

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RED HAT, INC.
Petitioner

v.

COMPETITIVE ACCESS SYSTEMS, INC.
Patent Owner

Case No. IPR2025-01372
U.S. Patent No. 8,861,349

**DECLARATION OF DR. STAN MCCLELLAN IN SUPPORT OF PATENT
OWNER PRELIMINARY RESPONSE**

Competitive Access Systems EX2015
Red Hat, Inc. v. Competitive Access
Systems, Inc.
IPR2025-01372

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I, Dr. Stan McClellan, hereby declare as follows:

I. Background

1. I have been retained by Patent Owner Competitive Access Systems, Inc. ("CAS") to provide my opinions in the above-captioned *inter partes* review ("IPR") proceeding involving U.S. Patent No. 8,861,349 (the "'349 Patent," EX1011), which is titled "Broadband Communications Device." I have been asked to evaluate whether certain references disclose or suggest the features recited in Claims 1-20 of the '349 Patent (the "Challenged Claims"). I understand this declaration will be entered in the above-captioned IPR proceeding, as an exhibit with Patent Owner's Preliminary Response to the Petition for Inter Partes Review (the "Preliminary Response") submitted by CAS.

2. The '349 Patent is a continuation of U.S. Patent No. 8,228, 801 (the "'801 Patent"), which is a continuation of U.S. Patent No. 7,606,156 (the "'156 Patent"). In addition to being retained in the present matter, I was also retained to provide my opinions as to the validity of the claims of the '156 Patent and the '801 Patent, as well as the validity of the claims of U.S. Patent Nos. 9,350,649 (the "'649 Patent"), 10,868,908 (the "'908 Patent"), 11,418,641 (the "'641 Patent"), and 11,582,343 (the "'343 Patent"), which are each also continuations of the '156 Patent. I have and/or will submit declarations as part of the '156 Patent, '801 Patent, '649 Patent, '908 Patent, '641 Patent, and '343 Patent IPR proceedings.

II. Qualifications

3. I currently serve as the Director of the JSC Engineering, Technology and Science Program (JETS) at Texas State University, a partnership with Jacobs Technology Group and NASA's Johnson Space Center (JSC). Previously, I held the following positions at Texas State:

- a. Professor in the Ingram School of Engineering from 2013-2023;
- b. Co-Director of the Connected Infrastructure initiative for Education, Demonstration, and Research (CIEDAR) from 2019 to 2023;
- c. Director of the Ingram School of Engineering from 2013 to 2018;
- d. Associate Director of the Ingram School of Engineering from 2011 to 2013; and
- e. Associate Professor in the Ingram School of Engineering from 2008 to 2013.

4. My research activities at Texas State have involved the development and management of FCC-licensed private 5G and LTE wireless networks, and the management of a regional LoRaWAN wireless network for low-rate, real-time data collection in multiple projects at CIEDAR. During my time as a Professor, I developed performance enhancements for Internet transport protocols and packet handling based on signal processing and machine learning algorithms, and designed

a multi-building "5G-capable" core network to support multiple faculty re-search projects as well as academic priorities. During my time as an Associate Professor, I investigated various Smart Grid systems and advanced technologies for broadband networking (e.g. 40/100Gb Ethernet), developed novel PHY layer for low-frequency communication via power lines, and developed performance enhancements for IP transport protocols.

5. I have prior academic experience as an Associate Professor of Electrical and Computer Engineering at the University of Alabama at Birmingham from 1995 to 2002.

6. I also have technical experience from my time in the private sector. I previously held executive or senior engineering positions at companies including Power Tagging Technologies, ZNYX Networks, SBE, Hewlett Packard, General Dynamics and LTV Aerospace and Defense Company. I have also served as a technical consultant for companies such as Cisco, American Express, 3COM, BellSouth, N.E.T., Alcatel, AT&T, Research in Motion (RIM), F5 Networks, LSU Medical Center, and the U.S. National Science Foundation.

7. I have published dozens of books and peer-reviewed research papers in this field, and have given numerous related technical talks world-wide. I am a named inventor on fourteen patents and have served as a technical expert witness in numerous patent litigation cases.

8. I received my Ph.D. from Texas A&M University (1995) in Electrical Engineering with a specialization in communication and data processing. I received a M.S. in Electrical Engineering (1991) and a B.S. in Electrical Engineering (1986), both from Texas A&M as well.

9. My qualifications and experience are detailed further in my Curriculum Vitae, which is EX2016.

III. Compensation

10. I am being compensated at the rate of \$350 per hour for the work I conduct related to this proceeding. My compensation does not depend on the content of my opinions or the outcome of the proceeding.

IV. Materials Considered

11. In providing the testimony set out in this declaration, I have reviewed the specification and claims of the '349 Patent, the file history of the '349 Patent, Red Hat's Petition for Inter Partes Review of the '349 Patent (the "Petition"), the prior art, declarations, and other documents attached to the Petition.

V. Legal Principles

12. I am not an attorney and offer no legal opinions. In forming my opinions, I have been informed by counsel about certain aspects of the law that are relevant to my analysis. My understanding of these principles is summarized below.

13. I understand that in patent law a patent's claims define the scope of protection for the claimed invention.

14. I understand that the first step in an invalidity analysis involves construing the claims, as necessary, to determine their scope. I have also been informed by counsel that claims are generally given their ordinary and custom meaning as understood by a person of ordinary skill in the art ("POSITA") at the time of the invention, in light of the patent's claims, specification and file history. I have additionally been informed by counsel that claim construction is a matter of law and that the final claim constructions for this proceeding will be determined by the Patent Trial and Appeal Board ("PTAB").

15. I understand that the validity of a patent's claims is determined on a claim-by-claim basis.

16. I understand that in this proceeding, Petitioner has the burden of proving that the challenged claims would have been unpatentable over the prior art by a preponderance of the evidence.

17. Ground 1 of the Petition argues that Claims 1-20 of the '349 Patent should be invalidated as disclosed or rendered obvious by the "Kotzin" prior art reference. As pertinent to my analysis, this reference is described further below.

18. Ground 2 of the Petition argues that Claims 1-20 of the '349 Patent should be invalidated as disclosed or rendered obvious by the "Challener" prior art reference. As pertinent to my analysis, this reference is described further below.

19. I understand that a claim is unpatentable as anticipated if a single prior art reference teaches each limitation of the claim.

20. I understand that a claim is unpatentable as obvious if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious to a POSITA at the time of the invention.

21. I understand that the question of obviousness is resolved based on underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of non-obviousness.

22. I further understand that for each of its obviousness grounds, Petitioner must demonstrate a POSITA would have: (1) a motivation to combine the relevant references and (2) a reasonable expectation of success of developing the claimed invention.

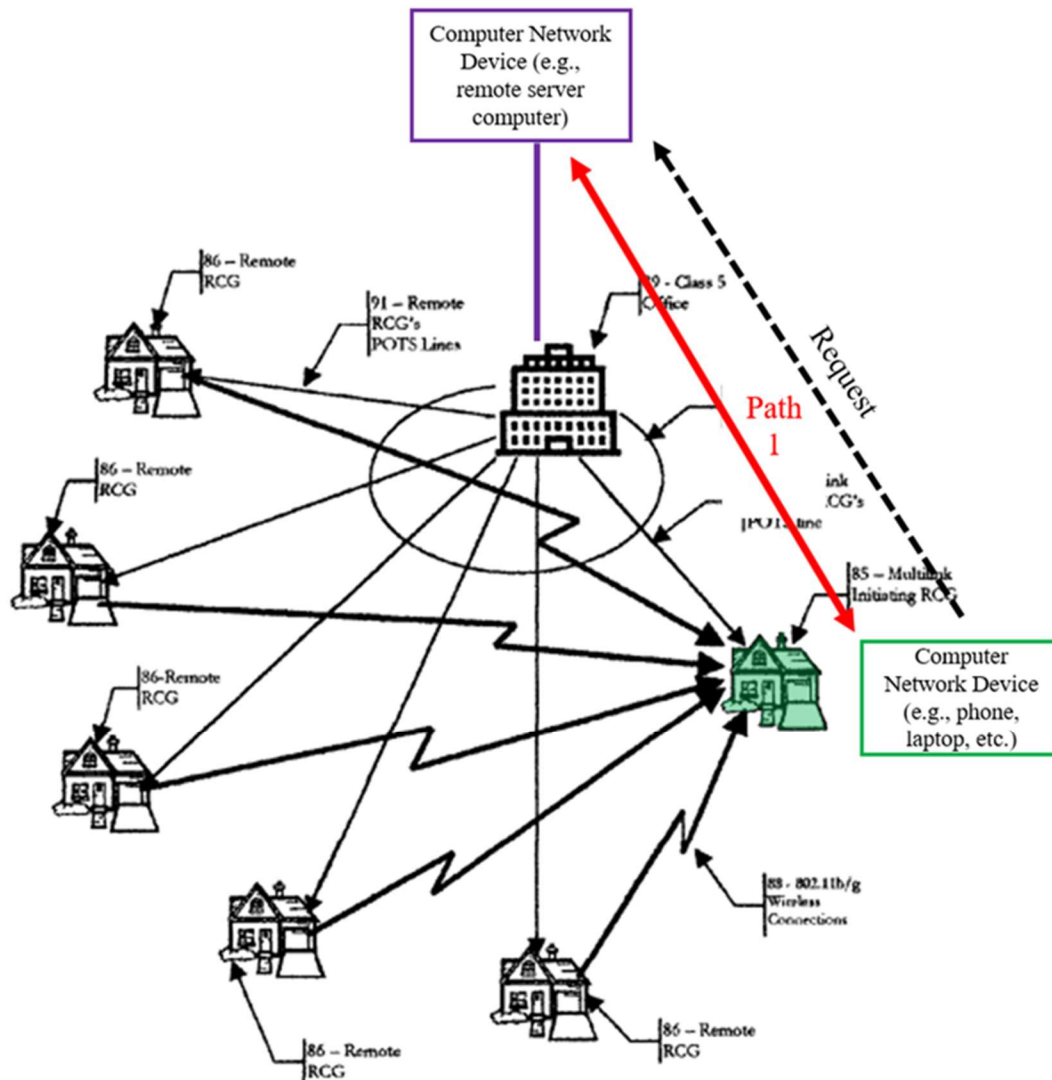
23. In forming my opinions, I have applied the understanding of one of ordinary skill in the art working at the time of the invention claimed in the '349 Patent, i.e., prior to January 2001. In my opinion, a person of ordinary skill in the art at this time would have an acquired body of knowledge gained through formal education, or practical experience providing an equivalent to, a Bachelor of Science in Electrical Engineering or Computer Science, or a related/equivalent field, and at least 3 years of work experience in the field of computer networking. I understand that the date of conception of the '349 Patent may be contested. My identification as to the level of skill of the person of ordinary skill in the art would not vary between the date of the conception or the October 15, 2002 filing date of Provisional Application No. 60/418,521.

VI. Overview of the '349 Patent and the Invention Claimed in the '349 Patent

24. The '349 Patent pertains to devices and methods to improve the effective bandwidth between a remote sending device (e.g., a server) and a receiving device by leveraging the bandwidth of at least two separate communication paths to receive the data sent from a remote device.

25. Although specific claims or claim limitations may be directed to only certain aspects of the configuration or to separate, but related embodiments, Figure 7 of the specification of the '349 Patent shows an example network configuration.

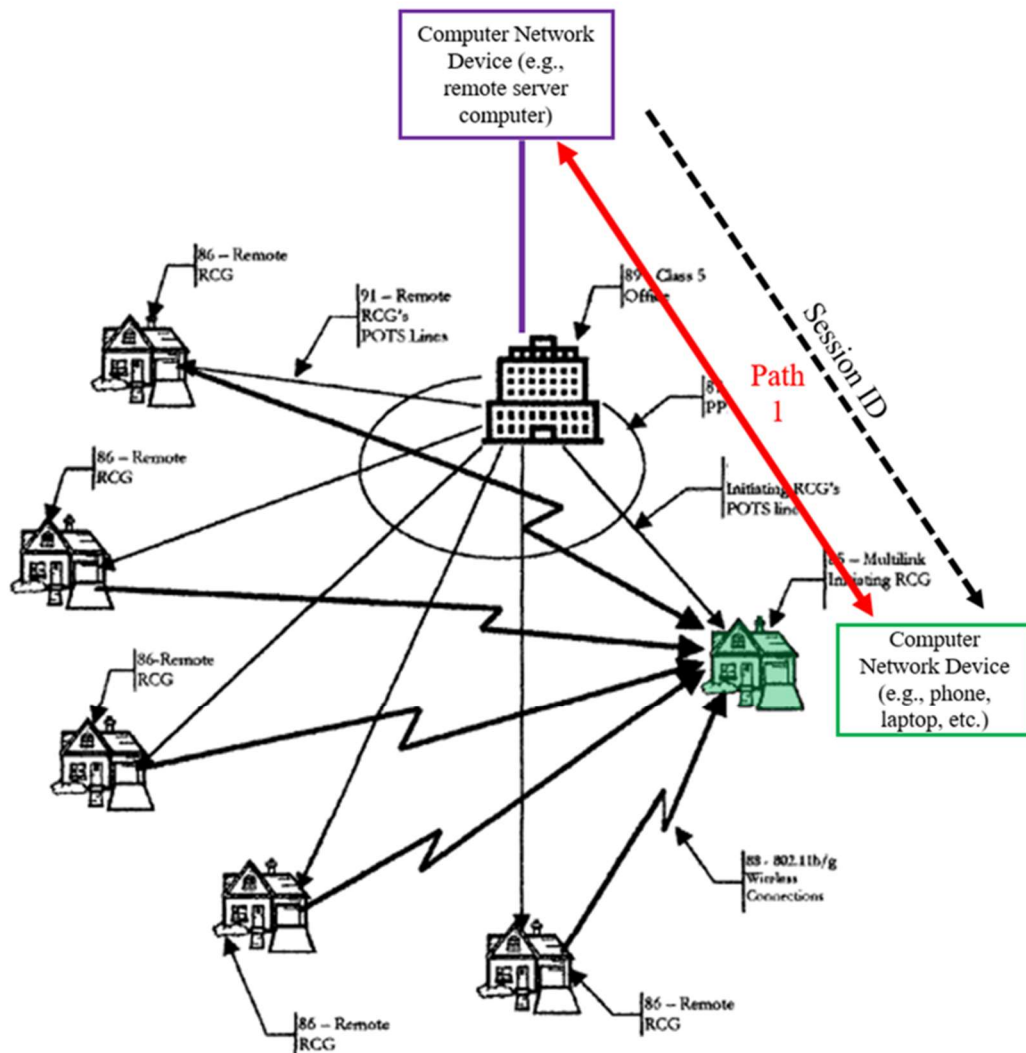
26. In this configuration, a request is sent from a computer network device (e.g., phone, laptop, server, etc.) over a first path (e.g., Path 1) to another computer network device, such as, for example, a remote server computer, for participation in a multilink session. To this end, as depicted and annotated below, the specification states: "Referring to FIG. 7, an RCG-85 that decides to initiate a multilink PPP session with a remote computer i.e. internet URL, requests a multilink PPP session with that URL resource via Link Control Protocol (LCP) session management[.]" EX1011 at 11:46–50.



27. The two devices negotiate the pertinent multilink parameters. For example here, as depicted and annotated below, the specification states: "The initiating RCG-85 and the remote server computer (not shown) will negotiate the pertinent multilink parameters such as compression, packet size, sync/async, link quality monitoring, bit stuffing etc." EX1011 at 11:50-53.

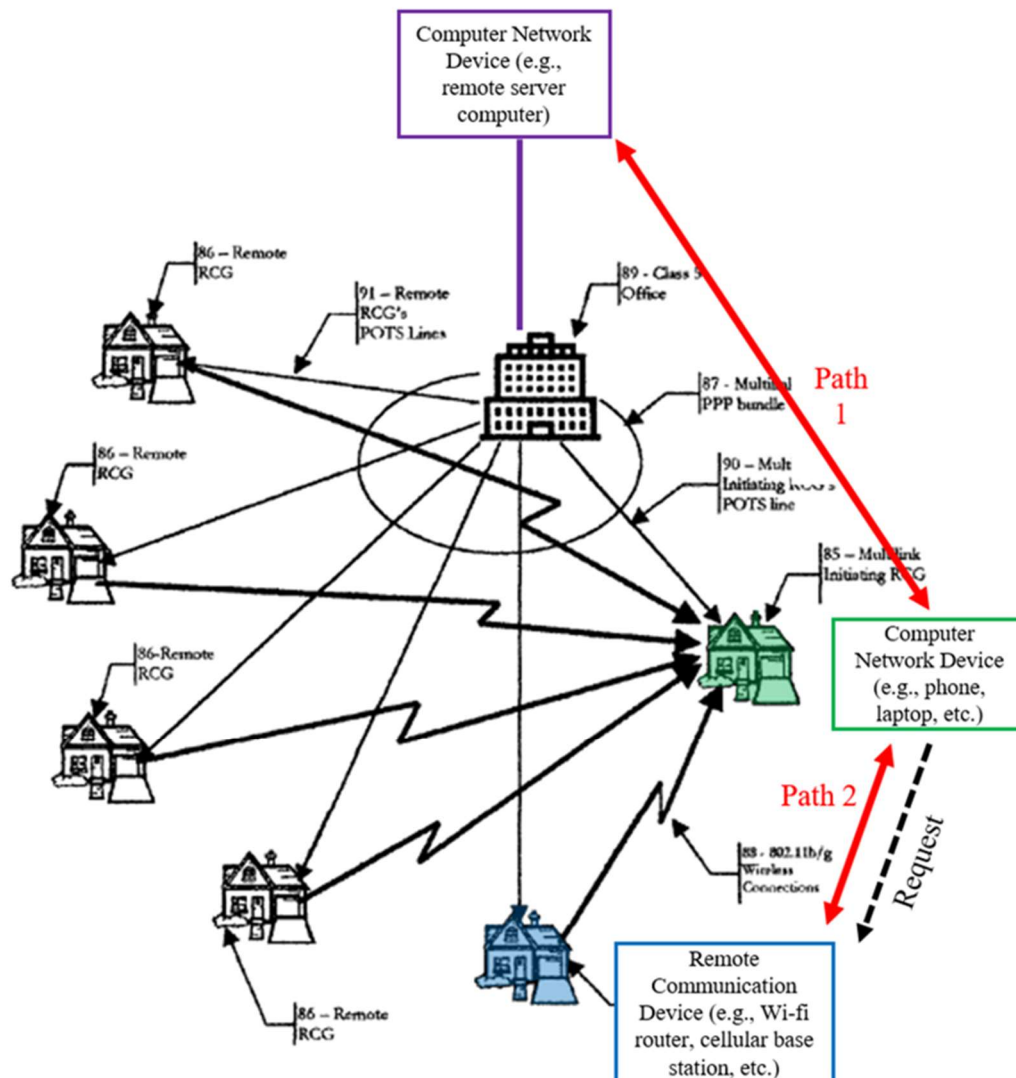
session and is also used for adding or removing links from the multilink bundle-87."

EX1011 at 11:53–58.



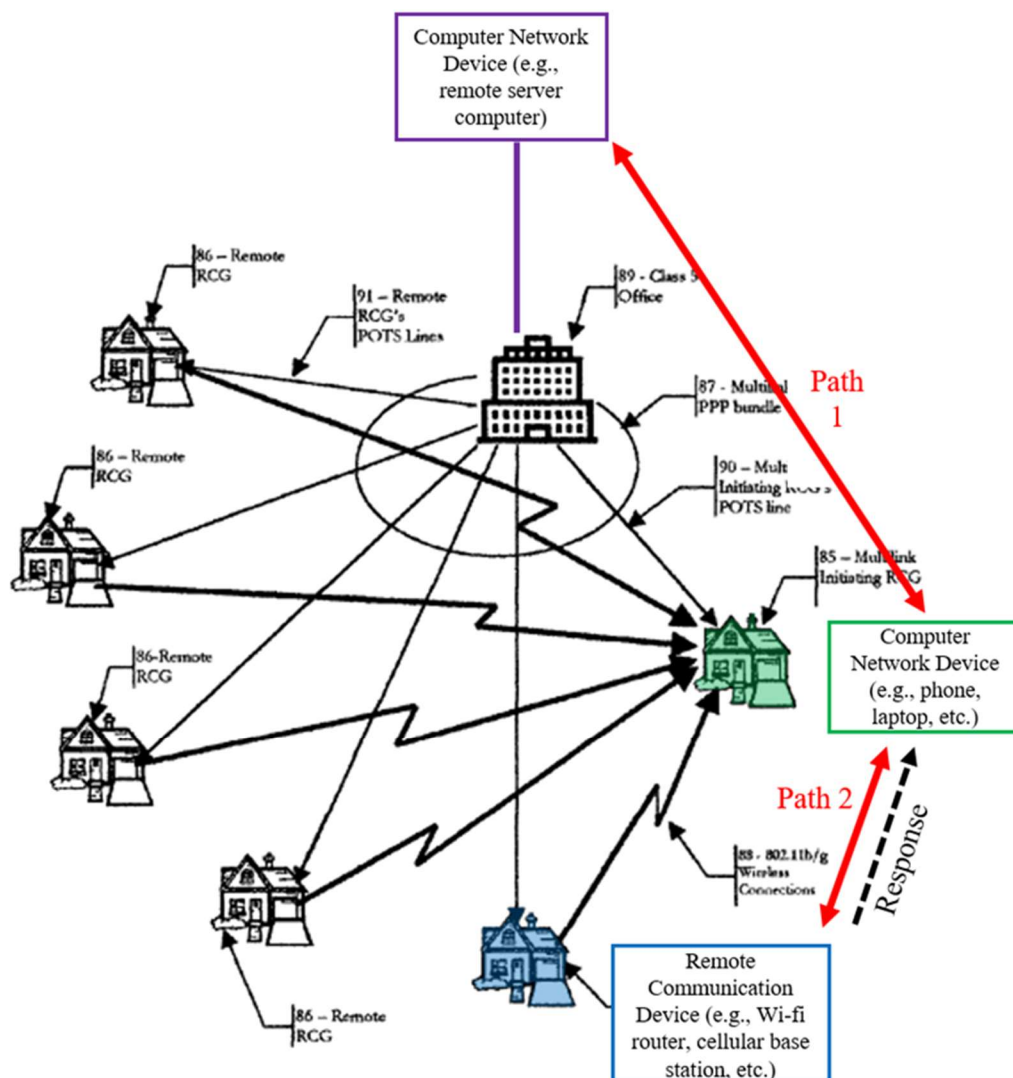
29. The computer network device (e.g., phone, laptop, server etc.) then sends a multilink request over a second path (e.g., Path 2) to one or more remote communications devices such as, for example, a router or base station to participate in the multilink session. As is relevant here, and as depicted and annotated below, the specification states: "The initiating RCG-85 then looks up the addresses of up to

31 (in this embodiment) other RCGs in its router tables to use for the multilink PPP transfer. (If a Neighborhood Access Point is available the RCG could request service through it instead of setting up a Multilink PPP connection—see FIG. 8.) The initiating RCG-85 determines the number of remote RCGs-86 that it wants to use to get the desired bandwidth for the transfer and sends multilink PPP service requests via the 802.11b/g wireless connections-88 to the selected remote RCGs-86." EX1011 at 11:60–12:2.

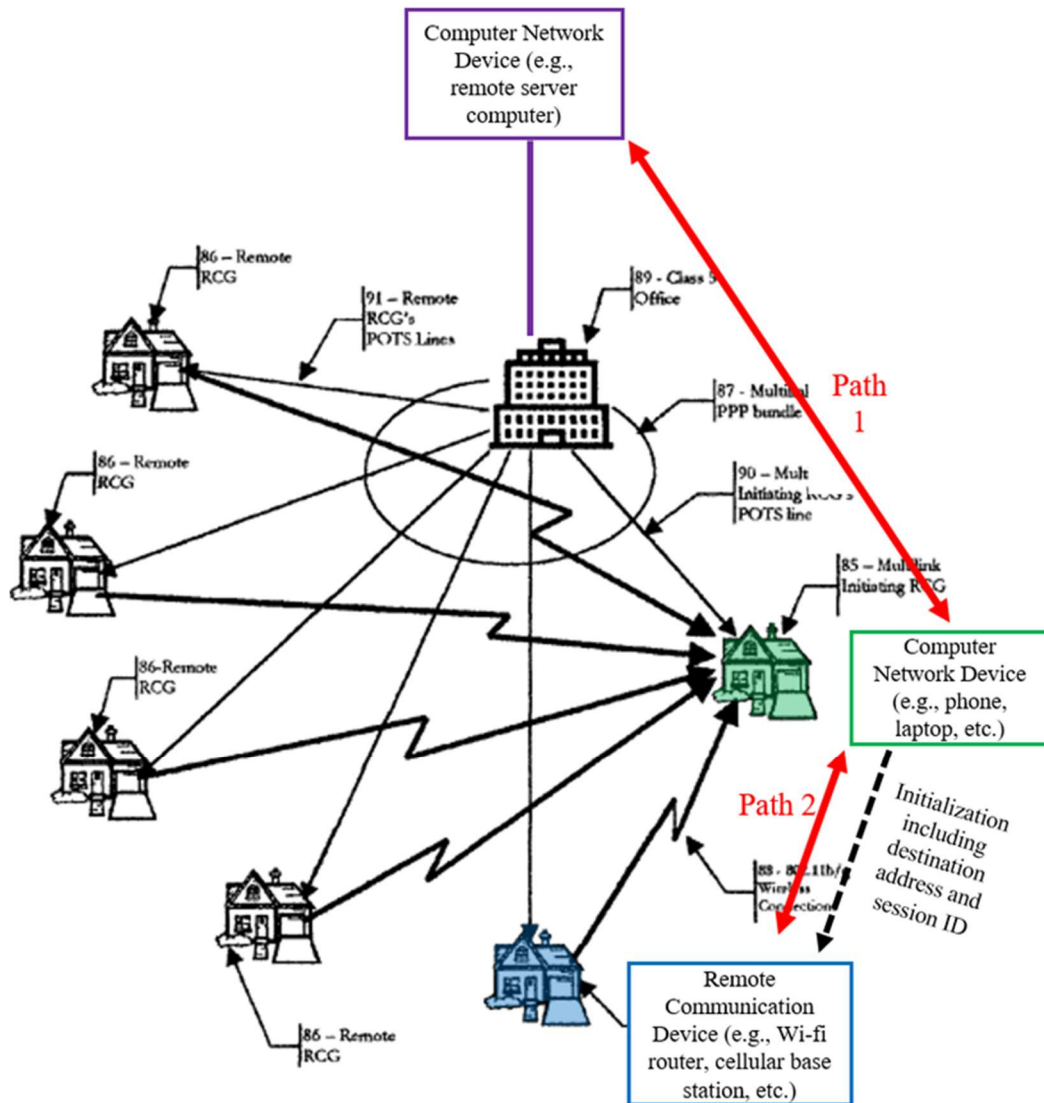


30. The remote communications devices respond back to the computer network device (e.g., phone, laptop, etc.) with acceptance or denial. For example, as depicted and annotated below, the specification states: "The selected remote RCGs-86 respond back to the initiating RCG with either an acceptance or denial of multilink PPP service request. This decision is made based upon the remote RCG's currently available POTS bandwidth and the current local demands for that

bandwidth. The remote RCG-86 makes a decision to participate in a multilink PPP service for an initiating RCG If the remote RCG-86 accepts the multilink PPP service request from the initiating RCG-85 it also sends its currently available bandwidth on its POTS line-91 that the initiating RCG-85 will have available to it for the multilink PPP transfers." EX1011 at 12:3–27.



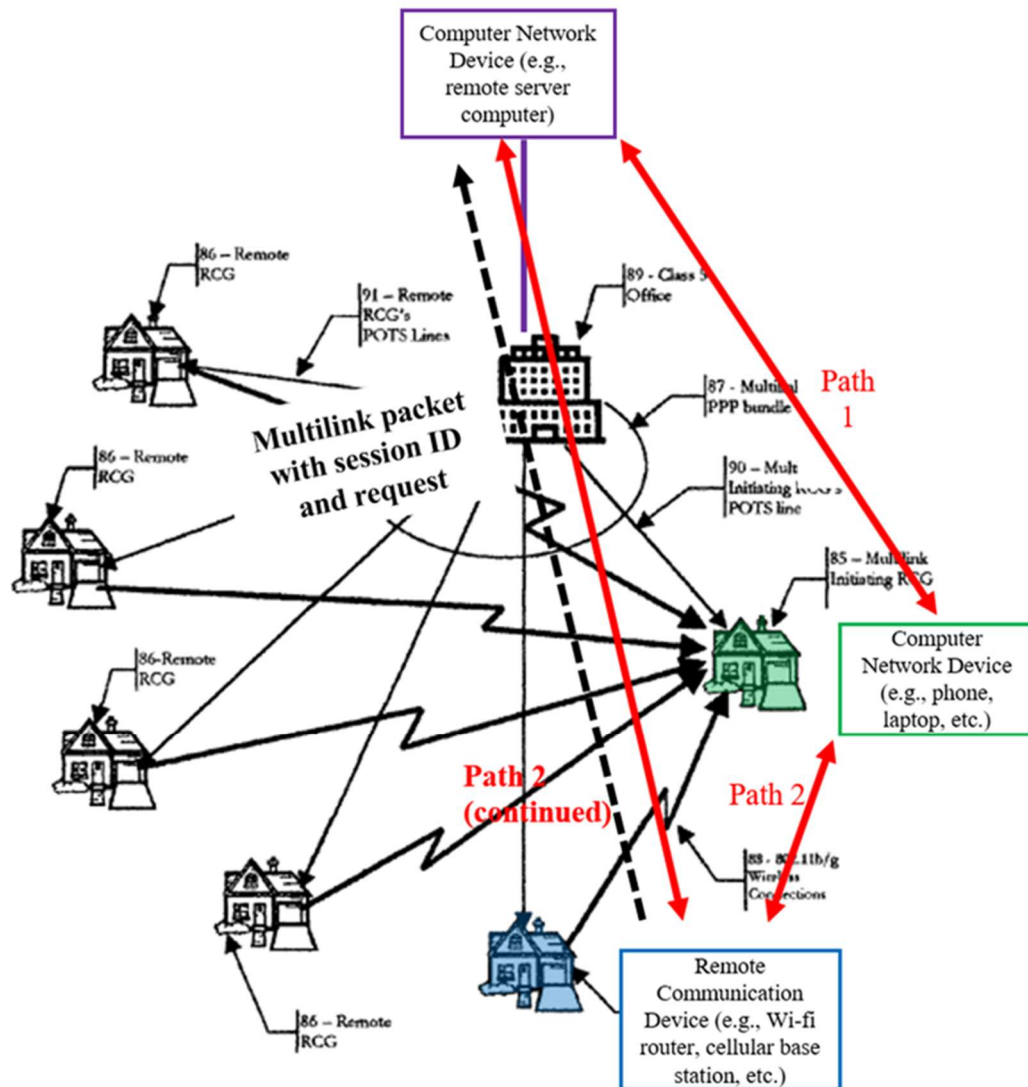
31. The computer network device (e.g., phone, laptop, server, etc.) sends a multilink initialization packet containing the address of the destination as well as the multilink session ID (magic number) and any other pertinent information required for the remote communications device to join in the existing multilink session. Here, as depicted and annotated below, the specification states: "The initiating RCG then selects which of the responding remote RCGs-86 it will use for the multilink PPP bundle-87 and sends them a multilink initialization packet containing the URL of the destination as well as the multilink PPP session ID (magic number) and any other pertinent information required for the remote RCG to join in the existing multilink PPP bundle-87. Each remote RCG POTS interface-91 participating in a multilink PPP bundle, represents a logical "link" in the initiating RCG's multilink PPP bundle-87." EX1011 at 12:27–36.



32. Each of the participating remote communications devices sends a multilink packet to the remote server computer with the multilink session ID and requests to be added to the multilink session. For example, as depicted and annotated below, the specification states: "The remote RCGs-86 then send a multilink PPP packet (over their respective POTS lines-91) to the destination URL with the

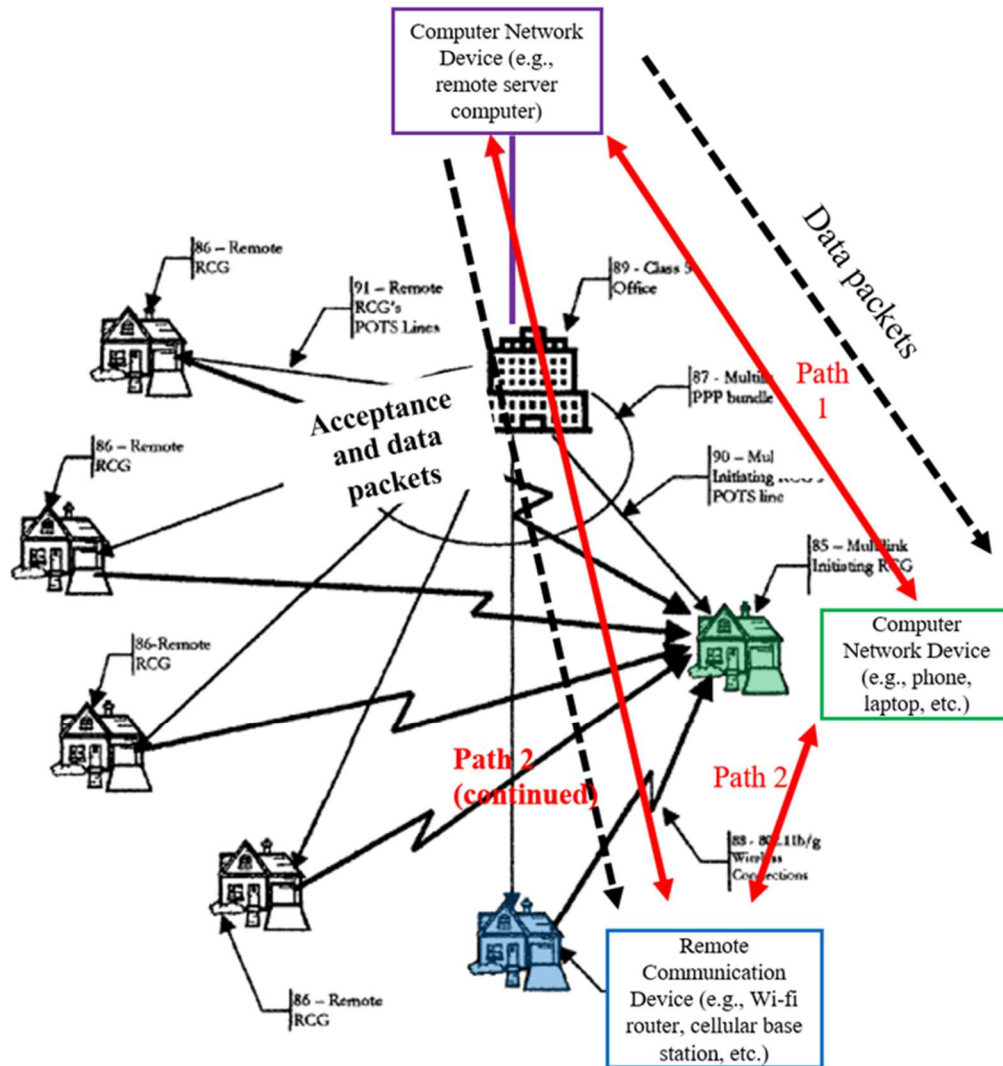
multilink PPP session ID and request to be added to that multilink PPP bundle-87."

EX1011 at 12:36–39.

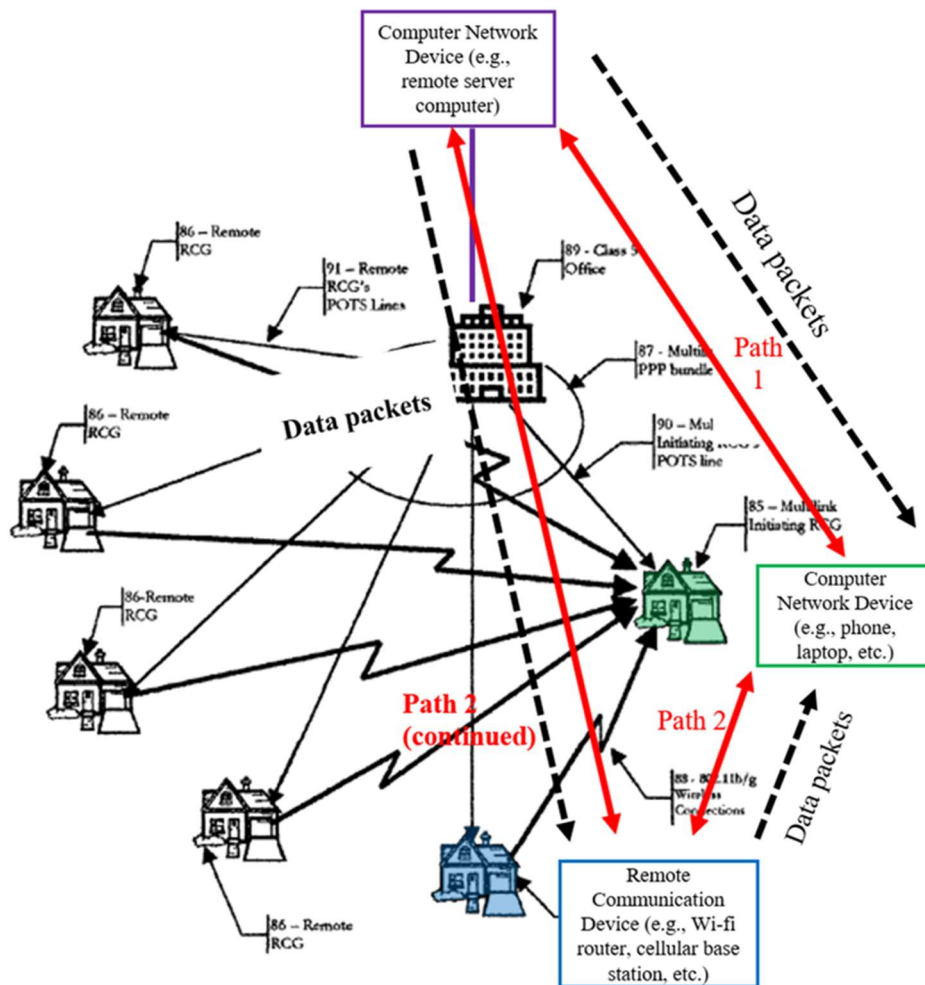


33. The remote server computer accepts the request and begins sending data packets to each of the remote communications devices over their respective paths or links. As an example, as depicted and annotated below, the specification states: "The destination URL accepts the request of each of the remote RCGs-86 and

begins sending data packets to each over their respective POTS lines-91." EX1011
at 12:39-42.



34. The remote communications device relays the data packets to the computer network device (e.g., phone, laptop, etc.). In this instance, as depicted and annotated below, the specification states: "When the remote RCGs-86 receive data packets sent over their respective POTS lines-91, that are destined for the multilink PPP bundle-87, they simply relay the data packets over their 802.11b/g interface-88 to the initiating RCG-85." EX1011 at 12:42–46.



35. The use of the additional links as claimed in the '349 Patent thus results in increased bandwidth, data throughput, quality of service, and/or connection reliability. For example, as explained in the specification: "An RCG that is transferring a very large file can request the services of 31 (in this embodiment) other RCGs to assist in the file transfer using their respective POTS lines. A single RCG can therefore gain the combined bandwidth of up to 32 POTS lines transferring data at as much as 56 Kbps each to transfer information. This is roughly equivalent to a transfer rate of 1.79 Mbps in the inbound direction (towards the RCG) and approximately 1.075 Mbps in the outbound direction (towards the PSTN)." EX1011 at 11:24–33.

36. The claims of the '349 Patent are limited to particular configuration and/or operation of computer network devices involved in an exchange of data designed to enable technological improvements such as increasing bandwidth, data throughput, quality of service, and/or connection reliability.

37. Specifically, claim 1 of the '349 Patent (from which Claim 7 depends) recites the following:

A method for increasing bandwidth and data throughput comprising the steps of:

sending a multilink request from a first device to a second device to join a multilink connection, the first device being connected at a first location to a network, the second device being connected at a second location to the network, the second location being geographically

separate from the first location, the first device and the second device being configured for accessing the network; and

when the multilink request is accepted by the second device, receiving at the first device first data from the network at the first location and during the multilink connection, concurrently receiving second data over a wireless connection from the second device, the second data being received at the second location from the network.

EX1011 at 16:30–47.

38. Claim 13 of the '349 Patent recites the following:

A device comprising:

an interface that establishes a network connection at a first location to a first network and receives first data packets over the network connection;

a wireless interface that is configured to establish a wireless connection to a remote communications device, the remote communications device being connected at a second location to a second network; and

a processor that sends a multilink request over the wireless interface to the remote communications device to join the multilink connection, receives from the interface the first data packets from the first network and when the multilink request is accepted by the remote communications device, concurrently receives from the wireless interface second data packets from the second network, the second data packets being received at the second location from the second network.

EX1011 at 17:15–31.

39. Claim 16 of the '349 Patent recites the following

A method for providing broadband communications services, comprising:

sending to a remote host an inquiry in whether the remote host is able to support a multilink connection;

receiving first data packets over a first connection to the Internet;

when the remote host indicates that the multilink connection is supported, receiving second data packets over a second connection, the first data packets being concurrently received with the second data packets during the multilink connection; and

wherein the first data packets create a first data stream and the second data packets create a second data stream.

EX1011 at 17:37–18:9.

40. Claim 20 of the '349 Patent recites the following:

A method for increasing bandwidth and data throughput comprising the steps of:

sending a multilink request from a first device to a second device to join a multilink connection the first device being connected at a first location to a first network, the wireless device being connected at a second location to the first network or a second network, the second location being geographically separate from the first location; and

when the multilink request is accepted by the second device, receiving at the first device first data from the first network at the first location and during the multilink connection, concurrently receiving second data over a wireless connection from the wireless device, the second data being received at the second location from the first network or the second network.

EX1011 at 18:24–39.

41. The inventions recited in the claims of the '349 Patent and its family members also improve upon the prior art. The typical and representative prior art configurations and computer network device operations involved in exchanging data included the following: a Plain Old Telephone Service ("POTS") lines, cable lines, or DSL lines to connect two computer network devices.

42. The problems with the prior art configurations and methods included low bandwidth, data throughput, quality of service, and reliability and substantial costs.

43. For example, as highlighted in the specification, DSL and cable lines require tremendous infrastructure costs, suffer from high costs associated with purchase, installation, and maintenance, required expensive modems at the customer's end, were difficult to deploy, were too complicated for the average user,

and were not available to many customers. EX1011 at 1:60–61 ("DSL or Cable services [] require tremendous infrastructure costs on behalf of the CLEC."); id. at 2:5–8 ("The high-speed services require expensive infrastructure enhancements to the local telephone companies' facilities and cable plants, as well as expensive modems at the customer's end ...").

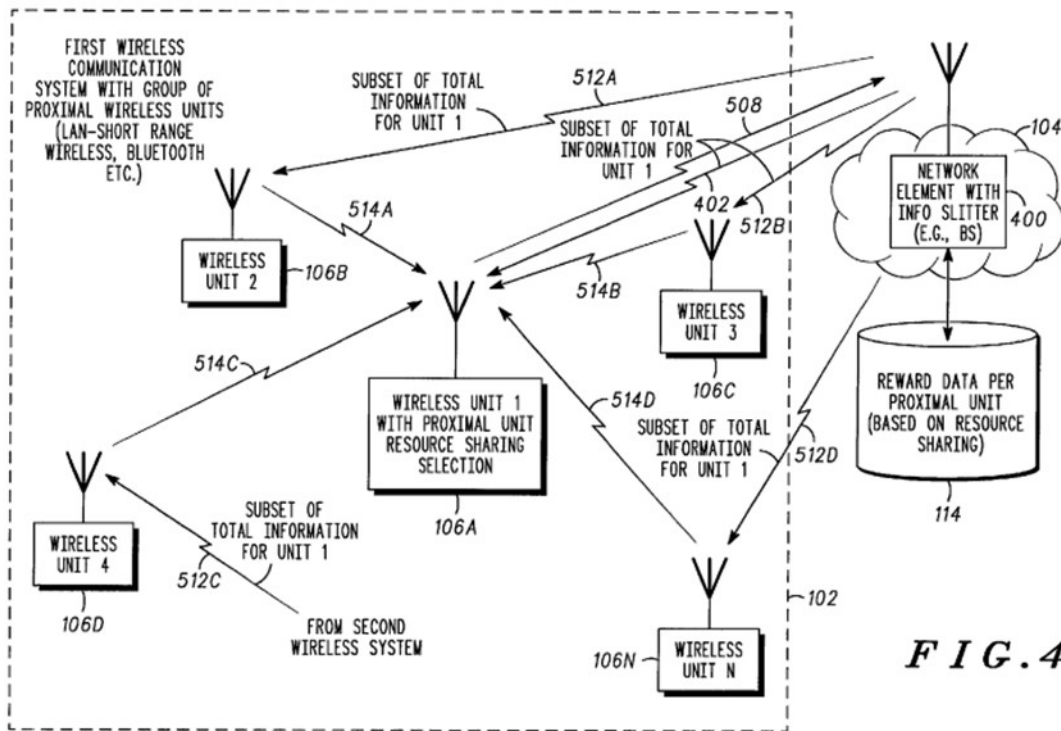
44. As another example, POTS lines had very limited bandwidth. See also EX1011 at 10:49–59 ("... standard POTS lines can only guarantee a maximum of 56 Kbps transfer rate under the best conditions ... DSL, however, suffers from the very high costs associated with the purchase, installation, maintenance, floor lease costs, etc. ...").

45. In addition, prior art configurations and methods also suffered from poor quality of service. EX1011 at 2:9–12 ("Internet based VoIP services suffer from Internet delays caused by a lack of true Quality of Service (QOS) capabilities across the Internet.").

VII. The Prior Art

A. Kotzin

46. U.S. Patent Application Publication No. 2003/0026221 ("Kotzin") (EX1018) discloses "[a] method and apparatus splits information into subsets of information to be communicated for a wireless apparatus." EX1018 at Abstract.



EX1018 at FIG. 4.

47. Kotzin also discloses in its Figure 5 the following sequence by which participation of wireless units are requested and the data is sent from the network communication system through the multiple wireless units to the recipient wireless unit.

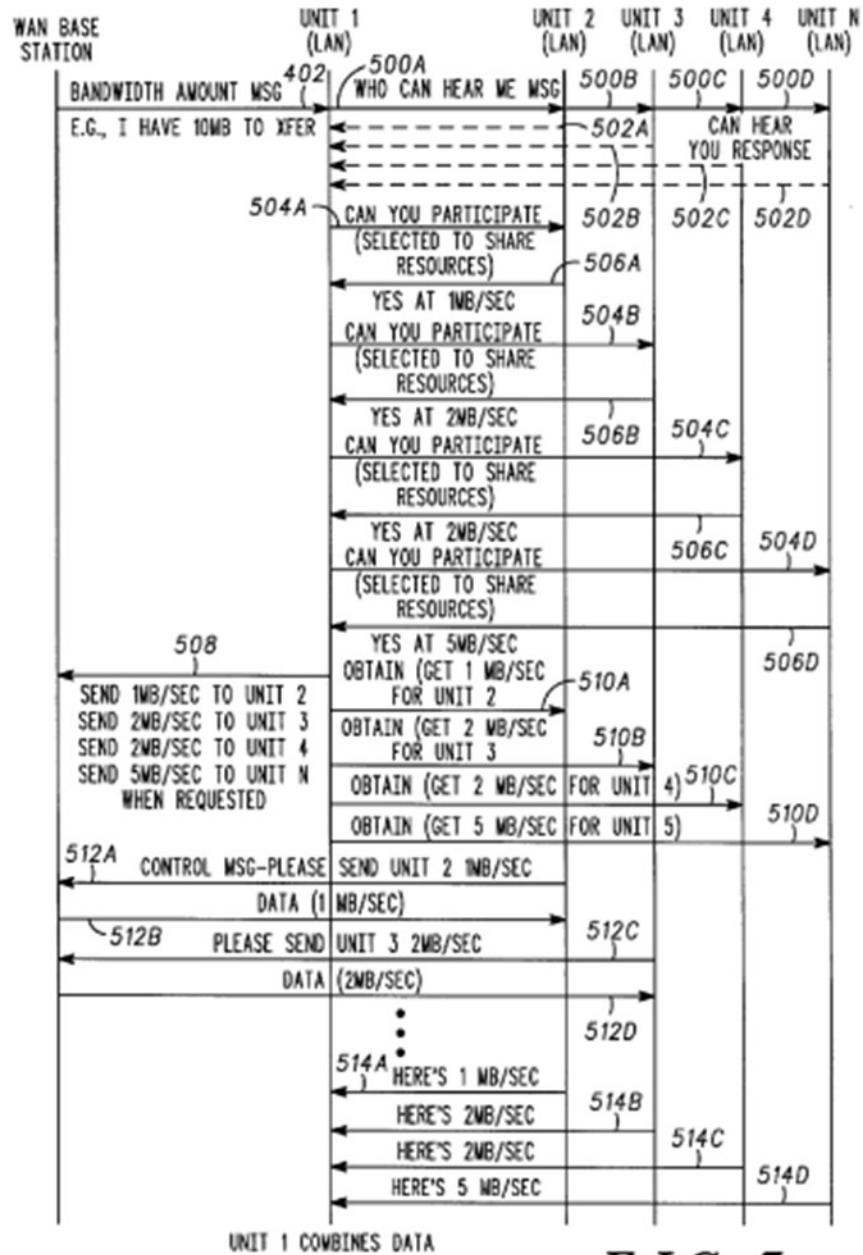


FIG. 5

EX1018 at FIG. 5.

B. Challenger

48. U.S. Patent Application Publication No. 2004/0001512 A1 ("Challenger") (EX1017) discloses a method and apparatus for sharing bandwidth

among a plurality of end users to increase the bandwidth available to each user as depicted in its Figure 2.

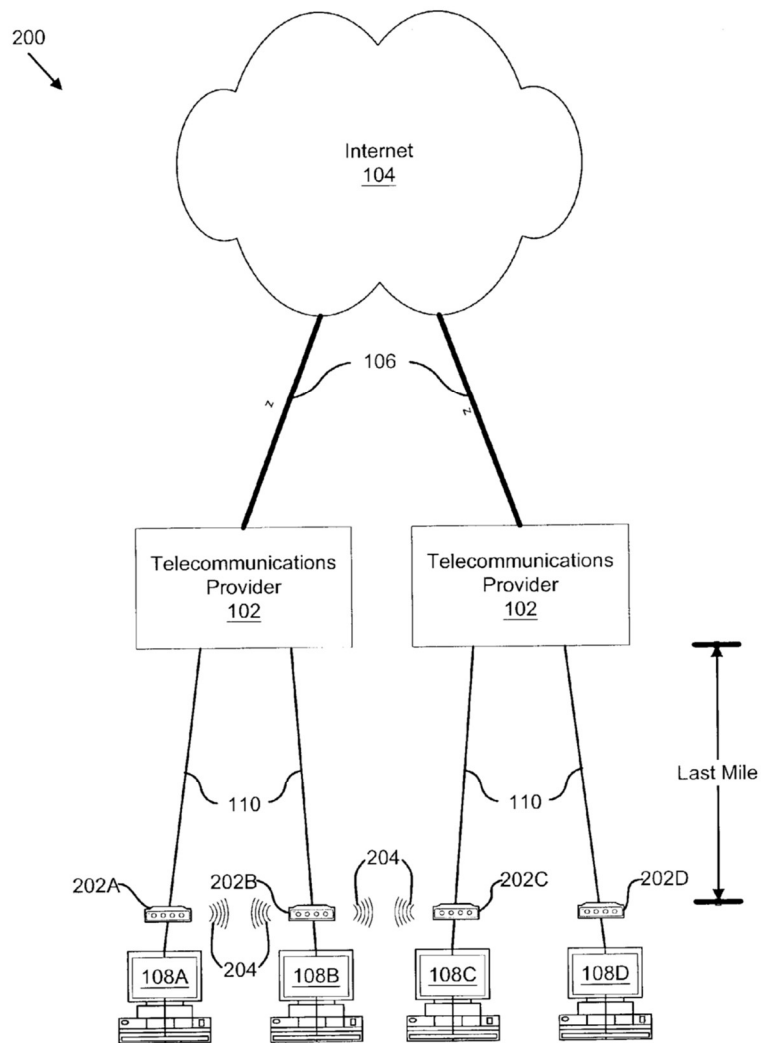


Fig. 2

EX1017 at FIG. 2.

49. Challenger also discloses the following sequence by which data is sent from a remote site through at least two bandwidth sharing devices (one device acting as a master device and the other acting as slave device) in its Figure 7.

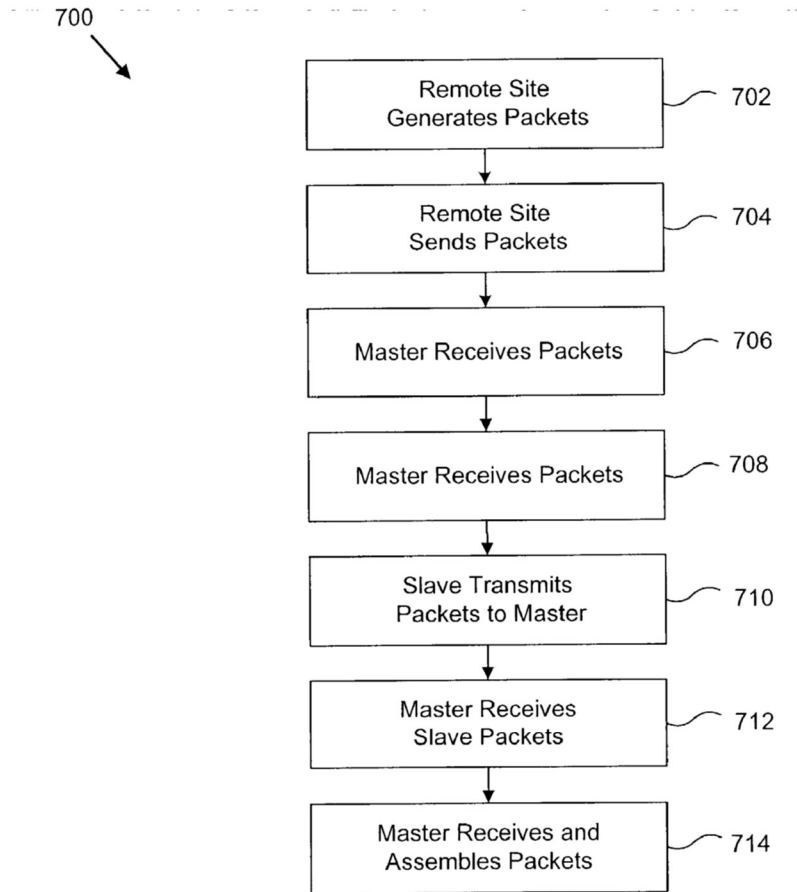


Fig. 7

EX1017 at FIG. 7.

VIII. Claim Construction

A. “Multilink Connection”

50. It is my opinion that in the context of the '349 Patent the person of ordinary art would understand the claim term “multilink connection” to mean “a connection for a data transfer session using at least two network interfaces to form links between two devices, where each link is associated with the same session

identification for assisting in the data transfer, and at least one of the links connects the two devices through a remote communications device having available bandwidth to assist with the data transfer."

51. The claim language supports that "multilink connection" comprises "a connection for a data transfer session." For example, in Claim 1 once the multilink connection is accepted the claimed method comprises "receiving at the first device first data from the network at the first location and during the multilink connection, concurrently receiving second data over a wireless connection from the second device, the second data being received at the second location from the network." EX1011 at 16:43-47. The specification also supports this understanding. EX1011 at 11:34-44 ("The multilink PPP connection-87 is initiated by an RCG when it determines that the file (or streaming service) that it is to download (receive) is of sufficient size or requires a minimum amount of bandwidth to justify the use of a multilink PPP connection. This determination can be made on many different criteria such as the file size, type of data being transmitted, the type of compression if any, a Quality-of- 40 Service requirement or any other pertinent information. (Since a certain amount of overhead is required to set up a Multilink PPP connection, it doesn't make sense to use it for small or low data rate transfers.)"); 11:46-49 ("Referring to FIG. 7, an RCG-85 that decides to initiate a multilink PPP session

with a remote computer i.e. internet URL, requests a multilink PPP session with that URL resource”).

52. The claim language also supports that “multilink connection” would be understood to require “using at least two network interfaces to form links between two devices.”

53. For example, in Claim 13 multiple interfaces are identified for the multilink communication. EX1011 at 17:15-31 (“A device comprising: an interface that establishes a network connection at a first location to a first network and receives first data packets over the network connection: a wireless interface that is configured to establish a wireless connection to a remote communications device, the remote communications device being connected at a second location to a second network and a processor that sends a multilink request over the wireless interface to the remote communications device to join the multilink connection, receives from the interface the first data packets from the first network and when the multilink request is accepted by the remote communications device, concurrently receives from the wireless interface second data packets from the second network, the second data packets being received at the second location from the second network.”). The specification also supports this understanding. EX1011 at 3:33-39 (“Broadband networking for home computers and appliances as well as wide area networking using a combination of a plurality POTS lines connected to a plurality of RCGS

and/or a direct wireless connection to a wireless access point. (These interfaces allow smart devices to communicate to other devices within the home, or over the Internet through the RCG.); 2:56-58 (“The 802.11b/g interface is for wireless communications between the RCG and PCs, other RCGs as well as any other types of compatible wireless devices.”); 11:8-13 (“An 802.11b/g interface-87 is shown as the preferred embodiment, since its 11/54 Mbps interface is considered sufficient bandwidth at this time also. its transmission distances are sufficient for implementation of this device, as opposed to other shorter ranged wireless transmission schemes”); 12:42-46 (“When the remote RCGs-86 receive data packets sent over their respective POTS lines 91, that are destined for the multilink PPP bundle-87, they simply relay the data packets over their 802.11b/g interface88 to the initiating RCG—85.”); 11:2=5 (“Referring to FIG. 7, the RCG implements broadband over POTS by employing an 802.11 b/g wireless interface to configure a multilink PPP bundle87 (per RFC 1990) comprised of the POTS lines connected to up to 32 RCGs.”); 11:58-63 (“Once the multilink bundle is setup, the initiating RCG-85 begins data transfer across its POTS interface 90 with the far end computer system. The initiating RCG—85 then looks up the addresses of up to 31 (in this embodiment) other RCGs in its router tables to use for the multilink PPP transfer.”); 12:42-46 (“When the remote RCGs-86 receive data packets sent over their respective POTS lines 91, that are destined for the multilink PPP bundle-87, they 45

simply relay the data packets over their 802.11b/g interface⁸⁸ to the initiating RCG—⁸⁵.”); 11:24-33 (“An RCG that is transferring a very large file can request the services of 31 (in 25 this embodiment) other RCGs to assist in the file transfer using their respective POTS lines. A single RCG can therefore gain the combined bandwidth of up to 32 POTS lines transferring data at as much as 56 Kbps each to transfer information. This is roughly equivalent to a transfer rate of 30 1.79 Mbps in the inbound direction (towards the RCG) and approximately 1.075 Mbps in the outbound direction (towards the PSTN).”); 12:33-36 (“Each remote RCG POTS interface 91 participating in a multilink PPP bundle, represents a logical "link" in the initiating RCG's multilink PPP bundle-⁸⁷.”).

54. The specification likewise supports that “multilink connection” would be understood to require that “where each link is associated with the same session identification for assisting in the data transfer and at least one of the links connects the two devices through a remote communications device having available bandwidth to assist with the data transfer.” EX1011 at Fig. 7; 11:24-33 (“An RCG that is transferring a very large file can request the services of 31 (in 25 this embodiment) other RCGs to assist in the file transfer using their respective POTS lines. A single RCG can therefore gain the combined bandwidth of up to 32 POTS lines transferring data at as much as 56 Kbps each to transfer information. This is roughly equivalent to a transfer rate of 30 1.79 Mbps in the inbound direction

(towards the RCG) and approximately 1.075 Mbps in the outbound direction (towards the PSTN).”); 12:33-36 (“Each remote RCG POTS interface 91 participating in a multilink PPP bundle, represents a logical "link" in the initiating RCG's multilink PPP bundle-87.”); 11:46-48 (“Referring to FIG. 7, an RCG-85 that decides to initiate a multilink PPP session with a remote computer i.e. internet URL,”); 11:53-58 (“As part of a successful multilink PPP session setup, the initiating RCG-85 receives a multilink PPP session ID, or "magic number", which is used to identify this particular multilink PPP session and is also used for adding or removing links from the multilink bundle 87”); 12:27-33 (“The initiating RCG then selects which of the responding remote RCGs-86 it will use for the multilink PPP bundle 87 and sends them a multilink initialization packet containing the URL of the destination as well as the multilink PPP session ID (magic number) and any other pertinent information required for the remote RCG to join in the existing multilink PPP bundle-87.”).

IX. Opinions on Ground 1 (Kotzin)

55. Claims 1, 13, and 20 require a "multilink request" to be sent from the "first device"/"a processor" of a "device" to "second device"/"remote communication device" to join a "multilink connection." (*See* claim 1, limitation [1.1]; claim 13, limitation [13.3]; claim 20, limitation [20.1]). Claim 16, limitation

[16.1] similarly requires sending an "inquiry" as to whether the "remote host" is able to support a "multilink connection."

56. As explained above "multilink connection", as used in each of the independent claims, would be understood to mean "a connection for a data transfer session using at least two network interfaces to form links between two devices, where each link is associated with the same session identification for assisting in the data transfer, and at least one of the links connects the two devices through a remote communications device having available bandwidth to assist with the data transfer."

57. Red Hat asserts Kotzin discloses the claimed "multilink request"/"inquiry" requirement because the message 504A—referred to by Kotzin as a "shared resource participation query"—is allegedly requesting that "UNIT 2 form one of the physical links in a multi-link connection where data from 106A will be transmitted and received over multiple links." Contrary to Red Hat's assertions, this request is not establishing end-to-end links between Unit 1, Units 2-N, and the WAN Base Station, which are components of a single multilink session. Instead, the request is a series of separate one-off requests and responses directly between Units 2-N and the WAN system.

58. The sequence of messages, i.e., 504, 506, etc., depicted in Figure 5 are between Unit 1 and Units 2-N and do not involve the WAN Base Station. Unit 1 is acting on behalf of the WAN to "recruit" other wireless nodes. Later, using message

508, Unit 1 notifies the WAN of the pool of recruits and their capabilities. The subsequent messages 510 from Unit 1 to Units 2-N are essentially notifications from Unit 1 to Units 2-N that they have been included in the pool, and may begin direct contact with the WAN to set up individual channels. This direct contact is indicated by message pairs 512A/B, 512C/D and so on.

59. The red arrows depicted in Figure 5 below highlight Unit 2's recruitment and participation in the scheme. Message sequence 500A, 502A, 504A and 510A are between Unit 1 and Unit 2 for the "first tranche" of data. Message sequence 5121A/B is the direct connection between Unit 2 and WAN for the "first tranche" of data. Message 514A is Unit 2's "offer" to Unit 1 for the "second tranche" of data.

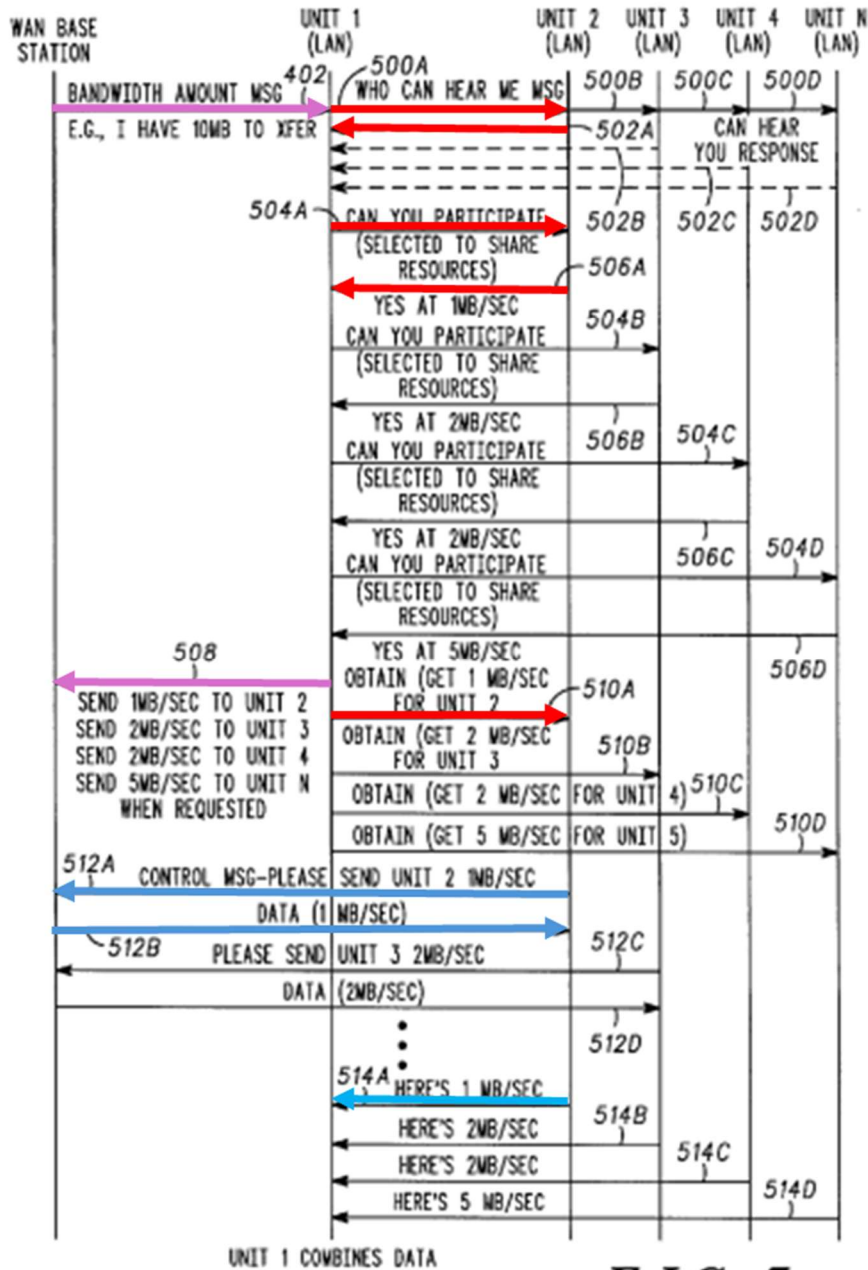


FIG. 5

60. Contrasting Kotzin to Red Hat's other lead references Challener (which I will discuss further below) demonstrates why Kotzin is not establishing end-to-end link. The teachings of Challener show the lines between the bandwidth sharing devices are connected at 506 and later released at 518. *See* Challener Fig. 5.

Notably, Challenger discloses establishing connections between the bandwidth sharing devices but does not similarly disclose establishing connections between the bandwidth sharing devices and the web server.

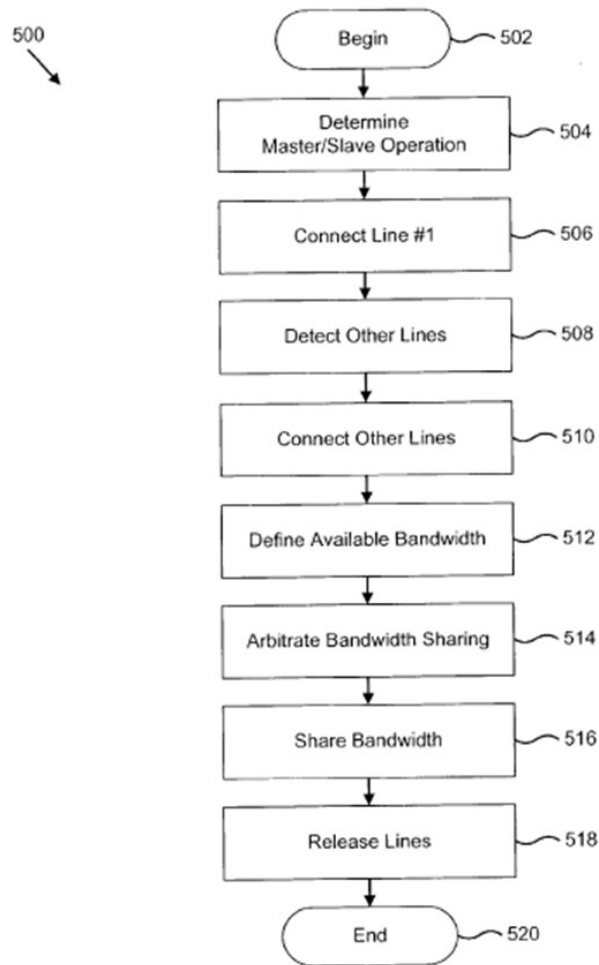


Fig. 5

61. As Kotzin is not establishing an end-to-end link, its configuration is most definitely not a "multilink" connection. Instead, it is a collection of individual, point-to-point, single connections between the "server" (WAN) and the "client volunteers" (Units 2-N) which happens to transport one or more "tranches" of data

from the server to each of the "client volunteers." The independent pieces of this "tranche" of data may be further forwarded or relayed to a different, single "client" device by the initial "client volunteers" using some other network connection, but the WAN system is uninvolved in this secondary part of the process.

62. Kotzin implements a load balancing scheme which is based on voluntary participation. The voluntary participation by the intermediate nodes (Units 2-N) can be interpreted as feedback to assist with link aggregation, queue occupancy notification, or a form of "backpressure" in a congestion control scenario. After being recruited by Unit 1, the intermediate nodes (Units 2-N) are "signaling" to the WAN what their capacity will be in the near future (e.g. for the nth tranche of data). The WAN then provides them with the amount of data they have signaled they can handle.

63. Construing "multilink connection" properly, as asserted in claims 1, 13, 16 and 20, requires that "each link is associated with the same session identification for assisting in the data transfer." Red Hat's Petition neglects to address this construction, specifically, if or how session identifications are used for assisting in the data transfer. The connections between the WAN and each of Units 2-N are established completely independently of a single, overarching "multilink connection" and as such a session identification is not necessary, and is not present in the signaling message from Unit 1 to the WAN system (e.g. 508).

64. Accordingly, even if Kotzin establishes links between Unit 1, Units 2-N, and the WAN Base Station, Kotzin does not demonstrate the establishment of a "multilink connection" as required by each of the independent claims.

65. Therefore, it is my opinion that Kotzin does not disclose or render obvious the "multilink request"/"inquiry" and "multilink connection" required by independent claims 1, 3, 16, and 20.

X. Opinions on Ground 2 (Challener)

66. As discussed above, each of the independent claims requires requesting the "second device"/"remote communication device" to join a "multilink connection." (See claim 1, limitation [1.1]; claim 13, limitation [13.3]; claim 16, limitation [16.1]; claim 20, limitation [20.1]). Red Hat argues that the "POSITA would have understood that Challener's request to a slave device is a multilink request because it requests that the slave device provide one of multiple physical links that will be used to receive or transmit data on behalf of the master BSD." To the contrary, transmitting data "on behalf" of another system is not intrinsically a request to establish or use a "multilink connection." Instead, transmitting data "on behalf" of another system is a request to "relay" or "forward" data in a certain manner.

67. As described above, "multilink connection", as used in each of the independent claims, would be understood to require "a connection for a data transfer

session using at least two network interfaces to form links between two devices, where each link is associated with the same session identification for assisting in the data transfer, and at least one of the links connects the two devices through a remote communications device having available bandwidth to assist with the data transfer."

68. Applying this understanding in the context of Challenger, the slave BSD would be the "remote communications device" through which two devices would be linked, e.g., the remote server and master BSD. Notably, Challenger does not discuss establishing such a "link" between the slave device and the remote server. Challenger only discusses establishing the link between the master device and the slave devices, not the overall shared bandwidth connection with the remote server.

69. In Challenger, the links between the master and each of the slave devices are all independent, point to point links. They are not part of a "multilink connection" which is an end-to-end construct. From the perspective of the master devices, the connections are "one to many" and point-to-point. From the perspective of each slave devices, the connection is "one to one" and point-to-point with the master, as well as "one-to-one" and end-to-end with the remote host. From the perspective of the remote host, each connection with a slave is "one-to-one" and end-to-end with that specific slave. The remote host is completely unaware that each slave device is a relay because each slave device is creating an independent end-to-end connection with the remote host and then acting as a transparent relay on one end of that

connection. Such is unlike a multilink connection. The point-to-point connections between multiple slave devices and master device are appended to the independent, end-to-end connections between each slave device and the remote system.

70. A multilink connection requires each end of the single logical connection to be "one to many" in terms of physical links or constituent logical paths, which then effects an end-to-end "one to one" logical connection.

71. The term "multilink connection" as properly construed requires that "each link is associated with the same session identification for assisting in the data transfer." Red Hat's Petition does not address if or how session identifications are used for assisting in the data transfer.

72. Even if the disclosures of Challenger are sufficient to establish "links" between the master BSD, slave BSD, and the remote server, Challenger does not demonstrate the establishment of a "multilink connection" as required by each of the independent claims.

73. Therefore, it is my opinion that Challenger does not disclose or render obvious the "multilink connection" required by independent claims 1, 3, 16, and 20. I declare under penalty of perjury that the foregoing is true and correct.

Executed this 6th day of November, 2025

By Dr. Stan McClellan: 