

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JUNIPER NETWORKS, INC.,
Petitioner,

v.

MONARCH NETWORKING SOLUTIONS LLC,
Patent Owner.

IPR2024-00175
Patent 8,693,369 B2

Record of Oral Hearing
Held: February 5, 2025

Before THU A. DANG, CHARLES J. BOUDREAU, and
NORMAN H. BEAMER, *Administrative Patent Judges*.

IPR2024-00175
Patent 8,693,369 B2

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The above-entitled matter came on for hearing on Wednesday,
February 5, 2025, commencing at 1:00 p.m., via video teleconference.

P R O C E E D I N G S

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JUDGE BEAMER: This is Judge Beamer. With me are Judges Dang and Boudreau. This is IPR2024-00175, Juniper Networks, Inc. v. Monarch Networking Solutions. Could the parties identify themselves, starting with the Petitioner?

MR. BRIGGS: Good morning, Your Honor. This is Todd Briggs from the law firm of Quinn Emanuel and I'm representing the Petitioner in this matter, Juniper Networks. Also with me here today is Christopher Sabbagh, also from Quinn Emanuel.

JUDGE BEAMER: And the Patent Owner?

MR. COLLIER: Good afternoon, Your Honor. This is William Collier of the law firm, Heim, Payne & Chorus, for the Patent Owner, Monarch, and with me today is lead counsel, Allan Bullwinkel.

JUDGE BEAMER: Okay, thank you. A few preliminary remarks. Given this is a video hearing, our first priority is to make sure everybody can be heard. So if at any time, anybody has difficulties or is disconnected, please speak up, or if you're disconnected, you may need to contact the team who originally provided you with the connection information. If you do drop off, write a note where things were being discussed at the time so we can pick up at the proper point.

Anyone who is not speaking, please mute your mic and only unmute when you're speaking. Also, identify yourself when you speak so the transcript reflects the speaker correctly, and when referring to an item on the record or a slide in your presentation, please specify the slide number or the citation so the panel can follow along, and so the transcript is clear. I

1 believe this is a public line, so there may be members of the public listening
2 in. Each party will have one hour to -- for their presentation. The Petitioner
3 goes first. You have -- Petitioner, do you want to reserve any time for
4 rebuttal?

5 MR. BRIGGS: Yes, I would like to reserve some time, and I
6 think that would be approximately 20 minutes, based on the presentation, but
7 that might depend upon the questions that are asked.

8 JUDGE BEAMER: Okay. So you may begin when you're
9 ready.

10 MR. BRIGGS: All right. Good morning and perhaps,
11 afternoon, Your Honors, depending on where you're currently located.
12 Okay. So I would like to start this off by giving you an idea of what I intend
13 to cover this morning. First, I would like to address the Board's questions
14 that were recently emailed to us regarding port masks and ranges. After that,
15 I would then like to turn to a few of the specific issues that have been raised
16 in the briefing.

17 And first, I would like to focus on the Fangman and Kumar
18 combination, which is -- involves Ground 2 in the Petition. Then I would
19 like to address the Biswas and Kumar combination, which is in Ground 1. I
20 do not intend today to address the King and Kumar combination. We will
21 submit that combination on the papers.

22 So first, let me turn to the Board's questions regarding port
23 masking, and I have a few demonstratives that I prepared to discuss this
24 issue, so let me share. And if we go to Slide number 32 in Petitioner's
25 demonstratives, this is a slide that shows a portion of the Board's email, and
26 the email was directed towards a masking example that was provided in Dr.

1 Bhattacharjee's declaration, and Dr. Bhattacharjee is Petitioner's expert.

2 And in this portion of his declaration, he was discussing, at a very
3 high level, how masks would work, and he gave an example in his
4 declaration of a mask for the range of value 0-15, and he explained how that
5 could be represented in binary form by the series of numbers you see in the
6 slide. The Board then asked the question that's presented on Slide number
7 33. What would a mask for the range 16 through 31 be? It would not be
8 1111100000 because that's the range 0-31. And that's a correct observation
9 by the Board.

10 To answer the Board's question, there is no single mask that can be
11 used to identify the range 16 through 31. What one of skill in the art would
12 know is that you could use two masks in conjunction with each other to
13 determine whether a number is in the range 16 through 31. And let me
14 explain how that would work. Basically, you would use the two masks that
15 are shown on Slide 33. The first mask is in the table -- the first row of the
16 table -- and that's a mask that would cover the range 0-15. Then you would
17 use a second mask that covers the range 0-31. And let me explain how this
18 would work, and we can go to Slide 34 to show this.

19 So Slide 34 shows a first example and let's assume that the
20 received port number is 20 in decimal. If you were to apply the port mask 0-
21 15 to this number, you would find that through that bitwise AND operation,
22 that the port number 20 would not fall within that range. So then you would
23 apply, as shown in the next slide, which is Slide 35, you would apply the
24 second mask to that same number. And here, if you applied the second
25 mask through a bitwise AND operation to the binary equivalent of 20, you
26 would find a match. You would find that it does fall within that range.

1 And based on those two pieces of information, you would know
2 that the received port number falls within the range 16-31. Again, because
3 the first test showed you that it did not fall within the range 0-15, but the
4 second range showed you that it did fall within the range of 0-31. So based
5 on those two pieces of information, you can conclude that the number you
6 received, which is 20, falls within the range 16-31.

7 JUDGE BEAMER: So what I'm -- Counsel?

8 MR. BRIGGS: Yes.

9 JUDGE BEAMER: What if you have a number 10 and you
10 applied that same test? It would pass both of the --

11 MR. BRIGGS: That's a very insightful question, Your Honor,
12 because the next slide picks up that very example. So let me turn to the next
13 slide. The next slide shows if you receive the port number 10, if you apply
14 this first test to the binary equivalent of 10, you would see that it falls within
15 the range 0-15. So you would then know that the number falls within 0-15
16 and it is not within the range 16-31. And so in this example, again, you
17 would only get to this first mask in the first part of the test.

18 Then to take this one step further, we have a third example, and
19 that's on Slide 37. Now, here we picked a number that is greater than the
20 range 16-31. We've assumed that the received port number is 40. Again,
21 using masking techniques, you would first apply the mask that covers 0-15
22 and when you apply that mask to the binary equivalent of 40, you would
23 recognize that it does not fall within that range. Then you would go on to
24 the second test or the second mask, and that's the test to see if the received
25 number falls within the range 0-31. And again, because the binary
26 equivalent of 40 does not fall within that range, you would -- the test would

1 show that and then you would know that the number you received is greater
2 than 31 and does not fall within the range.

3 So in summary, using -- in this example, just using these two port
4 masks, you can identify whether a number falls within different ranges. And
5 as we were preparing for the hearing yesterday, it dawned upon us that the
6 Board's questions also through that using a 10-bit number -- if you used a
7 10-bit number, you may only be able to represent two different ranges. And
8 what we did is we prepared a little table here that should be on your screen
9 now that is basically an extension of the example that I just provided to you,
10 with the 10-bit masking example. And this example shows that you could
11 have different masks.

12 In the top table, we have 10 bits in this first row that are all ones,
13 and you can see in the second row, it's all ones, except the far right bit,
14 which is a zero. And then the third row, the far two right bits are zero, and
15 so on, all the way down -- a similar pattern all the way down to the bottom
16 where you have all zeros. And in this particular example of a 10-bit mask,
17 you could assign different hosts to different masks.

18 Now, you'll see in the first two rows, we did not assign a host to
19 any of those first two masks because those first two masks would only --
20 would not yield a range of more than one number. So you couldn't have that
21 mask represent a range of more than one number; however, as you get
22 further down into the table, you can have hosts that could be assigned to
23 different ranges.

24 For example, host one could be assigned to the range 2-3; host two,
25 4-7; host three, 8-15; host four, 16-31; and so on. And one thing you can see
26 in this example is the hosts will have different -- the length of the ranges for

1 each host will be different; however, they will have unique ranges that can
2 be assigned to them. And in this example, you can isolate or identify
3 whether a received port number falls within one of these ranges that are
4 shown over here in the effective range column, using the same technique we
5 just went through and the examples a few moments ago.

6 And for example, if you look at -- if you look now down at the
7 bottom table, host four, this host four is the same example we went through
8 that had the range 16-31. That's the one the Board had a question about and
9 it. And as you see in this host four row on the bottom table, these are the
10 two same masks that we used for test one and test two in the example above.
11 And we showed -- I walked you through how this could identify whether a
12 received number is within the range 16-31.

13 Now, in a similar manner, you could use all the other masks --
14 these two sets of masks for all the different hosts that are shown in this table
15 to identify whether a number falls within the range that's been assigned to
16 that host. You know, for example, host one, you can use this first mask that
17 has all ones and then the far right bit is a zero. And then the second mask,
18 you would use as all ones, except for the two far right bits. And again, you
19 would apply those two masks in the same way that we just went through
20 with the other example to determine whether a number falls within that
21 range.

22 And so the purpose of this is to illustrate using this simple masking
23 example, how this 10-bit number can be used to assign different ranges to
24 multiple different hosts. And in practice, people -- those of skill in the art
25 could apply, you know, additional tests to further define the effective ranges,
26 perhaps make some of them narrower, things like that, but this is just one

1 example. And this is to address the Board's question that was presented,
2 again, where I believe the Board had the impression that a 10-bit mask could
3 only be used to identify two ranges, and the Board, I think, rightly asked the
4 question, well, is that really that useful then if you could only have two
5 ranges represented by a 10 bit number. But this is to show that you can use
6 multiple masks to increase the granularity of the ranges, and this could be
7 expanded further.

8 JUDGE BEAMER: So just to make sure I understand, if you had
9 an arbitrary number, I guess you would have to first test it for the host one
10 test, and then test it for the host two, and then the host three, and at --

11 MR. BRIGGS: Yes, Your Honor.

12 JUDGE BEAMER: -- some point, you would pass the test and
13 then you'd know what host you're on.

14 MR. BRIGGS: Right. I think if I'm understanding your question
15 correctly, Your Honor, if you receive, for example, in the context of this
16 patent, a destination port number in a packet, you would have to go through
17 and apply, you know, these tests that our next two hosts won to determine if
18 it's -- it falls in there, and so on, all the way down until you have a match.
19 And those would be -- in the context of this patent, bitwise ANDing
20 operations.

21 JUDGE BEAMER: So if you would jump to your Slide 132 --

22 MR. BRIGGS: Slide 132 or 32?

23 JUDGE BEAMER: 132.

24 MR. BRIGGS: Sure.

25 JUDGE BEAMER: You have a SQL command there, which as I
26 understood it, that would be a way to find out what -- if you give it an

1 arbitrary port number, it would tell you which mask it fell within. I don't
2 think that would work under what you're talking about.

3 MR. BRIGGS: Under the bitwise operations, I think it may or may
4 not work, but this is -- I think the point you're making is you might be able
5 to find -- like for example, if you had a piece of SQL code or a C code or a
6 higher level programming language, it might be able to operate on port
7 numbers and determine if that port number is in a -- perhaps a more arbitrary
8 port range, using that higher level programming language. And that
9 particular port range might not be amenable to a bitwise ANDing operation,
10 and I think that's true.

11 JUDGE BEAMER: Okay. This has been helpful. I don't think
12 you need to dive into this any deeper. It was just -- these questions arose as
13 we went through the papers, and I appreciate the clarification.

14 MR. BRIGGS: You're welcome, Your Honor. Another point -- I
15 understand that this came up when Your Honors were reviewing the papers.
16 This is a point that the Patent Owner did not make or make any arguments
17 based on this technical detail here. So would you like me to address any of
18 the other questions that were in the Board's emails or are you satisfied at this
19 point?

20 JUDGE BEAMER: I think we're okay.

21 MR. BRIGGS: Okay, fantastic. All right. Well, let me turn now
22 to the Fangman reference. And the Fangman reference is used by the
23 Petitioner in Grounds 2 and 4, and the key issue with Fangman appears to
24 have been boiled down to whether Fangman teaches storing port ranges in
25 its router's table or not. And the router in Fangman is referred to throughout
26 the text as a service gateway and there is a -- there's a -- the question, again,

1 is whether that router in its table is storing port ranges corresponding to each
2 individual host or if it is storing, for each individual host, individual port
3 numbers that are associated with that host.

4 And what I've shown on this slide is an excerpt. Again, I'm on
5 Slide 52, and if you look at the middle of the slide, there's three columns
6 with a private address, a public address, and an assigned port range. And
7 this is the type of structure that we believe Fangman discloses. It discloses
8 for each host a private address, a public address, and then a single port range
9 that's associated with that host. And let me now just walk the Board through
10 why we believe Fangman discloses that structure.

11 So turning to Slide 53, Slide 53 is an excerpt from Fangman and it
12 is Column 8 at lines 45 through 58. And this is an important part of
13 Fangman's disclosure, and this is a part of the disclosure that Juniper
14 believes supports its position. However, this is the very part of the
15 disclosure in Fangman that the Board relied on to -- I guess the Board has an
16 alternative interpretation of this, where it believes that this -- at least in the
17 institution decision, the Board expressed the belief that this section of
18 Fangman discloses a table in the service gateway, which, again, is the router
19 that has for each host, individual port numbers rather than port ranges.

20 And in the institution decision, the Board focused its attention on
21 this second highlighted sentence, where it says the SG 170 may maintain a
22 table of semi-permanent mappings of the external IP addresses and ports to
23 the internal hosts and ports. Now, we would submit that this sentence needs
24 to be read carefully in conjunction with the previous sentence. What the
25 previous sentence states is instead of dynamically assigning ports to IP
26 phones -- and we've added this in brackets, which says, as in traditional

1 NAT -- the service gateway may allocate a range of port numbers for each
2 IP telephone.

3 So this is a key teaching. The service gateway allocates a range of
4 port numbers. Then in the very next sentence, it states that the service
5 gateway may maintain a table of semi-permanent mappings of the external
6 IP addresses and ports to the internal hosts and ports. Now, the internal
7 ports in the last part of the second sentence, that is referring to the range of
8 port numbers in the previous sentence. If we were talking about claims, this
9 would be, for example, the -- the range of port numbers would be the
10 antecedent basis for this term, internal ports, in this sentence. So we believe,
11 and we believed when we filed the Petition, that it was crystal clear that
12 Fangman disclosed a range of ports being stored in the service gateway.

13 Now, we believe there's other disclosures in Fangman in addition
14 to this, that make it crystal clear -- crystal clear -- that Fangman is storing
15 ranges of port numbers for each host. And so let me turn to the next slide.
16 Now, this slide, which is Slide 54, has a few -- it's a quote from Fangman,
17 which starts in Column 10, lines 20 through 21, and it continues through
18 Column 10 into Column 11, line 14. And this was cited in our Petition. I
19 don't believe the Board addressed this citation in its institution decision, but
20 again, this is a very important disclosure because this section of Fangman
21 further describes the service gateway, and again, we know that the service
22 gateway allocates the ranges of ports.

23 And this disclosure goes through a summary of the features of the
24 service gateway and as you go through the text, it states that it maintains
25 persistent port mappings between each of the internal hosts and the assigned
26 ports. But I believe most critically, there's a portion of this description of the

1 service gateway that says, you, "assign port ranges for host, reserved in
2 NAPT table." This portion of Fangman is saying the port ranges for each
3 host are reserved or stored in the NAPT table. And I can further highlight
4 this by pulling up Fangman very quickly.

5 Again, we were talking about this section. So here we are in
6 Column 10, and this is the beginning of the section, where I'm on line
7 approximately 28 where it talks about the service gateway features. And as
8 you continue down through, it goes through various features, and then when
9 you get to Column 11, it has this very critical statement which we believe
10 makes it crystal clear that Fangman discloses storing port ranges. And
11 again, it says, assign port ranges for host, reserved in NAPT table.

12 So we believe that that statement right there is a dispositive on this
13 issue and there's no ambiguity. It does not state, assign individual port
14 numbers for each host and reserve those in the NAPT table. It says to assign
15 port ranges and reserve or store those in the table. There are other
16 disclosures that further support our interpretation of Fangman's table.

17 Turning to Slide 55, this is a portion of Fangman at Column 18,
18 lines 45 through 57, and it states, thus, in the above process, the service
19 gateway may facilitate and mediate the IP telephony process by assigning a
20 range of port numbers to a client IP phone and by NAPPTing packet IP
21 source/destination addresses while leaving the corresponding port
22 information unchanged. Again, this is talking about the NAPPTing process
23 in the context of using this range of ports, which is fully consistent with our
24 interpretation.

25 And then in our briefing, we also pointed to -- I turned to Slide 56 -
26 - another portion of Fangman. This is Claim 1. If you look at Claim 1, it

1 talks about a data structure that is stored in the NAPPT table. It claims that,
2 and it claims it in a way that is -- that shows that you are storing, in that
3 table, the assigned ports for the IP telephone, which are the assigned port
4 ranges.

5 Now, I wanted to jump forward briefly to Slide 81. So in response
6 to Petitioner's evidence on this point, the Patent Owner states in its Surreply
7 brief -- its, final word on this issue, it states that Petitioner's hypothetical
8 NAPPT table with port ranges is simply a fabrication. Fangman never even
9 hints at such an implementation. That is just -- it's plainly incorrect. Not
10 only is our view of the NAPPT table not a fabrication, it's explicitly
11 disclosed in Fangman, as we just went through with the various cites. For
12 example, again, Column 11, that shows that the port ranges are stored in the
13 NAPPT table. It can't be any clearer. And then we have the other citations,
14 as well.

15 Now, I'd like to briefly turn back to the Board's interpretation of
16 Fangman as we understood it in the institution decision. And in the
17 institution decision, it appears that the Board believes that what Fangman's
18 table is storing is basically ports, individual ports, that are associated with
19 each host. And so if a host, for example, were assigned a hundred ports,
20 then there would be a hundred entries in the table, or a hundred rows in the
21 table.

22 Now, let me go forward to Slide number 83. If the Board's
23 interpretation were correct -- and again, we don't believe it is -- but if it
24 were, a person of skill in the art would have recognized that storing port
25 ranges is a much more efficient way to store these ranges than storing the
26 individual port numbers themselves in these tables, saving potentially tens of

1 thousands of rows of data. And if we go to Slide 84, we've come up with a
2 hypothetical example, and these are somewhat arbitrary numbers in here.
3 It's just a hypothetical that shows this point.

4 And in this example, if you have a system with 512 hosts that are
5 assigned 120 ports each, you would have approximately, under the Board's
6 view, potentially 61,000 rows of data. Now, if you used an approach -- the
7 approach that Juniper believes Fangman teaches, you would only have 512
8 rows of data under this same example. And so that's much, much smaller.
9 In this example, it's .8 percent of the size. Again, this would depend on the
10 implementation, of course, what the sizes of the ranges and so on are, but the
11 point is, is if you're storing port ranges, you can do so in a much more
12 efficient manner. Now --

13 JUDGE BEAMER: So Counsel, lookup tables are pretty standard
14 things and I think large lookup tables are not exactly a big minus in a design,
15 and they can be very quickly looked up and you get the answer right away,
16 whereas a lookup table that has a bunch of ranges seems to me to be -- it
17 might save space, but you've got a lot of computation there that you don't
18 have if it's just a simple lookup table. So I'm not sure this balancing has
19 really been sufficiently laid out by your expert.

20 MR. BRIGGS: Well, that's where the port masks come in, Your
21 Honor, because then you can use these very efficient bitwise port masks on
22 the ranges to identify whether certain received port addresses fall within one
23 of the ranges. So it's -- it would be a combination of both of those, but
24 again, we believe that Fangman is clear that it's storing the port ranges in the
25 first place.

26 Okay. So I've turned now to Slide 91 and Patent Owner's response

1 to our position on this issue is very generic. Patent Owner's brief states that
2 routing based on port ranges would introduce challenges, but it only alleges
3 very generic issues that are not backed up with evidence or specific
4 examples. And their expert raises two points in his surreply declaration.
5 This is Dr. Minoli. And first, he states that using port ranges would require
6 modification to DHCP. But again, Fangman is already teaching
7 modification to DHCP, and we've cited Fangman at Column 3, lines 25
8 through 37, where it is already contemplating modifications to DHCP.

9 And this particular excerpt here, Column 3, line 25 through 37, it's
10 also important because it talks about the DHCP lease information, including
11 a range of port numbers. It says the DHCP offer may include DHCP lease
12 information based on the validated identifier, such as the range of port
13 numbers. So the DHCP lease information includes the range of port
14 numbers. Then the next sentence states that the service gateway may store
15 the DHCP lease information, so it's storing the range of port numbers,
16 further supporting our points. But in any event, Patent Owner's expert's first
17 argument on this point is easily rebutted by the Fangman reference itself.

18 Second, Patent Owner's expert says a person of skill in the art
19 would not implement port ranges because other processes are already
20 complex, but the Patent Owner's expert does not explain how implementing
21 port ranges would somehow make these other processes even more complex
22 or provide any support -- other support for this assertion. So in summary,
23 Petitioner's position is that Fangman teaches that the service gateway, as a
24 table, stores port ranges, not individual port numbers. And this slide, which
25 is Slide 94, walks through some of the key evidence that supports that
26 position.

1 JUDGE BEAMER: You have about a minute left in your initial
2 period.

3 MR. BRIGGS: Thank you, Your Honor. Turning to Grounds 2
4 and 4, once we've reached the point that Fangman -- the conclusion that
5 Fangman actually discloses a table that stores the range of ports or that that
6 would be obvious, the person of skill in the art would further have been
7 motivated to combined Fangman and Kumar. And we've laid out in our
8 briefing, citing to Juniper's expert's declaration, the various reasons why a
9 person of skill in the art would be motivated to combine.

10 And what was notable to us is this Slide 96 lists four different
11 reasons, and these -- well, really, the reasons are numbers two, three, and
12 four. Number two, three, and four were not rebutted at all by Monarch, the
13 Patent Owner, or its expert. And also, the Board found in the institution
14 decision that there was a sufficient motivation to combine provided.

15 So moving forward, before I turn to the next ground, I have a few
16 slides here, 103 through 105, that conclude our presentation on Fangman.
17 And again, the fundamental dispute is whether it discloses a table containing
18 port ranges for individual port numbers. We believe very strongly it's the
19 former from the evidence cited and mentioned during the hearing. No
20 matter how the Board reads Fangman, the record compels a finding for
21 Juniper because if the Board determines that Fangman -- I'm now on Slide
22 104 -- discloses storing individual port numbers, then the only evidence
23 before the Board is that it would be obvious to instead, use a much smaller,
24 more efficient table, using port ranges. And again, neither Patent Owner or
25 its expert dispute that this is a more efficient implementation.

26 And then finally, turning to Slide 105, we get to the point where

1 the only evidence before the Board is that a person of skill in the art would
2 combine Fangman and Kumar. Juniper's expert provided multiple reasons
3 why a person of skill in the art would do so, and Patent Owner's expert never
4 provided any contrary opinions or rebutted any of these motivations.

5 So now, let me turn to the next issue and that is the Biswas
6 reference. And the key issue with respect to Biswas is whether -- and
7 Biswas is addressed in Ground 1. The key issue is whether Biswas discloses
8 the routing identifier limitation in dependent Claims 8 and 12. Now,
9 Petitioner has not raised any challenge to all of the other claims that were in
10 Ground 1, other than Claims 8 and 12, and so Juniper believes that based on
11 the non-opposition to Juniper's Petition, those other claims should be found
12 invalid.

13 But turning to the router identifier limitation, it's found in -- for
14 example, Claim 8. The method, according to Claim 7, of configuring a piece
15 of terminal equipment, comprising a step of assigning to said piece of
16 terminal equipment, an identifier of a routing device, adapted to route a data
17 packet, comprising said primary address as the destination address to said
18 piece of terminal equipment.

19 Now, I'm just going to move forward. What Juniper pointed to in
20 its position -- in its Petition -- as satisfying this limitation, this routing
21 identifier limitation, is a global address. Now, this global address, Biswas
22 states that the gateway master also translates global addresses of data
23 received from public network 112. And I'm on Slide 112 right now. And
24 this is a key teaching for this dispute because what this states is that the
25 gateway master, which Juniper identified in its position as being the routing
26 identifier, actually translates global addresses, which are akin to public IP

1 addresses. These are global addresses of data received from a network into
2 local addresses. Those are private addresses.

3 And so this teaching shows you that at the gateway master, the
4 gateway master is the routing device that is identified by the global address,
5 and it then uses that global address to then translate data received from the
6 public network into local addresses.

7 JUDGE BEAMER: Why isn't the edge router the routing device?

8 MR. BRIGGS: Well, the edge router, of course, plays a part. The
9 edge router -- if you have an incoming packet, the packet comes first to the
10 gateway master, then goes through in the figure -- some of the private
11 network, and then to an edge router. So the edge router does perform some
12 routing functions, but the question that was presented I think by the Board's
13 institution decision, is whether or not the gateway master also does any
14 translation of public addresses into private addresses. And again, this is the
15 teaching that shows that it occurs there. And this is Biswas at Column 6,
16 lines 15 through 19.

17 JUDGE BEAMER: So if --

18 MR. BRIGGS: Now, the --

19 JUDGE BEAMER: So if it's the gateway master that's routing the
20 packet to the host, is the edge router just passing it through --

21 MR. BRIGGS: Well, the edge router --

22 JUDGE BEAMER: -- without doing anything or what? I --

23 MR. BRIGGS: Yeah. The edge router is doing additional packet
24 processing, but the individual check, as the packet goes from the public
25 network into the private network, the first step of that is the gateway master
26 translating the public IP address into a private address, and then that is used

1 within the private portion of Biswas's network to ultimately route the packet
2 to the correct host.

3 Now, the edge routers do additional processing. For example,
4 they're checking to see which particular host to send a packet to based on
5 their destination port within that packet. So you have, in effect, kind of like
6 some of the routing being done by the gateway master, some of the initial
7 routing, and then further processing and routing done by the edge routers.
8 It's split.

9 Now, one quick point, because we're running short -- I'm running
10 short on time. Most of the Patent Owner's arguments on this issue appear to
11 us to be red herrings. They are focusing on outbound packets and how
12 Biswas might handle outbound packets, meaning packets sent from the host
13 out to the public network. But that is not what this claim is directed to. This
14 claim -- Claim 8 and Claim 12, both of those claims -- are directed towards
15 inbound packets, and that's clear from the plain claim language. And if you
16 look at Biswas's disclosure in that context, again, it's clear that the gateway
17 master is doing a translation of a public global address into local addresses.
18 And with that, I will conclude our presentation and reserve my remaining
19 time for rebuttal.

20 JUDGE BEAMER: Okay. You have about 11 minutes remaining.

21 MR. BRIGGS: Thank you.

22 JUDGE BEAMER: So Patent Owner, you also have an hour.

23 What -- do you want to reserve any time?

24 MR. COLLIER: I'd like to reserve 15 minutes, Your Honor.

25 JUDGE BEAMER: Fifteen, okay. So you may begin when ready.

26 MR. COLLIER: Thank you, Your Honor, and may it please the

1 Court. I'm going to share my slides starting with Patent Owner's Slide 2.
2 Plaintiff discussed four key points that I've listed here today. The first is
3 that, with respect to Grounds 2 and 4, Fangman -- whether or not Fangman
4 discloses routing a packet -- the question is whether or not Fangman
5 discloses routing a packet based on port ranges. What we'll see as we go
6 through Fangman later in the presentation is that in every instance of routing
7 a packet, Fangman relies on a single port number that is assigned to or
8 paired to a single IP address. Not the claimed range of port numbers in the
9 '369 patent.

10 Similarly, King also does not disclose routing based on port
11 ranges, and there's a couple of reasons for this. First, King describes source
12 addresses and source ports, but the claims in the '369 patent are directed to
13 destination ports. And then second, even ignoring that issue, King, like
14 Fangman, only routes packets using a single port number assigned to a
15 single IP address in a translation table. Not a range of port numbers
16 assigned to an IP address.

17 Third, a person of ordinary skill would not modify the art to use
18 port masks, as claimed. As we've seen in Petitioner's presentation today,
19 simply attempting to use a bit mask to define a port range is far more
20 complicated than Petitioner suggested in the Petition. And a person of
21 ordinary skill would not be motivated to modify the teachings of these other
22 references to try to use a bit mask as opposed to using port range when
23 performing the function -- their functions.

24 And finally, with respective Ground 1, and Claims 8 and 12
25 specifically, Biswas does not disclose the claimed routing identifier. As the
26 Board noted in its institution decision, Petitioner pointed to this same global

1 address in Biswas to make two separate elements of the claims in the '369
2 patent. And as we'll see when we look at the details of those claims, the
3 Petitioner's theory does not make sense in the context of those claims.

4 JUDGE BEAMER: I see your argument about the masks. Did
5 you make that argument in the papers or is this just an argument you're
6 making now because of the recent discussion?

7 MR. COLLIER: Much of this is in response to the Board's, you
8 know, from the other week, specifically about bit masks. But we did argue
9 in the Response that Kumar would not be combined with the other
10 references because it's not as simple as applying a bit mask to the port range.
11 The Board's questions -- the Board's question about bit masks goes exactly
12 to that issue. It's not as simple as applying an AND function to a range of
13 bits. And for that reason, a person of ordinary skill would not combine
14 Kumar with the other references.

15 So I'll jump down to Patent Owner's Slide 15 to begin our
16 discussion of Fangman. On Patent Owner's Slide 15, I have Claims 1, 5, and
17 6, the relevant independent claims of Fangman. And as Petitioner explained,
18 the dispute between the parties essentially boils down to whether or not
19 Fangman uses a range of port numbers when it identifies a routing identifier
20 for the packet. And in other words, whether Fangman uses a range of port
21 numbers right, it routes the packet. And there's no dispute between the
22 parties that Fangman does describe using port ranges in certain aspects, but
23 what we'll see in Fangman is that Fangman never uses port ranges at its
24 service gateway in its NAPPT function.

25 Instead, Fangman always associates a single port or at best,
26 multiple ports to -- with a destination device or with a single IP address.

1 Instead, every time Fangman is discussing a range of ports, it's describing a
2 separate function, the DHCP function. And Fangman never suggests the
3 information from the DHCP system should be used or combined with the
4 data stored in the NAPPT table.

5 So just to provide a little background, I want to briefly look at
6 Figure 3 of Fangman. This illustrates Fangman's overall system, and as the
7 Board is aware, we're primarily focused on routing functions occurring at
8 service gateway 107, either service gateway 107A or B. The service
9 gateways provide a connection for IP telephones 120 A through D, to the
10 public network.

11 Further in my discussion, I may also discuss this media gateway
12 controller 150, but for now, we'll focus on the service gateways and
13 particularly, their NAPPT functions. So going to Patent Owner's Slide 17,
14 here I have Figure 4A from Fangman. 4A describes the steps involved in
15 Fangman's system, from powering on a telephone to actually placing and
16 receiving an IP phone call. The two steps here that I think we're going to
17 talk about most are this step 404, where the client performs DHCP lease
18 negotiations, and then separately, step 406 where the IP phone is registered.

19 Petitioner has noted that Fangman describes its DHCP system
20 assigning port ranges and I believe if we go to Petitioner's Slide 81, there are
21 actually several quotes here that Petitioner has relied on that use the phrase
22 port ranges. But when we go through Fangman and look at each of these
23 sections, what we'll actually see is that they're -- it's always describing a port
24 range in the DHCP context and a port number in the NAPPT context. So
25 looking at these specific examples --

26 JUDGE BEAMER: What were those two contexts? I didn't catch

1 that.

2 MR. COLLIER: So the first context is DHCP lease negotiations,
3 where a range -- a port range is assigned to an IP phone number. The second
4 is the NAPPT translation process and translation table at the service
5 gateway. In those instances, Fangman always uses the phrase ports, either --
6 or port -- an assigned port or assigned ports. They may clearly -- it makes it
7 different and it takes the times to differentiate between how these two
8 systems are functioning and how they're using ports.

9 So I'm going to go over to Fangman itself and turn to Columns 10
10 and 11. So Petitioner highlighted this discussion in Fangman's Columns 10
11 through 11 that describe various features that may be present at the service
12 gateway. But I want to note is that these features are not all within the
13 NAPPT table. So Fangman explains that below is a summary of features in
14 the service gateway. This is in line 20 of Column 10. If we scroll through
15 these features, we see first, Fangman spent a significant portion of this
16 column discussing tunnels. That's -- this lists the functions available at the --
17 in the tunnel system within Fangman.

18 Now, if we go further down to Column 11, this is the section that
19 Petitioner themselves cited. Were they focused on the assigned -- this
20 language of assigned port ranges reserved in an NAPT table. This specific
21 set of features is specifically within the DHCP service, which provides the
22 IP phones with a range of port numbers that they can use in their outgoing
23 calls. It does not assign these port numbers in its NAPPT table. And in fact,
24 later in Fangman, Fangman differentiates the NAPT table from the NAPPT
25 table.

26 So if we go, just briefly, to Column 14, lines 9 to 14, we see that

1 Fangman describes the NAPPT table as a perpetual table that maintains the
2 information used to solve this traditional problem with vending and report
3 numbers. But as Petitioner highlighted earlier, the NAPPT table, which the
4 Petitioner relies on for allegedly showing obviousness of the '369 patent is a
5 semi-permanent mapping of port numbers -- of IP address numbers -- and
6 port numbers.

7 Now, Petitioner also focused on the claim language from
8 Fangman. Again, to suggest that Fangman is using port ranges when it's
9 routing, but if we actually look at that claim language, we'll see that the
10 claim, in fact, uses the same distinction between a range of port numbers and
11 assigned ports that the discussion of the embodiments in Fangman uses.

12 So if we go to Claim 1, which is Column 32 of Fangman, line --
13 starting at line 35 and going through line 56, we can see Claim 1 here. It
14 describes a method of performing IP telephony, comprising receiving an
15 identifier of the IP telephone, determining if the identifier is valid, and if the
16 identifier is valid, assigning a, quote, "range of port numbers to the IP
17 telephone based on the identifier, wherein the IP telephone is operable to use
18 at least a subset of the range of port numbers to send or receive IP
19 communications."

20 There's a couple of other steps in here, but before I get to them, I'm
21 going to focus on the step that Petitioner has highlighted, which is the
22 paragraph beginning at line 47. There, Fangman claims the service gateway
23 performs NAPPT on a packet its received, including storing its translation
24 table, a data structure, wherein the translation information comprises. And
25 one of the items it comprises is seen on line 55, which says the assigned
26 ports of the IP telephone.

1 So Fangman specifically in its claim chose to differentiate between
2 a range of port numbers and the assigned ports for the telephone later. The
3 specific port numbers, in other words. The reason for that is if we follow the
4 claim, even the claim distinguishes the DHCP process from the NAPPT, the
5 translation process. So the second step in Fangman, after the phone has been
6 assigned the range of port numbers, the second step begins on line 43 and
7 states, the service gateway then receives a data packet from the IP telephone.

8 That data packet comprises private source address of the IP
9 telephone, a source port number of the IP telephone, and a destination
10 information associated with an IP device. It's only after it's received this
11 packet that translation information is stored in the service gateway. And that
12 translation information is the information contained in the packet that was --
13 that is sent to the service gateway, not the information in the DHCP lease
14 system.

15 JUDGE BOUDREAU: Mr. Collier, this is Judge Boudreau.

16 MR. COLLIER: Yes, Judge.

17 JUDGE BOUDREAU: The only antecedent basis I see for the
18 assigned ports is on approximately --

19 MR. COLLIER: Your Honor, I'm sorry. I think your mic is
20 cutting out. I'm having difficulty hearing you.

21 JUDGE BOUDREAU: Oh, sorry. Are you able to hear me now?

22 MR. COLLIER: I can, yes.

23 JUDGE BOUDREAU: Yeah. I was asking, the only antecedent
24 basis that I see for the phrase, the assigned ports, that you just pointed to on
25 line 55, is on approximately line 38, where it says, if the identifier is valid,
26 assigning a range of port numbers to the IP telephone. Why shouldn't we

1 read the later reference to the assigned ports to refer back to that range of
2 port numbers?

3 MR. COLLIER: Well, Your Honor, the antecedent basis for the
4 assigned ports is actually the source port number contained in the packet.
5 The claim envisions that an NAPPT -- sorry -- that the service gateway
6 could've received more than one packet with more than one source port.
7 When it says assigned ports, it's referring to that source port number. Not
8 the range of port numbers earlier in the claim. And I actually think if we go
9 through how Fangman works, it'll become pretty clear that our -- Patent
10 Owner's interpretation of the system is the only embodiment described in
11 Fangman.

12 JUDGE BOUDREAU: Well, before we move on, the difficulty
13 that I see with that is, what we were just pointing to on -- it looks like line 45
14 -- it says, a source port number, and when we get to line 55, it's the assigned
15 ports, plural, for the IP telephone. So that appears to contemplate that there's
16 more than one port for the IP telephone.

17 MR. COLLIER: There could be more than one port for the IP
18 telephone, but it is not storing the range of port numbers defined earlier.
19 And the claim itself -- in the claim itself, this port information, this
20 triangulation information, is not stored until after a packet comprising the
21 information has arrived at the service gateway.

22 If you look in the embodiments of Fangman, we'll see that there's
23 no discussion of providing DHCP information, in other words, this range of
24 port numbers, to the NAPPT table actually used to perform packet
25 translation. And the claim follows this same approach. And despite the
26 unusualness of the way they worded it, it's clearly differentiating between a

1 range of port numbers, which is used twice earlier in the claim and
2 elsewhere in the specification, and a specific assigned port.

3 JUDGE BOUDREAU: All right. And I think you said that the
4 only embodiment that's in Fangman illustrates that point. Do you --

5 MR. COLLIER: Yes, Your Honor. I was finding my slide. I
6 apologize. So I have up here Slide 24 from Patent Owner's demonstratives.
7 What you'll see is a combination of Figures 6A through 6C in Fangman.
8 These figures illustrate the registration process of a phone in Fangman.
9 Now, what this process is going to do is it will take a packet, an IP packet,
10 from one of the IP telephones, and transmit it via the service gateway to the
11 MGC device that I briefly discussed earlier, where essentially, contact
12 information for the IP phone will be stored.

13 And so as we saw -- I'll briefly go back up to Slide 17, which is --
14 it shows Figure 4A in Fangman. This registration process, step 406, will
15 occur after the DHCP lease negotiations. So when we get to this point, the
16 IP phone has already obtained a range of port numbers from the DHCP
17 server. Going back to Slide -- I'm sorry, Slide 24 -- we'll -- I'll start on the
18 left side, which if -- I've highlighted step 610. Here, the client has selected a
19 port number for MEGACO signaling, so this is the port number that we're
20 going to see is used throughout this system, and it's the port number that the
21 IP phone can be contacted at.

22 Above step 14 -- 614, slightly to the left here -- we'll see the IP
23 packet header information that the telephone has created to transmit this
24 packet to the MGC. The packet contains, as its source IP address, the
25 private IP address on the phone. Its source port is a port number selected
26 from its assigned range, and then the destination information is information

1 for the MGC.

2 If we follow our blue arrow from left to right, we'll get to, on the
3 right side, about the middle of Figure 6C, step 638. This is where the
4 service gateway transmits the packet from the private network to the public
5 network and it performs NAPT. The important thing about this step
6 specifically is it is the first time the service gateway has performed NAPPT
7 on a packet from one of the IP telephones. So this is the first time that the
8 NAPPT table has seen any information or any packet related to that IP
9 telephone. And what you'll see is that -- if we look at this packet or this
10 result of address translation above step 638 on the right here, the IP source
11 address is changed from a private address of the phone to the public one of
12 the service gateway. The source port is unchanged, which is one of the key
13 features of NAPPT. And of course, the destination information is
14 unchanged because it's the public information of the MGC.

15 Now, following our second arrow here back to the left, the packet
16 will eventually arrive at the MGC. If we look at step 610 on the left in
17 Figure 6A, it states that the MGC stores phone information, and the specific
18 information that it stores is the public IP address for the service gateway,
19 that same unchanged port number and the private IP address. And in a
20 separate entry, also the public IP address for the service gateway. And -- I'm
21 sorry, Your Honor. Did I interrupt a question?

22 Continuing, we'll see -- though I won't go through the full thing --
23 is that a reply packet has been sent back to the originating IP phone where
24 this same unchanged source number is used throughout the process,
25 including a NAPT back at service gateway. And so the important thing here
26 -- there's two key parts to this process. One is that the MGC basically has

1 the phone number for our IP phone and that phone number is the public IP
2 address of the service gateway, and the single port number transmitted in an
3 outgoing packet by the IP phone. The second is that now the service
4 gateway can form an entry in its NAPT table associating the IP phone's
5 single IP phone number -- I mean, IP address -- with the port number that it's
6 chosen.

7 So going on to our next slide, which is Patent Owner's Slide 25,
8 this illustrates the phone call process. So this would be a call between say,
9 IP phone 102A to a phone on an external network, IP phone 102B, and this
10 is the exact embodiment that Petitioner pointed to in the Petition as
11 rendering the claims obvious. So you'll see at step 610 in this process, the IP
12 phone asks itself, did the MGC provide destination IP address and
13 destination port. In other words, does the IP telephone, to send an outgoing
14 call, have the port number that the receiving phone already registered with
15 the MGC. If it does not, then the session fails, if we follow these errors here
16 to the right of step 1004. But if it does have that number, it has the IP
17 address and the port number, we can follow the blue arrows I've added here
18 as this packet is created and transmitted through the system.

19 And so what we'll see at various steps -- I'll start with step 1008 on
20 the left here -- is that the destination port number -- that is the port number
21 of the receiving phone of this phone call -- is the phone to port indicated by
22 MGC during the call setup process. That port number never changes. So
23 when we perform NAPT at the service gateway, 1024, it's that same number.
24 When we get around eventually to step 1064 at the bottom of Figure 10B,
25 this is the service gateway for the receiving phone performing NAPT, it
26 makes the same change in reverse that it made earlier. It changes the IP

1 phone's public address, which is service gateway's to address, to that phone's
2 private address. And then it leaves that port number unchanged. And so this
3 is a somewhat convoluted and complicated process.

4 The point here is that at every single point, there's only one port
5 number used by the IP telephone. There's no teaching or suggestion or other
6 disclosure that you would actually use or need to use more than one port
7 number in the NAPPT table per IP telephone. And even if you had to use
8 one or two, as we've seen in our discussion earlier -- or the Petitioner's
9 discussion of bit masks -- identifying a range can actually be more
10 complicated than identifying a single number, especially if you only have a
11 few devices with very limited port ranges. And that's the exact system that
12 Fangman describes. A few IP phones using individual -- maybe two, but in
13 every embodiment, only one port number at any given time.

14 And there's simply no reason for a person of skill in the art to
15 choose to modify this NAPT table, which is likely similar to the one that the
16 Board identified in its institution decision, to include a range of port
17 numbers. We have so few ports and such a direct relationship between IP
18 addresses and port numbers.

19 JUDGE BEAMER: So Counsel, if you can turn to Column 17 of
20 Fangman -- I don't know whether you have that handy.

21 MR. COLLIER: I do. One moment, please. Okay.

22 JUDGE BEAMER: So down -- on 17, down on line 27, it says in
23 one embodiment, two ports may be assigned for each two-way
24 communication. One port for incoming information, one for outgoing
25 information. And then it also says additional ports may be assigned for
26 other services, such as paging, et cetera. So what is your understanding of

1 this negotiation and registration and so on process that you're talking about?
2 Would there be multiple registrations for each different port?

3 MR. COLLIER: Yes. That's what the registration process
4 requires. If you're registering with the MGC -- if IP phones are registering
5 with the MGC -- it has to have a separate -- at least from the embodiments
6 that Fangman describes, it would have a separate registration for each of
7 these separate port registrations.

8 Now, the Petitioner hasn't pointed to how Fangman would assign
9 additional ports for these other services. Fangman is primarily focused on
10 the IP telephone system, but there's no reason to think that Fangman would
11 deviate from its existing system of separating the lease information, the
12 DHCP lease information, from the NAPPT table. And one reason that
13 Fangman may believe this distinction is because the DHCP lease
14 information will likely include more information than an NAPPT table
15 needs.

16 So if the DHCP lease information is sent to phones that, for
17 whatever reason don't register, it's not helpful to have that information in the
18 NAPPT table. In fact, Fangman itself, when it describes that table, explains
19 it's a semi-permanent relationship of ports -- of IP addresses to port
20 numbers. The implication there being it can come online and come offline,
21 add and remove ports as needed, but it doesn't need to keep track of every
22 single port number that's available to every single device in its system. Only
23 the ones that happen to be in use.

24 JUDGE BEAMER: Earlier, you were referring to a permanent
25 versus a semi-permanent. Where --

26 MR. COLLIER: So that is --

1 JUDGE BEAMER: Where is that in the patent?

2 MR. COLLIER: It's in Column 8 at -- yes, Column 8 starting at
3 line 45, which I can bring up. And this was also quoted by the Petitioner on
4 one of their slides, but I do not have which one in front of me. This is really
5 the heart of Fangman's discussion of NAPPT. It first describes that the
6 service gateway may allocate a range of port numbers for each IP telephone
7 as it acquires its lease during the DHCP process, described in Figures 5A
8 and 5B.

9 Separately, the service gateway may maintain a table of semi-
10 permanent mappings of the external IP addresses and ports -- not port ranges
11 or range of ports -- to the internal hosts and ports. Service gateway 107 may
12 continue to replace internal or private source IP address -- the internal or
13 private IP source address -- with the mapped external source IP address. It
14 may not, however, modify the port information, though it may validate it to
15 ensure the correct internal host is using its assigned port range.

16 JUDGE BEAMER: So and then where's the permanent table?

17 MR. COLLIER: So the permanent table is referring to the NAPT
18 table, and it's discussed in a separate -- sort of a separate issue that I don't
19 think -- that I know Petitioner has not pointed to as rendering the patent
20 obvious. So it describes, in Column 14 at line 12, this -- starting at the top
21 of Column 14, it discusses this issue of unattainable addresses and it states it
22 may be addressed by using a NAPT technology. Further down here at line
23 12, it states the perpetual NAPT table maintained by the service gateway
24 may solve the traditional problem of dynamic port numbers. So this is -- it's
25 a separate tool within the service gateway that no party has suggested -- or
26 that Petitioner has not suggested -- would render the claims obvious, and

1 certainly is not part of the embodiment that Petitioner has relied on in the
2 Petition itself, but it is distinct from NAPT table.

3 JUDGE BEAMER: So you're saying that NAPT is different from
4 NAPPT?

5 MR. COLLIER: Yes, Your Honor. So NAPT -- I cannot -- I don't
6 have the acronym in front of me to crosscheck it, but I believe NAPT is
7 network address and port translation, whereas NA -- which is an existing
8 system, as Fangman sort of describes here. The NAPPT table is the network
9 address and persistent port translation that's used in the specific
10 embodiments Petitioner relied on in its Petition, and that's this -- this idea of
11 maintaining port information across the translation table at the service
12 gateway.

13 JUDGE BEAMER: Okay, thank you.

14 MR. COLLIER: So I want to use this point to briefly touch on our
15 position that a person of ordinary skill would not combine Kumar with
16 Fangman or any of the other references. I have up Slide 43 of Patent
17 Owner's slides and this is an expert -- this is from the abstract of Kumar,
18 Exhibit 1023. As Petitioner has acknowledged, defining a range of ports
19 using a bit mask is not as simple as the single bit mask and AND function
20 that Petitioner's expert used and relied on in his declaration supporting the
21 Petition.

22 As we've seen, you need at least two bit masks to define any range
23 that doesn't start at zero. In fact, I -- frequently, you'll need more than two.
24 I think one example of this is the bit mask -- one of the port ranges, I should
25 say, that the Board identified in its email that's from the King reference. The
26 Board asked the parties if bit masks could be used to identify a range from

1 1040 to 1055. If my math is right, that would actually require at least three
2 masks.

3 This ties into the points that we've made about Kumar that simply
4 using a bit mask is not something a person of ordinary skill in the art is
5 going to do, and Kumar highlights that. In order for Kumar to identify
6 where packets go and what you do with them, Kumar actually has to use bit
7 masks to create these hash tables -- these forests of hash tables. They
8 combine bit masks with rules to create search keys, and then search through
9 the whole system.

10 If a person of ordinary skill in the art is looking at, for example,
11 Fangman, and says, oh, I need to define a range in this case, we -- in the
12 DHCP process -- it's far easier to do that at, for example, the higher level
13 code that Petitioner showed earlier, than it would be to define these arbitrary
14 ranges with bit masks, as the Board has recognized. Kumar itself recognizes
15 that for a mask just to determine if a number is above 1023, you have to use
16 at least six masks in its system. And despite Petitioner and their expert's
17 statements and theories, it simply does not make sense that a person of
18 ordinary skill in the art would refer to this type of complex computation to
19 do what otherwise would be a simpler system and a higher level of coding.

20 And I want to use the Board's questions on bit masks to highlight
21 one part of the '369 patent claims that help illustrate this non-obviousness. If
22 we go to Slide -- sorry, bear with me for one moment, if you don't mind.
23 Here we go. So if we go to Patent Owner's Slide 7, I have Figure 2B from
24 the '369 patent and I've annotated it here. So it's important to remember that
25 the claims in the '369 patent claim port masks that define a range of port
26 numbers.

1 The obviousness combinations that Petitioners propose define port
2 ranges that they have been suggested could be themselves -- those port
3 ranges could be defined by the bit mask as described in Kumar. As we've
4 seen, it's not that simple, but the port masks in the '369 are using port masks
5 specifically instead of port ranges, actually allow a fairly elegant solution.
6 So I've highlighted this third port mask in Figure 2B, which shows a number
7 of ones and X's. The ones represent bits that have to be fixed. They have to
8 be a certain number. The X's represent bits that can be either zero or one.

9 In this example, I've set the one bits in our mask to zero bits in our
10 big range that we're -- essentially, that we're calculating. And what you'll
11 see is that this mask, because of its -- how it's discontinuous -- it allows four
12 different ranges, each with 16 numbers. So in the context of a port mask,
13 that would allow four different ranges of 16 port numbers within a single 16
14 bit port mask.

15 On the next slide, Slide 8, I've taken that same bit mask, but I've
16 flipped the bits to the left. So now we have bits three and four free, whereas
17 bits five and six are fixed. Again, I've fixed them to zero here, and again, we
18 get four ranges of 16 numbers. So if we go to Slide 9, I've compared those
19 two numbers -- those two ranges of numbers -- and what these two 16 bit
20 masks allow a person implementing the '369 patent to do is define three
21 independent ranges for each -- for example, for each device, without having
22 to do additional computation to determine whether or not a number falls
23 above or below the range. They can use these separate ranges and it's an
24 easy computation to determine whether a number falls within the range.

25 One of the other benefits of that is it typically, as the evidence in
26 this -- in our Response shows, typically ranges 10 -- or zero to 1023 are not

1 used by terminal devices, so it actually doesn't require any -- since a terminal
2 device with one of these port masks will not use that range, it doesn't require
3 any additional processing the eliminate the one overlapping range between
4 these two port numbers. And this issue, as I said, applies -- not just to
5 Fangman, but also to King and also to Biswas, because the same issue of,
6 you know, whether Kumar's port -- bit mask system would actually be
7 implemented, it's the same issue in all of them. It's just going to make this
8 port range system far more complex in those references in actually intent.
9 And it ends up defeating the purposes of those references to simplify the
10 various systems they're trying to, you know, to make function.

11 I will briefly touch on King. I know Petitioner didn't discuss it. I
12 just want to make -- clarify one point that I think might not be clear in the
13 briefing, and then I will move on to Kumar -- I'm sorry, to Biswas.

14 JUDGE BEAMER: You have about 10 minutes left in your initial.

15 MR. COLLIER: Thank you, Your Honor. In that case, I will just
16 refer the Board -- the parties have discussed and quoted a significant portion
17 of King that discusses routing packets based on certain port numbers, so the
18 specific section I'm thinking to -- or referring to is in Column 5, where both
19 parties have cited and discussed language, starting from at least line 28 down
20 to line 35. And this section of King is specifically referring to Figure 6 in
21 King, though I don't think either party actually included this figure in their
22 briefing. So I would just refer -- as the Board is considering the arguments
23 on King, refer back to this figure in the context of the discussion in Column
24 5.

25 So I'll move on to Biswas. I believe, Your Honors, the parties
26 seem to dispute the actual meaning of claims -- of the claims at issue here in

1 Grounds 1. In our Response, we specifically focused on Claims 8 and 12,
2 and both, Claims 8 and 12, are dependent claims. Claim 8 depends from
3 Claim 7. What I've highlighted here on Patent Owner's Slide 50, Claims 7
4 and 8 -- to highlight a couple specific elements.

5 So first, Claim 7 is a method of configuring a piece of terminal
6 equipment. It's not a method of routing a packet. This configuration method
7 includes the step of assigning to a piece of terminal equipment a primary
8 address shared with plurality of pieces of terminal equipment. And then
9 Claim 8 adds that configuring the terminal equipment also includes
10 assigning to said piece of terminal equipment an identifier over routing
11 device adapted to route a data packet.

12 In the Petition, it was not clear how Petitioner was interpreting this
13 claim or what it was pointing to as teaching this claimed identifier. In the
14 response, Petitioner suggested that it was pointing actually to a packet
15 coming from an external device. If we were to look at Biswas, it would be,
16 for example, host 118, which we can see on Patent Owner's Slide 54, which
17 has Figure 1. So their new argument in the Reply was that host 118 could
18 send a packet to the gateway master 110 using the global address that
19 Petitioner is pointing to. The Board picked up on the issue that the global
20 address can't be both the primary address that identifies multiple devices and
21 this claimed identifier.

22 But beyond that dispute, it seems that Claims 8 and 12 are subject
23 to a couple interpretations, one of which is the one Patent Owner thought
24 Petitioner was putting forward. The other one is slightly different, though
25 we don't think in either case this one discloses or renders obvious these
26 claims. We'll go back briefly to the claims -- to Claims 7 and 8 on Slide 50.

1 So one interpretation of this routing identifier is that the identifier
2 must be adapted to route a data packet to said piece of terminal equipment.
3 And then that identifier must be an identifier of the routing device.
4 Petitioner's only argument -- since Petitioner's only argument is the global
5 gateway master -- or I'm sorry -- the global address is this identifier, the
6 Petitioner has failed to explain how that identifier routes a packet to the
7 piece of terminal equipment. As Petitioner highlighted earlier, Biswas
8 explains that at the global -- at the master gateway, packets will be translated
9 to private addresses, in which case the global address can't actually
10 ultimately route the packet to the terminal device.

11 The other interpretation, which is the one Patent Owner understood
12 Petitioner to be taking, is that the identifier must be of a routing device, and
13 that routing device must be adapted to route a data packet comprising said
14 primary address to said piece of terminal equipment. But because this
15 identifier is sent to the terminal device, the identifier must identify the global
16 master to the host. And as I said, this is a position we understood Petitioner
17 to be taking.

18 Nothing in Biswas suggests that the global address actually
19 identifies the global master to the host. The host uses the global address as a
20 source information in the outgoing packet. In either case, it doesn't make
21 sense that the global address can be both the primary address, which is
22 shared by multiple devices, and the routing identifier. And Petitioner's -- the
23 Petition seems to simply read out this requirement in the claims.

24 Before I wrap up, Your Honors, I just want to make one note that
25 the 10-bit example that Petitioner used earlier was not shared with us before
26 the presentation, and so we object to its use. And if there are no further

1 questions, I'll reserve the remainder of my time for surrebuttal.

2 JUDGE BEAMER: Okay. You have about I think 14 minutes
3 remaining.

4 MR. COLLIER: Thank you, Your Honor.

5 JUDGE BEAMER: So Petitioner, you have 11 minutes for your
6 rebuttal. You can start when you're ready. I think you're on mute.

7 MR. BRIGGS: There we are. All right. Thank you, Your Honor.
8 So the Patent Owner made several arguments with respect to Fangman. I'd
9 like to address a couple of those. First of all, the Patent Owner argued that
10 the DHCP lease negotiation process where the range of ports are assigned is
11 a separate process from the NAPPT routing process, and that's just incorrect.
12 If you look at Fangman, for example, let me go to Column 8, lines 45
13 through 57. This is a portion that we've discussed before. This section is
14 titled NAT, NAPT, NAPPT, and it describes the NAPPT process. The first
15 part of that paragraph states that instead of dynamically assigning ports to IP
16 telephones, the SG main allocator range of port numbers for each IP
17 telephone as it acquires its lease during a DHCP process.

18 So these two processes are closely related to one another, and this
19 paragraph here, the first two sentences are telling one of skill in the art that
20 the range of port numbers is acquired through the DHCP process and then
21 it's used in the table. That's what's in the very next sentence. So this
22 paragraph describing the NAPPT process in Column 8 directly contradicts
23 the Patent Owner's argument on this point. Then if you were to go to
24 another important part of the specification on this issue, and that is Columns
25 10 and 11, where the service gateway features are discussed -- again, in here,
26 in this section, starting at the very top of Column 11, it talks about the

1 DHCP service.

2 And if you go down to line, it's approximately 14 or 15, as part of
3 the DHCP service, it states that you assign the port ranges for hosts,
4 reserved, which means stored, in the NAPT table. What that means --
5 NAPT is the prior art implementation. NAPPT is the improvement
6 described in this patent on that improvement, and so when you assign the
7 port ranges or the hosts reserved in the NAPT table, you're essentially
8 turning the NAPT table into an NAPPT table, that's then used for routing.

9 So the notion that Patent Owner is trying to -- or the argument
10 Patent Owner is making that the DHCP process and its assignment of port
11 ranges, is something completely separate and distinct from the NAPPT
12 routing process, is just incorrect. And that -- these are just two examples in
13 the specification that make that clear.

14 The Patent Owner also made some other arguments about the
15 NAPPT process and how supposedly the NAPT table is populated during the
16 MGC registration process, and this is an issue that was raised in the briefing
17 and we responded to it there, but our overarching position on that is that
18 Fangman never discusses populating the NAPPT table during the MGC
19 registration process. It just doesn't. And it would not need to do this
20 because the service gateway already knows the assigned ports because of the
21 DHCP process. So those are the two primary points that I wanted to make in
22 my rebuttal, and with that, I have nothing further, Your Honor.

23 JUDGE BEAMER: Okay, thank you. And so Patent Owner, you
24 have 14 minutes.

25 MR. COLLIER: Thank you, Your Honor. To respond to
26 Petitioner's point, I'm going to go exactly to the sections here that the

1 Petitioner has highlighted. Mr. Briggs, do you mind -- thank you.

2 So starting with this -- the discussion on Column 8 in Fangman,
3 every -- just to reiterate, in these instances where we're describing -- where
4 Fangman is describing the DHCP lease process, which is, for example, the
5 very first section of the NAT/NAPT/NAPPT paragraph. It uses the phrase, a
6 range of port numbers. Once it actually describes the NAT process, it uses
7 ports and ports. It uses -- it also -- Fangman also explains that the NAPPT
8 table is a table of semi-permanent mappings. The reason I bring that up is if
9 we go down further to this entry in Column 11 about the NAPT table,
10 Petitioner's interpretation that the assigned ports are always stored NAPT
11 table, and that makes it NAPPT table, defeats the purpose -- defeats one of
12 the stated goals of the NAPPT table.

13 If all assigned ports and ranges for hosts are stored in the table, it
14 becomes a permanent table. Not the semi-permanent table that Fangman
15 describes. And that's why -- as it's clear, I think, in the embodiments and in
16 the claims, the NAPPT table is not populated until outgoing packets are
17 transmitted by the IP telephones.

18 I would like, also, to clarify my answer to a question that Judge
19 Boudreau asked about Claim 1. There's further -- Judge, you asked about
20 the antecedent basis for the port numbers in that claim, so I'm down to Claim
21 1 of Fangman. You asked about the antecedent basis for the assigned ports
22 at line 55 of Column 32. That antecedent basis can also be found in the
23 subset of the range of port numbers that the IP telephone uses when it sends
24 its outgoing packet. It's that -- those ports from that range that ultimately are
25 stored in an NAPPT table as single port entries, and the claim reflects that.

26 JUDGE BOUDREAU: Could that subset of ports also be a range?

1 MR. COLLIER: No, Your Honor. I -- in the sense that the
2 NAPPT table would not store them as a range, those port numbers likely fall
3 within a range because the IP device will use the port range assigned by the
4 DHCP lease, but when we look at the actual information stored in the NAPPT
5 table, it will be a single port number allocated each time that port number is
6 used and needs to be used. And in fact, the port numbers could also not
7 even be a sequential range. They could be all within say, a 16 number
8 range, but hopping around, so it could be port 1, port 7, port 9, et cetera.

9 And to tie this back into the claim, the claim requires that a port
10 mask needs to identify a range that a port number falls into. So we've
11 simplified that to say a port range, but if the entry isn't -- or can't be sorted in
12 a range, in a -- the form of a port mask, which disparate port numbers could
13 not be stored in a port mask, then it can't render the claim obvious.

14 And going back to one last point I want to make on the port mask
15 issue, specifically. Again, it's important to remember that the claims claim a
16 port mask that defines a port range and Petitioner's suggestion is that you
17 could go from a port range to a bit mask. This process, as we've seen --
18 using a bit mask to find a range isn't actually that straightforward. Kumar is
19 a good example of it. So this conclusion to go from range to a mask is only
20 arrived at in hindsight. And again, it's just going to introduce unnecessary
21 complexities to all of the symptoms, for Fangman, King, and Biswas.

22 This solution described in the patent, which I illustrated earlier, is a
23 very clean and efficient solution. And to piece -- but to piece together these
24 pieces of art to arrive at that solution can only be done with hindsight. And
25 just to summarize, I'd like to remind the Board that it's the Petitioner's
26 burden to show that the claims are obvious. So for example, it's Petitioner's

1 burden to show how Fangman works. Not our burden to show how
2 Fangman works. It's Petitioner's burden to show that you would actually use
3 -- modify these systems and the way that they've claimed, use bit masks to
4 try to find ranges, and they have not carried that burden, and that's all I have
5 if there are no further questions, Your Honor.

6 JUDGE BEAMER: And back on Column 8 of Fangman, if we
7 could go back there.

8 MR. COLLIER: It should be on the screen, Your Honor.

9 JUDGE BEAMER: That's line -- starting at line 53, it says, it may
10 not however modify the port information, though it may validate it to ensure
11 the correct internal host is using its assigned port range. So that, at least, is
12 an instance where during the NAPT process, it's doing something with port
13 ranges. I just wondered whether you could comment on that.

14 MR. COLLIER: It's -- when -- at first in this statement, it's
15 referring to the service gateway rather than the NAPT process itself, but
16 importantly, this is a validation that occurs in an outgoing packet on a source
17 address. It's not validating the packets coming inbound, so it's not validating
18 an inbound destination port number. And in this case, it's just another
19 example of this difference between DHCP and NAPT. The NAPT itself is
20 actually essentially the table -- well, one version of it could be the table that
21 the Board drew up in its institution decision, which is simply storing this
22 relationship between IP numbers and port numbers. These other functions
23 all belong to the DHCP process.

24 And this actually brings me to another perhaps minor issue that I
25 think highlights the distinctions between DHCP and the service gateway's
26 NAPT functions. I apologize, I hit the wrong button. So staying on Column

1 8, we have the discussion of DHCP in Fangman starting at line 59. Each
2 time these services are mentioned, they're mentioned as optional, so the
3 service gateway may provide support for the -- service gateway may be
4 DHCP server for the host, et cetera.

5 A person with skill would interpret this to mean that -- the DHCP
6 service does not need to be at the service gateway. It could be a separate
7 server on the local network, for example. And if that's the case, then the
8 NAPT function has to be able to function absent of a direct connection with
9 DHCP system. There's no suggestion in the Petition on how that would
10 happen. So this optionality further reinforces Patent Owner's interpretation,
11 and I think the Board's interpretation of Fangman, which is the NAPT
12 function relates individual port numbers and individual addresses as those
13 packets arrive at the NAPT system.

14 JUDGE BEAMER: Okay.

15 MR. COLLIER: I have nothing further, Your Honors. So thank
16 you for your time.

17 JUDGE BEAMER: I believe there's no further questions, so I'll
18 thank both parties for their informative presentation. We will take this under
19 advisement and that closes the record. Does the reporter have any
20 questions?

21 COURT REPORTER: I do not at this time, Your Honors. Thank
22 you very much.

23 JUDGE BEAMER: Okay. Well, thank you all.

24 MR. COLLIER: Thank you.

25 MR. BRIGGS: Thank you.

26 (Whereupon, the above-entitled matter went off the record at 2:56

1 a.m.)

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