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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte BOGDAN O. CARBUNAR, MICHAEL D. PEARCE, VENUGOPAL VASUDEVAN, LOREN J. RITTLE, and MICHAEL L. NEEDHAM

Appeal 2018-005548
Application 15/179,765
Technology Center 2400

Before ST. JOHN COURTENAY III, ERIC S. FRAHM, and DENISE M. POTHIER, *Administrative Patent Judges*.

FRAHM, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF CASE[1]

Introduction

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's Final Rejection of claims 1–9, 11, 14–17, 19, and 20.[2] Claims 10, 12, 13,

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[1] According to Appellants, Google, Inc. is the real party in interest (App. Br. 3).

[2] Because the Examiner rejects claim 14 in both the Final Rejection (*see* Final Act. 8–9) and the Examiner's Answer (*see* Ans. 2, 4–5), we consider

and 18 have been objected to by the Examiner (*see* Final Act., cover sheet (Office Action Summary), box #8). We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

Appellants' Disclosed and Claimed Invention

Appellants' disclosed invention pertains to distributed content management for video on demand (VoD) systems (Title; Spec. ¶ 3). More specifically, Appellants disclosed invention "relates generally to distributed caching for video-on-demand systems, and in particular to a method and apparatus for transferring content within such video-on-demand systems" (Spec. ¶ 2). As shown in Appellants' Figure 1 (labeled prior art), a video service office (VSO) 101 acts as a master server containing a content library for the system (Spec. ¶ 4). The VSO 101 feeds video content to multiple video home offices (VHOs) 102, which act as servers providing caching and streaming functions (Spec. ¶ 4; Fig. 1). The VHOs 102 in turn feed video content to customer set-top-boxes (STBs) 103 (Spec. ¶ 4; Fig. 1). Appellants, recognizing the need for a more efficient way to download content in a VoD system (Spec. ¶ 7), disclose and claim a system (claim 17) and a computer-readable medium (claim 9) for performing a method (claim

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claim 14 as being rejected with claim 5 under § 103(a). And, although claim 15 is listed on the cover sheet (Office Action Summary) of the Final Rejection (box #8) as being objected to (along with claims 10, 12–14, and 18), and claim 15 is *not* listed on the cover sheet of the Final Rejection as being rejected (*see* Final Act. cover sheet, box #7), we consider claim 15 to be rejected because (i) claim 15 is included in the heading of the statement of the rejection found at page 9 of the Final Rejection (*see also* Ans. 2); and (ii) the Examiner states in the Final Rejection that "[c]laim 15 is rejected on the same grounds as claim 7" (Final Act. 11).

1) of responding to a request for content by fetching content for multiple content sources based on respective *costs* of a network impact of fetching content from the different content sources (e.g., different VHOs) (claims 1, 9, 17; Figs. 2, 4–6; Abstract).

Exemplary Claims

Exemplary claims 1, 2, and 5 under appeal, with emphases and bracketed lettering added to key portions of the claims at issue, read as follows:

> 1. A method comprising:
>
> receiving, by a processing apparatus at a first content source, a request for content; in response to receiving the request, determining that the content is not available from the first content source;
>
> [A1] in response to determining that the content is not available from the first content source, *determining that a second content source cost associated with retrieving the content from a second content source is less than a third content source cost associated with retrieving the content from a third content source*, wherein the second content source cost is determined based on a network impact to fetch the content from the second content source to the first content source, and wherein the third content source cost is determined based on a network impact to fetch the content from the third content source to the first content source; and
>
> [A2] *in response to determining that the second content source cost is less than the third content source cost, fetching the content* from the second content source to the first content source, wherein the first content source, the second content source, and the third content source each maintain a different subset of content available from a master content source.
>
> 2. The method of claim 1, further comprising:
>
> [B1] *determining that there is not sufficient* memory to cache the content at the first content source; and

> [B2] *selecting one or more items to evict from a cache* at the first content source to make available sufficient memory for the content, wherein the selection of the items to evict minimizes a network penalty associated with the eviction of the items, wherein the network penalty is based on sizes of the content and the items, and numbers of requests expected to be received for the content and the items.
>
> 5. The method of claim 1, [C] wherein the second content source cost is determined further *based on a number of items simultaneously transferred* over a link in a network path from the second content source to the first content source, and wherein the third content source cost is determined further based on a number of items simultaneously transferred over a link in a network path from the third content source to the first content source.

The Examiner's Rejections

(1) Claims 1, 3, 4, 8, 9, 11, 16, 17, and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Costa (US 2004/0143850 A1; published July 22, 2004) in view of Scholl (US 8,028,319 B2; issued Sept. 27, 2011). Final Act. 3–7.

(2) Claim 2 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Costa, Scholl, Allegrezza (US 2004/0103437 A1; published May 27, 2004), and Ryu (US 8,087,056 B2; published Dec. 27, 2011). Final Act. 7–8.

(3) Claims 5 and 14 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Costa, Scholl, and Borst (US 2011/0107030 A1; published May 5, 2011). Final Act. 8–9.

(4) Claims 6, 7, 13, 15, and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Costa, Scholl, and Kenner (US 5,956,716; issued Sept. 21, 1999).[3] Final Act. 9–11.

Appellants' Contentions

(1) Appellants contend (App. Br. 6–12; Reply Br. 3–6) that the Examiner erred in rejecting claims 1, 3, 4, 8, 9, 11, 16, 17, and 19 under 35 U.S.C. § 103(a). Specifically, Appellants contend neither the combination of Costa and Scholl (App. Br. 6–7), nor Scholl alone (App. Br. 11–12) teaches or suggests limitations [A1] and/or [A2] as recited in claim 1. Appellants primarily present arguments as to method claim 1 (App. Br. 6–12; Reply Br. 3–6), and assert that claims 3, 4, 8, 9, 11, 16, 17, and 19 contain similar features as claim 1 and are, therefore, patentable for the same reasons (App. Br. 12; Reply Br. 6). Therefore, we select claim 1 as representative of the group of claims 1, 3, 4, 8, 9, 11, 16, 17, and 19 pursuant to our authority under 37 C.F.R. § 41.37(c)(1)(iv).

(2) With regard to claim 2 rejected over the combination of Costa, Scholl, Allegrezza, and Ryu, Appellants contend (App. Br. 12–14; Reply Br. 6–8) neither the combination of applied references, nor Allegrezza or Ryu taken individually, teaches or suggests limitation [B1] and [B2] recited in claim 2. More specifically, as to Allegrezza, Appellants contend Allegrezza "merely describes that 'if the demand is less than a second threshold, . . . then at step 340 the content file is moved to *a more remote server*'" (App. Br. 13), and thus fails to teach or suggest limitations [B1] and [B2] recited in claim 2. Appellants also contend that "Ryu merely mentions classifying

[3] *See supra* note 2.

stored content into high-capacity content and low-capacity content" (App. Br. 14), and thus fails to teach or suggest limitations [B1] and [B2].

(3) With regard to claims 5 and 14 rejected over the combination of Costa, Scholl, and Borst, Appellants contend (App. Br. 15–16; Reply Br. 8–9) Borst fails to teach or suggest limitation [C] as recited in claim 5. More specifically, Appellants contend "Borst [paragraph 18] mentions 'some QoS metric reflecting the congestion levels on the various network linkes'" (App. Br. 16), but does not teach or suggest limitation [C] recited in claim 5. Appellants primarily present arguments as to claim 5 (App. Br. 15–16; Reply Br. 8–9), and assert that claim 14 contains similar features as claim 5 and is, therefore, patentable for the same reasons as claim 5 (App. Br. 16; Reply Br. 9). Therefore, we select claim 5 as representative of the group of claims 5 and 14 pursuant to our authority under 37 C.F.R. § 41.37(c)(1)(iv).

(4) Appellants do not present any arguments as to claims 6, 7, 13, 15, and 20 rejected over the combination of Costa, Scholl, and Kenner.

Principal Issues on Appeal

Based on Appellants' arguments in the Appeal Brief (App. Br. 6–17) and the Reply Brief (Reply Br. 3–9), the following principal issues are presented on appeal:

(1) Did the Examiner err in rejecting claims 1–9, 11, 15–17, 19, and 20 as being unpatentable over the combination of Costa and Scholl because the combination fails to teach or suggest limitations [A1] and/or [A2], as recited in representative claim 1?

(2) Did the Examiner err in rejecting claim 2 as being obvious because the combination of Allegrezza and Ryu, and thus the combination of Costa,

Scholl, Allegrezza, and Ryu, fails to teach or suggest limitations [B1] and [B2], as recited in claim 2?

(3) Did the Examiner err in rejecting claims 5 and 14 as being obvious because Borst, and thus the combination of Costa, Scholl, and Borst, fails to teach or suggest limitation [C] recited in representative claim 5?

ANALYSIS

We have reviewed the Examiner's rejections (Final Act. 3–11) in light of Appellants' arguments in the Appeal Brief (App. Br. 6–16) and the Reply Brief (Reply Br. 3–9) that the Examiner has erred. We have also reviewed the Examiner's response to Appellants' arguments in the Appeal Brief (Ans. 3–5) in the Examiner's Answer. We disagree with Appellants' arguments. We adopt as our own: (1) the findings and reasons set forth by the Examiner in the action from which this appeal is taken (Final Act. 3–4 (claim 1); Final Act. 7–8 (claim 2); Final Act. 8–9 (claim 5)), as well as the Advisory Action mailed December 18, 2017 (p. 2), and (2) the reasons set forth by the Examiner in the Examiner's Answer (Ans. 3–4 (claim 1); Ans. 4 (claim 2); Ans. 4–5 (claim 5)) in response to Appellants' Appeal Brief. We concur with the conclusions reached by the Examiner, and we provide the following analysis for emphasis.

Claims 1, 3, 4, 8, 9, 11, 16, 17, and 19

Appellants' contentions that although Scholl makes a determination "according to some rules" (App. Br. 11), and delivers content to a requestor from "the closest distribution device" (Reply Br. 5), Scholl does not teach or suggest limitation [A2], including distributing content based on "costs" which are "based on a network impact" (claim 1), are not persuasive.

When construing claim terminology (such as "costs" "based on a network impact") during prosecution before the Office, claims are to be given their broadest reasonable interpretation consistent with the specification as it would be interpreted by one of ordinary skill in the art. *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). "Construing claims broadly during prosecution is not unfair to the applicant . . . because the applicant has the opportunity to amend the claims to obtain more precise claim coverage." *Id.* The Specification is the best guide to the meaning of a disputed term. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

Appellants' Specification (Spec. ¶¶ 5, 6, 15, 16, 20, 22, 23, 30, 57, 67, 75, 81, 83, 85; Fig. 6, step 607; Abstract; original claim 1) explains content source "costs" in terms of storage space (Spec. ¶¶ 5, 57), "cost" (i.e., possibly monetary costs) (Spec. ¶¶ 5, 6, 30), total network or fiber ring load (Spec. ¶¶ 15, 16), predicted data traffic (Spec. ¶¶ 15, 16, 75, 84, 85) and/or transfer time (Spec. ¶¶ 67, 68), as well as the costs of maintaining and upgrading servers (Spec. ¶ 20) and/or the network penalty or cost of fetching content from particular sources/servers (Spec. ¶¶ 22, 23, 30, 81, 83–85, 88). Appellants recognize that (i) "efficiency" and "access latency" are factors in providing distributed content (Spec. ¶ 5); (ii) and increasing the storage space needed for content "impos[es] higher costs" and reduces "scalability" (Spec. ¶ 5); and (iii) a lower number of VHOs 102 results in lower costs (Spec. ¶ 6).

Costa discloses distributing video content to different servers based on "content redundancy," the "link distance" between the source and the customer, and reducing/eliminating "network congestion" (¶ 92; *see also*

Figs. 11, 12). Scholl discloses distributing video on demand content to users from different servers (col. 3, ll. 25–29) based on optimal proximity (col. 3, ll. 47–50; col. 4, ll. 29–30), time, number of nodes between source and user, and efficiency (col. 5, ll. 13–20) using rules (*see* col. 2, l. 20–col. 5, l. 20; Fig. 2).

Inasmuch as Appellants' Specification defines and describes distributing content in a video on demand system based on costs related to network impact in terms of efficiency, latency, and/or storage capacity, we are not persuaded the Examiner's claim interpretation is overly broad, unreasonable, or inconsistent with the Specification. Therefore, we agree with the Examiner's determination that claim 1's recitation of distributing content based on costs related to network impact: (i) in limitation [A1], encompasses the teachings or suggestions of Costa; and (ii) in limitation [A2], encompasses the teachings or suggestions of Scholl, and therefore we find the combination of Costa and Scholl teaches or suggests the method of distributed content management and fetching recited in claim 1 (*see* Final Act. 3–4; Ans. 3–4).

We agree with the Examiner that the "costs" based on "network impact" recited in claim 1 encompass the costs based on redundancy, distance, or congestion taught by Costa, and/or the costs based on proximity, time, and/or number of nodes taught by Scholl. Under the broadest reasonable interpretation,[4] we conclude "costs" "based on a network impact"

[4] Claim terms are to be given their broadest reasonable interpretation, as understood by those of ordinary skill in the art and taking into account whatever enlightenment may be had from the specification. *In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997).

can be costs in terms of load, storage space, time/latency, predicted traffic (i.e., amount of data transmitted over time), or monetary costs (*see* Spec. ¶¶ 5, 6, 15, 16, 20, 22, 23, 30, 57, 67, 75, 81, 83, and 85 discussed *supra*). We also note Appellants have not cited to a definition of "costs" or "network impact" in the Specification that would preclude the Examiner's broader reading.[5]

In view of the foregoing, we sustain the obviousness rejection of representative claim 1 as well as claims 3, 4, 8, 9, 11, 16, 17, and 19 grouped therewith as being obvious over the combination of Costa and Scholl.

Claim 2

With regard to claim 2 rejected over the combination of Costa, Scholl, Allegrezza, and Ryu, Appellants contend (App. Br. 12–14; Reply Br. 6–8) that neither the combination of applied references, nor Allegrezza or Ryu taken individually, teaches or suggests limitations [B1] (determining there is not sufficient memory to cache the content) and [B2] (selecting item(s) to evict from the cache) recited in claim 2. More specifically, as to Allegrezza, Appellants contend Allegrezza "merely describes that 'if the demand is less than a second threshold, . . . then at step 340 the content file is moved to *a*

[5] Any special meaning assigned to a term "must be sufficiently clear in the specification that any departure from common usage would be so understood by a person of experience in the field of the invention." *Multiform Desiccants, Inc. v. Medzam Ltd.*, 133 F.3d 1473, 1477 (Fed. Cir. 1998); *see also Helmsderfer v. Bobrick Washroom Equip., Inc.*, 527 F.3d 1379, 1381 (Fed. Cir. 2008) ("A patentee may act as its own lexicographer and assign to a term a unique definition that is different from its ordinary and customary meaning; however, a patentee must clearly express that intent in the written description." (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005))).

more remote server'" (App. Br. 13), and thus fails to teach or suggest limitations [B1] and [B2] recited in claim 2. Appellants also contend that "Ryu merely mentions classifying stored content into high-capacity content and low-capacity content" (App. Br. 14), and thus fails to teach or suggest limitations [B1] and [B2] recited in claim 2.

We note that each reference cited by the Examiner must be read, not in isolation, but for what it fairly teaches in combination with the prior art as a whole. *See In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (finding one cannot show non-obviousness by attacking references individually where the rejections are based on combinations of references).

In this light, Appellants' arguments presented as to the shortcomings in the teachings of Allegrezza and Ryu individually (*see* App. Br. 12–15; Reply Br. 6–8) are not persuasive inasmuch as the Examiner relies on a properly made *combination* of Costa, Scholl, Allegrezza, and Ryu to support the conclusion of obviousness of the subject matter of claim 2. For example, Appellants' argument (App. Br. 14) that Ryu only mentions classifying stored content into high-capacity content and low-capacity content, and thus does not teach or suggest all of limitations [B1] and [B2], is not persuasive inasmuch as the Examiner only relies upon Ryu as teaching a network penalty being based on the size of the content and items as recited in limitation [B2].

Appellants have not rebutted or otherwise shown the Examiner's explanation of the *combination* of the collective teachings and suggestions of the applied references made in the Final Rejection (*see* Final Act. 7–8) and in response to the Appellants' arguments in the Appeal Brief (*see* Ans. 4 regarding the references individually or in pairs) to be in error. Appellants'

Reply Brief does not persuade us otherwise. Notably, the Examiner relies on paragraphs 7, 52–63, and 67 and steps 310 and 315 in Figure 3 of Allegrezza as teaching or suggesting the portions of limitations [B1] and [B2] not taught or suggested by Ryu. Appellants' response to the Examiner's findings in this regard are conclusory, fail to specifically address the Examiner's findings regarding paragraphs 7, 52–63, and 67 in detail, and are thus unpersuasive.[6] Notably, we find that the concept of evicting items from a cache when there is insufficient memory in order to (i) minimize a network penalty, (ii) reduce the cost of storage, and/or (iii) reduce response times, is disclosed in paragraphs 7 and 67 of Allegrezza. This is not disputed by Appellants in the briefs.

The combined teachings and suggestions of Allegrezza and Ryu teach or suggest determining whether there is sufficient memory to cache content and minimizing the network penalty associated with caching content, as recited in claim 2. In view of the above, we agree with the Examiner (Final Act. 7–8; Ans. 4) that Costa and Scholl, when modified with Allegrezza and Ryu, teach or suggest "determining that there is not sufficient memory to cache the content" (limitation [B1]), and "selecting one or more items to evict from a cache" at a content source "to make available sufficient memory for the content" while minimizing the network penalty associated with the eviction of the items, "wherein the network penalty is based on sizes of the content and the items, and numbers of requests expected to be

[6] Appellants contend in the Reply Brief that "storing content in a server to minimize delay times or maximize the storage capacity efficiency as taught in Allegrezza does not teach or suggest" limitations [B1] and [B2] (Reply Br. 6).

received for the content and the items" (limitation [B2]), as recited in claim 2.

In view of the foregoing, we sustain the obviousness rejection of claim 2 as being obvious over the combination of Costa, Scholl, Allegrezza, and Ryu.

Claims 5 and 14

With regard to claim 5 rejected over the combination of Costa, Scholl, and Borst, Appellants contend "Borst [paragraph 18] mentions 'some QoS metric reflecting the congestion levels on the various network linkes'" (App. Br. 16), but does not teach or suggest limitation [C] (a content source cost is determined based on a number of items simultaneously transferred over a link in a network path) recited in claim 5.

Borst discloses quality of service (QoS) metrics and algorithms used to manage distribution of content to "maximize the traffic volume" and "minimize the bandwidth cost" which "need not be actual monetary expenses, but could also represent some QoS metric reflecting the congestion levels on the various network links, like link weights in Open Shortest Path First (OSPF) for example" (¶ 18).

Quality of service metrics are "[u]sed to quantitatively measure the quality of service of a network and the network services that are often considered are error rates, bandwidth, throughput, transmission delay, availability, jitter, etc.," Igi-Global.com, *What is QoS Metrics*, https://www.igi-global.com/dictionary/qos-metrics/48394 (last visited Feb. 11, 2019). Thus, QoS metrics concern storage capacity and/or the amount of data sent over time (traffic, latency, throughput, etc.), which are encompassed by the "costs" "based on a network impact" recited in claim 1,

and "costs" "based on a number of items simultaneously transferred" as further recited in claim 5.

In this light, we agree with the Examiner (Final Act. 8–9; Ans. 4–5) that Costa and Scholl, when modified with Borst's QoS metrics and algorithms, teach or suggest limitation [C] recited in claim 5, including determining a content source cost "based on a number of items simultaneously transferred over a link in a network path."

In view of the foregoing, we sustain the obviousness rejection of representative claim 5, as well as claim 14 grouped therewith, as being obvious over the combination of Costa, Scholl, and Borst.

Claims 6, 7, 13, 15, and 20

Based on Appellants' failure to address the Examiner's prima facie case of obviousness, Appellants have failed to show that the Examiner erred in determining that the combination of Costa, Scholl, and Kenner teaches or suggests the method, computer-readable medium, and system recited in claims 6, 7, 13, 15, and 20. Accordingly, we sustain the Examiner's obviousness rejection of these claims *pro forma*. *See* 37 C.F.R. § 41.37(c)(1)(iv) (requiring a statement in the briefs as to each ground of rejection presented by Appellant for review and that arguments not presented in the briefs by Appellant will be refused consideration).

CONCLUSION

The Examiner did not err in rejecting claims 1–9, 11, 14–17, 19, and 20 as being unpatentable under 35 U.S.C. § 103(a).

DECISION

The Examiner's rejections of claims 1–9, 11, 14–17, 19, and 20 are affirmed.

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)(iv).

AFFIRMED