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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 13/198,937 | 08/05/2011 | Fatai ZHANG | 81344933US07 | 8753 |

97291 7590 11/20/2018

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| EXAMINER | |
|---|---|
| LUO, ANTHONY L | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2465 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 11/20/2018 | ELECTRONIC |

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* FATAI ZHANG and JIANHUA GAO

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Appeal 2016-008323
Application 13/198,937[1]
Technology Center 2400

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Before KALYAN K. DESHPANDE, JASON V. MORGAN, and HUNG H. BUI, *Administrative Patent Judges*.

BUI, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants seek our review under 35 U.S.C. § 134(a) of the Examiner's Final Rejection of claims 1–4 and 6–8, which are all the claims pending in the application. We have jurisdiction under 35 U.S.C. § 6(b). An oral hearing was held on November 8, 2017. A transcript of the oral hearing will be made of record in due course.

We REVERSE.[2]

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[1] According to Appellants, the real party in interest is Huawei Technologies Co., Ltd. App. Br. 2.

[2] Our Decision refers to Appellants' Appeal Brief ("App. Br.") filed December 28, 2015; Reply Brief ("Reply Br.") filed July 19, 2016; Examiner's Answer ("Ans.") mailed May 19, 2016; Final Office Action ("Final Act.") mailed April 29, 2015; and original Specification ("Spec.") filed August 5, 2011.

## STATEMENT OF THE CASE

*Appellants' invention*[3]

Appellants' invention relates to "a resource state monitoring method, device and communication network, so as to increase network stability." Spec. ¶ 9. According to Appellants, existing optical networks (e.g., automatically switched optical network (ASON) or generalized multi-protocol label switching (GMPLS) network) must perform three synchronization processes before providing an available resource and forming a consistent global topology, including: (1) "[a] vertical synchronization (or local initialization)" where "a local resource of a control plane is initialized"; (2) "[a] horizontal synchronization (or link discovery)" where "links, [between nodes] are acquired"; and (3) "a global synchronization" where "a global consistent topology" is obtained. Spec. ¶¶ 4–7. However, "inconsistency may occur between [1] the control plane resource state and [2] the data plane resource state due to a network abnormality" during a network running process which would negatively impact network stability. Spec. ¶ 8. Nevertheless, "there is no mechanism for detecting the control plane resource state and the data plane resource state in the network running process in the existing [optical] systems." Spec. ¶ 8. As such, Appellants propose "a resource state monitoring device" (shown in Figure 6) adapted to detect [1] "a data plane resource state" and [2] "a control plane resource state" of each node within an optical network during a network running time and to report any inconsistency between

[3] The present application is a continuation of U.S. Serial 12/421,074, filed April 9, 2009, now U.S. 8,014,300.

thereto to a management plane of each of the nodes in order to increase network stability. Spec. ¶¶ 9–10.

Appellants' Figure 6 is reproduced below.

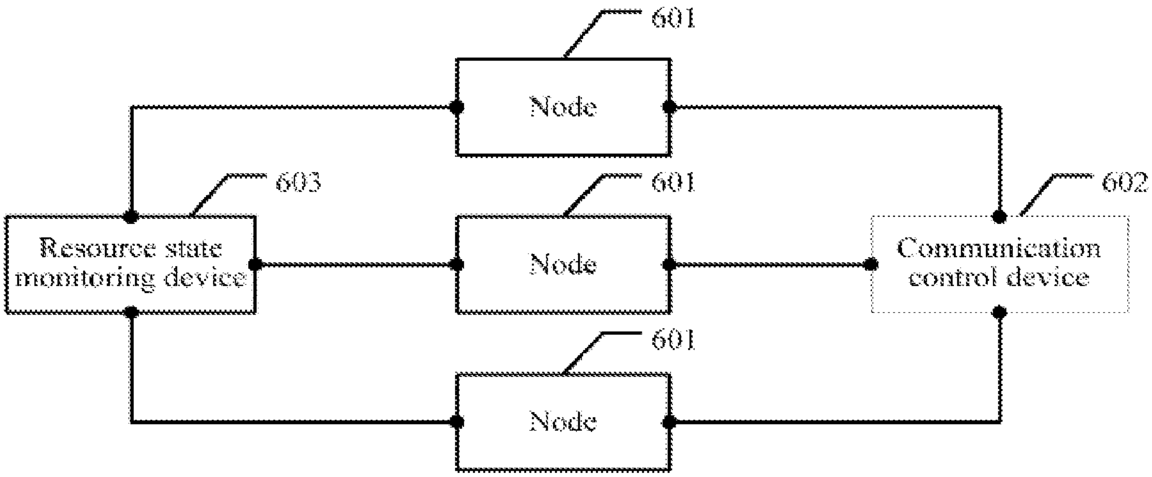



FIG. 6

Appellants' Figure 6 shows resource state monitoring device 603 adapted to detect and report inconsistency between [1] a data plane resource state and [2] a control plane resource state of each node 601.

*Claims on Appeal*

Claims 1–4 and 6–8 are pending on appeal. Claims 1 and 6 are independent. Claim 1 illustrates the claimed subject matter, as reproduced below, with disputed limitations in *italics*:

> 1. A resource state monitoring method, comprising:
>
> [1] *determining whether* [1A] *a control plane resource state of a first node and* [1B] *a control plane resource state of a second node are consistent*, wherein the second node is adjacent to the first node in a network topology structure, and wherein the control plane resource state of the first node comprises a subnetwork point (SNP) state of a control plane of the first node, and the control plane resource state of the second node comprises an SNP state of a control plane of the second node;
>
> based on a determination that the control plane resource state of the first node and the control plane resource state of the

> second node are not consistent, [2] *determining whether* [2A] *a data plane resource state of the first node and* [2B] *the control plane resource state of the first node are consistent during a network running time*; and
>
> based on a determination that the data plane resource state of the first node and the control plane resource state of the first node are not consistent, [3] reporting the inconsistency to a management plane of the first node.

App. Br. 13 (Claims App.) (bracketing added).

EXAMINER'S REJECTIONS and REFERENCES

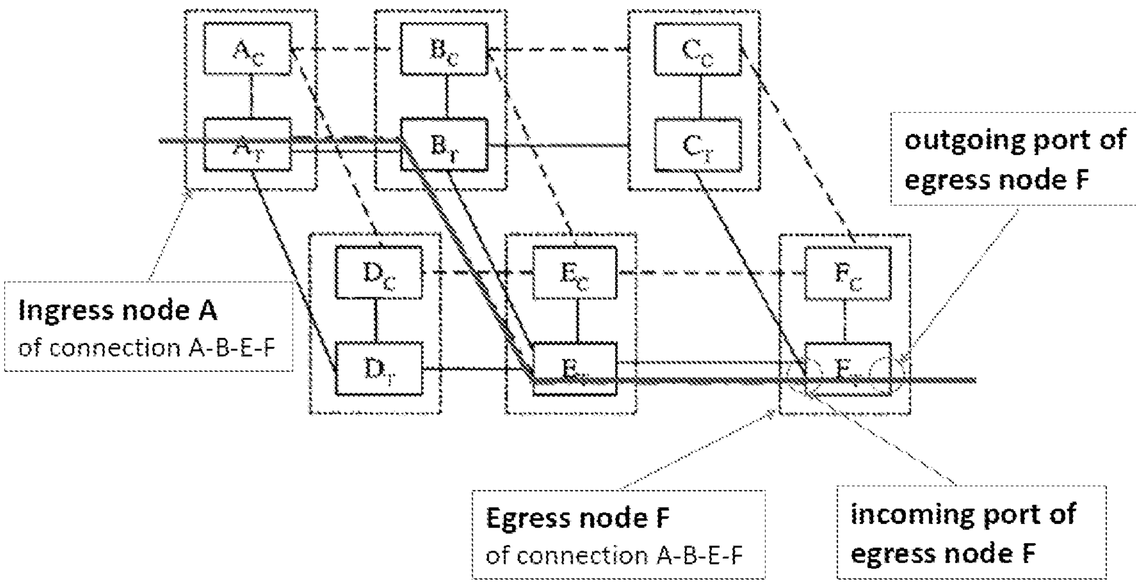
(1) Claims 1–3 and 6–8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Xu (US 8,068,483 B2; issued Nov. 29, 2011), Aubin et al. (US 7,680,934 B2; issued Mar. 16, 2010; "Aubin"), and Fant et al. (US 2004/0076151 A1; published Apr. 22, 2004; "Fant"). Final Act. 4–12.

(2) Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Xu, Aubin, Fant, and Windisch et al. (US 7,447,225 B2; issued Nov. 4, 2008; "Windisch"). Final Act. 11–13.

ANALYSIS

In support of the obviousness rejection of claim 1 and, similarly, claim 6, the Examiner finds the combination of Xu, Aubin, and Fant teaches all the claim limitations. Final Act. 4–6. In particular, the Examiner finds Wu teaches a resource state monitoring method and device comprising [step 1] "determining whether [1A] a control plane resource state of a first node and [1B] a control plane resource state of a second node are consistent." *Id.* at 4 (citing Wu 5:4–16, 5:45–46, 7:50–52, Fig. 1). (Emphasis omitted).

Wu's Figure 1 is reproduced below with additional markings for illustration:



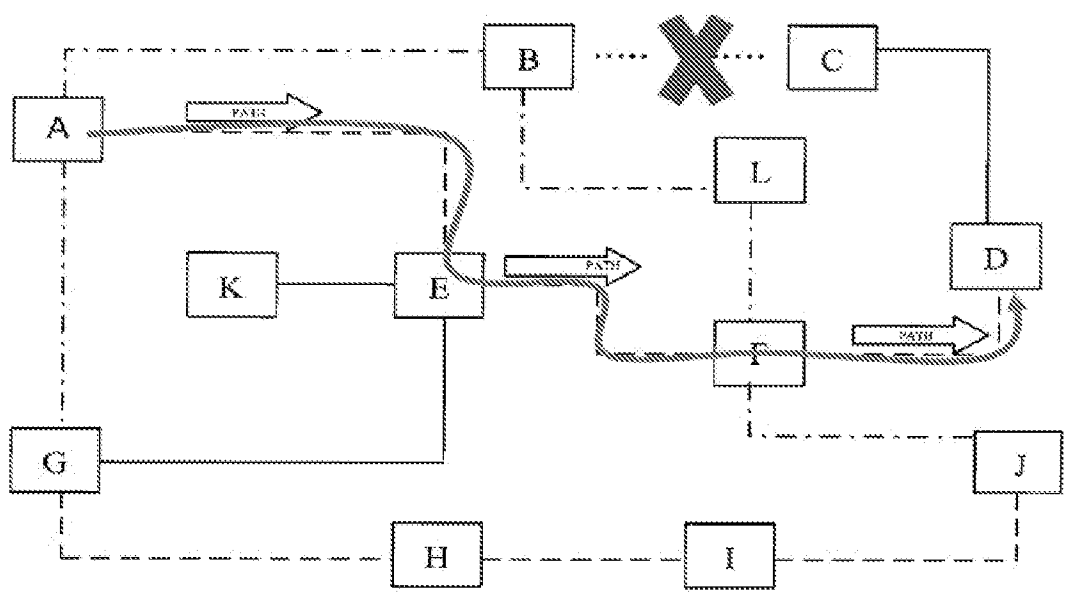

Wu's Figure 1 shows an optical network including, for example, six (6) nodes A–F connected via optical links to operate in [1] a data (transmission) plane AT–FT and [2] a control plane AC–FC (that can be physically combined but are logically separated) to establish connections (optical links) between nodes.

Wu teaches "the [] control planes of nodes communicate with each other by optical links," as shown in Figure 1, and control migration from the created connection of A-B-E-F in a switched connection in a transmission network so that "each node obtains its connections of optical links." Wu 5:4–57. According to Wu's migration, node A forwards a connection migrating request along the created connection of A-B-E-F (node by node) until node F receives the message for verification and the compares node ID and port ID of the egress node carried in the message with the actual node ID and port ID of node F to determine if they are consistent. Wu 7:43–52.

Separately, the Examiner finds Fant teaches [step 2] "determining whether [2A] a data plane resource state of the first node and [2B] the control plane resource state of the first node are consistent during a network running time." *Id.* at 6 (citing Fant ¶ 6). (Emphasis omitted).

Fant teaches techniques for improving the reliability of connections in an optical network, shown in Figure 1, using connection identifiers. Fan ¶ 1. In the event of a connection failure, network resources are dynamically reconfigured to carry out the higher priority connection within the network topology, shown in Figure 5. According to Fant, "to maintain the integrity of data, the control plane and the data plane are synchronized to ensure that all network reconfiguration occurs in a precise ordered fashion and that no data is enabled until the network has stabilized." Fant ¶ 6. However, if the control plane and the data plane are not synchronized, data can be misdirected. *Id.* ¶ 7.

Fant's Figure 5 is reproduced below with additional markings for illustration:




Fant's Figure 5 shows an optical network where a primary path A-B-C-D fails, connection A→D is switched to a secondary path A-E-F-D.

Appellants do not dispute the Examiner's rationale for combining Wu, Aubin, and Fant. Instead, Appellants dispute the Examiner's factual findings regarding Wu and Fant. First, Appellants argue Wu does not teach or suggest Appellants' claimed [step 1] "determining whether [A] a control plane resource state of a first node and [B] a control plane resource state of a second node are consistent" as recited in claims 1 and 6. App. Br. 7–10; Reply Br. 2. According to Appellants, Wu's "port information" of a node does not correspond to Appellants' claimed "resource state" of a control plane or data plane, particularly when the term "resource state" is described by Appellants' Specification as a resource occupancy status of the control plane or the data plane, including, for example: "available," "potentially available," "assigned," and "busy." App. Br. 8–9 (citing Spec. ¶ 35); Reply Br. 5. As such, Wu's disclosure of "comparing the ID and outgoing port information of the nodes" is not and cannot be the same as "comparing the control plane resource state of the nodes," i.e., Appellants' claimed "determining whether a control plane resource state of a first node and a control plane resource state of a second node are consistent." App. Br. 9–10 (citing Wu 7:42–52); Reply Br. 4–5.

Second, Appellants argue Fant does not teach or suggest Appellants' claimed [step 2] "determining whether [2A] a data plane resource state of the first node and [2B] the control plane resource state of the first node are consistent during a network running time." App. Br. 10–11. In particular, Appellants acknowledge Fant teaches "synchronization [between] the control plane and the data plane," but argue Fant's "synchronizing the control plane and the data plane" is not the same as Appellants' claimed [step 2] "determining whether [2A] a data plane resource state of the first node and [2B] the control plane resource state of the first node are consistent during a network running time." *Id.* at 10 (citing Fant ¶ 6). According to Appellants, because of Fant's synchronization, "there is no need to determine whether the control plane and the data plane are consistent during a network running time." *Id.* at 11.

In response, the Examiner takes the position that "[b]ecause each node has more than one port, these ports would be considered as the resource of the nodes" and, hence, "Xu's disclosure of comparing the port information of the nodes is similar to determin[ing] the control plane resource state of the nodes in a broadest reasonable interpretation." Ans. 12–13. However, the Examiner does not address Appellants' arguments regarding Fant.

We do not agree with the Examiner. During prosecution, claim terms are given their broadest reasonable interpretation (BRI) consistent with the specification. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). However, "the proper BRI construction is not just the broadest construction, but rather the broadest *reasonable* construction *in light of the specification*." *In re Man Mach. Interface Techs. LLC*, 822 F.3d 1282, 1287 (Fed. Cir. 2016), citing *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015) ("A construction that is 'unreasonably broad' and which does not 'reasonably reflect the plain language and disclosure' will not pass muster." (citation omitted)).

> [T]he specification "is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term".

*See Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) (en banc).

Appellants' Specification describes in relevant part:

> [0035] The resource states of the node are mainly divided into a control plane resource state and a data plane resource state, and the control plane SNP state may be divided into available, potentially available, assigned and busy. The "available" state refers to that the resource corresponding to the SNP is in an idle state and can be used. The "potentially available" state and "busy" state are generally the states occur in a multi-adaptable or virtual private network (VPN), in which a connection point (CP) of one transfer plane resource may be assigned to multiple subnetwork points of multiple control planes to use. The "potentially available" state refers to that the resource corresponding to the transfer plane has not been assigned to any control plane or management plane to use, and these control planes potentially have a chance for using it. The "busy" state refers to that the resource corresponding to the transfer plane has been assigned to one of the control planes or management planes, and the SNP state of the other control planes is the busy state, i.e., the resource cannot be used again. The "assigned" state generally refers to that the resource corresponding to the SNP has been assigned, but the resource may also be assigned to a service with a higher priority or another specified service.

Spec. ¶ 35 (emphasis added).

According to Appellants' Specification, the term "resource state" refers to a resource occupancy status of the control plane of two adjacent nodes (i.e., first and second nodes), such as, for example: "available," "potentially available," "assigned," and "busy," as Appellants argue. App. Br. 8–9; Reply Br. 5. As such, Appellants' claimed [step 1] "determining whether [1A] a control plane resource state of a first node and [1B] a control plane resource state of a second node are consistent" refers to the same control plane occupancy states of two adjacent nodes as including, for example: (1) both "available," (2) both "busy" (occupied), or (3) one "busy" (occupied), one "available." Likewise, Appellants' claimed [step 2] "determining whether [2A] a data plane resource state of the first node and

[2B] the control plane resource state of the first node are consistent during a network running time" refers to the different occupancy states of the same node as including, for example: (1) "available" or (2) "busy" (occupied).

Based on that construction, we do not agree with the Examiner that (1) Wu teaches Appellants' claimed [step 1] "determining whether [1A] a control plane resource state of a first node and [1B] a control plane resource state of a second node are consistent" and, likewise, (2) Fant teaches Appellants' claimed [step 2] "determining whether [2A] a data plane resource state of the first node and [2B] the control plane resource state of the first node are consistent during a network running time." The term "resource state" cannot be broadly construed to encompass any type of resource, including Wu's node ID or port ID or Wu's disclosure of comparing port information of adjacent nodes. *See* Wu 7:43–52.

Based on this record, we are persuaded of Examiner error. Accordingly, we do not sustain the Examiner's obviousness rejection of independent claims 1 and 6 and their dependent claims 2–4 and 7–8.

## CONCLUSION

On the record before us, we conclude Appellants have demonstrated the Examiner erred in rejecting claims 1–4 and 6–8 under 35 U.S.C. § 103(a).

## DECISION

As such, we reverse the Examiner's rejection of claims 1–4 and 6–8 under 35 U.S.C. § 103.

REVERSED