

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JUNIPER NETWORKS, INC.,
Petitioner,

v.

MONARCH NETWORKING SOLUTIONS LLC,
Patent Owner.

U.S. Patent No. 8,693,369

“Method of Routing a Data Packet in a Network and an Associated Device”

IPR2024-00175

**PETITIONER’S SUPPLEMENTAL BRIEF REGARDING PATENT
OWNER’S SUR-REPLY EXPERT DECLARATION¹**

¹ On January 8, 2025, the Board authorized the parties’ agreement allowing Juniper to file a supplemental five-page brief to respond to the expert declaration that Patent Owner submitted in support of its sur-reply. EX3003.

PETITIONER'S EXHIBIT LIST

EX1001	U.S. Patent No. 8,693,369 to Mohamed Boucadair (“’369 patent”)
EX1002	Prosecution history of U.S. Patent No. 8,693,369 (“’369 Prosecution History”)
EX1003	Declaration of Dr. Samrat Bhattacharjee under 37 C.F.R. §1.68
EX1004	<i>Curriculum Vitae</i> of Dr. Bhattacharjee
EX1005	Declaration of Dr. Sylvia Hall-Ellis under 37 C.F.R. §1.68
EX1006	P. Richter et al., “A Primer on IPv4 Scarcity,” (Feb. 27, 2015), available at https://arxiv.org/pdf/1411.2649.pdf
EX1007	H. Yeom et al., “IP Multiplexing by Transparent Port-Address Translator,” 10th USENIX System Administration Conference (LISA X) (Sept. 29, 1996), available at https://www.usenix.org/conference/lisa-96/ip-multiplexing-transparent-port-address-translator
EX1008	RFC 3022 (Traditional NAT), dated January 2001, available at https://datatracker.ietf.org/doc/html/rfc3022
EX1009	U.S. Patent Application Publication No. 2002/0016826 to Johansson et al. (“Johansson”)
EX1010	A. Reitz, “The Dynamic Port Reservation Protocol,” Univ. Ill. at Urbana-Champaign (2001), available at http://redefine.dyndns.org/~andyr/documents_and_writings/thesis/docs/areitz_msthesis.pdf
EX1011	M. Shin et al., “Using a Single IPv4 Global Address in DSTM,” Internet Engineering Task Force (“IETF”) (Feb. 22, 2001), available at https://www.ietf.org/archive/id/draft-shin-dstm-single-ipv4-00.txt (“Shin”)
EX1012	U.S. Patent No. 7,356,045 to Satapati et al. (“Satapati”)
EX1013	U.S. Patent Application Publication No. 2003/0154306 to Perry (“Perry”)

EX1014	RFC 950 (Internet Standard Subnetting Procedure), dated August 1985, available at https://datatracker.ietf.org/doc/html/rfc950
EX1015	U.S. Patent No. 7,624,195 to Biswas et al. ("Biswas-195")
EX1016	WO Publication No. 01/02965 A2 to Herbst et al. ("Herbst")
EX1017	RFC 7597 (Mapping of Address and Port with Encapsulation), dated July 2015, available at https://datatracker.ietf.org/doc/html/rfc7597
EX1018	RFC 4632 (Classless Inter-domain Routing), dated August 2006, available at https://datatracker.ietf.org/doc/html/rfc4632
EX1019	U.S. Patent Application No. 10/873,547 to Tornetta et al. ("Tornetta")
EX1020	U.S. Patent No. 7,873,038 to LaVigne et al. ("LaVigne")
EX1021	U.S. Patent Application No. 11/699,765 to McAlister ("McAlister")
EX1022	U.S. Patent No. 8,019,889 to Biswas et al. ("Biswas")
EX1023	U.S. Patent No. 7,394,809 to Kumar et al. ("Kumar")
EX1024	U.S. Patent No. 7,068,647 to Fangman et al. ("Fangman")
EX1025	U.S. Patent No. 8,032,639 to King et al. ("King")
EX1026	RFC 791, Internet Protocol Specification (September 1981), available at https://datatracker.ietf.org/doc/html/rfc791
EX1027	U.S. Patent No. 5,014,221 to Mogul ("Mogul")
EX1028	U.S. Patent No. 5,163,131 to Row et al. ("Row")
EX1029	July 20, 2006 Capture of RFC 791, Wayback Machine, available at https://web.archive.org/web/20060720182319/http://www.ietf.org/rfc/rfc791.txt
EX1030	Michael Witt, A Comment on Current Source Routing Techniques (1987), available at https://dl.acm.org/doi/pdf/10.1145/36727.36728

EX1031	Andrew Tanenbaum, <i>Computer Networks</i> (5th Ed. 2011)
EX1032	Monarch's Opposition to Juniper's Motion to Transfer, <i>Monarch Networking Solutions LLC v. Juniper Networks, Inc.</i> , No. 1:23-cv-670-TSE-LRV (E.D. Va. Oct. 3, 2023), ECF No. 52
EX1033	PTO Reexamination Operational Statistics, available at https://www.uspto.gov/learning-and-resources/statistics/reexamination-information
EX1034	Complaint, <i>Monarch Networking Solutions LLC v. Juniper Networks, Inc.</i> , No. 1:23-cv-670-TSE-LRV (E.D. Va. May 23, 2023), ECF No. 1
EX1035	Unified EPR (Control No. 90/015,315), filed on October 23, 2023
EX1039	Supplemental Declaration of Dr. Samrat Bhattacharjee under 37 C.F.R. §1.68
EX1040	Y. Miyazaki et al., <i>A Proposal for a NAT Traversal System That Does Not Require Additional Functions at Terminals</i> , IEEE (Oct. 2007), available at https://ieeexplore.ieee.org/abstract/document/4428885
EX1041	W. Jiang et al., <i>Towards Junking the PBX: Deploying IP Telephony</i> , Columbia Univ. (2001), available at https://www.cs.columbia.edu/~hgs/papers/Jian0106_Junking.pdf
EX1042	T. Wallingford, <i>Switching to VoIP</i> , O'Reilly (2005).
EX1043	P. Engelstad & G. Egeland, <i>Peer-to-Peer IP Telephony</i> , 102 <i>Teletronikk</i> 1 (2006), available at https://www.telenor.com/wp-content/uploads/2012/05/T06_1.pdf
EX1044	Y. Yu et al., <i>An Efficient NAT Traversal for SIP and Its Associated Media Sessions</i> , Int'l Comp. Symposium (Dec. 15-17, 2004), available at http://dspace.fcu.edu.tw/bitstream/2377/1829/1/ce07ics002004000150.pdf

EX1045	F. Thernelius, <i>SIP, NAT, and Firewalls</i> , Royal Institute of Tech. Stockholm (May 2000), available at https://www.cs.columbia.edu/sip/drafts/Ther0005_SIP.pdf
EX1046	Andrew Tanenbaum, <i>Computer Networks</i> (4th Ed. 2003)

Dr. Daniel Minoli's sur-reply declaration, (EX2015), highlights the weakness of Patent Owner's arguments. First, recognizing that his initial interpretation of Fangman contradicts explicit disclosures in the reference, Dr. Minoli presents a new theory that is not relevant to Juniper's invalidity argument and misrepresents Fangman's teachings. Second, Dr. Minoli's response to King fails to substantively address disclosures in the reference that show King uses port ranges to route inbound data packets. Third, Dr. Minoli's other argument that Juniper's understanding of the prior art can only be based on hindsight because it would have been too complex to implement is conclusory and contradicts the prior art.

Dr. Minoli Improperly Shifts His Interpretation of Fangman in Sur-

Reply: Dr. Minoli initially testified that Fangman's NAPPT works identically to traditional NAT, where a port from a prior outgoing transmission is "used to identify the device corresponding to a packet *sent back* to the private network" based on "*the relevant communication session.*" EX2014 ¶¶58-59; *see also* EX2014 ¶¶80-81 (comparing NAPPT to "traditional NAT" and asserting that the destination port number used in NAPPT is "previously identified in an outgoing transmission"). Juniper's Reply argued that traditional NAT is incompatible with the teachings in Fangman because Fangman's IP telephones cannot handle "unsolicited" inbound transmissions. Paper 20 ("Reply"), at 6-7, 9-14. Recognizing his error, Dr. Minoli shifts positions, suggesting now that NAPPT stores individual ports when the IP

telephone registers with the media gateway controller (“MGC”). EX2015 ¶¶6-12. This argument is not relevant to Juniper’s invalidity theory, which focuses on the service gateway, not the MGC.

In Fangman, the IP telephone is assigned a port range during the DHCP process. EX1024 at 3:25-37, 20:53-55. The service gateway “store[s] the DHCP lease information”—which includes “the range of port numbers” assigned to the IP telephone—“in [its] NAPPT table.” *Id.* at 3:25-37, 11:14; Paper 1 (“Petition”), at 44-45. The service gateway uses this “range of ports” to “facilitate and mediate the IP telephony process,” (EX1024 at 18:47-56; Petition 40, 44), “[i]nstead of dynamically assigning ports to [the] IP telephones” as in traditional NAT, (EX1024 at 8:21-31; Petition 40, 44).

Fangman does not disclose that the service gateway populates its NAPPT table during the MGC-registration process, much less stores only individual port numbers rather than ranges. *See* EX1024 at 21:1-23:18 (describing the MGC-registration process). In fact, the service gateway is already performing NAPPT ***during the registration process itself***, before the IP telephone has even registered its port numbers with the MGC. *Id.* at 21:55-63. To the extent the MGC process is relevant at all, it shows that “the media gateway controller has similar DHCP information as the service gateway,” as Patent Owner admits. Paper 21 (“Sur-Reply”), at 16. Not surprisingly, the MGC uses this information ***in the same way***

the service gateway uses it in NAPPT: “to use the public IP address *and the port range* to determine the private IP address.” EX1024 at 3:53-64.

Dr. Minoli Cannot Rebut That King's Teachings Apply To Routing Inbound Data Packets: Dr. Minoli fails to substantively dispute that the invention in King applies to data packets traveling inbound into the network, not just outbound. In fact, Dr. Minoli agrees that “King describes modifying PAT” such that, “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.” EX2015 ¶15 (quoting EX1025, 5:32-35). This disclosure alone teaches the purported invention, as Juniper has repeatedly explained. Petition 58; Reply 21.

As an alternative argument, Juniper explained that the aggregation device must also use port ranges to route inbound data packets when it services “multiple CPEs” that “reuse [] a common IP address.” EX1025, 2:29-34; Reply 22-23; *see also* Petition 56 (identifying both the CPE and the aggregation device as routers implementing King's teachings); Petition 58 (noting that both the CPE and aggregation device store port range assignments). Dr. Minoli responds that “King's aggregation device does not route packets.” EX2015 ¶15. If Dr. Minoli were correct, then the network in King would not work at all because data packets would stop at the aggregation device and never reach the user devices. Dr. Minoli's only

support for this sweeping argument is that King discloses that “all address or port translation is performed at the CPE device,” not at the aggregation device. *Id.* This argument confuses the issues. Juniper does not assert that the aggregation device performs address or port translation or otherwise modifies the data packet, just that it transmits the data packet to the applicable CPE based on port range assignments. Reply 22-23. In fact, Juniper said in reply that the aggregation device *would not* use NAT or PAT because those translation methods would needlessly waste resources. *Id.* at 22. 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.

Finally, Dr. Minoli says that the aggregation device applies security policies on outbound data packets only, not inbound packets. EX2015 ¶14. This contradicts King's teaching of “exert[ing] parental control *on content*.” EX1025 at 3:53-59; Reply 21-22. A parent might want to allow access to websites that are generally child-friendly, but further block adult *content* that could appear on those websites—like news stories about war. Dr. Minoli does not explain how such content moderation would work by only processing outbound, and not inbound, data packets.

Dr. Minoli's Other Arguments Are Unsupported: Dr. Minoli presents only two reasons why a POSITA allegedly would not have routed data packets based on port ranges. *First*, Dr. Minoli argues that a POSITA would not use port ranges to

route inbound data packets because it “introduce[s] complexity” that “may require modification to DHCP.” EX2015 ¶16. But Fangman already teaches modifying DHCP to include port range assignments, so it already addresses this so-called “complexity.” *E.g.*, EX1024 at 3:11-38, 18:60-20:67. Dr. Minoli then generically suggests that existing systems are already complex, and a POSITA would not make them more complex by implementing port ranges. EX2015 ¶16. Dr. Minoli does not identify any specific aspects that would supposedly become more difficult to maintain, so this is just conclusory expert testimony. *TQ Delta, LLC v. Cisco Sys., Inc.*, 942 F.3d 1352, 1358-59 (Fed. Cir. 2019).

Second, Dr. Minoli argues that using port ranges to route inbound data packets is “hindsight in light of the ’369 Patent.” EX2015 ¶16. Not true. As shown throughout this IPR, both Fangman and King teach routing inbound data packets based on port ranges. Other prior art does too. Biswas, for example, teaches that after assigning global port ranges (“GPR”) to its hosts, “[e]ach 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 100001 will be sent to host 102a since this global port value is within the GPR 10000 through 10100 previously assigned to host 102a.” EX1022 at 7:1-6. POSITAs were thus well aware that port ranges could be used to route inbound data packets.

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CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing Petitioner's Supplemental Brief Regarding Patent Owner's Sur-Reply Declaration was served via e-mail pursuant to 37 C.F.R. §42.6(e) in its entirety to all counsel of record, as follows:

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