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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 ZIV WOLKOWICKI,
DANIEL B. POLLACK, and JUSTIN WOOD

_____

Appeal 2018-006981
Application 14/341,562
Technology Center 2400

_____

Before JAMES R. HUGHES, STEVEN M. AMUNDSON, and
JASON M. REPKO, *Administrative Patent Judges*.

AMUNDSON, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant[1] seeks our review under 35 U.S.C. § 134(a) from a final
rejection of claims 1, 2, 4, 6–8, 10, 11, 13, 14, 16, 18–20, 22–28, and 30.
We have jurisdiction under 35 U.S.C. § 6(b).

We affirm in part.

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[1] We use the word "Appellant" to refer to "applicant" as defined in
37 C.F.R. § 1.42 (2017). Appellant identifies the real party in interest
as Apple Inc. Appeal Br. 3.

STATEMENT OF THE CASE

The Invention

According to the Specification, the invention "relates generally to wireless communication between a portable electronic device and a server, and more particularly to power optimization modes for data delivery between [a] portable electronic device and [a] server." Spec. ¶ 1.[2] The Specification explains that the "device can dynamically change between communication modes based on an application or quality of service, battery life, an amount of noise associated with the communications link, a frequency of messages, and a type of message received in a given time period." *Id.* ¶ 4, Abstract. As an example, the "device can determine if the number of pull messages is greater than the number of push messages," and the "device can select a push mode where a pull message can accompany a push message." *Id.* Abstract. As another example, the "device can determine that the number of push messages is greater than the number of pull messages," and the "device can select a low-power associated sleep mode." *Id.*

Exemplary Claims

Independent claims 1 and 13 exemplify the claims at issue and read as follows:

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[2] This decision uses the following abbreviations: "Spec." for the Specification, filed July 25, 2014; "Final Act." for the Final Office Action, mailed June 22, 2017; "Appeal Br." for the Appeal Brief, filed January 16, 2018; "Ans." for the Examiner's Answer, mailed April 19, 2018; and "Reply Br." for the Reply Brief, filed June 19, 2018.

1. A device comprising:

a transceiver configured to communicate through a communications link to a wireless access point; and

a processor configured to:

dynamically switch between at least a first mode of communication and a second mode of communication for communicating push messages and pull messages over the communications link, wherein each of the first and second modes of communication includes a first period and a second period;

receive data during the first period of the first mode of communication and switch to a first inactive state having a first base power level during the second period of the first mode of communication, the push messages being receivable at the first base power level in the first inactive state; and

retrieve data corresponding to a data request originating at the device during the first period of the second mode of communication and switch to a second inactive state having a second base power level, lower than the first base power level, during the second period of the second mode of communication, the push messages being unreceivable at the second base power level of the second inactive state.

13. A method comprising:

dynamically switching between a first mode of communication that is initiated by a server device and a second mode of communication that is initiated by a client device based at least in part on a number of push messages and a number of pull messages expected to be communicated to the client device during a given time period, each of the first and second modes of communication including a first period and a second period;

when the number of pull messages expected to be communicated to the client device during the given time period exceeds or equals the number of push messages expected to be

communicated to the client device during the given time period, receiving data during the first period of the first mode of communication and switching to an inactive state during the second period of the first mode of communication; and

when the number of push messages expected to be communicated to the client device during the given time period exceeds the number of pull messages expected to be communicated to the client device during the given time period, retrieving data during the first period of the second mode of communication and switching to the inactive state during the second period of the second mode of communication.

Appeal Br. 25, 27 (Claims App.).

The Prior Art Supporting the Rejections on Appeal

As evidence of unpatentability under 35 U.S.C. § 103, the Examiner relies on the following prior art:

Brakmo et al. ("Brakmo")	US 6,816,977 B2	Nov. 9, 2004
Nakajima et al. ("Nakajima")	US 7,174,161 B2	Feb. 6, 2007
Jansson et al. ("Jansson")	US 2007/0264948 A1	Nov. 15, 2007
Nakao et al. ("Nakao")	US 8,225,323 B2	July 17, 2012
He et al. ("He")	US 8,547,941 B2	Oct. 1, 2013
Liu	US 2014/0153457 A1	June 5, 2014
Black et al. ("Black")	US 8,904,206 B2	Dec. 2, 2014 (filed Jan. 26, 2010)
Jacobs et al. ("Jacobs")	US 2015/0286391 A1	Oct. 8, 2015 (filed Mar. 11, 2015)[3]

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[3] Jacobs claims the benefit of priority to U.S. Provisional Application No. 61/976,922, filed on April 8, 2014. Jacobs ¶ 1, code (60). Appellant does not argue that Jacobs fails to qualify as prior art.

The Rejections on Appeal

Claims 18–20 stand rejected under 35 U.S.C. § 112(d) as having an improper dependent form for failing to further limit the subject matter of the base claim. Final Act. 12.

Claims 1, 4, 6, and 11 stand rejected under 35 U.S.C. § 103 as unpatentable over Jansson and Nakao. Final Act. 14–19.

Claim 2 stands rejected under 35 U.S.C. § 103 as unpatentable over Jansson, Nakao, and Nakajima. Final Act. 19–20.

Claims 7, 8, and 25 stand rejected under 35 U.S.C. § 103 as unpatentable over Jansson, Nakao, and Liu. Final Act. 20–24.

Claim 10 stands rejected under 35 U.S.C. § 103 as unpatentable over Jansson, Nakao, and Brakmo. Final Act. 24–25.

Claims 13, 16, 18–20, and 23 stand rejected under 35 U.S.C. § 103 as unpatentable over Jansson and Liu. Final Act. 26–36.

Claim 14 stands rejected under 35 U.S.C. § 103 as unpatentable over Jansson, Liu, and Nakajima. Final Act. 36–37.

Claim 22 stands rejected under 35 U.S.C. § 103 as unpatentable over Jansson, Liu, and Brakmo. Final Act. 37–38.

Claim 24 stands rejected under 35 U.S.C. § 103 as unpatentable over Jansson, Liu, and Jacobs. Final Act. 38–39.

Claims 26–28 stand rejected under 35 U.S.C. § 103 as unpatentable over Jansson, Nakao, and Liu. Final Act. 39–48.

Claim 30 stands rejected under 35 U.S.C. § 103 as unpatentable over Jansson, Nakao, Liu, and Black. Final Act. 49–50.

ANALYSIS

We have reviewed the rejections in light of Appellant's arguments that the Examiner erred. For the reasons explained below, we disagree with the Examiner's determinations regarding unpatentability under § 103. But we (1) agree with the Examiner that claim 18 fails to further limit the subject matter of the base claim and (2) disagree that claims 19 and 20 fail to do so. We add the following to address and emphasize specific findings and arguments.

The § 112(d) Rejection of Claims 18–20

Claims 18–20 depend directly or indirectly from claim 13 and read as follows:

> 18. The method of claim 13, further comprising:
>
> determining the number of push messages and the number of pull messages expected to be communicated to the client device during the given time period.
>
> 19. The method of claim 18, further comprising:
>
> switching to the first mode of communication when the number of pull messages expected to be communicated to the client device during the given time period is greater than or equal to the number of push messages expected to be communicated to the client device during the given time period.
>
> 20. The method of claim 19, further comprising:
>
> switching to the second mode of communication when the number of push messages expected to be communicated to the client device during the given time period is greater than the number of pull messages expected to be communicated to the client device during the given time period.

Appeal Br. 28 (Claims App.).

Section 112(d) provides that "a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further

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limitation of the subject matter claimed." 35 U.S.C. § 112(d). The Examiner concludes that claim 18 "requires determining the number of push/pull messages to be received within a given time limit, but this limitation is . . . found in claim 13." Final Act. 12. The Examiner explains that "[t]he limitations of claim 13 cannot be met without determining the number of push messages and the number of pull messages, because the numbers must be compared to each other in order to receive messages in a first mode or retrieve messages in the second mode." Ans. 3. The Examiner reasons that "without such determination the limitations of dynamically switching between modes to receive or retrieve messages cannot be reached" and that claim 18 "merely recites a feature inherent to claim 13." *Id.* at 4.

In addition, the Examiner concludes that claims 19 and 20 are "fully incorporated" into claim 13. Final Act. 12. The Examiner explains that the limitation "'dynamically switching between a first mode and a second mode' of claim 13 requires switching to the first mode (as required by claim 19) *and* switching to the second mode (as required by claim 20)." Ans. 6–7.

For claim 18, Appellant contends that claim 13 differs from claim 18 because claim 13 does not include the term "determining" or "any variation thereof." Appeal Br. 11. Appellant also contends that claim 13 "does not recite how the 'number of push messages' and 'the number of pull messages' become known." *Id.* According to Appellant, claim 18 requires "determining" by "the actor of the method." Reply Br. 7.

For claims 19 and 20, Appellant asserts that claim 13 "does not specifically recite 'switching to the first mode,' or 'switching to the second mode,' as is recited in dependent claims 19 and 20, respectively." Appeal

Br. 11. Appellant also asserts that claim 13 does not require switching according to the "when" conditions in claims 19 and 20. Reply Br. 8.

For claim 18, we agree with the Examiner that it fails to further limit claim 13's subject matter because claim 18 recites a feature necessarily required by claim 13. Specifically, to "dynamically switch[] between a first mode of communication . . . and a second mode of communication . . . based at least in part on a number of push messages and a number of pull messages expected to be communicated to the client device during a given time period" according to claim 13 requires determining the number of push messages and the number of pull messages expected to be communicated. Claim 18 requires the same determination. Hence, we sustain the § 112(d) rejection of claim 18.

For claims 19 and 20, we disagree with the Examiner that they fail to further limit the subject matter of the base claim. The Specification discloses more than two modes of communication, including the following modes: (1) a push mode, (2) a low-power-associated-sleep mode, (3) an associated-polling mode, and (4) a poll-and-reconnect mode. *See, e.g.*, Spec. ¶¶ 82–87, 90–94, Figs. 2B, 2D, 4A, 5A, 6A–6C. Claim 13 requires switching between two modes of communication, i.e., "switching between a first mode of communication . . . and a second mode of communication." In contrast to claim 13, claim 19 requires "switching to the first mode of communication" when a first condition exists. Similar to claim 19, claim 20 requires "switching to the second mode of communication" when a second condition exists.

Because the Specification discloses more than two modes of communication, "switching to the first mode of communication" according

to claim 19 may occur from a mode other than the second mode. Similarly, "switching to the second mode of communication" according to claim 20 may occur from a mode other than the first mode. Thus, the "switching to" requirements in claims 19 and 20 differ from the "switching between" requirement in claim 13. Hence, we do not sustain the § 112(d) rejection of claims 19 and 20.

The § 103 Rejection of Claims 1, 4, 6, and 11

INDEPENDENT CLAIM 1

As noted above, the § 103 rejection of claim 1 rests on Jansson and Nakao. *See* Final Act. 14–17. Appellant argues that the Examiner erred in rejecting claim 1 because Jansson and Nakao fail to teach or suggest the following limitations in claim 1:

> receive data during the first period of the first mode of communication and switch to a first inactive state having a first base power level during the second period of the first mode of communication; and

> retrieve data corresponding to a data request originating at the device during the first period of the second mode of communication and switch to a second inactive state having a second base power level, lower than the first base power level, during the second period of the second mode of communication.

See Appeal Br. 12–13; Reply Br. 3–5.

Specifically, Appellant asserts that Jansson discloses sending fewer and fewer or even no emails to a device depending on decreases in the device's battery level instead of switching the device to any lower-power mode, i.e., "a first inactive state" and "a second inactive state" according to claim 1. Appeal Br. 13 (citing Jansson ¶ 31). Appellant also asserts that Nakao does not cure Jansson's deficiency. *Id.*

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In response, the Examiner explains that Jansson discloses a device with "multiple battery trigger levels for reducing the granularity of receiving batches of pushed emails or email notifications." Ans. 8. As an example, when the device reaches a first battery-level threshold, "push an email notification when two emails are received at" a server. *Id.* As another example, when the device reaches a second battery-level threshold, "push an email notification when five emails are received at" the server. *Id.* As yet another example, when the device reaches a third battery-level threshold, do not "push any further emails or email notifications to" the device. *Id.*

Based on the record before us, we agree with Appellant that the Examiner has not adequately explained how the cited portions of Jansson teach or suggest switching to "a first inactive state" and "a second inactive state" according to claim 1. That Jansson's server "reduc[es] the granularity of receiving batches of pushed emails or email notifications" by a device does not mean that the device switches to the claimed inactive states. The Examiner does not rely on Nakao for teaching or suggesting switching to "a first inactive state" and "a second inactive state" according to claim 1. *See* Final Act. 14–17; Ans. 7–10. Hence, we do not sustain the § 103 rejection of claim 1.

DEPENDENT CLAIMS 4, 6, AND 11

Claims 4, 6, and 11 depend directly from claim 1. For the reasons discussed for claim 1, we do not sustain the § 103 rejection of claims 4, 6, and 11.

The § 103 Rejections of Claims 2, 7, 8, 10, and 25

Claims 2, 7, 8, 10, and 25 depend directly or indirectly from claim 1. On this record, the Examiner has not shown how the additionally cited

secondary references—Nakajima, Liu, and Brakmo—overcome the
deficiency in Jansson and Nakao discussed above for claim 1. Hence, we
do not sustain the § 103 rejections of claims 2, 7, 8, 10, and 25.

The § 103 Rejection of Claims 13, 16, 18–20, and 23

INDEPENDENT CLAIM 13

As noted above, the § 103 rejection of claim 13 rests on Jansson and
Liu. *See* Final Act. 26–31. Appellant argues that the Examiner erred in
rejecting claim 13 because Jansson and Liu fail to teach or suggest the
following limitation in claim 13: "dynamically switching between a first
mode of communication . . . and a second mode of communication . . . based
at least in part on a number of push messages and a number of pull messages
expected to be communicated to the client device during a given time
period." *See* Appeal Br. 15–18; Reply Br. 5–7.

In particular, Appellant contends that Jansson's device (1) "has no
a priori knowledge or expectation of how many messages might be received
during a given period of time" and (2) operates differently based on the
battery state. Appeal Br. 17 (emphasis omitted). Appellant asserts that
a "battery state undeniably differs from 'a number of push messages and
a number of pull messages expected to be communicated to the client
device,' as recited in independent claim 13." *Id.* In addition, Appellant
contends that "Liu does not disclose or suggest any information regarding
determining a number of push or pull messages." Reply Br. 7. According to
Appellant, Liu determines energy consumption for different channels using
test data that does not correlate "to any particular number of messages"
because "the size of each message may vary, e.g. a message with an

attachment may be significantly larger than a message without an attachment." *Id.*

In response, the Examiner explains that Jansson discloses push and pull messages and a device "receiving a notification for 5 mails (expected number of messages) that it will receive at once (a given time period) upon fetching them." Ans. 15. The Examiner also explains that Liu discloses "selecting channels based on energy efficiency for a push/pull session . . . calculated from a number of equations." *Id.* at 16. The Examiner reasons that "[i]t is evident that the device disclosed in Liu is capable of using the equations provided to determine" that "the amount of data for pull messages (i.e., the number of pull messages) is greater than or equal to the amount of data for push messages (i.e., the number of push messages)." *Id.*

Based on the record before us, we agree with Appellant that the Examiner has not adequately explained how the cited portions of Jansson and Liu teach or suggest switching between different modes of communication "based at least in part on a number of push messages and a number of pull messages expected to be communicated to the client device during a given time period" according to claim 13. Jansson discloses different device operations based on the device's battery level. *See, e.g.*, Jansson ¶¶ 25–26, 31–36, Fig. 3. Liu discloses determining energy consumption for push channels and pull channels to select a channel that "consume[s] the least amount of energy." *See, e.g.*, Liu ¶¶ 56, 64, 86–94, Fig. 6. To determine energy consumption, Liu uses test data corresponding to "a unit data packet size." *Id.* ¶ 89. Liu "calculate[s] energy consumed by retrieving or receiving the test data." *Id.* ¶ 92, Fig. 6. In addition, Liu

discloses equations for calculating energy consumption. *Id.* ¶¶ 53, 58, 61, 63–64.

The Examiner has not explained how any of Liu's equations for calculating energy consumption allows an ordinarily skilled artisan to calculate "a number of push messages and a number of pull messages expected to be communicated to the client device during a given time period" as required by claim 13. *See* Ans. 12–16. Nor has the Examiner explained how Liu's test data corresponding to "a unit data packet size" relates to a number of messages. *See id.* Hence, we do not sustain the § 103 rejection of claim 13.

<div align="center">DEPENDENT CLAIMS 16, 18–20, AND 23</div>

Claims 16, 18–20, and 23 depend directly or indirectly from claim 13. For the reasons discussed for claim 13, we do not sustain the § 103 rejection of claims 16, 18–20, and 23.

<div align="center">*The § 103 Rejections of Claims 14, 22, and 24*</div>

Claims 14, 22, and 24 depend directly from claim 13. On this record, the Examiner has not shown how the additionally cited secondary references—Nakajima, Brakmo, and Jacobs—overcome the deficiency in Jansson and Liu discussed above for claim 13. Hence, we do not sustain the § 103 rejections of claims 14, 22, and 24.

<div align="center">*The § 103 Rejection of Claims 26–28*</div>

<div align="center">INDEPENDENT CLAIM 26</div>

As noted above, the § 103 rejection of claim 13 rests on Jansson, Nakao, and Liu. *See* Final Act. 39–44. Appellant argues that the Examiner erred in rejecting claim 26 because Jansson, Nakao, and Liu fail to teach or suggest the following limitations in claim 26: "determine a number of push

<div align="center">13</div>

messages for the device and a number of pull messages for the device within a given time period" and "dynamically switch . . . between at least a first mode of communication and a second mode of communication based at least on the number of push messages and pull messages for the device within the given time period." *See* Appeal Br. 19–20; Reply Br. 7.

Specifically, Appellant cites the following statement in the Final Office Action: "Jansson-Nakao do not explicitly disclose wherein the dynamic switching is based at least on the number of push messages and pull messages for the device within the given time period." Final Act. 43 (emphasis omitted); *see* Appeal Br. 19. Appellant then contends that "Liu discloses that the telecommunications device ***uses test data to test*** which 'push/pull communication channel consume[s] the least amount of energy,' and that channel is selected, i.e. irrespective of how many messages might be transmitted over the channel." Appeal Br. 19 (citing Liu ¶ 94.). Appellant also contends that "Liu does not disclose or suggest that the energy for each channel is determined based on 'a number of push messages for the device and a number of pull messages for the device within a given time period,' as recited in independent claim 26." *Id.* at 20. Appellant adds that "***a number of push messages vs. a number of pull messages has no bearing on the selection of the push/pull channel in Liu***, nor does Liu contemplate such numbers." *Id.*

In response, the Examiner explains that (1) Jansson discloses "dynamically switching between modes," (2) Nakao discloses distinct "base power levels," and (3) Liu discloses "selecting channels based on energy efficiency for a push/pull session . . . calculated from a number of equations." Ans. 17–18. As with claim 13, the Examiner reasons that "[i]t

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is evident that the device disclosed in Liu is capable of using the equations provided to determine" that "the amount of data for pull messages (i.e., the number of pull messages) is greater than or equal to the amount of data for push messages (i.e., the number of push messages)." *Id.* at 18.

Based on the record before us, we agree with Appellant that the Examiner has not adequately explained how the cited portions of Jansson, Nakao, and Liu teach or suggest switching between different modes of communication "based at least on the number of push messages and pull messages for the device within the given time period" according to claim 26. As with claim 13, the Examiner has not explained how any of Liu's equations for calculating energy consumption allows an ordinarily skilled artisan to calculate "the number of push messages and pull messages for the device within the given time period" as required by claim 26. *See* Ans. 17–18. Nor has the Examiner explained how Liu's test data corresponding to "a unit data packet size" relates to a number of messages. *See id.* Hence, we do not sustain the § 103 rejection of claim 26.

DEPENDENT CLAIMS 27 AND 28

Claims 27 and 28 depend directly from claim 26. For the reasons discussed for claim 26, we do not sustain the § 103 rejection of claims 27 and 28.

The § 103 Rejection of Claim 30

Claim 30 depends indirectly from claim 26. On this record, the Examiner has not shown how the additionally cited secondary reference— Black—overcomes the deficiency in Jansson, Nakao, and Liu discussed above for claim 26. Hence, we do not sustain the § 103 rejection of claim 30.

Because the preceding determinations resolve the appeal for the § 103 rejections, we need not address Appellants' other arguments regarding Examiner error. *See, e.g., Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423 (Fed. Cir. 1984) (explaining that an administrative agency may render a decision based on "a single dispositive issue").

CONCLUSION

We affirm the rejection of claim 18 under 35 U.S.C. § 112(d).

We reverse the rejection of claims 19 and 20 under 35 U.S.C. § 112(d).

We reverse the rejections of claims 1, 2, 4, 6–8, 10, 11, 13, 14, 16, 18–20, 22–28, and 30 under 35 U.S.C. § 103.

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
18–20	112(d)	Improper Dependent Form	18	19, 20
1, 4, 6, 11	103	Jansson, Nakao		1, 4, 6, 11
2	103	Jansson, Nakao, Nakajima		2
7, 8, 25	103	Jansson, Nakao, Liu		7, 8, 25
10	103	Jansson, Nakao, Brakmo		10
13, 16, 18–20, 23	103	Jansson, Liu		13, 16, 18–20, 23
14	103	Jansson, Liu, Nakajima		14
22	103	Jansson, Liu, Brakmo		22

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
24	103	Jansson, Liu, Jacobs		24
26–28	103	Jansson, Nakao, Liu		26–28
30	103	Jansson, Nakao, Liu, Black		30
Overall Outcome			18	1, 2, 4, 6–8, 10, 11, 13, 14, 16, 19, 20, 22–28, 30

TIME PERIOD FOR RESPONSE

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). *See* 37 C.F.R. § 41.50(f).

AFFIRMED IN PART