

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS**

MORRIS ROUTING TECHNOLOGIES,
LLC

Plaintiff,

v.

SAMSUNG ELECTRONICS CO., LTD.;
SAMSUNG ELECTRONICS AMERICA,
INC.; and SAMSUNG RESEARCH
AMERICA, INC.

Defendant.

Civil Action No. 4:24-cv-624

JURY TRIAL DEMANDED

FIRST AMENDED COMPLAINT FOR PATENT INFRINGEMENT

Pursuant to Fed. R. Civ. P. 15(a)(1) Plaintiff Morris Routing Technologies, LLC (“MRT” or “Plaintiff”), hereby amends its Complaint against Defendants Samsung Electronics Co., Ltd. (“SEC”) and Samsung Electronics America, Inc. (“SEA”), and Samsung Research America (“SRA”) (individually each a “Defendant,” and collectively “Samsung” or “Defendants”) to include newly issued U.S. Patent No. 12,058,042 (“the ’042 patent”). The ’042 patent issued on August 6, 2024—after MRT filed its initial complaint. MRT accordingly alleges the following:

NATURE OF THE ACTION

1. This is an action for patent infringement arising under the Patent Laws of the United States, 35 U.S.C. § 1 *et seq.*

THE PARTIES

2. Plaintiff MRT is a limited liability company organized under the laws of the State of Texas with a place of business at 1312 14TH St. Suite 204, Plano TX 75074.

3. Upon information and belief, Defendant SEC is a corporation organized and existing under the laws of the Republic of Korea with a principal place of business at 129 Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 443-742, South Korea. Upon information and belief, SEC sells, offers to sell, and/or uses products and services throughout the United States, including in this judicial district, and introduces products and services into the stream of commerce knowing that they would be sold and/or used in this judicial district and elsewhere in the United States.

4. Upon information and belief, Defendant SEA is a corporation organized and existing under the laws of New York. Upon information and belief, SEA has been registered to do business in Texas under File Number 0011028006 since June 10, 1996. SEA's registered agent is CT Corporation System, located at 1999 Bryan St., Ste. 900, Dallas, Texas 75201. Upon information and belief, SEA is a direct or indirect subsidiary of SEC.

5. Upon information and belief, Defendant SRA is a corporation organized and existing under the laws of California. Since at least January 26, 2012, SRA has been registered to do business in Texas under Texas SOS file number 0801541089. SRA may be served through its registered agent, CT Corporation System, located at 1999 Bryan St., Ste. 900, Dallas, Texas 75201. On information and belief, SRA is a direct or indirect subsidiary of SEC.

JURISDICTION AND VENUE

6. This is an action for patent infringement arising under the Patent Laws of the United States, Title 35 of the United States Code.

7. This Court has subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a).

8. Venue is proper in this judicial district under 28 U.S.C. § 1400(b).

9. Samsung is subject to this Court's personal jurisdiction consistent with the principles of due process and/or the Texas Long Arm Statute.

10. This Court has general and specific personal jurisdiction over the Defendants under the laws of the State of Texas, due at least to their substantial business in Texas and in this judicial district, directly or through intermediaries, including: (i) at least a portion of the infringements alleged herein; and (ii) regularly doing or soliciting business, engaging in other persistent courses of conduct and/or deriving substantial revenue from goods and services provided to individuals in the State of Texas. Samsung has purposefully availed itself of the privileges of conducting business in the State of Texas and in this judicial district. Defendants SEA and SRA are each registered to do business in Texas and maintain an agent authorized to receive service of process within Texas, and Defendant SEC is the direct or indirect parent corporation of Defendants SEA and SRA.

11. Venue is also proper in this district because Samsung has a regular and established place of business and has committed acts of infringement in this district. For example, Defendant SEA maintains its “Flagship North Texas Campus” in this District, which it opened in 2019 with a “216,000 square foot building” and “more than 1,000 regional employees.”¹ This facility is located at 6625 Excellence Way, Plano, Texas 75023. Since opening SEA's North Texas Campus in 2019, Samsung has further expanded its Plano footprint multiple times, including, for example, with the addition of locations at 6625 Declaration Way, Plano, Texas 75023, and at 6105 Tennyson Parkway, Plano, Texas 75023.²

12. Moreover, for example, Defendant SRA maintains an office within the Eastern District of Texas, which is also located in the facility at 6105 Tennyson Pkwy, Plano, Texas 75024.³ Upon information and belief, SRA employees at this location work on research and

¹ <https://news.samsung.com/us/samsung-electronics-america-open-flagship-north-texas-campus/>.

² *See, e.g.*, <https://www.dallasnews.com/business/retail/2023/01/06/samsung-growing-in-north-texas-with-offices-in-plano-and-coppell-warehouse>.

³ <https://sra.samsung.com/locations/#loc-431>.

development relating to the implementation of 5G technologies in the area of network communications in Samsung products.⁴

13. In other actions, Samsung has either admitted or not contested that the Eastern District of Texas is a proper venue for patent infringement actions against it. *See, e.g., 5G IP Holdings LLC v. Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., and Samsung Research America*, No. 4:21-cv-00622-SDJ, Dkt. 23 ¶ 19 (E.D. Tex. Nov. 15, 2021); *CogniPower LLC v. Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.*, No. 2:23-cv-00160-JRG, Dkt. 29 ¶¶ 12-13 (E.D. Tex. July 31, 2023); *Asus Technology Licensing inc. et al. v. Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., and Samsung Research America*, No. 2:23-cv-409, Dkt. 38 ¶¶ 7-8, 10 (E.D. Tex. Mar. 25, 2024).

14. Samsung’s infringement has caused substantial injury to MRT, including in this judicial district.

BACKGROUND

The Inventions of the Patents-in-Suit

15. Mr. Robert Paul Morris is the inventor of U.S. Patent Nos. 10,419,335 (“the ’335 patent”; Exhibit A), 10,476,788 (“the ’788 patent”; Exhibit B), 10,594,594 (“the ’594 patent”; Exhibit C), 10,652,150 (“the ’150 patent”; Exhibit D), 10,721,164 (“the ’164 patent”; Exhibit E), 10,735,306 (“the ’306 patent”; Exhibit F), 11,196,660 (“the ’660 patent”; Exhibit G), and 12,058,042 (“the ’042 patent”; Exhibit H) (collectively, the “Patents-in-Suit”). True and correct copies of the Patents-in-Suit are attached as Exhibits A-H.

16. The Patents-in-Suit resulted from the pioneering efforts of Mr. Morris (hereinafter “the Inventor”) in the area of segment-based routing (“SR”). These efforts resulted in the

⁴ *See* <https://sra.samsung.com/research-area/next-generation-communications/>.

development of methods and apparatuses for improving the routing, provisioning and transport of data packets across networks in the 2012 timeframe using SR over Multiprotocol Label Switching (“MPLS”) and IPv6 data planes (*See, e.g.*, ’594 patent, col. 19:42-67), which are now referred to as “SR-MPLS” and “SRv6” respectively.

17. At the time of these pioneering efforts, the most widely implemented technology used to address network traffic engineering was IP-based forwarding using a distributed control plane as well as constrained shortest-path forwarding. In traditional IP/MPLS networks, routing decisions are made based on destination IP addresses, and packet forwarding decisions are determined hop-by-hop based on routing tables.

18. MPLS introduced the concept of label switching, where packets are assigned labels at ingress routers and forwarded based on these labels rather than IP addresses, which can improve forwarding efficiency and allow for traffic engineering. However, explicit state information had to be maintained at all hops along an MPLS path, leading to scalability problems in the control plane and the data plane. Additionally, per-connection traffic steering did not take advantage of load balancing offered by equal cost multipath routing typically used in IP networks.

19. The Inventor conceived of the inventions claimed in the Patents-in-Suit as a way to improve addressing. (*See, e.g.*, ’594 patent, col. 2:49-51.) Prior to the Inventor’s efforts, Internet protocol dealt primarily with addresses and left mapping from names to addresses and mapping from local net addresses to routes to other protocol layers. The claimed inventions of the Patents-in-Suit establish new relationships between and among names, addresses and routes to improve network operations.

20. The claimed inventions of the Patents-in-Suit allow the source to choose a path and encode it in the packet header as a sequence of identifiers that identify segments. (*See, e.g.*,

'594 patent, col. 18:19-20:7; col. 20:41-22:36; col. 32:41-33:21; Figs. 2, 9-11, 13.) Using the claimed inventions of the Patents-in-Suit, networks no longer need to maintain a per-application and per-flow state and need only obey the forwarding information provided in the packet. This results in a dramatic reduction in the per-flow state that needs to be maintained in network nodes supporting traffic engineered paths. For example, instead of relying on a complex network of label-switched paths (LSPs) established by control protocols like LDP (Label Distribution Protocol) or RSVP-TE (Resource Reservation Protocol - Traffic Engineering), the inventions claimed in the Patents-in-Suit use source routing where a packet's path through the network is identified in the packet. (*See, e.g.*, '594 patent, col. 24:23-28:21; col. 30:15-24; col. 38:1-11; col. 41:8-24.)

21. The Inventor conceived of different ways to implement segment-based routing, including with MPLS-based and IPv6-based networks. For example, with the claimed inventions of the Patents-in-Suit, a segment identifier can be embodied as an MPLS label and a plurality of segment identifiers can be included in a sequence thereof. The first segment identifier of the sequence is processed and upon completion, such segment identifier is removed from the sequence. By removing reliance on label-switched paths established by control protocols, the network architecture is simplified and has greater scalability and flexibility.

22. In another example, the claimed inventions of the Patents-in-Suit extend IPv6 and allow SR over the IPv6 data plane. The claimed inventions enable use of multiple segment identifiers embodied as IPv6 addresses in headers and a plurality of segment identifiers embodied as a sequence of IPv6 addresses. A segment identifier is indicated by the destination address of the packet and a pointer indicates another segment identifier. This allows even more precise control over packet forwarding and even greater flexibility and scalability.

23. With the inventions claimed in the Patents-in-Suit, network operators can specify explicit paths for packets to travel through the network and can also leverage IPv6's larger address space to improve scalability and define and manage greater numbers of explicit paths. This also allows the inclusion of service functions directly into the header providing for servicing chaining and integration of network functions. There is reduced need for state management in routers and because packets carry their path information, it is more secure because of the difficulty attackers face manipulating or spoofing routing information now carried in the packet.

24. Using the claimed inventions, network bandwidth is used more effectively and performance is optimized. The control plane is greatly simplified and the amount of state information maintained by network nodes is reduced significantly. There is less reliance on complex configurations and protocols to control the flow of traffic through a network because operators can define explicit paths. (*See, e.g.*, '594 patent, col. 24:23-28:21; col. 30:15-24; col. 38:1-11; col. 41:8-24.) This facilitates service chaining where network operators define paths that include service nodes such as firewalls and intrusion detection systems, to improve security, and load balancers, to optimize performance. This results in costs savings by reducing the need for over-provisioning of network resources and improving the overall efficiency of the network infrastructure. There is lower latency and traffic is protected against link and node failures without requiring burdensome additional signaling requirements in the network while providing optimum backup paths.

Advantage Over the Prior Art

25. The patented inventions disclosed in the Patents-in-Suits, provide many advantages over the prior art, and in particular improve the operations of networks using a path-based protocol address. (*See, e.g.*, '594 patent at col. 1:66-2:51.) One advantage of the patented

invention is that fewer nodes, in particular path nodes, are required to maintain state information for each path in a network. (*See, e.g.*, '594 patent at col. 30:17-24.)

26. Another advantage of the patented invention is that utilizing path information in the packet header to route a packet through a network reduces or eliminates the need for additional protocols. (*See, e.g.*, '594, col. 41:14-16.)

27. Another advantage of the patented invention is that specific network paths may be specified using path information in the packet header, which allows precise traffic control and selective routing for various purposes such as reduced power consumption, decreased processing time or other cost-saving measures. (*See, e.g.*, '594 patent, col. 22:54-61; col. 50:30-36; col. 51:40-56.)

28. Yet another advantage of the patented invention is dynamic routing that responds to disruptions in the network by updating the routing path through the network in response. (*See, e.g.*, '594 patent at col. 34:62-35:18; col. 36:44-37:10; col. 49:40-54.) An operation command may be included in the header so that as the data packet is routed through a path node it is routed through a particular node capable of performing the operation identified by the command in the header. (*See, e.g.*, '594 patent at col. 46:53-58; col. 49:48-54.)

29. Because of these significant advantages that can be achieved through the use of the patented inventions, MRT believes that the Patents-in-Suit present significant commercial value for companies like Samsung that provide network equipment, including for 5G. Indeed, SRv6 has been identified as a key enabling technology for 5G. SRv6 can replace GTP-U and also any underlay transport layers and be used as the only transport layer in 5G, dramatically simplifying network operations while providing greater traffic engineering control and enabling

other capabilities such as service chaining and network slicing, a main feature of 5G.⁵ SR is a key technology allowing companies like Samsung to address the huge growth in demand for network capacity and traffic.⁶

Technological Innovation

30. The patented inventions disclosed in the Patents-in-Suit resolves technical problems related to traffic engineering in networks, particularly the complexity and scalability problems presented by the incredible growth in networking and the Internet. As the Patents-in-Suit explain, one of the limitations of the prior art as regards network routing was that the approach traditionally used for addressing and routing, and the effect on network latency. (*See, e.g.*, '594 patent, col. 1:66-2:51.)

31. The claims of the Patents-in-Suit do not merely recite the performance of some well-known business practice from the pre-Internet world along with the requirement to perform it on the Internet. Instead, the claims of the Patents-in-Suit recite inventive concepts that are deeply rooted in engineering technology, and overcome problems specifically arising out of how to efficiently and effectively manage network traffic with optimum utilization of network resources. (*See, e.g.*, '594 patent, col. 50:17-36.)

32. In addition, the claims of the Patents-in-Suit recite inventive concepts that improve the functioning of network hardware such as routers for transferring data packets

⁵ *See, e.g.*, https://www.segment-routing.net/images/ACG_Segment_Routing_201808.pdf.

⁶ *See, e.g.*, https://research.samsung.com/blog/Network_Slicing%E2%80%93Service-Oriented_Network_Architecture_for_Industry_Verticals; https://images.samsung.com/is/content/samsung/assets/global/business/networks/insights/white-papers/samsungs-network-slicing-powers-profitable-5g/Samsung-Network-Slicing-Solution-Brief_r1.pdf; https://images.samsung.com/is/content/samsung/assets/global/business/networks/insights/white-paper/network-slicing/200420_Samsung_Network_Slicing_Final.pdf; *see also* <https://www.ericsson.com/en/blog/2023/5/bright-future-of-srv6>.

through a network, particularly by reducing the demand on transit nodes and egress nodes to maintain state information and reducing the number of protocols required. (*See, e.g.*, '594 patent, col. 41:8-16.)

33. Moreover, the claims of the Patents-in-Suit recite inventive concepts that are not merely routine or conventional use of transferring information. Instead, the patented inventions disclosed in the Patents-in-Suit provide new and novel solutions to specific problems related to improving network performance and packet routing through networks that are scalable and dynamic.

34. And finally, the patented inventions disclosed in the Patents-in-Suit do not preempt all the ways that packet routing may be used to improve network trafficking, nor do the Patents-in-Suit patent preempt any other well-known or prior art technology.

35. Accordingly, the claims in the Patents-in-Suit recite a combination of elements sufficient to ensure that the claims in substance and in practice amount to significantly more than a patent-ineligible abstract idea.

Internet Engineering Task Force (IETF) and Standard Setting Organizations

36. The IETF is a standards setting organization. It publishes technical documents referred to as RFCs that define technical foundations and specify application protocols.⁷ Each RFC is a product of the IETF and represents the consensus of the IETF community.

37. The IETF has a working group, SPRING, which has published a number of RFCs related to SR, including RFC 8402, RFC 8660, RFC 8663, RFC 8754, RFC 8986, RFC 9256 and RFC 9352 (collectively "SR RFCs").

⁷ <https://www.ietf.org/process/rfc/>.

38. RFC 8402 is entitled “Segment Routing Architecture” and specifies an architectural framework and requirements for implementing SR, including both SR-MPLS and SRv6.⁸

39. RFC 8660 is entitled “Segment Routing with the MPLS Data Plane” and “specifies the forwarding behavior to allow instantiating SR over the MPLS data plane (SR-MPLS).”⁹

40. RFC 8663 is entitled “MPLS Segment Routing over IP” and “describes how SR-MPLS-capable routers and IP-only routers can seamlessly coexist and interoperate through the use of SR-MPLS label stacks and IP encapsulation/tunneling such as MPLS-over-UDP”¹⁰

41. RFC 8754 is entitled “IPv6 Segment Routing Header (SRH)” and “describes the SRH and how it is used by nodes that are Segment Routing (SR) capable.”¹¹

42. RFC 8986 is entitled “Segment Routing over IPv6 (SRv6) Network Programming” and “defines the SRv6 Network Programming concept and specifies the base set of SRv6 behaviors that enables the creation of interoperable overlays with underlay optimization.”¹²

43. RFC 9256 is entitled “Segment Routing Policy Architecture” and “updates RFC 8402 as it details the concepts of SR Policy and steering into an SR Policy.”¹³ “SR Policy is an ordered list of segments (i.e., instructions) that represent a source-routed policy.”¹⁴

⁸ <https://datatracker.ietf.org/doc/rfc8402/>.

⁹ <https://datatracker.ietf.org/doc/html/rfc8660>.

¹⁰ <https://datatracker.ietf.org/doc/html/rfc8663>.

¹¹ <https://datatracker.ietf.org/doc/html/rfc8754>

¹² <https://datatracker.ietf.org/doc/html/rfc8986>

¹³ <https://datatracker.ietf.org/doc/html/rfc9256>

¹⁴ <https://datatracker.ietf.org/doc/html/rfc9256>

44. RFC 9352 is entitled “IS-IS Extensions to Support Segment Routing over the IPv6 Data Plane” and “describes the IS-IS extensions required to support SR over the IPv6 data plane.”¹⁵

45. Numerous companies supply interoperable equipment and software solutions that support SR-capable networks and the requirements set forth in the SR RFCs, including Samsung.¹⁶

46. In the context of 5G and wireless networks, multiple standard setting organizations and industry-based open source communities are involved in creating standards and ensuring interoperability which is critical given the diversity of components and services that are interconnected. One example is the 3rd Generation Partnership Project (“3GPP”). It is a standard setting organization that develops protocols for mobile telecommunications, including the 5G standard and non-radio access to core networks and other interworking with non-3GPP networks.¹⁷

¹⁵ <https://datatracker.ietf.org/doc/html/rfc9352>

¹⁶ *See, e.g.*, <https://www.samsung.com/global/business/networks/solutions/network-slicing/> (“Network slicing involves the end-to-end (E2E) 5G network and requires various state-of-the-art technologies based on standards and open source communities such as MGMN, 3GPP, ETSI, ONF, IETF, O-RAN and ONAP. Samsung is contributing to these industry endeavors and is able to provide an end-to-end network slicing solution that is comprised of an orchestration platform, slice management system and each network domain (radio access, core, transport).”); https://images.samsung.com/is/content/samsung/assets/global/business/networks/insights/white-paper/network-slicing/200420_Samsung_Network_Slicing_Final.pdf (“data plane protocols (e.g., SRv6, SR-MPLS, etc.)”).

¹⁷ *See, e.g.*, <https://www.3gpp.org/about-us/introducing-3gpp>; https://www.3gpp.org/ftp/Information/presentations/Newcomers_quick-start/Newcomers_slides.pdf; <https://webapp.etsi.org/3gppmembership/Results.asp?SortMember=Name&DirMember=ASC&SortPartner=Name&DirPartner=ASC&SortMarket=Name&DirMarket=ASC&SortObserver=Name&DirObserver=ASC&SortGuest=Name&DirGuest=ASC&Name=samsung&search=Search>.

47. The O-RAN ALLIANCE is another example. It is an open technical organization founded in 2018 and Samsung is a contributor.¹⁸ Its “mission is to encourage the industry towards more intelligent, open, virtualized and fully inter-operable mobile networks.”¹⁹ It publishes specifications and supports integration and testing while working with other standard setting organizations to ensure compatibility.²⁰ Samsung has developed and offers O-RAN compliant products.²¹

48. The European Telecommunications Standards Institute (“ETSI”) is another standard setting organization that develops global standards that ensure interoperability between wireless networks, network operators and devices. ETSI is part of 3GPP.²² ETSI publishes O-RAN specifications²³ and also publishes documents created by Industry Specification Groups (ISGs), such as Group Specifications, which provide technical requirements and explanatory material and are produced and approved by specific ISGs.²⁴ Seven different Samsung companies are members of ETSI and various ISGs within ETSI.²⁵

49. Samsung has stated the following about ETSI:

Defendants admit that the European Telecommunications Standards Institute (“ETSI”) describes itself at <https://www.etsi.org/about>, and is a not-for-profit organization that is the “recognized regional standards body dealing with telecommunications.” Defendants admit that while ETSI was “initially founded to serve European needs,” it has a “global perspective” and its standards are used worldwide. Defendants admit that ETSI is a partner in the Third Generation

¹⁸ See, e.g., <https://www.o-ran.org/membership>.

¹⁹ See, e.g., https://assets-global.website-files.com/60b4ffd4ca081979751b5ed2/64bee579b5449cafb9f0f889_Governance%20of%20O-RAN%20ALLIANCE%20e.V.%20in%20Compliance%20with%20WTO%20Principles-v02.pdf.

²⁰ *Id.*

²¹ See, e.g., <https://www.fierce-network.com/sponsored/vran-open-ran-and-ai-take-center-stage-mwc-2024>.

²² See, e.g., https://www.3gpp.org/ftp/Information/presentations/Newcomers_quick-start/Newcomers_slides.pdf.

²³ *Id.*

²⁴ See, e.g., <https://www.etsi.org/standards/types-of-standards>.

²⁵ <https://www.etsi.org/membership>.

Partnership Project (“3GPP”), and that 3GPP created the technical specifications for 3G, 4G, and 5G, which are globally applicable technical specifications and standards that help ensure worldwide interoperability between wireless networks, network operators, and devices. Defendants admit that ETSI and its members have also developed other worldwide standards that help ensure interoperability.²⁶

50. Samsung has also stated that “[w]hile ETSI was initially founded to serve European needs, it has a global perspective and its standards are used worldwide.”²⁷

51. In May 2024, 3GPP and ETSI published a technical specification entitled “5G; Management and orchestration; 5G Network Resource Model (NRM); Stage 2 and Stage 3” as 3GPP TS 28.541 version 18.7.0 Release 18 and ETSI TS 128 541 V18.7.0 (2024-05).²⁸ That requirements document specifies that the allowed tunnelling mechanism attribute for a network slice includes SRv6.²⁹

52. One ETSI ISG is the Fifth Generation Fixed Network ISG, which focuses on the “evolution of the fixed network needed to match and further enhance the benefits that 5G has brought to mobile networks and communications” and addresses, among other things, “end-to-end full stack slicing.”³⁰

53. The Fifth Generation Fixed Network (F5G) ISG produced and approved a Group Specification that “specifies the End-to-End network architecture, features and related network devices/elements' requirements for F5G, including on-premises, Access, IP and Transport

²⁶ *Asus Technology Licensing Inc. v. Samsung Electronics Co. Ltd. et al.*, No. 2:23-cv-00488, Dkt. 38 at 7 (¶30) (E.D. Tex. Mar. 25, 2024).

²⁷ *Id.* at 24 (¶23 counterclaims).

²⁸ *See, e.g.*,

https://www.etsi.org/deliver/etsi_ts/128500_128599/128541/18.07.00_60/ts_128541v180700p.pdf.

²⁹ *Id.* at pg. 396.

³⁰ *See, e.g.*, <https://www.etsi.org/committee/1696-f5g>

Networks.”³¹ It lists IETF RFC 8402 and IETF RFC 8986 as normative references.³² ETSI Normative references are necessary for the application of the standard in which they are mentioned.³³

54. The F5G Group Specification states that “Segment Routing is the preferred technology for implementing slicing in the aggregation network.”³⁴ It specifies that “SRv6 shall be used as the bearer connection on the IP/Ethernet fabric Underlay Plane,”³⁵ “[t]he OLT shall support slicing per VLAN, SRv6 and OTN on the uplink port(s),”³⁶ “[t]he IP Network shall support SRv6 Best Effort (BE)” and “should support SRv6 Traffic Engineering (TE).”³⁷

55. A different ETSI ISG, the Network Functions Virtualization (NFV) ISG, produced and approved a Group Specification specifying performance metrics and methods for benchmarking networks in NFV infrastructure.³⁸ It states that “[p]rotocols like VLAN, VXLAN, GRE, VXLAN-GPE, SRv6 and SFC NSH are needed in NFVI deployments.”³⁹ Samsung as well as AT&T, Verizon and T-Mobile are members of the NFV ISG.⁴⁰ The Group Specification was “produced and approved by the Fifth Generation Fixed Network (F5G) ETSI Industry

³¹ See, e.g., ETSI GS F5G 014 V1.1.1 (2023-05) available at https://www.etsi.org/deliver/etsi_gs/F5G/001_099/014/01.01.01_60/gs_F5G014v010101p.pdf at sec. 1.

³² *Id.* at sec. 2.1 ([5] amd [6]).

³³ See, e.g., <https://portal.etsi.org/Services/editHelp/Search/FAQs/Normative-informative-references>.

³⁴ See, e.g., ETSI GS F5G 014 V1.1.1 (2023-05) available at https://www.etsi.org/deliver/etsi_gs/F5G/001_099/014/01.01.01_60/gs_F5G014v010101p.pdf at sec. 5.4.1.11.

³⁵ *Id.* at 5.4.3.1.2.

³⁶ *Id.* at [R-54]

³⁷ *Id.* at [R-89] and [R-90].

³⁸ See, e.g., ETSI GS NFV-TST 009 V3.4.1 (2020-12) available at https://www.etsi.org/deliver/etsi_gs/NFV-TST/001_099/009/03.04.01_60/gs_NFV-TST009v030401p.pdf.

³⁹ *Id.*

⁴⁰ See, e.g., <https://portal.etsi.org/TB-SiteMap/NFV/NFV-List-members>

Specification Group (ISG) and represents the views of those members who participated in this ISG.”⁴¹

56. In October 2023, the NFV ISG also published a Group Report that analyzed SRv6 and SR-MPLS and discussed RFC 8402, RFC 8754, RFC 8986 and RFC 9256.⁴²

57. Verizon, T-Mobile and AT&T were also part of the Open Networking Foundation (“ONF”).⁴³ The ONF SDN fabric specification, which is part of ONOS, requires the use of SR-MPLS.⁴⁴

58. On information and belief, Samsung has developed, tested and sold SR solutions according to the ONF specifications.⁴⁵ For example, Samsung has stated that “Network slicing involves the end-to-end (E2E) 5G network and requires various state-of-the-art technologies based on standards and open source communities such as MGMN, 3GPP, ETSI, ONF, IETF, O-RAN and ONAP. Samsung is contributing to these industry endeavors and is able to provide an end-to-end network slicing solution that is comprised of an orchestration platform, slice management system and each network domain (radio access, core, transport).”⁴⁶ Samsung has

⁴¹ See, e.g., ETSI GS NFV-TST 009 V3.4.1 (2020-12) available at https://www.etsi.org/deliver/etsi_gs/NFV-TST/001_099/009/03.04.01_60/gs_NFV-TST009v030401p.pdf.

⁴² See, e.g., ETSI GR NFV-IFA 035 V5.1.1 (2023-10) available at https://www.etsi.org/deliver/etsi_gr/NFV-IFA/001_099/035/05.01.01_60/gr_NFV-IFA035v050101p.pdf.

⁴³ See, e.g., <https://opennetworking.org/member-listing/> (AT&T and T-Mobile); <https://www.datacenterknowledge.com/open-source-software/verizon-latest-telco-to-join-onos-open-source-sdn-project>.

⁴⁴ See, e.g., <https://docs.sd-fabric.org/master/specification.html>.

⁴⁵ See, e.g., <https://wiki.onosproject.org/pages/viewpage.action?pageId=39813572>;
<https://wiki.onosproject.org/display/ONOS/1.15-SR+Routing>;

<https://www.samsung.com/global/business/networks/solutions/network-slicing/>

⁴⁶ <https://www.samsung.com/global/business/networks/solutions/network-slicing/>.

also stated that “Samsung’s SDN is based on the Open Network Operating System (ONOS), supporting various types of open interfaces to enable multi-vendor interoperability.”⁴⁷

59. On information and belief, ONOS supports SR which is in turn supported by Samsung’s network solutions.⁴⁸

Samsung’s Accused Instrumentalities

60. Upon information and belief, Samsung has developed, manufactures, uses, sells, offers for sale and imports into the United States various networking solutions that support segment routing.

61. Upon information and belief, Samsung has developed, manufactures, uses, sells, offers for sale and imports into the United States various networking solutions that support SRv6.

62. Upon information and belief, Samsung has developed, manufactures, uses, sells, offers for sale and imports into the United States various networking solutions that support SR-MPLS.

63. Upon information and belief, Samsung has developed, manufactures, uses, sells, offers for sale and imports into the United States various networking solutions that support the SR RFCs.

⁴⁷ <https://www.samsung.com/global/business/networks/insights/press-release/0721-samsung-expands-its-lineup-of-sdn-solutions/>.

⁴⁸ See, e.g., <https://wiki.onosproject.org/pages/viewpage.action?pageId=39813572>;
<https://wiki.onosproject.org/display/ONOS/Master-Segment+Routing>;
<https://www.samsung.com/global/business/networks/solutions/network-slicing/>.

64. Samsung's networking solutions identified in paragraphs 60-63 are collectively referred to as the Accused Instrumentalities and upon information and belief, include, but are not limited to, Samsung's SDN, RAN and Core solutions.⁴⁹

COUNT I – INFRINGEMENT OF U.S. PATENT NO. 10,419,335

65. The allegations set forth in the foregoing paragraphs are incorporated into this First Claim for Relief.

66. On September 17, 2019, U.S. Patent No. 10,419,335 ("the '335 patent"), entitled "REGION SCOPE-SPECIFIC OUTSIDE-SCOPE IDENTIFIER-EQUIPPED ROUTING METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS" was duly and legally issued by the United States Patent and Trademark Office.

67. Plaintiff is the assignee and owner of the right, title and interest in and to the '335 patent, including the right to assert all causes of action arising under said patents and the right to any remedies for infringement of them, including all past infringement.

⁴⁹ https://images.samsung.com/is/content/samsung/p5/global/business/networks/insights/white-paper/network-slicing/200420_Samsung_Network_Slicing_Final.pdf ("Network slicing is comprised of various state-of-the-art technologies based on standardization and open source community . . . More recently, the Internet Engineering Task Force (IETF" has contributed a rich set of . . . data plane protocols (e.g., SRv6, SR-MPLS, etc.) . . . to support transport network slicing."); <https://www.samsung.com/global/business/networks/insights/press-release/0721-samsung-expands-its-lineup-of-sdn-solutions/>; https://images.samsung.com/is/content/samsung/assets/global/business/networks/insights/brochures/1020_maximize-network-flexibility-through-open-and-centralized-network-management/1020_maximize-network-flexibility-through-open-and-centralized-network-management.pdf ("Mobile Access SDN also provides segment routing per slice and contributes to help the operator reduce OPEX through plug and play functions and fast fault detection for troubleshooting"); <https://www.samsung.com/global/business/networks/solutions/network-slicing/>; <https://www.samsung.com/global/business/networks/insights/blog/samsung-vcore-is-at-the-core-of-5g-evolution/>; <https://www.samsung.com/global/business/networks/insights/press-release/0721-samsung-expands-its-lineup-of-sdn-solutions/>; <https://www.fierce-network.com/sponsored/vran-open-ran-and-ai-take-center-stage-mwc-2024>.

68. The '335 patent is valid and enforceable. A true and correct copy of the '335 patent is attached as Exhibit A.

69. Upon information and belief, Defendant has and continues to directly infringe at least claim 1 of the '335 patent by making, using, selling, importing and/or providing and causing to be used the Accused Instrumentalities.

70. Exemplary infringement analysis showing infringement of claim 1 of the '335 patent is set forth in Exhibit I. This infringement analysis is necessarily preliminary, as it is provided in advance of any discovery provided by Samsung with respect to the '335 patent. MRT reserves all rights to amend, supplement and modify this preliminary infringement analysis. Nothing in the attached chart should be construed as any express or implied contention or admission regarding the construction of any term or phrase of the claims of the '335 patent.

71. The Accused Instrumentalities infringed and continue to infringe claim 1 of the '335 patent during the pendency of the '335 patent.

72. MRT has been harmed by Samsung's infringing activities.

COUNT II – INFRINGEMENT OF U.S. PATENT NO. 10,476,788

73. The allegations set forth in the foregoing paragraphs are incorporated into this Second Claim for Relief.

74. On November 12, 2019, U.S. Patent No. 10,476,788 (“the '788 patent”), entitled “OUTSIDE-SCOPE IDENTIFIER-EQUIPPED ROUTING METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS” was duly and legally issued by the United States Patent and Trademark Office.

75. Plaintiff is the assignee and owner of the right, title and interest in and to the '788 patent, including the right to assert all causes of action arising under said patents and the right to any remedies for infringement of them, including all past infringement.

76. The '788 patent is valid and enforceable. A true and correct copy of the '788 patent is attached as Exhibit B.

77. Upon information and belief, Defendant has and continues to directly infringe at least claim 1 of the '788 patent by making, using, selling, importing and/or providing and causing to be used the Accused Instrumentalities.

78. Exemplary infringement analysis showing infringement of claim 1 of the '788 patent is set forth in Exhibit J. This infringement analysis is necessarily preliminary, as it is provided in advance of any discovery provided by Samsung with respect to the '788 patent. MRT reserves all rights to amend, supplement and modify this preliminary infringement analysis. Nothing in the attached chart should be construed as any express or implied contention or admission regarding the construction of any term or phrase of the claims of the '788 patent.

79. The Accused Instrumentalities infringed and continue to infringe claim 1 of the '788 patent during the pendency of the '788 patent.

80. MRT has been harmed by Samsung's infringing activities.

COUNT III – INFRINGEMENT OF U.S. PATENT NO. 10,594,594

81. The allegations set forth in the foregoing paragraphs are incorporated into this Third Claim for Relief.

82. On March 17, 2020, U.S. Patent No. 10,594,594 ("the '594 patent"), entitled "ROUTING METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS" was duly and legally issued by the United States Patent and Trademark Office.

83. Plaintiff is the assignee and owner of the right, title and interest in and to the '594 patent, including the right to assert all causes of action arising under said patents and the right to any remedies for infringement of them, including all past infringement.

84. The '594 patent is valid and enforceable. A true and correct copy of the '594 patent is attached as Exhibit C.

85. Upon information and belief, Defendant has and continues to directly infringe at least claim 1 of the '594 patent by making, using, selling, importing and/or providing and causing to be used the Accused Instrumentalities.

86. Exemplary infringement analysis showing infringement of claim 1 of the '594 patent is set forth in Exhibit K. This infringement analysis is necessarily preliminary, as it is provided in advance of any discovery provided by Samsung with respect to the '594 patent. MRT reserves all rights to amend, supplement and modify this preliminary infringement analysis. Nothing in the attached chart should be construed as any express or implied contention or admission regarding the construction of any term or phrase of the claims of the '594 patent.

87. The Accused Instrumentalities infringed and continue to infringe claim 1 of the '594 patent during the pendency of the '594 patent.

88. MRT has been harmed by Samsung's infringing activities.

COUNT IV – INFRINGEMENT OF U.S. PATENT NO. 10,652,150

89. The allegations set forth in the foregoing paragraphs are incorporated into this Fourth Claim for Relief.

90. On March 12, 2020, U.S. Patent No. 10,652,150 ("the '150 patent"), entitled "ROUTING METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS" was duly and legally issued by the United States Patent and Trademark Office.

91. Plaintiff is the assignee and owner of the right, title and interest in and to the '150 patent, including the right to assert all causes of action arising under said patents and the right to any remedies for infringement of them, including all past infringement.

92. The '150 patent is valid and enforceable. A true and correct copy of the '150 patent is attached as Exhibit D.

93. Upon information and belief, Defendant has and continues to directly infringe at least claim 1 of the '150 patent by making, using, selling, importing and/or providing and causing to be used the Accused Instrumentalities.

94. Exemplary infringement analysis showing infringement of claim 1 of the '150 patent is set forth in Exhibit L. This infringement analysis is necessarily preliminary, as it is provided in advance of any discovery provided by Samsung with respect to the '150 patent. MRT reserves all rights to amend, supplement and modify this preliminary infringement analysis. Nothing in the attached chart should be construed as any express or implied contention or admission regarding the construction of any term or phrase of the claims of the '150 patent.

95. The Accused Instrumentalities infringed and continue to infringe claim 1 of the '150 patent during the pendency of the '150 patent.

96. MRT has been harmed by Samsung's infringing activities.

COUNT V – INFRINGEMENT OF U.S. PATENT NO. 10,721,164

97. The allegations set forth in the foregoing paragraphs are incorporated into this Fifth Claim for Relief.

98. On July 21, 2020, U.S. Patent No. 10,721,164 ("the '164 patent"), entitled "ROUTING METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS WITH MULTIPLE SEQUENCES OF IDENTIFIERS" was duly and legally issued by the United States Patent and Trademark Office.

99. Plaintiff is the assignee and owner of the right, title and interest in and to the '164 patent, including the right to assert all causes of action arising under said patents and the right to any remedies for infringement of them, including all past infringement.

100. The '164 patent is valid and enforceable. A true and correct copy of the '164 patent is attached as Exhibit E.

101. Upon information and belief, Defendant has and continues to directly infringe at least claim 1 of the '164 patent by making, using, selling, importing and/or providing and causing to be used the “Accused Instrumentalities.

102. Exemplary infringement analysis showing infringement of claim 1 of the '164 patent is set forth in Exhibit M. This infringement analysis is necessarily preliminary, as it is provided in advance of any discovery provided by Samsung with respect to the '164 patent. MRT reserves all rights to amend, supplement and modify this preliminary infringement analysis. Nothing in the attached chart should be construed as any express or implied contention or admission regarding the construction of any term or phrase of the claims of the '164 patent.

103. The Accused Instrumentalities infringed and continue to infringe claim 1 of the '164 patent during the pendency of the '164 patent.

104. MRT has been harmed by Samsung's infringing activities.

COUNT VI – INFRINGEMENT OF U.S. PATENT NO. 10,735,306

105. The allegations set forth in the foregoing paragraphs are incorporated into this Sixth Claim for Relief.

106. On August 4, 2020, U.S. Patent No. 10,735,306 (“the '306 patent”), entitled “ROUTING METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS” was duly and legally issued by the United States Patent and Trademark Office.

107. Plaintiff is the assignee and owner of the right, title and interest in and to the '306 patent, including the right to assert all causes of action arising under said patents and the right to any remedies for infringement of them, including all past infringement.

108. The '306 patent is valid and enforceable. A true and correct copy of the '306 patent is attached as Exhibit F.

109. Upon information and belief, Defendant has and continues to directly infringe at least claim 27 of the '306 patent by making, using, selling, importing and/or providing and causing to be used the Accused Instrumentalities.

110. Exemplary infringement analysis showing infringement of claim 27 of the '306 patent is set forth in Exhibit N. This infringement analysis is necessarily preliminary, as it is provided in advance of any discovery provided by Samsung with respect to the '306 patent. MRT reserves all rights to amend, supplement and modify this preliminary infringement analysis. Nothing in the attached chart should be construed as any express or implied contention or admission regarding the construction of any term or phrase of the claims of the '306 patent.

111. The Accused Instrumentalities infringed and continue to infringe claim 27 of the '306 patent during the pendency of the '306 patent.

112. MRT has been harmed by Samsung's infringing activities.

COUNT VII – INFRINGEMENT OF U.S. PATENT NO. 11,196,660

113. The allegations set forth in the foregoing paragraphs are incorporated into this Seventh Claim for Relief.

114. On December 7, 2021, U.S. Patent No. 11,196,660 ("the '660 patent"), entitled "ROUTING METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS" was duly and legally issued by the United States Patent and Trademark Office.

115. Plaintiff is the assignee and owner of the right, title and interest in and to the '660 patent, including the right to assert all causes of action arising under said patents and the right to any remedies for infringement of them, including all past infringement.

116. The '660 patent is valid and enforceable. A true and correct copy of the '660 patent is attached as Exhibit G.

117. Upon information and belief, Defendant has and continues to directly infringe at least claim 11 of the '660 patent by making, using, selling, importing and/or providing and causing to be used the Accused Instrumentalities.

118. Exemplary infringement analysis showing infringement of claim 11 of the '660 patent is set forth in Exhibit O. This infringement analysis is necessarily preliminary, as it is provided in advance of any discovery provided by Samsung with respect to the '660 patent. MRT reserves all rights to amend, supplement and modify this preliminary infringement analysis. Nothing in the attached chart should be construed as any express or implied contention or admission regarding the construction of any term or phrase of the claims of the '660 patent.

119. The Accused Instrumentalities infringed and continue to infringe claim 11 of the '660 patent during the pendency of the '660 patent.

120. MRT has been harmed by Samsung's infringing activities.

COUNT VIII – INFRINGEMENT OF U.S. PATENT NO. 12,058,042

121. The allegations set forth in the foregoing paragraphs are incorporated into this Eighth Claim for Relief.

122. On August 6, 2024, U.S. Patent No. 12,058,042 ("the '042 patent"), entitled "ROUTING METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS" was duly and legally issued by the United States Patent and Trademark Office.

123. Plaintiff is the assignee and owner of the right, title and interest in and to the '042 patent, including the right to assert all causes of action arising under said patents and the right to any remedies for infringement of them, including all past infringement.

124. The '042 patent is valid and enforceable. A true and correct copy of the '042 patent is attached as Exhibit H.

125. Upon information and belief, Defendant has and continues to directly infringe at least claim 1 of the '042 patent by making, using, selling, importing and/or providing and causing to be used the Accused Instrumentalities.

126. Exemplary infringement analysis showing infringement of claim 1 of the '042 patent is set forth in Exhibit P. This infringement analysis is necessarily preliminary, as it is provided in advance of any discovery provided by Samsung with respect to the '042 patent. MRT reserves all rights to amend, supplement and modify this preliminary infringement analysis. Nothing in the attached chart should be construed as any express or implied contention or admission regarding the construction of any term or phrase of the claims of the '042 patent.

127. The Accused Instrumentalities infringed and continue to infringe claim 1 of the '042 patent during the pendency of the '042 patent.

128. MRT has been harmed by Samsung's infringing activities.

JURY DEMAND

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, MRT demands a trial by jury on all issues triable as such.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff MRT demands judgment for itself and against Samsung as follows:

- A. An adjudication that the Samsung has infringed the Patents-in-Suit;
- B. An award of damages to be paid by Samsung adequate to compensate MRT for Samsung's past infringement of the Patents-in-Suit, and any continuing or future infringement

through the date such judgment is entered, including interest, costs, expenses and an accounting of all infringing acts including, but not limited to, those acts not presented at trial;

C. A declaration that this case is exceptional under 35 U.S.C. § 285, and an award of MRT's reasonable attorneys' fees; and

D. An award to MRT of such further relief at law or in equity as the Court deems just and proper.

Dated: October 9, 2024

DEVLIN LAW FIRM LLC

/s/ Timothy Devlin

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