IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

EXAFER LTD., Plaintiff, v. MICROSOFT CORPORATION, Defendant.	Case No. 6:19-cv-00687 Jury Trial Demanded

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Exafer Ltd. ("Exafer"), by and through its counsel files this Complaint against Microsoft Corporation ("Microsoft") for patent infringement of United States Patent Nos. 8,325,733 and 8,971,335 (the "patents-in-suit") (Exhibits 1-2) and alleges as follows:

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 Exafer Ltd. is a privately held Israeli limited company with its principal place of business at 131 Ramot Meir, Israel.

3. On information and belief, Defendant Microsoft Corporation is incorporated under the laws of Washington State with its principal place of business at

1 Microsoft Way, Redmond, WAS 98052. Microsoft may be served with process through its registered agent Corporation Service Company, 211 East 7th Street, Suite 620, Austin, Texas 78701.

4. On information and belief, Microsoft has been registered to do business in the state of Texas under Texas SOS file number 0010404606 since about March 1987.

5. On information and belief, Microsoft has had a regular and established place of business in this judicial district since at least as early as 2002.

JURISDICTION AND VENUE

6. This Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338(a) because this action arises under the patent laws of the United States, 35 U.S.C. §§ 1 *et seq.*

7. Microsoft is subject to this Court's personal jurisdiction in accordance with due process and/or the Texas Long Arm Statute because, in part, Microsoft "[r]ecruits Texas residents, directly or through an intermediary located in this state, for employment inside or outside this state." *See* Tex. Civ. Prac. & Rem. Code § 17.042.

8. Microsoft has already admitted that this Court has personal jurisdiction over it in patent litigations bearing docket numbers: 6:19-cv-00399-ADA and 1:19-cv-00874-ADA.

9. This Court also has personal jurisdiction over Microsoft because it committed and continues to commit acts of direct and indirect infringement in this judicial district in violation of at least 35 U.S.C. §§ 271(a) and (b). In particular, on information and belief, Microsoft has, made, used, offered to sell and sold licenses for,

or access to, Azure Platform in this judicial district, and has induced others to use the Azure Platform in this judicial district.

10. As used herein, the term "Azure Platform" is defined to include "(1) the Microsoft Azure cloud computing platform, (2) the hardware and software systems and components of the Microsoft Azure cloud computing platform, and (3) the numerous cloud-based features, products, services, and systems that are dependent upon or that leverage the Microsoft Azure cloud computing platform."

11. On information and belief, Microsoft is subject to the Court's personal jurisdiction, in part, because it regularly conducts and solicits business, or otherwise engages in other persistent courses of conduct in this district, and/or derives substantial revenue from the sale and distribution of infringing goods and services provided to individuals and businesses in this district.

12. This Court has personal jurisdiction over Microsoft because, *inter alia*, Microsoft, on information and belief: (1) has substantial, continuous, and systematic contacts with this State and this judicial district; (2) owns, manages, and operates facilities in this State and this judicial district; (3) enjoys substantial income from its operations and sales in this State and this judicial district; (4) employs Texas residents in this State and this judicial district, and (5) solicits business and markets products, systems and/or services in this State and judicial district including, without limitation, related to the infringing Azure Platform.

13. On information and belief, Microsoft derives substantial revenue within the State of Texas and within this judicial district from the sale of the infringing Azure Platform.

14. Venue is proper pursuant to at least 28 U.S.C. § 1400(b), at least because Microsoft, either directly or through its agents, has committed acts of infringement in this district, and has a regular and established place of business in this district.

15. In fact, this district was deemed to be a proper venue for patent cases against Microsoft in actions bearing docket numbers: 6:19-cv-00399-ADA and 1:19-cv-00874-ADA.

16. On information and belief, Microsoft maintains a variety of regular and established business locations in the judicial district including its Corporate Sales Office Locations, Retail Store Locations, and Datacenter Locations (hereinafter collectively referred to as "Microsoft's Regular and Established Business Locations").

17. On information and belief, Microsoft operates multiple corporate sales offices in the judicial district, and these offices constitute regular and established places of business.

18. On information and belief, Microsoft employs hundreds of employees within its corporate sales offices located in the judicial district.

19. Namely, on information and belief, Microsoft has an established place of business in this judicial district known as "Corporate Sales Office: Austin" located at 10900 Stonelake Boulevard, Suite 225, Austin, TX, USA 78759. [1]

20. On information and belief, Microsoft's "Corporate Sales Office: Austin" location was assessed by the Travis County Appraisal District in 2019 to have a market value of over $2.3 Million dollars. [2]

21. On information and belief, Microsoft's "Corporate Sales Office: Austin" location features clear signage demonstrating Microsoft's established business operations at that location, as demonstrated by the photograph below which is accessible through the Google Maps service:

[1] *See* https://www.microsoft.com/en-us/about/officelocator?Location=78258

[2] *See* http://propaccess.traviscad.org/clientdb/Property.aspx?prop_id=434688

22. On information and belief, Microsoft's "Corporate Sales Office: Austin" location has been operational at least since June of 2017.

23. On information and belief, Microsoft has another established place of business in this judicial district known as "Corporate Sales Office: San Antonio" located at Concord Park II, 401 East Sonterra Boulevard, Suite 300, San Antonio, TX, USA 78258.[3]

24. On information and belief, affixed to the exterior of Microsoft's "Corporate Sales Office: San Antonio" is signage featuring the "Microsoft" logo as seen in the below image from Google Map's Streetview.

[3] *See* https://www.microsoft.com/en-us/about/officelocator?Location=78258

25. On information and belief, Microsoft markets, offers to sell, or sells products through its corporate sales offices located in this judicial district including but not limited to the accused Azure Platform.

26. On information and belief, Microsoft has placed advertisements for Austin based employment positions, including an Education Cloud Program Manager, which are focused, in part, on marketing Microsoft's accused Azure Platform.[4]

27. On information and belief, Microsoft markets its accused Azure Platform, through its corporate sales offices to customers and potential customers located within this judicial district.

28. Microsoft operates multiple retail stores in this judicial district, which also constitute regular and established places of business. [5]

29. On information and belief, Microsoft employs dozens of employees within its retail stores located in the judicial district.

30. On information and belief, Microsoft has a regular and established retail store locations in this judicial district known as "Microsoft Retail Store: The Domain" located at 3309 Esperanza Crossing, Suite 104, Austin, TX, USA 78758,[6] and "Microsoft

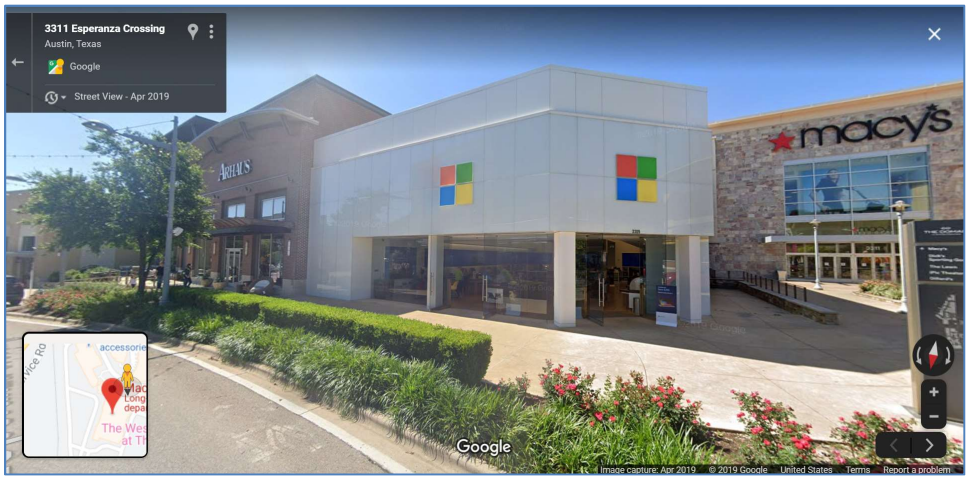
[4] *See* https://careers.microsoft.com/us/en/job/691102/Education-Cloud-Program-Manager

[5] *See* https://www.microsoft.com/en-us/about/officelocator?Location=78258

[6] *See* https://www.microsoft.com/en-us/about/officelocator?Location=78258

Retail Store: The Shops at La Cantera" located at 15900 La Cantera Parkway, Suite 6560, San Antonio, TX, USA 78256[7] ("Microsoft's Retail Locations").

31. On information and belief, affixed to the exterior of Microsoft's Retail Locations is signage featuring Microsoft's red, green, blue, and yellow logo as seen in the below images.



[7] *See* https://www.microsoft.com/en-us/about/officelocator?Location=78258

32. On information and belief, Microsoft has continuously operated a retail store location in this district at least since as early as December of 2014.

33. On information and belief, in addition to selling goods and services, Microsoft utilizes its Retail Locations for educational and marketing purposes, to market and increase awareness of the Azure Platform.

34. On information and belief, many of Microsoft's customers, who use the accused Azure Platform reside in the State of Texas and in this judicial district.

35. On information and belief, Microsoft has, offered to sell and sold licenses for, or access to, the accused Azure Platform to customers who reside in the State of Texas and in this judicial district.

36. On information and belief, Microsoft maintains a list of certified learning partners in this judicial district that offer training solutions and "Microsoft Certification preparation to help you take your Microsoft technology skills to the next level."[8] On information and belief, ONLC Training Centers is certified by Microsoft as a Learning Partner who employs "Microsoft Certified Trainers."[9]

37. On information and belief, Microsoft certified educational centers including an ONLC Training Center located at 700 Lavaca Street, Suite 1400, Austin, Texas 78701, employ Microsoft Certified Trainers who teach Microsoft's customers who

[8] *See* https://www.microsoft.com/en-us/learning/partners.aspx

[9] *See* https://www.onlc.com/microsoft.asp

work and reside in the judicial district on the use and operation of the accused Azure Platform.[10]

38. On information and belief, Microsoft has spent at least tens of millions of dollars on networking and server infrastructure to support its accused Azure Platform that is located in the State of Texas and in this judicial district.

39. On information and belief, Microsoft owns and operates multiple datacenters in the judicial district, including without limitation data centers located at 5150 Rogers Road, San Antonio, TX 78251; 5200 Rogers Rd, San Antonio, TX 78251; 3823 Weisman Blvd, San Antonio, TX 78251; and 15000 Lambda Drive, San Antonio, TX 782245, (hereinafter "Microsoft's Datacenter Locations").

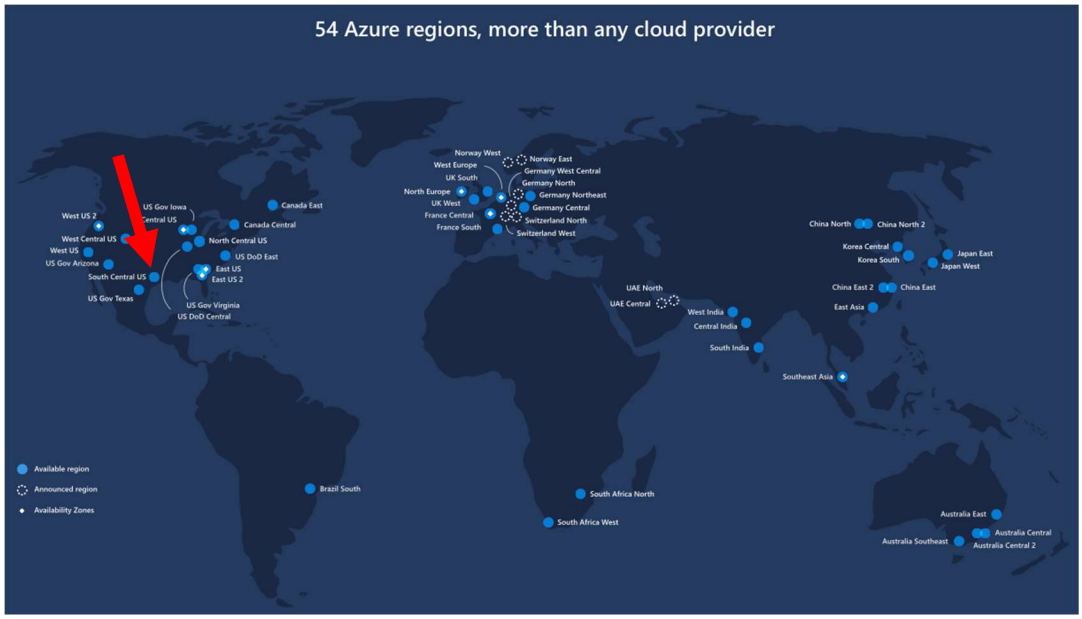
40. On information and belief, Microsoft utilizes its datacenter locations in this judicial district as regular and established places of business.

41. On information and belief, on or about November 9th, 2017 the San Antonio Business Journal reported that "Chevron USA Inc., a subsidiary of Chevron Corp., sold its 5200 Rogers Road datacenter to Microsoft Corp. on Oct. 31." *See* "Microsoft buys Chevron's Datacenter in San Antonio" (Exhibit 3). On information and belief, as of the publication date of that article, Microsoft already "owned four datacenters in San Antonio and leased space inside two other co-location centers." *Id.* On information and belief, the sale of 5200 Rogers Road datacenter brought "Microsoft's total datacenter usage in San Antonio to seven different buildings." *Id.*

[10] *See* https://www.onlc.com/training/azure/austin-downtown-tx.htm

42. On information and belief, Microsoft built "an Azure cloud environment inside Chevron's old datacenter." *Id*.

43. On information and belief, Microsoft's Azure Cloud Network includes 54 Azure regions worldwide. On information and belief, one of those regions is known as "South Central US".



See https://azure.microsoft.com/en-us/global-infrastructure/regions/

44. On information and belief, a substantial portion of the network and server infrastructure related to the "South Central US" Azure region is housed and operated in the Microsoft's Datacenter Locations.

45. Microsoft has acknowledged in publicly available documents that the "SouthCentral US" Azure region is hosted within one or more of the Microsoft Datacenter Locations. *See* "Windows Azure for G Cloud" (Exhibit 4).[11]

46. On information and belief, the relationship between "South Central US" Azure region and one or more of the Microsoft Datacenter Locations was publicly reported on the website datacenterknowledge.com on or about September 4, 2018. *See* "Microsoft Blames 'Severe Weather' for Azure Cloud Outage" (Exhibit 5). On information and belief, on or about September 4, 2018, a "severe weather event" led to an outage of some Azure resources in the "South Central US availability region" which is "hosted in San Antonio." *Id*.

47. On information and belief, one or more of the Microsoft Datacenter Locations houses server and network infrastructure related to the Azure Platform.

48. On information and belief, a listing of Azure related products and services, which are available through the Azure Platform in the US South Central Azure Region is published on the Microsoft's web site.[12] On information and belief, one or more of the Azure related products and services listed on Microsoft's website rely on the accused Azure Platform.

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[11] http://download.microsoft.com/documents/uk/government/G-Cloud-v3-Windows-Azure-Platform-Service-Definition.pdf. *See* p. 36.

[12] *See* https://azure.microsoft.com/en-us/global-infrastructure/services/?regions=us-south-central&products=all

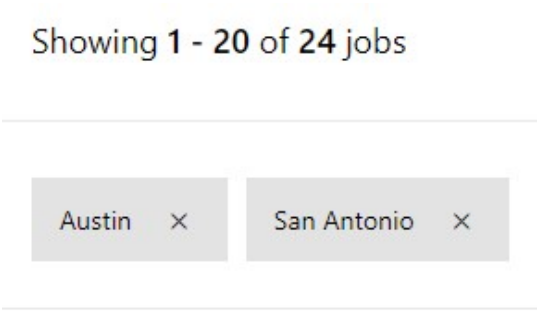
49. On information and belief, Microsoft uses infringing network and server systems as part of its infringing Azure Platform, including specifically in the Microsoft Datacenter Locations.

50. On information and belief, Microsoft offers cloud services, which are enabled by infringing network and server systems that are located within the Microsoft Datacenter Locations.

51. On information and belief, many of the potential customers, customers, and users of the accused Azure Platform are located in this judicial district.

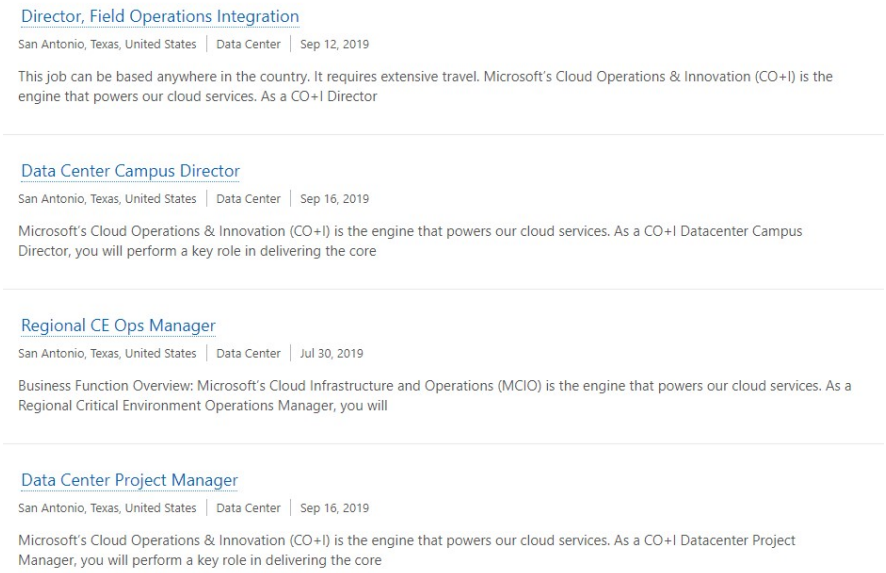
52. On information and belief, Microsoft uses Microsoft's Regular and Established Business Locations as a regular and established place of business because these location are home to Microsoft's Cloud Infrastructure and Operations (MCIO) Team, Datacenter Operations Group, engineering teams and corporate and retail sales teams.

53. On information and belief, Microsoft has recently advertised 24 open positions in the judicial district on its careers.microsoft.com website:



See https://careers.microsoft.com/us/en/c/data-center-jobs

54. On information and belief, Microsoft has posted job advertisements for positions in this judicial district, including: Datacenter Campus Director, Director of Field Operations Integration, Datacenter Project Manager, Regional Critical Environment Operations Manager, IT Operations Manager, Datacenter Operations/Electrical Engineer, Mechanical Engineer, Datacenter Hardware Engineer.



Director, Field Operations Integration

San Antonio, Texas, United States | Data Center | Sep 12, 2019

This job can be based anywhere in the country. It requires extensive travel. Microsoft's Cloud Operations & Innovation (CO+I) is the engine that powers our cloud services. As a CO+I Director

Data Center Campus Director

San Antonio, Texas, United States | Data Center | Sep 16, 2019

Microsoft's Cloud Operations & Innovation (CO+I) is the engine that powers our cloud services. As a CO+I Datacenter Campus Director, you will perform a key role in delivering the core

Regional CE Ops Manager

San Antonio, Texas, United States | Data Center | Jul 30, 2019

Business Function Overview: Microsoft's Cloud Infrastructure and Operations (MCIO) is the engine that powers our cloud services. As a Regional Critical Environment Operations Manager, you will

Data Center Project Manager

San Antonio, Texas, United States | Data Center | Sep 16, 2019

Microsoft's Cloud Operations & Innovation (CO+I) is the engine that powers our cloud services. As a CO+I Datacenter Project Manager, you will perform a key role in delivering the core

See e.g. https://careers.microsoft.com/us/en/c/data-center-jobs

55. On information and belief, thousands of customers who rely on the infringing datacenter infrastructure that Microsoft's engineering and operations teams have built, reside in this judicial district.

56. On information and belief, the accused Azure Platform, was made by, was developed by, was marketed by, or was serviced by, employees located in the judicial district who work at one or more of Microsoft's Regular and Established Business Locations.

57. On information and belief, Microsoft's Regular and Established Business Locations are regular and established business locations because these locations are where numerous important Microsoft employees are located, including but not limited to Microsoft employees holding the following titles: Director of Product Management, Director of Solutions Sales, Director of Global Commissioning, Regional Director of Datacenter Operations, Program Manager, Senior Principal Software Engineering Manager, Regional Logistics Program Manger, Global Technical Account Manager, Regional OPS Assurance Manager, Construction Program Manager, Facilities Operations Manager, Field Operations DC Manager, Critical Environment Operational Excellence Program Manager, Senior Technical Delivery Manager, Global Lease Program Manager, Critical Environments Program Manager, Principal Program Manager, Regional Program Manager, Store Manager, Senior EHS Manager, Senior Mechanical Engineer, Information Technology and Operations Service Engineer, Senior Premier Field Engineer, Office 365 SMB Engineer, Service Engineer, Principal Software Development Engineer, Critical Facilities Engineer, Mechanical Engineer, System Center Configuration Management Engineer, Premier Field Engineer, Senior Solutions Architect, World Wide Secure Infrastructure Solution Architect, National Cloud Solution Architect, Delivery Architect, Digital Architect, Cloud Solutions Architect, Senior Datacenter Technician, Datacenter Lead, and Partner Technology Strategist.[13]

[13] *See e.g.* https://www.linkedin.com/search/results/people/?facetCurrentCompany=%5B%221

58. On information and belief, publicly-available information lists 36 H-1B labor condition applications that Microsoft filed for persons employed in Austin, Texas since 2001. *See* Exhibit 6.[14] On information and belief, publicly-available information lists 16 H-1B labor condition applications that Microsoft filed for persons employed in San Antonio, Texas since 2010. *See* Exhibit 7.[15]

59. On information and belief, the workers Microsoft employs in the judicial district are highly specialized and important to the regular operation of Microsoft because workers holding an H-1B visa are employed in a specialty occupation that requires a "theoretical and practical application of a body of highly specialized knowledge . . . and attainment of a bachelor's or higher degree in the specific specialty. . . . " *See generally* 8 U.S.C. § 1184.

BACKGROUND

60. The patents-in-suit are the result of Exafer's years of research, design and development of innovative and proprietary networking technologies, which were led by Alon Lelcuk, Exafer's co-founder and an inventor of the patents-in-suit.

035%22%5D&facetGeoRegion=%5B%22us%3A724%22%5D&origin=FACETED_SEARCH

[14] *See* https://h1bsalary.online/index.php?searchtext=MICROSOFT+CORPORATION&year=&minsalary=&state=&worksite_city=Austin%2CTX&job_title=

[15] *See* https://h1bsalary.online/index.php?searchtext=MICROSOFT%20CORPORATION&worksite_city=san%20antonio,TX

61. Mr. Lelcuk has worked as a senior executive in technology start-ups and corporations for over 25 years. In the early 1990s, Mr. Lelcuk founded the first commercial Israeli company with a connection to the Internet. Mr. Lelcuk also helped develop networking systems for some of the largest governmental and non-governmental network deployments in Israel.

62. In or around, May of 2008 Mr. Lelcuk began developing technology related to out of band control planes for network data flows.

63. In May 2009, Mr. Lelcuk co-founded Exafer along with co-inventor Amir Harel in order to commercialize their innovations.

64. The patents-in-suit relate, in part, to Software Defined Networking, which is an approach to computer network management that enables dynamic programmatically efficient network configuration to improve network performance and monitoring.

United States Patent No. 8,325,733

65. On December 4, 2012, the United States Patent and Trademark Office ("USPTO") duly and legally issued United States Patent No. 8,325,733 ("the '733 patent") entitled "Method and System For Layer 2 Manipulator and Forwarder" to inventors Amir Harel, Alon Lelcuk, Ronit Nossenson, and Avinoam Zakai. A true and correct copy of the '733 patent is attached as Exhibit 1.

66. The '733 patent is presumed valid under 35 U.S.C. § 282.

67. Exafer owns all rights, title, and interest in the '733 patent.

68. Exafer has not granted a license to Microsoft relating to the '733 patent.

69. The abstract of the '733 patent describes a "method and system for forwarding frames of a flow via a layer 2 forwarder and manipulator (L2FM) for improving network utilization and improving users experience by reducing the latency associated with the flow. When a new flow is identified, forward control information for frames of the new flow is obtained. The forward control information can include re-writing of at least one field in an original header of the frames of the new flow. At least one field in an original header of the frames of the new flow is manipulated according to the obtained forward control information, and the manipulated frames of the new flow are forwarded accordingly." *See* '733 patent, Abstract.

70. The '733 patent disclosure provided, *inter alia*, solutions for problems with, and improvements upon, existing computer networks and how such networks operate. For example, the '733 patent provides:

> [T]here are no remotely controlled supporting admission mechanisms that are capable of communicating with a forwarding device for delivering control information on a per session basis or per flow basis. Meaning there is no method that verifies per each flow/session if the path chosen (forward information) is optimal. . . .
>
> [Deep Packet Inspection] uses multi dimension classification are computational intensive, consume a lot of power and expensive while generally delivering more than an order magnitude slower throughput.

See '733 patent, Specification at col. 2, ll. 34-41.

71. The '733 patent then also provides:

> Therefore there is a need for a novel system and method that will control and manipulate forwarding rules and information of flows on a per session basis or per flow basis at intelligent switches. A need for a novel system and method that will check and verify per flow and/or per session basis if the

> control information can be optimized and change it accordingly at different novel intelligent switches along communication paths.

See '733 patent, Specification at col. 2, ll. 60-67.

72. The '733 patent solves various technological problems inherent in computer networks and enables computer networks to, among other things, (1) function more efficiently, (2) be more agile in meeting customers' cloud computing needs, and (3) maximize the use of server and network hardware.

United States Patent No. 8,971,335

73. On March 3, 2015, the USPTO duly and legally issued United States Patent No. 8,971,335 ("the '335 patent") entitled "System and Method for Creating a Transitive Optimized Flow Path" to inventors Amir Harel, Alon Lelcuk, Ronit Nossenson, and Avinoam Zakai. A true and correct copy of the '335 patent is attached as Exhibit 2.

74. The '335 patent is presumed valid under 35 U.S.C. § 282.

75. Exafer owns all rights, title and interest in the '335 patent.

76. Exafer has not granted a license to Microsoft relating to the '335 patent.

77. The abstract of the '335 patent describes how "[t]raffic paths based on common devices available in a network are optimized, controlled, manipulated and created. The new paths used to optimize are not limited to the original OSI layer and/or original networks. Thus, various kinds of users/computers/devices, working in the same or in different abstraction layer networks, are combined into one collective virtual network providing the ability to compute and utilize the best (optimal) traffic path for each flow at each given time. The traffic path can be constructed especially for each

flow. All or most devices and layer networks are combined in a collective virtual network when computing and constructing an optimized path for a flow. Thus, there is no need to add additional headers to a flow thereby eliminating the addition of overhead to the flow. *See* '335 patent, abstract.

78. The '335 patent disclosure provided, *inter alia*, solutions for problems with, and improvements upon, existing computer networks and how such networks operate. For example, the '335 patent provides:

> In common communication networks it is possible to change a path of a flow to a different network and/or to a different OSI layer. In such communication networks, the flow is encapsulated and additional headers are added to it thereby increasing the overhead of the data packets of the flow.…
>
> This operation results in increasing the overhead of the data packets of the flow. Communication networks that add additional headers are fast but not sophisticated networks. Flows can accumulate many headers across the path that it needs to be transferred through.…
>
> Adding more headers (encapsulation of the data traffic) increases the bandwidth consumption of the flow. Furthermore existing communication networks that calculate an optimized path and modify the flow accordingly can require edge devices at the edges of the flow path. The edge devices are needed for encapsulating and\or de-encapsulation and adding additional headers with forwarding information in order to divert the flow to a new path according to the optimization plane.…
>
> Common communication networks may also require a link management system and or method because they create a new network on top of existing networks, creating more complexity and so on.

See '335 patent, Specification at col. 3, ll. 22-54.

79. The '335 patent then also provides:

> Therefore there is a need for an elegant, sophisticated, and uncomplicated method and system that will enable creating an optimized path for a flow with minimal or no overhead.

See '335 patent, Specification at col. 3, ll. 54-57.

80. The '335 patent solves various technological problems inherent in computer networks and enables computer networks to, among other things, (1) function more efficiently, (2) be more agile in meeting customers' cloud computing needs, and (3) maximize the use of server and network hardware.

Microsoft's Azure Platform

81. On information and belief, Microsoft is the developer, owner, and operator of the Azure Platform,[16] which is available in 140 countries and 54 regions worldwide.[17]

82. On information and belief, in order to accommodate the scale of the Azure Platform, Microsoft has built datacenters throughout the United States and in this judicial district, which enable Microsoft to offer the accused Azure Platform to its customers.

CLAIMS FOR RELIEF

Count I – Infringement of United States Patent No. 8,325,733

83. Exafer repeats, realleges, and incorporates by reference, as if fully set forth here, the allegations of the preceding paragraphs, as set forth above.

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[16] *See* https://azure.microsoft.com/en-us/overview/what-is-azure/

[17] *See* https://azure.microsoft.com/en-us/global-infrastructure/regions/

84. Microsoft makes, uses, offers to sell access to, and sells access to the accused Azure Platform. The Azure Platform infringes, literally and/or under the doctrine of equivalents, at least claim 26 of the '733 patent.

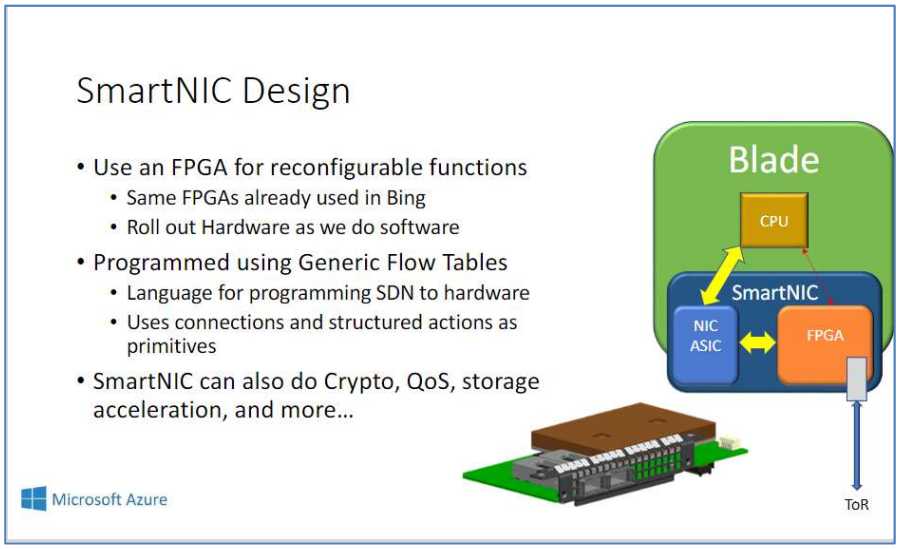
85. Claim 26 of the '733 patent provides as follows:

> 26. A method for forwarding frames of a flow via a layer 2 forwarder and manipulator (L2FM), the method comprising:
>
> a. identifying, at the L2FM, one or more first frames of a new flow;
>
> b. obtaining forward control information for frames of the new flow, wherein the forward control information includes re-writing of at least one field in an original header of the frames of the new flow, wherein obtaining forward control information is done out of band;
> c. changing the at least one field in an original header of the frames of the new flow according to the obtained forward control information; and
>
> d. forwarding the frames of the new flow according to the forward control information;
>
> wherein at least portion of the control information is obtained from a remote-admission-and-information controller (RAIC).

See '733 patent, Claim 26.

86. On information and belief, the Azure Platform comprises a layer 2 forwarder and manipulator (L2FM) that employs a method for forwarding frames of a flow.

87. On information and belief, the L2FMs of the Azure Platform, include without limitation, Azure Smart Network Interface Cards ("Azure SmartNICs") which are integrated within the Azure Platform's servers:



See "Accelerated SDN in Azure" Presentation, Open Networking Summit 2017 Conference, Slide 14.[18] (Exhibit 8).

88. On information and belief, the Azure Platform forwards frames of flows using at least the Azure SmartNICs:

[18] Available for download at http://events17.linuxfoundation.org/sites/events/files/slides/ONS%202017%20Slides.pdf

> We present Azure Accelerated Networking (AccelNet), our solution for offloading host networking to hardware, using custom Azure SmartNICs based on FPGAs. We define the goals of AccelNet, including programmability comparable to software, and performance and efficiency comparable to hardware. We show that FPGAs are the best current platform for offloading our networking stack as ASICs do not provide sufficient programmability, and embedded CPU cores do not provide scalable performance, especially on single network flows.

See Firestone, Daniel, et al. "Azure accelerated networking: SmartNICs in the public cloud." *15th {USENIX} Symposium on Networked Systems Design and Implementation* ({NSDI} 18). 2018 at p. 1 (Exhibit 9).[19] *See also* Firestone, Daniel. "{VFP}: A Virtual Switch Platform for Host {SDN} in the Public Cloud." *14th {USENIX} Symposium on Networked Systems Design and Implementation* ({NSDI} 17). 2017 (Exhibit 10). [20]

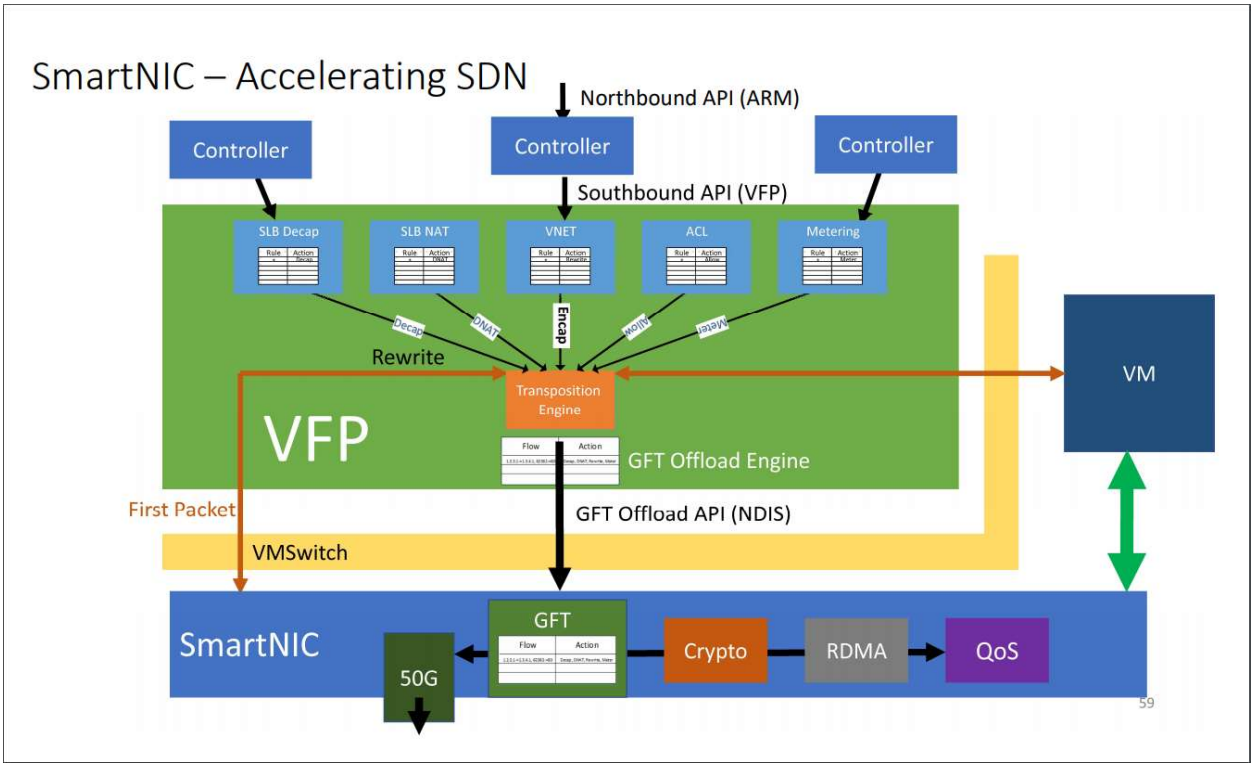
89. On information and belief, components of the Azure Platform including, but not limited to, the Virtual Filtering Platform ("VFP") Packet Processor software component and the SmartNIC, identify one or more first frames of a new flow when a new network traffic flow arrives at or is generated by the Azure Platform:

[19] https://www.microsoft.com/en-us/research/uploads/prod/2018/03/Azure_SmartNIC_NSDI_2018.pdf.

[20] https://www.microsoft.com/en-us/research/wp-content/uploads/2017/03/vfp-nsdi-2017-final.pdf.

> *6.1.1 Unified FlowIDs*
>
> VFP's packet processor begins with parsing. The relevant fields to parse are all those which can be matched in conditions (from §5.3.1). One each of an L2/L3/L4 header (as defined in table 1) form a header group, and the relevant fields of a header group form a single FlowID. The tuple of all FlowIDs in a packet is a Unified FlowID (UFID) – the output of the parser.

See Ex. 10 at Section 6.1.1.

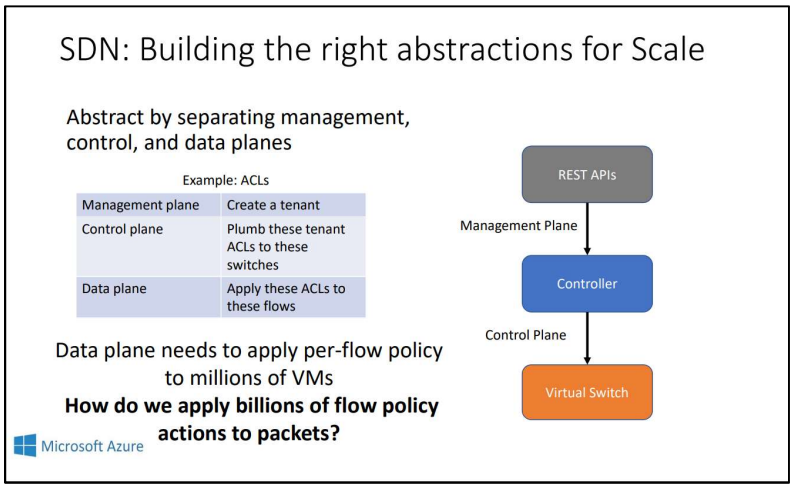


See also "Accelerating Host Networking in the Cloud" Presentation, Slide 59.[21] (Exhibit 11).

[21] Available for download at http://events17.linuxfoundation.org/sites/events/files/slides/ONS%202017%20Slides.pdf

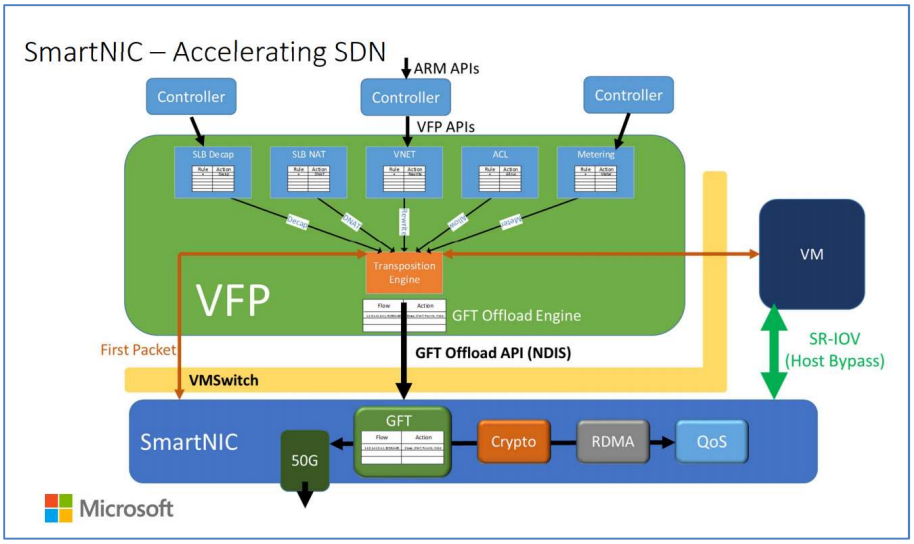
90. On information and belief, components of the Azure Platform including, but not limited to servers and Azure SmartNICs, obtain forward control information for frames of new flows from components of the Azure Platform including, but not limited to controllers.

91. On information and belief, components of the Azure Platform including, but not limited to, servers, Azure SmartNICs, and virtual switch software, obtain forward control information for frames of new flows from components of the Azure Platform including, but not limited to controllers:



See Ex. 8 at Slide 7. [22]

[22] *See also* Ex. 10 at Section 5.1 ("Since our controllers generally want to program policy on behalf of a VM or VNIC, this clean separation of ports allows controllers to independently manage policy on different VMs, and instantiate and manage flow tables ….")

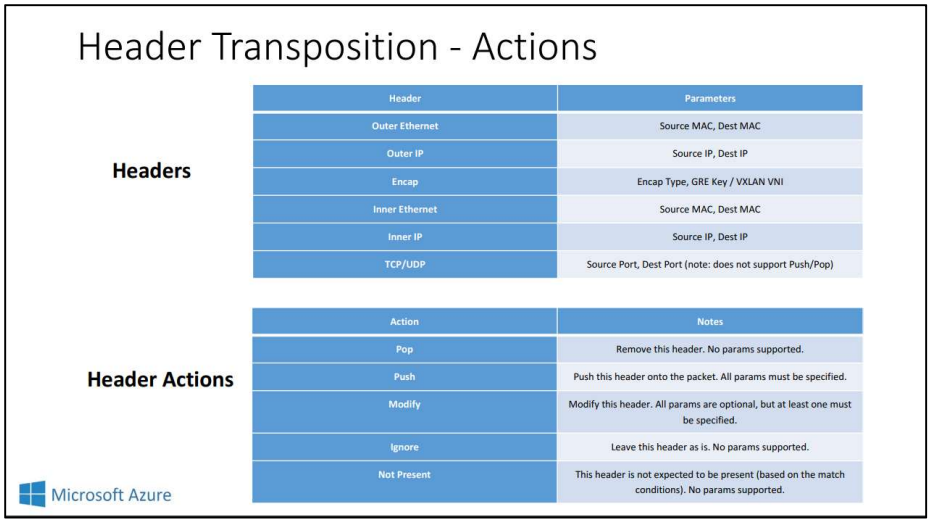


See "Azure Accelerated Networking: SmartNICs in the Public Cloud," NSDI '18 Conference, Slide No. 23.[23] (Exhibit 12).

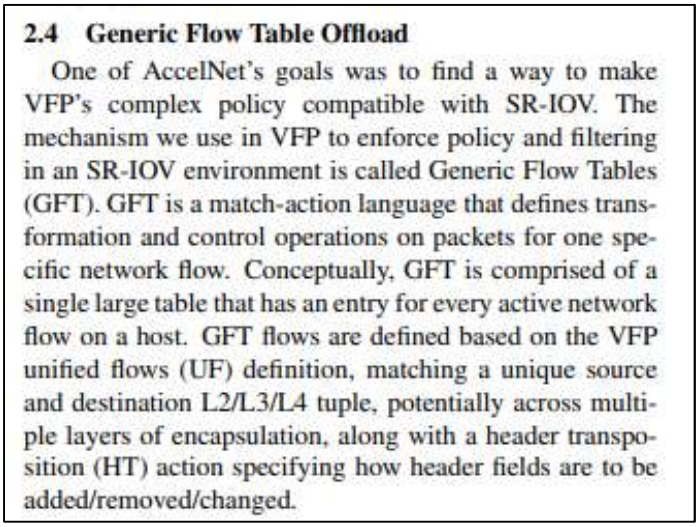
92. On information and belief, "VFP's core programming model is based on a hierarchy of VFP objects that controllers can create and program to specify their SDN policy." *See* Ex. 10 at Section 5.

93. On information and belief, the forward control information obtained by components of the Azure Platform including, but not limited to, servers, the virtual switch software, and the Azure SmartNICs, includes instructions for re-writing at least one field in an original header of the frames of the new flow:

[23] https://www.usenix.org/sites/default/files/conference/protected-files/nsdi18_slides_firestone.pdf



See "Virtual Filtering Platform: A retrospective on 8 years of shipping Host SDN in the Public Cloud," NSDI '17 Conference, Slide 32 (Exhibit 13).[24]



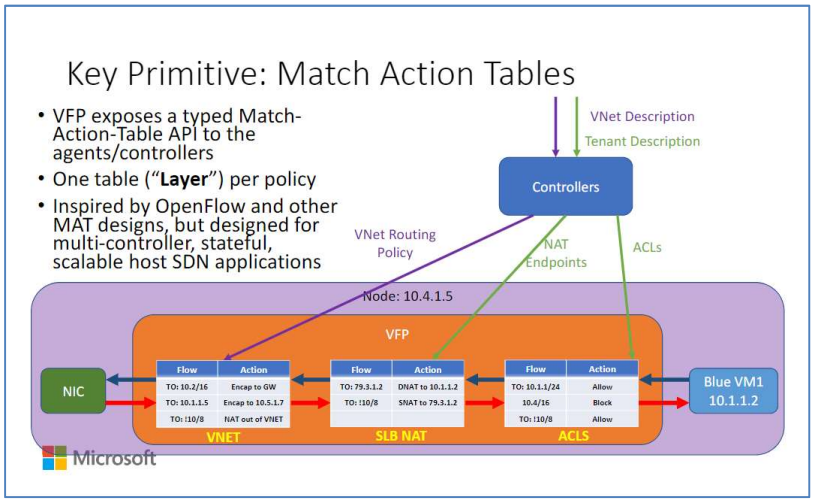
2.4 Generic Flow Table Offload

One of AccelNet's goals was to find a way to make VFP's complex policy compatible with SR-IOV. The mechanism we use in VFP to enforce policy and filtering in an SR-IOV environment is called Generic Flow Tables (GFT). GFT is a match-action language that defines transformation and control operations on packets for one specific network flow. Conceptually, GFT is comprised of a single large table that has an entry for every active network flow on a host. GFT flows are defined based on the VFP unified flows (UF) definition, matching a unique source and destination L2/L3/L4 tuple, potentially across multiple layers of encapsulation, along with a header transposition (HT) action specifying how header fields are to be added/removed/changed.

See Ex. 9, Section 2.4.

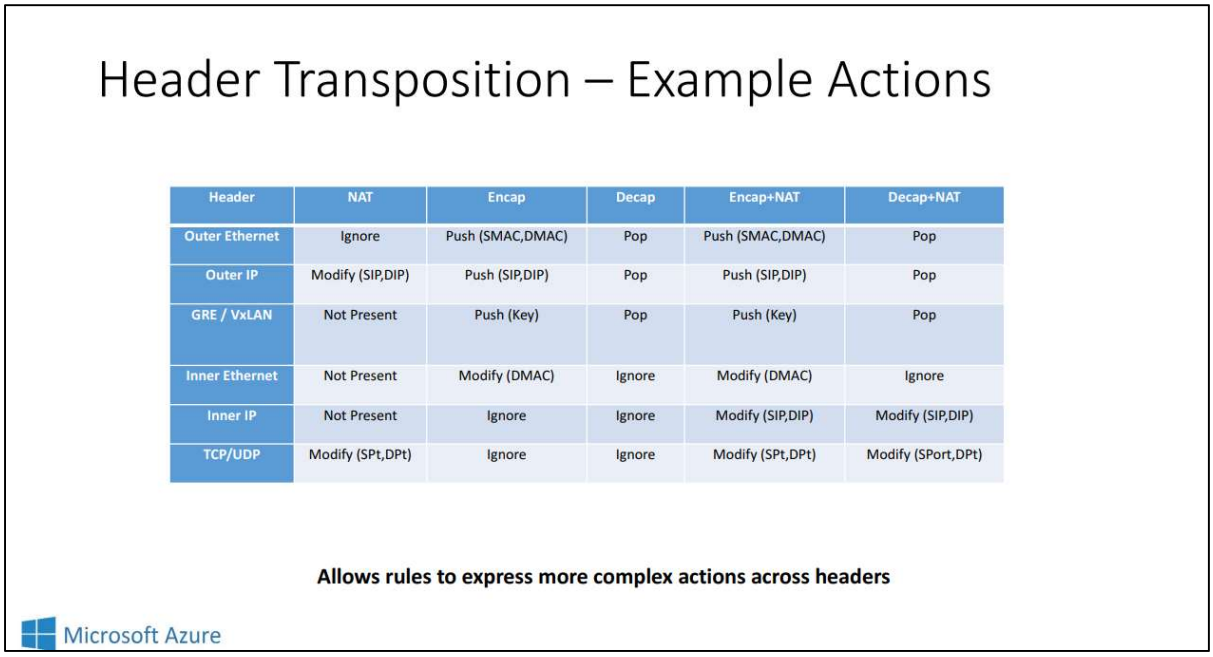
[24] https://www.usenix.org/sites/default/files/conference/protected-files/nsdi17_slides_firestone.pdf

94. On information and belief, the forward control information obtained by the components of the Azure Platform including, but not limited to servers, virtual switch software, and the Azure SmartNICs, is obtained out of band:



See Ex. 13, Slide 20.

95. On information and belief, components of the Azure Platform including, but not limited to servers, virtual switch software, and the Azure SmartNICs, change at least one field in an original header of the frames of the new flow according to the obtained forward control information:



See Ex. 13, Slide 33.

96. On information and belief, components of the Azure Platform including, but not limited to servers, virtual switch software, and the Azure SmartNICs, forward the frames of the new flow according to forward control information.

97. On information and belief, components of the Azure Platform including, but not limited to servers, virtual switch software, and Azure SmartNICs, obtain at least a portion of the control information from remote-admission-and-information controllers, referred to by Microsoft as "controllers."

98. On information and belief, Microsoft has been on notice of the '733 patent at least as early as the filing and service of the Complaint in this action.

99. On information and belief, Microsoft's domestic Azure Platform customers, including but not limited to the 173 Microsoft's Azure Platform customers

who are listed on their website, [25] directly infringe every element of, at least claim 26 of the '733 patent through their use of the Azure Platform.

100. On information and belief, at least since its post-filing knowledge of the '733 Patent, Microsoft knowingly encourages, and continues to encourage, customers to directly infringe one or more claims of the '733 patent, including by Microsoft's actions that include, without limitation, instructing and encouraging customers to use the Azure Platform through user guides/manuals,[26] advertisements,[27] promotional materials[28], and instructions.[29]

101. On information and belief, at least since its post-filing knowledge of the '733 patent, Microsoft knows that the acts Microsoft induced customers to take

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[25] *See e.g.* https://azure.microsoft.com/en-us/case-studies/?service=active-directory|bot-service|cosmos-db|functions|iot-hub|sql-database|stream-analytics&country=UnitedStates. (Dillen Bouwteam, MYOB, Portal Solutions, Paramount Consultancy & Training Services Limited, Mimeo, Harper Collins, Making Waves, 3M Informatics, Aviva, Avanade, Hogg Robinson Group, Wellmark Blue Cross and Blue Shield, Hearst Corporation, BetOnSoft, Connect2Field, Flavorus, 3M, Apttus, Accenture - United States, Adents, City Year, American Cancer Society, Amtrak, and DriveTime.)

[26] *See e.g.*, https://docsmsftpdfs.blob.core.windows.net/guides/azure/azure-ops-guide.pdf.

[27] *See e.g.* https://azure.microsoft.com/en-us/global-infrastructure/.

[28] *See e.g.* https://www.microsoft.com/itshowcase/blog/wp-content/uploads/2017/04/010_Azure_Infographic_PPIv2.pdf.

[29] *See e.g.* https://download.microsoft.com/download/6/6/2/662DD05E-BAD7-46EF-9431-135F9BAE6332/9781509302963_Microsoft%20Azure%20Essentials%20Fundamentals%20of%20Azure%202nd%20ed%20mobile.pdf.

constitute patent infringement and Microsoft's encouraging acts result in direct infringement by customers.

102. On information and belief, Microsoft instructs and continues to instruct customers to use the Azure Platform including, without limitation, through Microsoft's websites, which provide support for using the Azure Platform.

103. On information and belief, at least the 173 customers listed on Microsoft's website directly infringe, literally and/or under the doctrine of equivalents, at least claim 26 of the '733 patent through their use of the Azure Platform.

104. On information and belief, Microsoft is in violation of 35 U.S.C. § 271(b) and has been, at least since its post-filing knowledge of the '733 patent, indirectly infringing and continues to indirectly infringe at least claim 26 of the '733 patent by knowingly and specifically intending to induce infringement by others (including, without limitation, Microsoft's customers) and possessing specific intent to encourage infringement by Microsoft's customers.

105. Exafer has been damaged by the direct and/or indirect infringement of Microsoft and is suffering and will continue to suffer irreparable harm and damages as a result of this infringement.

Count II – Infringement of United States Patent No. 8,971,335

106. Exafer repeats, realleges, and incorporates by reference, as if fully set forth here, the allegations of the preceding paragraphs, as set forth above.

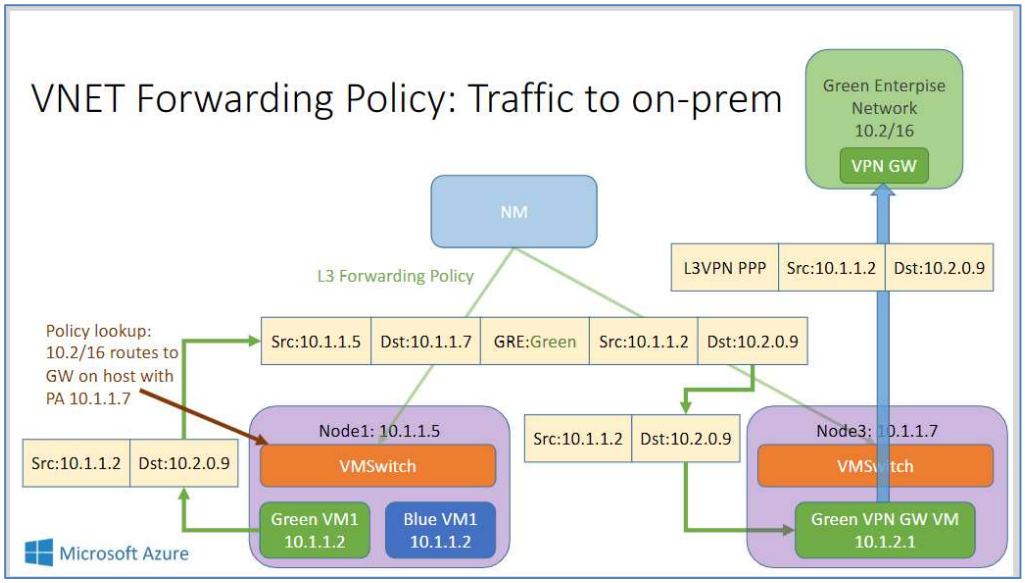
107. The Azure Platform infringes, literally and/or under the doctrine of equivalents, at least claim 26 of the '335 patent.

108. Claim 26 of the '335 patent provides as follows:

> 26. A method to optimize information delivery between a first node on a first network and a second node on the same or different network, the delivery being made through a networked system in which one or more paths between the first node and the second node are known and, through a Transmitting Device Set with Promiscuous and Re-writing Capabilities (TDSPRC) that receives and retransmits all frames of the first network and the same or different network, and the method comprising:
>
> > collecting topology information related to three or more different Open System Interconnection (OSI) model layers from a plurality of network devices working in networks that belong to different OSI layers;
> >
> > identifying alternate paths, based at least in part on the collected topology information related to three or more different OSI layers, between the first node and the second node;
> >
> > creating a collective virtual network (CVN) including the known paths and the alternate paths, for a particular flow, identify an optimal path in the CVN instead of a known path between the first node and the second node; and
> >
> > modifying the data frames of the particular flow to be compatible with a network technology employed by the identified optimal path, wherein the modification is implemented by the TDSPRC and the TDSPRC is not a member in at least one of the networks.

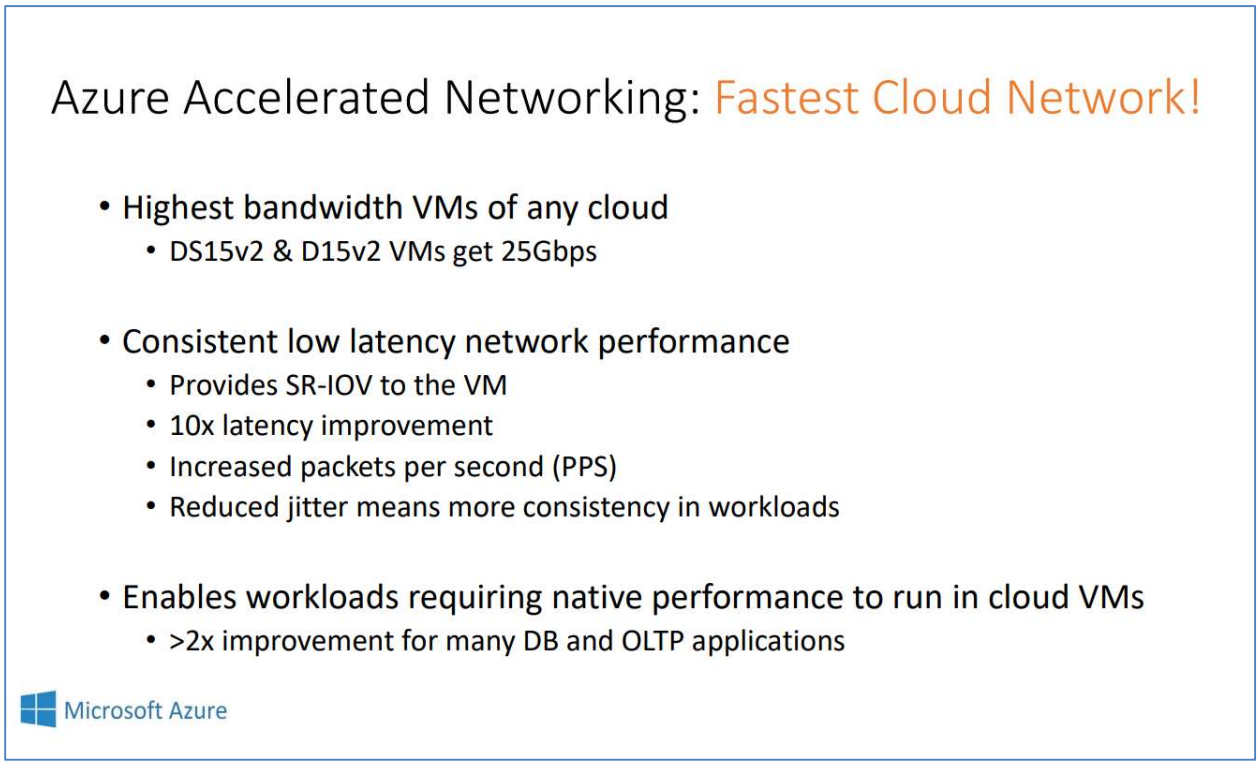
See '335 patent, claim 26.

109. On information and belief, the accused Azure Platform practices a method to optimize information delivery between a first node on a first network and a second node on the same or different network:



See e.g. Ex. 13 at slide 11.

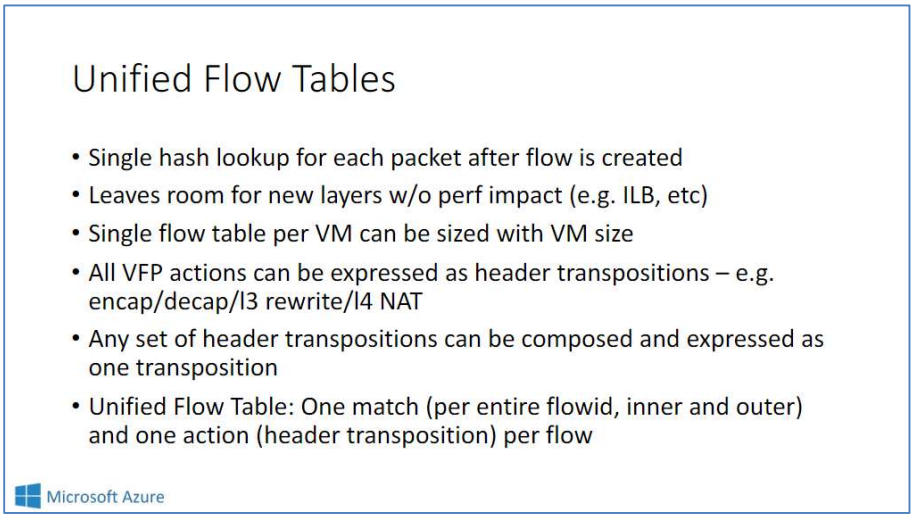
110. On information and belief, the information delivery optimization of the Azure Platform is exemplified by, but is not limited to, the improvements claimed in the following conference presentation slide:



See e.g. Ex. 8 at slide 16.

111. On information and belief, the accused Azure Platform delivers information through a networked system in which one or more paths between the first node and the second node are known.

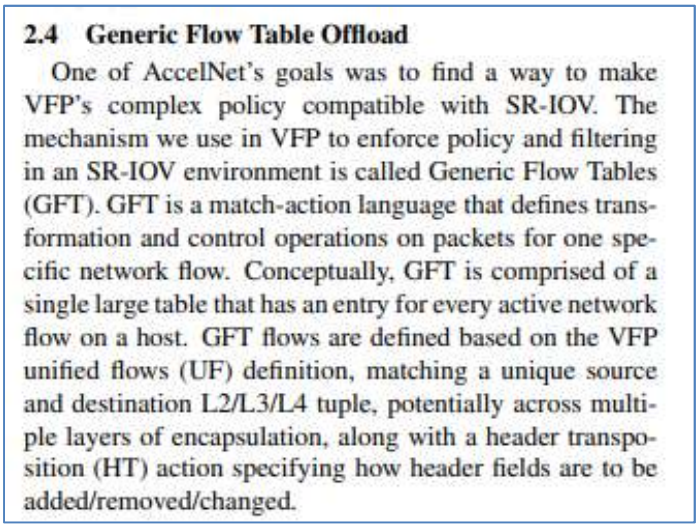
112. On information and belief, the Azure Platform includes one or more transmitting device sets with promiscuous and re-writing capabilities, ("TDSPRCs"). More specifically, on information and belief, the Azure Platform includes, without limitation, servers, as well as server-based hardware and software components including but not limited to the Azure SmartNICs, the virtual switch, and the VFP, which collectively or alone can form a device set that is capable of performing both promiscuous network data monitoring and re-writing of network transmission header information:



See Ex. 13 at Slide 37.

113. On information and belief, the Azure Platform receives and retransmits all frames of a network and the same or different network through a TDSPRC.

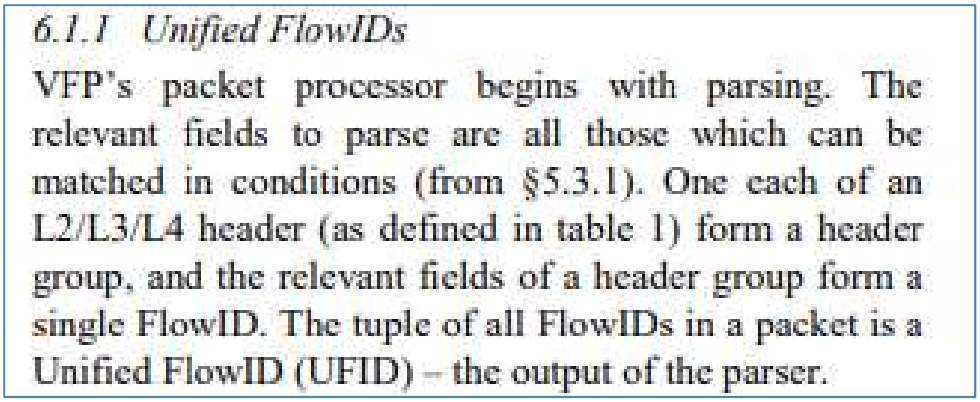
114. On information and belief, components of the Azure Platform, including but not limited to, the Azure controllers or the VFP, individually or collectively are configured to collect topology information related to three or more different OSI layers from a plurality of network devices working in different OSI layers as evidenced by the disclosures below:



2.4 Generic Flow Table Offload

One of AccelNet's goals was to find a way to make VFP's complex policy compatible with SR-IOV. The mechanism we use in VFP to enforce policy and filtering in an SR-IOV environment is called Generic Flow Tables (GFT). GFT is a match-action language that defines transformation and control operations on packets for one specific network flow. Conceptually, GFT is comprised of a single large table that has an entry for every active network flow on a host. GFT flows are defined based on the VFP unified flows (UF) definition, matching a unique source and destination L2/L3/L4 tuple, potentially across multiple layers of encapsulation, along with a header transposition (HT) action specifying how header fields are to be added/removed/changed.

See Ex. 9 at Section 2.4.



6.1.1 Unified FlowIDs

VFP's packet processor begins with parsing. The relevant fields to parse are all those which can be matched in conditions (from §5.3.1). One each of an L2/L3/L4 header (as defined in table 1) form a header group, and the relevant fields of a header group form a single FlowID. The tuple of all FlowIDs in a packet is a Unified FlowID (UFID) – the output of the parser.

See also Ex. 10 at Section 6.1.1.

Table 3. Example Header Transpositions

Header	NAT	Encap	Decap	Encap+ NAT
Outer Ethernet	Ignore	Push (SMAC, DMAC)	Pop	Push (SMAC, DMAC)
Outer IP	Modify (SIP,DIP)	Push (SIP,DIP)	Pop	Push (SIP,DIP)
GRE	Not Present	Push (Key)	Pop	Push (Key)
Inner Ethernet	Not Present	Modify (DMAC)	Ignore	Modify (DMAC)
Inner IP	Not Present	Ignore	Ignore	Modify (SIP,DIP)
TCP/UDP	Modify (SPt,DPt)	Ignore	Ignore	Modify (SPt,DPt)

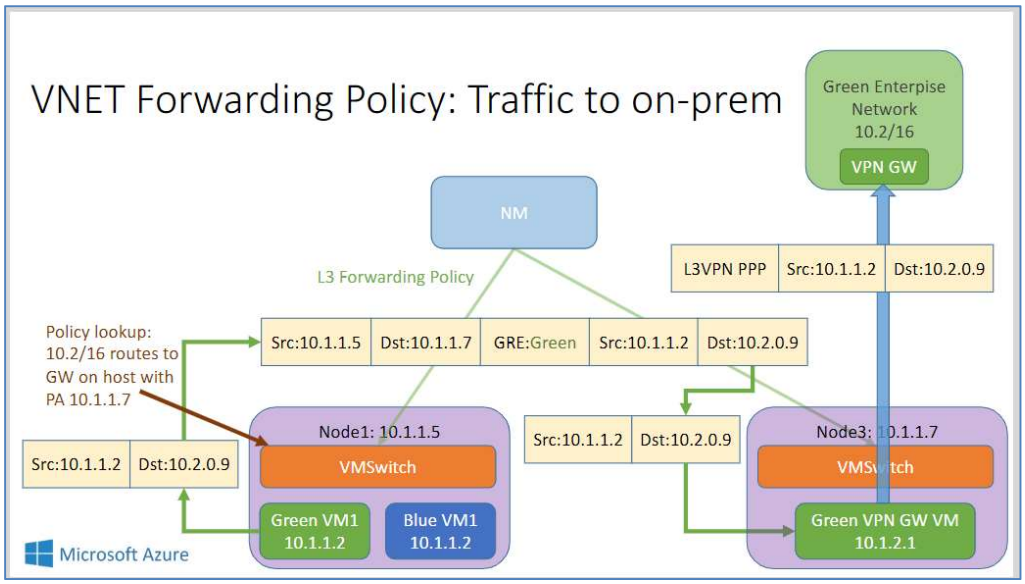
See also Ex. 10 at Table 3, presented on p. 322.

115. On information and belief, one or more components of the Azure Platform including without limitation, controllers identify alternate paths, based at least in part on the collected topology information related to three or more different OSI layers, between the first node and the second node.

116. On information and belief, components of the Azure Platform including but not limited to, controllers, networking equipment, and server equipment, create a collective virtual network (CVN) including the known paths and the alternate paths, for a particular flow, and identify an optimal path in the CVN instead of a known path between the first node and the second node.

117. On information and belief, the Azure Platform comprises a plurality of collective virtual networks, ("CVNs"). On information and belief, a non-limiting example of collective virtual networks within the Azure Platform is demonstrated by

green and blue Generic Routing Encapsulation (GRE) networks depicted in the following conference slide:



See e.g. Ex. 13 at slide 11.

118. On information and belief, components of the Azure Platform which individually or collectively function as a TDSPRC modify data frames of a flow to be compatible with a network technology employed by the identified optimal path, as disclosed below:

> *5.3.2 Actions*
> A rule descriptor also has an action. The action contains a type and a data structure specific to that type with data needed to perform the rule (for example, an encapsulation rule takes as input data the source / destination IP addresses, source / destination MACs, encapsulation format and key to use in encapsulating the packet). The action interface is extensible - example conditions and actions are listed in Figure 6.

See Ex. 9 at Section 5.3.2.

119. On information and belief, components of the Azure Platform, which individually or collectively function as a TDSPRC are not a member or members in at least one of the networks to which either the first node or the second node belong.

120. On information and belief, Microsoft has been on notice of the '335 patent at least as early as the filing and service of the Complaint in this action.

121. On information and belief, at least since its post-filing knowledge of the '335 Patent, Microsoft knowingly encourages, and continues to encourage, customers to directly infringe one or more claims of the '335 patent, including by Microsoft's actions that include, without limitation, instructing and encouraging customers to use the Azure Platform through user guides/manuals,[30] advertisements,[31] promotional materials[32], and instructions.[33]

122. On information and belief, at least since its post-filing knowledge of the '335 patent, Microsoft knows that the acts Microsoft induced customers to take

[30] *See e.g.*, https://docsmsftpdfs.blob.core.windows.net/guides/azure/azure-ops-guide.pdf.

[31] *See e.g.* https://azure.microsoft.com/en-us/global-infrastructure/.

[32] *See e.g.* https://www.microsoft.com/itshowcase/blog/wp-content/uploads/2017/04/010_Azure_Infographic_PPIv2.pdf.

[33] *See e.g.* https://download.microsoft.com/download/6/6/2/662DD05E-BAD7-46EF-9431-135F9BAE6332/9781509302963_Microsoft%20Azure%20Essentials%20Fundamentals%20of%20Azure%202nd%20ed%20mobile.pdf.

constitute patent infringement and Microsoft's encouraging acts result in direct infringement by its customers.

123. On information and belief, Microsoft instructs and continues to instruct customers to use the Azure Platform including, without limitation, through Microsoft's websites, which provide support for using the Azure Platform.

124. On information and belief, Microsoft's domestic Azure Platform customers, including but not limited to the 173 Microsoft's Azure Platform customers who are listed on their website, [34] directly infringe every element of, at least, claim 26 of the '335 patent through their use of the Azure Platform.

125. On information and belief, Microsoft is in violation of 35 U.S.C. § 271(b) and has been, at least since its post-filing knowledge of the '335 patent, indirectly infringing and continues to indirectly infringe at least claim 26 of the '335 patent by knowingly and specifically intending to induce infringement by others (including, without limitation, Microsoft's customers) and possessing specific intent to encourage infringement by Microsoft's customers.

[34] *See e.g.* https://azure.microsoft.com/en-us/case-studies/?service=active-directory|bot-service|cosmos-db|functions|iot-hub|sql-database|stream-analytics&country=UnitedStates. (Dillen Bouwteam, MYOB, Portal Solutions, Paramount Consultancy & Training Services Limited, Mimeo, Harper Collins, Making Waves, 3M Informatics, Aviva, Avanade, Hogg Robinson Group, Wellmark Blue Cross and Blue Shield, Hearst Corporation, BetOnSoft, Connect2Field, Flavorus, 3M, Apttus, Accenture - United States, Adents, City Year, American Cancer Society, Amtrak, and DriveTime.)

126. Exafer has been damaged by the direct and/or indirect infringement of Microsoft and is suffering and will continue to suffer irreparable harm and damages as a result of this infringement.

JURY DEMANDED

127. Pursuant to Federal Rule of Civil Procedure 38(b), Exafer hereby requests a trial by jury on all issues so triable.

PRAYER FOR RELIEF

Exafer respectfully requests this Court to enter judgment in Exafer's favor and against Microsoft as follows:

a. finding that Microsoft has infringed one or more claims of the '733 patent;

b. finding that Microsoft has infringed one or more claims of the '335 patent;

c. awarding Exafer damages under 35 U.S.C. § 284, or otherwise permitted by law, including supplemental damages for any continued post-verdict infringement;

d. awarding Exafer pre-judgment and post-judgment interest on the damages award and costs;

e. awarding cost of this action (including all disbursements) and attorney fees pursuant to 35 U.S.C. § 285, or as otherwise permitted by the law; and

f. awarding such other costs and further relief that the Court determines to be just and equitable.

Dated: December 3, 2019

Respectfully submitted,

/s/Raymond W. Mort, III

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