet from a service forwarding entity (SFE) *(page 3, par (0040), line 10-20, the SPEs in each node is operatively coupled to a Service Forwarding Entity (SFE), which routes the data packets to their intended physical and virtual nodes from an SFE point of view, the SPEs appears as virtual/physical nodes when a forwarding decisions is made based on an iBF of a data packet)*, send a second fault tracing detection request packet to the SFE*(page 9, par (0088), line 1-10, the SFE receives an updated iBF where one more link identifiers as indicated in the complementing information has been included such that the data packet can be forwarded to its intended node, the SFE of the network node updates the iBF, the updated iBF is added to the data packet accordingly and forwarded to its intended destination)*.

Rajagopal and JOKELA are analogous art because they are from the same field of endeavor of access to a service device.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teaching of Rajagopal to include the teaching of JOKELA because it is providing iBF, determine that a service is to be provided by the virtual node SPE, before deriving the final destination from the iBF, which subsequently will deliver the data packet to its intended destination node.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure are:

DUNBAR et al. (US 20150236948, Aug. 20, 2015) teaches Restoring Service Functions After Changing a Service Chain Instance Path.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IQBAL ZAIDI whose telephone number is (571) 270-3943. The examiner can normally be reached on 7:30a.m to 5:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NGO RICKY can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/IQBAL ZAIDI/

Primary Examiner, Art Unit 2464