

***Juniper Networks, Inc. v.
Monarch Networking Solutions LLC***

**IPR2024-00175
U.S. Patent No. 8,693,369**

Hearing: February 5, 2025

Summary: Grounds

Grounds	Claims Challenged
1. Biswas + Kumar	7-14, 16-17
2. Fangman + Kumar	1-3, 5-6, 15
3. King + Kumar	1-3, 5-6, 15
4. Fangman + Kumar + RFC 791	4
5. King + Kumar + RFC 791	4

Summary: Undisputed Points

Ground	Undisputed Points	Claims
1	Patent Owner does not argue that these claims are unpatentable in view of Biswas and Kumar. Instead, Patent Owner attacks only dependent claims 8 and 12.	7, 9-11, 13-14, 16-17
2, 4	Patent Owner attacks only the independent routing claims. To the extent the Board determines these independent claims are unpatentable, then the dependent claims fall as well.	2-4, 15
3, 5	Patent Owner attacks only the independent routing claims. To the extent the Board determines these independent claims are unpatentable, then the dependent claims fall as well.	2-4, 15

Summary: Disputed Points

Ground	Disputed Points	Claims
1	Patent Owner's argument that Biswas does not disclose assigning a routing identifier incorrectly focuses on outbound transmissions rather than inbound transmissions.	8, 12
2, 4	Patent Owner assumes that Fangman uses traditional NAT to route inbound data packets, but—as Fangman and the prior art teach—traditional NAT does not work with Fangman's IP telephones. The Board interprets Fangman to store individual port numbers rather than port ranges, even though Fangman repeatedly discloses storing ranges and a POSITA would know that storing ranges is more efficient. Patent Owner overstates the combination of Fangman and Kumar, incorrectly arguing that a POSITA would need to bodily incorporate Kumar into Fangman.	1, 5, 6
3, 5	King does not need to explicitly describe the inbound-routing process; a POSITA would know that the inbound-routing process is nearly identical to the outbound process described in detail in King. Patent Owner overstates the combination of King and Kumar, incorrectly arguing that a POSITA would need to bodily incorporate Kumar into King.	1, 5, 6

'369 Patent Overview

'369 Patent Overview: Prior Art

“It is commonly accepted in the IP service provider community that exhaustion of public IPv4 addresses is inevitable. . . .

To limit the number of IPv4 public addresses necessary to provide an IP connectivity service, a dual NAT or Operator NAT solution has been proposed and implemented. It activates a NAT function in the telecommunications network of the operator so that the home gateways use private addressing in their NAT tables. . . .

The Operator NAT solution has drawbacks”

Ex. 1001 ('369 Patent) at 1:53-2:41; Petition 8.

'369 Patent Overview: Purported Solution

“The inventors have found that pieces of terminal equipment do not make use simultaneously of all the 216 (i.e. 65536) port number values available thereto. . . .

The invention consists in reducing the range of port numbers available to terminal equipment for each application by assigning a piece of terminal equipment a port mask that defines a sub-portion of this range. The port mask assigned in this way to a particular piece of terminal equipment is used in combination with its primary IP address to route data packets that are sent to it without degrading IP service.”

Ex. 1001 ('369 Patent) at 7:23-35; Petition 8-9.

'369 Patent Overview: Configuration Claims

7. A method of configuring a piece of terminal equipment connected to a telecommunications network, comprising, on reception of a configuration request sent by said equipment, the following steps:

- assigning to said piece of terminal equipment a primary address shared with a plurality of pieces of terminal equipment;
- assigning to said piece of terminal equipment a port mask defining a range of numbers dedicated to it and a routing identifier; and
- sending to said piece of terminal equipment a configuration message comprising said primary address, said port mask, and said routing identifier.

Ex. 1001 ('369 Patent) at Claim 7; Petition 9-11.

'369 Patent Overview: Routing Claims

1. A method of routing an IP data packet in a telecommunications network to a destination equipment, said packet comprising a primary destination address and a destination port number, said method comprising, on reception of said packet, the following steps:

determining a port mask assigned to the destination equipment, the port mask defining a range of port numbers to which the destination port number belongs;

selecting at least one identifier of the destination equipment of the packet from a plurality of equipment identifiers associated with said primary destination address based on the port mask; and

routing the packet to the destination equipment based on said identifier.

Ex. 1001 ('369 Patent) at Claim 1; Petition 9-11.

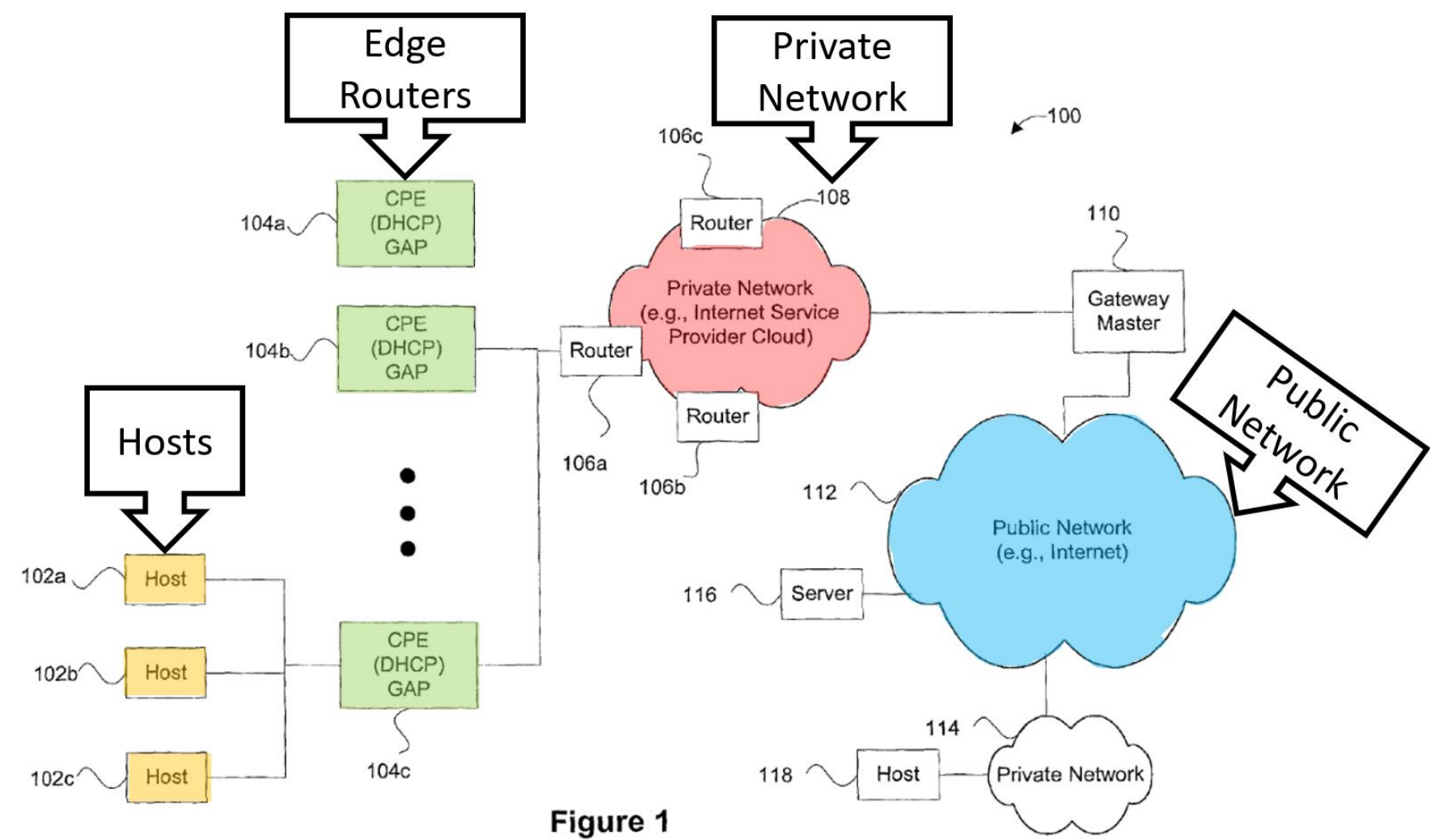
Summary of Prior Art

Biswas Acknowledges That IPv4 Addresses Are Running Out

“For a particular computer to communicate with other computers or web servers within a network (e.g., the Internet), the particular computer must have a unique IP address. IP protocol version 4 specifies 32 bits for the IP address, which theoretically gives about 4,294,967,296 unique IP addresses. However, there are actually only between 3.2 and 3.3 billion available IP addresses since the addresses are separated into classes and set aside for multicasting, testing and other special uses. With the explosion of the Internet, the number of IP address is not enough to give each computer a unique IP address.”

Ex. 1022 (Biswas) at 1:13-24; Petition 14-15.

Biswas Depicts the Following Network Configuration



Ex. 1022 (Biswas) at Figure 1 (annotations and highlighting added); Petition 15.

Biswas Assigns Port Ranges to Its Private Hosts

“In the present invention, a host of a private network, such as each host 102 of network 108, is operable to obtain from its corresponding edge router a global address (GA) and optionally an additional global port range (GPR) to thereafter be embedded within data sent by the host to a public network. In the illustrated embodiment, each host 102 of private network 108 is operable to obtain from its corresponding edge router 104 either (1) a global address for itself or (2) a GA and GPR for itself.”

Ex. 1022 (Biswas) at 6:41-60; Petition 16.

Biswas Discloses Using These Ranges to Route Packets

“In one embodiment, each one or more of the edge routers 104 has a GA and GPR that may be apportioned among its corresponding hosts. For example, edge router 104 c may have GA 172.1.1.1 and GPR 10000 through 15000. When host 102 a makes a request for a GA and GPR, edge router 104 c may then assign the GA 172.1.1.1 and a portion of its available GPR to host 102 a. For instance, GPR 10000 through 10100 is assigned to host 102 a. Each edge router 104 preferably tracks its GPR assignments so that data that is destined for any of its hosts may be sent to the correct host. That is, data having a global destination port of 10001 will be sent to host 102 a since this global port value is within the GPR 10000 through 10100 previously assigned to host 102 a. One or more of the edge routers may also have only a pool of GA's to be assigned to requesting hosts.”

Ex. 1022 (Biswas) at 6:61-7:7; Petition 16.

Fangman Acknowledges That IPv4 Addresses Are Running Out

“The American Registry for Internet Numbers (ARIN) has placed severe restrictions on the allocation of routable, public IP addresses due to the popular growth on the Internet, and the rapid depletion of remaining available addresses. In order to conserve address space, ARIN strongly encourages end users to utilize NAT technology to conserve address space.”

Ex. 1024 (Fangman) at 1:47-52; Petition 38-39.

Fangman Depicts the Following IP Telephone Network

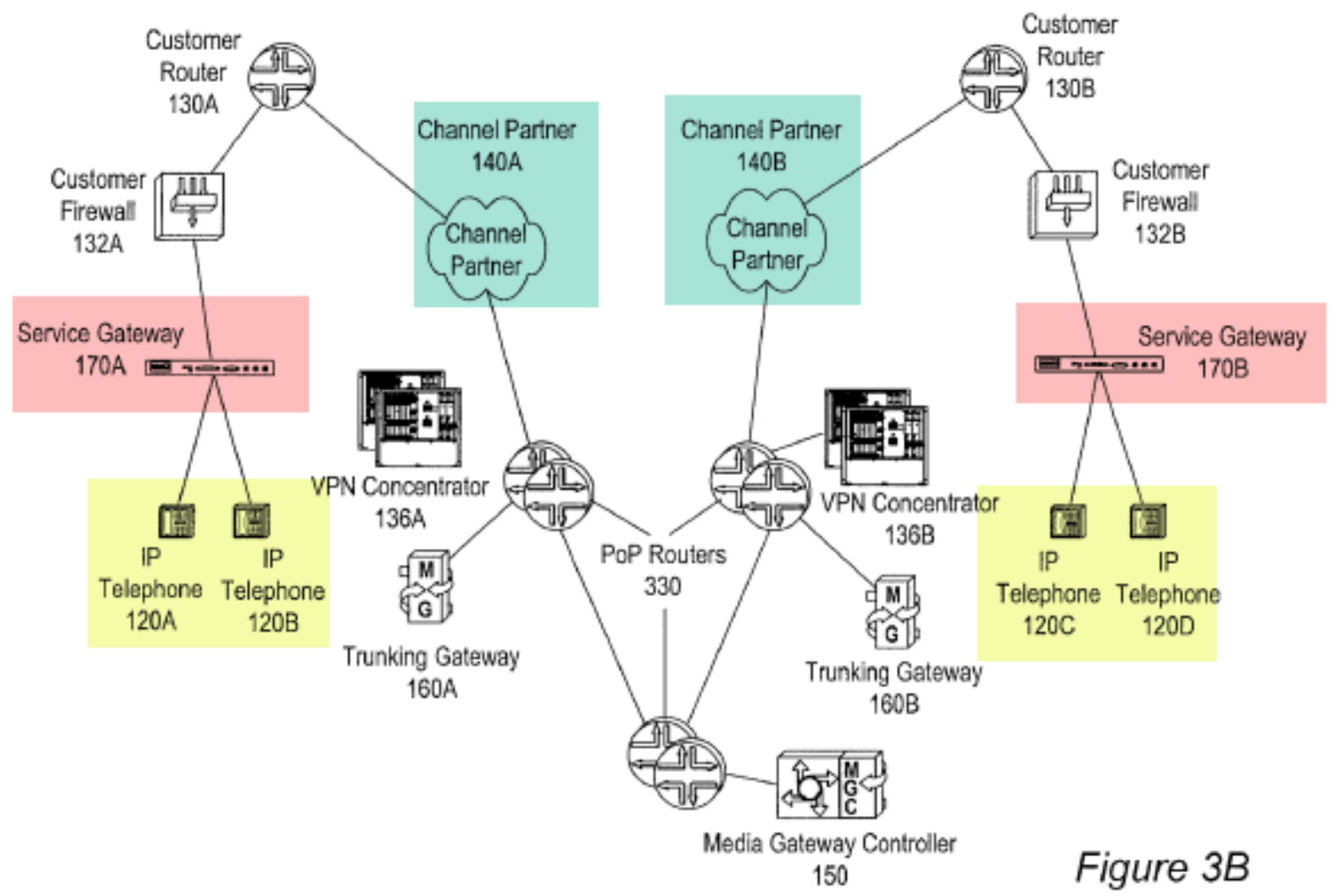


Figure 3B

Ex. 1024 (Fangman) at Figure 3B (highlighting added); Petition 39.

Fangman Uses Ranges Instead of Traditional NAT Assignment

“Instead of dynamically assigning ports to IP telephones, [as is done in traditional NAT,] the SG 170 may allocate a range of port numbers for each IP telephone 120 as it acquires its lease during a DHCP process, described below with reference to FIGS. 5A and 5B. The SG 170 may maintain a table of semi-permanent mappings of the external IP address and ports to the internal hosts and ports. The SG 170 may continue to replace the internal or private source IP address with the NATed external source IP address. It may not, however, modify the port information, though it may validate it to ensure the correct internal host is using its assigned port range. Such Network Address Translation may be referred to as Network Address Persistent Port Translation (NAPPT).”

Ex. 1024 (Fangman) at 8:21-32; Petition 40.

Fangman Uses Ranges to Facilitate IP Telephony

“Thus, in the above process, the SG 170 may facilitate and mediate the IP telephony process by assigning a range of ports to a client IP telephone, and by NAPPTing packet IP source/destination addresses while leaving the corresponding port information unchanged. These features may allow for a great deal of flexibility and future expansion of the system, while addressing the ‘triangle’ problem of distinguishing between internal and external IP telephone connections.”

Ex. 1024 (Fangman) at 18:45-57; Petition 40.

King Explains That the Prior Art Uses PAT to Route Data

“In particular at step 500 the user device initiates a service session with its IP address as source identifier and a native data session identifier Such as a TCP source port as data session identifier. At step 502 the CPE translates the source address to its own overloaded IP address. At step 504 the CPE additionally translates the TCP source port to its own TCP port in a Port Address Translation (PAT) step as described in more detail below. Then, as step 506, the CPE forwards returning traffic with the translated overloaded IP address and TCP port to the user device, reinstating the user device IP address as destination address and the user device assigned TCP port number.”

Ex. 1025 (King) at 2:62-3:6; Reply 21.

King Disparages the Prior-Art Version of PAT

“This approach is known as port address translation (PAT) and it will be seen that PAT obscures the identity of the host or user device. As a result where the IP addresses of multiple user devices such as PCs are translated to a single, over loaded IP address, with Source ports assigned on a first-come first-served basis across the connected PCs, it is not possible for a provider edge device such as an aggregation device to classify incoming packets as belonging to a particular host or user device without additional information being provided, typically through the application layer, for example through the use of HTTP cookies.”

Ex. 1025 (King) at 3:47-50; Reply 21.

King Teaches Using Port Ranges Instead of Traditional PAT

“For example the CPE may assign TCP port numbers 1024 to 1039 to data sessions associated with the first user or source device 100 and TCP port numbers 1041 to 1054 to data sessions associated with the second user or source device 118. As a result, rather than performing conventional PAT, where outside source ports are assigned indiscriminately across inside PCs, translation is carried out to separate port ranges per host device.”

Ex. 1025 (King) at 5:28-35; Petition 54; Reply 21.

King Discloses Storing Port Ranges

SOURCE ADDRESS	TCP PORT	USER DEVICE
IPCPE	1024-1039	IP1'
IPCPE	1040-1055	IP2'

FIG. 7

Ex. 1025 (King) at Figure 7 (highlighted); Petition 58.

Kumar Teaches the Same Port Masks as the '369 Patent

“Turning to FIG. 6, an embodiment of a rule 600 is illustrated. Generally, the rule 600 specifies a set of criteria that suggests a particular flow to which a packet satisfying the criteria belongs. The rule 600 includes a number of components, including components 602 a, 602 b, . . . , 602 x. In one embodiment, each component 602 a-x corresponds to a field in the header of a packet. However, in other embodiments, the components 602 a-x of a rule 600 may include other information, such as application header fields, link identification information, time-of-day, etc. A packet “matches” the rule if, for each component 602 a-x, the corresponding field in the header matches that component. A component 602 a-x may comprise a regular expression on the corresponding header field or, alternatively, a mask or character/number specification applied to the corresponding header field. It should be noted here that, generally, any regular expression on a header field may be expanded to one or more masks. A mask or character/number specification may be in the form of an exact match (e.g., destination port=80) or a range specification (e.g., destination port $\leq$ 1023). A rule may contain any suitable number of components 602 a-x, and the number X of fields in a rule is referred to herein as the dimension. Also, a rule 600 has an associated action 604 (e.g., accept, block, etc.) that is to be applied to any packet matching that rule.”

Ex. 1023 (Kumar) at 7:14-38; Petition 16.

Kumar Teaches the Same Port Masks as the '369 Patent

- Kumar teaches representing port ranges as binary masks, as in the '369 patent

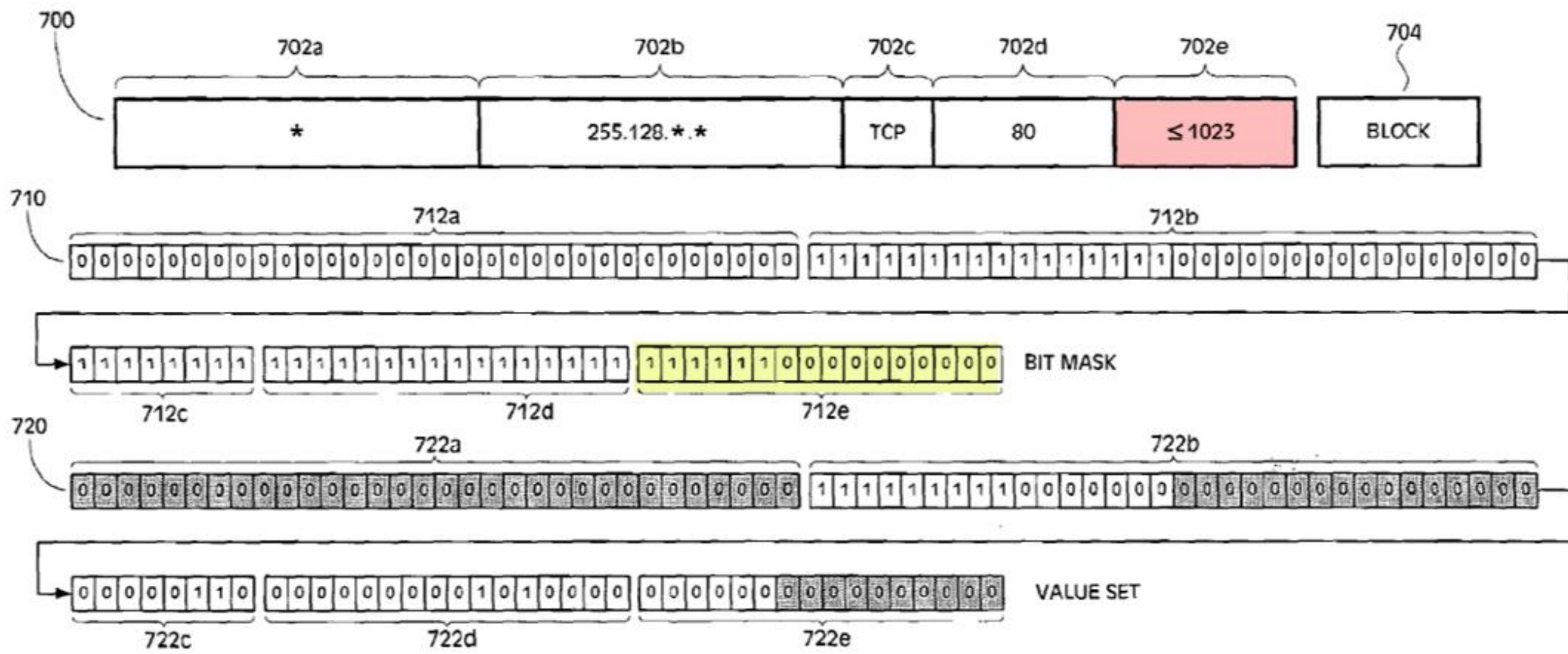


FIG. 7B

Ex. 1023 (Kumar) at Figure 7B (highlighting added); Petition 17.

Kumar Teaches Using Multiple Masks To Identify Additional Ranges

“However, not all ranges are amenable to expression by a single mask, and this concept is illustrated in FIGS. 7C through FIG. 7I. Referring to FIG. 7C, the rule 700 now includes a destination port specification of “>1023” (all other parameters being equal to those shown in FIG. 7B). The range expression “>1023” cannot be represented by a single character string or “prefix”. However, this expression can be broken down into a set of prefixes. More specifically, the range of “>1023” can be delineated by the following series of prefixes: “000001*****”; “00001*****”; “0001*****”; “001*****”; “01*****”; and “1*****” Accordingly, the rule 700 specified in FIG. 7C can be expanded into six different rules, one for each of the six distinct prefixes comprising the range specification “>1023”.”

Ex. 1023 (Kumar) at 8:34-63; Petition 24.

Claim Construction and Level of Skill in the Art

Claim Construction: No Constructions Are Needed

“In the district court action, the parties have not submitted claim construction proposals. **Petitioner does not believe any terms require construction**, particularly because the prior art relied upon in this petition maps directly onto embodiments disclosed in the '369 patent. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).”

Petition 14.

“Claims are construed according to *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). See 37 C.F.R. § 42.100(b). Petitioner contends that no terms require construction. Pet., 14. **For the purposes of this proceeding, Monarch agrees.**”

Patent Owner Response 15.

Level of Skill in the Art: Undisputed

“A POSITA would have had a B.S. degree in electrical engineering, computer engineering, computer science, or a related subject, and three years of work experience in computer networking, including experience with the IPv4 protocol, or a related field. EX1003, ¶¶62-64. Lack of professional experience can be remedied by additional education, and vice versa. *Id.*”

Petition 14.

“For purposes of this proceeding, Patent Owner does not contest Petitioner’s recitation of the level of skill in the art”

Patent Owner Response 9.

All Grounds: Kumar's Port Masks Disclose the '369 Patent's Port Masks

All Grounds: Kumar's Port Masks Disclose the '369 Patent's Port Masks

- The port ranges that the Board asked about would require multiple port masks or are not amenable to port masks
- This does not affect the combination:

1

The masks disclosed in Kumar are more detailed than the masks disclosed in the '369 patent

2

A POSITA would have still combined the prior art with Kumar

3

Patent Owner never raised this issue and therefore forfeited it

All Grounds: Using Port Masks To Represent 16-31

Private Address	Public Address	Port Mask

All Grounds: Using Port Masks To Represent 16-31

“For example, a mask for the range 0-15 could be 1111110000.”

Ex. 1003 (Bhattacharjee Declaration) at ¶¶41-43.

Private Address	Public Address	Port Mask
Pr1	G1	1111111111110000 (0-15)

All Grounds: Using Port Masks To Represent 16-31

“What would be a mask for the range 16-31? It would not be 1111100000 – that is the range 0-31.”

Board’s 1/23/2025 e-mail.

Private Address	Public Address	Port Mask
Pr1	G1	1111111111110000 (0-15)
Pr2	G1	1111111111110000 (0-31)

RECEIVED PORT NUMBER = 20

Private Address	Public Address	Port Mask
Pr1	G1	1111111111110000 (0-15) 
Pr2	G1	11111111111100000 (0-31)

RECEIVED PORT NUMBER = 20

Private Address	Public Address	Port Mask
Pr1	G1	1111111111110000 (0-15) 
Pr2	G1	11111111111100000 (0-31) 

RECEIVED PORT NUMBER = 10

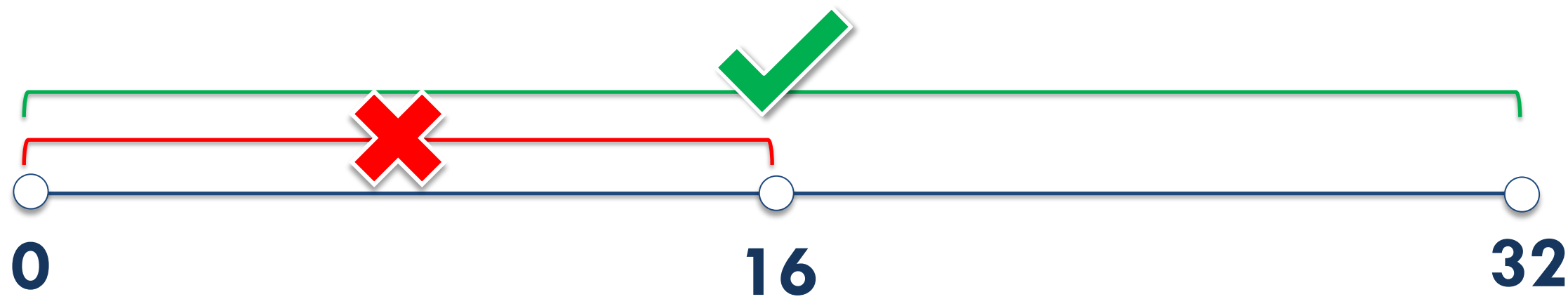
Private Address	Public Address	Port Mask
Pr1	G1	1111111111110000 (0-15) 
Pr2	G1	11111111111100000 (0-31)

RECEIVED PORT NUMBER = 40

Private Address	Public Address	Port Mask
Pr1	G1	1111111111110000 (0-15) 
Pr2	G1	11111111111100000 (0-31) 

All Grounds: Using Port Masks To Represent 16-31

Private Address	Public Address	Port Mask Start	Port Mask End
Pr1	G1	1111111111111111 (0)	1111111111110000 (0-15)
Pr2	G1	11111111111110000 (0-15)	11111111111100000 (0-31)



All Grounds: Kumar Teaches Using Multiple Masks

“However, not all ranges are amenable to expression by a single mask, and this concept is illustrated in FIGS. 7C through FIG. 7I. Referring to FIG. 7C, the rule 700 now includes a destination port specification of “>1023” (all other parameters being equal to those shown in FIG. 7B). The range expression “>1023” cannot be represented by a single character string or “prefix”. However, this expression can be broken down into a set of prefixes. More specifically, the range of “>1023” can be delineated by the following series of prefixes: “000001*****”; “00001*****”; “0001*****”; “001*****”; “01*****”; and “1*****” Accordingly, the rule 700 specified in FIG. 7C can be expanded into six different rules, one for each of the six distinct prefixes comprising the range specification “>1023”.”

Ex. 1023 (Kumar) at 8:34-63; Petition 24.

All Grounds: Using Port Masks To Represent Other Ranges

“What masks would define the following Port ranges?
10000-10100 [decimal] and 10101-10200 referred to in Paragraph 85 of Ex. 1003.
1024-1039 and 1040-1055 in Figure 7 of King.”

Board's 1/24/2025 e-mail.

All Grounds: Kumar and the '369 Patent Disclose the Same Port Masks

1

The masks disclosed in Kumar are more detailed than the masks disclosed in the '369 patent



“It’s not necessary to show that a combination is ‘the *best* option, only that it be a *suitable* option.’”

Intel Corp. v. Qualcomm Inc., 21 F.4th 784, 800 (Fed. Cir. 2021)
(quoting *PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1197-98 (Fed. Cir. 2014)).
Reply 19.

All Grounds: Kumar and the '369 Patent Disclose the Same Port Masks

1

The masks disclosed in Kumar are more detailed than the masks disclosed in the '369 patent

“A component 602 a-x may comprise . . . a mask It should be noted here that, generally, any regular expression on a header field may be expanded to one or more masks. A mask or character/number specification may be in the form of an exact match (e.g., destination port=80) or a range specification (e.g., destination port $\leq$ 1023).”

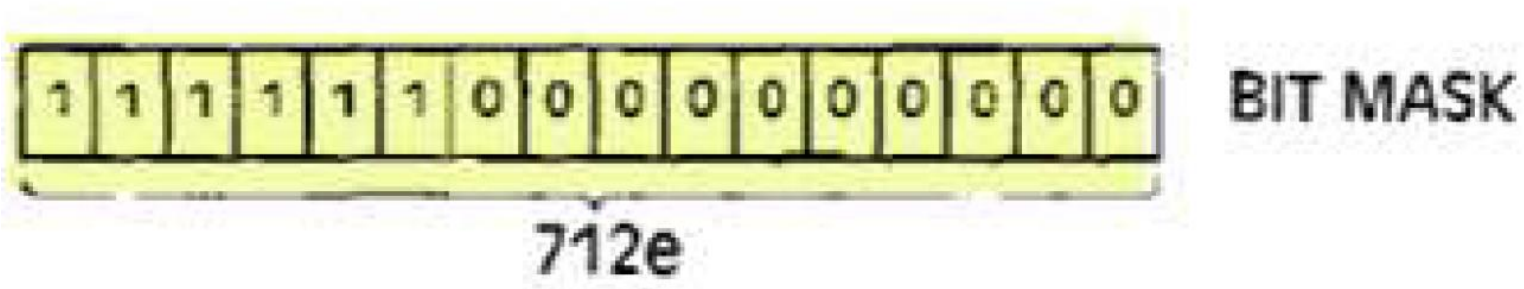
Ex. 1023 (Kumar) at 7:14-38; Petition 16.

“In a variant, the provider may force the value of the first eight more significant bits so that the terminal equipment has a usable range of 256 port numbers.”

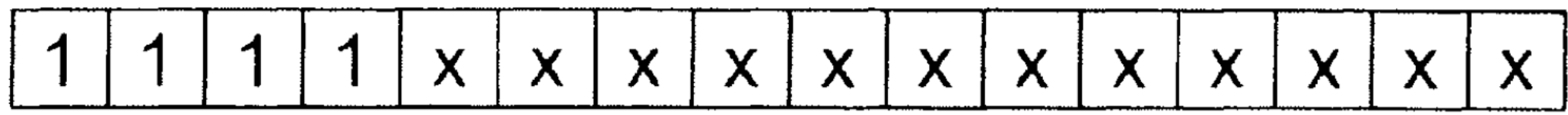
Ex. 1001 ('369 patent) at 7:46-48.

All Grounds: Kumar and the '369 Patent Disclose the Same Port Masks

1 The masks disclosed in Kumar are more detailed than the masks disclosed in the '369 patent



Ex. 1023 (Kumar) at Fig. 7B; Petition 17.



Ex. 1001 ('369 patent) at Fig. 2A.

All Grounds: The Port Ranges Disclosed in the Prior Art Are Arbitrary

2

A POSITA would have still combined the prior art with Kumar

- The exemplary port ranges from Biswas and King that the Board asks about are arbitrary port ranges

“In one embodiment, each one or more of the edge routers 104 has a GA and GPR that may be apportioned among its corresponding hosts. For example, edge router 104 c may have GA 172.1.1.1 and GPR 10000 through 15000. When host 102 a makes a request for a GA and GPR, edge router 104 c may then assign the GA 172.1.1.1 and a portion of its available GPR to host 102 a. For instance, GPR 10000 through 10100 is assigned to host 102 a.”

Ex. 1022 (Biswas) at 6:61-7:1.

All Grounds: The Port Ranges Disclosed in the Prior Art Are Arbitrary

2

A POSITA would have still combined the prior art with Kumar

- The exemplary port ranges from Biswas and King that the Board asks about are arbitrary port ranges

“For example the CPE may assign TCP port numbers 1024 to 1039 to data sessions associated with the first user or source device 100 and TCP port numbers 1041 to 1054 to data sessions associated with the second user or source device 118.”

Ex. 1025 (King) at 5:28-32.

2

A POSITA would have still combined the prior art with Kumar

- A POSITA would know to choose ranges amenable to port masks since arbitrary ranges would require more computationally complex algorithms

“Masks are an efficient way of defining a range of numbers and determining whether a number is within that range.”

Ex. 1003 (Bhattacharjee Declaration) ¶41.

All Grounds: The Combination Is Still Efficient

3

Patent Owner never raised this issue and therefore forfeited it



“Patent Owner forfeited this argument by not raising it in the Patent Owner Response.”

Google LLC v. Ecolfactor, Inc., IPR2022-00473 (PTAB Aug. 1, 2023), Paper 25, at 44; Reply 4.

All Grounds: “Port Masks” Do Not Encompass The Accused Technology

Private Address	Public Address	Range Start	Range Length (# of Bits)
Pr2	G1	00000000000001111 (15)	4 (Range of 16)

Grounds 2 and 4: Fangman Teaches Using Port Ranges to Route Inbound Data Packets

Grounds 2 and 4: There Are Three Interpretations of Fangman

1

Juniper's Position: Fangman's NAPPT Uses Stored Port Ranges to Route Inbound Data Packets

2

Patent Owner's Position: Fangman Uses Traditional NAT to Route Inbound Data Packets

3

The Board's Position: Fangman Uses Stored Individual Port Numbers to Route Inbound Data Packets

Reply 5-8.

Grounds 2 and 4: Juniper's Position

1

Juniper's Position: Fangman's NAPPT Uses Stored Port Ranges to Route Inbound Data Packets

2

Patent Owner's Position: Fangman Uses Traditional NAT to Route Inbound Data Packets

3

The Board's Position: Fangman Uses Stored Individual Port Numbers to Route Inbound Data Packets

Reply 5-8.

1

Juniper's Position: Fangman's NAPPT Uses Stored Port Ranges to Route Inbound Data Packets

Private Address	Public Address	Assigned Port Range
10.255.255.123	31.31.98.152	8,192-8,447

Reply 6.

Grounds 2 and 4: Fangman Uses Port Ranges to Route Packets

“Instead of dynamically assigning ports to IP telephones [as in traditional NAT], the SG 170 may allocate a range of port numbers for each IP telephone 120 as it acquires its lease during a DHCP process, described below with reference to FIGS. 5A and 5B. The SG 170 may maintain a table of semi-permanent mappings of the external IP address and ports to the internal hosts and ports. The SG 170 may continue to replace the internal or private source IP address with the NATed external source IP address. It may not, however, modify the port information, though it may validate it to ensure the correct internal host is using its assigned port range. Such Network Address Translation may be referred to as Network Address Persistent Port Translation (NAPPT).”

Ex. 1024 (Fangman) at 8:45-58; Petition 40, 44.

Grounds 2 and 4: Fangman Uses Port Ranges to Route Packets

“A summary of features of the Service Gateway 170 is presented below []

Maintain persistent port mappings between internal hosts and assigned ports []

Assign port ranges for host, reserved in NAPT table”

Ex. 1024 (Fangman) at 10:20-21, 10:67, 11:14; Petition 44; Supplemental Brief 2.

Grounds 2 and 4: Fangman Uses Port Ranges to Route Packets

“Thus, in the above process, the SG 170 may facilitate and mediate the IP telephony process by assigning a range of ports to a client IP telephone, and by NAPPTing packet IP source/destination addresses while leaving the corresponding port information unchanged. These features may allow for a great deal of flexibility and future expansion of the system, while addressing the “triangle” problem of distinguishing between internal and external IP telephone connections.”

Ex. 1024 (Fangman) at 18:45-57; Petition 40, 44.

Grounds 2 and 4: Fangman Uses Port Ranges to Route Packets

Private Address	Public Address	Assigned Port Range
10.255.255.123	31.31.98.152	8,192-8,447

“the Service Gateway performing a network address persistent port translation (NAPPT) on the data packet, including storing translation information in a data structure, wherein the translation information comprises:

the private source IP address of the IP telephone;
a public IP address of the Service Gateway; and
the assigned ports for the IP telephone.”

Reply 15-16 (quoting Exhibit 1024 (Fangman) at Claim 1).

Grounds 2 and 4: Patent Owner's Position

1

Juniper's Position: Fangman's NAPPT Uses Stored Port Ranges to Route Inbound Data Packets

2

Patent Owner's Position: Fangman Uses Traditional NAT to Route Inbound Data Packets

3

The Board's Position: Fangman Uses Stored Individual Port Numbers to Route Inbound Data Packets

Reply 5-8.

Grounds 2 and 4: Patent Owner Argues That Fangman Uses NAT

“This is part of Fangman’s Network Address Persistent Port Translation (“NAPPT”), and it relies on a “persistent” port number to transmit packets between networks. *Supra* § II.D.3; EX2014 ¶ 80-81. Using this technique, the service gateway checks whether the persistent **port number** in the destination packet matches the port number used by the IP telephone **in a prior outgoing transmission**. EX2014 ¶¶ 81-83; EX1024, 18:31-47.”

Patent Owner Response 22-23 (emphasis in original).

- In traditional NAT, when a telephone initiates a call, the NAT device records the port number that the telephone uses
- The NAT device then relies on that record to process any future inbound calls
- If the gateway receives an inbound call to a port number that was not previously used, it rejects or discards the call

Reply 9-11; Ex. 1039 (Bhattacharjee Reply Declaration) ¶¶ 12-15.

Grounds 2 and 4: IP Telephones Cannot Use Traditional NAT

- Fangman itself disparages traditional NAT

“Complicating matters further, VoIP protocols often use pairs of ports for communication, initiated from both the inside and outside of the network. Firewalls tend to support single port communication **only initiated from the inside.**”

Ex. 1024 (Fangman) at 2:12-27; Reply 10.

Grounds 2 and 4: IP Telephones Cannot Use Traditional NAT

- Fangman itself disparages traditional NAT

“The above problem **may become very complex** considering that the ALG 70 must maintain a local table of all internal hosts (IP telephones 20), examine the call destination address information coming from the MGC 50, and decide whether or not to modify it when routing it to the internal hosts 20. The alternative would be to route all traffic through the ALG 70 regardless of whether the destination is in the internal network, perform the ALG function, then the NAT function twice, then the ALG function again, and then route it back out the same interface. **This convoluted process would be required for every single packet, introducing substantial inefficiencies to the system.**”

Ex. 1024 (Fangman) at 2:54-65; Reply 7, 10.

Grounds 2 and 4: IP Telephones Cannot Use Traditional NAT

- The prior art confirms that IP telephones cannot work with traditional NAT

“Interworking with the corporate firewalls and Network Address Translators (NATs) is another challenge.”

Ex. 1041, at 8; Reply 10; Ex. 1039 (Bhattacharjee Reply Declaration) ¶ 14.

Grounds 2 and 4: IP Telephones Cannot Use Traditional NAT

- The prior art confirms that IP telephones cannot work with traditional NAT

“Another key use of firewalls is network address translation (NAT), which provides an exchange point for data transmitted between privately and publicly addressed IP networks. NAT keeps track of outbound sockets (those from users on the private network to the Internet) and performs the necessary packet translation as each packet traverses the firewall. This way, hosts with private addresses can access the services of hosts with public addresses, like World Wide Web servers. A side effect of NAT is that protocols that must use both outbound and inward sockets (like SIP and H.323) simply don’t work.”

Ex. 1042, at 342; Reply 10; Ex. 1039 (Bhattacharjee Reply Declaration) ¶ 14.

Grounds 2 and 4: IP Telephones Cannot Use Traditional NAT

- The prior art confirms that IP telephones cannot work with traditional NAT

“The NAT approach assumes that all peers inside the NAT operate as clients and communicate with servers outside the NAT. A peer that is located outside a NAT cannot contact a peer located inside the NAT (although the opposite is possible). If two peers are located behind different NATs, peer-to-peer communication is not possible. Another problem is that NATs operate transparently to the peers. If the two peers cannot communicate because either one or both peers are located behind a NAT, the failure will not be detected by the peer-to-peer application.”

Ex. 1043, at 2; Reply 10; Ex. 1039 (Bhattacharjee Reply Declaration) ¶ 14.

Grounds 2 and 4: IP Telephones Cannot Use Traditional NAT

- The prior art confirms that IP telephones cannot work with traditional NAT

“The above operations function well in the public network but fail when traversing through the NAT. Nat was developed to allow the use of a single IP address for a whole network of computers to alleviate the problem of IP addresses shortage. Therefore NAT products are popular in today’s world. Although providing many benefits, NAT also incur some problems. NAT only permits the devices in the private realm to initiate the sessions, so device behind a NAT may be able to make SIP calls but not be able to receive them.”

Ex. 1044, at 1; Reply 10; Ex. 1039 (Bhattacharjee Reply Declaration) ¶ 14.

Grounds 2 and 4: IP Telephones Cannot Use Traditional NAT

- The prior art confirms that IP telephones cannot work with traditional NAT

“This seems to be very simple, and it is, but there are a few problems that can occur. Lets use SIP to show them. The first problem occurs if a session is not initiated from the inside, because then there will be no easy way to set up the translation table. The address to the right internal host must be found somehow.”

Ex. 1045, at 25; Reply 10; Ex. 1039 (Bhattacharjee Reply Declaration) ¶ 14.

Grounds 2 and 4: Fangman Uses NAT for Redundancy Only

“Redundancy

Additionally, full redundancy for each function that the SG 170 performs may be provided, according to one embodiment. In the background, the primary SG 170 may maintain a connection state table for all NAT sessions, DHCP leases, and VPN tunnels. This function may be performed via a direct Ethernet connection, or over the internal network interfaces. The use of gratuitous ARP (Address Resolution Protocol) may be used on the local interfaces in the event of fail-over to keep its IP addresses reachable.”

Ex. 1024 (Fangman) at 10:1-11; Reply 14.

Grounds 2 and 4: Fangman's Figure 10 Does Not Use Traditional NAT

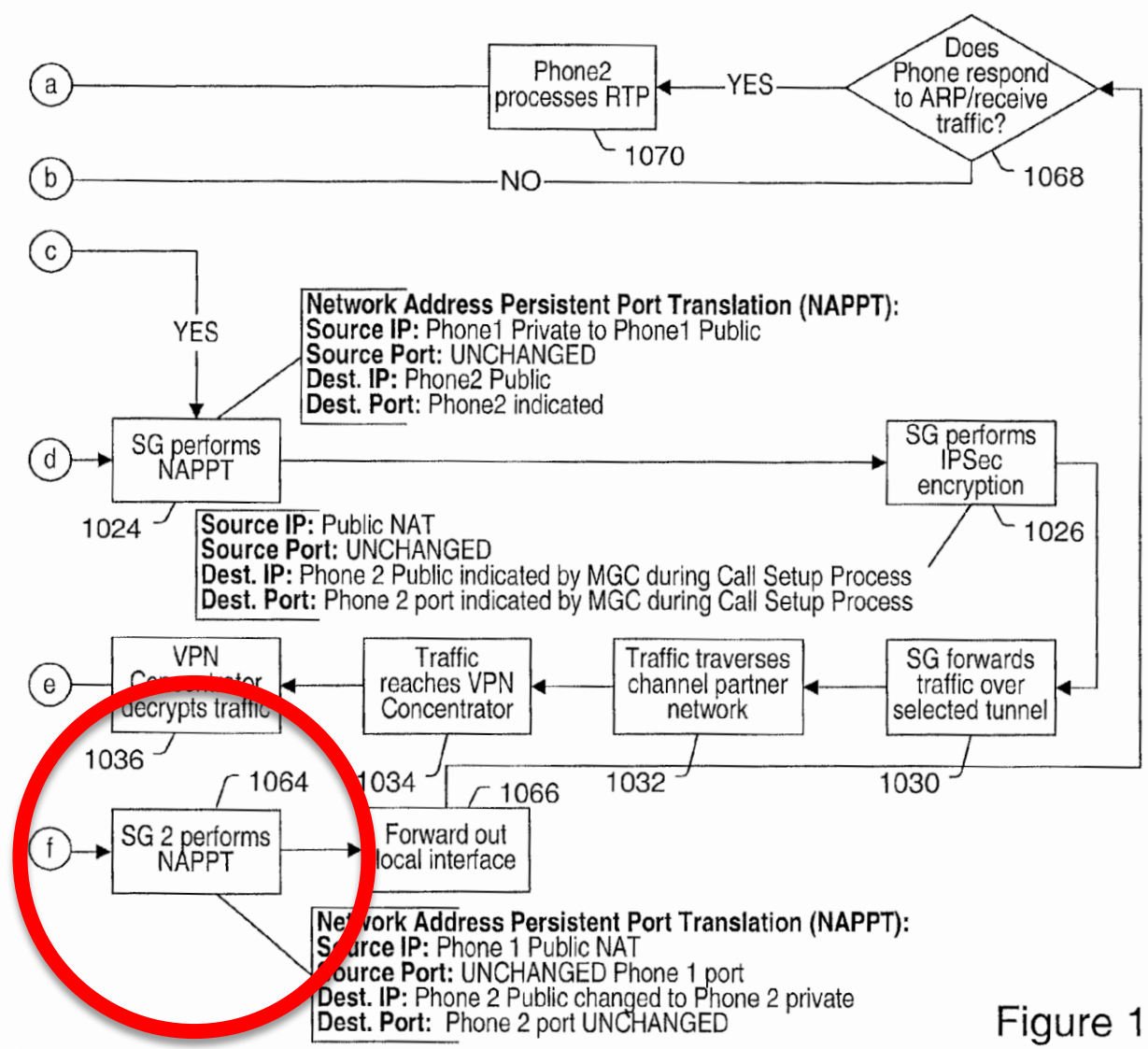


Figure 10B

Ex. 1024 (Fangman) at Figures 10A-B, 30:12-24; Petition 50; Reply 13-14.

Grounds 2 and 4: Fangman Disparages NAT in Favor of Port Ranges

“The problem of Supporting application layer protocols that use UDP, multiple and sequential port numbers, and sessions initiated from outside the network may be addressed by the SG 170. The perpetual NAPT table maintained by the SG 170 may solve the traditional problem of dynamic port numbers.”

Ex. 1024 (Fangman) at 14:9-14; Reply 12.

Grounds 2 and 4: A POSITA Would Not Implement Traditional NAT

- A POSITA would have understood that maintaining a connection-state table as in traditional NAT is inefficient
- The service gateway already stores the assigned port ranges
- A POSITA would recognize that maintaining a separate connection-state table is redundant and would needlessly consume resources

Reply 13; Ex. 1039 (Bhattacharjee Reply Declaration) ¶ 21; Ex. 1024 (Fangman) at 8:49-51, 3:25-37, 11:14.

Grounds 2 and 4: Fangman Teaches Identifying Hosts by Port Range

“The Media Gateway Controller may be operable to use the public IP address and the port range to determine the private IP address, for example, by using look-up tables.”

Ex. 1024 (Fangman) at 3:53-64; Reply 12-13.

Grounds 2 and 4: Patent Owner's Other Arguments Are Wrong

- Patent Owner's argument:

“This is part of Fangman's Network Address Persistent Port Translation (“NAPPT”), and it relies on a “persistent” port number to transmit packets between networks. Supra § II.D.3; EX2014 ¶ 80-81. Using this technique, the service gateway checks whether the persistent port number in the destination packet matches the port number used by the IP telephone in a prior outgoing transmission. EX2014 ¶¶ 81-83; EX1024, 18:31-47.”

Patent Owner Response 22.

- Fangman never teaches matching the port number in an inbound packet to a port number used in “a prior outgoing transmission,” especially not in the cited portion of Fangman.

See Reply 13-14.

Grounds 2 and 4: Patent Owner's Other Arguments Are Wrong

- Patent Owner's argument:

“In fact, Fangman confirms that it uses only a port number in NAPPT. *Id.* ¶ 86; EX1024, 18:39-42 (“Performing a NAPPT on the data packet may include using the public destination IP address and ***the destination port number*** to uniquely identify the IP telephone 120....” (emphasis added)).”

Patent Owner Response 25 (emphasis in original).

- The above quote is consistent with Juniper's position: Fangman “us[es] the destination port number” when it compares the received port number to the stored port ranges to identify the recipient host

Reply 14.

Grounds 2 and 4: Patent Owner Conflates Solicitation with Registration

- Patent Owner argues that the IP telephones “solicit” an inbound transmission when they register port numbers with the media gateway controller as depicted in Figure 6

“As the process above illustrates, before the IP telephone can even send or receive a call, it **must register a port number with the MGC** and sending [] an outgoing packet with the port number through the SG. EX2015 ¶12. Since NAPPT requires “maintain[ing] a table of semi-permanent mappings of the external IP address and ports to the internal hosts and ports,” there is no teaching that suggest instead maintaining a mapping of port ranges. EX2015 ¶11-12; see EX1024 8:49-51.”

“As explained above, every embodiment of Fangman first selects a port in an outgoing communication, either **to initialize and register an IP telephone** or to setup a call. *Supra* §IV.A.”

Patent Owner Sur-Reply 10-11, 14.

Grounds 2 and 4: Patent Owner Conflates Solicitation with Registration

- Patent Owner conflates registration with solicitation
- Registering a port number with the MGC is ***unrelated*** to maintaining a traditional NAT table at the service gateway
- The service gateway is able to perform NAPPT on the data packet ***before registration completes***

“If the tunnel is operational then in step 638 the Service Gateway 170 may perform Network Address Persistent Port Translation or NAPPT” during the registration process in Figure 6.”

Ex. 1024 (Fangman) at 21:55-57; Supplemental Brief 1-2.

Grounds 2 and 4: The Service Gateway Stores Port Ranges

- The service gateway receives and stores port range information for use in routing data packets **before** the telephone registers with the MGC

“The range of port numbers may include one or more port numbers which are not reserved for use by other IP protocols. The client DHCP lease negotiations may include the IP telephone issuing a DHCP discover message to the Service Gateway, which may then issue a DHCP offer to the IP telephone if the identifier is determined to be valid. The DHCP offer may include DHCP lease information based on the validated identifier, such as the range of port numbers and information indicating operational software for the IP telephone. The Service Gateway may store the DHCP lease information. The IP telephone may store the DHCP lease information, and enable DHCP settings included in the DHCP lease information.”

Ex. 1024 (Fangman) at 3:25-37; Supplemental Brief 1-2.

“DHCP Service: . . .
Assign port ranges for host, reserved in NAPT table”

Ex. 1024 (Fangman) at 11:1, 11:14; Supplemental Brief 1-2.

Grounds 2 and 4: If Relevant At All, the MGC Also Uses Port Ranges

- Even if the MGC were relevant, it determines host identity based on port **range**, not based on **individual** port numbers

“The Media Gateway Controller may be operable to use the public IP address and the port range to determine the private IP address, for example, by using look-up tables.”

Ex. 1024 (Fangman) at 3:53-64; Reply 12-13.

- Patent Owner recognizes that the MGC stores the same information as the service gateway, meaning the service gateway can similarly identify internal hosts by using the port range information

“At most, Petitioner’s citation suggests that the media gateway controller has similar DHCP information as the service gateway. See EX1024 8:59-62.”

Patent Owner Sur-Reply 16; Supplemental Brief 2-3.

Grounds 2 and 4: Patent Owner Shifts Positions in Sur-Reply

- In its sur-reply, Patent Owner shifted positions and adopted the Board's interpretation of Fangman

“Instead, every embodiment in Fangman first sends an outbound packet during initialization that results in a mapping of an internal IP address to a single port number. *Id.* ¶6-8. Thus, every embodiment where the Service Gateway receives an external packet and routes it to the destination device uses the port number stored in the NAPPT table. *Id.*”

Patent Owner Sur-Reply 7; Supplemental Brief 1-3.

Grounds 2 and 4: The Board's Position

1

Juniper's Position: Fangman's NAPPT Uses Stored Port Ranges to Route Inbound Data Packets

2

Patent Owner's Position: Fangman Uses Traditional NAT to Route Inbound Data Packets

3

The Board's Position: Fangman Uses Stored Individual Port Numbers to Route Inbound Data Packets

Reply 5-8.

3

The Board's Position: Fangman Uses Stored Individual Port Numbers to Route Inbound Data Packets

Private Address	Internal Port	Public Address	External Port
10.255.255.123	8,192	31.31.98.152	8,192
10.255.255.123	8,193	31.31.98.152	8,193
10.255.255.123	8,194	31.31.98.152	8,193
...	...	...	...
10.255.255.123	8,447	31.31.98.152	8,447

Reply 8.

Grounds 2 and 4: Patent Owner Forfeited This Argument

- Patent Owner forfeited this argument by not disclosing it in Patent Owner's response

Reply 15.



“Patent Owner is cautioned that any arguments not raised in the response may be deemed waived.”

Paper 13, at 9

Grounds 2 and 4: Fangman Teaches an NAPPT Table with Port Ranges

“Petitioner’s hypothetical NAPPT table with port ranges is simply a fabrication—Fangman never even hints at such an implantation.”

Patent Owner Sur-Reply 7.

“**Assign port ranges** for host,
reserved in NAPPT table”

Ex. 1024 (Fangman) at 11:14; Petition 44.

“Maintain persistent port mappings between internal hosts and **assigned ports**”

Ex. 1024 (Fangman) at 10:67; Petition 44.

“Thus, in the above process, the SG 170 may facilitate and mediate the IP telephony process by **assigning a range of ports** to a client IP telephone, and by NAPPTing packet IP source/destination addresses while leaving the corresponding port information unchanged.”

Ex. 1024 (Fangman) at 18:45-57; Petition 40, 44.

“Instead of dynamically assigning ports to IP telephones, the SG 170 may allocate **a range of port numbers** for each IP telephone 120 as it acquires its lease during a DHCP process, described below with reference to FIGS. 5A and 5B.”

Ex. 1024 (Fangman) at 8:45-58; Petition 40, 44.

Grounds 2 and 4: Fangman Teaches an NAPPT Table with Port Ranges

“Petitioner’s hypothetical NAPPT table with port ranges is simply a fabrication—Fangman never even hints at such an implantation.”

Patent Owner Sur-Reply 7.

“the Service Gateway performing a network address persistent port translation (NAPPT) on the data packet, including storing translation information in a data structure, wherein the translation information comprises:

the private source IP address of the IP telephone;
a public IP address of the Service Gateway; and
the assigned ports for the IP telephone.”

Ex. 1024 (Fangman) at 32:48-57; Reply 12.

Grounds 2 and 4: A POSITA Would Not Have Implemented Individual Port Numbers

- A POSITA would have recognized that storing port ranges is much more efficient than storing individual port numbers, saving potentially tens of thousands of rows of data:

Private Address	Internal Port	Public Address	External Port
10.255.255.123	8,192	31.31.98.152	8,192
10.255.255.123	8,193	31.31.98.152	8,193
10.255.255.123	8,194	31.31.98.152	8,193
...	...	...	...
10.255.255.123	8,447	31.31.98.152	8,447



Private Address	Public Address	Assigned Port Range
10.255.255.123	31.31.98.152	8,192-8,447

Reply 15-16.

Grounds 2 and 4: A POSITA Would Not Have Implemented Individual Port Numbers

- A POSITA would have recognized that storing port ranges is **much more efficient** than storing individual port numbers, saving potentially tens of thousands of rows of data
- Consider a system with 512 hosts that are assigned 120 ports each
- The Board’s interpretation requires 61,400 rows of data (one for each assigned port number):

Private Address	Internal Port	Public Address	External Port
10.255.255.123	0	31.31.98.152	0
10.255.255.123	1	31.31.98.152	1
10.255.255.123	2	31.31.98.152	2
...	...	...	...
10.255.255.255	61,440	31.31.98.152	61,440

Reply 15-16.

Grounds 2 and 4: A POSITA Would Not Have Implemented Individual Port Numbers

- Juniper’s interpretation requires only 512 rows of data (one for each assigned port range):

Private Address	Public Address	Port Range
10.255.255.123	31.31.98.152	0-119
...	...	...
10.255.255.255	31.31.98.152	61,320-61,440

- That is 0.8% of the size required by the Board’s implementation

Reply 15-16.

Grounds 2 and 4: Fangman Describes Port Ranges, Not Individual Port Numbers

- The latter, more efficient table is exactly what is described in Fangman:

Private Address	Public Address	Assigned Port Range
10.255.255.123	31.31.98.152	8,192-8,447

“Assign port ranges for host, reserved in NAPT table”

Ex. 1024 (Fangman) at 11:14; Petition 44.

“the Service Gateway performing a network address persistent port translation (NAPPT) on the data packet, including storing translation information in a data structure, wherein the translation information comprises:

the private source IP address of the IP telephone;
a public IP address of the Service Gateway; and
the assigned ports for the IP telephone.”

Reply 15-16 (quoting Exhibit 1024 (Fangman) at Claim 1).

Grounds 2 and 4: Fangman Describes Port Ranges, Not Individual Port Numbers

Fangman states:

“the Service Gateway performing a network address persistent port translation (NAPPT) on the data packet, including storing translation information in a data structure, wherein the translation information comprises:

the private source IP address of the IP telephone;
a public IP address of the Service Gateway; and
the assigned ports for the IP telephone.”

Exhibit 1024 (Fangman) at Claim 1.

Fangman does not state:

“the Service Gateway performing a network address persistent port translation (NAPPT) on the data packet, including storing translation information in a data structure, wherein the translation information comprises:

the private source IP address of the IP telephone;
a public IP address of the Service Gateway; and
~~the assigned~~ a ports for the IP telephone in the assigned range of port numbers.”

Exhibit 1024 (Fangman) at Claim 1 (modified).

Grounds 2 and 4: Fangman Describes Port Ranges, Not Individual Port Numbers

Fangman states:

“Assign **port ranges** for host, reserved in NAPT table.”

Ex. 1024 (Fangman) at 11:14.

Fangman does not state:

“Assign **individual port ~~ranges~~ numbers** for host, reserved in NAPT table.”

Ex. 1024 (Fangman) at 11:14 (modified).

Grounds 2 and 4: Fangman Describes Port Ranges, Not Individual Port Numbers

Fangman states:

“Maintain persistent port mappings between internal hosts and **assigned ports**”

Ex. 1024 (Fangman) at 10:67.

Fangman does not state:

“Maintain persistent port mappings between internal hosts and **assigned ports** individual port numbers assigned to the hosts”

Ex. 1024 (Fangman) at 10:67 (modified).

Grounds 2 and 4: A POSITA Would Not Have Implemented Individual Port Numbers

- This is not “improper hindsight” as Patent Owner suggests

Patent Owner Sur-Reply 17-18.

- Fangman discloses using port ranges to identify internal hosts

“The Media Gateway Controller may be operable to use the public IP address and the port range to determine the private IP address, for example, by using look-up tables.”

Ex. 1024 (Fangman) at 3:53-64; Reply 12-13; Supplemental Brief 5.

- The prior art discloses using port ranges to route inbound data packets

“Each edge router 104 preferably tracks its GPR assignments so that data that is destined for any of its hosts may be sent to the correct host. That is, data having a global destination port of 10001 will be sent to host 102 a since this global port value is within the GPR 10000 through 10100 previously assigned to host 102 a.”

Ex. 1022 (Biswas) at 7:1-7; Supplemental Brief 5.

Grounds 2 and 4: A POSITA Would Not Have Implemented Individual Port Numbers

- Patent Owner's brief states that routing based on port ranges would introduce "challenges" but only alleges very generic issues that are not backed by evidence or specific examples

"Moreover, it oversimplifies the challenges involved with such a change. EX2015 ¶16. Such a system would fundamental change how packet translation is handled, would require extensive testing, and risks incompatibility with existing systems. *Id.*"

Patent Owner Sur-Reply 18; Supplemental Brief 4-5.

Grounds 2 and 4: A POSITA Would Not Have Implemented Individual Port Numbers

- Patent Owner cites to its expert's sur-reply expert declaration, but this does not help Patent Owner
- Patent Owner's expert says that using port ranges would "require modification to DHCP," but Fangman already teaches modifying DHCP to use port ranges

"This change could introduce complexity and potential unforeseen incompatibility. For example, the '369 Patent recognizes that its teaching may require modification to DHCP. EX 1001 10:4-56."

Ex. 2015 (Minoli Sur-Reply Declaration) ¶ 16.

"The DHCP offer may include DHCP lease information based on the validated identifier, such as the range of port numbers and information indicating operational software for the IP telephone. The Service Gateway may store the DHCP lease information. The IP telephone may store the DHCP lease information, and enable DHCP settings included in the DHCP lease information."

Ex. 1024 (Fangman) at 3:25-37; Supplemental Brief 4-5.

Grounds 2 and 4: A POSITA Would Not Have Implemented Individual Port Numbers

- Patent Owner's expert also says a POSITA would not implement port ranges because ***other*** processes are already complex
- Patent Owner's expert does not explain how implementing port ranges would somehow make these other processes even more complex or provide any support for this assertion

“But, specific techniques described in Fangman and King would limit a POSITA from seeking additional complexity. Fangman describes the dual IP flow and the interaction with the intermediary Media Gateway Controller needed in VoIP. . . . These interactions can be complex without making additional changes to NAT and the related techniques.”

Ex. 2015 (Minoli Sur-Reply Declaration) ¶ 16; Supplemental Brief 4-5.

Grounds 2 and 4: The Service Gateway Stores Port Ranges

“The DHCP offer may include DHCP lease information based on the validated identifier, such as the **range of port numbers** and information indicating operational software for the IP telephone. The Service Gateway may store the DHCP lease information.”

Ex. 1024 (Fangman) at 3:25-37.



“DHCP Service: . . .
Assign **port ranges** for host, reserved in NAPT table”

Ex. 1024 (Fangman) at 11:1, 14.



“Instead of dynamically assigning ports to IP telephones, the SG 170 may allocate a **range of port numbers** for each IP telephone 120 as it acquires its lease during a DHCP process, described below with reference to FIGS. 5A and 5B.”

Ex. 1024 (Fangman) at 8:45-58; Petition 40, 44; Supplemental Brief 2.

Grounds 2 and 4: A POSITA Would Have Been Motivated to Combine Fangman and Kumar

Grounds 2 and 4: Juniper Identified Multiple Motivations to Combine

1. Fangman, Kumar, and the '369 patent are all directed to routing data packets in a computer network

Ex. 1024 (Fangman) at 1:1-2, 8:33-43; Ex. 1023 (Kumar) at 1:7-24, 2:57-65; Ex. 1001 ('369 patent) at 1:15-36; Petition 46.

2. Masks were well known in the art and a POSITA would have known that they could be used to optimize performance

Ex. 1003 (Bhattacharjee Declaration) ¶ 158; Petition 46.

3. Kumar teaches that its disclosures are generally applicable to any system “where classification of packets or other communications is needed”

Ex. 1023 (Kumar) at 2:57-65; Petition 46.

4. The combination is of a known technique (*i.e.*, port masks) to a known device (*i.e.*, Fangman’s service gateway) to yield predictable results (*i.e.*, determining whether a port number falls within a range)

Ex. 1003 (Bhattacharjee Declaration) ¶¶ 161-162; Petition 47.

Grounds 2 and 4: Kumar Applies to IP Systems

- Patent Owner's argument:

“As noted above, firewall packet handling deals with traffic flow management, not IP telephony or connection setup and management. *Id.* Kumar does not address the complexities or processes involved with IP telephony. *Id.* Accordingly, a POSITA would not look to Kumar when seeking to improve the system of Fangman for the purpose of IP address conservation. *Id.*”

Patent Owner Response 26.

- Kumar says its teachings apply to IP systems:

“Each of the links 130a-n may be established over any suitable medium, e.g., wireless, copper wire, fiber optic, or a combination thereof using any suitable protocol—e.g., TCP/IP (Transmission Control Protocol/Internet Protocol), HTTP (Hyper-Text Transmission Protocol), as well as others.”

Ex. 1023 (Kumar) at 3:22-29; Reply 17.

Grounds 2 and 4: Fangman Already Uses Masks in Similar Contexts

- Patent Owner's argument:

“As noted above, firewall packet handling deals with traffic flow management, not IP telephony or connection setup and management. *Id.* Kumar does not address the complexities or processes involved with IP telephony. *Id.* Accordingly, a POSITA would not look to Kumar when seeking to improve the system of Fangman for the purpose of IP address conservation. *Id.*”

Patent Owner Response 26.

- Fangman already uses IP address masks:

“Specifically, via DHCP the SG 170 may perform one or more of the following: assign the IP address and network mask, set the SG 170 as the default gateway, set the DNS domain to the appropriate value, set the SG 170 as the TFTP/BOOTP server, provide the path and file name for the boot image, and set the host name.”

Ex. 1024 (Fangman) at 8:60-9:3; Reply 18.

Grounds 2 and 4: Juniper Identified Benefits of the Combination

- Patent Owner's argument:

“Petitioner also has not explained how the system of Kumar would provide any benefit to the IP telephony system of Fangman. . . . A POSITA would not implement the Kumar system in Fangman and increase the complexity of Fangman.”

Patent Owner Response 26-27.

- Juniper ***did*** identify benefits:

“A POSITA would have been aware that masks **could be used to determine whether a number lies within a range** and that this implementation of masks was well-known in the prior art for decades. EX1003, ¶158. Masks in general were well known in the prior art for decades and a POSITA would have been motivated to combine these references **to optimize performance**. *Id.*”

Petition 46; Reply 18-19.

Grounds 2 and 4: Juniper Identified Benefits of the Combination

- Patent Owner's argument:

“Petitioner also has not explained how the system of Kumar would provide any benefit to the IP telephony system of Fangman. . . . A POSITA would not implement the Kumar system in Fangman and increase the complexity of Fangman.”

Patent Owner Response 26-27.

- Juniper *did* identify benefits:

“Moreover, in my opinion, a POSITA would have been motivated to combine the teaching of these two references because, by the time of the alleged invention of the '369 patent, it was well-known that bit masks, such as port masks, as used in the '369 patent, could be used to optimize performance. For example, a POSITA would have recognized that Kumar's port masks are computationally efficient because they use only bitwise operations, like logical ANDs. Thus, an inclusion in the range can be efficiently computed with one logical operation and a comparison to zero.”

Ex. 1003 (Bhattacharjee Declaration) ¶ 159; Reply 19; *see also* Ex. 1003 ¶¶ 41-51.

Grounds 2 and 4: Juniper Merely Needs to Show the Combination Is Suitable

- Patent Owner's argument:

“Petitioner also has not explained how the system of Kumar would provide any benefit to the IP telephony system of Fangman. . . . A POSITA would not implement the Kumar system in Fangman and increase the complexity of Fangman.”

Patent Owner Response 26-27.

- Regardless, Juniper does not need to show that this option was better than others:



“It’s not necessary to show that a combination is ‘the *best* option, only that it be a *suitable* option.’”

Intel Corp. v. Qualcomm Inc., 21 F.4th 784, 800 (Fed. Cir. 2021)
(quoting *PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1197-98 (Fed. Cir. 2014)).
Reply 19.

Grounds 2 and 4: A POSITA Would Not Bodily Incorporate Kumar into Fangman

- These arguments also overstate the proposed combination
- Juniper is not bodily incorporating Kumar into Fangman



“The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference. . . . Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art.”

In re Keller, 632 F.2d 413, 425 (CCPA 1981).
Reply 19-20.

Grounds 2 and 4: Conclusion

- The fundamental dispute as to Fangman is whether it discloses a table containing port ranges or individual port numbers
- No matter how the Board reads Fangman, the record compels a finding for Juniper

Grounds 2 and 4: Conclusion

- If the Board determines that Fangman discloses storing individual port numbers in a table, then the only evidence before the Board is that it would be obvious to instead use a much smaller and efficient table storing port ranges
- Neither Patent Owner nor its expert dispute that this implementation is more efficient

“But a POSITA would have known that [storing individual port numbers] is inefficient because it stores a large amount of redundant data, and would have further known that the entire table above could be simplified to the following single row.”

Ex. 1003 (Bhattacharjee Declaration) ¶ 23.

Grounds 2 and 4: Conclusion

- Then, the only evidence before the Board is that a POSITA would combine Fangman and Kumar
- Juniper's expert provided multiple reasons why a POSITA would have combined Fangman and Kumar, spanning 11 paragraphs and 6 pages (Ex. 1003 (Bhattacharjee Declaration) ¶ 23).
- Patent Owner's expert never provides any contrary opinions or rebut any of these motivations

Ground 1: Biswas Discloses the Routing Identifier in Claims 8 and 12

Ground 1: Claims 8 and 12 Require a Routing Identifier

“8. The method according to claim 7 of configuring a piece of terminal equipment, comprising a step of assigning to said piece of terminal equipment an identifier of a routing device adapted to route a data packet comprising said primary address as the destination address to said piece of terminal equipment, and the configuration message further comprising said routing device identifier.”

Ex. 1001 ('369 Patent) at Claim 8; Petition 27-28.

“12. The configuration method according to claim 11, wherein, once an identifier of a routing device adapted to route a data packet comprising said primary address as the destination address to said piece of terminal equipment has been received, said method further comprises a step of sending the configuration data to said routing device.”

Ex. 1001 ('369 Patent) at Claim 12; Petition 33-34.

Ground 1: Claims 8 and 12 Require a Routing Identifier

“8. The method according to claim 7 of configuring a piece of terminal equipment, comprising a step of assigning to said piece of terminal equipment **an identifier of a routing device** adapted to route a data packet comprising said primary address as the destination address to said piece of terminal equipment, and the configuration message further comprising said routing device identifier.”

Ex. 1001 ('369 Patent) at Claim 8; Petition 27-28.

“12. The configuration method according to claim 11, wherein, once **an identifier of a routing device** adapted to route a data packet comprising said primary address as the destination address to said piece of terminal equipment has been received, said method further comprises a step of sending the configuration data to said routing device.”

Ex. 1001 ('369 Patent) at Claim 12; Petition 33-34.

Ground 1: Claims 8 and 12 Require a Routing Identifier

“8. The method according to claim 7 of configuring a piece of terminal equipment, comprising a step of assigning to said piece of terminal equipment an identifier of a routing device adapted to route a data packet comprising said primary address as the destination address to said piece of terminal equipment, and the configuration message further comprising said routing device identifier.”

Ex. 1001 ('369 Patent) at Claim 8; Petition 27-28.

“12. The configuration method according to claim 11, wherein, once an identifier of a routing device adapted to route a data packet comprising said primary address as the destination address to said piece of terminal equipment has been received, said method further comprises a step of sending the configuration data to said routing device.”

Ex. 1001 ('369 Patent) at Claim 12; Petition 33-34.

Ground 1: Claims 8 and 12 Require a Routing Identifier

“8. The method according to claim 7 of configuring a piece of terminal equipment, comprising a step of assigning to said piece of terminal equipment an identifier of a routing device adapted to route a data packet comprising said primary address as the destination address to said piece of terminal equipment, and the configuration message further comprising said routing device identifier.”

Ex. 1001 ('369 Patent) at Claim 8; Petition 27-28.

“12. The configuration method according to claim 11, wherein, once an identifier of a routing device adapted to route a data packet comprising said primary address as the destination address to said piece of terminal equipment has been received, said method further comprises a step of sending the configuration data to said routing device.”

Ex. 1001 ('369 Patent) at Claim 12; Petition 33-34.

Ground 1: Biswas Assigns a Global Address to Internal Hosts

“In general terms, a host of a private network is operable to obtain from its corresponding edge router a global address (GA) and optionally a global port range (GPR). When the host then wishes to transmit data out of the private network, the obtained GA (and GPR) may then be used for an embedded address (and port) within data sent by the host to a public network.”

Ex. 1022 (Biswas) at 2:23-33; Petition 19-20, 28, 30-31, 33-34.

Ground 1: The Global Address Identifies the Gateway Master

“The Gateway Master 110 also translates global addresses of data received from public network 112 into local addresses of data being output from the Gateway Master 110 to private network 108, and vice versa.”

Ex. 1022 (Biswas) at 6:15-19; Petition 28, 33-34; Reply 5.

Ground 1: PO Does Not Address Biswas's Inbound Teachings

- PO's response does not address the disclosures in Biswas showing that the global address identifies the gateway master in inbound transmissions
Petition 28, 33-34.
- PO therefore forfeits a response to this argument
Reply 4.



“Patent Owner forfeited this argument by not raising it in the Patent Owner Response.”

Google LLC v. Ecolfactor, Inc., IPR2022-00473 (PTAB Aug. 1, 2023), Paper 25, at 44; Reply 4.

Ground 1: PO's Argument Incorrectly Focuses on Outbound Packets

- PO argues in response that the global address does not identify the gateway master during **outbound** transmissions—*i.e.*, from the perspective of an internal host to the gateway master

“When sending a packet **within Biswas’s private network**, the host 102, edge router 104, and gateway master 110 must use private addresses to route the packets through the network. EX2014 ¶¶ 73-74; EX1022, 6:12-19. But the global address is a public address that cannot route packets **in the private network**. EX2014 ¶¶ 73-74; EX1022, 6:12-19. As a result, the global address cannot identify gateway master **to any device within the private network**, even if it could be used as a destination address outside the network.”

“Nothing else in Biswas suggests that the Global Address could identify gateway master 110 **to host 102, edge 104, or any other device on the private network**.”

Patent Owner Response 19.

Ground 1: But the Claims Describe Inbound Packets

- But both claims require the global address to identify the gateway master during *inbound* transmissions

“8. The method according to claim 7 of configuring a piece of terminal equipment, comprising a step of assigning to said piece of terminal equipment an identifier of a routing device adapted to route a data packet comprising said primary address as the destination address to said piece of terminal equipment, and the configuration message further comprising said routing device identifier.”

Ex. 1001 ('369 Patent) at Claim 8; Petition 27-28.

“12. The configuration method according to claim 11, wherein, once an identifier of a routing device adapted to route a data packet comprising said primary address as the destination address to said piece of terminal equipment has been received, said method further comprises a step of sending the configuration data to said routing device.”

Ex. 1001 ('369 Patent) at Claim 12; Petition 33-34.

Ground 1: Regardless, PO's Outbound Argument Is Wrong

- Not only does PO's argument misunderstand the claims, but it is also wrong
- Even within a private network, a host can use a global address to communicate with the corresponding gateway master

```
% ping -c 5 173.79.60.190
PING 173.79.60.190 (173.79.60.190): 56 data bytes
64 bytes from 173.79.60.190: icmp_seq=0 ttl=64 time=1.231 ms
64 bytes from 173.79.60.190: icmp_seq=1 ttl=64 time=1.271 ms
64 bytes from 173.79.60.190: icmp_seq=2 ttl=64 time=1.230 ms
64 bytes from 173.79.60.190: icmp_seq=3 ttl=64 time=1.748 ms
64 bytes from 173.79.60.190: icmp_seq=4 ttl=64 time=1.321 ms

--- 173.79.60.190 ping statistics ---
5 packets transmitted, 5 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 1.230/1.360/1.748/0.197 ms
```

Reply 4; Ex. 1039 (Bhattacharjee Reply Declaration) ¶ 10.

Ground 1: PO's Sur-Reply Arguments Do Not Move the Needle

- Patent Owner's argument:

“Nonetheless, Petitioner's Reply is premised entirely on the idea that ‘claims 8 and 12 are directed to inbound transmissions.’ Reply 2. But, claims 8 and 12 do not address transmissions at all. Instead, both are directed to a “configuration method” to configure a piece of terminal equipment. EX1001 15:16-22 (Claims 7, 8), 15:39-16:12 (claims 11, 12).”

Patent Owner Sur-Reply 4-5.

- Although the **claim** is generally directed to configuring a host, the **limitation at issue** expressly defines the routing identifier within the context of routing data packets inbound to the internal host:

“an identifier of a routing device adapted to route a data packet comprising said primary address as the destination address to said piece of terminal equipment”

Ex. 1001 ('369 patent) at claims 8 and 12.

Ground 1: PO's Sur-Reply Arguments Do Not Move the Needle

- Patent Owner's argument:

“Even Petitioner's expert's analysis highlights this error. The heart of Petitioner's argument is that ‘the '369 claims are directed to inbound transmissions, and [Patent Owner] focuses instead on Biswas's outbound teachings.’ Reply 1. But, Petitioner's expert contends that ‘a host can use a global address to communicate with the gateway master.’ EX1039 ¶10. This is only in the outbound transmission that Petitioner now rejects.”

Patent Owner Sur-Reply 5-6.

- Petitioner's expert performed this analysis out of an abundance of caution
- Petitioner's expert explains that even if Patent Owner's argument were relevant to the claims, it is still incorrect

“Finally, in my opinion, Patent Owner's explanation of how outbound transmissions work is incorrect.”

Ex. 1039 (Bhattacharjee Reply Declaration) ¶10.

Ground 1: PO's Sur-Reply Arguments Do Not Move the Needle

- Patent Owner's argument:

“Moreover, Petitioner's expert's “test” represents communication between two devices: a host device and a NAT device, forgetting that in Biswas, there are three devices, and a CPE is located between the host and the master gateway. See EX1039 ¶10 (only testing a connect between a host on an internal network and a NAT device on the network); EX1022 Fig. 1. Petitioner's new arguments in reply do not solve the failures of Biswas.”

Patent Owner Sur-Reply 6.

- Unsupported attorney argument
- Patent Owner's expert does not even try to explain how this difference, if true at all, is material
- Patent Owner did not depose Dr. Bhattacharjee to ask whether the network used for this test contained intermediary devices

Ground 1: The Board Misapprehended the Portion of Biswas It Relied on

- The section that the Board cited in its institution decision is not relevant to claims 8 and 12
- This passage is referring to outbound data packets
- The edge router does not need to process the **content** of outbound data packets because the host knows its assigned port range and address and can, on its own, use those values in the content of its packet
- The fact that this paragraph is directed to outbound packets is confirmed by the sentence, “the local host can now encrypt the payload,” which would only happen on outbound transmissions, not inbound ones

“For example, since the host requests a GA (and GPR) from its edge router for use as its embedded address (and global port), the Gateway Master does not have to be configured to analyze the payload of data to translate an embedded address (and port) into a corresponding GA (and global port). Additionally, the local host can now encrypt the payload.”

Ex. 1022 (Biswas) at 12:20-28; Institution Decision 20-21.

Ground 1: The Board Misapprehended the Portion of Biswas It Relied on

- Other disclosures in Biswas confirm that, for inbound transmissions, the gateway master acts as a NAT
- Meaning, the system in Biswas does not “bypass[] the address translation process that otherwise would be performed by the gateway master”
- The gateway master still performs this translation process

“The gateway master 110 is operable to handle communication between the ISP network 108 and public network 112. The gateway master 110 may also be referred to as a network address translation (NAT) device. . . .

In the illustrated embodiment, Gateway Master 110 translates local addresses of data received from a private network 108 into global addresses of data being output from the Gateway Master 110 to public network 112, and vice versa. The Gateway Master 110 also translates global addresses of data received from public network 112 into local addresses of data being output from the Gateway Master 110 to private network 108, and vice versa.”

Ex. 1022 (Biswas) at 5:55-58, 6:7-24.

Grounds 3 and 5: King Teaches Replacing PAT with Port Ranges

Grounds 3 and 5: King Teaches Two Invalidating Methods/Devices

King teaches two methods/devices that read on the '369 claims:

1. The CPE device replaces conventional PAT with port ranges
2. The aggregation device uses port ranges to route inbound packets to CPEs

“King discloses a ‘method [that] is implemented using one or more computer programs running on a network element such as a **router device**.’ EX1025, 7:29-35. Particularly, **a customer premises equipment (‘CPE’) device 108 and an ‘aggregation device 110.’** *Id.*, 1:34-49, 2:62-3:41, 5:36-56, FIG4. King teaches that ‘returning traffic’ is sent from, for example, remote device 102 through aggregation device 110 and CPE 108 to user device 100. *Id.*, 3:2-6, FIG5.”

Petition 56.

Grounds 3 and 5: King's CPE Uses Port Ranges Instead of PAT

King teaches two methods/devices that read on the '369 claims:

1. The CPE device replaces conventional PAT with port ranges

“In particular at step 500 the user device initiates a service session with its IP address as source identifier and a native data session identifier Such as a TCP source port as data session identifier. At step 502 the CPE translates the source address to its own overloaded IP address. At step 504 the CPE additionally translates the TCP source port to its own TCP port in a Port Address Translation (PAT) step as described in more detail below. Then, as step 506, the CPE forwards returning traffic with the translated overloaded IP address and TCP port to the user device, reinstating the user device IP address as destination address and the user device assigned TCP port number.”

Ex. 1025 (King) at 2:62-3:6; Reply 21.

Grounds 3 and 5: King's CPE Uses Port Ranges Instead of PAT

King teaches two methods/devices that read on the '369 claims:

1. The CPE device replaces conventional PAT with port ranges

“This approach is known as port address translation (PAT) and it will be seen that PAT obscures the identity of the host or user device. As a result where the IP addresses of multiple user devices such as PCs are translated to a single, over loaded IP address, with Source ports assigned on a first-come first-served basis across the connected PCs, it is not possible for a provider edge device Such as an aggregation device to classify incoming packets as belonging to a particular host or user device without additional information being provided, typically through the application layer, for example through the use of HTTP cookies.”

Ex. 1025 (King) at 3:47-50; Reply 21.

Grounds 3 and 5: King's CPE Uses Port Ranges Instead of PAT

King teaches two methods/devices that read on the '369 claims:

1. The CPE device replaces conventional PAT with port ranges

“For example the CPE may assign TCP port numbers 1024 to 1039 to data sessions associated with the first user or source device 100 and TCP port numbers 1041 to 1054 to data sessions associated with the second user or source device 118. As a result, rather than performing conventional PAT, where outside source ports are assigned indiscriminately across inside PCs, translation is carried out to separate port ranges per host device.”

Ex. 1025 (King) at 5:28-35; Petition 58; Reply 21; Supplemental Brief 3.

Grounds 3 and 5: King's CPE Uses Port Ranges Instead of PAT

King teaches two methods/devices that read on the '369 claims:

1. The CPE device replaces conventional PAT with port ranges

“King describes **modifying PAT**, where ‘**rather than performing conventional PAT** where outside source ports are assigned indiscriminately across inside PCs, **translation is carried out to separate port ranges per host device**.’ EX1025 5:32-35. In this instance the modified PAT is still performed by the CPE, not the aggregation device.”

EX2015 (Dr. Minoli Sur-Reply Declaration) ¶15; Supplemental Brief 3.

Grounds 3 and 5: King's CPE Uses Port Ranges Instead of PAT

“King’s teachings focus on identifying a source device, not a destination device.”

Patent Owner Response 27.

“Because aggregation device 110 includes a table with **source** port ranges assigned by CPE device 108, it can use the **source** port to identify the **source** device and obtain a policy for that device from AAA server 114. EX1025, 5:63-65, Figs. 6, 7; EX2014 ¶ 96.”

“Nothing Petitioner points to in King suggests that the above method could function in reverse, i.e., to identify a policy for a packet transmitted from destination device 102 to user device 100 by using the destination port. *Id.*”

Patent Owner Response 30.

Grounds 3 and 5: King's Aggregation Device Uses Port Ranges

King teaches two methods/devices that read on the '369 claims:

2. The aggregation device uses port ranges to route inbound packets to CPEs

“King’s teachings focus on identifying a source device, not a destination device.”

Patent Owner Response 27.

Grounds 3 and 5: King's Aggregation Device Uses Port Ranges

King teaches two methods/devices that read on the '369 claims:

- 2. The aggregation device uses port ranges to route inbound packets to CPEs

SOURCE ADDRESS	TCP PORT	USER DEVICE
IPCPE	1024-1039	IP1'
IPCPE	1040-1055	IP2'

FIG. 7

Ex. 1025 (King) at Figure 7 (highlighted); Petition 58.

Grounds 3 and 5: King Discloses “Function[ing] In Reverse”

King teaches two methods/devices that read on the '369 claims:

2. The aggregation device uses port ranges to route inbound packets to CPEs

“The aggregation device obtains and applies a policy to communication **between the user device and the Internet** ensuring for example that the user device is authorised, that an appropriate quality of service (QoS) Such as bandwidth is applied and that an appropriate billing method is applied.”

“Where the community comprises, for example, a domestic residence with multiple PCs used by different family members then it may be desirable to apply different policies to the different devices in order to **exert parental control on content**.”

Ex. 1025 (King) at 1:21-33, 3:53-59; Reply 21-22; Supplemental Brief 3-4.

Grounds 3 and 5: A POSITA Would Have Known How to Reverse King

“A POSITA would have understood, for example, that a SQL query implementing King’s invention would simply change this

```
SELECT PrivateAddress  
FROM TranslationTable  
WHERE PublicAddress = received_public_address AND (PortMask &  
received_source_port) = 0;
```

to this

```
SELECT PrivateAddress  
FROM TranslationTable  
WHERE PublicAddress = received_public_address AND (PortMask &  
received_destination_port) = 0;
```

in order to perform the disclosed functionality on inbound data packets.”

Ex. 1039 (Dr. Bhattacharjee Reply Declaration) ¶126; Reply 20-21.

Grounds 3 and 5: A POSITA Would Have Had to Reverse King

King teaches two methods/devices that read on the '369 claims:

2. The aggregation device uses port ranges to route inbound packets to CPEs

“One or more CPE’s communicate with a gateway to the network such as an aggregation device in the form of a broadband remote access server (BRAS).”

“According to the approach described in Lou et al., where an aggregation device handles multiple CPEs there is a risk of reuse of a common IP address, use of a non-recognised local address space between the aggregation device and the portal or of multiple aggregation devices communicating with a portal. Lou et al. addresses these issues by replacing the Source port number and source port address with an aggregation device assigned port number and address associated with the CPE source address.”

Ex. 1025 (King) at 1:25-28, 2:29-37; Reply 22-23.

Grounds 3 and 5: A POSITA Would Have Had to Reverse King

King teaches two methods/devices that read on the '369 claims:

2. The aggregation device uses port ranges to route inbound packets to CPEs

“Dr. Bhattacharjee also misunderstands the aggregation device 110 described by King. King’s aggregation device does not route packets (e.g., performing the IP routing function) in the sense that it does not perform any sort of NAT or PAT on the packets. King is clear that ‘since all address or port translation is performed at the CPE device, no such translation or deep packet inspection overheads need to be incurred at the aggregation device itself.’ EX 102 6: 5 8-61. The aggregation device simply obtains and ‘applies the policy to the service session permitting data sessions between the user device and remote entities.’ *Id.* 2:47-48.”

Exhibit 2015 (Minoli Sur-Reply Declaration) ¶15; Supplemental Brief 3-4.

Grounds 3 and 5: A POSITA Would Have Had to Reverse King

King teaches two methods/devices that read on the '369 claims:

2. The aggregation device uses port ranges to route inbound packets to CPEs

“In every case where address translation is discussed, “the CPE [not the aggregation device] translates the source address to its own overloaded IP address” and “the CPE [not the aggregation device] additionally translates the TCP source port to its own TCP port in a Port Address Translation (PAT) step” (citations omitted). Indeed, the entire focus of King is on the issue of identifying a source device after its source address and port have been changed by the CPE. *Id.* 3:42-52; *see also* 5:22-35; EX2015 ¶13-14. **There is no teaching in Fangman that suggests modifying the source IP address and/or port number again at the aggregation device 110.** Indeed, Fangman explicitly teaches against such an implementation: “[S]ince **all address or port translation is performed at the CPE device**, no [] translation or deep packet inspection overheads need to be incurred at the aggregation device itself.” EX1025, 6:58-61 (emphasis added); EX2015 ¶15.”

Patent Owner Sur-Reply 23.

Grounds 3 and 5: A POSITA Would Have Had to Reverse King

King teaches two methods/devices that read on the '369 claims:

2. The aggregation device uses port ranges to route inbound packets to CPEs

“A POSITA would have understood that aggregation device 110 could use NAT or PAT to route these inbound data packets—as in the prior-art method described in King, (EX1025, 2:13-39)—but a POSITA would have known that implementing NAT or PAT would needlessly waste resources—for example, memory—because the aggregation device 110 can already identify internal devices by comparing the received port number to the stored portrange assignments, (EX1039 ¶28). A POSITA would have therefore known to use King’s port-range disclosure to route inbound data packets. EX1039 ¶28.”

Reply 22; Supplemental Brief 4.

Grounds 3 and 5: A POSITA Would Have Had to Reverse King

King teaches two methods/devices that read on the '369 claims:

2. The aggregation device uses port ranges to route inbound packets to CPEs

“Dr. Minoli does not present an alternate explanation for how the aggregation device could route inbound data packets to the corresponding CPE without using port ranges.”

Supplemental Brief 4.

Grounds 3 and 5: A POSITA Would Have Been Motivated to Combine King and Kumar

Grounds 3 and 5: Juniper Identified Multiple Motivations to Combine

1. Fangman, Kumar, and the '369 patent are all directed to computer networking

Ex. 1025 (King) at 1:23-44, 7:29-8:10; Ex. 1023 (Kumar) at 1:7-24, 2:57-65; Ex. 1001 ('369 patent) at 1:15-36; Petition 59.

2. Masks were well known in the art and a POSITA would have known that they could be used to optimize performance

Ex. 1003 (Bhattacharjee Declaration) ¶¶ 198-99; Petition 60.

3. The combination is of a known technique (*i.e.*, port masks) to a known device (*i.e.*, King's network configuration) to yield predictable results (*i.e.*, determining whether a port number falls within a range)

Ex. 1003 (Bhattacharjee Declaration) ¶ 200; Petition 60.

Grounds 3 and 5: Kumar Applies to IP Systems

- Patent Owner's argument:

“Petitioner also failed to consider the complexity Kumar's teachings would impose of King. As noted above, Kumar uses a search system where packet headers are converted into search keys. See, e.g., EX1023, 18:65-19:10. Combining these systems would add considerable processing demands that a POSITA would realize increases the complexity of King's method of obtaining a policy from a AAA server. EX2014 ¶ 107.”

Patent Owner Response 34.

- Kumar says its teachings apply to IP systems:

“Each of the links 130a-n may be established over any suitable medium, e.g., wireless, copper wire, fiber optic, or a combination thereof using any suitable protocol—e.g., TCP/IP (Transmission Control Protocol/Internet Protocol), HTTP (Hyper-Text Transmission Protocol), as well as others.”

Ex. 1023 (Kumar) at 3:22-29; Reply 17, 23.

Grounds 3 and 5: A POSITA Would Not Bodily Incorporate Kumar into King

- Patent Owner's argument:

“Petitioner’s analysis also fails to explain how King and Kumar would be combined or how a POSITA would have a reasonable expectation of success. For example, the petition never explains how the complex forest of hash tables of Kumar would be implemented in King’s translation table or policy management system.”

Patent Owner Response 34.

- Juniper is not bodily incorporating Kumar into King



“The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference. . . . Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art.”

In re Keller, 632 F.2d 413, 425 (CCPA 1981).
Reply 19-20, 23.

Patent Owner's Procedural Arguments

Juniper Did Not Impermissibly Cite to Its Expert Declaration in Reply

- Patent Owner's argument:

“As an initial matter, several sections of Petitioner's reply should be given no weight for violating 37 C.F.R. § 42.6(a)(3). . . . For example, with respect to Ground 1, the Reply does not cite a single section of Biswas. Instead to support conclusory statements, the Reply cites up to six paragraphs from Dr. Bhattacharjee's declaration at a time, covering up two six pages of text. Reply 2-5.”

Patent Owner Sur-Reply 2-3.

- There was no reason to redundantly cite to Biswas: the petition already adequately explained that these claims involved inbound transmissions and cited to Biswas for that explanation

“Biswas further discloses that the gateway master 110 is ‘adapted to route a data packet comprising said primary address as the destination address to said piece of terminal equipment.’ In particular, Biswas teaches that incoming data packets that include the global address as the destination address can be routed to the corresponding host 102. EX1022, 6:61-7:8.”

Petition 34.

Juniper Did Not Impermissibly Cite to Its Expert Declaration in Reply

- Patent Owner's argument:

“As an initial matter, several sections of Petitioner's reply should be given no weight for violating 37 C.F.R. § 42.6(a)(3). . . . For example, with respect to Ground 1, the Reply does not cite a single section of Biswas. Instead to support conclusory statements, the Reply cites up to six paragraphs from Dr. Bhattacharjee's declaration at a time, covering up two six pages of text. Reply 2-5.”

Patent Owner Sur-Reply 2-3.

- The limitation itself is clear that it is directed to inbound transmissions

“an identifier of a routing device adapted to route a data packet comprising said primary address as the destination address to said piece of terminal equipment”

Ex. 1001 ('369 patent) at claims 8 and 12.

Juniper Did Not Impermissibly Cite to Its Expert Declaration in Reply

- Patent Owner's argument:

“As an initial matter, several sections of Petitioner's reply should be given no weight for violating 37 C.F.R. § 42.6(a)(3). . . . For example, with respect to Ground 1, the Reply does not cite a single section of Biswas. Instead to support conclusory statements, the Reply cites up to six paragraphs from Dr. Bhattacharjee's declaration at a time, covering up two six pages of text. Reply 2-5.”

Patent Owner Sur-Reply 2-3.

- Dr. Bhattacharjee's declaration merely describes the rudimentary idea that “data packet[s] comprising said primary address as the destination address” are inbound data packets
- The reply makes the same point:

“The proper framing is whether a device on the public network, like host 118, can identify gateway master 110 using the global address (*i.e.*, in an inbound transmission), not whether a device on the private network, like host 102, can identify gateway master using the global address (*i.e.*, in an outbound transmission).”

Reply 4.

Juniper Did Not Impermissibly Cite to Its Expert Declaration in Reply

- Patent Owner's argument:

“With respect to Grounds 2 and 4, discussing Fangman, the Reply argues that “Patent Owner’s argument is incorrect, resting on a fundamental misunderstanding of NAT and IP telephony and contradicting Fangman’s explicit disclosures.” Reply 7. In support of this assertion, Petitioner cites 11 paragraphs from Dr. Bhattacharjee’s reply declaration covering 10 pages of text. See EX1039 ¶¶11-21.”

Patent Owner Sur-Reply 3.

- This is an *introductory sentence*
- Juniper goes through each paragraph in detail over the course of five pages in the reply

“Patent Owner’s argument is incorrect, resting on a fundamental misunderstanding of NAT and IP telephony and contradicting Fangman’s explicit disclosures. EX1039 ¶¶11-21. **As Petitioner discusses in further detail below**, traditional NAT can only handle inbound data packets that are solicited by a prior outbound data packet. Id. ¶¶12-15.”

Reply 7; see Reply 9-14 (discussing each paragraph in detail).

Juniper Did Not Present New Arguments in Reply

- Patent Owner's argument:

“Petitioner now argues that Biswas’s inbound transmissions disclose claims 8 and 12 of the ’369 Patent. **However, this position was not articulated in the Petition.** And, it ignores Petitioner’s arguments with respect to claims 7 and 11, from which claims 8 and 12 depend. These new arguments should not be considered.”

Patent Owner Sur-Reply 4.

- This is incorrect, Juniper expressly articulated this position in the petition:

“Biswas further discloses that the gateway master 110 is ‘adapted to route a data packet comprising said primary address as the destination address to said piece of terminal equipment.’ **In particular, Biswas teaches that incoming data packets that include the global address as the destination address can be routed to the corresponding host 102.** EX1022, 6:61-7:8.”

Petition 34 (claim 12).

Juniper Did Not Present New Arguments in Reply

- Patent Owner's argument:

“Petitioner now argues that Biswas’s inbound transmissions disclose claims 8 and 12 of the ’369 Patent. **However, this position was not articulated in the Petition.** And, it ignores Petitioner’s arguments with respect to claims 7 and 11, from which claims 8 and 12 depend. These new arguments should not be considered.”

Patent Owner Sur-Reply 4.

- This is incorrect, Juniper expressly articulated this position in the petition:

“Biswas explains that . . . “The Gateway Master 110 also **translates global addresses of data received from public network 112** into local addresses of data being output from the Gateway Master 110 to private network 108, and vice versa.” EX1022, 5:52-6:24.

Petition 28 (claim 8).

Juniper Did Not Present New Arguments in Reply

- Patent Owner's argument:

“Petitioner now argues that Biswas’s inbound transmissions disclose claims 8 and 12 of the ’369 Patent. **However, this position was not articulated in the Petition.** And, it ignores Petitioner’s arguments with respect to claims 7 and 11, from which claims 8 and 12 depend. These new arguments should not be considered.”

Patent Owner Sur-Reply 4.

- The limitation is also expressly directed to these inbound transmissions:

“an identifier of a routing device adapted to **route a data packet comprising said primary address as the destination address to said piece of terminal equipment**”

Ex. 1001 (’369 patent) at claims 8 and 12.

Juniper Did Not Present New Arguments in Reply

- Patent Owner's argument:

“Here, Petitioner **newly relies on Fangman's ‘media gateway controller.’** Reply 12-13.1 Petitioner never argued in the petition that the media gateway controller routes packets, nor has Petitioner pointed to anything in its Reply suggesting such. At most, Petitioner's citation suggests that the media gateway controller has similar DHCP information as the service gateway. *See* EX1024 8:59-62.”

Patent Owner Sur-Reply 16.

- This is a responsive argument to show that, even in other contexts, Fangman teaches using port range assignments to identify internal hosts

“Other disclosures **further confirm** that Fangman relies on port ranges to route inbound data packets. EX1039 ¶¶17-19. Fangman discloses another hardware component, a media gateway controller, that the system uses to set up calls between IP telephones. EX1024, 2:43-53, 4:51-5:28.”

Reply 12.

Juniper Did Not Present New Arguments in Reply

- Patent Owner's argument:

“Here, Petitioner **newly relies on Fangman's ‘media gateway controller.’** Reply 12-13.1 Petitioner never argued in the petition that the media gateway controller routes packets, nor has Petitioner pointed to anything in its Reply suggesting such. At most, Petitioner's citation suggests that the media gateway controller has similar DHCP information as the service gateway. *See* EX1024 8:59-62.”

Patent Owner Sur-Reply 16.

- It is also responsive to the Board's interpretation of Fangman, to show that a POSITA would have known that port ranges can be used to identify hosts

“As discussed above, a POSITA would have understood that the port-range implementation saves memory over the needlessly inefficient individual-port implementation and could also be used to route inbound data packets based on Fangman's teachings. *Id.*; *see, e.g.*, EX1024, 3:53-64. (‘The Media Gateway Controller may be operable to use the public IP address **and the port range** to determine the private IP address, for example, by using look-up tables.’ (emphasis added)).”

Reply 16-17.

Juniper Did Not Present New Arguments in Reply

- Patent Owner's argument:

“Here, Petitioner newly relies on Fangman’s ‘media gateway controller.’ Reply 12-13.1 Petitioner never argued in the petition that the media gateway controller routes packets, nor has Petitioner pointed to anything in its Reply suggesting such. At most, Petitioner’s citation suggests that the media gateway controller has similar DHCP information as the service gateway. *See* EX1024 8:59-62.”

Patent Owner Sur-Reply 16.

- Patent Owner also opened the door even further to discussing the media gateway controller by fixating on it in sur-reply

“The IP Telephone registration process is illustrated in Figures 6A, 6B, and 6C. *Id.* 21:2-3; EX2015 ¶9. In this step ‘the Media Gateway Controller (MGC) 150 and the IP telephone 120 may perform IP telephone 120 registration.’ EX1024 16:21-23. This ‘involve[s] registering the IP telephone 120 with the MGC 150 and includes transmitting registration information between the MGC 150 and the IP telephone 120.’ *Id.* 16:22-27.”

Patent Owner Sur-Reply 8.

Juniper Did Not Present New Arguments in Reply

- Patent Owner's argument:

“With respect to both Patent Owner's arguments and the Board's Institution Decision, Petitioner now asserts a **new argument**: even if NAPPT does not use port ranges, a POSITA would decide to use port ranges. Reply at 13, 15-16.”

Patent Owner Sur-Reply 17.

- This is responsive to the Board's and Patent Owner's interpretations of Fangman
- A POSITA would not have interpreted Fangman as the Board and Patent Owner do because the POSITA would have known that these implementations are inefficient

“Further, a POSITA would have generally understood that **maintaining a connection-state table** to route inbound data packets **would be an inefficient use of memory**. EX1039 ¶21.”

“Regardless, a POSITA would have recognized that **maintaining or using a table that maps individual internal ports** to individual external ports **is also highly inefficient** for the same reason.”

Reply 13, 15.