

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

REOLINK INNOVATION INC. AND
SHENZHEN REOLINK TECHNOLOGY CO., LTD.,
Petitioner,

v.

THROUGHTTEK CO., LTD.,
Patent Owner.

Case IPR2024-01193
Patent No. 10,602,448

SECOND DECLARATION OF VLAD KARDASHOV

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I, Vlad Kardashov, declare as follows:

I. INTRODUCTION AND SCOPE OF WORK

1. On July 19, 2024, I submitted a First Declaration in IPR2024-01193. *See* EX1003 (First Declaration). I submit this Second Declaration for purposes of responding to Patent Owner's Response to Petition (POR) submitted on April 22, 2025. In this Second Declaration, I provide additional analysis regarding the claims of U.S. Patent Number 10,602,448 (the '448 Patent) and the relied-upon prior art references.

2. My analysis is based upon my education, training, and experience in the relevant field, including my professional experience and additional experience working with persons of ordinary skill in the art as of the earliest alleged priority date of the '448 patent. For the reasons explained in my First Declaration and detailed in my CV (*see* EX1003, ¶¶3-15), I am familiar with the technology described in the '448 patent, and I am also familiar with the knowledge of a person of ordinary skill in the art (POSITA) with respect to this technology as of the earliest alleged priority date of the '448 patent (August 29, 2016).

3. I am being compensated for my work in connection with this IPR proceeding at my standard hourly rate. My compensation is not in any way contingent on the substance of my opinions or the outcome of these proceedings.

II. EXPERIENCE AND MATERIALS CONSIDERED

4. As summarized in my First Declaration (*see* EX1003, ¶¶16-18), I have reviewed the documents and materials cited in this proceeding, including the '448 Patent, the prosecution history of the '448 Patent, and prior art references cited therein. Additionally, I have also reviewed the Patent Owner's Response to Petition ("POR"; paper no. 8 in this proceeding) and the Board's Decision Instituting IPR ("Institution Decision"; paper no. 6 in this proceeding).

III. TECHNICAL DISCUSSION

5. The analysis expressed in my First Declaration fully explains why each and every feature of the Challenged Claims of the '448 Patent is provided in the prior art. I understand that Patent Owner has considered my analysis and offered attorney argument regarding Patent Owner's assumptions and contentions, some of which are inconsistent with my analysis. I will address some of those points below. The fact that I do not address all of Patent Owner's assumptions and contentions should not be interpreted as agreement with them.

6. I have noted that the POR does not address, much less rebut, much of the analysis I provided in my First Declaration. Indeed, rather than proffering any exhibits to rebut my testimony set forth in my First Declaration, Patent Owner's attorney argument sometimes mischaracterize my testimony, the disclosure of the '448 patent, and the cited prior art. As I previously explained with reference to the applied prior art, each of Grounds 1-3 renders unpatentable the Challenged

Claims. I need not repeat that analysis here because the testimony from my First Declaration remains accurate today. Rather, my Second Declaration is intended to be responsive to particular arguments presented in the POR.

IV. CLAIM INTERPRETATIONS

7. I understand the POR on pages 3 to 4 outlines “required interpretations” for five terms. I have reviewed ¶¶36-38 of my First Declaration, which describes how “the terms that appear in the claims of the ’448 Patent should be interpreted.” I have been informed that, under the law, claim terms are generally given their plain and ordinary meanings when read in the context of the specification and prosecution history. Although the claims are read in view of the specification, one should not import limitations from the embodiments in the specification into the claims. Under the law, there are only two instances where the factfinder should depart from the plain and ordinary meaning of claim terms: lexicography and disavowal. Absent such language in the written specification, the factfinder should not import limitations from the specification into the claims.

8. First, the POR on page 3 states that the phrase “wakeup request packet” should be interpreted to include “a device identifier(Unique identification UID) of a connection target and a network location indicating a source of the packet namely connection information of the first apparatus.” I note that this interpretation is inconsistent with the language within claims 1 and 11. There, the claim language

plainly states the wakeup request packet requires only “a device identifier of a second apparatus,” without the added language that is imported by the POR’s proposal. *See* Elements [1a.i], [11d]. The POR cites to paragraphs in columns 2 and 3 of the ’448 patent, but it is clear that these paragraphs only describe an “embodiment” and/or “embodiments.” EX1001 (the ’448 Patent), 1:65-2:13 (“an embodiment”), 3:34-4:3 (“some embodiments”). The ’448 patent also makes it clear that such disclosure about embodiments in the specification “is not limiting for the scope of invention.” EX1001 (the ’448 Patent), 13:27-36. The POR has not cited to any instances of disclaimer or lexicography in the ’448 Patent (nor am I aware of any) that would compel importation of a limitation from the specification into the claim term “wakeup request packet.”

9. Second, the POR on page 3 states that the claimed “apparatus wakeup packet” should be interpreted to “[c]ontain[] the device ID, wakeup information and connection information.” POR, 3. Similar to my analysis in ¶8, I note that this interpretation is inconsistent with the actual claim language of claims 1 and 11. Those claims simply state that the “apparatus wakeup packet” contains “the device identifier of the second apparatus from the wakeup request packet and the obtained wakeup information,” without the added language that is imported by the POR’s proposal. *See* Elements, [1c.i], [11e]. I also note that the POR never cites any text from the specification to support this interpretation. Here again, the POR has not

cited to any instances of disclaimer or lexicography in the '448 Patent (nor am I aware of any) that would compel importation of a limitation from the specification into the claim term “apparatus wakeup packet.”

10. Third, the POR on page 4 provides an interpretation for the term “connection information.” I note that the term “connection information” is not recited in any of the claims. *See* EX1001 (the '448 Patent), 13:38-16:49. This phrase is mentioned in the specification in the context of the FIGS. 1A-1B “embodiment” at cols. 3-4. EX1001 (the '448 Patent), 3:34-4:8 (“some embodiments”). For example, column 3 introduces the “connection information” and then column 4 describes that the connection information can include “a network (IP Address).” EX1001 (the '448 Patent), 3:34-4:8. I note again that the '448 patent explains that such disclosure in the specification “is not limiting for the scope of invention.” EX1001, (the '448 Patent) 13:27-36. The POR has not cited to any instances of disclaimer or lexicography in the '448 Patent (nor am I aware of any) that would compel importation of a limitation from the specification into the term “connection information,” especially when that term is not used in the claims at all.

11. Fourth, the POR at page 4 states that the term “wakeup information” should be interpreted to require “device-specific static data” that is “supplemental to the general information HD and device identifier ID.” I note that the '448 patent never uses the term “device-specific static data,” certainly not in connection with the

term “wakeup information.” EX1001 (the ’448 Patent), 5:43-48, FIG. 7. The ’448 patent also never states that the “wakeup information” must be “supplemental to” the general information HD and device identifier ID. Even though the ’448 patent specification discloses embodiments that include the use of “wakeup information,” the ’448 patent plainly states that such disclosure in the specification “is not limiting for the scope of invention.” EX1001, (the ’448 Patent) 13:27-36. The POR has not cited to any instances of disclaimer or lexicography in the ’448 Patent (nor am I aware of any) that would compel importation of a limitation from the specification into the term “wakeup information.”

12. Fifth, the POR at page 4 contends that the term “feature flags” should be interpreted to require substitute language: “a software development and product experimentation technique that turns certain functionality on and off during runtime, without deploying new code”). I note that the ’448 patent never uses the phrase “a software development and product experimentation technique” nor the functional phrase “turns certain functionality on and off during runtime, without deploying new code,” and these phrases are certainly not in connection with the term “feature flags.” EX1001 (the ’448 Patent), 10:32-33, 10:65-11:18, FIG. 13. While the ’448 patent specification discloses embodiments a “feature flag” in connection with FIG. 13 (col. 10:65-11:18), the ’448 patent is clear that such disclosure in the specification “is not limiting for the scope of invention.” EX1001, (the ’448 Patent) 13:27-36. The

POR has not cited to any instances of disclaimer or lexicography in the '448 Patent (nor am I aware of any) that would compel importation of any limitation into the term “feature flag.” Instead, the POR only cites to a URL at the domain “optimizely.com” in 2025, but I am not aware of any evidence that this URL existed in 2016 or that a POSITA would have referred to this URL at that time.

13. The POR’s proposed construction for the term “feature flags” is also contradicted by language of the dependent claims and the embodiment in the specification. EX1001 (the '448 Patent), 10:32-33, 11:16-18, FIG. 13. Regarding the context from the other claim language, the dependent claims 8, 16, and 23 merely states that the feature flag “indicates that the running state of the second apparatus is the sleep state,” without the added language that is imported by the POR’s proposal. EX1001 (the '448 Patent), at Cl. [8], [16], [23]. Also, dependent claim 24 (depending from claim 23 which recites the “feature flag” term) describes that the claimed feature flag is simply “located at a header of the sleep login packet.” EX1001 (the '448 Patent), at Cl. [24]. Thus, consistent with claim 24, I note that an indicator of a running state “located at a header” of the sleep login packet would not be limited to “a software development and product experimentation technique” that turns certain functionality on and off “during runtime, without deploying new code.” *See* POR, 4. The specification further confirms my analysis here. Namely, the '448 patent explains that “[i]n some embodiments, the feature flag SF may be located in

a header of the sleep login packet SLP.” EX1001 (the ’448 Patent), cols. 10-11. The ’448 patent also illustrates in FIG. 13 that the feature flag as a single bit of a single byte in a header. In other words, the specification illustrates and describes the feature flag as a single bit in a header to indicate whether the packet is a “sleep login packet” or a “normal login packet.” EX1001 (the ’448 Patent), FIG. 13, 10:5-20, 10:32-33; 10:56-11:18. Based on this teaching in columns 10-11 and FIG. 13 of the ’448 patent, a POSITA would have recognized that a single-bit feature flag in a header of the sleep login packet is not circumscribed to the limited scope of “a software development and product experimentation technique” that turns certain functionality on and off “during runtime, without deploying new code.” *See* POR, 4.

V. GROUND 1: Zhang anticipates the Challenged Claims

14. As an initial matter, I note that the POR mainly disputes whether Zhang fails to disclose a single element in the independent claims 1 and 11, and then raises arguments from one other element recited in a few dependent claims. POR, 5-18. I also note that the POR concedes that Zhang anticipates independent claim 19. POR, 17. I will turn first to my response to the Patent Owner’s arguments about the independent claims 1 and 11.

A. Response to Patent Owner’s Contentions for Elements 1c and 11c.iv

15. The POR argues that Zhang fails to disclose Element [1c] and Element [11c.iv] because Zhang’s server does not “generate” an apparatus wakeup packet

according to the wakeup request packet and the wakeup information. *See* POR 6-13. In my First Declaration (EX1003), I analyzed Zhang’s teaching in detail and set forth two distinct reasons why Zhang provides a straightforward teaching of this element. EX1003 (First Declaration), ¶¶58-62 (citing EX1004 (Zhang) at paragraphs [0066] and [0078]-[0082]).

16. First, I testified about Zhang’s teaching at paragraph [0066] that “the server may modify ... the wakeup message before sending the wakeup message to the first computer system.” This teaching in context within earlier paragraphs of Zhang *see* EX1004 (Zhang) at paragraphs [0063], [0018], [0054], and [0056]) explains why this express “modifying” at Zhang’s server “results in the generation of a new outgoing wakeup message (the claimed apparatus wakeup packet) because the outgoing wakeup message includes information not present in the incoming wakeup message.” EX1003 (First Declaration), ¶59 (where I explain that “[t]he outgoing wakeup message outgoing wakeup message (the claimed apparatus wakeup packet) must also include one or more items of registration information retrieved from the server’s memory”).

17. Second, I testified that, regardless of whether Zhang’s server “modifies” the incoming message as described at paragraph [0066], Zhang’s server would still generate a new packet for the outgoing message based upon Zhang’s teaching at paragraphs [0078]-[0082]. *See* EX1003 (First Declaration), ¶60 (“second

reason” that Zhang’s server “generates at least one new outgoing packet”). Patent Owner has never cited to any testimony or evidence to challenge these two reasons detailed in my First Declaration.

18. The POR’s argument that Zhang’s server “merely forwards” the wakeup packet fails to acknowledge both the express disclosure in Zhang and what a POSITA would have recognized from this straightforward teaching. *See* POR, 12. First, as I discussed above this argument fails to understand that Zhang expressly discloses the modifying incoming wake up message at the server in paragraph [0066] (“may modify) and in paragraphs [0078]-[0082] (new packet with new “header”)—either one of these disclosures requires the server to generate a new packet as I explained in my First Declaration. *See* EX1003 (First Declaration), ¶¶59-60 (where I provide a “first reason” and “second reason”).

19. Again, as a first reason, Zhang expressly discloses that the server can “modify” the wakeup message “before sending the wakeup message to the [sleep-enabled] computer.” EX1004 (Zhang), [0066]. A POSITA would have readily recognized that Zhang’s server “modifying” an incoming message before sending a new outgoing packet (carrying the newly modified content) amounted to much more than “merely forwarding” the incoming message. This is because, after modifying the incoming message, Zhang’s server produces a new packet containing new information (which was absent from the incoming message). EX1003 (First

Declaration), ¶59 (where I explain that “[t]he server’s modifying of the incoming message wakeup message results in the generation of a new outgoing wakeup message (the claimed apparatus wakeup packet) because the outgoing wakeup message includes information not present in the incoming wakeup message” and EX1004 (Zhang), [0066] (explaining that “the server may modify ... the wakeup message before sending the wakeup message to the first computer system.”)).

20. Furthermore, even beyond the scenario where Zhang’s server modifies the incoming message to generate a new packet (with the modified content), Zhang also discloses that the server constructs a new packet each time it sends a wakeup message to the sleep-enabled computer. *See* EX1003 (First Declaration), ¶60 (where I explain that “the server generates at least one new outgoing packet to send the outgoing wakeup message to the sleep-enabled computer system”) and EX1004 (Zhang), [0078]-[0082] (new packet with new “header”), FIG. 5). This teaching in Zhang at paragraphs [0078]-[0082] about the format of each packet is particularly pertinent here because Elements [1c] and [11c.iv] merely describe that a wakeup “packet” is generated (not an entirely new “message”). Patent Owner’s contentions in the POR appear to overlook this fact and Zhang’s details of the “packet” that must be produced at Zhang’s server when sending an outgoing packet.

21. The POR also argues that Zhang’s server “supplements the apparatus wakeup request,” but that this “supplements” task somehow does not result in the

generation of new packet for the (supplemented) outgoing content. POR, 12-13. I respectfully disagree with this contention. Again, a POSITA would have surely recognized from Zhang's teaching that, in order to "supplement" an incoming message, Zhang's server must generate a new outgoing packet with the supplemented message content. *See supra*, ¶17. For the reasons I explained in my First Declaration, from a technical perspective of a POSITA that understood Zhang's teaching, there is no difference between Zhang's server "generating" the "apparatus wakeup packet" and Zhang's server "supplement[ing]" the incoming message when constructing the new packet for the (supplemented) outgoing wakeup message. EX1003 (First Declaration), ¶¶60-61 (citing Zhang's paragraphs [0078]-[0082]). In Zhang, the actual outgoing "packet" from the server is ultimately still constructed/generated by the server. This is particularly evident in the embodiment where the network address information is not included in the wakeup request packet. *See* EX1003 (First Declaration), ¶¶59-60 (where I provide a "first reason" and "second reason").

22. The POR also theorizes, without citing evidence to support such a theory, that Zhang's outgoing message is not generated "according to" the wakeup request packet and wakeup information. POR, 13. In doing so, Patent Owner indicates that the incoming wakeup request packet and wakeup information are "integrated into" Zhang's newly constructed wakeup packet. *See* POR, 13

(“integrated into”). But, even if that is true, the Patent Owner never explained why the phrase “according to” must somehow exclude this “integrated into” scenario. See POR, 13. The Patent Owner never proposes a narrow claim interpretation for the “according to” phrase, and the POR never cites to any text from the specification of the ’448 patent that mandates a narrow view of the two-word phrase “according to.” Instead, as I explained in my First Declaration, Zhang’s outgoing wakeup packet is generated responsive to the incoming wakeup message and uses both the wakeup information and the information supplied by the wakeup request packet. EX1003 (First Declaration), ¶¶62-63 (“because it uses both”). Without such triggering information (the wakeup information and the information supplied by the wakeup request packet), the outgoing wakeup packet from Zhang’s server would not be generated for purposes of sending from Zhang’s server to the sleep-enabled computer. EX1003 (First Declaration), ¶¶58-63.

23. I note that the POR appears to rely upon a similar “according to” argument for Element [11c.iv]. POR, 15 (“from the wakeup information received in the previous step”). As I discussed in ¶¶19-22, Zhang’s outgoing wakeup packet is generated in a manner that requires both the information supplied by the wakeup request packet and the wakeup information (e.g., the nonce). EX1003, ¶81 and ¶62.

24. I confirm that for at least the reasons above and those outlined in my First Declaration, Zhang discloses Elements [1c] and [11c.iv]. EX1003 (First

Declaration), ¶¶58-62. The POR does not dispute that Zhang discloses all other elements of claims 1 and 11. Regardless, I confirm that Zhang discloses these elements for at least the reasons outlined in my First Declaration. EX1003 (First Declaration), ¶¶47-68, 73-86.

25. I note that page 11 of the POR initially states that Zhang fails to disclose Element “[1c.i].” *See* POR, 11. From there, the POR never addresses this element in its analysis or explains why Zhang is lacking this element. I confirm, for the reasons outlined in my First Declaration, that Zhang’s outgoing wakeup message satisfies the claimed “apparatus wakeup packet.” EX1003 (First Declaration), ¶63.

B. Response to Patent Owner’s Contentions for Claims 8, 16, and 23-25

26. The POR’s arguments for dependent claims 8, 16, and 23 (and also for claims 24-25 which depend from claim 23) rely on the POR’s interpretation of the term “feature flags.” POR, 4 (“software ... technique that turns certain functionality on and off during run time, without deploying new code”) and 13-14 (“a software tool that allows the code to be disabled”). As I discussed above, this interpretation is wrong. Specifically, in section IV above, I explain that the language of these claims never requires the term “feature flag” to include these additional requirements. In view of the express claim language, Zhang discloses Elements [8]/[16]/[23] for the reasons I previously outlined in my First Declaration. *See, e.g.*, EX1003 (First Declaration), ¶70. For example, Zhang’s CMD field indicates a type

of message including when the type of message is a registration message. EX1004 (Zhang), [0080]. This registration message in Zhang indicates to the server that the sleep-enabled computer system “remains in a sleep mode.” EX1004 (Zhang), [0057]-[0058], [0080]; *see also* EX1003 (First Declaration), ¶¶70, 109.

27. The POR also failed to understand Zhang’s teaching nevertheless discloses Elements [8]/[16]/[23]. First, Zhang’s teaching for the command field (CMD) in [0080] is equivalent to the feature flag described in the ’448 patent. The CMD field in Zhang’s “‘secure wake over internet’ header” is nearly identical to, if not more functional than the single-bit flag in the header of the ’448 patent’s illustrated embodiment. EX1001 (the ’448 Patent), FIG. 13 (showing the feature flag “SF” as a bit within a byte of a header for a packet), 10:5-20, 10:32-33; 10:56-11:18. I understand that if the ’448 patent’s preferred embodiment falls within the scope of the POR’s interpretation, so too does Zhang’s nearly identical teaching for the registration message. Second, Zhang’s “registration message” can also include information that is “updated or changed,” such as an updated “nonce” to thereby turn off the security functionality of the old nonce and turn on the security functionality of the new nonce. EX1004 (Zhang), [0058] and [0080]. This teaching also falls within the scope of POR’s interpretation. POR, 4 (“turns certain functionality on and off”).

VI. GROUND 2: the predictable combination of Zhang (EX1004) and Zill (EX1005) would have achieved known benefits

28. As I outlined in my First Declaration the predictable Zhang-Zill combination satisfies all elements of the challenged claims. EX1003 (First Declaration), ¶¶112-119. I understand that the POR never disputes that the resulting Zhang-Zill combination would provide every element of the challenged independent claims. *See generally* POR, 19-33. Instead, the POR argues against the motivations to combine set forth in my testimony. EX1003 (First Declaration), ¶¶112-119. In contrast to these arguments, a POSITA would have been motivated to implement the Zhang-Zill combination for at least the I discuss below and in my First Declaration (EX1003). EX1003 (First Declaration), ¶¶112-119.

29. I also note that the POR on pages 21-22 attempts to distinguish Zill alone from the '448 patent, but my Analysis Ground 2 is not based upon Zill alone but rather on the Zhang-Zill combination.

A. The predictable benefit to allow the server to facilitate remote wake from legacy requesting computing systems

30. The POR, at pages 23-24, fails to recognize the advantages for improved compatibility with legacy devices by applying Zill's suggestion for generating wakeup packets at Zhang's server. *See* POR, 23-24. In my First Declaration, I provided the known benefit of moving this logic to the server, which would allow Zhang's method for waking up the remote device to accommodate more types of requesting computing systems (e.g., "legacy remote hosts"). EX1003 (First Declaration), ¶113 (citing EX1005 (Zill) at paragraph [0111] and EX1004 (Zhang

at paragraph [0077]). In particular, and as I explained in my First Declaration, Zhang's requesting computer operated the complex security software (e.g., including encryption software) due to the sensitive information in the query reply and wakeup message. EX1003 (First Declaration), ¶113 and EX1004 (Zhang), [0061]-[0062], [0064]- [0065], [0077]. Moving this logic to the server allows Zhang's method for waking up the remote device to accommodate more types of requesting computing systems including "legacy remote hosts." EX1005 (Zill), [0111] and EX1004 (Zhang), [0077].

31. The POR does not directly dispute my testimony, but instead alleges, at pages 23-24, that this advantage is not expressly linked within the four corners of Zill to "generating" of the wakeup packet. POR, 23-24. This argument ignores what a POSITA would have recognized from Zill's explanation at paragraph [0111], (and what I explained in my First Declaration) that the server "can facilitate remote wake up of target host for all legacy remote hosts, depending on whether a remote host can be trusted or authenticated." EX1005 (Zill), [0111]; *see also* EX1003 (First Declaration), ¶113.

32. The POR incorrectly alleges that Zhang alone can replicate this known benefit by "providing a legacy host with a security key." POR, 23-24. First, I note that a security key is the exact type of the sensitive information contemplated in my First Declaration that would require the requesting computer to operate complex

security software. EX1003 (First Declaration), ¶113. Thus, this benefit would not be replicated by Zhang alone. Second, I understand that while an alternative modification might achieve a benefit it does not mean the Zhang-Zill combination ceases to be a suitable option with that known benefit.

B. The predictable benefit to improve the security for waking up the sleep-enabled computer

33. I note that the POR addresses my second listed motivation out of order. I turn now to the second listed motivation in my First Declaration. *See* EX1003 (First Declaration), ¶¶114-115. Specifically, a POSITA would have been motivated to implement the Zhang-Zill combination to improve the security for waking up the sleep-enabled computer. *See* EX1003 (First Declaration), ¶¶114-115 (where I explain that “because having the server generate the wakeup message improves the security for waking up the sleep-enabled computer”).

34. First, POR on page 26 states that “Zill provides no teachings regarding security nor makes any claims regarding the security of his system.” I disagree. For example, Zill plainly states that the server can “facilitate authentication... for the purpose of providing limited access to remote wake up of target host.” EX1005 (Zill), [0111] (“facilitate determining the trust or authentication status of remote host 104 by resolution server 114”); *see also* [0040].

35. Next, the POR’s argument regarding whether “Zhang’s suggested encryption methods are deficient” are incorrect. POR, 26-27. These arguments fail

to recognize that Zhang’s encryption methods are consistent with Zill’s suggestions for moving the “apparatus wakeup packet” generation step to the server. For example, Zhang’s encryption technique may be an effective way to improve the security of a message delivered *over a network*, they still would not eliminate the storage of sensitive information at an end-user computer and therefore the overall security of the sensitive information. EX1003 (First Declaration), ¶115 (where I explain that “[s]ervers are also better protected against physical and network based attacks”). In other words, even with Zhang’s encryption techniques, a POSITA would still be motivated to manage the most sensitive information at a server for the reasons articulated in my First Declaration. *See* EX1003 (First Declaration), ¶¶114-115.

C. The predictable benefit to reduce the quantity of “messages containing sensitive information”

36. The POR addressed the “third” motivation in my First Declaration, but labeled it as the “second proffered reason.” POR, 24-25. The POR never actually disputes the specific motivation outlined in my First Declaration for advantageously reducing the quantity of messages *containing sensitive information*. EX1003 (First Declaration), ¶¶114-115.

37. In particular, the POR did not address my testimony in my First Declaration about why the Zhang-Zill combination “would eliminate the sending of authentication nonce and other sensitive context from Zhang’s query reply messages

and Zhang’s incoming wakeup messages.” Instead, the POR at page 25 cites to Zhang’s optional embodiment mentioned at [0065], but this misses the point behind my third listed motivation in my First Declaration. First, I understand that the test is not whether the Zhang-Zill combination provides the best option compared to Zhang’s option in [0065], but instead the legal question is whether the Zhang-Zill combination was a “suitable option” that achieves a known benefit. Based on my review the Zhang-Zill combination provides a suitable option for advantageously reduce the quantity of messages containing sensitive information (in other words, a known benefit). EX1003, ¶116. Second, the POR fails to understand that the embodiment outlined in Zhang’s paragraph [0065] would still require the requesting computer to send an initial to the server bearing “all of the necessary information” (e.g., all of the sensitive information). EX1004 (Zhang), [0065]. In contrast, in the Zhang-Zill combination, at least some of the sensitive information (such as, the nonce) is isolated within the server and never part of any message from the requesting computer. *See also* EX1003 (First Declaration), ¶¶113-115 (“better protected against...”).

38. The POR also argues that the combination with Zill serves to increase the overall load fails to understand the noted “suggestion” that a POSITA would have recognized from Zill’s conventional practice and the predictable benefits that

would have motivated a POSITA to implement such an improvement in Zhang. EX1003 (First Declaration), ¶¶114-115.

D. The predictable benefit for the server to include optimized hardware to efficiently complete tasks

39. My testimony in my First Declaration articulated why a POSITA would have recognized the advantage stemming from the fact that “the server can include optimized hardware to efficiently complete tasks.” EX1003 (First Declaration), ¶117. In my First Declaration I noted additional computational and power resources for Zhang’s original solution in comparison to Zhang-Zill combination with its server-based wakeup message generation.” EX1003 (First Declaration), ¶117.

40. I note that the POR incorrectly alleges that Zill “in its 20 page disclosure, never teaches or discloses that the remote host or trusted remote host may be mobile.” POR, 29-30. However, Zill plainly states that the term “host” includes mobile devices such as “*a tablet personal computer (PC) device, a Smartphone, and/or a personal digital assistant (PDA), and so on.*” EX1005 (Zill), [0035] (emphasis added).

41. I also note that both Zhang and Zill expressly consider the use of a mobile device as the requesting device. EX1004, [0032]-[0033], [0046]; EX1005 (Zill), [0035], *see also* [0043], [0048]. Based on at least these teachings in Zhang and Zill, a POSITA would have considered improving the utilization of such mobile devices given the well-known hardware constraints (processing, power, etc.) of such

mobile devices by moving operations to the server. EX1003 (First Declaration), ¶117.

VII. GROUND 3: The predictable combination of Liu (EX1006) and Zhang (EX1005) would have achieved known benefits

42. For Ground 3, the POR does not argue the Liu-Zhang combination lacks any element of the challenged claims. POR, 33-39. Instead, the POR’s argument only disputes the motivations to combine Liu with Zhang as set forth in my First Declaration. EX1003 (First Declaration), ¶¶1139-141.

43. I note the POR incorrectly states that “[c]laim 11 is not challenged by the combination of Liu and Zhang.” POR, 39. Based on my review of the Petition, the Petition does in fact challenge claim 11 under Ground 3. *See* Pet., 1, 46, 67-69. The POR also repeats the “feature flag” argument for dependent claim 16, which I addressed above in Section V.B.

A. The predictable benefit to improve the security for Liu’s system

44. My First Declaration provides a “first” motivation “to advantageously provide an additional ‘provision of security’” as suggested by Zhang. EX1003 (First Declaration), ¶139. I understand that the POR seems to agree that this motivation is accurate but never-the-less still disputes this “first” motivation. POR, 36 (“may be advantageous to incorporate additional security measures as taught by Zhang”).

45. I understand that the POR argues that the Liu-Zhang combination cannot be considered unless it includes the fully bodily incorporation of “*all* relevant

teachings of Zhang.” POR, 36-37 (“if all of its teachings were followed”). I note that this theory relies on POR’s incorrect assumption that Liu’s “clients are not optimized for the processing steps that are required by Zhang’s invention.” POR, 35-36. This argument fails to understand that Zhang expressly contemplates a similar mobile client like that of Liu. EX1004 (Zhang), [0032]-[0033]. This argument also fails to understand that Liu is not limited solely to mobile client devices.; EX1006 (Liu), [0047] (“but is not limited thereto”); EX1008, [0046].

46. Additionally, the POR fails to understand what is being modified in the Liu-Zhang combination. EX1003 (First Declaration), ¶138. Specifically, as I explained in my First Declaration, Liu’s client device is modified to use a “user-selected human-readable ID” and a “password.” EX1003, ¶138. I note that by 2016 (in fact by much earlier) a POSITA would have understood that such ID/password functionality would have been predictably used on various types of computing systems including Liu’s mobile devices and Liu’s other contemplated devices. *See* EX1004 (Zhang), [0032]-[0033]; EX1006 (Liu), [0047]; EX1008, [0046].; EX1012, [0104] (explaining that “[t]he authentication parameter is related authentication information of a terminal device that is allowed to wake up the first AP device, for example, the authentication parameter may be a password that is preset by an owner of the AP device”), [0119] (explaining that “the terminal device” uses “a password

that is preset by an owner of the AP device”); EX1014, [0035] (“often make use of usernames and passwords to ensure the proper access is granted”).

47. Next, the POR contends that a POSITA would have avoided implementing encryption on Liu’s “heartbeat messages” and “beacon messages.” POR, 37-38. I note that nothing in my First Declaration requires applying Zhang’s encryption techniques to the “heartbeat messages” in Liu. EX1003 (First Declaration), ¶139. Additionally, even if the encryption technology incrementally “increased the load of the processors” (POR, p. 38), this concern is not outweighed by the advantage of additional security measures. EX1003 (First Declaration), ¶139.

B. The predictable benefit to improve the user experience

48. I also provided a “second” motivation for the Liu-Zhang combination in my First Declaration. EX1003 (First Declaration), ¶140. Specifically, a POSITA would have been motivated to implement the Liu-Zhang combination to “predictably improve the user experience ... because it would be easier for the user to remember”). EX1003 (First Declaration), ¶140. I understand that the POR concedes that this motivation is accurate but never-the-less argues against this motivation for combining Liu and Zhang because “the combination does not address how the connection address and port number data are entered or captured by the system and correlated with the required wakeup information for the remote sleeping apparatus.” POR, 38 (“may improve the user experience”). First, I note that by 2016, a POSITA

would have understood how to predictably implement Zhang's suggested ID/password improvement with Liu's system, thereby improving the user experience.

49. For example, as outlined in my First Declaration at paragraph 138, Zhang teaches an incoming wakeup message to the server that includes "the user-selected human-readable ID of the [sleep-enabled] computer and a user-selected pre-shared password." EX1004 (Zhang), [0065]. Next, Zhang's server authenticates the incoming wakeup message using the password. EX1004 (Zhang), [0019], [0066]. Next, after authenticating Zhang's incoming wakeup message, Zhang's server modifies this wakeup message (e.g., generates a modified wakeup message) and sends the modified wakeup message to the sleep-enabled computer system (i.e., Liu's IP camera). EX1004 (Zhang), [0066]; EX1006 (Liu), [0098-100]; EX1008, [0097- 0099]. A POSITA would understand that modifying the wakeup message would include retrieving the required connection information to send the outgoing wakeup message to Liu's IP camera including the port number and communication address. In fact, I discussed such an arrangement in my First Declaration. *See* EX1003, (First Declaration) ¶147 ("a POSITA would have understood that the server searches according to the identification information for the [sleep-enabled] computer system in the wakeup message (i.e. "the wakeup request packet") to obtain the wake-up packet [(the claimed wakeup information)]); *see also* EX1006 (Liu),

[0099]; EX1008, [0098]; EX1004 (Zhang), [0015], [0018], [0043], Figure 2, element 204, Claims 7, 9, 12, 15; EX1003, (First Declaration) ¶¶138-141, 146, 175-176.

VIII. CONCLUSION

50. I hereby declare that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true. I further declare that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of the Title 18 of the United States Code.

Dated: July 14, 2025

By: Vlad Kardashov
Vlad Kardashov