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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* MIKAEL PRYTZ, JOACHIM SACHS, PER MAGNUSSON, JOHAN LUNDSJÖ and PETER LARSSON

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Appeal 2015-007087
Application 11/917,112
Technology Center 2400

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Before BRUCE R. WINSOR, LINZY T. McCARTNEY, and NATHAN A. ENGELS, *Administrative Patent Judges*.

*PER CURIAM.*

DECISION ON APPEAL

Appellants[1] appeal under 35 U.S.C. § 134(a) from the Examiner's Final Rejection of claims 27–56, which constitute all the claims pending in this application. We have jurisdiction under 35 U.S.C. § 6(b). Claims 1–26 are canceled. *See* Br. 19.

We affirm-in-part.

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[1] According to Appellants, the real party in interest is Telefonaktiebolaget LM Ericsson (publ). Br. 2.

## STATEMENT OF THE CASE

### *Illustrative Claim*

Claim 27 is independent and illustrative of the subject matter on appeal:

> 27. A method of selecting a route for a data transmission flow in a communication network, comprising:
>
> defining a first route from a sender to a receiver comprising at least a first link having a first link metric, and a second route from the sender to the receiver comprising at least a second link having a second link metric;
>
> determining the value of at least the first link metric based on a cross-correlation value representing an evaluated change that would occur in the first link metric value if a data flow would already use a link in the network other than the first link due to the first link and the other link transmitting on different channels or accessing common resources; and
>
> comparing route metrics for the first and second routes, the route metrics based on the link metric values of the links comprising the routes;
>
> wherein one or more method steps are performed by a computational circuit associated with a network node.

Br. 19.

*The Examiner's Rejections*

Claims 27–56 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. *See* Final Act. 3–4.

Claims 27–30, 33–36, 38–40, 43–46, and 48–56 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Shao,[2] Padhye,[3] and one or more of Miki,[4] Garcia-Luna-Aceves,[5] Benmohamed,[6] and Liu[7]. *See* Final Act. 4–16.

## ANALYSIS

*Rejection under 35 U.S.C. § 112, First Paragraph*

We have reviewed the Examiner's written description rejection of claims 27–56 in light of Appellants' arguments and agree with Appellants that the Examiner erred. *See* Ans. 3–4; Final Act. 3–4; Br. 6–8. The Examiner found that claims 27–56 fail to comply with the written description requirement because the Specification describes a network node and various units but does not describe a "circuit," as recited in the following claim limitations: "computational circuit," "link metric function computational circuit," "link metric function circuit," "path determining circuit," and "cross-correlation value determining circuit." *See* Ans. 3–4; Final Act. 4. The Examiner explained that the disclosed "network node" and

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[2] Shao et al. (US 2005/0083848 A1; published Apr. 21, 2005) ("Shao").
[3] Padhye et al. (US 2005/0286426 A1; published Dec. 29, 2005) ("Padhye").
[4] Miki et al. (US 5,724,378; issued Mar. 3, 1998) ("Miki").
[5] Benmohamed et al. (US 6,795,399 B1; issued Sept. 21, 2004) ("Benmohamed").
[6] Garcia-Luna-Aceves et al. (US 2002/0013856 A1; published Jan. 31, 2002) ("Garcia-Luna-Aceves").
[7] Liu et al. (US 2005/0265288 A1; published Dec. 1, 2005) ("Liu").

"unit" did not provide adequate support for a "circuit" because (1) a network node "can simply be a node in a network topology graph," and (2) a unit "can simply be purely software." Ans. 3–4. Appellants argue one of ordinary skill in the art of "computer technology would understand that the network node described in the Specification would have to include a processor comprising processing circuits and that the LMF computing function unit of the network node (and others) would be implemented on a processing circuit or processing circuits." Br. 8 (citing *HTC Corp. v. IPCom GmbH & Co., KG*, 667 F.3d 1270, 1279 (Fed. Cir. 2012) (holding that "[a]lthough the specification here does not literally disclose a processor and transceiver, a person skilled in the art would understand that the mobile device would have to contain a processor and transceiver")).

We agree with Appellants for the reasons stated by Appellants. Although Appellants' Specification does not literally disclose a circuit, one of ordinary skill in the art of computer technology would understand that the disclosed network nodes and units, *see* Spec. 10:8–27, would be implemented on one or more processing circuits. *See* Br. 8; *HTC Corp.*, 667 F.3d at 1279. Put differently, we find that Appellants' Specification conveys, with reasonable clarity, possession of the invention because Appellants' description of network nodes and units at least implies the use of a processing "circuit." *See* Spec. 10:8–27; *Carnegie Mellon Univ. v. Hoffmann-La Roche Inc.*, 541 F.3d 1115, 1122 (Fed. Cir. 2008) (a patent applicant's specification must "convey with reasonable clarity to those skilled in the art that, as of the filing date sought, [the applicant] was in possession of the invention") (citation omitted); MPEP § 2163.02 ("The subject matter of the claim need not be described literally (i.e., using the

same terms or *in haec verba*) in order for the disclosure to satisfy the description requirement."). For these reasons, we do not sustain the rejections of claims 27–56 under 35 U.S.C. § 112, first paragraph.

*Rejections under 35 U.S.C. § 103(a)*

Appellants contend the combination of Shao, Padhye, and Miki does not teach or suggest the "determining" limitation of claim 27. *See* Br. 10–14. Appellants argue Shao's link correlation metric does not teach or suggest the "evaluated change" portion of the "determining" limitation. *See* Br. 10, 12–13. Appellants submit that Shao's link correlation metric, at most, expresses a mathematical correlation based on an expectation E of quality of service (QoS) metrics for two independent and active links, $L_{ij}$ and $L_{mn}$. *See* Br. 10, 12–13. Accordingly, Appellants argue Shao's link correlation metric does not relate to a change that would occur in only one of links $L_{ij}$ and $L_{mn}$ if a data flow were to use another link. *See* Br. 10. Appellants further argue that Padhye does not teach or suggest an "evaluated change" that is "due to the first link and the other link transmitting on different channels or accessing common resources." *See* Br. 11 (emphasis omitted). According to Appellants, even though Padhye teaches that interference between busy paths should be considered when evaluating path metrics, *see* Br. 12–13, Padhye assumes links that operate on different channels do not interfere with or affect one another and is silent as to links that share common resources. *See* Br. 11. Finally, Appellants argue that Miki does not disclose the "cross-correlation value" of the "determining" limitation and that a person skilled in the art would not combine Miki with

Shao and Padhye. *See* Br. 11–14. We find Appellants' arguments unpersuasive and agree with the Examiner.

The Examiner found Shao teaches a method for selecting multiple paths between a server and a client. Final Act. 5 (citing Shao ¶ 6). As cited by the Examiner, Shao's multi-path selection method includes measuring quality of service metrics for each link in each path to create a link correlation matrix and a path correlation matrix, where the path correlation matrix relates "each possible path to all other possible paths" (Shao ¶ 22). *See* Final Act. 5 (citing Shao ¶¶ 21–43, 51–55). Further, Shao teaches determining "a correlation cost (cc) for each link L with respect to a previous selected link set S of a path" (Shao ¶ 48) and using a cost function to combine the correlation cost with the quality of service metrics to obtain a new cost for each link (Shao ¶¶ 50–55). *See* Shao Fig 2, ¶¶ 44–56 (describing equations (7) and (8) for calculations of correlation costs and combining correlation costs and measured metrics to obtain new costs for each link). In other words, Shao teaches determining a change in cost for a given link based on a cross-correlation value between that link and one or more already selected links. *Compare* Shao ¶¶ 48–51 (describing calculation of a correlation cost for each link with respect to a previously selected link set and applying a cost function to calculate a new cost for each link; "[t]his cost function is a weighted sum of the path correlation matrix **151** and the metric W **152**, where $\alpha$ and $\alpha_i$ are weighting factors") and 52 ("we use the cost function of equation (8) that combines the correlation cost and the most important link metrics, such as packet loss rate and latency, using the appropriate weighting factors"), *with* Spec. 6 ("[t]he estimated correlation-corrected link metrics then can be computed as the sum of the

link metric and the cross correlation values of the links in [a given path] *p*") and 9 (describing an "updated estimate" of the cross-correlation value of link *a* that includes a weight factor representing the probable influence of link *b*).

Further, as cited by the Examiner, Padhye similarly discloses combining and weighting path metrics to, among other things, account for factors such as bandwidth, physical layer loss rate, increased consumption of resources, increased delay, and interference. *See* Final Act. 6 (citing Padhye ¶¶ 35–38); *see also* Spec. 12 ("The reason for the increase [in link metric values] can be that one of the links became very loaded following the routing, or that the two hops use the same link technology in this route and that they have to share resources or that they interfere with each other."). Among other things, Padhye teaches weighting path metrics to account for a reduction in throughput due to interference among links operating on the same channel, which reasonably teaches or suggests that the links are interfering with one another when "accessing common resources." *See* Padhye ¶ 38; *accord* Spec. 2:3–4 (disclosing that different links sharing the same channel use the same CSMA medium for transmission of different hops); *contra* Br. 11. Moreover, contrary to Appellants' arguments (Br. 11), Padhye teaches that the weighting path metrics should "account" for the fact that links on different channels do not interfere with another (Padhye ¶ 38), and Appellants' Specification similarly recognizes that certain components of a cross-correlation value "may be zero, which can mean that the corresponding link metrics are uncorrelated with [link metric] $m_a$" (Spec. 5).

Accordingly, having considered the Examiner's rejection in view of each of Appellants' arguments and the evidence of record, we disagree with Appellants' arguments that the combined teachings of the cited references

do not teach or suggest the "determining" limitation of claim 27. *Contra* Br. 8–14. Shao and Padhye are analogous art as they are the same field of endeavor as Appellants' invention—routing data traffic in a communication network—and reasonably pertinent to the problem addressed by Appellants. *Compare, e.g.*, Shao ¶¶ 1, 58, *and* Padhye ¶ 2, *with* Spec. 1:4–17. Appellants do not specifically address or rebut the Examiner's rationale to combine Shao with Padhye, which the Examiner drew from the Padhye reference, and we agree with the Examiner that claim 27 would have been obvious in view of the references' combined teachings.[8] *See* Br. 8–14; Final Act. 6 (citing Padhye ¶ 38). Accordingly, we are unpersuaded the Examiner erred in the rejection of claim 27. *See* Final Act. 5–6; *In re Bush*, 296 F.2d 491, 496 (CCPA 1961) (sustaining a multiple reference rejection under 35 U.S.C § 103(a) by relying on less than all of the references); *In re Boyer*, 363 F.2d 455, 458 n.2 (CCPA 1966). We also sustain the rejection of independent claims 39 and 49, as well as dependent claims 28–30, 33–36, 38, 40, 43–46, 48, and 50–56, which were not argued separately with particularity beyond the arguments advanced for claim 27. *See* Br. 14–17.

## DECISION

We affirm the rejections of claims 27–30, 33–36, 38–40, 43–46, and

[8]The Examiner states that Shao and Padhye do not teach "the value is a cross-correlation value" and cites Miki's teachings that the amount of interference that one path experiences from another path can be termed a "cross-correlation." Final Act. 6 (Citing Miki col. 6, l. 43–col. 7, l. 64). Consistent with the Examiner's findings and as explained above, Shao and Padhye teach the claimed "cross-correlation value," and we find the Examiner's citation to Miki was unnecessary.

48–56 under 35 U.S.C. § 103(a).

We reverse the rejections of claims 27–56 under 35 U.S.C. § 112, first paragraph.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART