## REMARKS/ARGUMENTS

### *Status of Claims*

Claims 1-20 stand rejected.

Claims 1-2, 9, and 14-20 are currently amended.

Thus, claims 1-20 remain pending in this patent application.

Applicant hereby requests further examination and reconsideration of the presently claimed application.

### *Allowable Subject Matter*

Applicant thanks Examiner for indicating that claims 2, 4, 10, 12, 18, and 20 would be allowable if they overcame the double-patenting and 35 U.S.C. § 101 rejections. However, Applicant believes that claims 1, 9, and 17, which claims 2, 4, 10, 12, 18, and 20 depend from, are allowable for the reasons provided below.

### *Double Patenting Rejections*

Claims 1-20 stand rejected for non-statutory, obviousness-type double patenting in view of claims 2-9, 11-18, and 20-21 of U.S. Patent No. 10,181,989 ("'989 Patent"). Applicant will file with this response a terminal disclaimer in relation to the '989 Patent. Accordingly, Applicant respectfully requests withdrawal of the rejections.

Neither the terminal disclaimer nor the absence of any expression as to a substantive distinction between the rejected claims and one or more claims of the '989 Patent shall be construed to constitute (i) an admission that any one of the pending claims is patentably indistinct from any claim of the '989 Patent (ii) an admission as to the propriety or meritoriousness of the pending non-statutory, obviousness-type double patenting rejections, or (iii) the basis for a presumption that any one of the pending claims is patentably indistinct from any claim of the '989

Patent. *See Ortho Pharmaceutical Corp. v. Smith*, 959 F.2d 936, 941-42, 22 USPQ2d 1119, 1124 (Fed. Cir. 1992) ("the filing of a terminal disclaimer simply serves the statutory function of removing the rejection of double patenting, and raises neither presumption nor estoppel on the merits of the rejection. It is improper to convert this simple expedient of "obviation" into an admission or acquiescence or estoppel on the merits") (citing *Quad Envtl. Technologies Corp. v. Union Sanitary Dist.,* 946 F.2d 870, 874, 20 USPQ2d 1392, 1394-95 (Fed. Cir. 1991)).

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

Claims 17-20 stand rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Specifically, the Final Office Action asserts that the claims are "directed to non-statutory subject matter as computer program[] per se." Final Office Action, at 2-3. Claim 17 is amended to claim "a computer program product . . . stored on a non-transitory computer-readable medium." In addition, 35 U.S.C. § 101 does not prohibit such computer program products. *See, e.g.*, 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 4 ("Indeed, the Federal Circuit has held that ''improvements in computer-related technology'' and ''claims directed to software'' are not ''inherently abstract.''). Accordingly, Applicant respectfully requests withdrawal of the rejections.

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

Claims 1, 8-9, and 16-17[1] stand rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent App. Pub. No. 2015/0227404 ("Rajagopal") in view of U.S. Patent App. Pub. No. 2016/0254998 ("Jokela"). Claim 8 depends from independent claim 1, and claim 16 depends from independent claim 9. Thus, claims 1, 8-9, and 16-17 will be allowable if independent claims 1, 9, and 17 are allowable over Rajagopal and Jokela. The United States Supreme Court in *Graham v.*

[1] The Final Office Action lists claims 1, 8-9, and 16-20 in the heading of the rejections, but does not include actual rejections of claims 18-20. *See* Final Office Action, at 19. In addition, the Final Office Action indicates that claims 18-20 could make claim 17 allowable. *Id.* at 2.

*John Deere Co. of Kansas City* noted that an obviousness determination begins with a finding that "the prior art as a whole in one form or another contains all" of the elements of the claimed invention. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 22 (1966). The combination of Rajagopal and Jokela fails to disclose each element of claims 1, 9, and 17, and thus fails to render obvious claims 1, 8-9, and 16-17.

The combination of Rajagopal and Jokela fails to render obvious claims 1, 8-9, and 16-17 because the combination of Rajagopal and Jokela fails to disclose: 1) that the first fault tracing detection request packet comprises a path identifier (ID) and that the path ID identifies a path of the service chain, 2, determining to communicate with a first service function (SF) node on the service chain by sending the first fault tracing detection request packet to the first SF node, and 3) sending a first fault tracing detection response packet to a device for initiating fault detection, wherein the first fault tracing detection response packet comprises the path ID and the ID of the first SF node. Claim 1 reads:

> 1. A service chain fault detection method implemented by a service forwarding entity (SFE), the service chain fault detection method comprising:
>
> obtaining a first fault tracing detection request packet on a service chain, **wherein the first fault tracing detection request packet comprises a path identifier (ID), and wherein the path ID identifies a path of the service chain;**
>
> **determining to communicate with a first service function (SF) node on the service chain by sending the first fault tracing detection request packet to the first SF node;**
>
> obtaining an ID of the first SF node; and
>
> **sending a first fault tracing detection response packet to a device for initiating fault detection,**
>
> **wherein the first fault tracing detection response packet comprises the path ID and the ID of the first SF node.**

(Emphasis added). First, claim 1 requires that the first fault tracing detection request packet comprises a path ID and that the path ID identifies a path of the service chain. Claims 9 and 17 require the same limitations. The Final Office Action asserts that paragraph 4 of Rajagopal

discloses those limitations. Final Office Action, at 11. However, Rajagopal's fault classification rules identify nodes and fault conditions, not a path of a service chain:

> In one embodiment, a smart diagnostic system is disclosed, comprising: a hardware processor; and a memory storing processor-executable instructions comprising instructions for: receiving an agent fault report, including one or more network-wide standardized fault codes, from an agent application executing on a remote device in a media network; aggregating one or more relevant fault reports related to the agent fault report; obtaining one or more fault classification rules; **identifying one or more fault nodes and associated fault conditions in the media network using the one or more fault classification rules,** by analyzing the aggregated relevant fault reports; and providing an agent configuration instruction for one or more agent applications using the identification of the one or more fault nodes and associated fault conditions.

Rajagopal, ¶ 4 (emphasis added). As shown, Rajagopal's fault classification rules identify nodes and fault conditions. Rajagopal's fault classification rules do not identify a path of a service chain.

In response to that argument, the Advisory Action asserts the following:

> In fact, Examiner interprets the "par (0004), line 1-10, obtaining one or more fault classification rules; identifying one or more fault nodes and associated fault conditions in the media network using the one or more fault classification rules, by analyzing the aggregated relevant fault reports; and providing an agent configuration instruction for one or more agent applications using the identification of the one or more fault nodes and associated fault conditions" according to Rajagopal's disclosure.

Advisory Action, at 3. The Advisory Action simply recites the words from Rajagopal and fails to address Applicant's argument. Instead, the Advisory Action appears to assert that paragraph 53 of Rajagopal also discloses the claimed limitation. *Id.* Paragraph 53 of Rajagopal reads:

> When a central fault record is received via SI 455 and SCM 405, the FMM 408 identifies the corresponding fault node (as reflected in the central fault record) in the fault scenario map, and triggers FAE 413 for fault analysis related to the specified node. When a service fault is reported (e.g., by a user) via CRMI 410 and SCM 40S, FAE 413 may use the fault classification map to identify the service chain component at issue. FAE 413 may identify fault nodes that are part of the service chain component in the fault scenario map. FAE 413 then performs fault scenario identification. **FAE 413 may analyze the edges (e.g., communication links) associated with the triggered node(s) that satisfies edge conditions**, and thereby attempts to identify an origin node of the fault scenarios that are linked. In

> the example above where a fault in one node causes several SAs linked to nodes with which the faulty node communicates to send central fault records, all nodes may be included in the fault scenario map, and **FAE 413 may identify the faulty node as the origin node**. When service faults are reported through CRMI 410, FAE 413 may also isolate clusters of nodes as suggestible scenarios, with identifiers such as: nodes evaluated to be true (for persistent faults); nodes evaluated to be true in the recent time window between service faults (for transient and recurring faults); nodes historically associated together; fault scenario evaluation, etc. FAE 413 may evaluate the identified fault scenarios via edges from the origin node of the scenarios to determine if the fault scenario is satisfied. In case the FAE determines any fault scenario(s) to be satisfied, the corresponding remediation rule may be triggered at RE 404. AAC 409 may store suggestible scenarios in the fault scenario map to be used for building recommendations to the authorized user using UIM 401.

Rajagopal, ¶ 53 (emphases added). In relation to the above portion of Rajagopal, the Advisory Action asserts "wherein the communication link is the path to connect the nodes it is obvious every link has the link ID or the path ID to establish the link or the path with the nodes" and "wherein in the broadest interpretation of the claim language the fault tracing request packet has the path ID to identify the link or path of the service chain." Advisory Action, at 3. While the cited portion of Rajagopal discloses analyzing communication links associated with triggered nodes that satisfy conditions and discloses identifying faulty nodes as origin nodes, the cited portion does not disclose a path ID identifying a path of the service chain, much less disclose such in a first fault tracing detection request packet. Neither paragraph 4 nor paragraph 53 of Rajagopal discloses a fault detection packet. If Examiner maintains this rejection, then Applicant respectfully requests explicit identification of what in Rajagopal is equivalent to the claimed first fault tracing detection request packet, path ID, and path of the service chain. Thus, Rajagopal fails to disclose that the first fault tracing detection request packet comprises a path ID and that the path ID identifies a path of the service chain. Jokela fails to remedy that deficiency.

Second, claim 1 requires determining to communicate with a first service function (SF) node on the service chain by sending the first fault tracing detection request packet to the first SF

node. Claims 9 and 17 require similar limitations. The Final Office Action asserts that paragraph 23 of Rajagopal discloses that limitation. Final Office Action, at 12. Specifically, the Final Office Action asserts "Upon obtaining fault related data, agent device generate the central fault report, and provide it to diagnostics server (service function node) for fault detection." *Id.* However, Rajagopal's agent device 130 reports a fault to a diagnostics server 150, not to a first SF node on the service chain:

> **With reference to FIG. 1B, in some embodiments, before agent device 130 can report a fault to diagnostics server 150, agent device 130 may collect information (e.g., "local context") to be reported as part of central fault report 140**. For example, agent device 130 may make a data request 181 to another agent (e.g., agent process 164) or device (e.g., device 160) for fault-related data 182. Upon obtaining fault-related data 182, agent device 130 may generate the central fault report 140, and provide it to diagnostics server 150 for fault detection and remediation.

Rajagopal, ¶ 23 (emphasis added). As shown, Rajagopal's agent device 130 reports a fault to a diagnostics server 150. Rajagopal's agent device 130 does not report a fault to a first SF node on the service chain. Thus, Rajagopal fails to disclose determining to communicate with a first service function (SF) node on the service chain by sending the first fault tracing detection request packet to the first SF node. In addition, as discussed above, the claimed first fault tracing detection request packet comprises a path ID identifying a path of the service chain. In contrast, Rajagopal's central fault report 140 may report a local context. Jokela fails to remedy those deficiencies.

Third, claim 1 requires sending a first fault tracing detection response packet to a device for initiating fault detection, wherein the first fault tracing detection response packet comprises the path ID and the ID of the first SF node. Claims 9 and 17 require the same limitations. As shown above, Rajagopal fails to disclose the claimed path ID. For at least that reason, Rajagopal fails to disclose a first fault tracing detection response packet comprising the path ID. In response to that argument, the Advisory Action asserts the following:

> In fact, Examiner interprets the "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" according to Rajagopal's disclosure. The examiner would like to further explain also see par (0024), lines 1-10, diagnostics server make a data request to an agent (e.g., agent process) or device (e.g., device) for data response. Upon obtaining data response, diagnostics server identify remediation actions, and generate corrective action message for agent device.agent device, determine that additional information is needed before the corrective action can be implemented, and make a data request for the correction-related data, Upon obtaining correction-related data, agent device generate a correction message for device with instructions to remedy the identified fault(wherein in the broadest interpretation of the claim language the fault tracing request packet has the path ID to identify the link or path of the service chain to identify the fault link and the node)

Advisory Action, at 3. While Rajagopal's smart diagnostic server (SDS) 400 may use service chain information, that service chain information does not comprise a path ID and an ID of a first SF node:

> At step 474, SDS 400 may perform smart fault analysis. When SDS 400 receives a central fault report from SA 455, SDS 400 may perform service fault segregation to identify one or more fault nodes where a fault may have occurred, and rules to be executed by RE 404 to identify remediation measures. **SDS 400 may use service chain information and other received service faults to identify the nodes.** In particular, SDS 400 may be able to identify dependencies between central fault records submitted by different SAs. For example, a fault in one node (e.g., a device, application, etc.) may cause several SAs linked to nodes with which the faulty node communicates to generate and send central fault records. SDS 400 may use the segregation procedure to identify the faulty node based on the multiple central fault records from the multiple linked SAs.

Rajagopal, ¶ 52 (emphasis added). As shown, Rajagopal's SDS 400 may use service chain information. However, that service chain information does not comprises a path ID and an ID of a first SF node. In addition, while Rajagopal's SDS 400 may use the service chain information to

identify nodes, the service chain information does not initiate fault detection. Thus, Rajagopal fails to disclose sending a first fault tracing detection response packet to a device for initiating fault detection, wherein the first fault tracing detection response packet comprises the path ID and the ID of the first SF node. Jokela fails to remedy that deficiency. Consequently, the combination of Rajagopal and Jokela fails to disclose each element of claims 1 and 9, and thus fails to render obvious claims 1, 8-9, and 16-17.

## CONCLUSION

Consideration of the foregoing amendments and remarks, reconsideration of the application, and withdrawal of the rejections and objections is respectfully requested by Applicant. No new matter is introduced by way of the amendment. It is believed that each ground of rejection raised in the Final Office Action dated February 21, 2020 and the Advisory Action dated June 29, 2020 has been fully addressed. If any fee is due as a result of the filing of this paper, please appropriately charge such fee to Deposit Account Number 50-1515 of Conley Rose, P.C., Texas. If a petition for extension of time is necessary in order for this paper to be deemed timely filed, please consider this a petition therefor.

If a telephone conference would facilitate the resolution of any issue or expedite the prosecution of the application, then Examiner is invited to telephone the undersigned at the telephone number given below.

Respectfully submitted,
CONLEY ROSE, P.C.

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