

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicants : Bill Chin, Sajit Bhaskaran and Robin Mavunkel  
Title : METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR  
VOICE AND VIDEO OVER INTERNET PROTOCOL  
Docket No. : 18198-4005  
Customer No. : 34313

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**UTILITY PATENT APPLICATION TRANSMITTAL**

1. Type of Application  
This new application is for a(n)  
☒ Utility (non provisional)  
☐ Design  
☐ Plant
2. ☒ Applicant claims small entity status. See 37 CFR 1.27
3. ☒ Specification, including Description, Claims and Abstract (Total Page: 19 )
4. ☒ Drawing(s) (35 USC 113) (Total sheets 13 )
5. Oath or Declaration
  - a. ☐ Newly executed (original or copy)
  - b. ☐ Copy from a prior application (37 CFR 1.63(d)) (for continuation/divisional with Box 18 completed)
    - i. ☐ Deletion of Inventors (Signed statement attached deleting inventors(s) named in the prior application.) See 37 CFR 1.63(d)(2) and 1.33(b).
6. ☐ CD-ROM or CD-R in duplicate, large table or Computer Program (Appendix)
7. ☐ Nucleotide and/or Amino Acid Sequence Submission (if application, all necessary)
  - a. ☐ Computer Readable Form (CRF)
  - b. Specification Sequence Listing on:
    - i. ☐ CD-ROM or CD-R (2 copies); or
    - ii. ☐ Paper
  - c. ☐ Statement verifying identity of above copies

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8. ☒ An assignment of the invention:  
☐ is attached. A separate ☐ "COVERSHEET FOR ASSIGNMENT (DOCUMENT) ACCOMPANYING NEW PATENT APPLICATION" or ☐ FORM PTO 1595 is also attached.  
☒ will follow.  
☐ previously filed on \_\_\_\_\_, at reel \_\_\_\_\_ and frame \_\_\_\_\_.
9. ☐ Power of Attorney
10. ☐ 37 CFR 3.73(b) Statement (when there is an assignee) (Power of Attorney by Assignee)
11. ☐ Listing of Commonly Owned Applications & Patents (37 CFR 1.78(f))  
☐ Rebuttal to the Presumption  
☐ Terminal Disclaimer
12. ☐ Suggested Requirement for Restriction
13. ☐ Examination Support Document
14. ☐ English Translation Document (if applicable)
15. ☐ Information Disclosure Statement/PTO 1449 (or PTO/SB/08a)  
☐ Copies of citations
16. ☐ Preliminary Amendment
17. ☐ Return Receipt Postcard (MPEP 503) (Should be specifically itemized)
18. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed)
19. ☐ Non-publication Request under 35 USC 122 (b)(2)(B)(i) (Applicant must attach form PTO/SB/35 or its equivalent)

[0001] 20. ☒ Other: The present application claims the benefit of and priority to U.S. Provisional Patent Application No. 61/036,377 filed on March 13, 2008, which is hereby incorporated by reference in its entirety.

21. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment or in an Application Data Sheet under 37 CFR 1.76:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application no. \_\_\_\_\_/\_\_\_\_\_, filed \_\_\_\_\_.

Prior application information:

Examiner: \_\_\_\_\_ Group Art Unit: \_\_\_\_\_

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For CONTINUATION OR DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. This incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

22. Basic Filing. Search and Examination Fees:

- A. ☒ The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to Deposit Account No. 15-0665.  
☒ Charge any additional fee required under 37 CFR 1.16 and 1.17 to Deposit Account No. 15-0665.  
B. ☐ Payment Enclosed  
☐ Check ☐ Credit Card ☐ Money Order ☐ Other

|                                                                                                                   |       |   |                 |                          |                         |                  |
|-------------------------------------------------------------------------------------------------------------------|-------|---|-----------------|--------------------------|-------------------------|------------------|
| Basic Filing Fee (if electronic filing of small entity \$75.00)                                                   |       |   |                 |                          |                         | \$310.00         |
| Search Fee                                                                                                        |       |   |                 |                          |                         | \$510.00         |
| Examination Fee                                                                                                   |       |   |                 |                          |                         | \$210.00         |
| Total Claims                                                                                                      | 21    | - | 20              | =                        | 1 x \$50.00             | \$50.00          |
| Independent Claims                                                                                                | 2     | - | 3               | =                        | 0 x $\frac{\$210.0}{0}$ | \$0.00           |
| Application Size Fee<br>(\$250 for each additional 50<br>sheets or fraction thereof)                              | 32    | - | 100             | =                        | 100 x 260.00            | \$0.00           |
| Multiple Dependent Claims                                                                                         | \$370 |   | (if applicable) | <input type="checkbox"/> |                         | \$0.00           |
| Surcharge 37 CFR § 1.16(e)                                                                                        | \$130 |   | (if applicable) | <input type="checkbox"/> |                         | \$0.00           |
| <b>TOTAL OF ABOVE CALCULATIONS</b>                                                                                |       |   |                 |                          |                         | <b>\$1080.00</b> |
| Reduction by ½ for Filing by Small Entity. Note 37 CFR §§ 1.9, 1.27, 1.28.<br><input checked="" type="checkbox"/> |       |   |                 |                          |                         | (\$540.00)       |
| Extension of Time (from above)                                                                                    |       |   |                 |                          |                         | \$0.00           |
| Assignment -- \$40 (if applicable) <input type="checkbox"/>                                                       |       |   |                 |                          |                         | \$0.00           |
| <b>TOTAL FEES SUBMITTED HERewith</b>                                                                              |       |   |                 |                          |                         | <b>\$540.00</b>  |

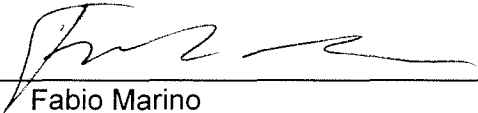
- C. ☒ This application is being filed without fee or Declaration under 37 CFR §1.53.

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23. Correspondence Address  
☒ Customer Number. 34313

Respectfully submitted,  
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**APPLICATION FOR UNITED STATES PROVISIONAL PATENT**

A METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND  
VIDEO OVER INTERNET PROTOCOL

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A Method For Multiple Link Quality Of Service For Voice And Video Over Internet Protocol

**[0001]** The present application claims the benefit of and priority to U.S. Provisional Patent Application No. 61/036,037 filed on March 13, 2008, which is hereby incorporated by reference in its entirety.

**[0002]** The invention described applies to computer and telecommunications networks, where software or other digital logic such as FPGAs, ASICs are used in the control and transmission of video or audio payloads over networks using the Internet Protocol (IP). Embodiments could be in networked computers, cell phones, routers, switches, firewalls, gateways, session border controllers, and miscellaneous networking devices connecting to both wireless and wired networks. The invention applies equally to transmission over private network links and paths, or over the public Internet.

**[0003]** The main standard protocols in use for audio and video over IP networks are the Session Initiation Protocol (SIP), Session Description Protocol (SDP) as defined in [1], [2] respectively, and lastly the Real Time Protocol (RTP) and RTP Control Protocol (RTCP) as defined in [3]. These are the standard protocols in use with Voice over Internet Protocol (VoIP), as well as in various video and video-conferencing protocol stacks that run on top of IP. Practitioners of ordinary skill in the art will also be familiar with computers, routers, firewalls, VoIP gateways, VoIP session border controllers, video session border controllers, and other networked devices that implement Network Address Translation (NAT) as described in [5]. A variant of NAT is Port Address

Translation (PAT) where many devices can share a single public IP address; the technique involves careful use of TCP and UDP port numbers. More information about PAT can be found in [9]. NAT and PAT are important because of the necessity of security and quality-of-service gateway devices, as well as other devices operating at the Application Layer of the TCP/IP reference model; these are often deployed at a user's premises when connecting to the Internet or private network operators. The necessity and demand by users that voice and video over Internet be able to successfully interoperate with these application gateway devices is well established.

**[0004]** Practitioners of ordinary skill in the art may also be familiar with Internet routing protocols, such as BGP as defined in [4]. Studies have shown recently that BGP networks are susceptible to numerous short-lived instabilities that adversely affect audio and video streams transported over the Internet; VoIP calls in particular are adversely affected by various Internet instabilities related to BGP [6]. Video or audio calls that are in progress tend to break when these instabilities occur, as extensively documented in [6].

**[0005]** SIP/SDP and RTP have proven to be extremely difficult to operate in networks involving NAT and PAT, as explained in [7], [8]. For example, many security firewalls implement NAT/PAT. More often than not, audio and video traffic using SIP/SDP and RTP tend to break when firewall methods (or other software methods involving NAT or PAT) are encountered in the processing path of these same SIP/SDP and RTP traffic.

**[0006]** A number of prior art "gateway" devices exist for video and audio over IP traffic. These usually provide a security firewall function. More significantly, they frequently offer a quality of service (QOS) feature. In this case, the wide area network (WAN) link is typically a bottleneck where voice and video traffic may compete for scarce bandwidth with data traffic (such as file transfers). Such gateways often are advertised as performing QOS enforcement by traffic shaping or rate limiting or rate policing, on the single WAN link. Voice and video traffic are often given better treatment by limiting the amount of bandwidth consumed by normal data traffic (such as PC file transfers).

**[0007]** The field of the invention also relates to both mobile and non-mobile domains in voice and video communications.

**[0008]** In the prior art, no technology exists whereby with multiple links or paths available in a mobile or non-mobile domain, where these alternate paths are combined intelligently to provide the best quality of service for VoIP or Video over IP.

**[0009]** Example in the non-mobile domain: if an Internet voice call is originating in a device (computer or gateway or other embodiment) and multiple WAN links are available concurrently, each representing a different Internet path, there is no prior art that solves the problem of determining the "best" link at any given time, where "best" is defined as the link or path that provides the best quality. Voice or video quality over a given path is often determined by various metrics, such as packet loss, jitter, packet re-sequencing, packet duplicate creation, MOS scores, etc. In the prior art, if an established VoIP call is in

progress, and a quality of service degrade event occurs in the middle of a call (such as packet loss, link failure, increased jitter etc.), the speakers usually lose the call in the middle of their conversation.

**[0010]** Not all quality events are degrade events on an active link.

Example: A quality of service event could also occur on a network link which is not currently in use; in this case voice or video traffic is currently being placed on some link other than the one on which the event occurred. If the inactive link suddenly becomes of significantly higher quality than the active one, it may be desirable to move the voice or video payload (in reality an RTP flow) from the currently active link, to the better-quality link. What is lacking in the prior art is the ability to move the call "at will" and with full confidence that the call will not break; it usually does break because of the traditional difficulty of handling NAT and PAT in the presence of SIP and RTP protocols. This is depicted in Fig 7.

**[0011]** It is important to understand that in the prior art, dynamic IP routing protocols (such as BGP, OSPF, IS-IS and others) do not solve the non-mobile domain problem—how to pick the best path among several concurrent ones—so that quality never degrades. For example, if there is a 5-second interval where packet loss is high—it may be 10% packet loss, which is known to cause severe degradation for voice—these dynamic routing protocols do not make any path change to correct the problem. Five seconds of unacceptable voice quality is enough to make the speakers hang up the phone.

**[0012]** Since the prior art routers have difficulty dealing with these issues, it has become clear to practitioners of ordinary skill in the art that voice

and video quality control needs to be asserted—in terms of auto-detection of quality degrades and consequent actions to recover quality—in devices other than routers—more specifically in various types of application layer devices, including possibly the voice and video endpoints. Examples of such application layer devices are VoIP or video gateways/firewalls, QOS gateways, SIP phones, cell phones which are SIP/RTP enabled, and videoconferencing terminals.

**[0013]** Unfortunately, prior art gateways have problems when multiple WAN or Internet links need to be treated as alternate paths. As mentioned earlier, in the prior art, when a voice or video call is moved, a NAT or PAT often has to be performed. In the general case of a SIP/RTP user endpoint (such as an Internet phone, videoconference station, IP TV receiver—see 501 in Fig 3) communicating with a SIP/RTP server—depicted as 502 in Fig 3 (in the case of voice, this SIP server is often called an IP PBX) —it is often found that moving a call from one path to another path to get a better call quality results in the call itself breaking. Sometimes, additional devices called Session Border Controllers (SBC) are inserted in front of the SIP server at an Internet data center to try and fix this problem. Unfortunately—the cost of additional SBC equipment at the data center is an unnecessary economic burden; not to mention these SBCs are not able to detect quality degrades at remote locations and auto-correct for them when alternate paths do exist. The SBC in some deployment scenarios is not even aware of the existence and identity, as expressed in source IP address ranges, of these alternate Internet or WAN paths. An SBC deployment example is shown in Fig 8. If Fig 8 were applied to the example of hosted IP PBX service,

a service provider manages the SBC 703, but the customer manages the WAN links (paths) 721 and 722 shown in Fig 8, without the service provider or the SBC being aware of these. Hence the prior art SBC is an unsatisfactory and inadequate solution for achieving and maximizing quality of service when multiple links are available across the remote network.

**[0014]** Because of the expense and other issues of deploying SBCs, many customers are attempting to deploy voice or video with multiple WAN links, as shown in Fig 3. A gateway 501 is installed at customer premises to provide security and quality of service—these are 2 essential functions in most networks. In Fig 3 today, with a prior art gateway, calls do break when the gateway attempts to move calls from one path to another.

**[0015]** In addition to the non-mobile domain where multiple link choices exist, prior art also does not work well in the mobile domain sense in networks where SIP, RTP and IP are used. This is where different IP paths can be selected at different points in time. A good example is cell phone roaming and handoff from one base station to another base station: in many instances the calls do break when the handoff occurs.

### **Summary of Invention**

**[0016]** A method for achieving multiple link quality of service for video and voice calls over Internet links, or over IP links running in private networks, is described. This method applies to both the non-mobile domain (alternate paths exist in one place at the same time) as well as the mobile domain (one path is used at any one place at a given time, but the user device roams from place to

place). This method can be implemented as either computer software or other digital logic (ASIC or FPGA). Using this invention, voice and video calls can be moved at will from one path to another, as many times as required during a single conversation, without breaking the RTP voice or video payload stream. The benefit is that embodiments of this invention have a significantly higher probability that a call never breaks under various conditions of quality degrade. This includes the case of link and router failures, which are treated as a special case of quality degrade in the context of voice and video.

**[0017]** In one embodiment (a non-mobile domain example) a gateway with multiple links to the Internet delivers maximum quality of service to SIP capable phones installed behind it, as in Fig 3.

**[0018]** In another embodiment (a mobile domain example), a cell phone with a SIP/RTP over IP stack roams from one base station to another, where each base station also implies a different IP default router for the cell phone, as in Fig 6. In this case, again any call quality degrade or call break event is avoided or minimized by using the methods described in the invention.

## **Detailed Description of Invention**

### ***Brief Description of the Drawings***

**[0019]** Fig 1, Fig 2, Fig 3 and Fig 6 depict some but not all embodiments of the invention.

**[0020]** Fig 4 is a flow chart of the method for achieving quality of service for voice and video over IP, using multiple links in either a non-mobile domain or mobile domain. Each step in the flow chart is explained in a table below.

**[0021]** Fig 5 is a Finite State Machine that describes how to implement the invention in digital logic or software in the exemplary embodiment. Other methods of implementation will be understood by practitioners in the art.

***Detailed Description***

**[0022]** As mentioned, those of ordinary skill in the art can use either the FSM in Fig 5, or the Flow Chart in Fig 4, in order to implement the methods in the embodiments described herein.

**[0023]** In this section we focus on clarifying the flow chart in Fig 4 with a more detailed description of the methods involved, as well as providing additional clarification for those of ordinary skill in the art.

**[0024]** The Table below begins by giving a description of each of the blocks depicted in Fig 4 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230 and 240.

**Flow Chart Description**

| Number | Brief Description       | A More Detailed Description                                                                                                                                                                                                                                             |
|--------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100    | SIP session in progress | A SIP session has been established with at least one RTP stream is active.                                                                                                                                                                                              |
| 110    | Stream quality event    | These events occur when the RTP stream quality drops below or exceeds configured quality thresholds. The thresholds can be based on MOS scale, SWiQI index, jitter, latency, out of order packet events, packet loss events, packet duplication events and RTCP events. |
| 120    | Stream load balancing   | An RTP stream may be signaled to move in order to achieve the desired load balancing results.                                                                                                                                                                           |
| 130    | Admin move              | The administrator may want to move specific RTP streams to a different WAN link.                                                                                                                                                                                        |

| Number | Brief Description                                         | A More Detailed Description                                                                                                                                                                                                                                                                                                                                     |
|--------|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 140    | Is remote stream?                                         | Only RTP streams traversing a WAN link should be moved. Local RTP streams that stay only on the LAN should not be moved.                                                                                                                                                                                                                                        |
| 150    | Alternate path available?                                 | RTP streams will only be moved when there is an alternate WAN link available for use. An ISP outage or poor quality scores on a WAN link may cause a particular link to be marked unavailable.                                                                                                                                                                  |
| 160    | Select SIP server, Send Re-Invite, Update sequence number | Once a new WAN link has been selected, the SIP server is chosen to send a SIP INVITE request. The request will contain the IP address and TCP/UDP port information for the WAN link that the RTP stream will use. The SIP signaling sequence number must be maintained between the SIP device and the server.                                                   |
| 170    | Server accept request?                                    | If the SIP server does not accept the request, then the RTP stream will not be moved and the session will continue as before.                                                                                                                                                                                                                                   |
| 180    | Server challenge request?                                 | The SIP server may challenge subsequent SIP INVITE requests on an active SIP session.                                                                                                                                                                                                                                                                           |
| 190    | Send invite authentication                                | When the SIP server challenges the SIP INVITE request, the SIP INVITE must be re-sent with the proper authentication information.                                                                                                                                                                                                                               |
| 200    | Authentication successful?                                | If the authentication fails, then the RTP stream will not be moved and the session will continue as before.                                                                                                                                                                                                                                                     |
| 210    | Attempt move, Update sequence numbers                     | The dialog with the SIP server must be completed before the RTP stream can be moved. The state involving the SIP signaling sequence number (often referred to as the "cseq" value, must be maintained throughout the dialog. For a new "transaction" this number must monotonically increase; for a re-transmit of an old transaction, it must remain the same. |
| 220    | Move successful?                                          | Did the dialog with the SIP server to move the RTP stream complete successfully?                                                                                                                                                                                                                                                                                |

| Number | Brief Description | A More Detailed Description                                               |
|--------|-------------------|---------------------------------------------------------------------------|
| 230    | Do not change     | The RTP stream will not be moved and the session will continue as before. |
| 240    | Update stream     | Move the RTP stream to the designated WAN link.                           |

### ***An Embodiment of the Invention***

**[0025]** An embodiment of the invention that we have built is described here; what follows is an example of a non-mobile-domain use of multiple WAN links. We will describe a QoS voice/video gateway which includes all steps of the method described in Fig 4. It has been tested and verified for the economical and highly desirable deployment scenario depicted in Fig 9, where no server side SBC is needed.

**[0026]** With reference to Fig 9, the multi-link QoS gateway 910 has 3 logical network interfaces 961, 962 and 963. In this example 3 routers on the user local area network 990 connect the user to the public Internet 940—these routers are 921, 922 and 923. Network interfaces 961, 962 and 963 correspond to globally routable public IP addresses belonging to the 3 access Internet Service Providers shown in Fig 9 as 931, 932 and 933 respectively. If any of these access Internet links are DSL or cable modem networks, then it is possible for the elements shown as 921, 922 and 923 to be DSL or cable modems, instead of IP routers in the traditional sense; the methods are still applicable as practitioners will be familiar with protocols such as DHCP [10] and PPPoE [11],

which are used by the gateway to obtain dynamic public IP addresses in these cases.

**[0027]** In Fig 9 a SIP user endpoint 990 is shown communicating with a SIP/RTP server 950; while this is a voice example, with 990 being a SIP phone and the server being an IP PBX, practitioners of ordinary skill in the art can also use it for video-based embodiments, as long as the methods for handling SIP and RTP in Fig 4 and 5 are adhered to.

**[0028]** In this embodiment, 3 alternate paths for quality of service in the non-mobile-domain are shown:

Path 1: 900, 910, 961, 921, 931, 940, 950

Path 2: 900, 910, 962, 922, 932, 940, 950

Path 3: 900, 910, 963, 923, 933, 940, 950

**[0029]** The gateway 910 described here appears to the routers 921, 922 and 923 as a transparent bridge; other embodiments could include the gateway actually appearing as a router, or incorporating one or all of the routers 921, 922 and 923. An embodiment of the invention 1010—whereby the WAN router modules 1021, 1022, 1023 are incorporated into the QOS gateway—is shown in Fig 12.

**[0030]** Various algorithms for detecting failures and degrades, as well as relative improvements in quality between links over time can be implemented (110 in Fig 4). For example, in one embodiment, the RTP stream in both directions is sampled at their natural arrival rate—which is once per 20 milliseconds in most VoIP cases where no loss occurs. By applying statistical

techniques over a small number of sampling intervals (any value from 4–20 intervals is good) it is possible to detect changes in various quality conditions within 80 ms–200 ms. While this is one embodiment, those of ordinary skill in the art will recognize that step 110 can have a multiplicity of embodiments which need not be described here. Suffice it to say that the detect algorithm needs to be fast—so fast that auto-detect and auto-correct in the case of bad quality can be performed in under 2 seconds. We have built embodiments that perform this in under 1 second. In a multi link QoS context, fast detect is important because if more than a few seconds transpire and a voice or video call becomes unusable, the human users tend to give up and the call is considered "broken."

**[0031]** Those of ordinary skill in the art will also recognize that embodiments are capable of deciding, while a SIP/RTP session is in progress, that a stream needs to be moved for load balancing reasons as depicted in Fig 4 as step 120. For example there may be 2 phones that are currently active as depicted in Fig 10 as 900 and 901.

**[0032]** Initially the paths are as follows:

Stream 1 Phone 900: 900, 910, 961, 921, 931, 940, 950

Stream 2 Phone 901: 901, 910, 961, 921, 931, 940, 950

**[0033]** In other words, initially both streams use essentially the same WAN path represented by access ISP 1. Suppose a large PC file transfer gets triggered on the same path represented by ISP 1, which the gateway becomes aware of, and the gateway now decides to pre-emptively optimize for VoIP quality by moving Stream 2 to a better path, and suppose this better path is

ISP 3; this can be done without breaking the RTP call that is already in progress. Steps 140, 150, 160, 170, 180, 190, 200, 210, 220 and 240 can now be executed to move the stream "at will."

**[0034]** The final paths after the move are:

Stream 1 Phone 900: 900, 910, 961, 921, 931, 940, 950

Stream 2 Phone 901: 901, 910, 963, 923, 933, 940, 950

**[0035]** Most importantly, the call does not break during the move of the stream.

**[0036]** Those of ordinary skill in the art will also recognize another embodiment is possible where for administrative reasons, a stream may be moved while a session 100 is in progress. For example, it may be known in advance that the path represented by ISP 1 is going to be "taken down for service maintenance" in 20 minutes. Admin commands to move both streams depicted in Fig 10—from path (961, 921, 931, 940, 950) to path (962, 922, 932, 940, 950) for example, can also be implemented in this invention, following the same steps in Fig 4.

**[0037]** Those of ordinary skill in the art will also recognize that embodiments with multiple SIP server registrations are possible concurrently with an intermediate VoIP or video gateway 910; this is shown in Fig 11. In these cases, the Select SIP Server step is needed as part of Step 160 in Fig 4. For a call not to break, the SIP re-invite message of Step 160 needs to be sent to the same SIP server that handled the original SIP Invite for the call.

**[0038]** Those of ordinary skill in the art will recognize that the transport layer port and IP address parameters for the "move" can be conveyed in appropriately formulated SIP/SDP headers in the re-invite message, see step 160 in Fig 4. In addition the "cseq" field requires proper handling, as described in the Flow Chart Description table above.

***Another Embodiment of the Invention—Mobile Domain***

**[0039]** Another example of where the invention may be applied is in cell phone roaming (or any other mobile device that uses cellular technology and faces problems of calls dropping when handoff occurs from one base station to another). The invention prevents dropped calls during hand off in an all-IP type network. If in addition, the following 2 conditions are met, then calls will not drop when roaming. These conditions are (a) the cell phone uses VoIP protocols SIP and RTP over IP, and (b) the cell phone always communicates with the same SIP server—that it originally registered with, for the entire duration of one call (630 in Fig 6) as it moved from the first base station (605 in Fig 6) to a second base station (606 in Fig 6). As long as all these conditions are met, an embodiment of the invention in the cell phone will produce no dropped calls during handoff.

**[0040]** Those of ordinary skill in the art of cellular and VoIP technology will recognize that the embodiments are not limited to cell phones, but to all mobile devices that use SIP, RTP and IP protocols.

CLAIMS:

We claim:

1. A method of enhancing the reliability of a transmission from a source to a destination in a communications network using a network protocol that operates on top of the Internet Protocol (IP) comprising;  
  
transmitting between a source and destination over a first network path made up of one or more network links where at least one of the network links is to a local area network that is remote from the transmission source;  
  
switching the transmission from the first network path to one of a plurality of alternative network paths; and  
  
the transmission is not disrupted as a result of said switch to the one of a plurality of alternative network paths,  
  
wherein said transmission contains audio or video content.
2. The method of claim 2 wherein said transmission uses the Real Time Protocol (RTP).
3. The method of claim 3 wherein said transmission further uses the Session Initiation Protocol (SIP).
4. The method of claim 4 wherein the SIP signaling sequence of the transmission is maintained after said switching from the first network path to the one of a plurality of alternative network paths.

5. The method of claim 5 wherein the switch from the first network path to the one of a plurality of alternative network paths occurs as a result of a stream quality event.
6. The method of claim 5 wherein the switch from the first network path to the one of a plurality of alternative network paths occurs as a result of stream load balancing
7. The method of claim 5 wherein the switch from the first network path to the one of a plurality of alternative network paths occurs as a result of an administrator move
8. The method of claim 5 wherein the SIP server associated with the one of a plurality alternative network paths may authenticate the transmission before it is switched.
9. The method of claim 5 wherein the source device is a mobile device.
10. The method of claim 10 wherein one or more of said plurality of alternative network paths become available to the mobile device during roaming.
11. A communications network comprising  
a transmitting device;  
a receiving device;  
a network device;  
the transmitting device and receiving device operable to maintain a transmission over a first network path that is made up of one or more

network links where at least one of the network links is to a local area network is remote from the transmitting device; and  
  
a network device operable to switch the transmission from the first network path to one of a plurality of alternative network paths without disrupting the transmission.

12. The system of claim 12 wherein said transmission contains audio or video content.
13. The system of claim 13 wherein said transmission is made using the Real Time Protocol (RTP).
14. The system of claim 14 wherein said transmission further uses the Session Initiation Protocol (SIP).
15. The system of claim 15 wherein said transmission's SIP signaling sequence is maintained after said switching from the first network path to the one of a plurality of alternative network paths.
16. The system of claim 16 wherein said switching from the first network path to the one of a plurality of alternative network paths occurs as a result of a stream quality event.
17. The system of claim 16 wherein said switching from the first network path to the one of a plurality of alternative network paths occurs as a result of stream load balancing.

18. The system of claim 16 wherein said switching from the first network path to the one of a plurality of alternative network paths occurs as a result of an administrator move.
19. The system of claim 16 wherein the SIP server associated with the one of a plurality alternative network paths may authenticate the transmission before it is switched.
20. The system of claim 16 wherein the transmitting device is a mobile device.
21. The system of claim 21 wherein one or more of said plurality of alternative network paths become available to the mobile device during roaming.

ABSTRACT

A method for achieving multiple link quality of service for video and voice calls over Internet links, or over IP links running in private networks, is described. This method applies to both the non-mobile domain (alternate paths exist in one place at the same time) as well as the mobile domain (one path is used at any one place at a given time, but the user device roams from place to place). This method can be implemented as either computer software or other digital logic (ASIC or FPGA). Using this invention, voice and video calls can be moved at will from one path to another, as many times as required during a single conversation, without breaking the RTP voice or video payload stream. The benefit is that embodiments of this invention have a significantly higher probability that a call never breaks under various conditions of quality degrade. This includes the case of link and router failures, which are treated as a special case of quality degrade in the context of voice and video

## Electronic Patent Application Fee Transmittal

|                                        |                                                                                        |                 |               |                             |
|----------------------------------------|----------------------------------------------------------------------------------------|-----------------|---------------|-----------------------------|
| <b>Application Number:</b>             |                                                                                        |                 |               |                             |
| <b>Filing Date:</b>                    |                                                                                        |                 |               |                             |
| <b>Title of Invention:</b>             | METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL |                 |               |                             |
| First Named Inventor/Applicant Name:   | BILL CHIN                                                                              |                 |               |                             |
| <b>Filer:</b>                          | Sanjeet Kumar Dutta/Susan Principe                                                     |                 |               |                             |
| <b>Attorney Docket Number:</b>         | 18198-4005                                                                             |                 |               |                             |
| Filed as Small Entity                  |                                                                                        |                 |               |                             |
| <b>Utility Filing Fees</b>             |                                                                                        |                 |               |                             |
| <b>Description</b>                     | <b>Fee Code</b>                                                                        | <b>Quantity</b> | <b>Amount</b> | <b>Sub-Total in USD(\$)</b> |
| <b>Basic Filing:</b>                   |                                                                                        |                 |               |                             |
| Utility filing Fee (Electronic filing) | 4011                                                                                   | 1               | 75            | 75                          |
| Utility Search Fee                     | 2111                                                                                   | 1               | 255           | 255                         |
| Utility Examination Fee                | 2311                                                                                   | 1               | 105           | 105                         |
| <b>Pages:</b>                          |                                                                                        |                 |               |                             |
| <b>Claims:</b>                         |                                                                                        |                 |               |                             |
| Claims in excess of 20                 | 2202                                                                                   | 1               | 25            | 25                          |
| <b>Miscellaneous-Filing:</b>           |                                                                                        |                 |               |                             |
| <b>Petition:</b>                       |                                                                                        |                 |               |                             |

| Description                             | Fee Code | Quantity | Amount | Sub-Total in USD(\$) |
|-----------------------------------------|----------|----------|--------|----------------------|
| <b>Patent-Appeals-and-Interference:</b> |          |          |        |                      |
| Post-Allowance-and-Post-Issuance:       |          |          |        |                      |
| <b>Extension-of-Time:</b>               |          |          |        |                      |
| <b>Miscellaneous:</b>                   |          |          |        |                      |
| <b>Total in USD (\$)</b>                |          |          |        | <b>460</b>           |

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| <b>EFS ID:</b>                              | 3440635                                                                                |
| <b>Application Number:</b>                  | 12137258                                                                               |
| <b>International Application Number:</b>    |                                                                                        |
| <b>Confirmation Number:</b>                 | 7163                                                                                   |
| <b>Title of Invention:</b>                  | METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL |
| <b>First Named Inventor/Applicant Name:</b> | BILL CHIN                                                                              |
| <b>Customer Number:</b>                     | 34313                                                                                  |
| <b>Filer:</b>                               | Sanjeet Kumar Dutta/Susan Principe                                                     |
| <b>Filer Authorized By:</b>                 | Sanjeet Kumar Dutta                                                                    |
| <b>Attorney Docket Number:</b>              | 18198-4005                                                                             |
| <b>Receipt Date:</b>                        | 11-JUN-2008                                                                            |
| <b>Filing Date:</b>                         |                                                                                        |
| <b>Time Stamp:</b>                          | 17:00:16                                                                               |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                                            |

### Payment information:

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| Submitted with Payment                   | yes             |
| Payment Type                             | Deposit Account |
| Payment was successfully received in RAM | \$460           |
| RAM confirmation Number                  | 2717            |
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| Authorized User                          |                 |

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| 1               |                      | 4005.pdf  | 1293757<br>f890ef6abaaadd6614b46dfa300b7a353ce7cc29 | yes              | 37               |

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|  | <b>Multipart Description/PDF files in .zip description</b> |              |            |  |
|  | <b>Document Description</b>                                | <b>Start</b> | <b>End</b> |  |
|  | Transmittal of New Application                             | 1            | 5          |  |
|  | Specification                                              | 6            | 19         |  |
|  | Claims                                                     | 20           | 23         |  |
|  | Abstract                                                   | 24           | 24         |  |
|  | Drawings-only black and white line drawings                | 25           | 37         |  |

**Warnings:****Information:**

|   |                        |              |                                                  |    |   |
|---|------------------------|--------------|--------------------------------------------------|----|---|
| 2 | Fee Worksheet (PTO-06) | fee-info.pdf | 8535<br>c244cabf76a3aad21320d7d15524a9715d453524 | no | 2 |
|---|------------------------|--------------|--------------------------------------------------|----|---|

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

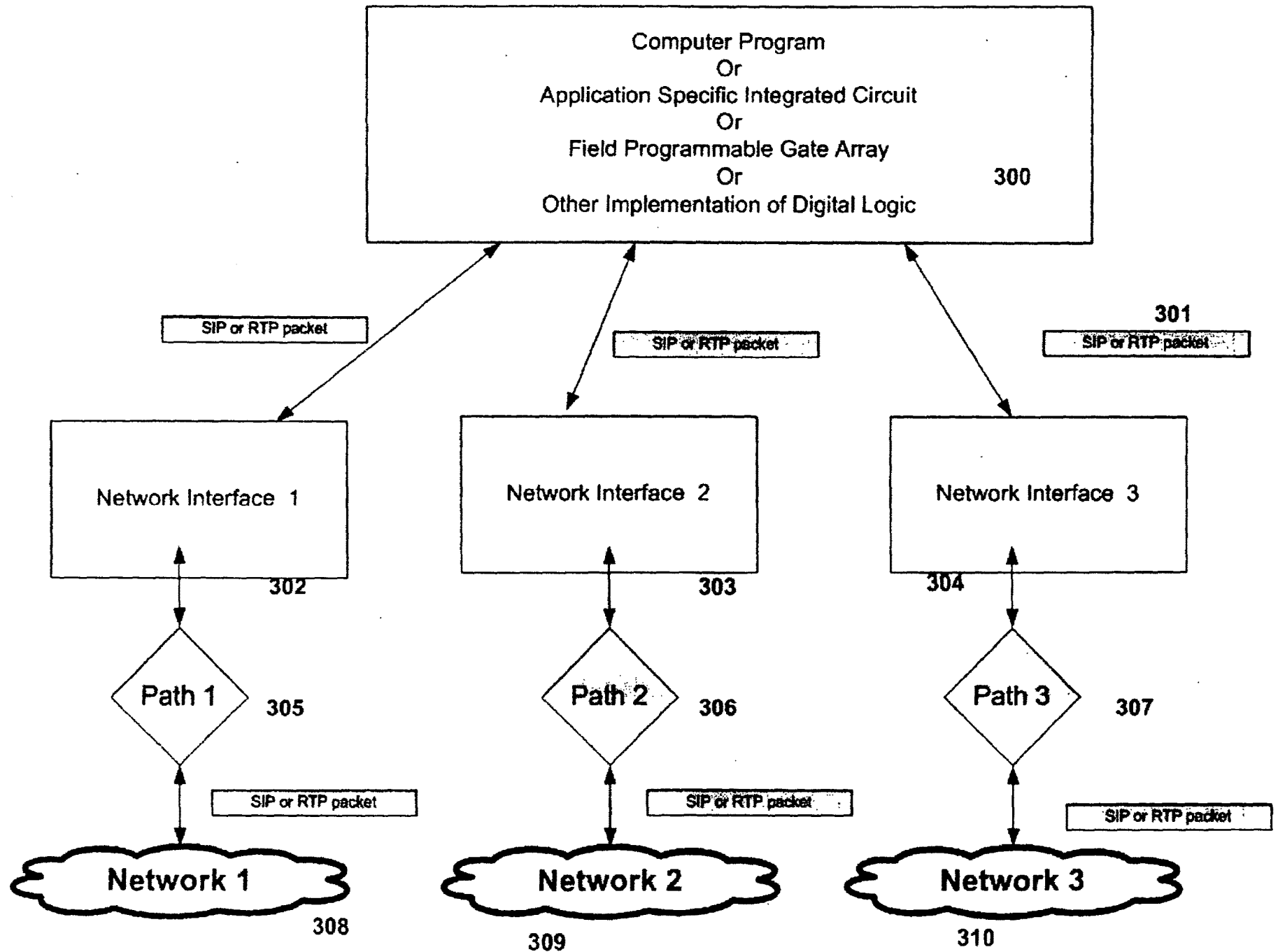
**National Stage of an International Application under 35 U.S.C. 371**

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

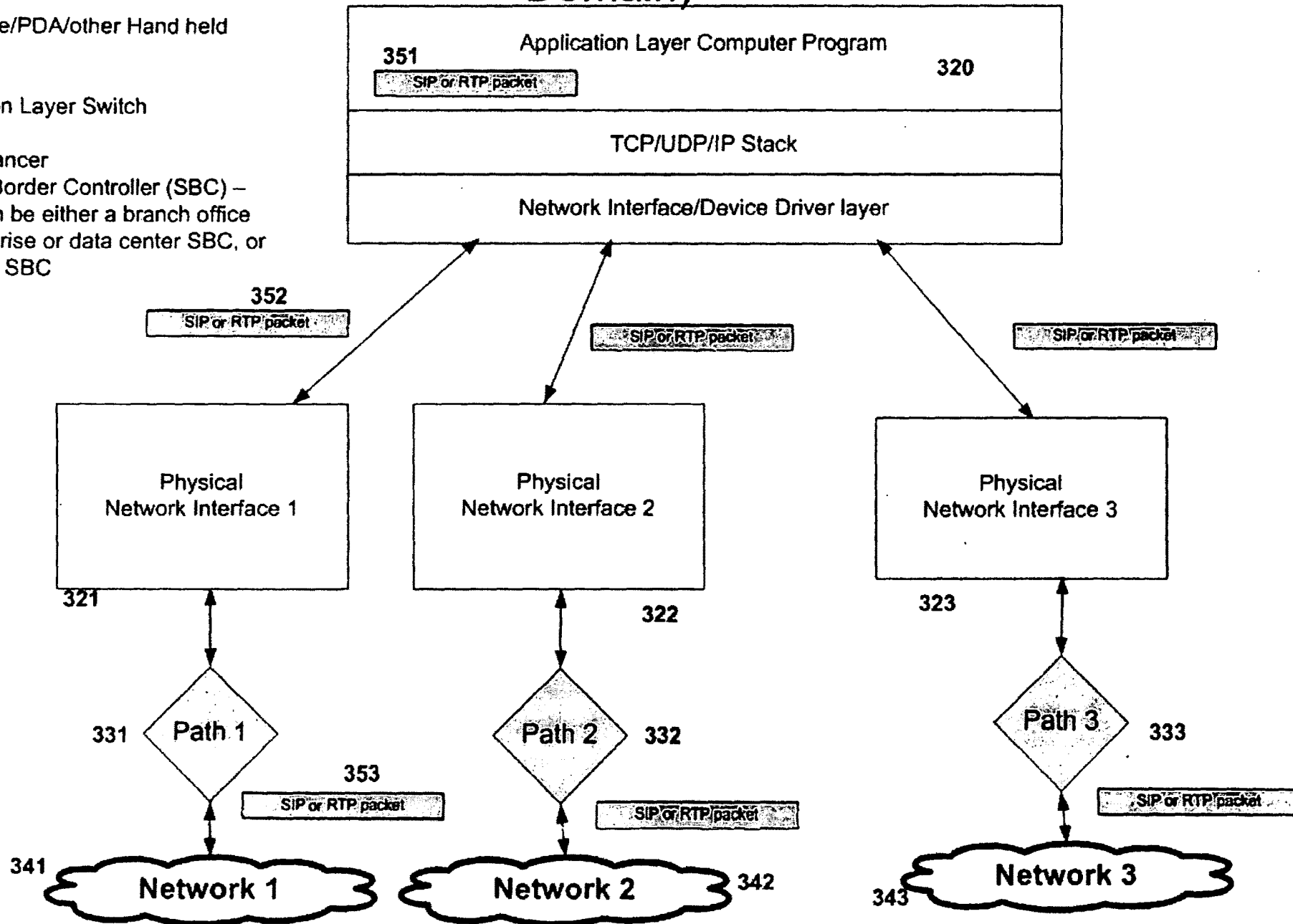
# Fig 1 Generic Embodiment of Invention



# Fig 2 Embodiment of Invention in Host Computer (Non mobile Domain)

Examples

1. PC
2. Cell phone/PDA/other Hand held appliance
3. Router
4. Application Layer Switch
5. Firewall
6. Load Balancer
7. Session Border Controller (SBC) – the SBC can be either a branch office SBC, enterprise or data center SBC, or carrier class SBC



# Fig 2b Embodiment of Invention in Host Computer (Mobile Domain)

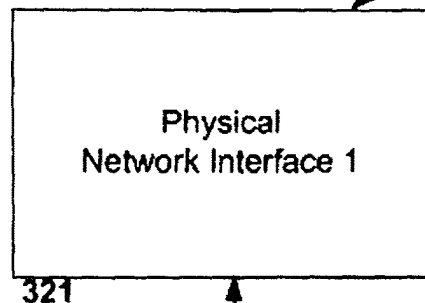
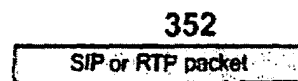
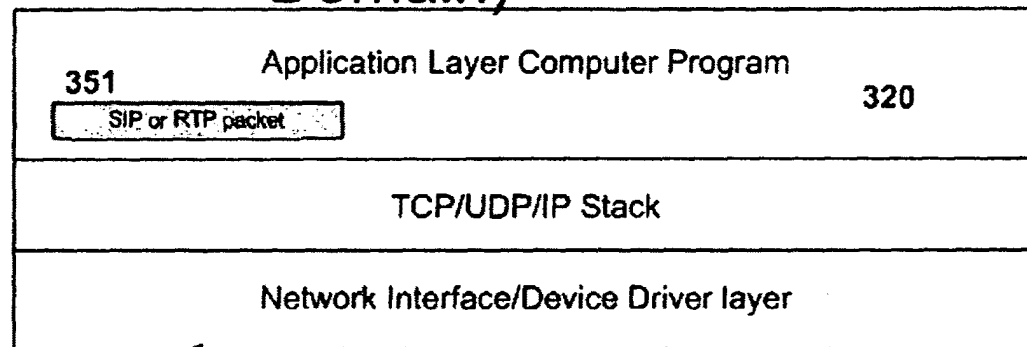
## Example

Cell phone/PDA/other Hand held appliance

Roam from one base station to another

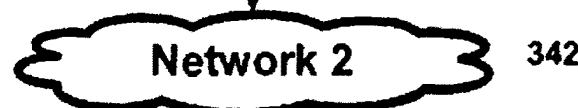
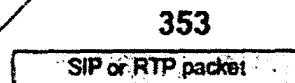
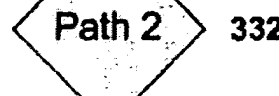
Original good quality path becomes poor, eventually fades out

New base station presents a new path of higher quality



Original good quality path becomes poor, eventually fades out

New path is of much better quality



# Fig 3 Typical SIP User Endpoint Connection to a SIP Server

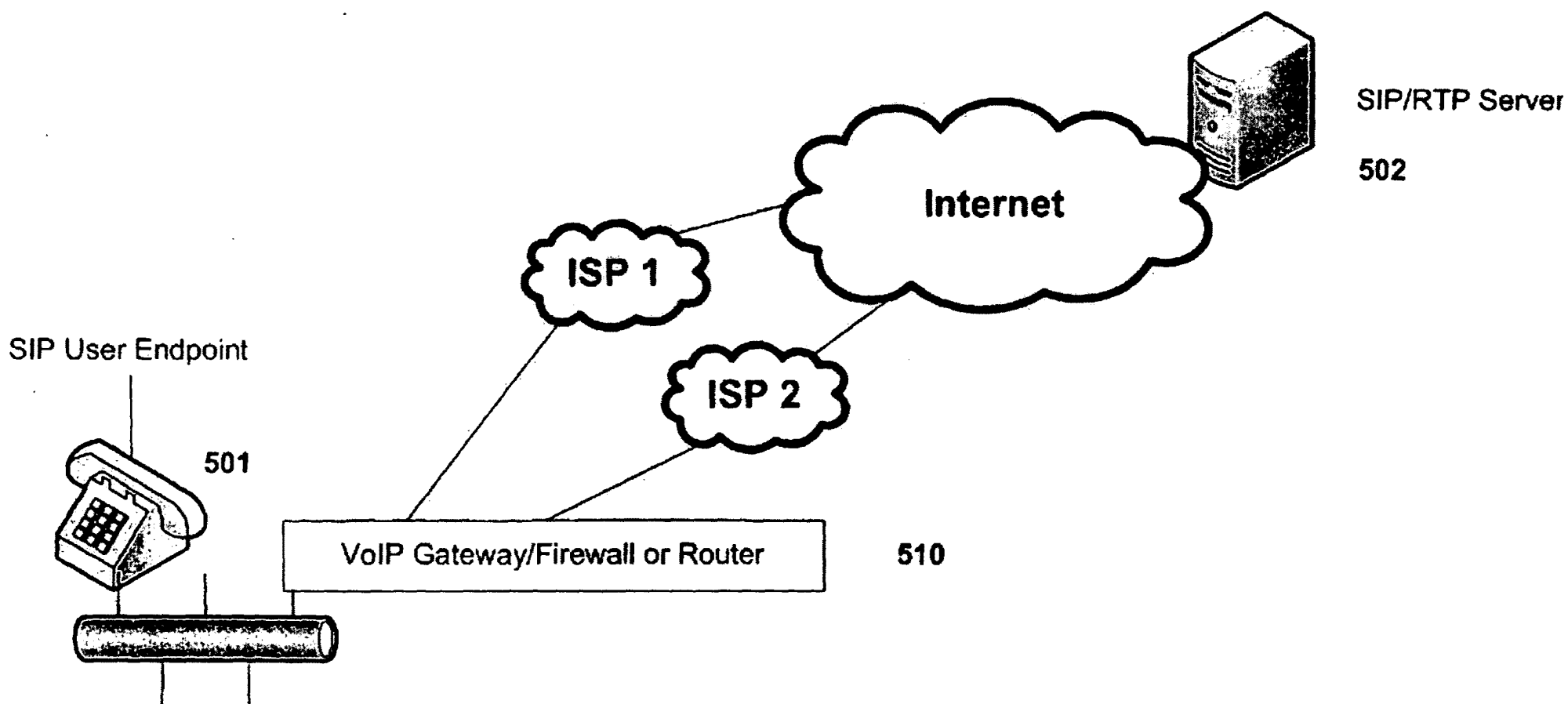


Fig 4 Move SIP Control Flow and RTP Stream The Flow Chart

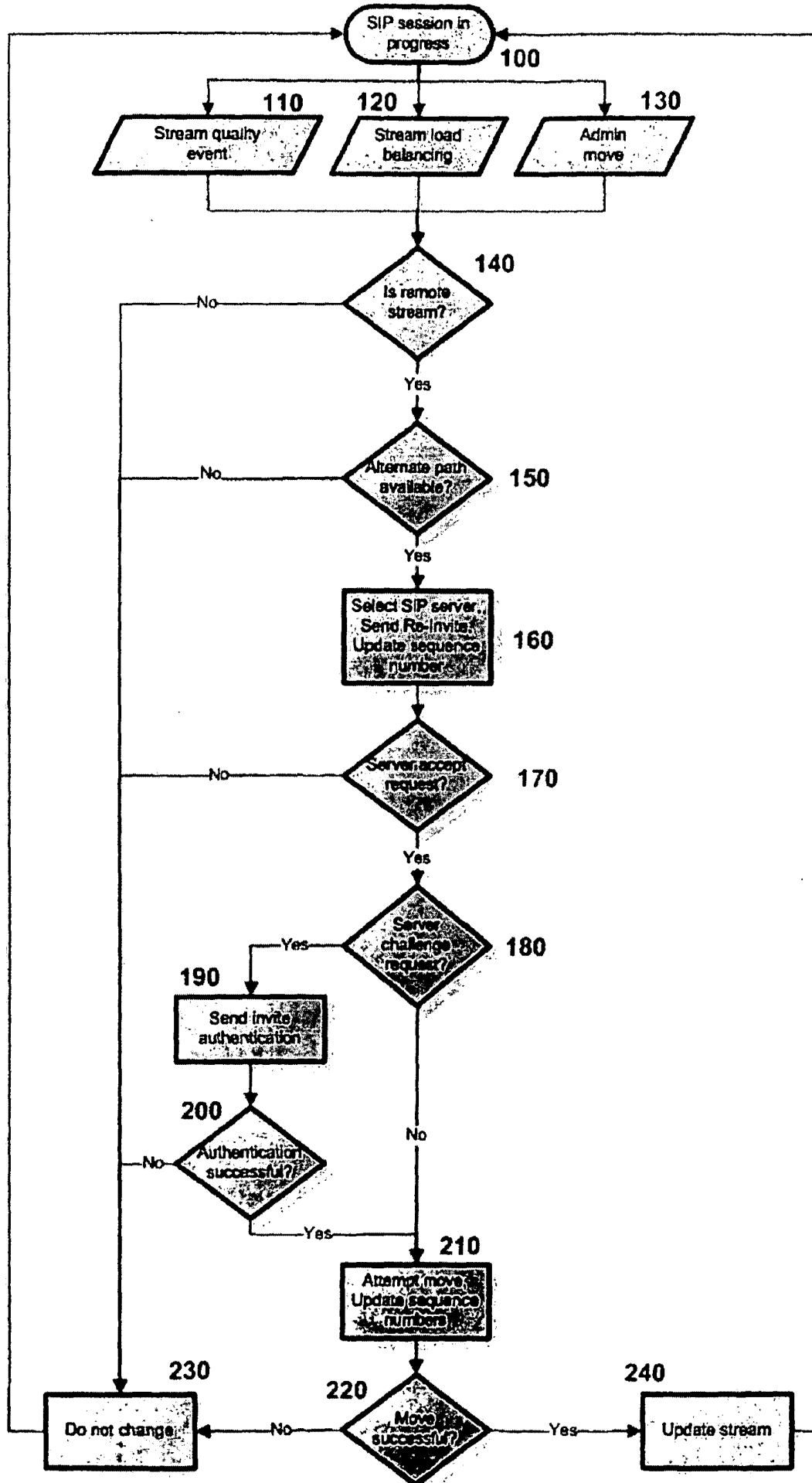
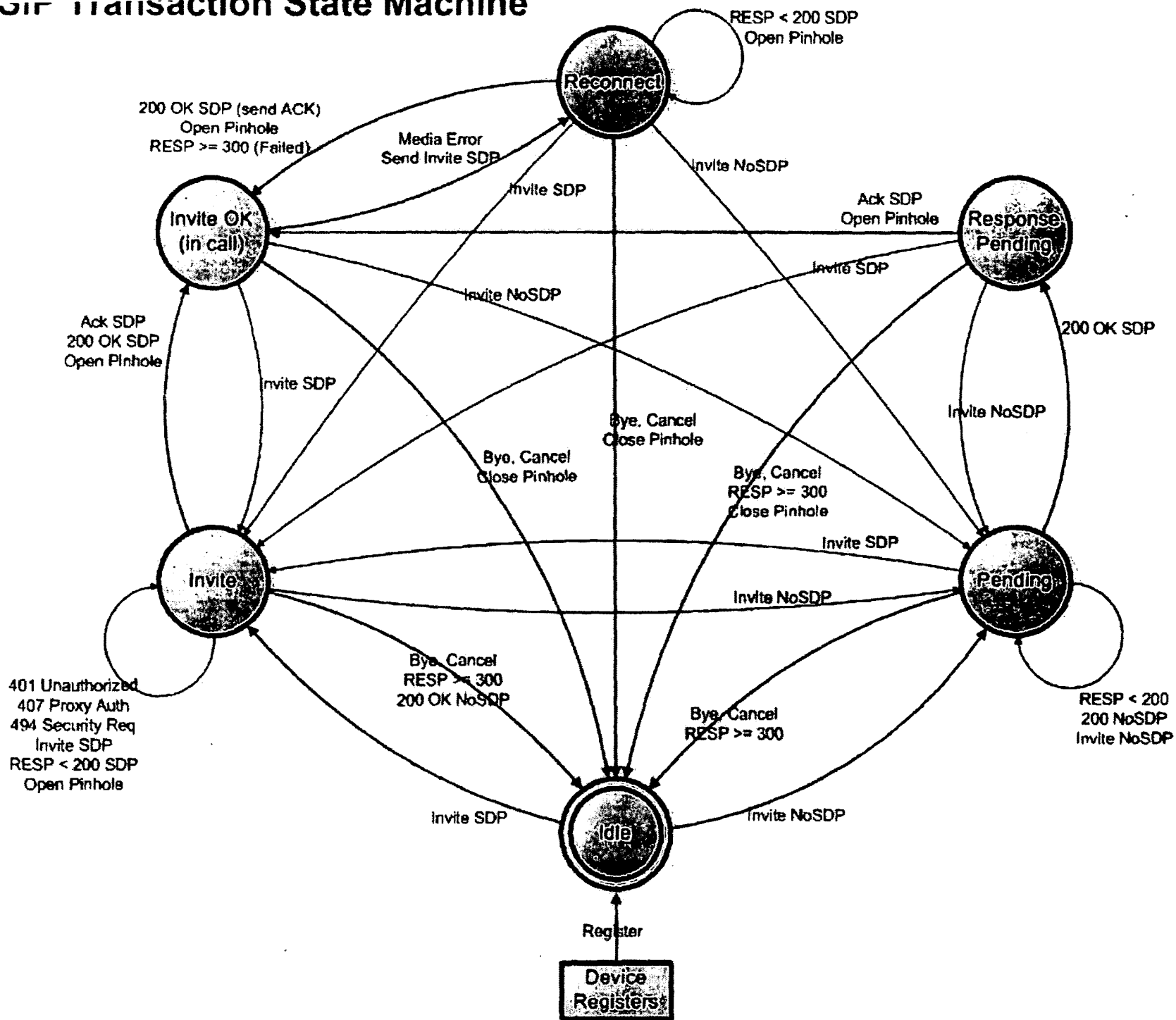
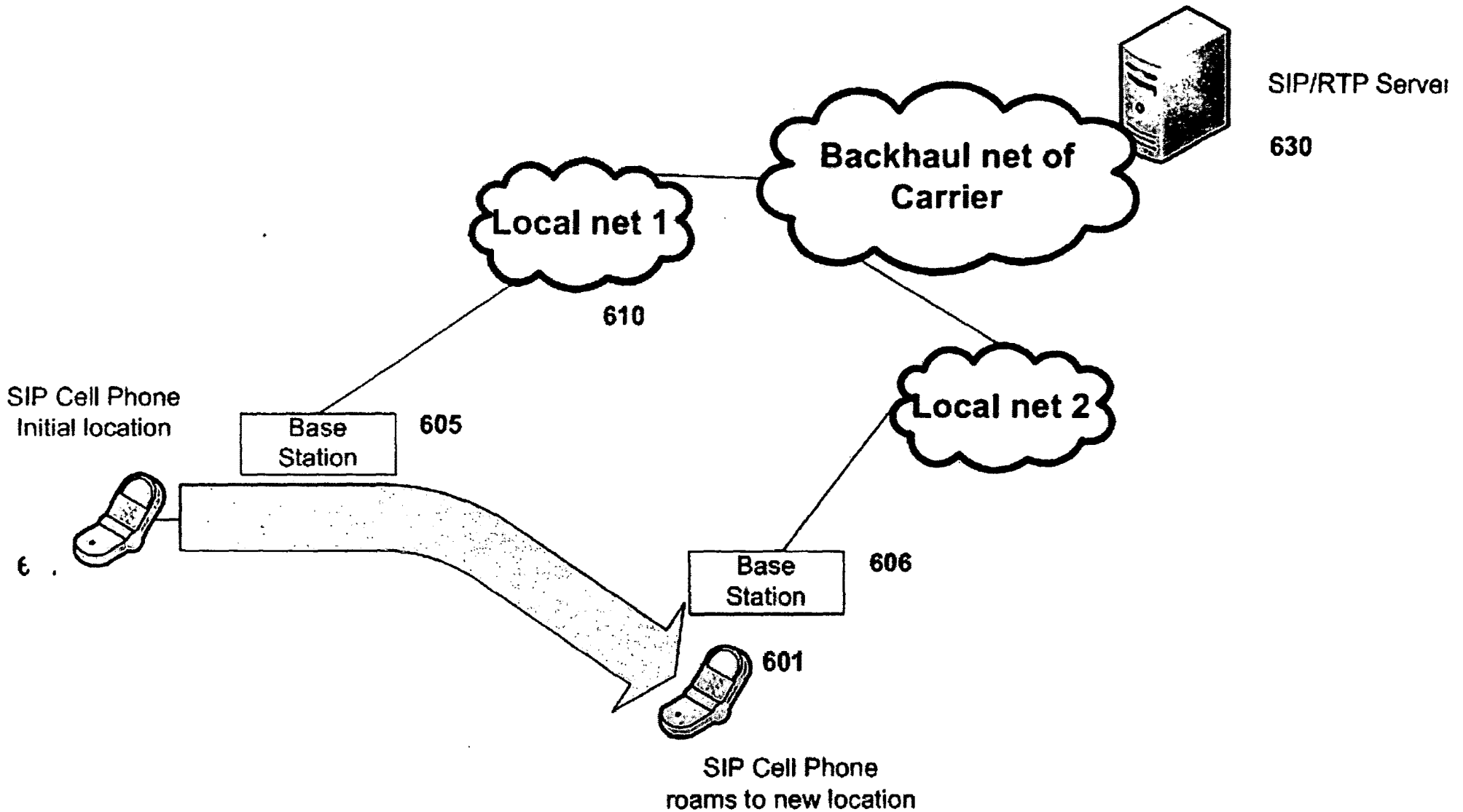


Fig 3 SIP Transaction State Machine



# Fig 6 Typical SIP Cell Phone Roaming Embodiment



# Fig 7 SIP and RTP Control in Prior Art

## SIP phone 711 VoIP Call to SIP Phone 712

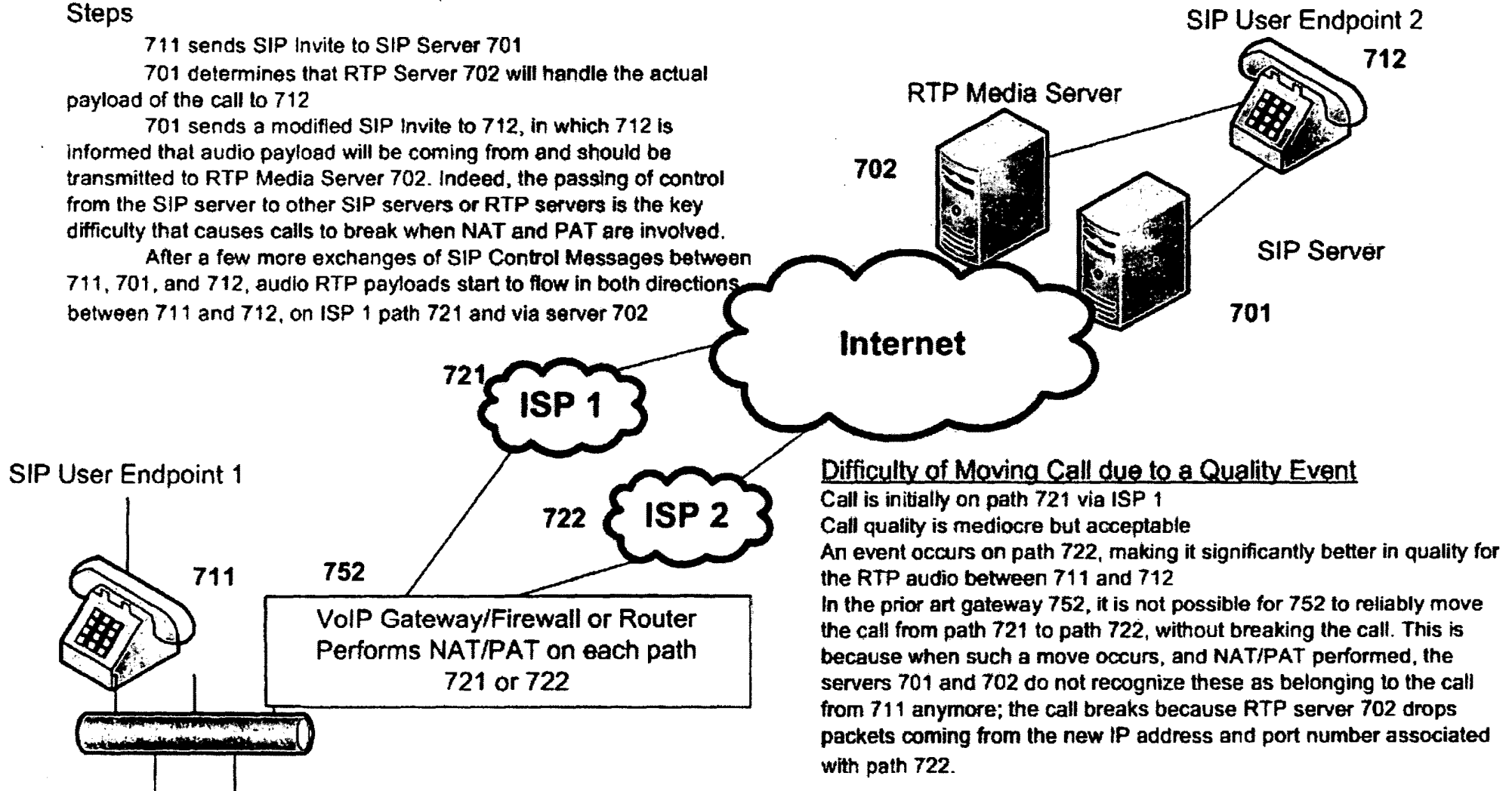
### Steps

711 sends SIP Invite to SIP Server 701

701 determines that RTP Server 702 will handle the actual payload of the call to 712

701 sends a modified SIP Invite to 712, in which 712 is informed that audio payload will be coming from and should be transmitted to RTP Media Server 702. Indeed, the passing of control from the SIP server to other SIP servers or RTP servers is the key difficulty that causes calls to break when NAT and PAT are involved.

After a few more exchanges of SIP Control Messages between 711, 701, and 712, audio RTP payloads start to flow in both directions between 711 and 712, on ISP 1 path 721 and via server 702



### Difficulty of Moving Call due to a Quality Event

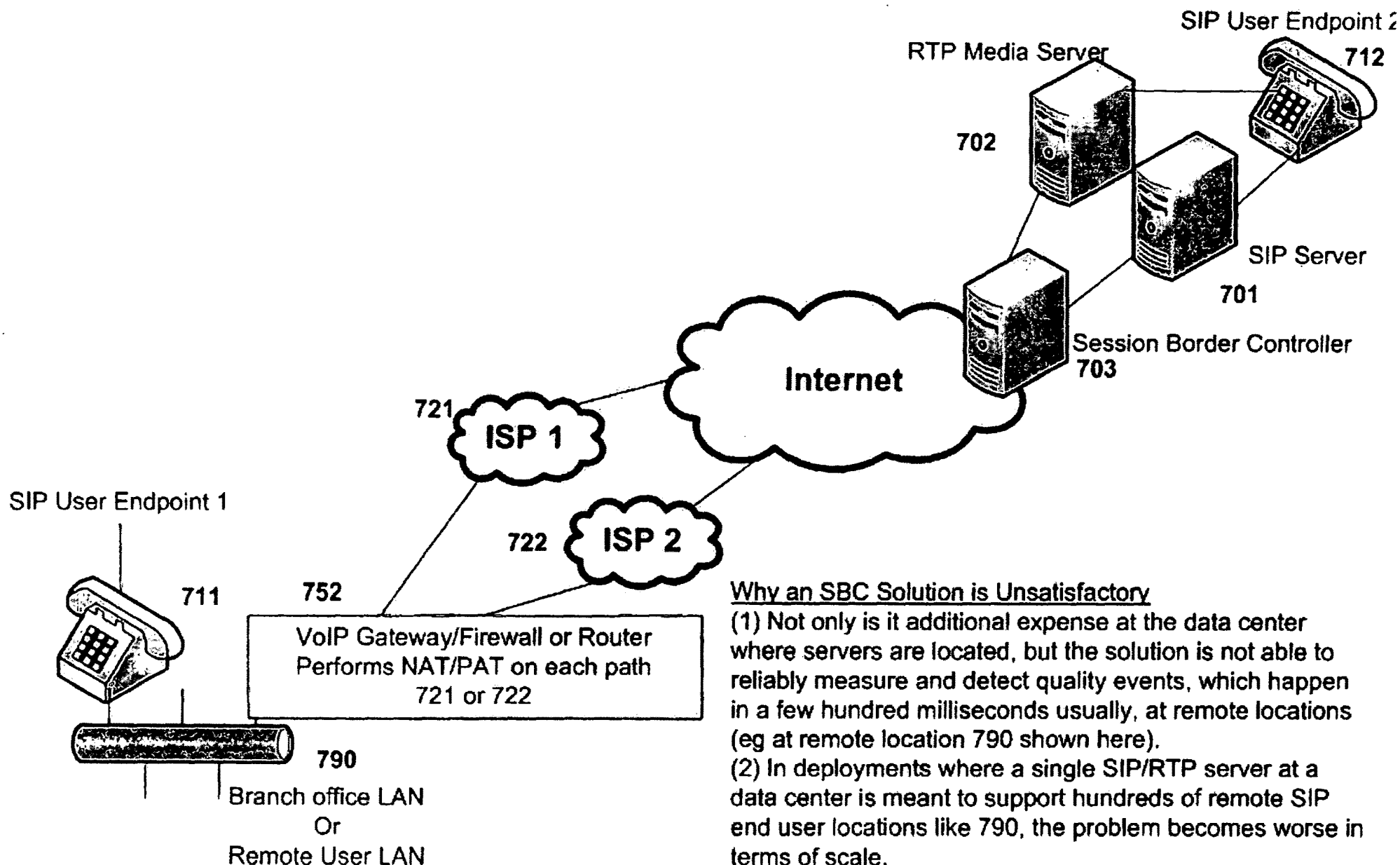
Call is initially on path 721 via ISP 1

Call quality is mediocre but acceptable

An event occurs on path 722, making it significantly better in quality for the RTP audio between 711 and 712

In the prior art gateway 752, it is not possible for 752 to reliably move the call from path 721 to path 722, without breaking the call. This is because when such a move occurs, and NAT/PAT performed, the servers 701 and 702 do not recognize these as belonging to the call from 711 anymore; the call breaks because RTP server 702 drops packets coming from the new IP address and port number associated with path 722.

# Fig 8 Server Side SBC in the Prior Art



## Why an SBC Solution is Unsatisfactory

- (1) Not only is it additional expense at the data center where servers are located, but the solution is not able to reliably measure and detect quality events, which happen in a few hundred milliseconds usually, at remote locations (eg at remote location 790 shown here).
- (2) In deployments where a single SIP/RTP server at a data center is meant to support hundreds of remote SIP end user locations like 790, the problem becomes worse in terms of scale.

Fig 9 – A QoS Gateway Embodiment of Invention

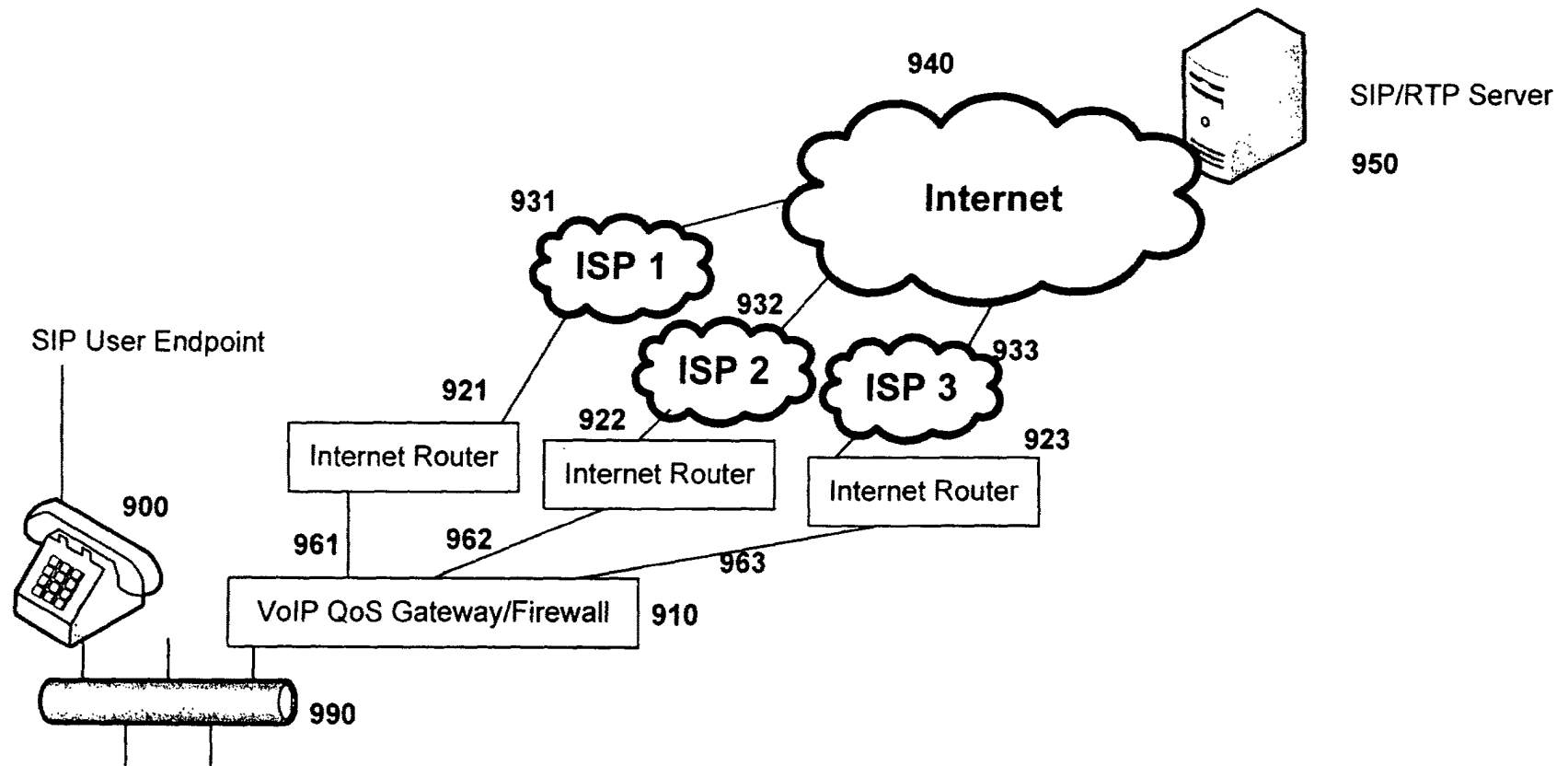


Fig 10 – A QoS Gateway Embodiment – Stream Load Balancing

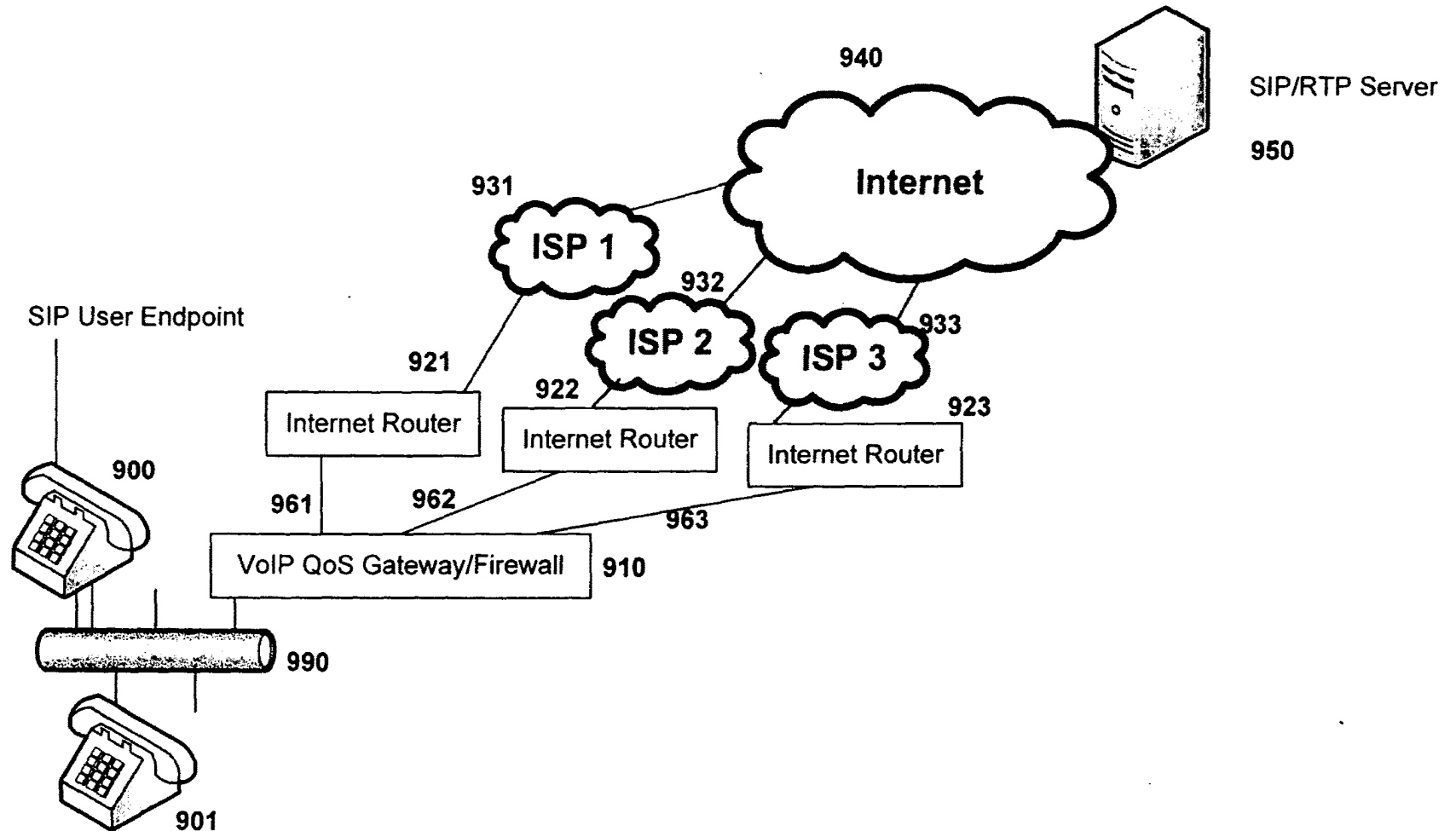
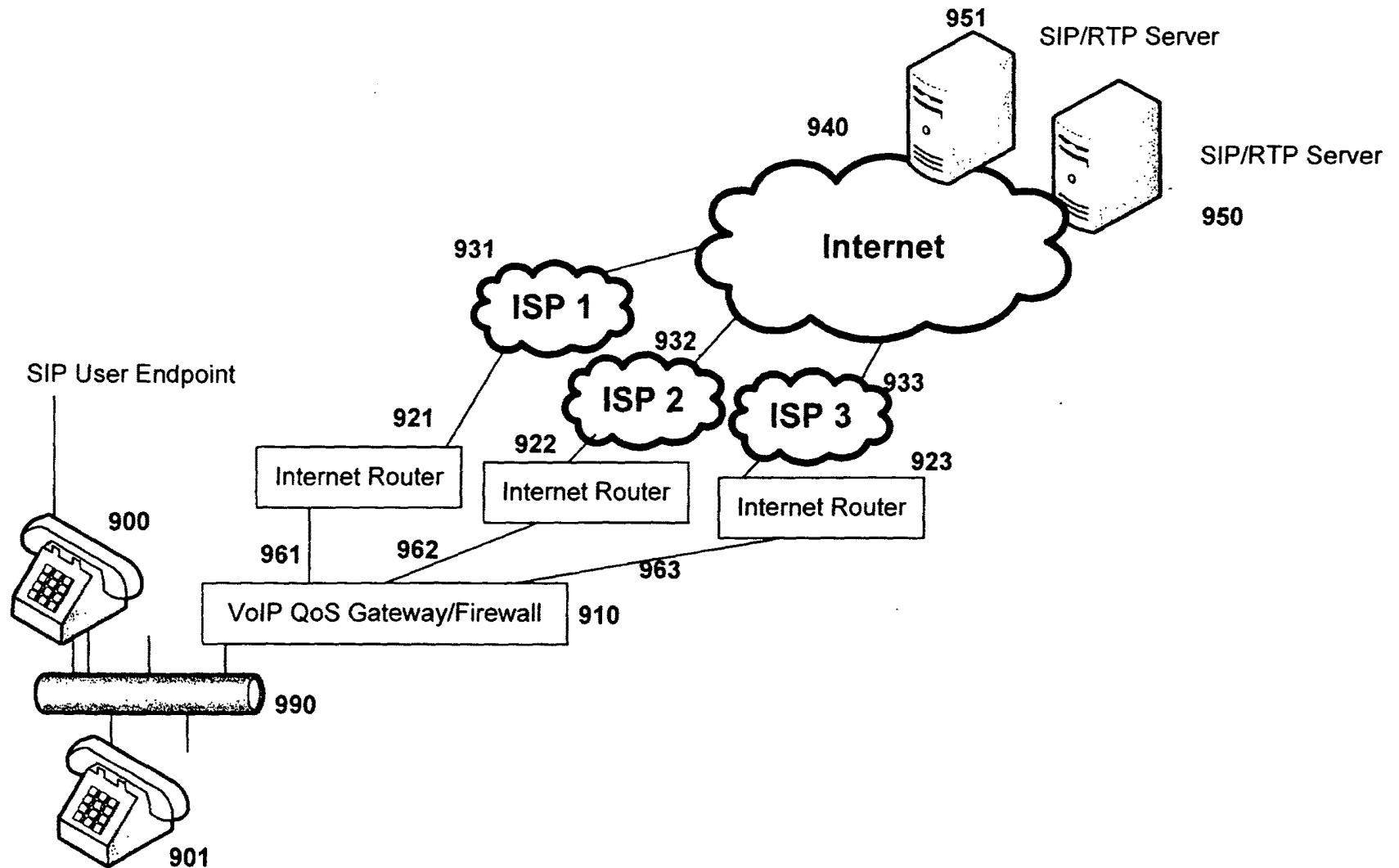
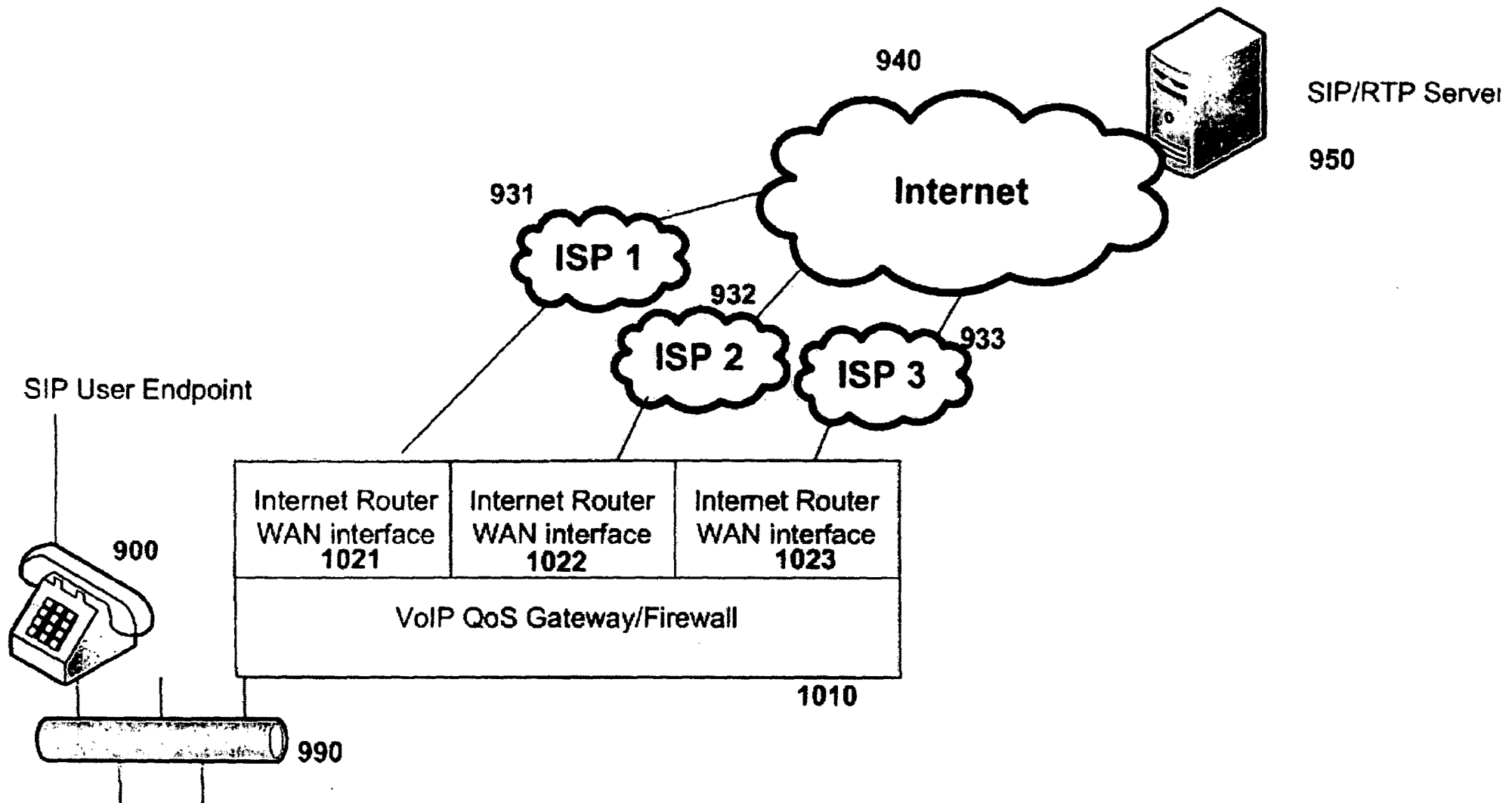


Fig 11 – A QoS Gateway Embodiment with multiple SIP Servers (dual registrations)



# Fig 12 QoS Gateway Embodiment w Internal Router WAN Interface Modules



**Filing Date:** 06/11/08

Approved for use through 7/31/2006. OMB 0651-0032

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12/137,258

# APPLICATION AS FILED – PART I

|                                                   | (Column 1)                                                                                                                                                                                                           | (Column 2)   |
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| FOR                                               | NUMBER FILED                                                                                                                                                                                                         | NUMBER EXTRA |
| BASIC FEE<br>(37 CFR 1.16(a), (b), or (c))        | N/A                                                                                                                                                                                                                  | N/A          |
| SEARCH FEE<br>(37 CFR 1.16(k), (l), or (m))       | N/A                                                                                                                                                                                                                  | N/A          |
| EXAMINATION FEE<br>(37 CFR 1.16(o), (p), or (q))  | N/A                                                                                                                                                                                                                  | N/A          |
| TOTAL CLAIMS<br>(37 CFR 1.16(i))                  | 21                                                                                                                                                                                                                   | minus 20 = 1 |
| INDEPENDENT CLAIMS<br>(37 CFR 1.16(h))            | 2                                                                                                                                                                                                                    | minus 3 = 0  |
| APPLICATION SIZE FEE<br>(37 CFR 1.16(s))          | If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$260 (\$130 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR |              |
| MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) |                                                                                                                                                                                                                      |              |

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# APPLICATION AS AMENDED – PART II

|                                                                 | (Column 1)                       | (Column 2)                         | (Column 3)    |
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| Independent<br>(37 CFR 1.16(h))                                 | *                                | Minus ***                          | =             |
| Application Size Fee (37 CFR 1.16(s))                           |                                  |                                    |               |
| FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) |                                  |                                    |               |

|                                                                 | (Column 1)                       | (Column 2)                         | (Column 3)    |
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| AMENDMENT B                                                     | CLAIMS REMAINING AFTER AMENDMENT | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA |
| Total<br>(37 CFR 1.16(i))                                       | *                                | Minus **                           | =             |
| Independent<br>(37 CFR 1.16(h))                                 | *                                | Minus ***                          | =             |
| Application Size Fee (37 CFR 1.16(s))                           |                                  |                                    |               |
| FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) |                                  |                                    |               |

## SMALL ENTITY

| RATE (\$) | FEE (\$) |
|-----------|----------|
| N/A       | 75       |
| N/A       | 255      |
| N/A       | 105      |
| X\$ 25    | 25       |
| X\$105    | 0        |
| 185       |          |
| TOTAL     | 460      |

## OTHER THAN SMALL ENTITY

| RATE (\$) | FEE (\$) |
|-----------|----------|
| N/A       |          |
| N/A       |          |
| N/A       |          |
| X\$50     |          |
| X\$210    |          |
| 370       |          |
| TOTAL     | 0        |

## SMALL ENTITY

| RATE (\$) | ADDITIONAL FEE (\$) |
|-----------|---------------------|
| X =       |                     |
| X =       |                     |
| N/A       |                     |
| TOTAL     |                     |
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| TOTAL     |                     |
| ADD'T FEE |                     |

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| RATE (\$) | ADDITIONAL FEE (\$) |
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|-----------------------|--------------------------|-----------------|---------------|-----------------|------------|------------|
| 12/137,258            | 06/11/2008               | 2616            | 460           | 18198-4005      | 21         | 2          |

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Date Mailed: 06/24/2008

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**Applicant(s)**

BILL CHIN, Residence Not Provided;  
Sajit Bhaskaran, Residence Not Provided;  
Robin Mavunkel, Residence Not Provided;

**Power of Attorney:** None

**Domestic Priority data as claimed by applicant**

This appln claims benefit of 61/036,377 03/13/2008

**Foreign Applications**

**If Required, Foreign Filing License Granted:** 06/23/2008

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/137,258**

**Projected Publication Date:** To Be Determined - pending completion of Missing Parts

**Non-Publication Request:** No

**Early Publication Request:** No

**\*\* SMALL ENTITY \*\***

**Title**

METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER  
INTERNET PROTOCOL

**Preliminary Class**

370

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The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where

the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

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#### **NOT GRANTED**

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).



UNITED STATES PATENT AND TRADEMARK OFFICE

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| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|--------------------|-----------------------|-----------------------|------------------------|
| 12/137,258         | 06/11/2008            | BILL CHIN             | 18198-4005             |

CONFIRMATION NO. 7163

FORMALITIES LETTER



34313  
ORRICK, HERRINGTON & SUTCLIFFE, LLP  
IP PROSECUTION DEPARTMENT  
4 PARK PLAZA  
SUITE 1600  
IRVINE, CA 92614-2558

Date Mailed: 06/24/2008

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

*Filing Date Granted*

**Items Required To Avoid Abandonment:**

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is missing.

*A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.*

*Note: If a petition under 37 CFR 1.47 is being filed, an oath or declaration in compliance with 37 CFR 1.63 signed by all available joint inventors, or if no inventor is available by a party with sufficient proprietary interest, is required.*

The application is informal since it does not comply with the regulations for the reason(s) indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- Replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121(d) are required. The drawings submitted are not acceptable because:
  - The drawing sheets do not have the appropriate margin(s) (see 37 CFR 1.84(g)). Each sheet must include a top margin of at least 2.5 cm. (1 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 1.5 cm. ( 5/8 inch), and a bottom margin of at least 1.0 cm. (3/8 inch). See Figures(s) 1,2B,3,5,8,9,12.
  - Numbers, letters, and reference characters on the drawings must measure at least 0.32 cm (1/8 inch) in height. See Figure(s) 1,2,5.
  - The drawings submitted to the Office are not electronically reproducible because portions of figures 3-8 are missing and/or blurry.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- To avoid abandonment, a surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.16(f) of **\$65** for a small entity in compliance with 37 CFR 1.27, must be submitted with the missing items identified in this notice.

**SUMMARY OF FEES DUE:**

Total additional fee(s) required for this application is **\$65** for a small entity

- **\$65** Surcharge.

Replies should be mailed to:

Mail Stop Missing Parts  
Commissioner for Patents  
P.O. Box 1450  
Alexandria VA 22313-1450

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/mkanno/

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Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 12/137,258 Confirmation No. 7163  
Applicant : BILL CHIN, et al.  
Filing Date : June 11, 2008  
Title : METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE  
AND VIDEO OVER INTERNET PROTOCOL  
Group Art Unit : Not Yet Assigned  
Examiner : Not Yet Assigned  
Docket No. : 18198-4005  
Customer No. : 34313

Mail Stop: Patent Application  
Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

**INFORMATION DISCLOSURE STATEMENT**

Sir:

In accordance with 37 CFR §§ 1.97 and 1.98, the items identified in this Information Disclosure Statement ("IDS") are brought to the attention of the Office. The items are listed on the attached form PTO-1449 and copies are enclosed for the convenience of the Examiner.

The items identified in this IDS may or may not be "material" pursuant to 37 CFR § 1.56. The submission thereof by Applicant is not to be construed as an admission that any such patent, publication or other information referred to therein is material or considered to be material (37 CFR § 1.97(h)), or even qualifies as "prior art" under 35 USC § 102 with respect to this invention unless specifically designated by Applicant as such.

Applicant : Bill Chin, et al.  
Appl. No. : 12/137,258  
Examiner : Not Yet Assigned  
Docket No. : 18198-4005

**INFORMATION DISCLOSURE STATEMENT FILING PROVISION:**

☒ This IDS is believed to be timely in that it is being submitted under 37 CFR § 1.97(b), that is (1) within three months of the filing date of the application, which is not a continued prosecution application filed under § 1.53(d); or (2) within three months of entry of the national stage as set forth in 37 CFR § 1.491; or (3) before the mailing of a first Office action on the merits; or (4) before the mailing of a first Office action after filing a request for continued examination under § 1.114. Thus, no fee is required.

☒ However, if the undersigned is in error in this regard, Applicant respectfully requests that the Office consider this IDS as filed under 37 CFR § 1.97(c), if applicable, and charge the fee due under 37 CFR § 1.17(p) to the deposit account referenced below.

☐ However, if the undersigned is in error in this regard, Applicant respectfully requests that the Office consider this IDS as filed under 37 CFR § 1.97(c), if applicable, and a statement under 37 CFR § 1.97(e) is included below, thus no fee is required.

☐ This IDS is being submitted under 37 CFR § 1.97(c), that is after mailing of a first Office action on the merits, but before a Final Action under 37 CFR § 1.113 or a Notice of Allowance under 37 CFR § 1.311.

☐ The fee due under 37 CFR § 1.17(p) is submitted herewith.

☐ A statement under 37 CFR § 1.97(e) is included below, thus no fee is required. In the event that this IDS is not received before a Final Action or a Notice of Allowance, then Applicant respectfully requests that the Office consider the filing of these papers to be submitted under 37 CFR § 1.97(d) and charge the fee due under 37 CFR § 1.17(p) to the deposit account below.

☐ This IDS is being submitted under 37 CFR § 1.97(d), that is after a Final Action under 37 CFR § 1.113 or a Notice of Allowance under 37 CFR § 1.311, but before payment of the issue fee. A statement under 37 CFR § 1.97(e) is included below. The fee due under 37 CFR § 1.17(p) is submitted herewith.

Applicant : Bill Chin, et al.  
Appl. No. : 12/137,258  
Examiner : Not Yet Assigned  
Docket No. : 18198-4005

**STATEMENT UNDER 37 CFR § 1.97(e):**

- ☐ Each item contained in this IDS was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this IDS.
- ☐ No item contained in this IDS was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing this statement after making reasonable inquiry, no item of information contained in this IDS was known to any individual designated in 37 CFR § 1.56(c) more than three months prior to the filing of this IDS.

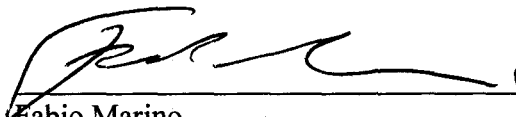
**PAYMENT AND/OR AUTHORIZATION TO CHARGE FEES:**

- ☐ A check in the amount of \_\_\_ is enclosed for the above fee(s).
- ☐ Please charge \$\_\_\_ to Deposit Account No. **15-0665** for the above fee(s).
- ☒ The Commissioner is authorized to charge any fees required by the filing of these papers, and to credit any overpayment to Orrick, Herrington & Sutcliffe's Deposit Account No. **15-0665**.

Respectfully submitted,

ORRICK, HERRINGTON & SUTCLIFFE LLP

Dated: July 23, 2008

By:   
Fabio Marino  
Reg. No. 43,339

ORRICK, HERRINGTON & SUTCLIFFE LLP  
4 Park Plaza, Suite 1600  
Irvine, CA 92614  
650/614-7660 Telephone  
650/614-7401 Facsimile

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| <b>INFORMATION DISCLOSURE<br/>STATEMENT BY APPLICANT</b><br><br><i>(use as many sheets as necessary)</i> |   |    |   | <b>Complete if Known</b> |                  |
|                                                                                                          |   |    |   | Application Number       | 12/137,258       |
|                                                                                                          |   |    |   | Filing Date              | June 11, 2008    |
|                                                                                                          |   |    |   | First Named Inventor     | Bill Chin        |
|                                                                                                          |   |    |   | Group Art Unit           | Not Yet Assigned |
|                                                                                                          |   |    |   | Examiner Name            | Not Yet Assigned |
| Sheet                                                                                                    | 1 | of | 2 | Attorney Docket Number   | 18198-4005       |

| U.S. PATENT DOCUMENTS |                          |                      |                           |                                                    |                                                          |                                                                                    |
|-----------------------|--------------------------|----------------------|---------------------------|----------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------------------------|
| Examiner<br>Initials  | Cite<br>No. <sup>1</sup> | U.S. Patent Document |                           | Name of Patentee or Applicant of<br>Cited Document | Date of Publications of<br>Cited Documents<br>MM-DD-YYYY | Pages, Columns, Lines,<br>Where<br>Relevant Passages or<br>Relevant Figures Appear |
|                       |                          | Number               | Kind<br>Code <sup>2</sup> |                                                    |                                                          |                                                                                    |
|                       | AA                       |                      |                           |                                                    |                                                          |                                                                                    |
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| FOREIGN PATENT DOCUMENTS |                          |                         |                     |                           |                                                    |                                                          |                                                                                       |                |
|--------------------------|--------------------------|-------------------------|---------------------|---------------------------|----------------------------------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------|----------------|
| Examiner<br>Initials     | Cite<br>No. <sup>1</sup> | Foreign Patent Document |                     |                           | Name of Patentee or Applicant of<br>Cited Document | Date of Publications<br>of Cited Documents<br>MM-DD-YYYY | Pages, Columns,<br>Lines,<br>Where Relevant<br>Passages or Relevant<br>Figures Appear | T <sup>6</sup> |
|                          |                          | Office <sup>3</sup>     | Number <sup>4</sup> | Kind<br>Code <sup>5</sup> |                                                    |                                                          |                                                                                       |                |
|                          |                          |                         |                     |                           |                                                    |                                                          |                                                                                       |                |

| OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS |                          |                                                                                                                                                                                                                                                                                                                                         |                |
|---------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Examiner<br>Initials                              | Cite<br>No. <sup>1</sup> | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.                                                                         | T <sup>2</sup> |
|                                                   | CA                       | Can You Hear Me Now?!, It Must Be BGP; NATE KUSHMAN; SRIKANTH KANDULA; DINA KATABI; 6-pages                                                                                                                                                                                                                                             |                |
|                                                   | CB                       | draft-rosenberg-sip-entfw-02.txt; Internet Engineering Task Force; SIP WG; Internet Draft; JONATHAN ROSENBERG,, JOEL WEINBERGER, HENNING SCHULZRINNE; dynamicsoft, Columbia U.; July 20, 2001; Expires: February 2002; NAT Friendly SIP; 29-pages                                                                                       |                |
|                                                   | CC                       | draft-rosenberg-sipping-nat-scenarios-00.txt; Internet Engineering Task Force; SIPPING WG; Internet Draft; JONATHAN ROSENBERG; ROHAN MAHY, SANJOY SEN; dynamicsoft, Cisco, Nortel; November 14, 2001; Expires: March 2002; NAT and Firewall Scenarios and Solutions for SIP; 57-pages; Internet Draft; nat scenarios; November 16, 2001 |                |
|                                                   | CD                       | Port address translation; From Wikipedia, the free encyclopedia                                                                                                                                                                                                                                                                         |                |
|                                                   | CE                       | Network Working Group; Request for Comments: 1631; Category: Informational; Cray Communications; KJELD BORCH EGEVANG and PAUL FRANCIS; NTT; May 1994; The IP Network Address Translator (NAT); 10-pages                                                                                                                                 |                |

|                    |                                            |                    |  |
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| Examiner Signature | OHS West:260468057.1<br>18198-4005 R1H/KW6 | Date<br>Considered |  |
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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Unique citation designation number. <sup>2</sup>See attached Kinds of U.S. Patent Documents. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.)). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent documents. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

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|                                                                                                          |   |    |   | Application Number       | 12/137,258       |
|                                                                                                          |   |    |   | Filing Date              | June 11, 2008    |
|                                                                                                          |   |    |   | First Named Inventor     | Bill Chin        |
|                                                                                                          |   |    |   | Group Art Unit           | Not Yet Assigned |
|                                                                                                          |   |    |   | Examiner Name            | Not Yet Assigned |
| Sheet                                                                                                    | 2 | of | 2 | Attorney Docket Number   | 18198-4005       |

|  |    |                                                                                                                                                                                                                                                                                                                                                                                                 |  |
|--|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  | CF | Network Working Group; Request for Comments: 1771; YAKOV REKHTER, T.J. Watson Research Center IBM Corp.; Obsoletes: 1654; TONY LI, cisco Systems, Inc., Editors; Category: Standards Track; A Border Gateway Protocol 4 (BGP-4); March 1995; 57-pages; document was originally published as RFC 1267 in October 1991, jointly authored by KIRK LOUGHEED (cisco Systems) and YAKOV REKHTER (IBM) |  |
|  | CG | Network Working Group; Request for Comments: 1889; Category: Standards Track; RTP: A Transport Protocol for Real-Time Applications; Audio-Video Transport Working Group; HENNING SCHULZRINNE, GMD Fokus; STEPHEN L. CASNER, Precept Software, Inc.; RON FREDERICK, Xerox Palo Alto Research Center, VAN JACOBSON, Lawrence Berkeley National Laboratory; January 1996; 75-pages                 |  |
|  | CH | Network Working Group; Request for Comments: 2131; Obsoletes: 1541; Category: Standards Track; Dynamic Host Configuration Protocol; RALPH DROMS; Bucknell University; March 1997; 45-pages                                                                                                                                                                                                      |  |
|  | CI | Network Working Group; Request for Comments: 2327; Category: Standards Track; SDP: Session Description Protocol; MARK HANDLEY and VAN JACOBSON; ISI/LBNL; April 1998; 42-pages                                                                                                                                                                                                                  |  |
|  | CJ | Network Working Group; Request for Comments: 2516; Category: Informational; A Method for Transmitting PPP Over Ethernet (PPPoE); LOUIS MAMAKOS, KURT LIDL and JEFF EVARTS, UUNET Technologies, Inc.; DAVID CARREL and DAN SIMONE, RedBack Networks, Inc.; ROSS WHEELER; RouterWare, Inc.; February 1999; 17-pages                                                                               |  |
|  | CK | Network Working Group; Request for Comments: 3261; Obsoletes: 2543; Category: Standards Track; SIP: Session Initiation Protocol; JONATHAN ROSENBERG, dynamicsoft; HENNING SCHULZRINNE, Columbia University; GONZALO CAMARILLO, Ericsson; ALAN JOHNSTON, WorldCom; JON PETERSON, NeuStar; ROBERT SPARKS, dynamicsoft; MARK HANDLEY, ICIR; EVE SCHOOLER, AT&T; June 2002; 269-pages               |  |

|                    |                                            |                 |  |
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| Examiner Signature | OHS West:260468057.1<br>18198-4005 R1H/KW6 | Date Considered |  |
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<sup>1</sup>Unique citation designation number. <sup>2</sup>See attached Kinds of U.S. Patent Documents. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.)). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent documents. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

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| <b>EFS ID:</b>                              | 3666538                                                                                |
| <b>Application Number:</b>                  | 12137258                                                                               |
| <b>International Application Number:</b>    |                                                                                        |
| <b>Confirmation Number:</b>                 | 7163                                                                                   |
| <b>Title of Invention:</b>                  | METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL |
| <b>First Named Inventor/Applicant Name:</b> | BILL CHIN                                                                              |
| <b>Customer Number:</b>                     | 34313                                                                                  |
| <b>Filer:</b>                               | Sanjeet Kumar Dutta/Susan Principe                                                     |
| <b>Filer Authorized By:</b>                 | Sanjeet Kumar Dutta                                                                    |
| <b>Attorney Docket Number:</b>              | 18198-4005                                                                             |
| <b>Receipt Date:</b>                        | 23-JUL-2008                                                                            |
| <b>Filing Date:</b>                         | 11-JUN-2008                                                                            |
| <b>Time Stamp:</b>                          | 17:45:53                                                                               |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                                            |

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### File Listing:

| Document Number | Document Description | File Name   | File Size(Bytes) /Message Digest                   | Multi Part /.zip | Pages (if appl.) |
|-----------------|----------------------|-------------|----------------------------------------------------|------------------|------------------|
| 1               |                      | 4005IDS.pdf | 267309<br>5c30f7b206b2b97431e0eba2210f769aaf95b45a | yes              | 5                |

|              | Multipart Description/PDF files in .zip description |                |                                          |     |     |
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|              | Document Description                                |                | Start                                    | End |     |
|              | Information Disclosure Statement Letter             |                | 1                                        | 3   |     |
|              | Information Disclosure Statement (IDS) Filed        |                | 4                                        | 5   |     |
| Warnings:    |                                                     |                |                                          |     |     |
| Information: |                                                     |                |                                          |     |     |
| 2            | NPL Documents                                       | rfc1631txt.pdf | 14449                                    | no  | 10  |
|              |                                                     |                | d7431568837728b6c0a5991fe1429d2648e21797 |     |     |
| Warnings:    |                                                     |                |                                          |     |     |
| Information: |                                                     |                |                                          |     |     |
| 3            | NPL Documents                                       | rfc1771txt.pdf | 73474                                    | no  | 57  |
|              |                                                     |                | 5344e06a2d4c7498c4d0476f36f68448b06e6c74 |     |     |
| Warnings:    |                                                     |                |                                          |     |     |
| Information: |                                                     |                |                                          |     |     |
| 4            | NPL Documents                                       | rfc1889txt.pdf | 110507                                   | no  | 75  |
|              |                                                     |                | 4e0a6dff1e53e858b7f97fb83f501a683d871064 |     |     |
| Warnings:    |                                                     |                |                                          |     |     |
| Information: |                                                     |                |                                          |     |     |
| 5            | NPL Documents                                       | rfc2131txt.pdf | 62073                                    | no  | 45  |
|              |                                                     |                | 9ac7776e3dba8850c76aa101d2f9204ad2fd1312 |     |     |
| Warnings:    |                                                     |                |                                          |     |     |
| Information: |                                                     |                |                                          |     |     |
| 6            | NPL Documents                                       | rfc2327txt.pdf | 55057                                    | no  | 42  |
|              |                                                     |                | d25c8a17cc26756991a32b0f81782256b791e727 |     |     |
| Warnings:    |                                                     |                |                                          |     |     |
| Information: |                                                     |                |                                          |     |     |
| 7            | NPL Documents                                       | rfc2516txt.pdf | 20324                                    | no  | 17  |
|              |                                                     |                | c4acf267fa489c1902d3e9c7b98b50263c8b6f9d |     |     |
| Warnings:    |                                                     |                |                                          |     |     |
| Information: |                                                     |                |                                          |     |     |
| 8            | NPL Documents                                       | rfc3261txt.pdf | 384323                                   | no  | 269 |
|              |                                                     |                | 7c1c1cfd81c6f08089e7967254c95cab b075993 |     |     |
| Warnings:    |                                                     |                |                                          |     |     |
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| 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | NPL Documents | CanYouHearMe_ItMustbeB<br>GP_2.pdf       | 130489<br>776c93b99e3653fb26e85142d3fac4bdf<br>35e0cfc | no | 6  |
| Warnings:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |                                          |                                                        |    |    |
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| 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | NPL Documents | PortAddressTranslation_2.pdf             | 130486<br>f6e5eb1e52cdda917a33e5896c994e90<br>3b53cd29 | no | 6  |
| Warnings:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |                                          |                                                        |    |    |
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| 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | NPL Documents | draftrosenbergshippingnatscenarios00.pdf | 1915653<br>43fa527017c6bab9254acc13348ad8acd9f1716c    | no | 57 |
| Warnings:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |                                          |                                                        |    |    |
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| 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | NPL Documents | draftrosenbergshipentfw02_2.pdf          | 1145428<br>0f1b543620597d11422e9bd6d8261d6ca1371fcd    | no | 25 |
| Warnings:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |                                          |                                                        |    |    |
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| Total Files Size (in bytes):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |               |                                          | 4309572                                                |    |    |
| <p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><b><u>New Applications Under 35 U.S.C. 111</u></b><br/>If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b><br/>If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b><br/>If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p> |               |                                          |                                                        |    |    |

**OATH AND DECLARATION  
AND POWER OF ATTORNEY  
Utility Application**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled "**METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL**", the specification of which

(Check One) ☐ is attached hereto OR  
☒ was filed on June 11, 2008 and assigned Application Serial No. 12/137,258.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment(s) referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

| Prior Foreign<br>Application<br>Number(s) | Country | Date of Filing | Priority Claimed |    |
|-------------------------------------------|---------|----------------|------------------|----|
|                                           |         |                | Yes              | No |
|                                           |         |                |                  |    |

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below.

| Application Number(s) | Filing Date    |
|-----------------------|----------------|
| 61/036,377            | March 13, 2008 |

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s), or § 365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

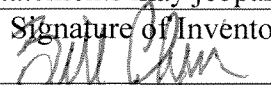
| <b>U.S. Parent<br/>Application Number</b> | <b>PCT Parent Number</b> | <b>Parent Filing Date</b> | <b>Status-Patented,<br/>Pending or<br/>Abandoned</b> |
|-------------------------------------------|--------------------------|---------------------------|------------------------------------------------------|
|                                           |                          |                           |                                                      |

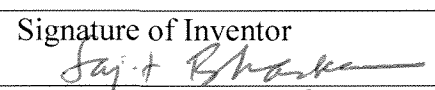
POWER OF ATTORNEY: As a named inventor, I hereby appoint as my attorneys with full power of substitution and revocation, to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: Fabio Marino, Reg. No. 43,339

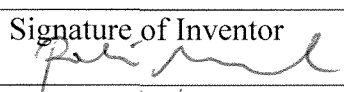
|                                                                                                |                                                                                                |       |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------|
| Send Correspondence<br>and direct all<br>telephone calls to:<br>Fabio Marino<br>(650) 614-7353 | ORRICK, HERRINGTON & SUTCLIFFE LLP<br>4 Park Plaza Suite 1600<br>Irvine, California 92614-2558 | 34313 |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------|

|            |                         |                                            |                                        |                                                 |                   |
|------------|-------------------------|--------------------------------------------|----------------------------------------|-------------------------------------------------|-------------------|
| <b>201</b> | FULL NAME OF INVENTOR   | FIRST Name<br>Bill                         | MIDDLE Initial                         | LAST Name<br>Chin                               |                   |
|            | RESIDENCE & CITIZENSHIP | City<br>San Jose                           | State or Foreign Country<br>California | Country of Citizenship<br>USA                   |                   |
|            | POST OFFICE ADDRESS     | Post Office Address<br>1445 Buckthorne Way | City<br>San Jose                       | State or Country<br>California                  | Zip Code<br>95129 |
| <b>202</b> | FULL NAME OF INVENTOR   | FIRST Name<br>Sajit                        | MIDDLE Initial                         | LAST Name<br>Bhaskaran                          |                   |
|            | RESIDENCE & CITIZENSHIP | City<br>Sunnyvale                          | State or Foreign Country<br>California | Country of Citizenship<br>Republic of Singapore |                   |
|            | POST OFFICE ADDRESS     | Post Office Address<br>1335 Avoset Terrace | City<br>Sunnyvale                      | State or Country<br>California                  | Zip Code<br>94087 |
| <b>203</b> | FULL NAME OF INVENTOR   | FIRST Name<br>Robin                        | MIDDLE Initial                         | LAST Name<br>Mavunkel                           |                   |
|            | RESIDENCE & CITIZENSHIP | City<br>Sunnyvale                          | State or Foreign Country<br>California | Country of Citizenship<br>USA                   |                   |
|            | POST OFFICE ADDRESS     | Post Office Address<br>1348 Avoset Terrace | City<br>Sunnyvale                      | State or Country<br>California                  | Zip Code<br>94087 |

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Title 18, United States Code §1001, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

|                                                                                     |            |
|-------------------------------------------------------------------------------------|------------|
| Signature of Inventor                                                               | <b>201</b> |
|  |            |
| Date                                                                                | 8/5/2008   |

|                                                                                     |            |
|-------------------------------------------------------------------------------------|------------|
| Signature of Inventor                                                               | <b>202</b> |
|  |            |
| Date                                                                                | 8/5/2008   |

|                                                                                     |            |
|-------------------------------------------------------------------------------------|------------|
| Signature of Inventor                                                               | <b>203</b> |
|  |            |
| Date                                                                                | 8/5/2008   |

(Signatures should conform to names as presented at 201 et seq. above.)

Fig 1 Generic Embodiment of Invention

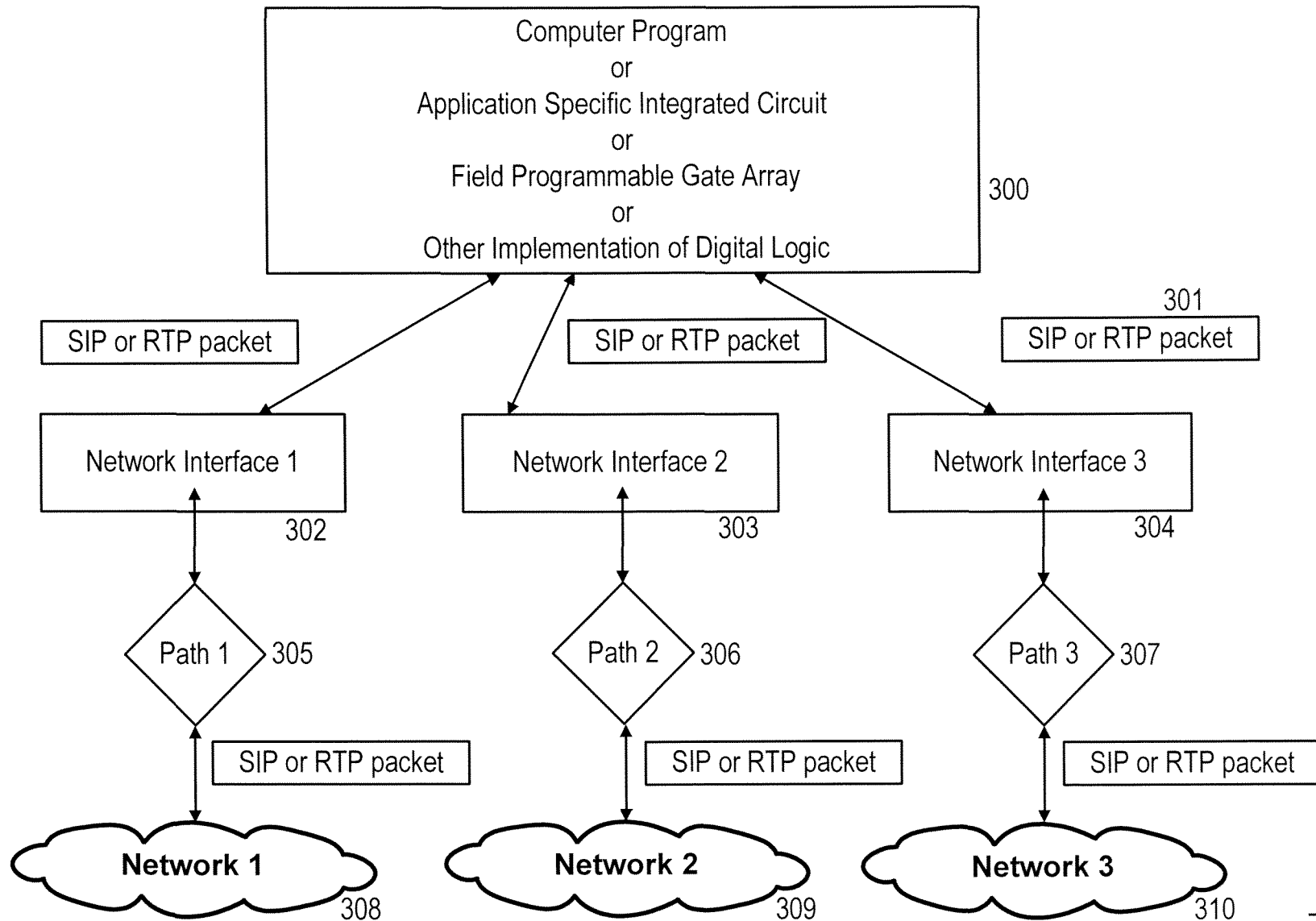
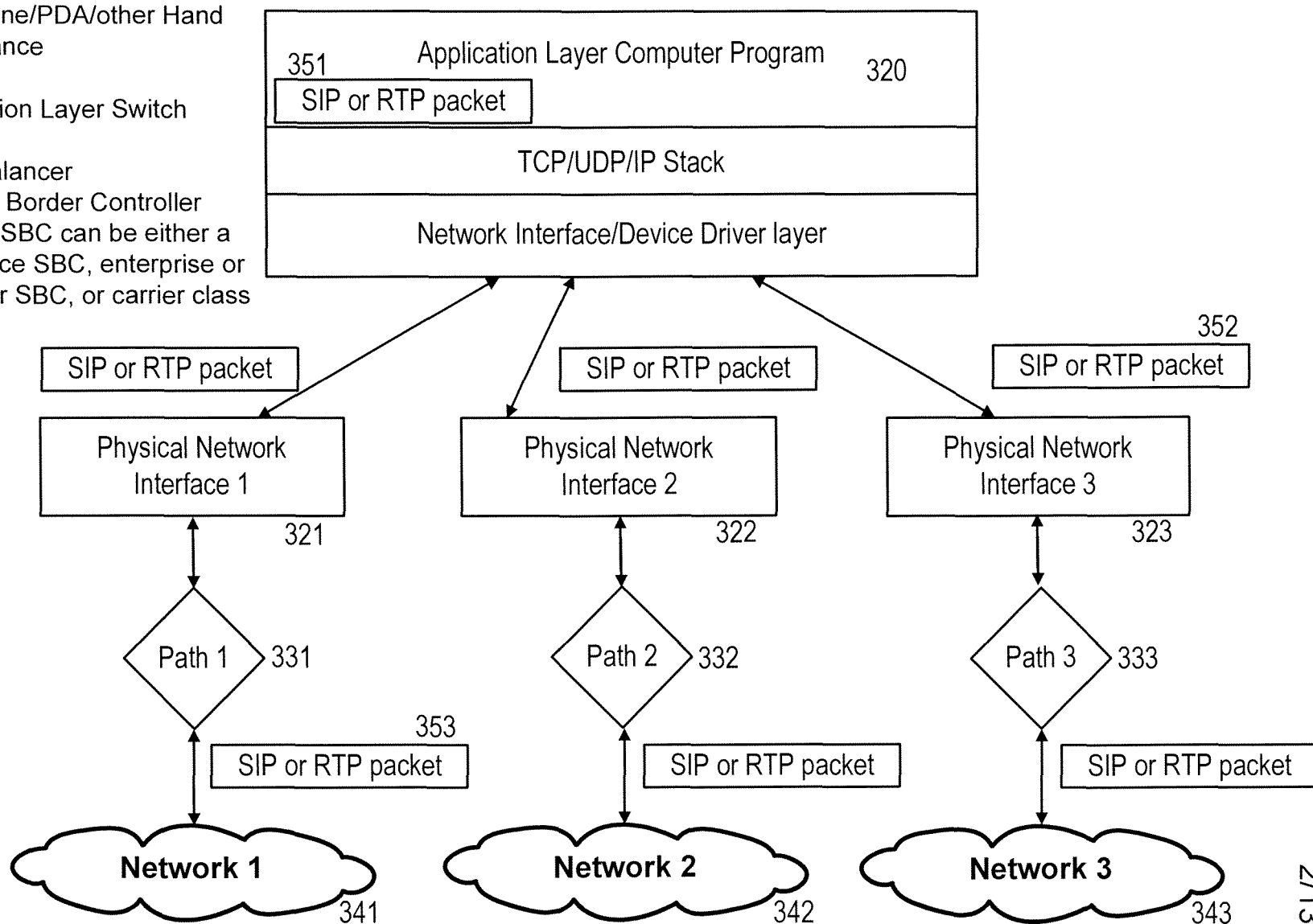


Fig 2 Embodiment of Invention in Host Computer (Non mobile Domain)

Examples:

1. PC
2. Cell phone/PDA/other Hand held appliance
3. Router
4. Application Layer Switch
5. Firewall
6. Load Balancer
7. Session Border Controller (SBC)-the SBC can be either a branch office SBC, enterprise or data center SBC, or carrier class SBC



# Fig 2b Embodiment of Invention in Host Computer (Mobile Domain)

Example:

Cell phone/PDA/other hand held appliance

Roam from one base station to another

Original good quality path becomes poor, eventually fades out

New base station presents a new path of higher quality

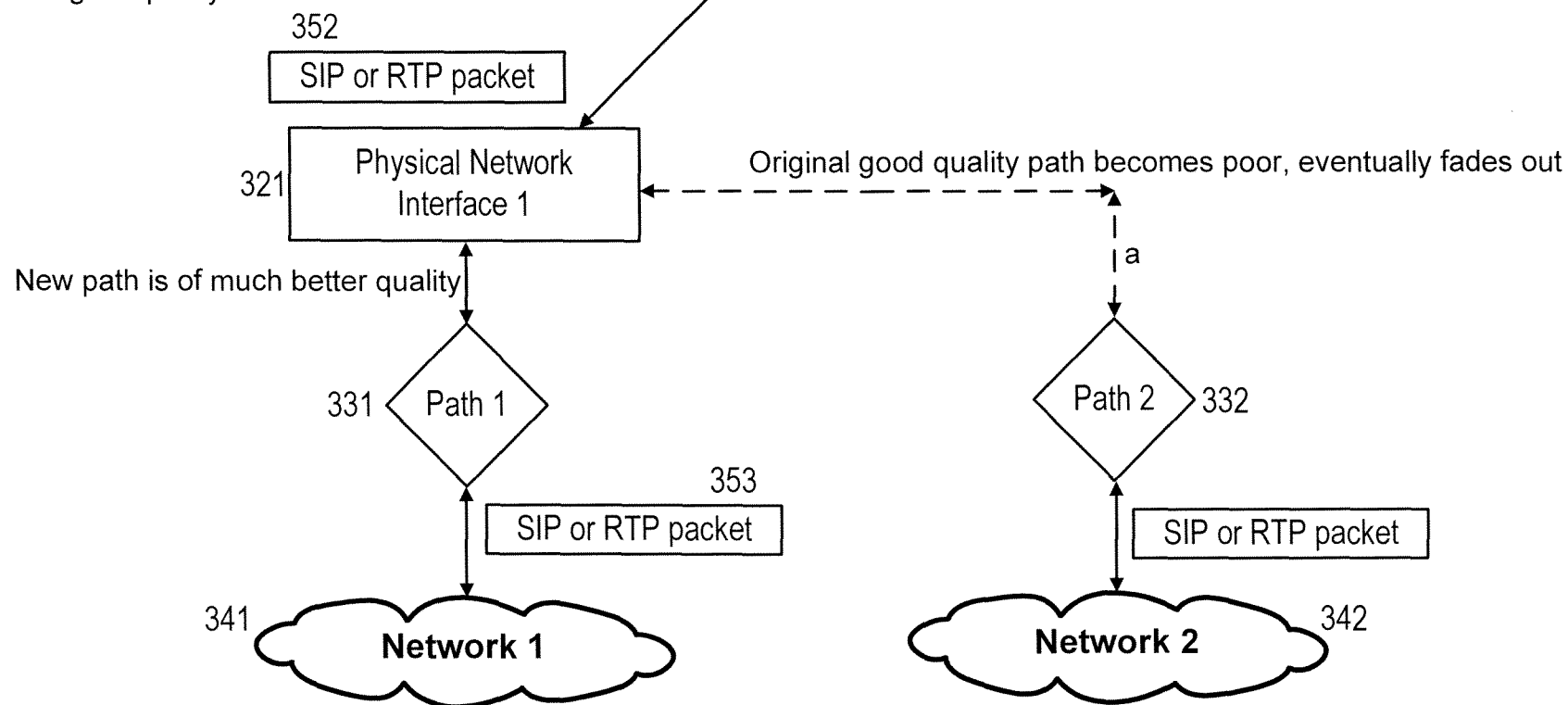


Fig 3 Typical SIP User Endpoint Connection to a SIP Server

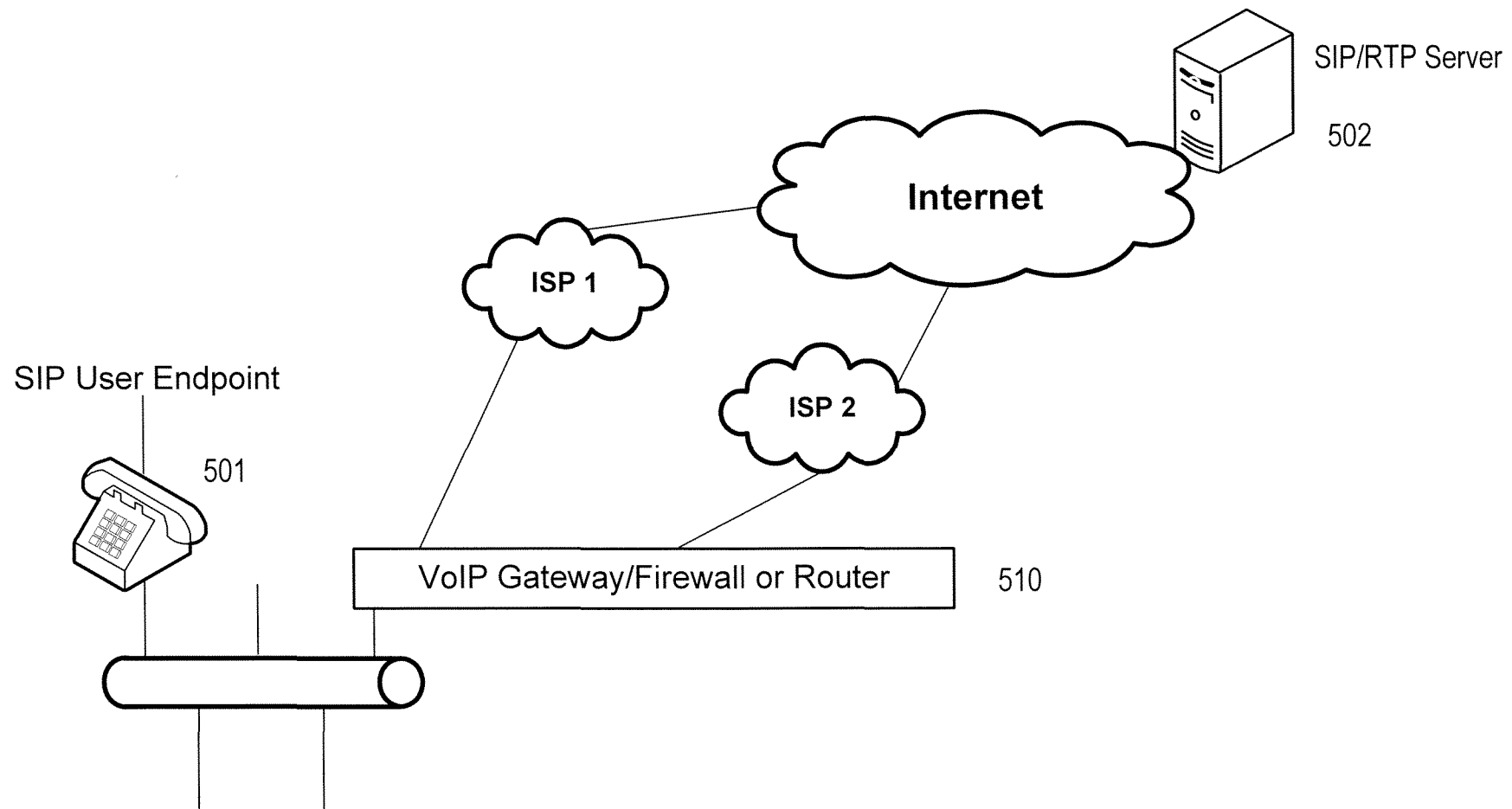


Fig 4 Move SIP Control Flow and RTP Stream. The Flow Chart

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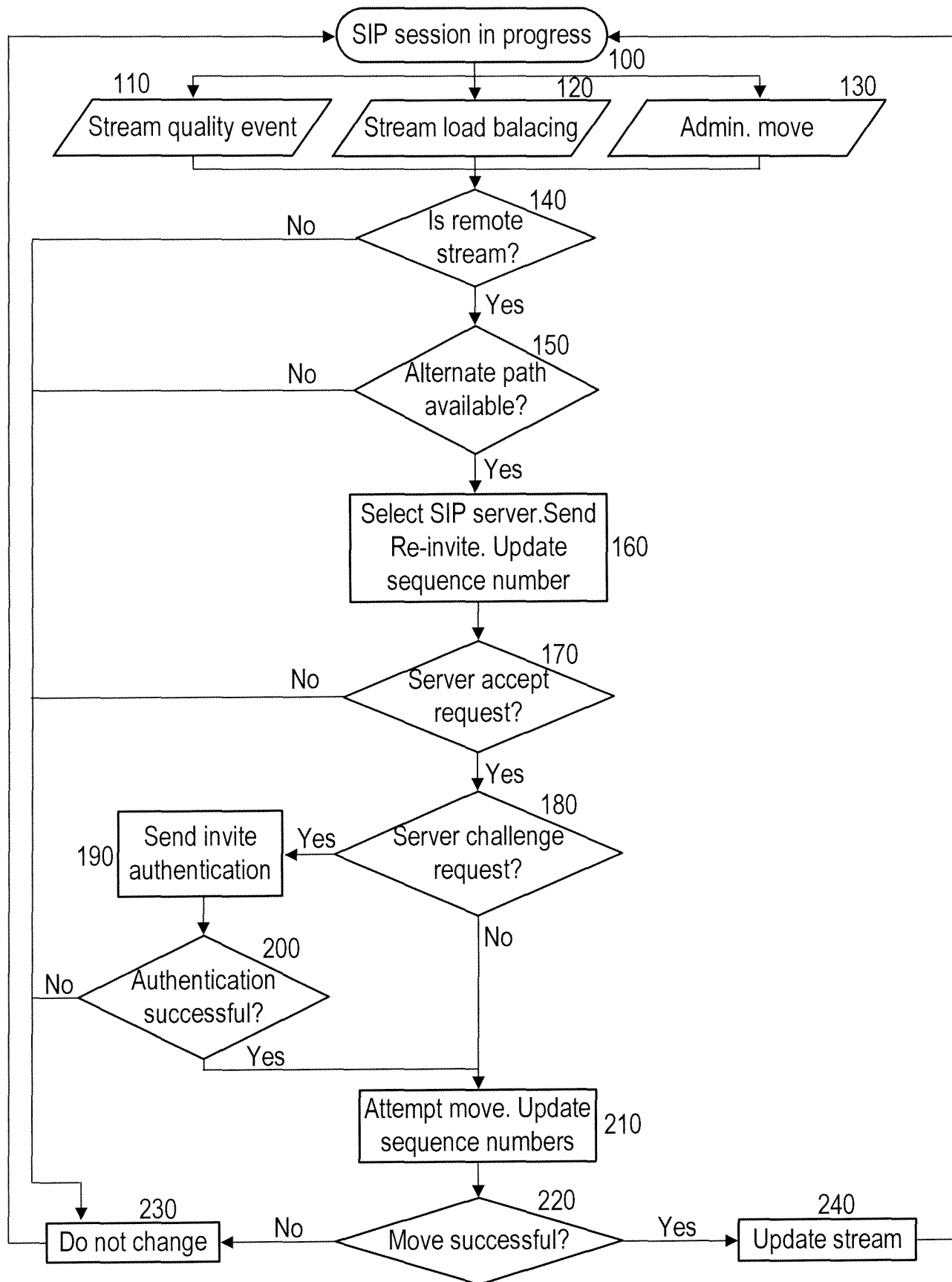


Fig 5 SIP Transaction State Machine

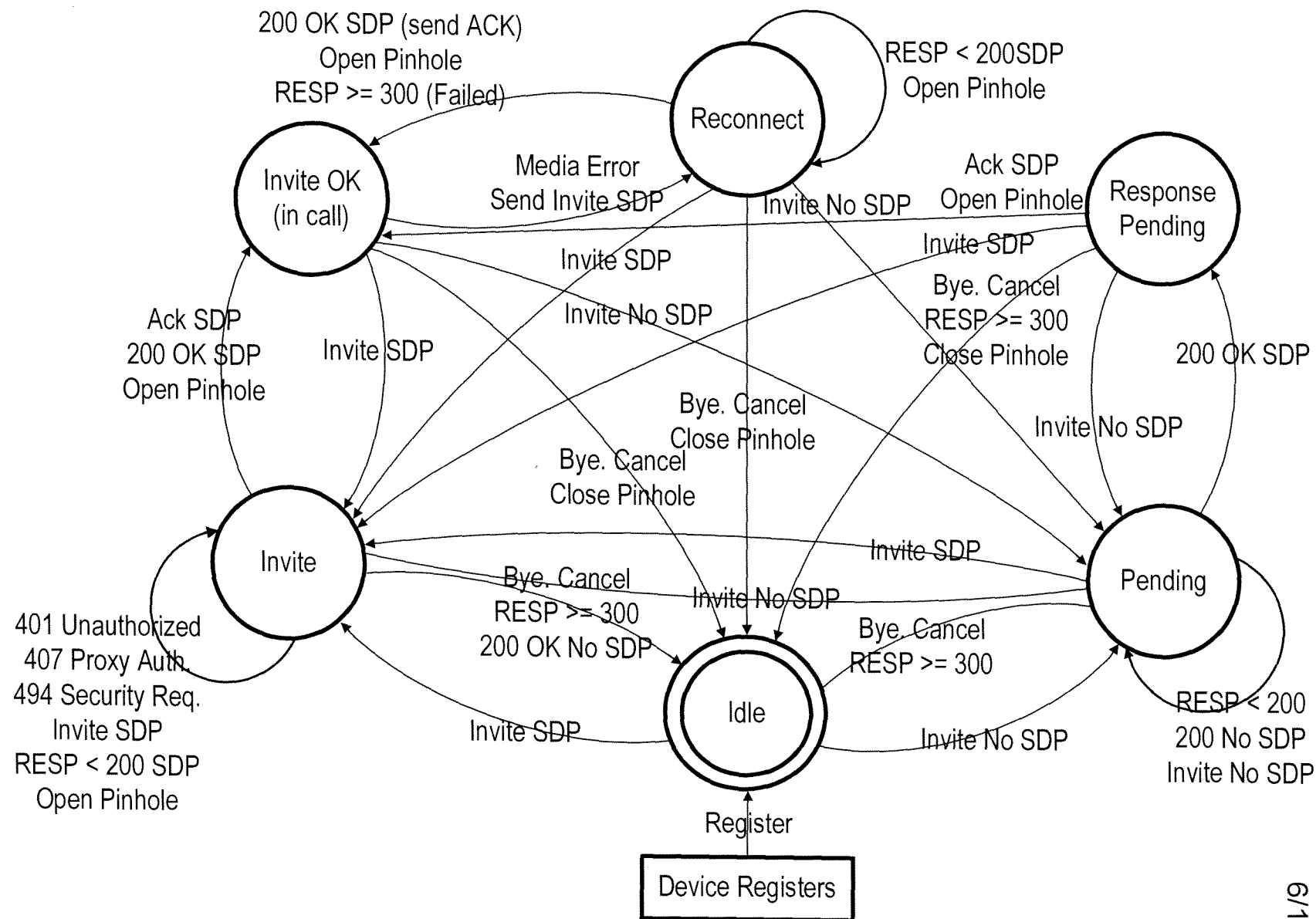


Fig 6 Typical SIP Cell Phone Roaming Embodiment

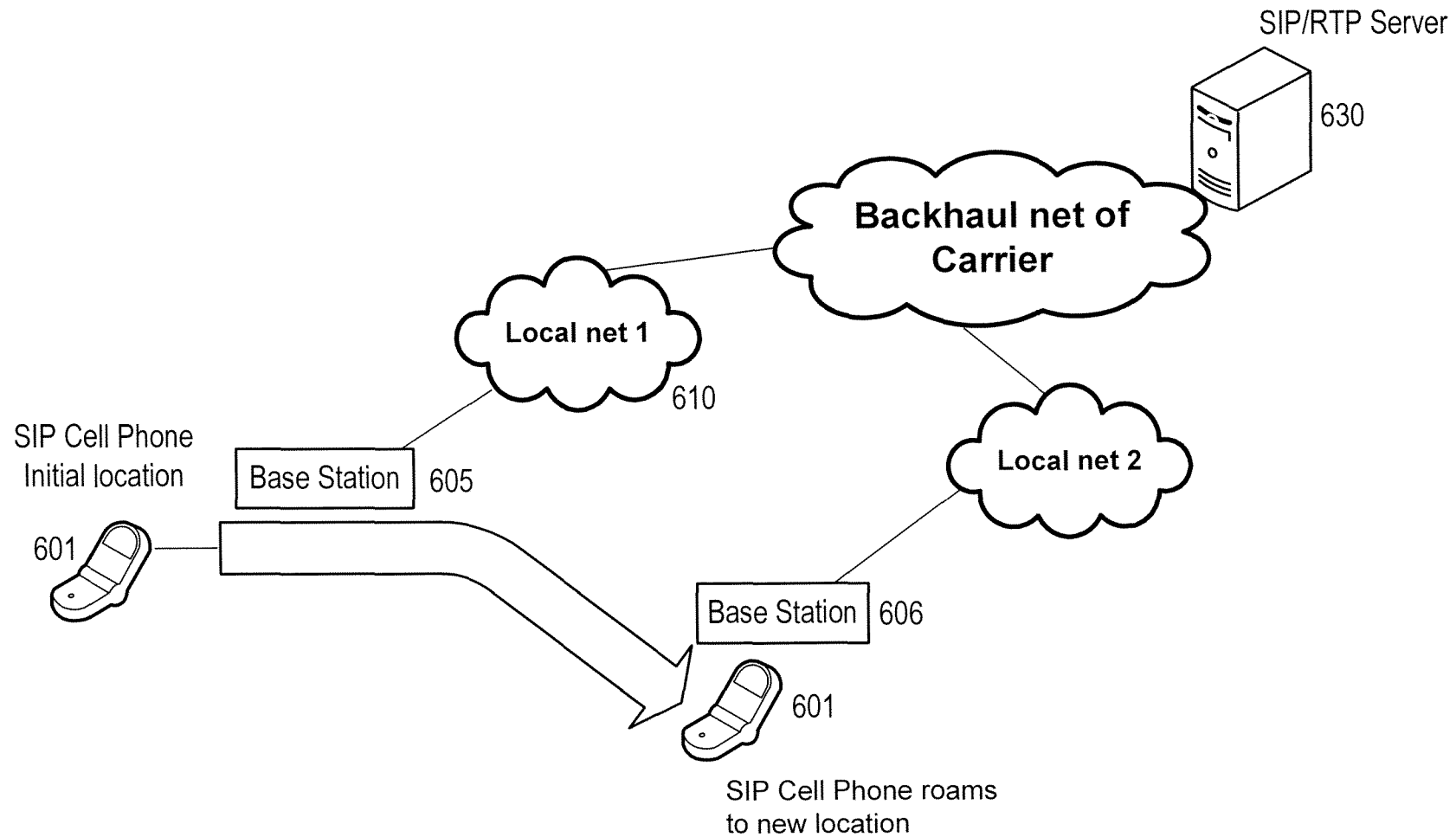


**Fig 7 SIP and RTP Control in Prior Art**

**SIP phone 711 VoIP Call to SIP Phone 712**

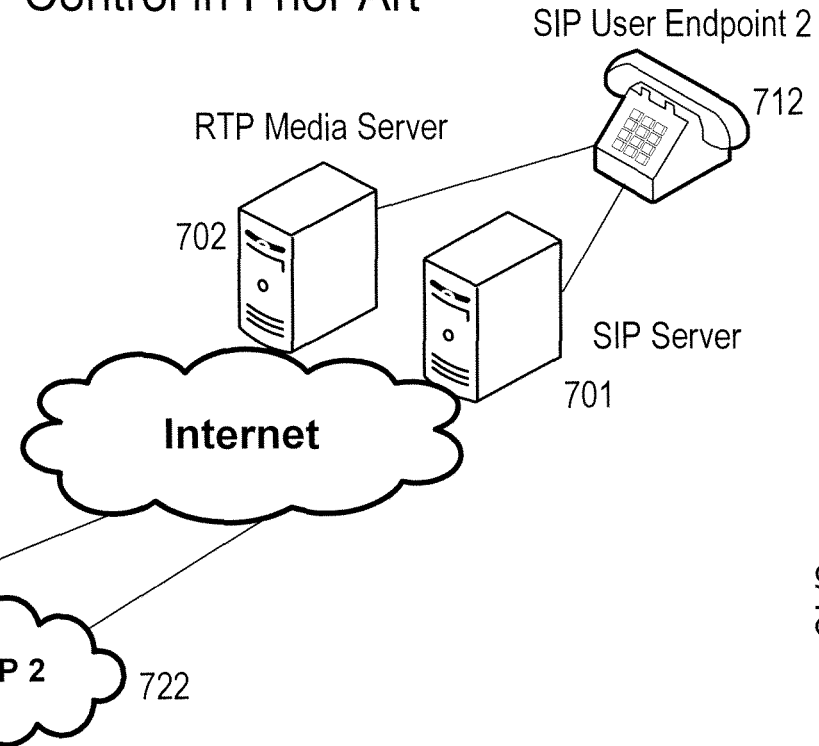
Steps:

711 sends SIP invite to SIP Server 701

701 determines that RTP Server 702 will handle the actual payload of the call to 712

701 sends a modified SIP invite to 712, in which 712 is informed that audio payload will be coming from and should be transmitted to RTP Media Server 702. Indeed, the passing of control from the SIP server to other SIP servers or RTP servers is the key difficulty that causes calls to break when NAT and PAT are involved.

After a few more exchanges of SIP Control Messages between 711, 701 and 702, audio RTP payloads start to flow in both directions between 711 and 712, on ISP 1 path 721 and via server 702



**Difficulty of Moving Call due to a Quality Event**

Call is initially on path 721 via ISP 1

Call is mediocre but acceptable

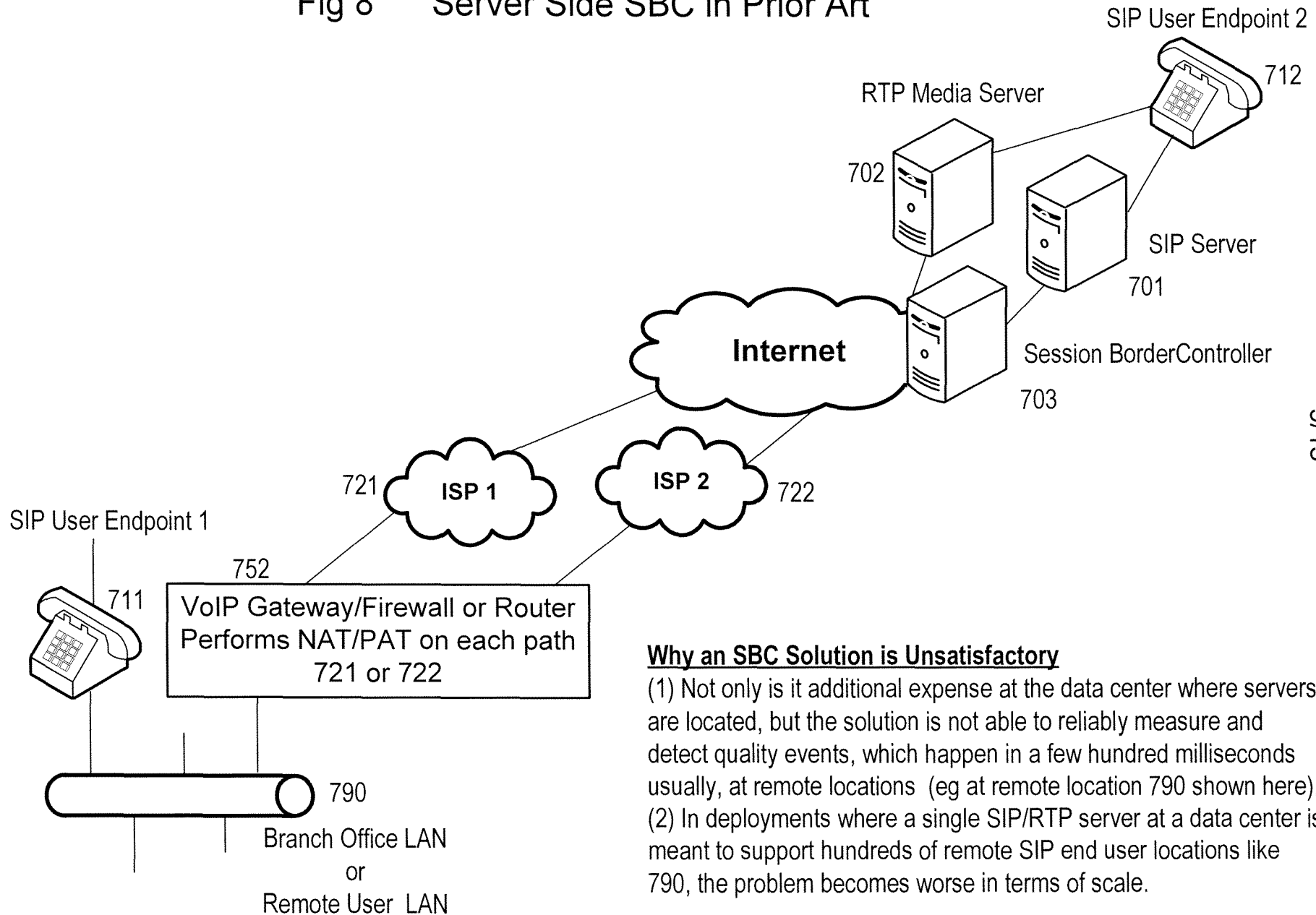
An event occurs on path 722, making it significantly better in quality for the RTP audio between 711 and 712

In the prior art gateway 752, it is not possible for 752 to reliably move the call from path 721 to path 722, without breaking the call. This is because when such a move occurs, and NAT/PAT performed, the servers 701 and 702 do not recognize these as belonging to the call from 711 anymore; the call breaks because RTP server 702 drops packets coming from the new IP address and port number associated with path 722.

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Replacement Sheet

Fig 8 Server Side SBC in Prior Art



**Why an SBC Solution is Unsatisfactory**

- (1) Not only is it additional expense at the data center where servers are located, but the solution is not able to reliably measure and detect quality events, which happen in a few hundred milliseconds usually, at remote locations (eg at remote location 790 shown here).
- (2) In deployments where a single SIP/RTP server at a data center is meant to support hundreds of remote SIP end user locations like 790, the problem becomes worse in terms of scale.

Fig 9 A QoS Gateway Embodiment of Invention

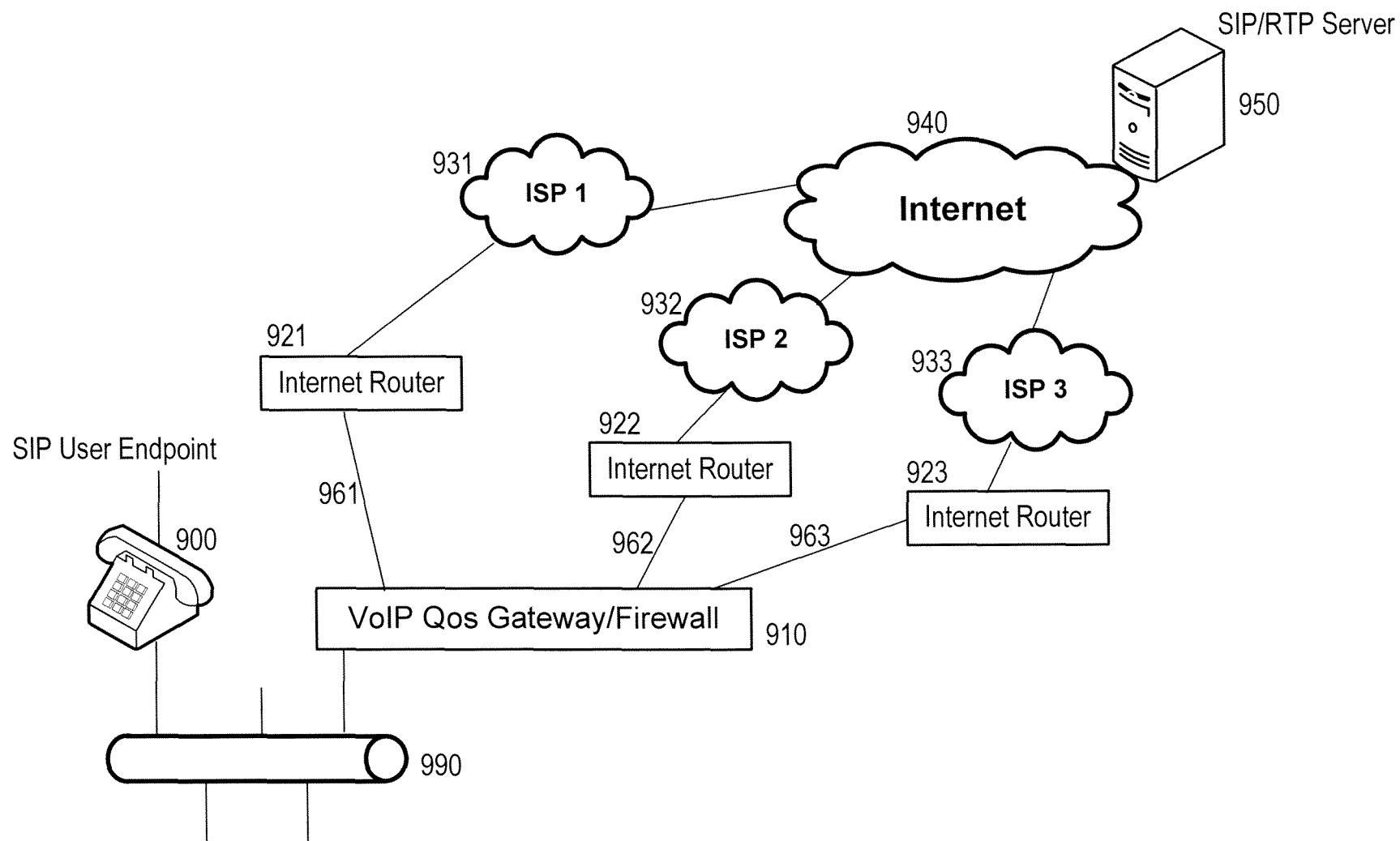


Fig 10 -- A QoS Gateway Embodiment -- Stream Load Balancing

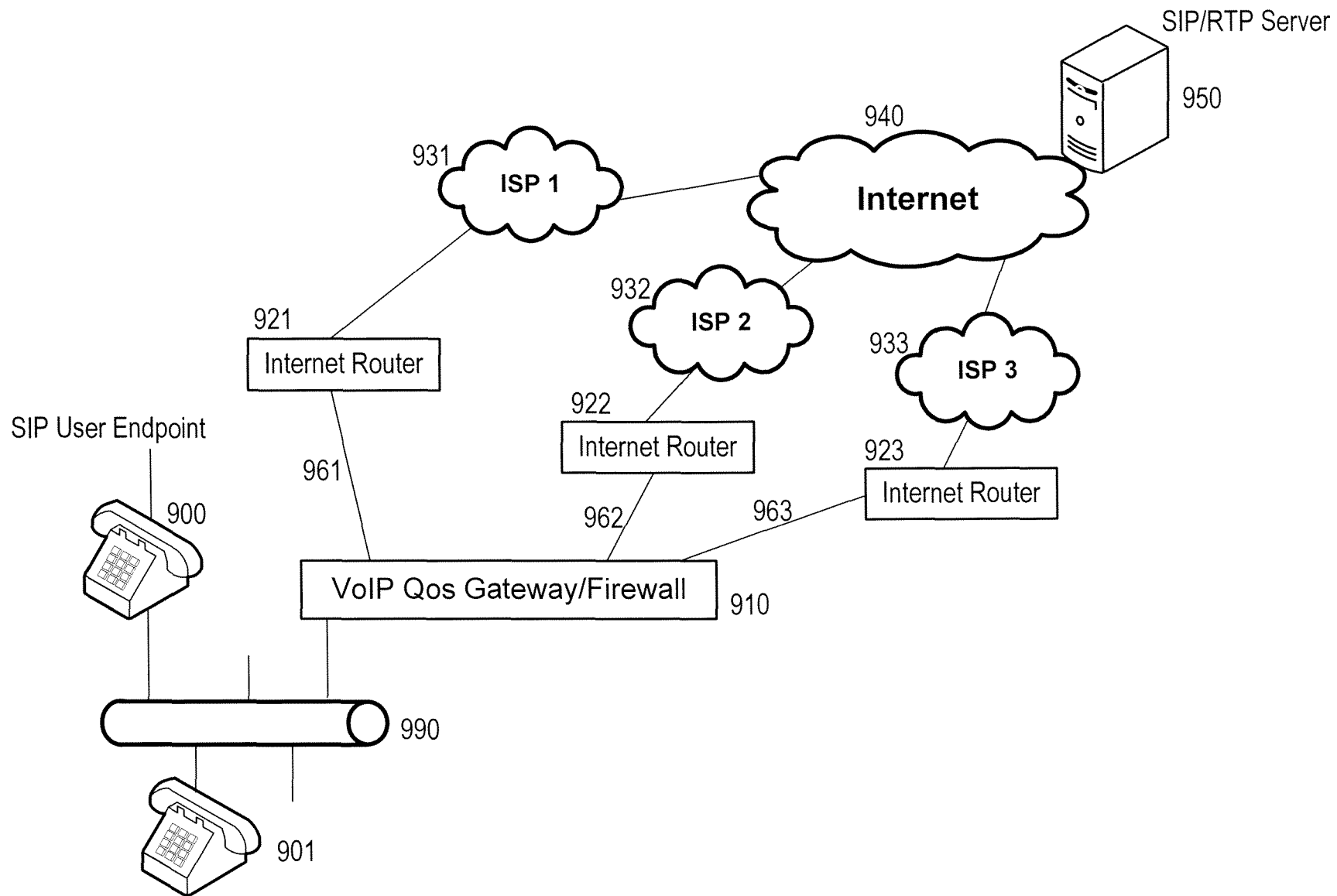


Fig 11 -- A QoS Gateway Embodiment with multiple SIP Servers (dual registrations)

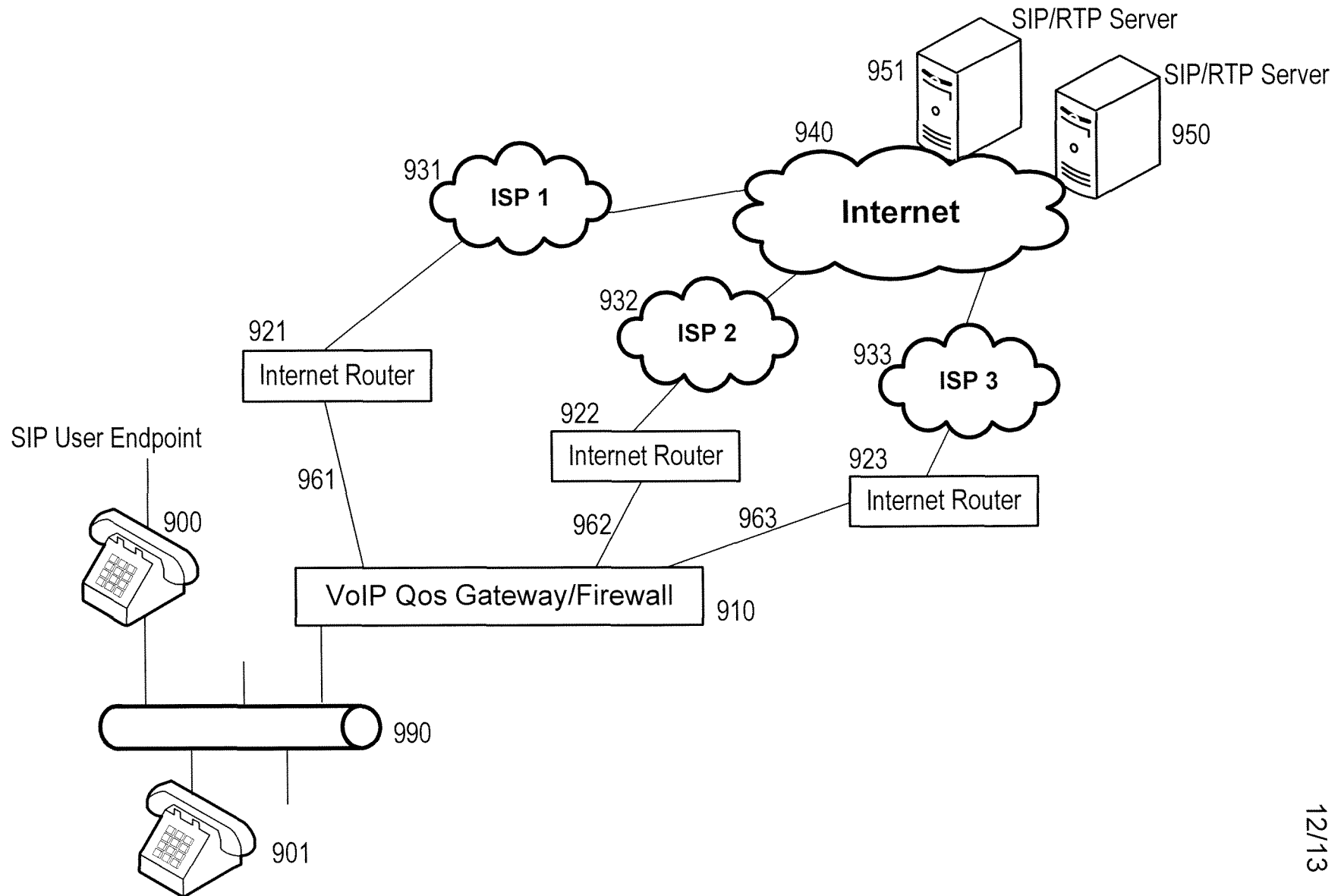
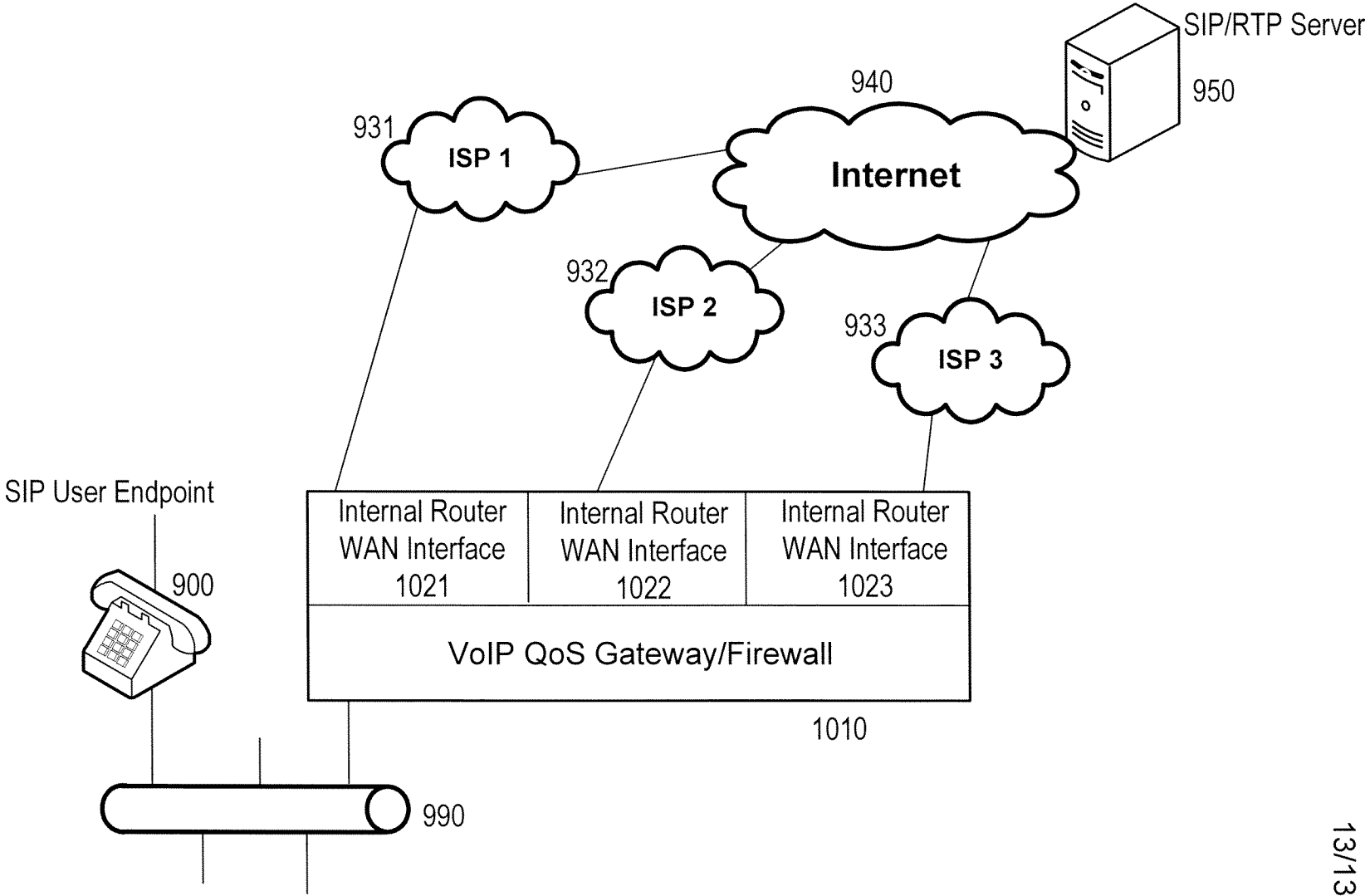


Fig 12 QoS Gateway Embodiment with Internal Router WAN Interface Modules



## Electronic Patent Application Fee Transmittal

|                                                |                                                                                        |                 |               |                             |
|------------------------------------------------|----------------------------------------------------------------------------------------|-----------------|---------------|-----------------------------|
| <b>Application Number:</b>                     | 12137258                                                                               |                 |               |                             |
| <b>Filing Date:</b>                            | 11-Jun-2008                                                                            |                 |               |                             |
| <b>Title of Invention:</b>                     | METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL |                 |               |                             |
| <b>First Named Inventor/Applicant Name:</b>    | BILL CHIN                                                                              |                 |               |                             |
| <b>Filer:</b>                                  | Sanjeet Kumar Dutta/Susan Principe                                                     |                 |               |                             |
| <b>Attorney Docket Number:</b>                 | 18198-4005                                                                             |                 |               |                             |
| Filed as Small Entity                          |                                                                                        |                 |               |                             |
| <b>Utility under 35 USC 111(a) Filing Fees</b> |                                                                                        |                 |               |                             |
| <b>Description</b>                             | <b>Fee Code</b>                                                                        | <b>Quantity</b> | <b>Amount</b> | <b>Sub-Total in USD(\$)</b> |
| <b>Basic Filing:</b>                           |                                                                                        |                 |               |                             |
| <b>Pages:</b>                                  |                                                                                        |                 |               |                             |
| <b>Claims:</b>                                 |                                                                                        |                 |               |                             |
| <b>Miscellaneous-Filing:</b>                   |                                                                                        |                 |               |                             |
| Late filing fee for oath or declaration        | 2051                                                                                   | 1               | 65            | 65                          |
| <b>Petition:</b>                               |                                                                                        |                 |               |                             |
| <b>Patent-Appeals-and-Interference:</b>        |                                                                                        |                 |               |                             |
| <b>Post-Allowance-and-Post-Issuance:</b>       |                                                                                        |                 |               |                             |
| <b>Extension-of-Time:</b>                      |                                                                                        |                 |               |                             |

| Description       | Fee Code | Quantity | Amount | Sub-Total in USD(\$) |
|-------------------|----------|----------|--------|----------------------|
| Miscellaneous:    |          |          |        |                      |
| Total in USD (\$) |          |          |        | 65                   |

## Electronic Acknowledgement Receipt

|                                             |                                                                                        |
|---------------------------------------------|----------------------------------------------------------------------------------------|
| <b>EFS ID:</b>                              | 3806434                                                                                |
| <b>Application Number:</b>                  | 12137258                                                                               |
| <b>International Application Number:</b>    |                                                                                        |
| <b>Confirmation Number:</b>                 | 7163                                                                                   |
| <b>Title of Invention:</b>                  | METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL |
| <b>First Named Inventor/Applicant Name:</b> | BILL CHIN                                                                              |
| <b>Customer Number:</b>                     | 34313                                                                                  |
| <b>Filer:</b>                               | Sanjeet Kumar Dutta/Susan Principe                                                     |
| <b>Filer Authorized By:</b>                 | Sanjeet Kumar Dutta                                                                    |
| <b>Attorney Docket Number:</b>              | 18198-4005                                                                             |
| <b>Receipt Date:</b>                        | 19-AUG-2008                                                                            |
| <b>Filing Date:</b>                         | 11-JUN-2008                                                                            |
| <b>Time Stamp:</b>                          | 18:04:15                                                                               |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                                            |

### Payment information:

|                                          |                 |
|------------------------------------------|-----------------|
| Submitted with Payment                   | yes             |
| Payment Type                             | Deposit Account |
| Payment was successfully received in RAM | \$65            |
| RAM confirmation Number                  | 4707            |
| Deposit Account                          | 150665          |
| Authorized User                          |                 |

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**File Listing:**

| Document Number | Document Description | File Name          | File Size(Bytes)/ Message Digest                   | Multi Part /.zip | Pages (if appl.) |
|-----------------|----------------------|--------------------|----------------------------------------------------|------------------|------------------|
| 1               |                      | 4005MissingPts.pdf | 717539<br>db696ca62a16f956d90022245e66ba229f3a3958 | yes              | 28               |

**Multipart Description/PDF files in .zip description**

| Document Description                        | Start | End |
|---------------------------------------------|-------|-----|
| Miscellaneous Incoming Letter               | 1     | 6   |
| Oath or Declaration filed                   | 7     | 9   |
| Power of Attorney                           | 10    | 15  |
| Drawings-only black and white line drawings | 16    | 28  |

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|---|------------------------|--------------|---------------------------------------------------|----|---|

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**National Stage of an International Application under 35 U.S.C. 371**

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

**POWER OF ATTORNEY  
By Assignee**

Aspen Networks, Inc assignee(s) of the application for United States Letters Patent for an improvement in

**METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO  
OVER INTERNET PROTOCOL**

by Bill Chin, Sajit Bhaskaran and Robin Mavunkel

the specification of which:

- ☐ is filed herewith, OR  
☒ was filed on June 11, 2008 having U.S. Patent Application Serial No. 12/137,258

does hereby appoint as my attorneys and/or agents, with full power of substitution and revocation, to prosecute this application and transact all business in the United States Patent and Trademark Office, and in countries other than the United States, and to do all things necessary or appropriate therefor before any competent International Authorities in connection with any international patent application(s) corresponding to the above-identified application, to Jeffrey A. Miller, Registration No. 35,287

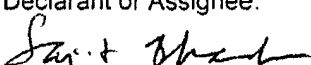
ORRICK, HERRINGTON & SUTCLIFFE LLP  
4 Park Avenue, Suite 1600  
Irvine, CA 92614-2558  
(650) 614-7400

Please send all inquiries to **Fabio Marino**, at the above referenced address.

I, the undersigned, declare that I have reviewed copies of the documentary evidence establishing chain of title to the patent application identified above from the inventor(s) to the assignee(s), which:

- ☐ is filed for recordation herewith; or  
☐ was recorded at Reel \_\_\_\_\_, Frame \_\_\_\_\_; or  
☒ has been sent for recordation under separate cover, copy attached herewith.

To the best of the undersigned's knowledge and belief, title is in the assignee(s) identified above. Furthermore, the undersigned is empowered to sign this document on behalf of the assignee(s).

|                                                                                                                            |                          |
|----------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Full Name of Assignee: Aspen Networks, Inc.                                                                                |                          |
| Post Office Address: 3777 Stevens Creek Boulevard, Suite 330, Santa Clara, California 95051                                |                          |
| Signature of Declarant or Assignee:<br> | Date:<br><u>8/5/2008</u> |
| Full Name of Declarant                                                                                                     |                          |
| If Other Than Assignee: Sajit Bhaskaran                                                                                    |                          |
| Title of Declarant: Chief Technology Officer                                                                               |                          |
| Address of Declarant: 3777 Stevens Creek Boulevard, Suite 330, Santa Clara, California 95051                               |                          |

A S S I G N M E N T

WHEREAS, We, **Bill Chin**, a citizen of the USA, residing at 1445 Buckthorne Way San Jose CA 95129 USA , **Sajit Bhaskaran**, a citizen of the Republic of Singapore, residing at 1336 Avoset Terrace, Sunnyvale CA 94087, USA , **Robin Mavunkel** a citizen of the USA, residing at 1348 Avoset Terrace, Sunnyvale CA 94087 ; (hereinafter referred to as "ASSIGNORS"), have invented and own a certain invention entitled **A Method for Multiple Link Quality of Service for Voice and Video over Internet Protocol** for which application for Letters Patent of the United States of America was filed on 13<sup>th</sup> March 2008 and assigned Serial No. 61/036 377; and

WHEREAS, Aspen Networks Inc, a California corporation and having its principal place of business at 3777 Stevens Creek Boulevard, Suite 330, Santa Clara, CA 95051 (hereinafter referred to as "ASSIGNEE"), is desirous of acquiring the exclusive right, title and interest in, to and under said invention and in, to and under any Patent or similar legal protection to be obtained therefor in the United States of America, its territorial possessions and in any and all countries foreign thereto.

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, ASSIGNORS hereby sell, assign, transfer and set over unto the said ASSIGNEE, its successors and assigns, the full and exclusive right, title and interest to said invention and to all Letters Patent or application or similar legal protection, not only in the United States and its territorial possessions, but in all countries foreign thereto to be obtained for said invention by said application, and to any continuation, division, renewal, substitute or reissue thereof or any legal equivalent thereof in the United States or a foreign country for the full term or terms for which the same may be granted, including all priority rights under the International Convention; and ASSIGNORS hereby authorize and request the Commissioner of Patents and Trademarks to issue

said Letters Patent or any legal equivalent thereof to said ASSIGNEE, its successors and assigns, in accordance with this Assignment.

ASSIGNORS hereby covenant that no assignment, sale, agreement or encumbrance has been or will be made or entered into which would conflict with this Agreement;

ASSIGNORS further covenant that ASSIGNEE will, upon its request, be provided promptly with all pertinent facts and documents relating to said application, said invention and said Letters Patent and legal equivalents as may be known and accessible to ASSIGNORS and will testify as to the same in any interference or litigation related thereto and will promptly execute and deliver to ASSIGNEE or its legal representative any and all papers, instruments or affidavits required to apply for, obtain, maintain, issue and enforce said application, said invention and said Letters Patent and said equivalents in the United States or in any foreign country, which may be necessary or desirable to carry out the purposes thereof.

WITNESS my hand at San Jose, CA this 12 day of  
March, 2008.

Bill Chin  
Signature, Bill Chin

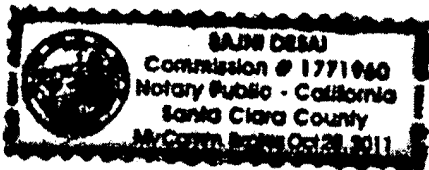
STATE OF CALIFORNIA           )  
                                                  ) ss  
COUNTY OF Santa Clara )

On March 12, 2008 before me, Sajni Desai, personally  
appeared Bill Chin proved to me on the basis of satisfactory evidence  
to be the person whose name is subscribed to the within instrument and acknowledged to me that he  
executed the same in his authorized capacity, and that by his signature on the instrument the person,  
or the entity upon behalf of which the person acted, executed the instrument.

I certify under Penalty of Perjury under the laws of the State of California that the foregoing  
paragraph is true and correct

WITNESS my hand and official seal.

Sajni Desai, County of Santa Clara  
Notary Public in and for said County and State



WITNESS my hand at San Jose CA, \_\_\_\_\_ this 12 day of  
March, 2008.

Sajit Bhaskaran

Signature, Sajit Bhaskaran

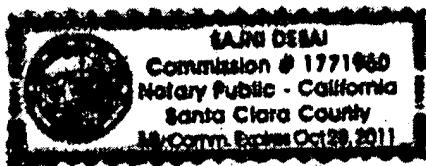
STATE OF CALIFORNIA                    )  
                                                          ) ss  
COUNTY OF Santa Clara        )

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appeared Sajit Bhaskaran \_\_\_\_\_ proved to me on the basis of satisfactory evidence  
to be the person whose name is subscribed to the within instrument and acknowledged to me that he  
executed the same in his authorized capacity, and that by his signature on the instrument the person,  
or the entity upon behalf of which the person acted, executed the instrument.

I certify under Penalty of Perjury under the laws of the State of California that the foregoing  
paragraph is true and correct

WITNESS my hand and official seal.

Sajni Desai, Santa Clara County  
Notary Public in and for said County and State



  
Signature, Robin Mavunkel

 **SAJNI DESAI**  
Commission # 1771960  
Notary Public - California  
Santa Clara County  
My Comm. Expires Oct 28, 2011

Page 81 of 234

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 12/137,258 Confirmation No.: 7163  
Applicant : Bill Chin  
Filing Date : June 11, 2008  
Title : METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR  
VOICE AND VIDEO OVER INTERNET PROTOCOL  
Group Art Unit : Not Yet Assigned  
Examiner : Not Yet Assigned  
Docket No. : 18198-4005  
Customer No. : 34313

Commissioner For Patents  
Mail Stop Missing Parts  
P.O. Box 1450  
Alexandria, VA 22313-1450

**TRANSMITTAL OF MISSING PARTS**

Sir:

1. DOCUMENTS ENCLOSED:

In response to the **NOTICE TO FILE MISSING PARTS OF APPLICATION  
UNDER 37 CFR § 1.53(f)**, which was mailed by the Patent Office on December 12,  
2007, enclosed are:

- ☒ Oath and Declaration
- ☒ Replacement Drawings (13pages)
- ☒ Power of Attorney by Assignee:
- ☒ Assignment of the invention to Aspen Networks Inc.
- ☐ Information Disclosure Statement/PTO 1449 (or PTO/SB/08a)
- ☐ Check No. in the amount of \$65.00 (to cover filing, surcharge and  
Recordation of Assignment fees)
- ☒ A copy of the Notice to File Missing Parts of Application under 37 CFR  
§ 1.53(b)

REQUEST FOR EXTENSION OF TIME:

Applicant : Bill Chin  
 Appl. No. : 12/137,258  
 Examiner : Not Yet Assigned  
 Docket No. : 18198-4005

The proceedings herein are for a patent application and the provisions of 37 CFR § 1.136 apply.

- ☐ Applicant(s) petitions for an extension of time under 37 CFR § 1.136 [fees: 37 CFR § 1.17(a)(1)-(5)] for the total number of months checked below:

| EXTENSION<br>(months)                 | FEE FOR SMALL<br>ENTITY | FEE FOR OTHER THAN<br>SMALL ENTITY |
|---------------------------------------|-------------------------|------------------------------------|
| <input type="checkbox"/> one month    | \$60.00                 | \$120.00                           |
| <input type="checkbox"/> two months   | \$230.00                | \$460.00                           |
| <input type="checkbox"/> three months | \$525.00                | \$1,050.00                         |
| <input type="checkbox"/> four months  | \$820.00                | \$1,640.00                         |
| <input type="checkbox"/> five months  | \$1,115.00              | \$2,230.00                         |

**Fee**

- ☒ If any extension fee is required, please consider this a petition therefor.

3. **FILING FEES**

- ☐ Applicant claims small entity status pursuant to 37 CFR 1.27.

|                                                                                                        |                                                           |                |
|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------------|
| Basic Filing Fee                                                                                       |                                                           | \$0.00         |
| Search Fee                                                                                             |                                                           | \$0.00         |
| Examination Fee                                                                                        |                                                           | \$0.00         |
| Total Claims                                                                                           | 0 - 20 = 0 x \$50.00                                      | \$0.00         |
| Independent Claims                                                                                     | 0 - 3 = 0 x \$200.00                                      | \$0.00         |
| Application Size Fee<br>(\$250 for each additional<br>50 sheets or fraction<br>thereof)                | - 100 = 0 x 250.00                                        |                |
| Multiple Dependent Claims                                                                              | \$360 (if applicable) <input type="checkbox"/>            | \$0.00         |
| Surcharge 37 CFR §<br>1.16(e)                                                                          | \$130 (if applicable) <input checked="" type="checkbox"/> | \$65.00        |
| <b>TOTAL OF ABOVE CALCULATIONS</b>                                                                     |                                                           | <b>\$65.00</b> |
| Reduction by ½ for Filing by Small Entity. Note 37 CFR §§ 1.9, 1.27,<br>1.28. <input type="checkbox"/> |                                                           | \$0.00         |
| Extension of Time (from above)                                                                         |                                                           | \$0.00         |
| Assignment -- \$40 (if applicable) <input type="checkbox"/>                                            |                                                           | \$0.00         |
| <b>TOTAL FEES SUBMITTED HERewith</b>                                                                   |                                                           | <b>\$65.00</b> |

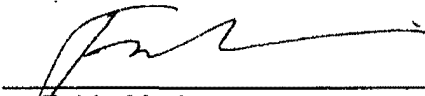
4. **Method of Payment of fees:**

Applicant : Bill Chin  
Appl. No. : 12/137,258  
Examiner : Not Yet Assigned  
Docket No. : 18198-4005

- ☐ Check No. in the amount of \$ is enclosed to cover the above fee(s).
- ☒ Charge Orrick's Deposit Account No. **15-0665** in the amount of \$65.00 to cover the Surcharge fee (\$65.00) and two month extension of time (\$230.00)
- ☒ The Commissioner is authorized to charge Orrick's Deposit Account No. **15-0665** for any fees required under 37 CFR §§ 1.16, 1.17 and 1.445 that are not covered, in whole or in part, by a check enclosed herewith and to credit any overpayments to said Deposit Account No. **15-0665**.

Respectfully submitted,  
ORRICK, HERRINGTON & SUTCLIFFE LLP

Dated: August 19, 2008

By:   
Fabio Marino  
Reg. No. 43,339

Orrick, Herrington & Sutcliffe LLP  
4 Park Plaza, Suite 1600  
Irvine, CA 92614-2558  
Tel. 650 614-7647  
Fax: 650 614-7400  
Customer Number: 34313



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NUMBER | FILING OR 37(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|--------------------|----------------------|-----------------------|------------------------|
| 12/137,258         | 06/11/2008           | BILL CHIN             | 18198-4005             |

CONFIRMATION NO. 7163

34313

## FORMALITIES LETTER

ORRICK, HERRINGTON & SUTCLIFF  
IP PROSECUTION DEPARTMENT  
4 PARK PLAZA  
SUITE 1600  
IRVINE, CA 92614-2558

## ORRICK IP PROSECUTION

Due Date 8/24/08  
Action Item Missing Parts  
Resp Atty SKD  
Docketed by mlb  
Entered 12/27/08 (P)



Date Mailed: 06/24/2008

## NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is missing.

A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.

Note: If a petition under 37 CFR 1.47 is being filed, an oath or declaration in compliance with 37 CFR 1.63 signed by all available joint inventors, or if no inventor is available by a party with sufficient proprietary interest, is required.

The application is informal since it does not comply with the regulations for the reason(s) indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- Replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121(d) are required. The drawings submitted are not acceptable because:
  - The drawing sheets do not have the appropriate margin(s) (see 37 CFR 1.84(g)). Each sheet must include a top margin of at least 2.5 cm. (1 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 1.5 cm. (5/8 inch), and a bottom margin of at least 1.0 cm. (3/8 inch). See Figures(s) 1,2B,3,5,8,9,12.
  - Numbers, letters, and reference characters on the drawings must measure at least 0.32 cm (1/8 inch) in height. See Figure(s) 1,2,5.
  - The drawings submitted to the Office are not electronically reproducible because portions of figures 3-8 are missing and/or blurry.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

The applicant needs to satisfy supplemental fees problems indicated below.

page 1 of 2

The required item(s) identified below must be timely submitted to avoid abandonment:

- To avoid abandonment, a surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.16(f) of **\$65** for a small entity in compliance with 37 CFR 1.27, must be submitted with the missing items identified in this notice.

**SUMMARY OF FEES DUE:**

Total additional fee(s) required for this application is **\$65** for a small entity

- **\$65** Surcharge.

Replies should be mailed to:

Mail Stop Missing Parts  
Commissioner for Patents  
P.O. Box 1450  
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.

<https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/mkanno/

---

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

#### **NOT GRANTED**

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

**POWER OF ATTORNEY  
By Assignee**

Aspen Networks, Inc assignee(s) of the application for United States Letters Patent for an improvement in

**METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO  
OVER INTERNET PROTOCOL**

by Bill Chin, Sajit Bhaskaran and Robin Mavunkel

the specification of which:

☐ is filed herewith, OR

☒ was filed on June 11, 2008 having U.S. Patent Application Serial No. 12/137,258

does hereby appoint as my attorneys and/or agents, with full power of substitution and revocation, to prosecute this application and transact all business in the United States Patent and Trademark Office, and in countries other than the United States, and to do all things necessary or appropriate therefor before any competent International Authorities in connection with any international patent application(s) corresponding to the above-identified application, to Jeffrey A. Miller, Registration No. 35,287

ORRICK, HERRINGTON & SUTCLIFFE LLP  
4 Park Avenue, Suite 1600  
Irvine, CA 92614-2558  
(650) 614-7400

Please send all inquiries to **Fabio Marino**, at the above referenced address.

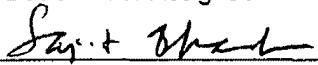
I, the undersigned, declare that I have reviewed copies of the documentary evidence establishing chain of title to the patent application identified above from the inventor(s) to the assignee(s), which:

☐ is filed for recordation herewith; or

☐ was recorded at Reel \_\_\_\_\_, Frame \_\_\_\_\_; or

☒ has been sent for recordation under separate cover, copy attached herewith.

To the best of the undersigned's knowledge and belief, title is in the assignee(s) identified above. Furthermore, the undersigned is empowered to sign this document on behalf of the assignee(s).

|                                                                                                                            |                   |
|----------------------------------------------------------------------------------------------------------------------------|-------------------|
| Full Name of Assignee: Aspen Networks, Inc.                                                                                |                   |
| Post Office Address: 3777 Stevens Creek Boulevard, Suite 330, Santa Clara, California 95051                                |                   |
| Signature of Declarant or Assignee:<br> | Date:<br>8/5/2008 |
| Full Name of Declarant:<br>If Other Than Assignee: Sajit Bhaskaran                                                         |                   |
| Title of Declarant: Chief Technology Officer                                                                               |                   |
| Address of Declarant: 3777 Stevens Creek Boulevard, Suite 330, Santa Clara, California 95051                               |                   |

A S S I G N M E N T

WHEREAS, We, **Bill Chin**, a citizen of the USA, residing at 1445 Buckthorne Way San Jose CA 95129 USA, **Sajit Bhaskaran**, a citizen of the Republic of Singapore, residing at 1336 Avoset Terrace, Sunnyvale CA 94087, USA, **Robin Mavunkel** a citizen of the USA, residing at 1348 Avoset Terrace, Sunnyvale CA 94087; (hereinafter referred to as "ASSIGNORS"), have invented and own a certain invention entitled **A Method for Multiple Link Quality of Service for Voice and Video over Internet Protocol** for which application for Letters Patent of the United States of America was filed on 13<sup>th</sup> March 2008 and assigned Serial No. 61/036377; and

WHEREAS, Aspen Networks Inc, a California corporation and having its principal place of business at 3777 Stevens Creek Boulevard, Suite 330, Santa Clara, CA 95051 (hereinafter referred to as "ASSIGNEE"), is desirous of acquiring the exclusive right, title and interest in, to and under said invention and in, to and under any Patent or similar legal protection to be obtained therefor in the United States of America, its territorial possessions and in any and all countries foreign thereto.

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, ASSIGNORS hereby sell, assign, transfer and set over unto the said ASSIGNEE, its successors and assigns, the full and exclusive right, title and interest to said invention and to all Letters Patent or application or similar legal protection, not only in the United States and its territorial possessions, but in all countries foreign thereto to be obtained for said invention by said application, and to any continuation, division, renewal, substitute or reissue thereof or any legal equivalent thereof in the United States or a foreign country for the full term or terms for which the same may be granted, including all priority rights under the International Convention; and ASSIGNORS hereby authorize and request the Commissioner of Patents and Trademarks to issue

said Letters Patent or any legal equivalent thereof to said ASSIGNEE, its successors and assigns, in accordance with this Assignment.

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WITNESS my hand at San Jose, CA this 12 day of  
March, 2008.

Bill Chin  
Signature, Bill Chin

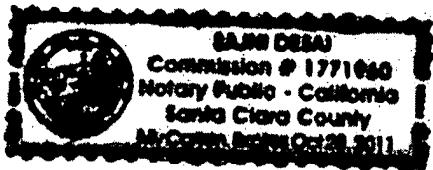
STATE OF CALIFORNIA           )  
                                          ) ss  
COUNTY OF Santa Clara )

On March 12, 2008 before me, Sajni Desai, personally  
appeared Bill Chin proved to me on the basis of satisfactory evidence  
to be the person whose name is subscribed to the within instrument and acknowledged to me that he  
executed the same in his authorized capacity, and that by his signature on the instrument the person,  
or the entity upon behalf of which the person acted, executed the instrument.

I certify under Penalty of Perjury under the laws of the State of California that the foregoing  
paragraph is true and correct

WITNESS my hand and official seal.

Sajni Desai, County of Santa Clara  
Notary Public in and for said County and State



WITNESS my hand at San Jose CA, \_\_\_\_\_ this 12 day of  
March, 2008.

Sajit Bhaskaran  
\_\_\_\_\_  
Signature, Sajit Bhaskaran

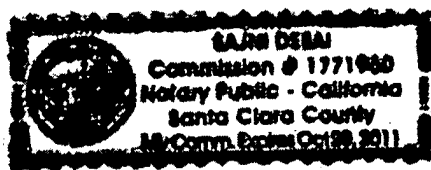
STATE OF CALIFORNIA           )  
                                          ) ss  
COUNTY OF Santa Clara )

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I certify under Penalty of Perjury under the laws of the State of California that the foregoing  
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WITNESS my hand and official seal.

Sajni Desai, Santa Clara County  
\_\_\_\_\_  
Notary Public in and for said County and State



March, 2008.

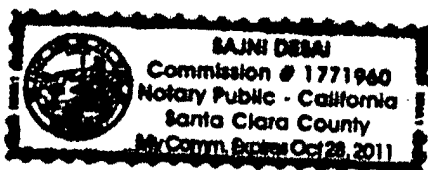
Signature, Robin Mavunkel

COUNTY OF Santa Clara )

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I certify under Penalty of Perjury under the laws of the State of California that the foregoing paragraph is true and correct

WITNESS my hand and official seal.



She, Santa Clara County  
Notary Public in and for  
said County and State



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|--------------------|-----------------------|-----------------------|------------------------|
| 12/137,258         | 06/11/2008            | BILL CHIN             | 18198-4005             |

**CONFIRMATION NO. 7163**

**IMPROPER CPOA LETTER**



34313  
ORRICK, HERRINGTON & SUTCLIFFE, LLP  
IP PROSECUTION DEPARTMENT  
4 PARK PLAZA  
SUITE 1600  
IRVINE, CA 92614-2558

Date Mailed: 09/02/2008

**NOTICE REGARDING POWER OF ATTORNEY**

This is in response to the Power of Attorney filed 08/19/2008. The Power of Attorney in this application is not accepted for the reason(s) listed below:

- The Power of Attorney is from an assignee and the Certificate required by 37 CFR 3.73(b) has not been received.

/hnguyen/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION<br>NUMBER | FILING or<br>371(c) DATE | GRP ART<br>UNIT | FIL FEE REC'D | ATTY. DOCKET NO | TOT CLAIMS | IND CLAIMS |
|-----------------------|--------------------------|-----------------|---------------|-----------------|------------|------------|
| 12/137,258            | 06/11/2008               | 2416            | 525           | 18198-4005      | 21         | 2          |

**CONFIRMATION NO. 7163**

**UPDATED FILING RECEIPT**

34313  
ORRICK, HERRINGTON & SUTCLIFFE, LLP  
IP PROSECUTION DEPARTMENT  
4 PARK PLAZA  
SUITE 1600  
IRVINE, CA 92614-2558



Date Mailed: 08/04/2009

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

**Applicant(s)**

BILL CHIN, San Jose, CA;  
Sajit Bhaskaran, Sunnyvale, CA;  
Robin Mavunkel, Sunnyvale, CA;

**Assignment For Published Patent Application**

Aspen Networks Inc.

**Power of Attorney:**

Fabio Marino--43339

**Domestic Priority data as claimed by applicant**

This appln claims benefit of 61/036,377 03/13/2008

**Foreign Applications**

**If Required, Foreign Filing License Granted:** 06/23/2008

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/137,258**

**Projected Publication Date:** 11/12/2009

**Non-Publication Request:** No

**Early Publication Request:** No

**\*\* SMALL ENTITY \*\***

**Title**

METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER  
INTERNET PROTOCOL

**Preliminary Class**

370

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Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

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| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|--------------------|-----------------------|-----------------------|------------------------|
| 12/137,258         | 06/11/2008            | BILL CHIN             | 18198-4005             |

**CONFIRMATION NO. 7163**

## PUBLICATION NOTICE



\*OC000000038723584\*

34313  
ORRICK, HERRINGTON & SUTCLIFFE, LLP  
IP PROSECUTION DEPARTMENT  
4 PARK PLAZA  
SUITE 1600  
IRVINE, CA 92614-2558

**Title:**METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL

**Publication No.**US-2009-0279436-A1

**Publication Date:**11/12/2009

## NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at [www.uspto.gov](http://www.uspto.gov). The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at [www.uspto.gov](http://www.uspto.gov) using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <http://pair.uspto.gov/>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

12/137,258

06/11/2008

BILL CHIN

18198-4005

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04/14/2010

ORRICK, HERRINGTON & SUTCLIFFE, LLP  
IP PROSECUTION DEPARTMENT

4 PARK PLAZA

SUITE 1600

IRVINE, CA 92614-2558

EXAMINER

HARPER, KEVIN C

ART UNIT

PAPER NUMBER

2462

MAIL DATE

DELIVERY MODE

04/14/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |                                    |  |
|------------------------------|--------------------------------------|------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>12/137,258 | <b>Applicant(s)</b><br>CHIN ET AL. |  |
|                              | <b>Examiner</b><br>Kevin C. Harper   | <b>Art Unit</b><br>2462            |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 June 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                                                               |                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                                           | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/08</u> . | 6) <input type="checkbox"/> Other: _____                                                |

***Claim Objections***

1. Claim 7 is objected to because it does not end in a period.
2. Claim 8 is objected to because “the SIP server” lacks antecedent basis. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 5-7, 9-14, 16-18 and 20-21 are rejected under 35 U.S.C. 102(e) as being anticipated by White et al. (US 2006/0193295).

3. Regarding claims 1-2 and 11-13, White discloses a method comprising transmitting between a source and a destination over a first network path and non-disruptively switching from the first path to a second path among links that in part comprise a remote (destination) local area network (figs. 1a-1c; para. 27, seamless handover), where RTP is used (para.72) on top of the IP protocol. Regarding claim 11, the network uses a switching device (items 16 or 18) to switch the paths.
4. Regarding claims 3 and 14, SIP is used (para. 37).
5. Regarding claims 5-7 and 16-18, the switch occurs because of load balancing which is a quality event and an administrative move (para. 57, lines 24-28 and 35-38).
6. Regarding claims 9 and 20, the source device is a mobile device (para. 9).
7. Regarding claims 10 and 21, the network paths become available during roaming (para. 25)

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 4 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over White in view of Yi et al. (US 2003/0156559).

8. Regarding claims 4 and 15, White does not disclose maintaining SIP sequencing after a switchover. Yi discloses maintaining sequencing after a switchover (para. 72; note: the sequence number of a control header is maintained and used for synchronization). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to maintain SIP sequencing in the invention of White in order to provide a seamless handover as is known in the art.

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Claims 8 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over White in view of Yi et al. (US 2003/0156559).

9. Regarding claim 8 and 19, White does not disclose authentication by a SIP server. Nam discloses authentication by a SIP server ((paras. 44 and 72). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to authenticate a device before switchover in the invention of White in order to maintain security in the network as is known in the art.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Harper whose telephone number is 571-272-3166. The examiner can normally be reached weekdays from 11:00 AM to 7:00 PM ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao, can be reached at 571-272-3174. The centralized fax number for the Patent Office is 571-273-8300. For non-official communications, the examiner's personal fax number is 571-273-3166 and the examiner's e-mail address is [kevin.harper@uspto.gov](mailto:kevin.harper@uspto.gov).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications associated with a customer number is available through Private PAIR only. For more information about the PAIR system, see [portal.uspto.gov](http://portal.uspto.gov). Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-

Art Unit: 2462

9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin C. Harper/

Primary Examiner, Art Unit 2462

April 12, 2010

|                                   |                                       |  |                                                           |             |
|-----------------------------------|---------------------------------------|--|-----------------------------------------------------------|-------------|
| <b>Notice of References Cited</b> | Application/Control No.<br>12/137,258 |  | Applicant(s)/Patent Under<br>Reexamination<br>CHIN ET AL. |             |
|                                   | Examiner<br>Kevin C. Harper           |  | Art Unit<br>2462                                          | Page 1 of 1 |

#### U.S. PATENT DOCUMENTS

| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Name         | Classification |
|---|---|--------------------------------------------------|-----------------|--------------|----------------|
| * | A | US-2006/0193295                                  | 08-2006         | White et al. | 370/336        |
| * | B | US-2003/0156559                                  | 08-2003         | Yi et al.    | 370/331        |
| * | C | US-2008/0130574                                  | 06-2008         | Nam et al.   | 370/331        |
|   | D | US-                                              |                 |              |                |
|   | E | US-                                              |                 |              |                |
|   | F | US-                                              |                 |              |                |
|   | G | US-                                              |                 |              |                |
|   | H | US-                                              |                 |              |                |
|   | I | US-                                              |                 |              |                |
|   | J | US-                                              |                 |              |                |
|   | K | US-                                              |                 |              |                |
|   | L | US-                                              |                 |              |                |
|   | M | US-                                              |                 |              |                |

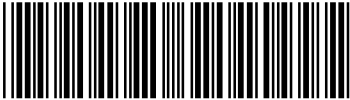
#### FOREIGN PATENT DOCUMENTS

| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Country | Name | Classification |
|---|---|--------------------------------------------------|-----------------|---------|------|----------------|
|   | N |                                                  |                 |         |      |                |
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|   | S |                                                  |                 |         |      |                |
|   | T |                                                  |                 |         |      |                |

#### NON-PATENT DOCUMENTS

| * |   | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
|---|---|-------------------------------------------------------------------------------------------|
|   | U |                                                                                           |
|   | V |                                                                                           |
|   | W |                                                                                           |
|   | X |                                                                                           |

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

|                                                                                                              |                                                |                                                                   |
|--------------------------------------------------------------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------|
| <b>Search Notes</b><br><br> | <b>Application/Control No.</b><br><br>12137258 | <b>Applicant(s)/Patent Under Reexamination</b><br><br>CHIN ET AL. |
|                                                                                                              | <b>Examiner</b><br><br>Kevin C Harper          | <b>Art Unit</b><br><br>2462                                       |

| SEARCHED |          |         |          |
|----------|----------|---------|----------|
| Class    | Subclass | Date    | Examiner |
| 370      | 216      | 4/12/10 | kch      |

| SEARCH NOTES                |         |          |
|-----------------------------|---------|----------|
| Search Notes                | Date    | Examiner |
| inventorship search on PALM | 4/12/10 | kch      |
| EAST - see printout         | 4/12/10 | kch      |

| INTERFERENCE SEARCH |          |      |          |
|---------------------|----------|------|----------|
| Class               | Subclass | Date | Examiner |
|                     |          |      |          |

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CONFIRMATION NO. 7163

|                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                   |                                                          |                                                                                                                                                                                                                                                                           |                                          |                           |                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---------------------------|--------------------------------|
| <b>SERIAL NUMBER</b><br>12/137,258                                                                                                                                                                                                                                                                                                               | <b>FILING or 371(c) DATE</b><br>06/11/2008<br><b>RULE</b>                                                         | <b>CLASS</b><br>370                                      | <b>GROUP ART UNIT</b><br>2462                                                                                                                                                                                                                                             | <b>ATTORNEY DOCKET NO.</b><br>18198-4005 |                           |                                |
| <b>APPLICANTS</b><br>BILL CHIN, San Jose, CA;<br>Sajit Bhaskaran, Sunnyvale, CA;<br>Robin Mavunkel, Sunnyvale, CA;<br><b>** CONTINUING DATA *****</b><br>This appln claims benefit of 61/036,377 03/13/2008<br><b>** FOREIGN APPLICATIONS *****</b><br><b>** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** ** SMALL ENTITY **</b><br>06/23/2008 |                                                                                                                   |                                                          |                                                                                                                                                                                                                                                                           |                                          |                           |                                |
| Foreign Priority claimed <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No<br>35 USC 119(a-d) conditions met <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No<br>Verified and Acknowledged <u>/KEVIN C HARPER/</u><br>Examiner's Signature                                                                  |                                                                                                                   | <input type="checkbox"/> Met after Allowance<br>Initials | <b>STATE OR COUNTRY</b><br>CA                                                                                                                                                                                                                                             | <b>SHEETS DRAWINGS</b><br>13             | <b>TOTAL CLAIMS</b><br>21 | <b>INDEPENDENT CLAIMS</b><br>2 |
| <b>ADDRESS</b><br>ORRICK, HERRINGTON & SUTCLIFFE, LLP<br>IP PROSECUTION DEPARTMENT<br>4 PARK PLAZA<br>SUITE 1600<br>IRVINE, CA 92614-2558<br>UNITED STATES                                                                                                                                                                                       |                                                                                                                   |                                                          |                                                                                                                                                                                                                                                                           |                                          |                           |                                |
| <b>TITLE</b><br>METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL                                                                                                                                                                                                                                           |                                                                                                                   |                                                          |                                                                                                                                                                                                                                                                           |                                          |                           |                                |
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|                                                                                                                                                                    |  |  |  | Application Number       | 12/137,258       |
|                                                                                                                                                                    |  |  |  | Filing Date              | June 11, 2008    |
|                                                                                                                                                                    |  |  |  | First Named Inventor     | Bill Chin        |
|                                                                                                                                                                    |  |  |  | Group Art Unit           | Not Yet Assigned |
|                                                                                                                                                                    |  |  |  | Examiner Name            | Not Yet Assigned |
|                                                                                                                                                                    |  |  |  | Attorney Docket Number   | 18198-4005       |

| U.S. PATENT DOCUMENTS |                          |                      |                           |                                                    |                                                          |                                                                                    |
|-----------------------|--------------------------|----------------------|---------------------------|----------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------------------------|
| Examiner<br>Initials  | Cite<br>No. <sup>1</sup> | U.S. Patent Document |                           | Name of Patentee or Applicant of<br>Cited Document | Date of Publications of<br>Cited Documents<br>MM-DD-YYYY | Pages, Columns, Lines,<br>Where<br>Relevant Passages or<br>Relevant Figures Appear |
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|                       |                          |                      |                           |                                                    |                                                          |                                                                                    |
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| FOREIGN PATENT DOCUMENTS |                          |                         |                     |                           |                                                    |                                                          |                                                                                       |                |
|--------------------------|--------------------------|-------------------------|---------------------|---------------------------|----------------------------------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------|----------------|
| Examiner<br>Initials     | Cite<br>No. <sup>1</sup> | Foreign Patent Document |                     |                           | Name of Patentee or Applicant of<br>Cited Document | Date of Publications<br>of Cited Documents<br>MM-DD-YYYY | Pages, Columns,<br>Lines,<br>Where Relevant<br>Passages or Relevant<br>Figures Appear | T <sup>6</sup> |
|                          |                          | Office <sup>3</sup>     | Number <sup>4</sup> | Kind<br>Code <sup>5</sup> |                                                    |                                                          |                                                                                       |                |
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| OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS |                          |                                                                                                                                                                                                                                                                                                                                         |                |
|---------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Examiner<br>Initials <sup>1</sup>                 | Cite<br>No. <sup>1</sup> | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.                                                                         | T <sup>2</sup> |
|                                                   | CA                       | Can You Hear Me Now?; It Must Be BGP; NATE KUSHMAN; SRIKANTH KANDULA; DINA KATABI; 6-pages                                                                                                                                                                                                                                              |                |
|                                                   | CB                       | draft-rosenberg-sip-entfw-02.txt; Internet Engineering Task Force; SIP WG; Internet Draft; JONATHAN ROSENBERG,, JOEL WEINBERGER, HENNING SCHULZRINNE; dynamicsoft, Columbia U.; July 20, 2001; Expires: February 2002; NAT Friendly SIP; 29-pages                                                                                       |                |
|                                                   | CC                       | draft-rosenberg-sipping-nat-scenarios-00.txt; Internet Engineering Task Force; SIPPING WG; Internet Draft; JONATHAN ROSENBERG; ROHAN MAHY, SANJOY SEN; dynamicsoft, Cisco, Nortel; November 14, 2001; Expires: March 2002; NAT and Firewall Scenarios and Solutions for SIP; 57-pages; Internet Draft; nat scenarios; November 16, 2001 |                |
|                                                   | CD                       | Port address translation; From Wikipedia, the free encyclopedia                                                                                                                                                                                                                                                                         |                |
|                                                   | CE                       | Network Working Group; Request for Comments: 1631; Category: Informational; Cray Communications; KJELD BORCH EGEVANG and PAUL FRANCIS; NTT; May 1994; The IP Network Address Translator (NAT); 10-pages                                                                                                                                 |                |

|                    |                                            |                    |  |
|--------------------|--------------------------------------------|--------------------|--|
| Examiner Signature | OHS West:260468057.1<br>18198-4005 R1H/KW6 | Date<br>Considered |  |
|--------------------|--------------------------------------------|--------------------|--|

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Unique citation designation number. <sup>2</sup>See attached Kinds of U.S. Patent Documents. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.)). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent documents. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

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|                                                                                                          |   |    |   |                          |                  |
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| <b>INFORMATION DISCLOSURE<br/>STATEMENT BY APPLICANT</b><br><br><i>(use as many sheets as necessary)</i> |   |    |   | <b>Complete if Known</b> |                  |
|                                                                                                          |   |    |   | Application Number       | 12/137,258       |
|                                                                                                          |   |    |   | Filing Date              | June 11, 2008    |
|                                                                                                          |   |    |   | First Named Inventor     | Bill Chin        |
|                                                                                                          |   |    |   | Group Art Unit           | Not Yet Assigned |
|                                                                                                          |   |    |   | Examiner Name            | Not Yet Assigned |
| Sheet                                                                                                    | 2 | of | 2 | Attorney Docket Number   | 18198-4005       |

|  |    |                                                                                                                                                                                                                                                                                                                                                                                                 |  |
|--|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  | CF | Network Working Group; Request for Comments: 1771; YAKOV REKHTER, T.J. Watson Research Center IBM Corp.; Obsoletes: 1654; TONY LI, cisco Systems, Inc., Editors; Category: Standards Track; A Border Gateway Protocol 4 (BGP-4); March 1995; 57-pages; document was originally published as RFC 1267 in October 1991, jointly authored by KIRK LOUGHEED (cisco Systems) and YAKOV REKHTER (IBM) |  |
|  | CG | Network Working Group; Request for Comments: 1889; Category: Standards Track; RTP: A Transport Protocol for Real-Time Applications; Audio-Video Transport Working Group; HENNING SCHULZRINNE, GMD Fokus; STEPHEN L. CASNER, Precept Software, Inc.; RON FREDERICK, Xerox Palo Alto Research Center, VAN JACOBSON, Lawrence Berkeley National Laboratory; January 1996; 75-pages                 |  |
|  | CH | Network Working Group; Request for Comments: 2131; Obsoletes: 1541; Category: Standards Track; Dynamic Host Configuration Protocol; RALPH DROMS; Bucknell University; March 1997; 45-pages                                                                                                                                                                                                      |  |
|  | CI | Network Working Group; Request for Comments: 2327; Category: Standards Track; SDP: Session Description Protocol; MARK HANDLEY and VAN JACOBSON; ISI/LBNL; April 1998; 42-pages                                                                                                                                                                                                                  |  |
|  | CJ | Network Working Group; Request for Comments: 2516; Category: Informational; A Method for Transmitting PPP Over Ethernet (PPPoE); LOUIS MAMAKOS, KURT LIDL and JEFF EVARTS, UUNET Technologies, Inc.; DAVID CARREL and DAN SIMONE, RedBack Networks, Inc.; ROSS WHEELER; RouterWare, Inc.; February 1999; 17-pages                                                                               |  |
|  | CK | Network Working Group; Request for Comments: 3261; Obsoletes: 2543; Category: Standards Track; SIP: Session Initiation Protocol; JONATHAN ROSENBERG, dynamicsoft; HENNING SCHULZRINNE, Columbia University; GONZALO CAMARILLO, Ericsson; ALAN JOHNSTON, WorldCom; JON PETERSON, NeuStar; ROBERT SPARKS, dynamicsoft; MARK HANDLEY, ICIR; EVE SCHOOLER, AT&T; June 2002; 269-pages               |  |

|                    |                                                                        |                 |  |
|--------------------|------------------------------------------------------------------------|-----------------|--|
| Examiner Signature | OHS West:260468057.1 /Kevin Harper/ (03/29/2010)<br>18198-4005 R1H/KW6 | Date Considered |  |
|--------------------|------------------------------------------------------------------------|-----------------|--|

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<sup>1</sup>Unique citation designation number. <sup>2</sup>See attached Kinds of U.S. Patent Documents. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.)). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent documents. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /K.H./

**EAST Search History****EAST Search History (Prior Art)**

| Ref # | Hits | Search Query                                                                                                                                                                                   | DBs             | Default Operator | Plurals | Time Stamp       |
|-------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------|---------|------------------|
| L4    | 6    | non-disruptiv\$3 and (mobile cellular) and rtp and (@rlad<"20080303" @ad<"20080303")                                                                                                           | US-PGPUB; USPAT | OR               | OFF     | 2010/04/12 10:37 |
| L10   | 11   | seamless\$2 near8 sip and load adj2 balanc\$3 and (@rlad<"20080303" @ad<"20080303")                                                                                                            | US-PGPUB; USPAT | OR               | OFF     | 2010/04/12 10:46 |
| L17   | 2    | (maintain\$3 seamless\$2 disruptive\$2) near8 sequenc \$3 adj2 number\$3 and sip same sequence adj2 number \$3 and (@rlad<"20080303" @ad<"20080303")                                           | US-PGPUB; USPAT | OR               | OFF     | 2010/04/12 10:49 |
| L22   | 5    | (maintain\$3 seamless\$2 disruptive\$2) near8 sequenc \$3 adj2 number\$3 same (handover\$1 handoff\$1 hand \$3 adj (over\$1 off\$1)) and (@rlad<"20080303" @ad<"20080303") and "370"/\$.cccls. | US-PGPUB; USPAT | OR               | OFF     | 2010/04/12 10:52 |
| L23   | 5    | (sip rtp) with sequenc\$3 adj2 number\$3 with (handover\$1 handoff\$1 hand \$3 adj (over\$1 off\$1)) and (@rlad<"20080303" @ad<"20080303") and "370"/\$.cccls.                                 | US-PGPUB; USPAT | OR               | OFF     | 2010/04/12 10:56 |
| L27   | 67   | sip adj server with authenticat\$ and (@rlad<"20080303" @ad<"20080303") and "370"/\$.cccls.                                                                                                    | US-PGPUB; USPAT | OR               | OFF     | 2010/04/12 11:21 |
| L28   | 1    | sip adj server with authenticat\$ with (handoff handover change-over switch-over) and (@rlad<"20080303" @ad<"20080303") and "370"/\$.cccls.                                                    | US-PGPUB; USPAT | OR               | OFF     | 2010/04/12 11:22 |

**EAST Search History (Interference)**

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**4/ 12/ 2010 11:39:29 AM**

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

|                                            |   |                           |
|--------------------------------------------|---|---------------------------|
| In re the Application of:                  | ) |                           |
|                                            | ) | Group Art Unit: 2462      |
| Chin et. al.                               | ) |                           |
|                                            | ) | Examiner: Kevin C. Harper |
| Serial No.: 12/137,258                     | ) |                           |
|                                            | ) | Confirmation No.: 7170    |
| Filed: June 11, 2008                       | ) |                           |
|                                            | ) |                           |
| For: A Method For Multiple Link Quality Of | ) |                           |
| Service For Voice And Video Over Internet  | ) |                           |
| Protocol                                   | ) |                           |

---

AMENDMENT AND RESPONSE TO OFFICE ACTION

Mail Stop: Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This paper is responsive to the Office Action mailed on April 14, 2010.

Amendments to the Claims start on page 2 of this paper

Remarks start on page 11 of this paper.

**Remarks**

Applicant thanks the Examiner for his consideration of the pending application. Claims 1-21 have been amended and claims 22-50 have been newly added. No claims have been cancelled. Therefore, claims 1-50 are presently pending.

Claims 2-10 and 12-21 have been amended to correct typographical errors in the original claims regarding the claims from which these claims depend. Claim 6 has also been amended to include a period at its end.

Claims 1 and 11 have been amended to clarify that the “transmissions” of these claims are of “data” and that the claimed step of “switching” the claimed transmission follows the wherein clause of each claim.

Claim 1 has also been amended to clarify that the claimed data transmissions contain audio and video “data,” and are not limited to any particular audio or video content. Newly added dependent claims 48-50 further clarify that the claimed audio or video data transmissions of these claims may include audio or video “content” or “data used in the control of the audio or video data transmissions.”

**Response to Claim Objections**

Claim 7 was objected to because it did not end with a period. Claim 7 has been amended to include a period at its end.

Claim 8 was objected to because “the SIP server” was found by the Examiner to lack antecedent basis. Claim 8 has been amended so the phrase “the SIP server” has been amended to read “a SIP server” in amended claim 8.

Rejection under 35 U.S.C. § 102 / 103

1. Claims 1-3, 5-7, 9-14, 16-18 and 20-21 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Publication No. 2006/0193295 to White et al. ("White").

The Examiner has rejected original claims 1-3, 5-7, 9-14, 16-18 and 20-21 under 35 U.S.C. § 102(e) as anticipated by White.

Independent claim 1 has been amended to include the limitation "wherein at least one Network Address Translation (NAT) is performed on said transmission." Independent claim 11 has been similarly amended to include the limitations of a "second network device," "wherein said transmission traverses the second network device and said second network device is capable of performing a Network Address Translation (NAT) on said transmission"

Claims 1 and 11 are allowable over White for at least the reason that White does not disclose the use of NAT in connection with a network transmission that is switched without disruption. As disclosed in the specification, Applicant's novel invention is capable of switching a transmission between a source and destination without disruption to the transmission, wherein said transmission undergoes a NAT translation. Specification at [0010], [0016]. This novel feature is absent in the prior art, including White, which does not disclose the use of switching a data transmission that has been translated using NAT without disruption. Accordingly, Applicant requests withdrawal of the rejections of claims 1 and 11 based on White.

Presently pending claims 2, 3, 5-7 and 9-10 depend from claim 1 and presently pending claims 12-13, 16-18 and 20-21 depend from claim 11. Therefore these claims are allowable over White for at least this reason as well.

2. Claims 4 and 15 were rejected under 35 U.S.C. § 103(a) as unpatentable over White in view U.S. Patent Publication No. 2003/0156559 to Yi et al. ("Yi").

Claims 4 and 15 were rejected as unpatentable over White in view of Yi. Claims 4 and 15 depend from claims 1 and 11 respectively. As claims 1 and 11 are allowable over White, dependent claims 4 and 15 are allowable over White in view of Yi for at least the reasons described above.

3. Claims 8 and 19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over White in view U.S. Patent Publication No. 2008/0130574 to Nam et al. ("Nam").

Claims 8 and 19 were rejected as unpatentable over White in view of Nam. Claims 8 and 19 depend from claims 1 and 11 respectively. As claims 1 and 11, are allowable over White, dependent claims 8 and 19 are allowable over White in view of Yi for at least the reasons described above.

4. Claims 22-45 are allowable over White et. al.

Newly added independent claims 22 and 34 are allowable over White for at least the reason that White does not disclose the use of Port Address Translation (PAT) in connection with a network transmission that is switched without disruption. As disclosed in the specification, Applicant's novel invention is capable of switching a transmission between a source and destination without disruption to the transmission, wherein said transmission undergoes a PAT translation. Specification at [0010], [0016]. This novel feature is absent in the prior art, including White, which does not disclose the use of switching a data transmission that has been translated using PAT without disruption. Accordingly, newly added claims 22 and 34 are allowable over White as well as the remaining prior art identified by the Examiner for at least this reason.

Newly added claims 23-33 depend from claim 22 and newly added claims 35-45 depend from claim 34 and are allowable over White as well as the remaining prior art identified by the Examiner for at least this reason as well.

5. Claims 46 and 47 are allowable over White et. al.

Newly added independent claims 46 and 47 are allowable over White for at least the reason that White does not disclose the use of the Session Description Protocol (SDP) in connection with a network transmission that is switched without disruption. As disclosed in the specification, Applicant's novel invention is capable of switching a transmission between a source and destination without disruption to the transmission, wherein said transmission uses SDP. Specification at [0046]. This novel feature is absent in the prior art, including White, which does not disclose the use of switching a data transmission that uses SDP. *Id.* at [0005]. Accordingly, newly added claims 46 and 47 are allowable over White as well as the remaining prior art identified by the Examiner for at least this reason.

5. Claims 48-50 are allowable over White et. al.

Newly added claims 48 and 49 depend from claim 1 and claim 50 depends from claim 11. Therefore these claims are allowable over White for at least the reason described with respect to claims 1 and 11 above.

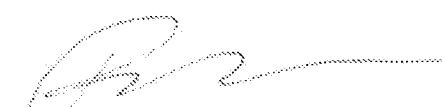
Conclusion

In view of the foregoing, Applicant respectfully submits that this application is in condition for allowance, and Notice of Allowance is earnestly solicited at the earliest possible date. If the Examiner believes that a telephone conference would be useful in moving the application forward to allowance, the Examiner is encouraged to contact the undersigned at (650) 614-7353. If there are any additional fees required, the Commissioner is authorized charge Deposit Account No. 15-0665.

Respectfully submitted,  
Orrick, Herrington & Sutcliffe LLP

Dated: September 14, 2010

By

  
\_\_\_\_\_  
Fabio Marino  
Reg. No. 43,339

Four Park Plaza, Suite 1600  
Irvine, California 92614-2558  
(650) 614-7660  
(650) 614-7401 (facsimile)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 12/137,258 Confirmation No.: 7170  
 Applicant : Chin, et al.  
 Filing Date : June 11, 2008  
 Title : METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR  
 VOICE AND VIDEO OVER INTERNET PROTOCOL  
 Group Art Unit : 2462  
 Examiner : Kevin C. Harper  
 Docket No. : 18198-4005  
 Customer No. : 34313

Commissioner For Patents  
 Mail Stop Amendment  
 P.O. Box 1450  
 Alexandria, VA 22313-1450

Dear Sir/Madam:

This is a request under the provisions of 37 CFR § 1.136(a) to extend the period for filing a reply in the above-identified application.

The requested extension and fees are as followings:

| EXTENSION<br>(months)                          | FEE FOR SMALL<br>ENTITY | FEE FOR OTHER THAN<br>SMALL ENTITY |
|------------------------------------------------|-------------------------|------------------------------------|
| <input type="checkbox"/> one month             | \$65.00                 | \$130.00                           |
| <input checked="" type="checkbox"/> two months | \$245.00                | 490.00                             |
| <input type="checkbox"/> three months          | \$555.00                | \$1,100.00                         |
| <input type="checkbox"/> four months           | \$820.00                | \$1,640.00                         |
| <input type="checkbox"/> five months           | \$1,115.00              | \$2,230.00                         |
| Fee                                            |                         | \$245.00                           |

- ☒ Applicant claims small entity status. See 37 CFR 1.27.
- ☐ An extension for \_\_\_\_\_ months has already been secured and the fee paid therefor of \_\_\_\_\_ is deducted from the total fee due for the total months of extension now requested.
- ☒ Extension due with this Request \$245.00

Applicant : Chin, et al.  
Appl. No. : 12/137,258  
Examiner : Kevin C. Harper  
Docket No. : 18198-4005

☒ Charge Orrick's Deposit Account No. 15-0665 in the amount of \$245.00

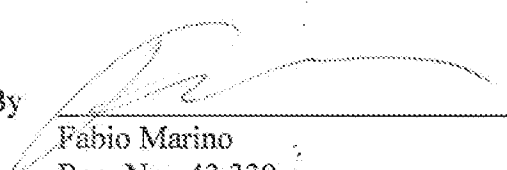
☒ The Commissioner is authorized to charge Orrick, Herrington & Sutcliffe LLP's Deposit Account No. **15-0665** for any fees required under 37 CFR §§ 1.16 and 1.17 that are not covered, in whole or in part, by a check enclosed herewith and to credit any overpayments to said Deposit Account **15-0665**.

Respectfully submitted,

Orrick, Herrington & Sutcliffe LLP

Dated: September 14, 2010

By

  
Fabio Marino

Reg. No. 43,339

Four Park Plaza, Suite 1600  
Irvine, California 92614-2558  
(650) 614-7660  
(650) 614-7401 (facsimile)

| Electronic Patent Application Fee Transmittal |          |                                                                                        |        |                      |
|-----------------------------------------------|----------|----------------------------------------------------------------------------------------|--------|----------------------|
| Application Number:                           |          | 12137258                                                                               |        |                      |
| Filing Date:                                  |          | 11-Jun-2008                                                                            |        |                      |
| Title of Invention:                           |          | METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL |        |                      |
| First Named Inventor/Applicant Name:          |          | BILL CHIN                                                                              |        |                      |
| Filer:                                        |          | Sanjeet Kumar Dutta/Rita Hernandez                                                     |        |                      |
| Attorney Docket Number:                       |          | 18198-4005                                                                             |        |                      |
| Filed as Small Entity                         |          |                                                                                        |        |                      |
| Utility under 35 USC 111(a) Filing Fees       |          |                                                                                        |        |                      |
| Description                                   | Fee Code | Quantity                                                                               | Amount | Sub-Total in USD(\$) |
| Basic Filing:                                 |          |                                                                                        |        |                      |
| Pages:                                        |          |                                                                                        |        |                      |
| Claims:                                       |          |                                                                                        |        |                      |
| Miscellaneous-Filing:                         |          |                                                                                        |        |                      |
| Petition:                                     |          |                                                                                        |        |                      |
| Patent-Appeals-and-Interference:              |          |                                                                                        |        |                      |
| Post-Allowance-and-Post-Issuance:             |          |                                                                                        |        |                      |
| Extension-of-Time:                            |          |                                                                                        |        |                      |
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| Description       | Fee Code | Quantity | Amount | Sub-Total in USD(\$) |
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| Miscellaneous:    |          |          |        |                      |
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| <b>EFS ID:</b>                              | 8419002                                                                                |
| <b>Application Number:</b>                  | 12137258                                                                               |
| <b>International Application Number:</b>    |                                                                                        |
| <b>Confirmation Number:</b>                 | 7163                                                                                   |
| <b>Title of Invention:</b>                  | METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL |
| <b>First Named Inventor/Applicant Name:</b> | BILL CHIN                                                                              |
| <b>Customer Number:</b>                     | 34313                                                                                  |
| <b>Filer:</b>                               | Sanjeet Kumar Dutta/Rita Hernandez                                                     |
| <b>Filer Authorized By:</b>                 | Sanjeet Kumar Dutta                                                                    |
| <b>Attorney Docket Number:</b>              | 18198-4005                                                                             |
| <b>Receipt Date:</b>                        | 14-SEP-2010                                                                            |
| <b>Filing Date:</b>                         | 11-JUN-2008                                                                            |
| <b>Time Stamp:</b>                          | 19:30:17                                                                               |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                                            |

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| Submitted with Payment                   | yes             |
| Payment Type                             | Deposit Account |
| Payment was successfully received in RAM | \$ 245          |
| RAM confirmation Number                  | 5477            |
| Deposit Account                          | 150665          |
| Authorized User                          |                 |

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### New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

### National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

### New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Document code: WFEE

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| <b>PATENT APPLICATION FEE DETERMINATION RECORD</b><br>Substitute for Form PTO-875        |                                                                                                                                                                                                                               |                                  |                                    |               | Application or Docket Number<br><b>12/137,258</b>   |                     | Filing Date<br><b>06/11/2008</b> |                         | <input type="checkbox"/> To be Mailed |          |
|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------------------------------------|---------------|-----------------------------------------------------|---------------------|----------------------------------|-------------------------|---------------------------------------|----------|
| <b>APPLICATION AS FILED – PART I</b>                                                     |                                                                                                                                                                                                                               |                                  |                                    |               |                                                     |                     |                                  |                         |                                       |          |
| (Column 1)                                                                               |                                                                                                                                                                                                                               |                                  | (Column 2)                         |               | SMALL ENTITY <input checked="" type="checkbox"/> OR |                     |                                  | OTHER THAN SMALL ENTITY |                                       |          |
| FOR                                                                                      | NUMBER FILED                                                                                                                                                                                                                  | NUMBER EXTRA                     | RATE (\$)                          | FEE (\$)      | OR                                                  | RATE (\$)           | FEE (\$)                         | OR                      | RATE (\$)                             | FEE (\$) |
| <input type="checkbox"/> BASIC FEE<br>(37 CFR 1.16(a), (b), or (c))                      | N/A                                                                                                                                                                                                                           | N/A                              | N/A                                |               |                                                     | N/A                 |                                  |                         | N/A                                   |          |
| <input type="checkbox"/> SEARCH FEE<br>(37 CFR 1.16(k), (l), or (m))                     | N/A                                                                                                                                                                                                                           | N/A                              | N/A                                |               |                                                     | N/A                 |                                  |                         | N/A                                   |          |
| <input type="checkbox"/> EXAMINATION FEE<br>(37 CFR 1.16(o), (p), or (q))                | N/A                                                                                                                                                                                                                           | N/A                              | N/A                                |               |                                                     | N/A                 |                                  |                         | N/A                                   |          |
| TOTAL CLAIMS<br>(37 CFR 1.16(i))                                                         | minus 20 =                                                                                                                                                                                                                    | *                                | X \$                               | =             |                                                     | X \$                | =                                |                         | X \$                                  | =        |
| INDEPENDENT CLAIMS<br>(37 CFR 1.16(h))                                                   | minus 3 =                                                                                                                                                                                                                     | *                                | X \$                               | =             |                                                     | X \$                | =                                |                         | X \$                                  | =        |
| <input type="checkbox"/> APPLICATION SIZE FEE<br>(37 CFR 1.16(s))                        | If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). |                                  |                                    |               |                                                     |                     |                                  |                         |                                       |          |
| <input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))               |                                                                                                                                                                                                                               |                                  |                                    |               |                                                     |                     |                                  |                         |                                       |          |
|                                                                                          |                                                                                                                                                                                                                               |                                  | TOTAL                              |               |                                                     | TOTAL               |                                  |                         |                                       |          |
| <b>APPLICATION AS AMENDED – PART II</b>                                                  |                                                                                                                                                                                                                               |                                  |                                    |               |                                                     |                     |                                  |                         |                                       |          |
| (Column 1)                                                                               |                                                                                                                                                                                                                               |                                  | (Column 2)                         |               | SMALL ENTITY OR                                     |                     |                                  | OTHER THAN SMALL ENTITY |                                       |          |
| AMENDMENT                                                                                | 09/14/2010                                                                                                                                                                                                                    | CLAIMS REMAINING AFTER AMENDMENT | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA | RATE (\$)                                           | ADDITIONAL FEE (\$) | OR                               | RATE (\$)               | ADDITIONAL FEE (\$)                   |          |
| Total (37 CFR 1.16(i))                                                                   | *                                                                                                                                                                                                                             | 50                               | Minus                              | ** 21         | =                                                   | 29                  |                                  | X \$                    | =                                     |          |
| Independent (37 CFR 1.16(h))                                                             | *                                                                                                                                                                                                                             | 6                                | Minus                              | *** 3         | =                                                   | 3                   |                                  | X \$                    | =                                     |          |
| <input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))                           |                                                                                                                                                                                                                               |                                  |                                    |               |                                                     |                     |                                  |                         |                                       |          |
| <input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) |                                                                                                                                                                                                                               |                                  |                                    |               |                                                     |                     |                                  |                         |                                       |          |
|                                                                                          |                                                                                                                                                                                                                               |                                  |                                    |               | TOTAL ADD'L FEE                                     | 1084                |                                  | TOTAL ADD'L FEE         |                                       |          |
| (Column 1)                                                                               |                                                                                                                                                                                                                               |                                  | (Column 2)                         |               | SMALL ENTITY OR                                     |                     |                                  | OTHER THAN SMALL ENTITY |                                       |          |
| AMENDMENT                                                                                | Total (37 CFR 1.16(i))                                                                                                                                                                                                        | CLAIMS REMAINING AFTER AMENDMENT | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA | RATE (\$)                                           | ADDITIONAL FEE (\$) | OR                               | RATE (\$)               | ADDITIONAL FEE (\$)                   |          |
| Total (37 CFR 1.16(i))                                                                   | *                                                                                                                                                                                                                             | Minus                            | **                                 | =             | X \$                                                | =                   |                                  | X \$                    | =                                     |          |
| Independent (37 CFR 1.16(h))                                                             | *                                                                                                                                                                                                                             | Minus                            | ***                                | =             | X \$                                                | =                   |                                  | X \$                    | =                                     |          |
| <input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))                           |                                                                                                                                                                                                                               |                                  |                                    |               |                                                     |                     |                                  |                         |                                       |          |
| <input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) |                                                                                                                                                                                                                               |                                  |                                    |               |                                                     |                     |                                  |                         |                                       |          |
|                                                                                          |                                                                                                                                                                                                                               |                                  |                                    |               | TOTAL ADD'L FEE                                     |                     |                                  | TOTAL ADD'L FEE         |                                       |          |

\* If the difference in column 1 is less than zero, enter "0" in column 2.

\* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

\*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

\*\*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:  
/ERIC DANTZLER/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

In The Claims

1. (Currently Amended) A method of enhancing the reliability of a transmission from a source to a destination in a communications network using a network protocol that operates on top of the Internet Protocol (IP), the method comprising;

transmitting data between a source and destination over a first network path made up of one or more network links where at least one of the network links is to a local area network that is remote from the transmission source; and

switching the transmission from the first network path to one of a plurality of alternative network paths;

~~the transmission is not disrupted as a result of said switch to the one of a plurality of alternative network paths;~~

wherein said transmission is not disrupted as a result of said switch to the one of a plurality of alternative network paths, said transmission contains audio or video data content[[.]] and at least one Network Address Translation (NAT) is performed on said transmission.

2. (Currently Amended) The method of claim [[2]]1 wherein said transmission uses the Real Time Protocol (RTP).

3. (Currently Amended) The method of claim [[3]]2 wherein said transmission further uses the Session Initiation Protocol (SIP).

4. (Currently Amended) The method of claim ~~[[4]]~~3 wherein the SIP signaling sequence of the transmission is maintained after said switching from the first network path to the one of a plurality of alternative network paths.
5. (Currently Amended) The method of claim ~~[[5]]~~4 wherein the switch from the first network path to the one of a plurality of alternative network paths occurs as a result of a stream quality event.
6. (Currently Amended) The method of claim ~~[[5]]~~4 wherein the switch from the first network path to the one of a plurality of alternative network paths occurs as a result of stream load balancing.
7. (Currently Amended) The method of claim ~~[[5]]~~4 wherein the switch from the first network path to the one of a plurality of alternative network paths occurs as a result of an administrator move.
8. (Currently Amended) The method of claim ~~[[5]]~~4 wherein ~~the~~ a SIP server associated with the one of a plurality alternative network paths may authenticate the transmission before it is switched.
9. (Currently Amended) The method of claim ~~[[5]]~~4 wherein the source device is a mobile device.
10. (Currently Amended) The method of claim ~~[[10]]~~9 wherein one or more of said plurality of alternative network paths become available to the mobile device during roaming.
11. (Currently Amended) A communications network comprising
  - a transmitting device;
  - a receiving device;
  - a first network device;

a second network device;

the transmitting device and receiving device operable to maintain a data transmission over a first network path that is made up of one or more network links where at least one of the network links is to a local area network is remote from the transmitting device; ~~and~~

~~a network device operable to switch the transmission from the first network path to one of a plurality of alternative network paths without disrupting the transmission.~~

wherein the first network device is operable to switch the transmission from the first network path to one of a plurality of alternative network paths without disrupting the transmission;

and the second network device is operable to perform a Network Address Translation (NAT) on said transmission.

12. (Currently Amended) The system of claim ~~[[12]]~~11 wherein said transmission contains audio or video content.

13. (Currently Amended) The system of claim ~~[[13]]~~12 wherein said transmission is made using the Real Time Protocol (RTP).

14. (Currently Amended) The system of claim ~~[[14]]~~13 wherein said transmission further uses the Session Initiation Protocol (SIP).

15. (Currently Amended) The system of claim ~~[[15]]~~14 wherein said transmission's SIP signaling sequence is maintained after said switching from the first network path to the one of a plurality of alternative network paths.

16. (Currently Amended) The system of claim [[16]]15 wherein said switching from the first network path to the one of a plurality of alternative network paths occurs as a result of a stream quality event.

17. (Currently Amended) The system of claim [[16]]15 wherein said switching from the first network path to the one of a plurality of alternative network paths occurs as a result of stream load balancing.

18. (Currently Amended) The system of claim [[16]]15 wherein said switching from the first network path to the one of a plurality of alternative network paths occurs as a result of an administrator move.

19. (Currently Amended) The system of claim [[16]]15 wherein the SIP server associated with the one of a plurality alternative network paths may authenticate the transmission before it is switched.

20. (Currently Amended) The system of claim [[16]]15 wherein the transmitting device is a mobile device.

21. (Currently Amended) The system of claim [[21]]20 wherein one or more of said plurality of alternative network paths become available to the mobile device during roaming.

22. (New) A method of enhancing the reliability of a transmission from a source to a destination in a communications network using a network protocol that operates on top of the Internet Protocol (IP), the method comprising;

transmitting data between a source and destination over a first network path made up of one or more network links where at least one of the network links is to a local area network that is remote from the transmission source;

switching the transmission from the first network path to one of a plurality of alternative network paths;

wherein said transmission is not disrupted as a result of said switch to the one of a plurality of alternative network paths, said transmission contains audio or video data, and at least one Port Address Translation (PAT) is performed on said transmission.

23. (New) The method of claim 22 wherein said transmission contains audio or video content.

24. (New) The method of claim 22 wherein said transmission contains data used in the control of the audio or video transmission.

25. (New) The method of claim 22 wherein said transmission uses the Real Time Protocol (RTP).

26. (New) The method of claim 25 wherein said transmission further uses the Session Initiation Protocol (SIP).

27. (New) The method of claim 26 wherein the SIP signaling sequence of the transmission is maintained after said switching from the first network path to the one of a plurality of alternative network paths.

28. (New) The method of claim 27 wherein the switch from the first network path to the one of a plurality of alternative network paths occurs as a result of a stream quality event.

29. (New) The method of claim 27 wherein the switch from the first network path to the one of a plurality of alternative network paths occurs as a result of stream load balancing.
30. (New) The method of claim 27 wherein the switch from the first network path to the one of a plurality of alternative network paths occurs as a result of an administrator move.
31. (New) The method of claim 27 wherein a SIP server associated with the one of a plurality alternative network paths may authenticate the transmission before it is switched.
32. (New) The method of claim 27 wherein the source device is a mobile device.
33. (New) The method of claim 32 wherein one or more of said plurality of alternative network paths become available to the mobile device during roaming.
34. (New) A communications network comprising  
a transmitting device;  
a receiving device;  
a first network device;  
a second network device;  
the transmitting device and receiving device operable to maintain a data transmission over a first network path that is made up of one or more network links where at least one of the network links is to a local area network is remote from the transmitting device;  
wherein the first network device is operable to switch the transmission from the first network path to one of a plurality of alternative network paths without disrupting the transmission;

and said the second network device is operable to perform a Port Address Translation (PAT) on said transmission.

35. (New) The system of claim 34 wherein said transmission contains data used in the control of the audio or video transmission.

36. (New) The system of claim 34 wherein said transmission contains audio or video content.

37. (New) The system of claim 34 wherein said transmission is made using the Real Time Protocol (RTP).

38. (New) The system of claim 37 wherein said transmission further uses the Session Initiation Protocol (SIP).

39. (New) The system of claim 38 wherein said transmission's SIP signaling sequence is maintained after said switching from the first network path to the one of a plurality of alternative network paths.

40. (New) The system of claim 39 wherein said switching from the first network path to the one of a plurality of alternative network paths occurs as a result of a stream quality event.

41. (New) The system of claim 39 wherein said switching from the first network path to the one of a plurality of alternative network paths occurs as a result of stream load balancing.

42. (New) The system of claim 39 wherein said switching from the first network path to the one of a plurality of alternative network paths occurs as a result of an administrator move.

43. (New) The system of claim 39 wherein a SIP server associated with the one of a plurality alternative network paths may authenticate the transmission before it is switched.

44. (New) The system of claim 39 wherein the transmitting device is a mobile device.
45. (New) The system of claim 44 wherein one or more of said plurality of alternative network paths become available to the mobile device during roaming.
46. (New) A method of enhancing the reliability of a transmission from a source to a destination in a communications network using a network protocol that operates on top of the Internet Protocol (IP), the method comprising;  
  
transmitting data between a source and destination over a first network path made up of one or more network links where at least one of the network links is to a local area network that is remote from the transmission source;  
  
switching the transmission from the first network path to one of a plurality of alternative network paths;  
  
wherein said transmission is not disrupted as a result of said switch to the one of a plurality of alternative network paths, said transmission contains audio or video data and said transmission further uses the Session Description Protocol (SDP).
47. (New) A communications network comprising  
  
a transmitting device;  
  
a receiving device;  
  
a first network device;

the transmitting device and receiving device operable to maintain a data transmission over a first network path that is made up of one or more network links where at least one of the network links is to a local area network is remote from the transmitting device;

wherein the first network device is operable to switch the transmission from the first network path to one of a plurality of alternative network paths without disrupting the transmission; and said transmission further uses the Session Description Protocol (SDP).

48. (New) The method of claim 1 wherein said transmission contains audio or video content.

49. (New) The method of claim 1 wherein said transmission contains data used in the control of the audio or video transmission.

50. (New) The system of claim 11 wherein said transmission contains data used in the control of the audio or video transmission.



# UNITED STATES PATENT AND TRADEMARK OFFICE

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| APPLICATION NO.                                                                                                                                  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.         | CONFIRMATION NO.       |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------|-----------------------------|------------------------|
| 12/137,258                                                                                                                                       | 06/11/2008  | BILL CHIN            | 18198-4005                  | 7163                   |
| 34313 7590 11/26/2010<br>ORRICK, HERRINGTON & SUTCLIFFE, LLP<br>IP PROSECUTION DEPARTMENT<br>4 PARK PLAZA<br>SUITE 1600<br>IRVINE, CA 92614-2558 |             |                      | EXAMINER<br>HARPER, KEVIN C |                        |
|                                                                                                                                                  |             |                      | ART UNIT<br>2462            | PAPER NUMBER           |
|                                                                                                                                                  |             |                      | MAIL DATE<br>11/26/2010     | DELIVERY MODE<br>PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |                                    |  |
|------------------------------|--------------------------------------|------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>12/137,258 | <b>Applicant(s)</b><br>CHIN ET AL. |  |
|                              | <b>Examiner</b><br>Kevin C. Harper   | <b>Art Unit</b><br>2462            |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-50 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                     |                                                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                         | 6) <input type="checkbox"/> Other: _____                          |

***Response to Arguments***

Applicant's arguments with respect to claims 1-50 have been considered but are moot in view of the new ground(s) of rejection.

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-3, 11-14, 22-26, 34-38 and 46-50 are rejected under 35 U.S.C. 102(e) as being anticipated by White et al. (US 2006/0193295) in view of Citron et al. (US 2007/0253413).

1. Regarding claims 1-2, 11-13, 22-25, 34-37 and 46-50, White discloses a method comprising transmitting between a source and a destination over a first network path and non-disruptively switching from the first path to a second path among links that in part comprise a remote (destination) local area network (figs. 1a-1c; para. 27, seamless handover), where RTP is used (para. 72) on top of the IP protocol. The transmissions include real-time audio and video (para. 39) with corresponding control information (para. 26; note: SCTP). Regarding claims 11, 34, the network uses a switching device (items 16 or 18) to switch the paths.

2. However, White does not disclose performing NAT and PAT on the transmission and that the transmission is SDP. Although, White discloses a router for handling transmissions (fig. 1A, item 14). Further, Citron discloses a router for performing NAT and PAT (paras. 3 and 17) and for transmission using SDP (para. 16). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to perform NAT and PAT on transmission and

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transmissions to be SDP in the invention of White in order to provide proper data routing as is known in the art and to provide a data format as desired as is known in the art.

3. Regarding claims 3, 14, 26 and 38, in White SIP is used (para. 37).

Claims 4-7, 9-10, 15-18, 20-21, 27-30, 32-33, 39-42 and 44-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over White in view of Citron and Yi et al. (US 2003/0156559).

4. Regarding claims 4, 15, 27 and 39, White does not disclose maintaining SIP sequencing after a switchover. Yi discloses maintaining sequencing after a switchover (para. 72; note: the sequence number of a control header is maintained and used for synchronization). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to maintain SIP sequencing in the invention of White in order to provide a seamless handover as is known in the art.

5. Regarding claims 5-7, 16-18, 28-30 and 40-42, in White the switch occurs because of load balancing which is a quality event and an administrative move (para. 57, lines 24-28 and 35-38).

6. Regarding claims 9, 20, 32 and 44, in White the source device is a mobile device (para. 9).

7. Regarding claims 10, 21, 33 and 45, in White the network paths become available during roaming (para. 25).

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Claims 8, 19, 31 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over White in view of Citron and Yi et al. (US 2003/0156559).

8. Regarding claim 8, 19, 31 and 43, White does not disclose authentication by a SIP server. Nam discloses authentication by a SIP server ((paras. 44 and 72). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to authenticate a device before switchover in the invention of White in order to maintain security in the network as is known in the art.

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Harper whose telephone number is 571-272-3166. The examiner can normally be reached weekdays from 11:00 AM to 7:00 PM ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao, can be reached at 571-272-3174. The centralized fax number for the Patent Office is 571-273-8300. For non-official communications, the examiner's personal fax number is 571-273-3166 and the examiner's e-mail address is [kevin.harper@uspto.gov](mailto:kevin.harper@uspto.gov).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications associated with a customer number is available through Private PAIR only. For more information about the PAIR system, see [portal.uspto.gov](http://portal.uspto.gov). Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin C. Harper/

Primary Examiner, Art Unit 2462

November 22, 2010

|                                   |                                       |  |                                                           |             |
|-----------------------------------|---------------------------------------|--|-----------------------------------------------------------|-------------|
| <b>Notice of References Cited</b> | Application/Control No.<br>12/137,258 |  | Applicant(s)/Patent Under<br>Reexamination<br>CHIN ET AL. |             |
|                                   | Examiner<br>Kevin C. Harper           |  | Art Unit<br>2462                                          | Page 1 of 1 |

#### U.S. PATENT DOCUMENTS

| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Name          | Classification |
|---|---|--------------------------------------------------|-----------------|---------------|----------------|
| * | A | US-2007/0253413                                  | 11-2007         | Citron et al. | 370/389        |
|   | B | US-                                              |                 |               |                |
|   | C | US-                                              |                 |               |                |
|   | D | US-                                              |                 |               |                |
|   | E | US-                                              |                 |               |                |
|   | F | US-                                              |                 |               |                |
|   | G | US-                                              |                 |               |                |
|   | H | US-                                              |                 |               |                |
|   | I | US-                                              |                 |               |                |
|   | J | US-                                              |                 |               |                |
|   | K | US-                                              |                 |               |                |
|   | L | US-                                              |                 |               |                |
|   | M | US-                                              |                 |               |                |

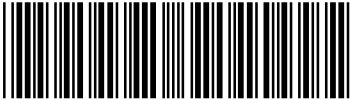
#### FOREIGN PATENT DOCUMENTS

| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Country | Name | Classification |
|---|---|--------------------------------------------------|-----------------|---------|------|----------------|
|   | N |                                                  |                 |         |      |                |
|   | O |                                                  |                 |         |      |                |
|   | P |                                                  |                 |         |      |                |
|   | Q |                                                  |                 |         |      |                |
|   | R |                                                  |                 |         |      |                |
|   | S |                                                  |                 |         |      |                |
|   | T |                                                  |                 |         |      |                |

#### NON-PATENT DOCUMENTS

| * |   | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
|---|---|-------------------------------------------------------------------------------------------|
|   | U |                                                                                           |
|   | V |                                                                                           |
|   | W |                                                                                           |
|   | X |                                                                                           |

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

|                                                                                                              |                                                |                                                                   |
|--------------------------------------------------------------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------|
| <b>Search Notes</b><br><br> | <b>Application/Control No.</b><br><br>12137258 | <b>Applicant(s)/Patent Under Reexamination</b><br><br>CHIN ET AL. |
|                                                                                                              | <b>Examiner</b><br><br>Kevin C Harper          | <b>Art Unit</b><br><br>2462                                       |

| SEARCHED |          |          |          |
|----------|----------|----------|----------|
| Class    | Subclass | Date     | Examiner |
| 370      | 216      | 4/12/10  | kch      |
| updated  | previous | 11/22/10 | kch      |

| SEARCH NOTES                |          |          |
|-----------------------------|----------|----------|
| Search Notes                | Date     | Examiner |
| inventorship search on PALM | 4/12/10  | kch      |
| EAST - see printout         | 4/12/10  | kch      |
| updated above searches      | 11/22/10 | kch      |

| INTERFERENCE SEARCH |          |      |          |
|---------------------|----------|------|----------|
| Class               | Subclass | Date | Examiner |
|                     |          |      |          |

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**EAST Search History****EAST Search History (Prior Art)**

| Ref # | Hits | Search Query                                                                                                                                                                                                                        | DBs             | Default Operator | Plurals | Time Stamp       |
|-------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------|---------|------------------|
| L5    | 1    | router\$1 same (network adj2 translation nat) and router\$1 same (port adj2 translation pat) and router \$1 same (session adj description sdp) and (@rlad<"20080303" @ad<"20080303") and "370"/\$.ccls. and session adj description | US-PGPUB; USPAT | OR               | OFF     | 2010/11/22 08:04 |

**EAST Search History (Interference)**

<This search history is empty>

**11/ 22/ 2010 8:06:54 AM**

**C:\ Documents and Settings\ kharper\ My Documents\ EAST\ Workspaces\ 12137258 non disruptive switch.wsp**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 12/137,258 Confirmation No.: 7163  
Applicant : Bill Chin  
Filing Date : June 11, 2008  
Title : METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR  
VOICE AND VIDEO OVER INTERNET PROTOCOL  
Group Art Unit : 2462  
Examiner : Kevin C. Harper  
Docket No. : 18198-4005  
Customer No. : 34313

Commissioner for Patents  
Mail Stop RCE  
P.O. Box 1450  
Alexandria, VA 22313-1450

REQUEST FOR CONTINUED EXAMINATION (RCE) TRANSMITTAL

- I. Submission required under 37 CFR § 1.114
- A. ☐ Previously submitted
1. ☐ Consider the amendment(s)/reply under 37 CFR § 1.116 previously filed on \_\_\_\_\_
2. ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on \_\_\_\_\_
3. ☐ Other \_\_\_\_\_
- B. ☒ Enclosed
1. ☒ Amendment/Reply
2. ☐ Affidavit(s)/Declarations(s)
3. ☐ Information Disclosure Statement (IDS) with copies of non U.S. references (4 U.S. Applications)
4. ☐ Other \_\_\_\_\_

Applicant : Chin et al.  
 Appl. No. : 12/137,258  
 Examiner : Kevin C. Harper  
 Docket No. : 18198-4005

## II. Miscellaneous

A. ☐ Suspension of action on the above-identified application is requested under 37 CFR § 1.103(c) for a period of \_\_\_\_\_ months. (Period of suspension shall not exceed 3 months; fee under 37 CFR § 1.17(i) required.)

B. ☐ Other \_\_\_\_\_

## III. Fees

A. ☒ The Commissioner is hereby authorized to charge the following fees, or credit any overpayments, to Deposit Account No. 15-0665

1. ☒ RCE fees (37 CFR §1.17(e):

|                                                                                                                  |                                           |   |                                    |     |   |          |          |
|------------------------------------------------------------------------------------------------------------------|-------------------------------------------|---|------------------------------------|-----|---|----------|----------|
| RCE Fee                                                                                                          |                                           |   |                                    |     |   |          | \$810.00 |
|                                                                                                                  | Claims filed or remaining after amendment |   | Highest number previously paid for |     |   |          |          |
| Total Claims                                                                                                     | 28                                        | - | 50                                 | = 0 | x | \$52.00  | \$ 0.00  |
| Independent Claims                                                                                               | 4                                         | - | 6                                  | = 0 | x | \$220.00 | \$0.00   |
| <input checked="" type="checkbox"/> Reduction by 1/2 for Filing by Small Entity. Note 37 CFR §§ 1.9, 1.27, 1.28. |                                           |   |                                    |     |   |          | \$405.00 |
| TOTAL OF ABOVE CALCULATIONS                                                                                      |                                           |   |                                    |     |   |          | \$405.00 |

2. ☐ Extension of time fee (37 CFR §§ 1.136 and 1.17)

| EXTENSION (months)                    | FEE FOR SMALL ENTITY | FEE FOR OTHER THAN SMALL ENTITY |
|---------------------------------------|----------------------|---------------------------------|
| <input type="checkbox"/> one month    | \$65.00              | \$130.00                        |
| <input type="checkbox"/> two months   | \$245.00             | \$490.00                        |
| <input type="checkbox"/> three months | \$555.00             | \$1,110.00                      |
| <input type="checkbox"/> four months  | \$865.00             | \$1,730.00                      |
| <input type="checkbox"/> five months  | \$1,175.00           | \$2,350.00                      |
| TOTAL OF ABOVE CALCULATIONS           |                      | \$0.00                          |

3. ☐ Other \_\_\_\_\_

B. ☐ Check in the amount of \$\_\_\_\_\_ is enclosed

Applicant : Chin et al.  
Appl. No. : 12/137,258  
Examiner : Kevin C. Harper  
Docket No. : 18198-4005

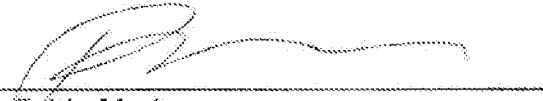
- C. ☒ The Commissioner is authorized to charge Orrick, Herrington & Sutcliffe LLP's Deposit Account No. 15-0665 in the amount of \$405.00 to cover the filing fee and to credit any overpayments to said Deposit Account 15-0665

Respectfully submitted,

ORRICK, HERRINGTON & SUTCLIFFE LLP

Dated: January 25, 2011

By: /

  
Fabio Marino  
Reg. No. 43,339

Orrick, Herrington & Sutcliffe LLP  
4 Park Plaza, Suite 1600  
Irvine, CA 92614-2558  
Tel. 650 614-7400  
Fax: 949-567-6710  
Customer Number: 34313

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

|                                            |   |                           |
|--------------------------------------------|---|---------------------------|
| In re the Application of:                  | ) |                           |
|                                            | ) | Group Art Unit: 2462      |
| Chin et. al.                               | ) |                           |
|                                            | ) | Examiner: Kevin C. Harper |
| Serial No.: 12/137,258                     | ) |                           |
|                                            | ) | Confirmation No.: 7163    |
| Filed: June 11, 2008                       | ) |                           |
|                                            | ) |                           |
| For: A Method For Multiple Link Quality Of | ) |                           |
| Service For Voice And Video Over Internet  | ) |                           |
| Protocol                                   | ) |                           |

---

AMENDMENT AND RESPONSE TO OFFICE ACTION

Mail Stop: Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This paper is responsive to the Office Action mailed on November 26, 2010.

Amendments to the Claims start on page 2 of this paper

Remarks start on page 8 of this paper.

Remarks

Applicant thanks the Examiner for his consideration of the pending application. Claims 1-3, 11-14, 22-26, 34-38 and 46-50 have been cancelled without prejudice.

Claim 4 has been amended to incorporate the limitations of Claims 1-3, Claim 15 has been amended to incorporate the limitations of Claims 11-14, Claim 27 has been amended to include the limitations of Claims 22-26 and Claim 39 has been amended to include the limitations of Claims 34-38. The remaining claims that depend from Claims 4, 15, 27 and 39 remain unchanged. Therefore claims 4-10, 15-21, 27-33 and 39-45 are presently pending.

Rejection under 35 U.S.C. § 102 / 103

1. Claims 1-3, 11-14, 34-38 and 46-50 were rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent Publication No. 2006/0193295 to White et al. ("White") in view of U.S. Patent Publication No. 2007/0253413 to Citron et al. ("Citron").

The Examiner has rejected original claims 1-3, 11-14, 34-38 and 46-50 under 35 U.S.C. § 102(e) as anticipated by White in view of Citron. These claims have been cancelled without prejudice, mooted this rejection.

2. Claims 4-7, 9-10, 15-18, 20-21, 27-30, 32-33, 39-42 and 44-45 were rejected under 35 U.S.C. § 103(a) as unpatentable over White in view of Citron in view of U.S. Patent Publication No. 2003/0156559 to Yi et al. ("Yi").

The Examiner has rejected original Claims 4, 15, 27 and 39 under 35 U.S.C. § 103 as unpatentable over White in view of Yi and rejected the remaining claims identified in the header over the combination of White, Yi and Citron. With respect to Claims 4, 15, 27 and 39, the Examiner specifically found that White does not disclose the claimed limitation "said transmission's SIP signaling sequence is maintained after said switching from the first network path to the one of a

plurality of alternative network paths” but that Yi discloses “maintaining sequencing after switchover” at paragraph [0072].

The Applicant respectfully disagrees. Yi does not disclose the claimed limitation “said transmission’s SIP signaling sequence is maintained after said switching from the first network path to the one of a plurality of alternative network paths,” as claimed in Claims 4, 15, 27 and 39 because the Sequence Number (SN) disclosed at paragraph [0072] in Yi relates to RTP packets that are transmitted in the manner disclosed in Yi. Yi explicitly defines SN as related to RTP transmission: “The SN is a value which increases whenever the RTP packet is transmitted.” Yi at [0074] (emphasis added). No disclosure is made of maintaining the claimed “SIP signaling sequence” anywhere in Yi and Yi’s disclosure of an SN value that is incremented during RTP transmission – a protocol that is different from SIP – does not teach nor suggest this novel claimed feature of Applicant’s invention.

As the Examiner has acknowledged that White does not disclose the claimed maintaining the “SIP signaling sequence” either, neither Yi nor White either alone or in combination teach or suggest at least this limitation, which is found in newly amended independent Claims 4, 15, 27 or 39. Accordingly, Claims 4, 15, 27 and 39 are allowable over White in view Yi.

The remaining presently pending claims rejected under White in view of Citron and Yi all depend from allowable claims 4, 15, 27, and 39. Claims 5-7 and 9-10 depend from Claim 4, Claims 16-18 and 20-21 depend from Claim 15, Claims 28-30 and 32-33 depend from Claim 27 and Claims 40-42 and 44-45 depend from Claim 39. Accordingly, these claims are allowable over White in view of Yi and Citron for at least the reasons set forth above as well.

3. Claims 8, 19, 31 and 43 were rejected under 35 U.S.C. § 103(a) as unpatentable over White in view of Citron in view Yi in view of U.S. Patent Publication No. 2008/0130574 to Nam et al. ("Nam")

The Examiner rejected Claims 8, 19, 31 and 43 as unpatentable over White in view of Citron in view of Yi in view of Nam. As these dependent claims depend from independent claims 4, 15, 27 and 39 as amended, these dependent claims are allowable over the combination of White, Citron, Yi and Nam for at least the reasons set forth above with respect to independent claims 4, 15, 27 and 39.

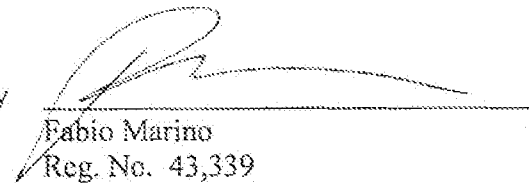
Conclusion

In view of the foregoing, Applicant respectfully submits that this application is in condition for allowance, and Notice of Allowance is earnestly solicited at the earliest possible date. If the Examiner believes that a telephone conference would be useful in moving the application forward to allowance, the Examiner is encouraged to contact the undersigned at (650) 614-7353. If there are any additional fees required, the Commissioner is authorized charge Deposit Account No. 15-0665.

Respectfully submitted,  
Orrick, Herrington & Sutcliffe LLP

Dated: January 25, 2011

By

  
Fabio Marino  
Reg. No. 43,339

Four Park Plaza, Suite 1600  
Irvine, California 92614-2558  
(650) 614-7660  
(650) 614-7401 (facsimile)

| Electronic Patent Application Fee Transmittal |          |                                                                                        |        |                      |
|-----------------------------------------------|----------|----------------------------------------------------------------------------------------|--------|----------------------|
| Application Number:                           |          | 12137258                                                                               |        |                      |
| Filing Date:                                  |          | 11-Jun-2008                                                                            |        |                      |
| Title of Invention:                           |          | METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL |        |                      |
| First Named Inventor/Applicant Name:          |          | BILL CHIN                                                                              |        |                      |
| Filer:                                        |          | Sanjeet Kumar Dutta/Susan Principe                                                     |        |                      |
| Attorney Docket Number:                       |          | 18198-4005                                                                             |        |                      |
| Filed as Small Entity                         |          |                                                                                        |        |                      |
| Utility under 35 USC 111(a) Filing Fees       |          |                                                                                        |        |                      |
| Description                                   | Fee Code | Quantity                                                                               | Amount | Sub-Total in USD(\$) |
| Basic Filing:                                 |          |                                                                                        |        |                      |
| Pages:                                        |          |                                                                                        |        |                      |
| Claims:                                       |          |                                                                                        |        |                      |
| Miscellaneous-Filing:                         |          |                                                                                        |        |                      |
| Petition:                                     |          |                                                                                        |        |                      |
| Patent-Appeals-and-Interference:              |          |                                                                                        |        |                      |
| Post-Allowance-and-Post-Issuance:             |          |                                                                                        |        |                      |
| Extension-of-Time:                            |          |                                                                                        |        |                      |

| Description                       | Fee Code | Quantity | Amount | Sub-Total in USD(\$) |
|-----------------------------------|----------|----------|--------|----------------------|
| <b>Miscellaneous:</b>             |          |          |        |                      |
| Request for continued examination | 2801     | 1        | 405    | 405                  |
| <b>Total in USD (\$)</b>          |          |          |        | <b>405</b>           |

## Electronic Acknowledgement Receipt

|                                             |                                                                                        |
|---------------------------------------------|----------------------------------------------------------------------------------------|
| <b>EFS ID:</b>                              | 9303255                                                                                |
| <b>Application Number:</b>                  | 12137258                                                                               |
| <b>International Application Number:</b>    |                                                                                        |
| <b>Confirmation Number:</b>                 | 7163                                                                                   |
| <b>Title of Invention:</b>                  | METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL |
| <b>First Named Inventor/Applicant Name:</b> | BILL CHIN                                                                              |
| <b>Customer Number:</b>                     | 34313                                                                                  |
| <b>Filer:</b>                               | Sanjeet Kumar Dutta/Susan Principe                                                     |
| <b>Filer Authorized By:</b>                 | Sanjeet Kumar Dutta                                                                    |
| <b>Attorney Docket Number:</b>              | 18198-4005                                                                             |
| <b>Receipt Date:</b>                        | 25-JAN-2011                                                                            |
| <b>Filing Date:</b>                         | 11-JUN-2008                                                                            |
| <b>Time Stamp:</b>                          | 16:36:37                                                                               |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                                            |

### Payment information:

|                                          |                 |
|------------------------------------------|-----------------|
| Submitted with Payment                   | yes             |
| Payment Type                             | Deposit Account |
| Payment was successfully received in RAM | \$ 405          |
| RAM confirmation Number                  | 3162            |
| Deposit Account                          | 150665          |
| Authorized User                          |                 |

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

**File Listing:**

| Document Number | Document Description | File Name          | File Size(Bytes)/<br>Message Digest                                | Multi Part /.zip | Pages (if appl.) |
|-----------------|----------------------|--------------------|--------------------------------------------------------------------|------------------|------------------|
| 1               |                      | 4005_1_25_2011.pdf | 2553165<br><small>d60470782c8e65ad2c410d2e0953ccb350a05d89</small> | yes              | 13               |

**Multipart Description/PDF files in .zip description**

| Document Description                               | Start | End |
|----------------------------------------------------|-------|-----|
| Amendment Submitted/Entered with Filing of CPA/RCE | 1     | 3   |
| Amendment After Final                              | 4     | 13  |

**Warnings:****Information:**

|   |                         |              |                                                                  |    |   |
|---|-------------------------|--------------|------------------------------------------------------------------|----|---|
| 2 | Fee Worksheet (PTO-875) | fee-info.pdf | 30477<br><small>62e11632ce8e2d9fa3206464905dd459db411ae3</small> | no | 2 |
|---|-------------------------|--------------|------------------------------------------------------------------|----|---|

**Warnings:****Information:**

|                                     |         |
|-------------------------------------|---------|
| <b>Total Files Size (in bytes):</b> | 2583642 |
|-------------------------------------|---------|

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

**National Stage of an International Application under 35 U.S.C. 371**

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

In The Claims

1-3. (Cancelled)

4. (Currently Amended) A method of enhancing the reliability of a transmission from a source to a destination in a communications network using a network protocol that operates on top of the Internet Protocol (IP), the method comprising:

transmitting data between a source and destination over a first network path made up of one or more network links where at least one of the network links is to a local area network that is remote from the transmission source; and

switching the transmission from the first network path to one of a plurality of alternative network paths;

wherein said transmission is not disrupted as a result of said switch to the one of a plurality of alternative network paths, said transmission contains audio or video data and at least one Network Address Translation (NAT) is performed on said transmission;

said transmission uses the Real Time Protocol (RTP);

said transmission uses the Session Initiation Protocol (SIP); and

~~The method of claim 3~~ wherein the SIP signaling sequence of the transmission is maintained after said switching from the first network path to the one of a plurality of alternative network paths.

5. (Previously Presented) The method of claim 4 wherein the switch from the first network path to the one of a plurality of alternative network paths occurs as a result of a stream quality event.

6. (Previously Presented) The method of claim 4 wherein the switch from the first network path to the one of a plurality of alternative network paths occurs as a result of stream load balancing.

7. (Previously Presented) The method of claim 4 wherein the switch from the first network path to the one of a plurality of alternative network paths occurs as a result of an administrator move.
8. (Previously Presented) The method of claim 4 wherein a SIP server associated with the one of a plurality alternative network paths may authenticate the transmission before it is switched.
9. (Previously Presented) The method of claim 4 wherein the source device is a mobile device.
10. (Previously Presented) The method of claim 9 wherein one or more of said plurality of alternative network paths become available to the mobile device during roaming.

11-14. (Cancelled)

15. (Currently Amended) A communications network comprising:

a transmitting device;

a receiving device;

a first network device;

a second network device;

the transmitting device and receiving device operable to maintain a data transmission over a first network path that is made up of one or more network links where at least one of the network links is to a local area network is remote from the transmitting device;

wherein the first network device is operable to switch the transmission from the first network path to one of a plurality of alternative network paths without disrupting the transmission;  
the second network device is operable to perform a Network Address Translation (NAT) on said transmission;

said transmission contains audio or video content;

said transmission is made using the Real Time Protocol (RTP);

said transmission uses the Session Initiation Protocol (SIP); and

~~The system of claim 14 wherein said transmission's SIP signaling sequence is maintained after said switching from the first network path to the one of a plurality of alternative network paths.~~

16. (Previously Presented) The system of claim 15 wherein said switching from the first network path to the one of a plurality of alternative network paths occurs as a result of a stream quality event.

17. (Previously Presented) The system of claim 15 wherein said switching from the first network path to the one of a plurality of alternative network paths occurs as a result of stream load balancing.

18. (Previously Presented) The system of claim 15 wherein said switching from the first network path to the one of a plurality of alternative network paths occurs as a result of an administrator move.

19. (Previously Presented) The system of claim 15 wherein the SIP server associated with the one of a plurality alternative network paths may authenticate the transmission before it is switched.

20. (Previously Presented) The system of claim 15 wherein the transmitting device is a mobile device.

21. (Previously Presented) The system of claim 20 wherein one or more of said plurality of alternative network paths become available to the mobile device during roaming.

22-26. (Cancelled)

27. (Currently Amended) A method of enhancing the reliability of a transmission from a source to a destination in a communications network using a network protocol that operates on top of the Internet Protocol (IP), the method comprising:

transmitting data between a source and destination over a first network path made up of one or more network links where at least one of the network links is to a local area network that is remote from the transmission source;

switching the transmission from the first network path to one of a plurality of alternative network paths;

wherein said transmission is not disrupted as a result of said switch to the one of a plurality of alternative network paths, said transmission contains audio or video data, and at least one Port Address Translation (PAT) is performed on said transmission;

said transmission contains audio or video content;

said transmission contains data used in the control of the audio or video transmission;

said transmission uses the Real Time Protocol (RTP);

said transmission further uses the Session Initiation Protocol (SIP); and

~~The method of claim 26~~ wherein the SIP signaling sequence of the transmission is maintained after said switching from the first network path to the one of a plurality of alternative network paths.

28. (Previously Presented) The method of claim 27 wherein the switch from the first network path to the one of a plurality of alternative network paths occurs as a result of a stream quality event.

29. (Previously Presented) The method of claim 27 wherein the switch from the first network path to the one of a plurality of alternative network paths occurs as a result of stream load balancing.

30. (Previously Presented) The method of claim 27 wherein the switch from the first network path to the one of a plurality of alternative network paths occurs as a result of an administrator move.

31. (Previously Presented) The method of claim 27 wherein a SIP server associated with the one of a plurality alternative network paths may authenticate the transmission before it is switched.

32. (Previously Presented) The method of claim 27 wherein the source device is a mobile device.

33. (Previously Presented) The method of claim 32 wherein one or more of said plurality of alternative network paths become available to the mobile device during roaming.

34-38. (Cancelled)

39. (Currently Amended) A communications network comprising

a transmitting device;

a receiving device;

a first network device;

a second network device;

the transmitting device and receiving device operable to maintain a data transmission over a first network path that is made up of one or more network links where at least one of the network links is to a local area network is remote from the transmitting device;

wherein the first network device is operable to switch the transmission from the first network path to one of a plurality of alternative network paths without disrupting the transmission; and said the second network device is operable to perform a Port Address Translation (PAT) on said transmission;

said transmission contains audio or video content

said transmission is made using the Real Time Protocol (RTP)

said transmission further uses the Session Initiation Protocol (SIP); and

The system of claim 38 wherein said transmission's SIP signaling sequence is maintained after said switching from the first network path to the one of a plurality of alternative network paths.

40. (Previously Presented) The system of claim 39 wherein said switching from the first network path to the one of a plurality of alternative network paths occurs as a result of a stream quality event.

41. (Previously Presented) The system of claim 39 wherein said switching from the first network path to the one of a plurality of alternative network paths occurs as a result of stream load balancing.

42. (Previously Presented) The system of claim 39 wherein said switching from the first network path to the one of a plurality of alternative network paths occurs as a result of an administrator move.
43. (Previously Presented) The system of claim 39 wherein a SIP server associated with the one of a plurality alternative network paths may authenticate the transmission before it is switched.
44. (Previously Presented) The system of claim 39 wherein the transmitting device is a mobile device.
45. (Previously Presented) The system of claim 44 wherein one or more of said plurality of alternative network paths become available to the mobile device during roaming.
- 46-50. (Cancelled)

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

| <b>PATENT APPLICATION FEE DETERMINATION RECORD</b><br>Substitute for Form PTO-875                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                               |                                  |                                    |               | Application or Docket Number<br><b>12/137,258</b> |                                                     | Filing Date<br><b>06/11/2008</b> |                         | <input type="checkbox"/> To be Mailed |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------------------------------------|---------------|---------------------------------------------------|-----------------------------------------------------|----------------------------------|-------------------------|---------------------------------------|--|
| <b>APPLICATION AS FILED – PART I</b>                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                               |                                  |                                    |               |                                                   |                                                     |                                  |                         |                                       |  |
| (Column 1)                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                               |                                  | (Column 2)                         |               |                                                   | SMALL ENTITY <input checked="" type="checkbox"/> OR |                                  | OTHER THAN SMALL ENTITY |                                       |  |
| FOR                                                                                                                                                                                                                                                                                                                                                                                                               | NUMBER FILED                                                                                                                                                                                                                  | NUMBER EXTRA                     | RATE (\$)                          | FEE (\$)      | OR                                                | RATE (\$)                                           | FEE (\$)                         |                         |                                       |  |
| <input type="checkbox"/> BASIC FEE<br>(37 CFR 1.16(a), (b), or (c))                                                                                                                                                                                                                                                                                                                                               | N/A                                                                                                                                                                                                                           | N/A                              | N/A                                |               |                                                   | N/A                                                 |                                  |                         |                                       |  |
| <input type="checkbox"/> SEARCH FEE<br>(37 CFR 1.16(k), (l), or (m))                                                                                                                                                                                                                                                                                                                                              | N/A                                                                                                                                                                                                                           | N/A                              | N/A                                |               |                                                   | N/A                                                 |                                  |                         |                                       |  |
| <input type="checkbox"/> EXAMINATION FEE<br>(37 CFR 1.16(o), (p), or (q))                                                                                                                                                                                                                                                                                                                                         | N/A                                                                                                                                                                                                                           | N/A                              | N/A                                |               |                                                   | N/A                                                 |                                  |                         |                                       |  |
| TOTAL CLAIMS<br>(37 CFR 1.16(j))                                                                                                                                                                                                                                                                                                                                                                                  | minus 20 =                                                                                                                                                                                                                    | *                                | X \$                               | =             |                                                   | X \$                                                | =                                |                         |                                       |  |
| INDEPENDENT CLAIMS<br>(37 CFR 1.16(h))                                                                                                                                                                                                                                                                                                                                                                            | minus 3 =                                                                                                                                                                                                                     | *                                | X \$                               | =             |                                                   | X \$                                                | =                                |                         |                                       |  |
| <input type="checkbox"/> APPLICATION SIZE FEE<br>(37 CFR 1.16(s))                                                                                                                                                                                                                                                                                                                                                 | If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). |                                  |                                    |               |                                                   |                                                     |                                  |                         |                                       |  |
| <input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                               |                                  |                                    |               |                                                   |                                                     |                                  |                         |                                       |  |
| * If the difference in column 1 is less than zero, enter "0" in column 2.                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                               |                                  |                                    |               |                                                   |                                                     |                                  |                         |                                       |  |
| <b>APPLICATION AS AMENDED – PART II</b>                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                               |                                  |                                    |               |                                                   |                                                     |                                  |                         |                                       |  |
| (Column 1)                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                               |                                  | (Column 2)                         |               |                                                   | SMALL ENTITY OR                                     |                                  | OTHER THAN SMALL ENTITY |                                       |  |
| AMENDMENT                                                                                                                                                                                                                                                                                                                                                                                                         | 01/25/2011                                                                                                                                                                                                                    | CLAIMS REMAINING AFTER AMENDMENT | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA | RATE (\$)                                         | ADDITIONAL FEE (\$)                                 | OR                               | RATE (\$)               | ADDITIONAL FEE (\$)                   |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                   | Total (37 CFR 1.16(i))                                                                                                                                                                                                        | * 28                             | Minus                              | ** 50         | = 0                                               | X \$26 =                                            | 0                                | OR                      | X \$ =                                |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                   | Independent (37 CFR 1.16(h))                                                                                                                                                                                                  | * 4                              | Minus                              | ***6          | = 0                                               | X \$110 =                                           | 0                                | OR                      | X \$ =                                |  |
| <input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                               |                                  |                                    |               |                                                   |                                                     |                                  |                         |                                       |  |
| <input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                               |                                  |                                    |               |                                                   |                                                     |                                  |                         |                                       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                               |                                  |                                    |               |                                                   | TOTAL ADD'L FEE                                     | 0                                | OR                      | TOTAL ADD'L FEE                       |  |
| (Column 1)                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                               |                                  | (Column 2)                         |               |                                                   | SMALL ENTITY OR                                     |                                  | OTHER THAN SMALL ENTITY |                                       |  |
| AMENDMENT                                                                                                                                                                                                                                                                                                                                                                                                         | Total (37 CFR 1.16(i))                                                                                                                                                                                                        | CLAIMS REMAINING AFTER AMENDMENT | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA | RATE (\$)                                         | ADDITIONAL FEE (\$)                                 | OR                               | RATE (\$)               | ADDITIONAL FEE (\$)                   |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                   | Total (37 CFR 1.16(i))                                                                                                                                                                                                        | *                                | Minus                              | **            | =                                                 | X \$ =                                              |                                  | OR                      | X \$ =                                |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                   | Independent (37 CFR 1.16(h))                                                                                                                                                                                                  | *                                | Minus                              | ***           | =                                                 | X \$ =                                              |                                  | OR                      | X \$ =                                |  |
| <input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                               |                                  |                                    |               |                                                   |                                                     |                                  |                         |                                       |  |
| <input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                               |                                  |                                    |               |                                                   |                                                     |                                  |                         |                                       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                               |                                  |                                    |               |                                                   | TOTAL ADD'L FEE                                     |                                  | OR                      | TOTAL ADD'L FEE                       |  |
| * If the entry in column 1 is less than the entry in column 2, write "0" in column 3.<br>** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".<br>*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".<br>The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1. |                                                                                                                                                                                                                               |                                  |                                    |               |                                                   |                                                     |                                  |                         |                                       |  |

Legal Instrument Examiner:  
/DORIS M. KING/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



# UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office  
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Alexandria, Virginia 22313-1450  
www.uspto.gov

## NOTICE OF ALLOWANCE AND FEE(S) DUE

34313 7590 02/04/2011

ORRICK, HERRINGTON & SUTCLIFFE, LLP  
IP PROSECUTION DEPARTMENT  
4 PARK PLAZA  
SUITE 1600  
IRVINE, CA 92614-2558

EXAMINER

HARPER, KEVIN C

ART UNIT

PAPER NUMBER

2462

DATE MAILED: 02/04/2011

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

12/137,258

06/11/2008

BILL CHIN

18198-4005

7163

TITLE OF INVENTION: METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL

| APPLN. TYPE    | SMALL ENTITY | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE   |
|----------------|--------------|---------------|---------------------|----------------------|------------------|------------|
| nonprovisional | YES          | \$755         | \$300               | \$0                  | \$1055           | 05/04/2011 |

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

### HOW TO REPLY TO THIS NOTICE:

#### I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

## PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** Mail Stop ISSUE FEE  
**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, Virginia 22313-1450**  
**or Fax** (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

34313

7590

02/04/2011

ORRICK, HERRINGTON & SUTCLIFFE, LLP  
 IP PROSECUTION DEPARTMENT  
 4 PARK PLAZA  
 SUITE 1600  
 IRVINE, CA 92614-2558

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

## Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

|                    |
|--------------------|
| (Depositor's name) |
| (Signature)        |
| (Date)             |

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 12/137,258      | 06/11/2008  | BILL CHIN            | 18198-4005          | 7163             |

TITLE OF INVENTION: METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL

| APPLN. TYPE    | SMALL ENTITY | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE   |
|----------------|--------------|---------------|---------------------|----------------------|------------------|------------|
| nonprovisional | YES          | \$755         | \$300               | \$0                  | \$1055           | 05/04/2011 |

| EXAMINER        | ART UNIT | CLASS-SUBCLASS |
|-----------------|----------|----------------|
| HARPER, KEVIN C | 2462     | 370-235000     |

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 \_\_\_\_\_
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 \_\_\_\_\_
- 3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY AND STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_

Date \_\_\_\_\_

Typed or printed name \_\_\_\_\_

Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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| APPLICATION NO.                                                                                                         | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.     | CONFIRMATION NO. |
|-------------------------------------------------------------------------------------------------------------------------|-------------|----------------------|-------------------------|------------------|
| 12/137,258                                                                                                              | 06/11/2008  | BILL CHIN            | 18198-4005              | 7163             |
| 34313                                                                                                                   | 7590        | 02/04/2011           | EXAMINER                |                  |
| ORRICK, HERRINGTON & SUTCLIFFE, LLP<br>IP PROSECUTION DEPARTMENT<br>4 PARK PLAZA<br>SUITE 1600<br>IRVINE, CA 92614-2558 |             |                      | HARPER, KEVIN C         |                  |
|                                                                                                                         |             |                      | ART UNIT                | PAPER NUMBER     |
|                                                                                                                         |             |                      | 2462                    |                  |
|                                                                                                                         |             |                      | DATE MAILED: 02/04/2011 |                  |

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 184 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 184 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

|                               |                        |                     |  |
|-------------------------------|------------------------|---------------------|--|
| <b>Notice of Allowability</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                               | 12/137,258             | CHIN ET AL.         |  |
|                               | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                               | Kevin C. Harper        | 2462                |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the RCE filed January 25, 2011.
2. ☒ The allowed claim(s) is/are 4-10, 15-21, 27-33, 39-45 (renumbered as 1-28, respectively).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All   b) ☐ Some\*   c) ☐ None   of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

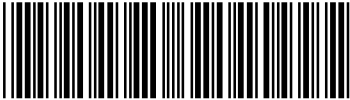
4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.

**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |                                                                                                            |                                                                                       |
|------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)                                           | 5. <input type="checkbox"/> Notice of Informal Patent Application                     |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date ____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date ____     | 7. <input type="checkbox"/> Examiner's Amendment/Comment                              |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance             |
|                                                                                                            | 9. <input type="checkbox"/> Other ____.                                               |

/Kevin C. Harper/  
 Primary Examiner, Art Unit 2462

|                                                                                                              |                                                |                                                                   |
|--------------------------------------------------------------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------|
| <b>Search Notes</b><br><br> | <b>Application/Control No.</b><br><br>12137258 | <b>Applicant(s)/Patent Under Reexamination</b><br><br>CHIN ET AL. |
|                                                                                                              | <b>Examiner</b><br><br>Kevin C Harper          | <b>Art Unit</b><br><br>2462                                       |

| SEARCHED |          |          |          |
|----------|----------|----------|----------|
| Class    | Subclass | Date     | Examiner |
| 370      | 216      | 4/12/10  | kch      |
| updated  | previous | 11/22/10 | kch      |
| updated  | previous | 01/30/11 | kch      |

| SEARCH NOTES                |          |          |
|-----------------------------|----------|----------|
| Search Notes                | Date     | Examiner |
| inventorship search on PALM | 4/12/10  | kch      |
| EAST - see printout         | 4/12/10  | kch      |
| updated above searches      | 11/22/10 | kch      |
| updated above searches      | 01/30/11 | kch      |

| INTERFERENCE SEARCH |                           |          |          |
|---------------------|---------------------------|----------|----------|
| Class               | Subclass                  | Date     | Examiner |
|                     | see interference printout | 01/30/11 | kch      |

|  |  |
|--|--|
|  |  |
|--|--|

## EAST Search History

## EAST Search History (Prior Art)

| Ref # | Hits | Search Query                                                                                                                                                      | DBs             | Default Operator | Plurals | Time Stamp       |
|-------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------|---------|------------------|
| L6    | 7    | sip near5 sequenc\$3 with standard\$ and (@rlaD<"20080313" @ad<"20080313") and "370"/\$.ccls.                                                                     | US-PGPUB; USPAT | OR               | OFF     | 2011/01/31 00:24 |
| L8    | 11   | sip near5 packet\$1 near4 sequenc\$3 and (@rlaD<"20080313" @ad<"20080313") and "370"/\$.ccls.                                                                     | US-PGPUB; USPAT | OR               | OFF     | 2011/01/31 00:25 |
| L12   | 20   | seamless near7 sip same (handover\$1 changeover\$1 switchover\$1 (hand change switch) adj (off over\$1)) and (@rlaD<"20080313" @ad<"20080313") and "370"/\$.ccls. | US-PGPUB; USPAT | OR               | OFF     | 2011/01/31 00:36 |
| L13   | 4    | seamless same sip near5 packet\$1 and (@rlaD<"20080313" @ad<"20080313") and "370"/\$.ccls.                                                                        | US-PGPUB; USPAT | OR               | OFF     | 2011/01/31 00:37 |
| L17   | 13   | sip near4 sequenc\$3.clm. and (@rlaD<"20080313" @ad<"20080313") and "370"/\$.ccls.                                                                                | US-PGPUB; USPAT | OR               | OFF     | 2011/01/31 00:42 |
| L20   | 1    | maintain\$3 near6 sip near4 sequenc\$3 and (@rlaD<"20080313" @ad<"20080313") and "370"/\$.ccls.                                                                   | US-PGPUB; USPAT | OR               | OFF     | 2011/01/31 00:44 |

## EAST Search History (Interference)

| Ref # | Hits | Search Query                                                                       | DBs         | Default Operator | Plurals | Time Stamp       |
|-------|------|------------------------------------------------------------------------------------|-------------|------------------|---------|------------------|
| L18   | 4    | sip near4 sequenc\$3.clm. and (@rlaD<"20080313" @ad<"20080313") and "370"/\$.ccls. | USPAT; UPAD | OR               | OFF     | 2011/01/31 00:43 |

|     |   |                                                                                                             |                |    |     |                     |
|-----|---|-------------------------------------------------------------------------------------------------------------|----------------|----|-----|---------------------|
| L19 | 0 | maintain\$3 near6 sip near4<br>sequenc\$3 and<br>(@rlaD<"20080313"<br>@ad<"20080313") and<br>"370"/\$.ccls. | USPAT;<br>UPAD | OR | OFF | 2011/01/31<br>00:44 |
|-----|---|-------------------------------------------------------------------------------------------------------------|----------------|----|-----|---------------------|

**1/31/2011 1:01:21 AM**

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disruptive switch.wsp**

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|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------------------------------------------|
| <b>Issue Classification</b><br> | <b>Application/Control No.</b><br>12137258 | <b>Applicant(s)/Patent Under Reexamination</b><br>CHIN ET AL. |
|                                                                                                                 | <b>Examiner</b><br>Kevin C Harper          | <b>Art Unit</b><br>2462                                       |

| ORIGINAL           |                                   |  |          |  |  | INTERNATIONAL CLASSIFICATION |   |   |   |                  |             |  |  |  |  |  |  |  |  |
|--------------------|-----------------------------------|--|----------|--|--|------------------------------|---|---|---|------------------|-------------|--|--|--|--|--|--|--|--|
| CLASS              |                                   |  | SUBCLASS |  |  | CLAIMED                      |   |   |   |                  | NON-CLAIMED |  |  |  |  |  |  |  |  |
| 370                |                                   |  | 216      |  |  | G                            | 0 | 1 | R | 31 / 08 (2006.0) |             |  |  |  |  |  |  |  |  |
| CROSS REFERENCE(S) |                                   |  |          |  |  |                              |   |   |   |                  |             |  |  |  |  |  |  |  |  |
|                    |                                   |  |          |  |  |                              |   |   |   |                  |             |  |  |  |  |  |  |  |  |
| CLASS              | SUBCLASS (ONE SUBCLASS PER BLOCK) |  |          |  |  |                              |   |   |   |                  |             |  |  |  |  |  |  |  |  |
|                    |                                   |  |          |  |  |                              |   |   |   |                  |             |  |  |  |  |  |  |  |  |
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|                    |                                   |  |          |  |  |                              |   |   |   |                  |             |  |  |  |  |  |  |  |  |
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|                    |                                   |  |          |  |  |                              |   |   |   |                  |             |  |  |  |  |  |  |  |  |

| <input checked="" type="checkbox"/> Claims renumbered in the same order as presented by applicant <input type="checkbox"/> CPA <input type="checkbox"/> T.D. <input type="checkbox"/> R.1.47 |          |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|
| Final                                                                                                                                                                                        | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original |
|                                                                                                                                                                                              | 1        |       | 17       |       | 33       |       | 49       |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                              | 2        |       | 18       |       | 34       |       | 50       |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                              | 3        |       | 19       |       | 35       |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                              | 4        |       | 20       |       | 36       |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                              | 5        |       | 21       |       | 37       |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                              | 6        |       | 22       |       | 38       |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                              | 7        |       | 23       |       | 39       |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                              | 8        |       | 24       |       | 40       |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                              | 9        |       | 25       |       | 41       |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                              | 10       |       | 26       |       | 42       |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                              | 11       |       | 27       |       | 43       |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                              | 12       |       | 28       |       | 44       |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                              | 13       |       | 29       |       | 45       |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                              | 14       |       | 30       |       | 46       |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                              | 15       |       | 31       |       | 47       |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                              | 16       |       | 32       |       | 48       |       |          |       |          |       |          |       |          |       |          |

|                                                    |            |                              |                   |
|----------------------------------------------------|------------|------------------------------|-------------------|
| NONE                                               |            | <b>Total Claims Allowed:</b> |                   |
|                                                    |            | 28                           |                   |
| (Assistant Examiner)                               | (Date)     | O.G. Print Claim(s)          | O.G. Print Figure |
| /Kevin C Harper/<br>Primary Examiner.Art Unit 2462 | 01/31/2011 | 1                            | 2b                |
| (Primary Examiner)                                 | (Date)     |                              |                   |

A Method For Multiple Link Quality Of Service For Voice And Video Over Internet Protocol

Change(s) applied  
to document,  
/M.W.J./  
3/14/2011

**[0001]** The present application claims the benefit of and priority to U.S. Provisional Patent Application No. <sup>61/036,377</sup>~~61/036,037~~ filed on March 13, 2008, which is hereby incorporated by reference in its entirety.

**[0002]** The invention described applies to computer and telecommunications networks, where software or other digital logic such as FPGAs, ASICs are used in the control and transmission of video or audio payloads over networks using the Internet Protocol (IP). Embodiments could be in networked computers, cell phones, routers, switches, firewalls, gateways, session border controllers, and miscellaneous networking devices connecting to both wireless and wired networks. The invention applies equally to transmission over private network links and paths, or over the public Internet.

**[0003]** The main standard protocols in use for audio and video over IP networks are the Session Initiation Protocol (SIP), Session Description Protocol (SDP) as defined in [1], [2] respectively, and lastly the Real Time Protocol (RTP) and RTP Control Protocol (RTCP) as defined in [3]. These are the standard protocols in use with Voice over Internet Protocol (VoIP), as well as in various video and video-conferencing protocol stacks that run on top of IP. Practitioners of ordinary skill in the art will also be familiar with computers, routers, firewalls, VoIP gateways, VoIP session border controllers, video session border controllers, and other networked devices that implement Network Address Translation (NAT) as described in [5]. A variant of NAT is Port Address



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| APPLICATION NO.                                                                                                                                  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.         | CONFIRMATION NO.       |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------|-----------------------------|------------------------|
| 12/137,258                                                                                                                                       | 06/11/2008  | BILL CHIN            | 18198-4005                  | 7163                   |
| 34313 7590 03/16/2011<br>ORRICK, HERRINGTON & SUTCLIFFE, LLP<br>IP PROSECUTION DEPARTMENT<br>4 PARK PLAZA<br>SUITE 1600<br>IRVINE, CA 92614-2558 |             |                      | EXAMINER<br>HARPER, KEVIN C |                        |
|                                                                                                                                                  |             |                      | ART UNIT<br>2462            | PAPER NUMBER           |
|                                                                                                                                                  |             |                      | MAIL DATE<br>03/16/2011     | DELIVERY MODE<br>PAPER |

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Application No. : 12137258  
Applicant : Chin  
Filing Date : 06/11/2008  
Date Mailed : 03/16/2011

### NOTICE TO FILE CORRECTED APPLICATION PAPERS

#### *Notice of Allowance Mailed*

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

**Applicant is given 2 month(s) from the mail date of this Notice within which to respond.**

The informalities requiring correction are indicated in the attachment(s). If the informality pertains to the abstract, specification (including claims) or drawings, the informality must be corrected with an amendment in compliance with 37 CFR 1.121 (or, if the application is a reissue application, 37 CFR 1.173). Such an amendment may be filed after payment of the issue fee if limited to correction of informalities noted herein. See Waiver of 37 CFR 1.312 for Documents Required by the Office of Patent Publication, 1280 Off. Gaz. Patent Office 918 (March 23, 2004). In addition, if the informality is not corrected until after payment of the issue fee, for purposes of 35 U.S.C. 154(b)(1)(iv), "all outstanding requirements" will be considered to have been satisfied when the informality has been corrected. A failure to respond within the above-identified time period will result in the application being ABANDONED. **This period for reply is NOT extendable under 37 CFR 1.136(a).**

See attachment(s).

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/Milton Williams/  
Publication Branch  
Office of Data Management  
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**IDENTIFICATION OF SPECIFICATION/DRAWING INCONSISTENCIES**

- ☐ On Page of the specification there is a brief description of FIG. , but the drawings filed do not include a drawing with that designation. Applicant must respond either by supplying the omitted drawing or by amending the specification to remove all references to that drawing.
- ☒ The drawings filed 08/19/2008 include FIG. 7-12, but the specification's brief description of the drawings does not describe a drawing with that designation. Applicant must respond either by amending the specification to add a brief description of that drawing or by correcting the drawings to remove the drawing in question.
- ☐ Drawings are present in the application and are referred to in the detailed description of the invention, but the specification does not contain a brief description of the drawings as required by 37 CFR 1.74 and 37 CFR 1.77(b)(8).
- ☐ Page of the specification refers to FIG. , but no drawing with that designation is described in the brief description of the drawings and no drawing with that designation is present in the application. Applicant must respond either by amending the specification to remove all references to that drawing, or by supplying that drawing and amending the specification to add a brief description of it.
- ☐ OTHER:
- ☐ COMMENTS:

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 12/137,258 Confirmation No.: 7163  
Applicant : Chin et al.  
Filing Date : June 11, 2008  
Title : Method for Multiple Link Quality of Service for Voice and Video  
Over Internet Protocol  
Group Art Unit : 2462  
Examiner : Harper  
Docket No. : 18198.4005  
Customer No. : 34313

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Commissioner For Patents

**RESPONSE TO NOTICE TO FILE CORRECTED APPLICATION PAPERS**

Sir:

In response to the Notice to File Corrected Application Papers mailed March 16, 2011, and pursuant to 37 CFR 1.121(b)(3), Applicant hereby submits a substitute specification, including new paragraphs [0022] – [0024] inadvertently omitted from the application when filed on June 11, 2008.

The Commissioner is authorized to charge any fee which may be required in connection with this Response to deposit account No. 15-0665.

Respectfully submitted,  
ORRICK, HERRINGTON & SUTCLIFFE LLP

Dated: May 3, 2011

By: /s/ Fabio Marino  
Fabio Marino  
Reg. No. 43339

Orrick, Herrington & Sutcliffe LLP  
4 Park Plaza, Suite 1600  
Irvine, CA 92614-2558  
Tel. 949-567-6700  
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| APPLICATION NO.                                                                                                                                  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.         | CONFIRMATION NO.       |
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| 12/137,258                                                                                                                                       | 06/11/2008  | BILL CHIN            | 18198-4005                  | 7163                   |
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|                                                                                                                                                  |             |                      | ART UNIT<br>2462            | PAPER NUMBER           |
|                                                                                                                                                  |             |                      | MAIL DATE<br>03/16/2011     | DELIVERY MODE<br>PAPER |

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Application No. : 12137258  
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See attachment(s).

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**IDENTIFICATION OF SPECIFICATION/DRAWING INCONSISTENCIES**

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- ☐ OTHER:
- ☐ COMMENTS:

**APPLICATION FOR UNITED STATES PATENT**

**A METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND  
VIDEO OVER INTERNET PROTOCOL**

Inventors:

Bill Chin  
Sajit Bhaskaran  
Robin Mavunkel

Prepared by:  
Orrick, Herrington, & Sutcliffe, LLP  
1000 Marsh Road  
Menlo Park, California 94025  
(650) 614-7400

A Method For Multiple Link Quality Of Service For Voice And Video Over Internet Protocol

**[0001]** The present application claims the benefit of and priority to U.S. Provisional Patent Application No. 61/036,037 filed on March 13, 2008, which is hereby incorporated by reference in its entirety.

**[0002]** The invention described applies to computer and telecommunications networks, where software or other digital logic such as FPGAs, ASICs are used in the control and transmission of video or audio payloads over networks using the Internet Protocol (IP). Embodiments could be in networked computers, cell phones, routers, switches, firewalls, gateways, session border controllers, and miscellaneous networking devices connecting to both wireless and wired networks. The invention applies equally to transmission over private network links and paths, or over the public Internet.

**[0003]** The main standard protocols in use for audio and video over IP networks are the Session Initiation Protocol (SIP), Session Description Protocol (SDP) as defined in [1], [2] respectively, and lastly the Real Time Protocol (RTP) and RTP Control Protocol (RTCP) as defined in [3]. These are the standard protocols in use with Voice over Internet Protocol (VoIP), as well as in various video and video-conferencing protocol stacks that run on top of IP. Practitioners of ordinary skill in the art will also be familiar with computers, routers, firewalls, VoIP gateways, VoIP session border controllers, video session border controllers, and other networked devices that implement Network Address Translation (NAT) as described in [5]. A variant of NAT is Port Address

Translation (PAT) where many devices can share a single public IP address; the technique involves careful use of TCP and UDP port numbers. More information about PAT can be found in [9]. NAT and PAT are important because of the necessity of security and quality-of-service gateway devices, as well as other devices operating at the Application Layer of the TCP/IP reference model; these are often deployed at a user's premises when connecting to the Internet or private network operators. The necessity and demand by users that voice and video over Internet be able to successfully interoperate with these application gateway devices is well established.

**[0004]** Practitioners of ordinary skill in the art may also be familiar with Internet routing protocols, such as BGP as defined in [4]. Studies have shown recently that BGP networks are susceptible to numerous short-lived instabilities that adversely affect audio and video streams transported over the Internet; VoIP calls in particular are adversely affected by various Internet instabilities related to BGP [6]. Video or audio calls that are in progress tend to break when these instabilities occur, as extensively documented in [6].

**[0005]** SIP/SDP and RTP have proven to be extremely difficult to operate in networks involving NAT and PAT, as explained in [7], [8] . For example, many security firewalls implement NAT/PAT. More often than not, audio and video traffic using SIP/SDP and RTP tend to break when firewall methods (or other software methods involving NAT or PAT) are encountered in the processing path of these same SIP/SDP and RTP traffic.

**[0006]** A number of prior art "gateway" devices exist for video and audio over IP traffic. These usually provide a security firewall function. More significantly, they frequently offer a quality of service (QOS) feature. In this case, the wide area network (WAN) link is typically a bottleneck where voice and video traffic may compete for scarce bandwidth with data traffic (such as file transfers). Such gateways often are advertised as performing QOS enforcement by traffic shaping or rate limiting or rate policing, on the single WAN link. Voice and video traffic are often given better treatment by limiting the amount of bandwidth consumed by normal data traffic (such as PC file transfers).

**[0007]** The field of the invention also relates to both mobile and non-mobile domains in voice and video communications.

**[0008]** In the prior art, no technology exists whereby with multiple links or paths available in a mobile or non-mobile domain, where these alternate paths are combined intelligently to provide the best quality of service for VoIP or Video over IP.

**[0009]** Example in the non-mobile domain: if an Internet voice call is originating in a device (computer or gateway or other embodiment) and multiple WAN links are available concurrently, each representing a different Internet path, there is no prior art that solves the problem of determining the "best" link at any given time, where "best" is defined as the link or path that provides the best quality. Voice or video quality over a given path is often determined by various metrics, such as packet loss, jitter, packet re-sequencing, packet duplicate creation, MOS scores, etc. In the prior art, if an established VoIP call is in

progress, and a quality of service degrade event occurs in the middle of a call (such as packet loss, link failure, increased jitter etc.), the speakers usually lose the call in the middle of their conversation.

**[0010]** Not all quality events are degrade events on an active link.

Example: A quality of service event could also occur on a network link which is not currently in use; in this case voice or video traffic is currently being placed on some link other than the one on which the event occurred. If the inactive link suddenly becomes of significantly higher quality than the active one, it may be desirable to move the voice or video payload (in reality an RTP flow) from the currently active link, to the better-quality link. What is lacking in the prior art is the ability to move the call "at will" and with full confidence that the call will not break; it usually does break because of the traditional difficulty of handling NAT and PAT in the presence of SIP and RTP protocols. This is depicted in Fig 7.

**[0011]** It is important to understand that in the prior art, dynamic IP routing protocols (such as BGP, OSPF, IS-IS and others) do not solve the non-mobile domain problem—how to pick the best path among several concurrent ones—so that quality never degrades. For example, if there is a 5-second interval where packet loss is high—it may be 10% packet loss, which is known to cause severe degradation for voice—these dynamic routing protocols do not make any path change to correct the problem. Five seconds of unacceptable voice quality is enough to make the speakers hang up the phone.

**[0012]** Since the prior art routers have difficulty dealing with these issues, it has become clear to practitioners of ordinary skill in the art that voice

and video quality control needs to be asserted—in terms of auto-detection of quality degrades and consequent actions to recover quality—in devices other than routers—more specifically in various types of application layer devices, including possibly the voice and video endpoints. Examples of such application layer devices are VoIP or video gateways/firewalls, QOS gateways, SIP phones, cell phones which are SIP/RTP enabled, and videoconferencing terminals.

**[0013]** Unfortunately, prior art gateways have problems when multiple WAN or Internet links need to be treated as alternate paths. As mentioned earlier, in the prior art, when a voice or video call is moved, a NAT or PAT often has to be performed. In the general case of a SIP/RTP user endpoint (such as an Internet phone, videoconference station, IP TV receiver—see 501 in Fig 3) communicating with a SIP/RTP server—depicted as 502 in Fig 3 (in the case of voice, this SIP server is often called an IP PBX) —it is often found that moving a call from one path to another path to get a better call quality results in the call itself breaking. Sometimes, additional devices called Session Border Controllers (SBC) are inserted in front of the SIP server at an Internet data center to try and fix this problem. Unfortunately—the cost of additional SBC equipment at the data center is an unnecessary economic burden; not to mention these SBCs are not able to detect quality degrades at remote locations and auto-correct for them when alternate paths do exist. The SBC in some deployment scenarios is not even aware of the existence and identity, as expressed in source IP address ranges, of these alternate Internet or WAN paths. An SBC deployment example is shown in Fig 8. If Fig 8 were applied to the example of hosted IP PBX service,

a service provider manages the SBC 703, but the customer manages the WAN links (paths) 721 and 722 shown in Fig 8, without the service provider or the SBC being aware of these. Hence the prior art SBC is an unsatisfactory and inadequate solution for achieving and maximizing quality of service when multiple links are available across the remote network.

**[0014]** Because of the expense and other issues of deploying SBCs, many customers are attempting to deploy voice or video with multiple WAN links, as shown in Fig 3. A gateway 501 is installed at customer premises to provide security and quality of service—these are 2 essential functions in most networks. In Fig 3 today, with a prior art gateway, calls do break when the gateway attempts to move calls from one path to another.

**[0015]** In addition to the non-mobile domain where multiple link choices exist, prior art also does not work well in the mobile domain sense in networks where SIP, RTP and IP are used. This is where different IP paths can be selected at different points in time. A good example is cell phone roaming and handoff from one base station to another base station: in many instances the calls do break when the handoff occurs.

### **Summary of Invention**

**[0016]** A method for achieving multiple link quality of service for video and voice calls over Internet links, or over IP links running in private networks, is described. This method applies to both the non-mobile domain (alternate paths exist in one place at the same time) as well as the mobile domain (one path is used at any one place at a given time, but the user device roams from place to

place). This method can be implemented as either computer software or other digital logic (ASIC or FPGA). Using this invention, voice and video calls can be moved at will from one path to another, as many times as required during a single conversation, without breaking the RTP voice or video payload stream. The benefit is that embodiments of this invention have a significantly higher probability that a call never breaks under various conditions of quality degrade. This includes the case of link and router failures, which are treated as a special case of quality degrade in the context of voice and video.

**[0017]** In one embodiment (a non-mobile domain example) a gateway with multiple links to the Internet delivers maximum quality of service to SIP capable phones installed behind it, as in Fig 3.

**[0018]** In another embodiment (a mobile domain example), a cell phone with a SIP/RTP over IP stack roams from one base station to another, where each base station also implies a different IP default router for the cell phone, as in Fig 6. In this case, again any call quality degrade or call break event is avoided or minimized by using the methods described in the invention.

## **Detailed Description of Invention**

### ***Brief Description of the Drawings***

**[0019]** Fig 1, Fig 2, Fig 3 and Fig 6 depict some but not all embodiments of the invention.

**[0020]** Fig 4 is a flow chart of the method for achieving quality of service for voice and video over IP, using multiple links in either a non-mobile domain or mobile domain. Each step in the flow chart is explained in a table below.

**[0021]** Fig 5 is a Finite State Machine that describes how to implement the invention in digital logic or software in the exemplary embodiment. Other methods of implementation will be understood by practitioners in the art.

**[0022]** Fig 7 shows SIP and RTP control in prior art.

**[0023]** Fig 8 shows server side session border controller (SBC) in prior art.

**[0024]** Fig 9 depicts a quality of service (QoS) gateway embodiment of the invention. Fig 10 shows the QoS gateway embodiment with stream load balancing. Fig 11 shows the QoS gateway embodiment with multiple SIP servers (dual registrations). Fig 12 shows the QoS gateway embodiment with internal router WAN interface module.

### ***Detailed Description***

**[0025]** As mentioned, those of ordinary skill in the art can use either the FSM in Fig 5, or the Flow Chart in Fig 4, in order to implement the methods in the embodiments described herein.

**[0026]** In this section we focus on clarifying the flow chart in Fig 4 with a more detailed description of the methods involved, as well as providing additional clarification for those of ordinary skill in the art.

**[0027]** The Table below begins by giving a description of each of the blocks depicted in Fig 4 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230 and 240.

**Flow Chart Description**

| <b>Number</b> | <b>Brief Description</b>                                  | <b>A More Detailed Description</b>                                                                                                                                                                                                                                                                            |
|---------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100           | SIP session in progress                                   | A SIP session has been established with at least one RTP stream is active.                                                                                                                                                                                                                                    |
| 110           | Stream quality event                                      | These events occur when the RTP stream quality drops below or exceeds configured quality thresholds. The thresholds can be based on MOS scale, SWiQI index, jitter, latency, out of order packet events, packet loss events, packet duplication events and RTCP events.                                       |
| 120           | Stream load balancing                                     | An RTP stream may be signaled to move in order to achieve the desired load balancing results.                                                                                                                                                                                                                 |
| 130           | Admin move                                                | The administrator may want to move specific RTP streams to a different WAN link.                                                                                                                                                                                                                              |
| 140           | Is remote stream?                                         | Only RTP streams traversing a WAN link should be moved. Local RTP streams that stay only on the LAN should not be moved.                                                                                                                                                                                      |
| 150           | Alternate path available?                                 | RTP streams will only be moved when there is an alternate WAN link available for use. An ISP outage or poor quality scores on a WAN link may cause a particular link to be marked unavailable.                                                                                                                |
| 160           | Select SIP server, Send Re-Invite, Update sequence number | Once a new WAN link has been selected, the SIP server is chosen to send a SIP INVITE request. The request will contain the IP address and TCP/UDP port information for the WAN link that the RTP stream will use. The SIP signaling sequence number must be maintained between the SIP device and the server. |
| 170           | Server accept request?                                    | If the SIP server does not accept the request, then the RTP stream will not be moved and the session will continue as before.                                                                                                                                                                                 |
| 180           | Server challenge request?                                 | The SIP server may challenge subsequent SIP INVITE requests on an active SIP session.                                                                                                                                                                                                                         |
| 190           | Send invite authentication                                | When the SIP server challenges the SIP INVITE request, the SIP INVITE must be re-sent with the                                                                                                                                                                                                                |

| Number | Brief Description                     | A More Detailed Description                                                                                                                                                                                                                                                                                                                                     |
|--------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        |                                       | proper authentication information.                                                                                                                                                                                                                                                                                                                              |
| 200    | Authentication successful?            | If the authentication fails, then the RTP stream will not be moved and the session will continue as before.                                                                                                                                                                                                                                                     |
| 210    | Attempt move, Update sequence numbers | The dialog with the SIP server must be completed before the RTP stream can be moved. The state involving the SIP signaling sequence number (often referred to as the "cseq" value, must be maintained throughout the dialog. For a new "transaction" this number must monotonically increase; for a re-transmit of an old transaction, it must remain the same. |
| 220    | Move successful?                      | Did the dialog with the SIP server to move the RTP stream complete successfully?                                                                                                                                                                                                                                                                                |
| 230    | Do not change                         | The RTP stream will not be moved and the session will continue as before.                                                                                                                                                                                                                                                                                       |
| 240    | Update stream                         | Move the RTP stream to the designated WAN link.                                                                                                                                                                                                                                                                                                                 |

### ***An Embodiment of the Invention***

**[0028]** An embodiment of the invention that we have built is described here; what follows is an example of a non-mobile-domain use of multiple WAN links. We will describe a QoS voice/video gateway which includes all steps of the method described in Fig 4. It has been tested and verified for the economical and highly desirable deployment scenario depicted in Fig 9, where no server side SBC is needed.

**[0029]** With reference to Fig 9, the multi-link QoS gateway 910 has 3 logical network interfaces 961, 962 and 963. In this example 3 routers on the user local area network 990 connect the user to the public Internet 940—these

routers are 921, 922 and 923. Network interfaces 961, 962 and 963 correspond to globally routable public IP addresses belonging to the 3 access Internet Service Providers shown in Fig 9 as 931, 932 and 933 respectively. If any of these access Internet links are DSL or cable modem networks, then it is possible for the elements shown as 921, 922 and 923 to be DSL or cable modems, instead of IP routers in the traditional sense; the methods are still applicable as practitioners will be familiar with protocols such as DHCP [10] and PPPoE [11], which are used by the gateway to obtain dynamic public IP addresses in these cases.

**[0030]** In Fig 9 a SIP user endpoint 990 is shown communicating with a SIP/RTP server 950; while this is a voice example, with 990 being a SIP phone and the server being an IP PBX, practitioners of ordinary skill in the art can also use it for video-based embodiments, as long as the methods for handling SIP and RTP in Fig 4 and 5 are adhered to.

**[0031]** In this embodiment, 3 alternate paths for quality of service in the non-mobile-domain are shown:

Path 1: 900, 910, 961, 921, 931, 940, 950

Path 2: 900, 910, 962, 922, 932, 940, 950

Path 3: 900, 910, 963, 923, 933, 940, 950

**[0032]** The gateway 910 described here appears to the routers 921, 922 and 923 as a transparent bridge; other embodiments could include the gateway actually appearing as a router, or incorporating one or all of the routers 921, 922 and 923. An embodiment of the invention 1010—whereby the WAN router

modules 1021, 1022, 1023 are incorporated into the QOS gateway—is shown in Fig 12.

**[0033]** Various algorithms for detecting failures and degrades, as well as relative improvements in quality between links over time can be implemented (110 in Fig 4). For example, in one embodiment, the RTP stream in both directions is sampled at their natural arrival rate—which is once per 20 milliseconds in most VoIP cases where no loss occurs. By applying statistical techniques over a small number of sampling intervals (any value from 4–20 intervals is good) it is possible to detect changes in various quality conditions within 80 ms–200 ms. While this is one embodiment, those of ordinary skill in the art will recognize that step 110 can have a multiplicity of embodiments which need not be described here. Suffice it to say that the detect algorithm needs to be fast—so fast that auto-detect and auto-correct in the case of bad quality can be performed in under 2 seconds. We have built embodiments that perform this in under 1 second. In a multi link QoS context, fast detect is important because if more than a few seconds transpire and a voice or video call becomes unusable, the human users tend to give up and the call is considered "broken."

**[0034]** Those of ordinary skill in the art will also recognize that embodiments are capable of deciding, while a SIP/RTP session is in progress, that a stream needs to be moved for load balancing reasons as depicted in Fig 4 as step 120. For example there may be 2 phones that are currently active as depicted in Fig 10 as 900 and 901.

**[0035]** Initially the paths are as follows:

Stream 1 Phone 900: 900, 910, 961, 921, 931, 940, 950

Stream 2 Phone 901: 901, 910, 961, 921, 931, 940, 950

**[0036]** In other words, initially both streams use essentially the same WAN path represented by access ISP 1. Suppose a large PC file transfer gets triggered on the same path represented by ISP 1, which the gateway becomes aware of, and the gateway now decides to pre-emptively optimize for VoIP quality by moving Stream 2 to a better path, and suppose this better path is ISP 3; this can be done without breaking the RTP call that is already in progress. Steps 140, 150, 160, 170, 180, 190, 200, 210, 220 and 240 can now be executed to move the stream "at will."

**[0037]** The final paths after the move are:

Stream 1 Phone 900: 900, 910, 961, 921, 931, 940, 950

Stream 2 Phone 901: 901, 910, 963, 923, 933, 940, 950

**[0038]** Most importantly, the call does not break during the move of the stream.

**[0039]** Those of ordinary skill in the art will also recognize another embodiment is possible where for administrative reasons, a stream may be moved while a session 100 is in progress. For example, it may be known in advance that the path represented by ISP 1 is going to be "taken down for service maintenance" in 20 minutes. Admin commands to move both streams depicted in Fig 10—from path (961, 921, 931, 940, 950) to path (962, 922, 932, 940, 950) for example, can also be implemented in this invention, following the same steps in Fig 4.

**[0040]** Those of ordinary skill in the art will also recognize that embodiments with multiple SIP server registrations are possible concurrently with an intermediate VoIP or video gateway 910; this is shown in Fig 11. In these cases, the Select SIP Server step is needed as part of Step 160 in Fig 4. For a call not to break, the SIP re-invite message of Step 160 needs to be sent to the same SIP server that handled the original SIP Invite for the call.

**[0041]** Those of ordinary skill in the art will recognize that the transport layer port and IP address parameters for the "move" can be conveyed in appropriately formulated SIP/SDP headers in the re-invite message, see step 160 in Fig 4. In addition the "cseq" field requires proper handling, as described in the Flow Chart Description table above.

***Another Embodiment of the Invention—Mobile Domain***

**[0042]** Another example of where the invention may be applied is in cell phone roaming (or any other mobile device that uses cellular technology and faces problems of calls dropping when handoff occurs from one base station to another). The invention prevents dropped calls during hand off in an all-IP type network. If in addition, the following 2 conditions are met, then calls will not drop when roaming. These conditions are (a) the cell phone uses VoIP protocols SIP and RTP over IP, and (b) the cell phone always communicates with the same SIP server—that it originally registered with, for the entire duration of one call (630 in Fig 6) as it moved from the first base station (605 in Fig 6) to a second base station (606 in Fig 6). As long as all these conditions are met, an embodiment of the invention in the cell phone will produce no dropped calls during handoff.

**[0043]** Those of ordinary skill in the art of cellular and VoIP technology will recognize that the embodiments are not limited to cell phones, but to all mobile devices that use SIP, RTP and IP protocols.

CLAIMS:

We claim:

1. A method of enhancing the reliability of a transmission from a source to a destination in a communications network using a network protocol that operates on top of the Internet Protocol (IP) comprising;  
  
transmitting between a source and destination over a first network path made up of one or more network links where at least one of the network links is to a local area network that is remote from the transmission source;  
  
switching the transmission from the first network path to one of a plurality of alternative network paths; and  
  
the transmission is not disrupted as a result of said switch to the one of a plurality of alternative network paths,  
  
wherein said transmission contains audio or video content.
2. The method of claim 2 wherein said transmission uses the Real Time Protocol (RTP).
3. The method of claim 3 wherein said transmission further uses the Session Initiation Protocol (SIP).
4. The method of claim 4 wherein the SIP signaling sequence of the transmission is maintained after said switching from the first network path to the one of a plurality of alternative network paths.

5. The method of claim 5 wherein the switch from the first network path to the one of a plurality of alternative network paths occurs as a result of a stream quality event.
6. The method of claim 5 wherein the switch from the first network path to the one of a plurality of alternative network paths occurs as a result of stream load balancing
7. The method of claim 5 wherein the switch from the first network path to the one of a plurality of alternative network paths occurs as a result of an administrator move
8. The method of claim 5 wherein the SIP server associated with the one of a plurality alternative network paths may authenticate the transmission before it is switched.
9. The method of claim 5 wherein the source device is a mobile device.
10. The method of claim 10 wherein one or more of said plurality of alternative network paths become available to the mobile device during roaming.
11. A communications network comprising  
  
a transmitting device;  
  
a receiving device;  
  
a network device;  
  
the transmitting device and receiving device operable to maintain a transmission over a first network path that is made up of one or more

- network links where at least one of the network links is to a local area network is remote from the transmitting device; and
- a network device operable to switch the transmission from the first network path to one of a plurality of alternative network paths without disrupting the transmission.
12. The system of claim 12 wherein said transmission contains audio or video content.
  13. The system of claim 13 wherein said transmission is made using the Real Time Protocol (RTP).
  14. The system of claim 14 wherein said transmission further uses the Session Initiation Protocol (SIP).
  15. The system of claim 15 wherein said transmission's SIP signaling sequence is maintained after said switching from the first network path to the one of a plurality of alternative network paths.
  16. The system of claim 16 wherein said switching from the first network path to the one of a plurality of alternative network paths occurs as a result of a stream quality event.
  17. The system of claim 16 wherein said switching from the first network path to the one of a plurality of alternative network paths occurs as a result of stream load balancing.

18. The system of claim 16 wherein said switching from the first network path to the one of a plurality of alternative network paths occurs as a result of an administrator move.
19. The system of claim 16 wherein the SIP server associated with the one of a plurality alternative network paths may authenticate the transmission before it is switched.
20. The system of claim 16 wherein the transmitting device is a mobile device.
21. The system of claim 21 wherein one or more of said plurality of alternative network paths become available to the mobile device during roaming.

ABSTRACT

A method for achieving multiple link quality of service for video and voice calls over Internet links, or over IP links running in private networks, is described. This method applies to both the non-mobile domain (alternate paths exist in one place at the same time) as well as the mobile domain (one path is used at any one place at a given time, but the user device roams from place to place). This method can be implemented as either computer software or other digital logic (ASIC or FPGA). Using this invention, voice and video calls can be moved at will from one path to another, as many times as required during a single conversation, without breaking the RTP voice or video payload stream. The benefit is that embodiments of this invention have a significantly higher probability that a call never breaks under various conditions of quality degrade. This includes the case of link and router failures, which are treated as a special case of quality degrade in the context of voice and video

## Electronic Acknowledgement Receipt

|                                             |                                                                                        |
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| <b>EFS ID:</b>                              | 10010976                                                                               |
| <b>Application Number:</b>                  | 12137258                                                                               |
| <b>International Application Number:</b>    |                                                                                        |
| <b>Confirmation Number:</b>                 | 7163                                                                                   |
| <b>Title of Invention:</b>                  | METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL |
| <b>First Named Inventor/Applicant Name:</b> | BILL CHIN                                                                              |
| <b>Customer Number:</b>                     | 34313                                                                                  |
| <b>Filer:</b>                               | Dana M. Zottola/Anita Chou                                                             |
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|-----------------|-------------------------------|-----------------------------|----------------------------------------------------|------------------|------------------|
| 1               | Miscellaneous Incoming Letter | ASPEN4005RespCorrectApp.pdf | 117943<br>54b2b2dc4dea8f95e17402e925d9677478a91c57 | no               | 1                |

### Warnings:

### Information:

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| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                       |                                                        |            |    |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                            |                                       |                                                        |            |    |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                            | ASPEN4005RevSpec.pdf                  | 200647<br>3c6d329dbd8abfa46643449346afe9b3af66<br>60fd | yes        | 21 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Multipart Description/PDF files in .zip description</b> |                                       |                                                        |            |    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Document Description</b>                                |                                       | <b>Start</b>                                           | <b>End</b> |    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Specification                                              |                                       | 1                                                      | 16         |    |
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| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                       |                                                        |            |    |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                            |                                       |                                                        |            |    |
| <b>Total Files Size (in bytes):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                            |                                       | 412915                                                 |            |    |
| <p><b>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</b></p> <p><b><u>New Applications Under 35 U.S.C. 111</u></b><br/> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b><br/> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b><br/> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p> |                                                            |                                       |                                                        |            |    |

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BILL CHIN

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7163

TITLE OF INVENTION: METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL

| APPLN. TYPE | SMALL ENTITY | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE |
|-------------|--------------|---------------|---------------------|----------------------|------------------|----------|
|-------------|--------------|---------------|---------------------|----------------------|------------------|----------|

nonprovisional

YES

\$755

\$300

\$0

\$1055

05/04/2011

| EXAMINER | ART UNIT | CLASS-SUBCLASS |
|----------|----------|----------------|
|----------|----------|----------------|

HARPER, KEVIN C

2462

370-235000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Orrick Herrington &amp; Sutcliffe, LLP

2

3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY AND STATE OR COUNTRY)

Aspen Networks, Inc.

Santa Clara, California

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

☒ Issue Fee

☒ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

☐ A check is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 150665 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature /fabiomarino/

Date May 4, 2011

Typed or printed name Fabio Marino

Registration No. 43339

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

## Electronic Patent Application Fee Transmittal

|                                                |                                                                                        |                 |               |                             |
|------------------------------------------------|----------------------------------------------------------------------------------------|-----------------|---------------|-----------------------------|
| <b>Application Number:</b>                     | 12137258                                                                               |                 |               |                             |
| <b>Filing Date:</b>                            | 11-Jun-2008                                                                            |                 |               |                             |
| <b>Title of Invention:</b>                     | METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL |                 |               |                             |
| <b>First Named Inventor/Applicant Name:</b>    | BILL CHIN                                                                              |                 |               |                             |
| <b>Filer:</b>                                  | Dana M. Zottola/Anita Chou                                                             |                 |               |                             |
| <b>Attorney Docket Number:</b>                 | 18198-4005                                                                             |                 |               |                             |
| Filed as Small Entity                          |                                                                                        |                 |               |                             |
| <b>Utility under 35 USC 111(a) Filing Fees</b> |                                                                                        |                 |               |                             |
| <b>Description</b>                             | <b>Fee Code</b>                                                                        | <b>Quantity</b> | <b>Amount</b> | <b>Sub-Total in USD(\$)</b> |
| <b>Basic Filing:</b>                           |                                                                                        |                 |               |                             |
| <b>Pages:</b>                                  |                                                                                        |                 |               |                             |
| <b>Claims:</b>                                 |                                                                                        |                 |               |                             |
| <b>Miscellaneous-Filing:</b>                   |                                                                                        |                 |               |                             |
| Publ. Fee- early, voluntary, or normal         | 1504                                                                                   | 1               | 300           | 300                         |
| <b>Petition:</b>                               |                                                                                        |                 |               |                             |
| <b>Patent-Appeals-and-Interference:</b>        |                                                                                        |                 |               |                             |
| <b>Post-Allowance-and-Post-Issuance:</b>       |                                                                                        |                 |               |                             |
| Utility Appl issue fee                         | 2501                                                                                   | 1               | 755           | 755                         |

| Description        | Fee Code | Quantity | Amount | Sub-Total in USD(\$) |
|--------------------|----------|----------|--------|----------------------|
| Extension-of-Time: |          |          |        |                      |
| Miscellaneous:     |          |          |        |                      |
| Total in USD (\$)  |          |          |        | 1055                 |

## Electronic Acknowledgement Receipt

|                                             |                                                                                        |
|---------------------------------------------|----------------------------------------------------------------------------------------|
| <b>EFS ID:</b>                              | 10019723                                                                               |
| <b>Application Number:</b>                  | 12137258                                                                               |
| <b>International Application Number:</b>    |                                                                                        |
| <b>Confirmation Number:</b>                 | 7163                                                                                   |
| <b>Title of Invention:</b>                  | METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL |
| <b>First Named Inventor/Applicant Name:</b> | BILL CHIN                                                                              |
| <b>Customer Number:</b>                     | 34313                                                                                  |
| <b>Filer:</b>                               | Dana M. Zottola/Anita Chou                                                             |
| <b>Filer Authorized By:</b>                 | Dana M. Zottola                                                                        |
| <b>Attorney Docket Number:</b>              | 18198-4005                                                                             |
| <b>Receipt Date:</b>                        | 04-MAY-2011                                                                            |
| <b>Filing Date:</b>                         | 11-JUN-2008                                                                            |
| <b>Time Stamp:</b>                          | 15:03:05                                                                               |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                                            |

### Payment information:

|                                          |                 |
|------------------------------------------|-----------------|
| Submitted with Payment                   | yes             |
| Payment Type                             | Deposit Account |
| Payment was successfully received in RAM | \$ 1055         |
| RAM confirmation Number                  | 1380            |
| Deposit Account                          | 150665          |
| Authorized User                          |                 |

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

### File Listing:

| Document Number | Document Description        | File Name             | File Size(Bytes)/ Message Digest         | Multi Part /.zip | Pages (if appl.) |
|-----------------|-----------------------------|-----------------------|------------------------------------------|------------------|------------------|
| 1               | Issue Fee Payment (PTO-85B) | ASPEN4005IssueFee.pdf | 290213                                   | no               | 1                |
|                 |                             |                       | c1dca913cda8679331c0903ad2e9b71aa8bf0a38 |                  |                  |

#### Warnings:

#### Information:

|   |                         |              |                                          |    |   |
|---|-------------------------|--------------|------------------------------------------|----|---|
| 2 | Fee Worksheet (PTO-875) | fee-info.pdf | 31952                                    | no | 2 |
|   |                         |              | 38752795b8d6bf9dbda3685efd112183b76573fb |    |   |

#### Warnings:

#### Information:

|                              |  |  |        |
|------------------------------|--|--|--------|
| Total Files Size (in bytes): |  |  | 322165 |
|------------------------------|--|--|--------|

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

#### New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

#### National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

#### New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



# UNITED STATES PATENT AND TRADEMARK OFFICE

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Address: COMMISSIONER FOR PATENTS  
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Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO.                                                                                                                                  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.         | CONFIRMATION NO.       |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------|-----------------------------|------------------------|
| 12/137,258                                                                                                                                       | 06/11/2008  | BILL CHIN            | 18198-4005                  | 7163                   |
| 34313 7590 05/04/2011<br>ORRICK, HERRINGTON & SUTCLIFFE, LLP<br>IP PROSECUTION DEPARTMENT<br>4 PARK PLAZA<br>SUITE 1600<br>IRVINE, CA 92614-2558 |             |                      | EXAMINER<br>HARPER, KEVIN C |                        |
|                                                                                                                                                  |             |                      | ART UNIT<br>2462            | PAPER NUMBER           |
|                                                                                                                                                  |             |                      | MAIL DATE<br>05/04/2011     | DELIVERY MODE<br>PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Response to Rule 312 Communication**

**Application No.**

12/137,258

**Examiner**

**Applicant(s)**

CHIN ET AL.

**Art Unit**

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

1. ☒ The amendment filed on 03 May 2011 under 37 CFR 1.312 has been considered, and has been:

a) ☒ entered.

b) ☐ entered as directed to matters of form not affecting the scope of the invention.

c) ☐ disapproved because the amendment was filed after the payment of the issue fee.

Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

d) ☐ disapproved. See explanation below.

e) ☐ entered in part. See explanation below.

B.Crittenden

**Publishing Division**



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| APPLICATION NO.                                                                                                                                  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.         | CONFIRMATION NO.       |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------|-----------------------------|------------------------|
| 12/137,258                                                                                                                                       | 06/11/2008  | BILL CHIN            | 18198-4005                  | 7163                   |
| 34313 7590 05/16/2011<br>ORRICK, HERRINGTON & SUTCLIFFE, LLP<br>IP PROSECUTION DEPARTMENT<br>4 PARK PLAZA<br>SUITE 1600<br>IRVINE, CA 92614-2558 |             |                      | EXAMINER<br>HARPER, KEVIN C |                        |
|                                                                                                                                                  |             |                      | ART UNIT<br>2462            | PAPER NUMBER           |
|                                                                                                                                                  |             |                      | MAIL DATE<br>05/16/2011     | DELIVERY MODE<br>PAPER |

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The time period for reply, if any, is set in the attached communication.



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P.O. Box 1450  
Alexandria, VA 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

Application No. : 12137258  
Applicant : Chin  
Filing Date : 06/11/2008  
Date Mailed : 05/16/2011

### NOTICE TO FILE CORRECTED APPLICATION PAPERS

#### *Notice of Allowance Mailed*

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

**Applicant is given 2 month(s) from the mail date of this Notice within which to respond.**

The informalities requiring correction are indicated in the attachment(s). If the informality pertains to the abstract, specification (including claims) or drawings, the informality must be corrected with an amendment in compliance with 37 CFR 1.121 (or, if the application is a reissue application, 37 CFR 1.173). Such an amendment may be filed after payment of the issue fee if limited to correction of informalities noted herein. See Waiver of 37 CFR 1.312 for Documents Required by the Office of Patent Publication, 1280 Off. Gaz. Patent Office 918 (March 23, 2004). In addition, if the informality is not corrected until after payment of the issue fee, for purposes of 35 U.S.C. 154(b)(1)(iv), "all outstanding requirements" will be considered to have been satisfied when the informality has been corrected. A failure to respond within the above-identified time period will result in the application being ABANDONED. **This period for reply is NOT extendable under 37 CFR 1.136(a).**

See attachment(s).

*A copy of this notice **MUST** be returned with the reply. Please address response to  
"Mail Stop Issue Fee, Commissioner for Patents,  
P.O. Box 1450, Alexandria, VA 22313-1450".*

/Marty Willis/  
Publication Branch  
Office of Data Management  
(571) 272-4200

**IDENTIFICATION OF SPECIFICATION/DRAWING INCONSISTENCIES**

- ☐ On Page of the specification there is a brief description of FIG. , but the drawings filed do not include a drawing with that designation. Applicant must respond either by supplying the omitted drawing or by amending the specification to remove all references to that drawing.
- ☒ The drawings filed 08/19/2008 include FIG. 2b, but the specification's brief description of the drawings does not describe a drawing with that designation. Applicant must respond either by amending the specification to add a brief description of that drawing or by correcting the drawings to remove the drawing in question.
- ☐ Drawings are present in the application and are referred to in the detailed description of the invention, but the specification does not contain a brief description of the drawings as required by 37 CFR 1.74 and 37 CFR 1.77(b)(8).
- ☐ Page of the specification refers to FIG. , but no drawing with that designation is described in the brief description of the drawings and no drawing with that designation is present in the application. Applicant must respond either by amending the specification to remove all references to that drawing, or by supplying that drawing and amending the specification to add a brief description of it.
- ☐ OTHER:
- ☐ COMMENTS:

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 12/137,258 Confirmation No.: 7163  
Applicant : Bill Chin  
Filing Date : June 11, 2008  
Title : METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR  
VOICE AND VIDEO OVER INTERNET PROTOCOL  
Group Art Unit : 2462  
Examiner : Kevin C. Harper  
Docket No. : 18198-4005  
Customer No. : 34313

Mail Stop: Issue Fee  
Commissioner for Patents  
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RESPONSE TO NOTICE TO FILE CORRECTED PAPERS

Sir:

This paper is responsive to the Notice to File Corrected Papers dated May 16, 2011 (copy attached).

Amendments to the specification begin on page 2 of this paper

Remarks begin on page 3 of this paper.

REMARKS

The present amendment is being made to add the brief description of Figure 2b as requested by the Patent Office. It is respectfully submitted that no new matter has been added.

The Commissioner is hereby authorized to charge any necessary indicated fees in connection with this Amendment to Deposit Account No. 15-0665.

Respectfully submitted,  
Orrick, Herrington & Sutcliffe LLP

Dated: July 18, 2011

By /Dana M. Zottola/  
Dana M. Zottola  
Reg. No. 65,942

Four Park Plaza, Suite 1600  
Irvine, California 92614-2558  
(650) 614-7660  
(650) 614-7401 (facsimile)



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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 12/137,258      | 06/11/2008  | BILL CHIN            | 18198-4005          | 7163             |

|                                     |      |            |
|-------------------------------------|------|------------|
| 34313                               | 7590 | 05/16/2011 |
| ORRICK, HERRINGTON & SUTCLIFFE, LLP |      |            |
| IP PROSECUTION DEPARTMENT           |      |            |
| 4 PARK PLAZA                        |      |            |
| SUITE 1600                          |      |            |
| IRVINE, CA 92614-2558               |      |            |

|                 |  |
|-----------------|--|
| EXAMINER        |  |
| HARPER, KEVIN C |  |

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
| 2463     |              |

|            |               |
|------------|---------------|
| MAIL DATE  | DELIVERY MODE |
| 05/16/2011 | PAPER         |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

ORRICK IP PROSECUTION

Due Date 5/16/11

Action Item Directed for reply

Resp Atty FM

Docketed by MB

Entered 5/23/11

RECEIVED

MAY 23 2011



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents  
United States Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450  
www.uspto.gov

Application No. : 12137258  
Applicant : Chin  
Filing Date : 06/11/2008  
Date Mailed : 05/16/2011

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See attachment(s).

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P.O. Box 1450, Alexandria, VA 22313-1450".*

/Marty Willis/  
Publication Branch  
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**IDENTIFICATION OF SPECIFICATION/DRAWING INCONSISTENCIES**

- ☐ On Page of the specification there is a brief description of FIG. , but the drawings filed do not include a drawing with that designation. Applicant must respond either by supplying the omitted drawing or by amending the specification to remove all references to that drawing.
- ☒ The drawings filed 08/19/2008 include FIG. 2b, but the specification's brief description of the drawings does not describe a drawing with that designation. Applicant must respond either by amending the specification to add a brief description of that drawing or by correcting the drawings to remove the drawing in question.
- ☐ Drawings are present in the application and are referred to in the detailed description of the invention, but the specification does not contain a brief description of the drawings as required by 37 CFR 1.74 and 37 CFR 1.77(b)(8).
- ☐ Page of the specification refers to FIG. , but no drawing with that designation is described in the brief description of the drawings and no drawing with that designation is present in the application. Applicant must respond either by amending the specification to remove all references to that drawing, or by supplying that drawing and amending the specification to add a brief description of it.
- ☐ OTHER:
- ☐ COMMENTS:

## Electronic Acknowledgement Receipt

|                                             |                                                                                        |
|---------------------------------------------|----------------------------------------------------------------------------------------|
| <b>EFS ID:</b>                              | 10544876                                                                               |
| <b>Application Number:</b>                  | 12137258                                                                               |
| <b>International Application Number:</b>    |                                                                                        |
| <b>Confirmation Number:</b>                 | 7163                                                                                   |
| <b>Title of Invention:</b>                  | METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL |
| <b>First Named Inventor/Applicant Name:</b> | BILL CHIN                                                                              |
| <b>Customer Number:</b>                     | 34313                                                                                  |
| <b>Filer:</b>                               | Dana M. Zottola/Susan Principe                                                         |
| <b>Filer Authorized By:</b>                 | Dana M. Zottola                                                                        |
| <b>Attorney Docket Number:</b>              | 18198-4005                                                                             |
| <b>Receipt Date:</b>                        | 18-JUL-2011                                                                            |
| <b>Filing Date:</b>                         | 11-JUN-2008                                                                            |
| <b>Time Stamp:</b>                          | 18:28:22                                                                               |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                                            |

### Payment information:

|                        |    |
|------------------------|----|
| Submitted with Payment | no |
|------------------------|----|

### File Listing:

| Document Number | Document Description                              | File Name                    | File Size(Bytes)/<br>Message Digest                | Multi Part /.zip | Pages (if appl.) |
|-----------------|---------------------------------------------------|------------------------------|----------------------------------------------------|------------------|------------------|
| 1               | Applicant Response to Pre-Exam Formalities Notice | 4005CorrPapers_7_18_2011.pdf | 348391<br>82ae03b85992cc67e2306416a4144ba505d5c659 | no               | 3                |

### Warnings:

### Information:

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                   |                                    |                                                    |    |   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------------|----------------------------------------------------|----|---|
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Applicant Response to Pre-Exam Formalities Notice | 4005CorrPapersNotice_7_18_2011.pdf | 593187<br>6ea38fb763264ba2fcd3798ac211cbec986e1a13 | no | 3 |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                   |                                    |                                                    |    |   |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                   |                                    |                                                    |    |   |
| <b>Total Files Size (in bytes):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                   |                                    | 941578                                             |    |   |
| <p><b>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</b></p> <p><b><u>New Applications Under 35 U.S.C. 111</u></b><br/> <b>If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</b></p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b><br/> <b>If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</b></p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b><br/> <b>If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</b></p> |                                                   |                                    |                                                    |    |   |

### **AMENDMENTS TO THE SPECIFICATION**

Please replace paragraph [0019] with the following paragraph:

[0019] FIG. 1, FIG. 2, FIG. 2b, FIG. 3 and FIG. 6 depict some but not all embodiments of the invention.



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| APPLICATION NO.                                                                                                                                  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.         | CONFIRMATION NO.       |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------|-----------------------------|------------------------|
| 12/137,258                                                                                                                                       | 06/11/2008  | BILL CHIN            | 18198-4005                  | 7163                   |
| 34313 7590 07/27/2011<br>ORRICK, HERRINGTON & SUTCLIFFE, LLP<br>IP PROSECUTION DEPARTMENT<br>4 PARK PLAZA<br>SUITE 1600<br>IRVINE, CA 92614-2558 |             |                      | EXAMINER<br>HARPER, KEVIN C |                        |
|                                                                                                                                                  |             |                      | ART UNIT<br>2462            | PAPER NUMBER           |
|                                                                                                                                                  |             |                      | MAIL DATE<br>07/27/2011     | DELIVERY MODE<br>PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                                           |                 |              |
|-------------------------------------------|-----------------|--------------|
| <b>Response to Rule 312 Communication</b> | Application No. | Applicant(s) |
|                                           | 12/137,258      | CHIN ET AL.  |
|                                           | Examiner        | Art Unit     |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

1. ☒ The amendment filed on 18 July 2011 under 37 CFR 1.312 has been considered, and has been:

a) ☒ entered.

b) ☐ entered as directed to matters of form not affecting the scope of the invention.

c) ☐ disapproved because the amendment was filed after the payment of the issue fee.

Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

d) ☐ disapproved. See explanation below.

e) ☐ entered in part. See explanation below.

*Charles Bower*  
Publishing Division



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| APPLICATION NO. | ISSUE DATE | PATENT NO. | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|------------|------------|---------------------|------------------|
| 12/137,258      | 08/30/2011 | 8009554    | 18198-4005          | 7163             |

34313 7590 08/10/2011  
ORRICK, HERRINGTON & SUTCLIFFE, LLP  
IP PROSECUTION DEPARTMENT  
4 PARK PLAZA  
SUITE 1600  
IRVINE, CA 92614-2558

## ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

### **Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)** (application filed on or after May 29, 2000)

The Patent Term Adjustment is 172 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

BILL CHIN, San Jose, CA;  
Sajit Bhaskaran, Sunnyvale, CA;  
Robin Mavunkel, Sunnyvale, CA;

## POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).

I hereby appoint



Practitioners associated with the Customer Number:

31824

OR



Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

| Name | Registration Number | Name | Registration Number |
|------|---------------------|------|---------------------|
|      |                     |      |                     |
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|      |                     |      |                     |
|      |                     |      |                     |
|      |                     |      |                     |
|      |                     |      |                     |

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(b) to:



The address associated with Customer Number.

31824

OR

|                                                  |       |     |  |
|--------------------------------------------------|-------|-----|--|
| <input type="checkbox"/> Firm or Individual Name |       |     |  |
| Address                                          |       |     |  |
| City                                             | State | Zip |  |
| Country                                          |       |     |  |
| Telephone                                        | Email |     |  |

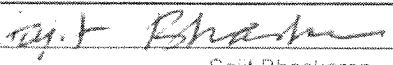
Assignee Name and Address:

Aspen Networks Inc.  
3777 Stevens Creek Blvd., #320  
Santa Clara, CA 95051

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

### SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

|           |                                                                                     |           |              |
|-----------|-------------------------------------------------------------------------------------|-----------|--------------|
| Signature |  | Date      | June 8 2012  |
| Name      | Sajit Bhaskaran                                                                     | Telephone | 408.625.7890 |
| Title     | Chief Executive Officer                                                             |           |              |

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

## Electronic Acknowledgement Receipt

|                                             |                                                                                        |
|---------------------------------------------|----------------------------------------------------------------------------------------|
| <b>EFS ID:</b>                              | 13020610                                                                               |
| <b>Application Number:</b>                  | 12137258                                                                               |
| <b>International Application Number:</b>    |                                                                                        |
| <b>Confirmation Number:</b>                 | 7163                                                                                   |
| <b>Title of Invention:</b>                  | METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL |
| <b>First Named Inventor/Applicant Name:</b> | BILL CHIN                                                                              |
| <b>Customer Number:</b>                     | 34313                                                                                  |
| <b>Filer:</b>                               | Nisha Agarwal                                                                          |
| <b>Filer Authorized By:</b>                 |                                                                                        |
| <b>Attorney Docket Number:</b>              | 18198-4005                                                                             |
| <b>Receipt Date:</b>                        | 14-JUN-2012                                                                            |
| <b>Filing Date:</b>                         | 11-JUN-2008                                                                            |
| <b>Time Stamp:</b>                          | 19:40:32                                                                               |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                                            |

### Payment information:

|                        |    |
|------------------------|----|
| Submitted with Payment | no |
|------------------------|----|

### File Listing:

| Document Number | Document Description | File Name                    | File Size(Bytes)/<br>Message Digest                | Multi Part /.zip | Pages (if appl.) |
|-----------------|----------------------|------------------------------|----------------------------------------------------|------------------|------------------|
| 1               |                      | 091066-0014_Stmt373b_POA.pdf | 147075<br>e1fc28eb8e37993ccdaeeea75d65b3ef35f93d11 | yes              | 2                |

| Multipart Description/PDF files in .zip description |  |       |     |
|-----------------------------------------------------|--|-------|-----|
| Document Description                                |  | Start | End |
| Assignee showing of ownership per 37 CFR 3.73(b).   |  | 1     | 1   |
| Power of Attorney                                   |  | 2     | 2   |

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**New Applications Under 35 U.S.C. 111**  
**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**  
**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**  
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**STATEMENT UNDER 37 CFR 3.73(b)**Applicant/Patent Owner: Bill Chin, et al.Application No./Patent No.: 12/137,258Filed/Issue Date: June 11, 2008Titled: METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOLAspen Networks Inc. \_\_\_\_\_, a corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☒ the assignee of the entire right, title, and interest in;
2. ☐ an assignee of less than the entire right, title, and interest in  
(The extent (by percentage) of its ownership interest is \_\_\_\_\_ %); or
3. ☐ the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

the patent application/patent identified above, by virtue of either:

- A. ☒ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 022373, Frame 0097, or for which a copy therefore is attached.

OR

- B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: \_\_\_\_\_ To: \_\_\_\_\_

The document was recorded in the United States Patent and Trademark Office at

Reel \_\_\_\_\_, Frame \_\_\_\_\_, or for which a copy thereof is attached.

2. From: \_\_\_\_\_ To: \_\_\_\_\_

The document was recorded in the United States Patent and Trademark Office at

Reel \_\_\_\_\_, Frame \_\_\_\_\_, or for which a copy thereof is attached.

3. From: \_\_\_\_\_ To: \_\_\_\_\_

The document was recorded in the United States Patent and Trademark Office at

Reel \_\_\_\_\_, Frame \_\_\_\_\_, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

- ☒ As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

Signature

June 13, 2012

Date

Nisha Agarwal, Reg. No. 67,039

Attorney for Assignee

Printed or Typed Name

Title

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|--------------------|-----------------------|-----------------------|------------------------|
| 12/137,258         | 06/11/2008            | BILL CHIN             | 18198-4005             |

31824  
MCDERMOTT WILL & EMERY LLP  
600 13th Street, NW  
Washington, DC 20005-3096

**CONFIRMATION NO. 7163**  
**POA ACCEPTANCE LETTER**



Date Mailed: 06/21/2012

**NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY**

This is in response to the Power of Attorney filed 06/14/2012.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/ddinh/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|--------------------|-----------------------|-----------------------|------------------------|
| 12/137,258         | 06/11/2008            | BILL CHIN             | 18198-4005             |

34313  
ORRICK, HERRINGTON & SUTCLIFFE, LLP  
IP PROSECUTION DEPARTMENT  
2050 Main Street, Suite 1100  
IRVINE, CA 92614

**CONFIRMATION NO. 7163**  
**POWER OF ATTORNEY NOTICE**



Date Mailed: 06/21/2012

## NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/14/2012.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/ddinh/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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**POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO**

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).

I hereby appoint:

☒ Practitioners associated with the Customer Number:

120954

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

| Name | Registration Number | Name | Registration Number |
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|      |                     |      |                     |
|      |                     |      |                     |
|      |                     |      |                     |
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|      |                     |      |                     |
|      |                     |      |                     |

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(b) to:

☒ The address associated with Customer Number:

120954

OR

|                                                  |       |     |       |
|--------------------------------------------------|-------|-----|-------|
| <input type="checkbox"/> Firm or Individual Name |       |     |       |
| Address                                          |       |     |       |
| City                                             | State | Zip |       |
| Country                                          |       |     |       |
| Telephone                                        |       |     | Email |

Assignee Name and Address:

ASPEN NETWORKS, INC.  
 3777 STEVENS CREEK BOULEVARD, SUITE 330  
 SANTA CLARA, CALIFORNIA 95051

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

**SIGNATURE of Assignee of Record**

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

|           |                                                                                     |           |            |
|-----------|-------------------------------------------------------------------------------------|-----------|------------|
| Signature |  | Date      | 4/11/2018  |
| Name      | SAIT B BHASKARAN                                                                    | Telephone | 4086257890 |
| Title     | CEO                                                                                 |           |            |

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**STATEMENT UNDER 37 CFR 3.73(b)**

Applicant/Patent Owner: ASPEN NETWORKS, INC.

Application No./Patent No.: 12/137,258 Filed/Issue Date: 06/11/2008

Titled: METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL

ASPEN NETWORKS, INC., a Corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☒ the assignee of the entire right, title, and interest in;
2. ☐ an assignee of less than the entire right, title, and interest in  
(The extent (by percentage) of its ownership interest is \_\_\_\_\_ %); or
3. ☐ the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

the patent application/patent identified above, by virtue of either:

A. ☒ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 022373, Frame 0097, or for which a copy therefore is attached.

OR

B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: \_\_\_\_\_ To: \_\_\_\_\_

The document was recorded in the United States Patent and Trademark Office at

Reel \_\_\_\_\_, Frame \_\_\_\_\_, or for which a copy thereof is attached.

2. From: \_\_\_\_\_ To: \_\_\_\_\_

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3. From: \_\_\_\_\_ To: \_\_\_\_\_

The document was recorded in the United States Patent and Trademark Office at

Reel \_\_\_\_\_, Frame \_\_\_\_\_, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☒ As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Benjamin B. Matthew/

Signature

April 12, 2018

Date

Benjamin B. Matthew

Printed or Typed Name

Attorney for Applicant

Title

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

## Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

## Electronic Acknowledgement Receipt

|                                             |                                                                                        |
|---------------------------------------------|----------------------------------------------------------------------------------------|
| <b>EFS ID:</b>                              | 32327769                                                                               |
| <b>Application Number:</b>                  | 12137258                                                                               |
| <b>International Application Number:</b>    |                                                                                        |
| <b>Confirmation Number:</b>                 | 7163                                                                                   |
| <b>Title of Invention:</b>                  | METHOD FOR MULTIPLE LINK QUALITY OF SERVICE FOR VOICE AND VIDEO OVER INTERNET PROTOCOL |
| <b>First Named Inventor/Applicant Name:</b> | BILL CHIN                                                                              |
| <b>Customer Number:</b>                     | 31824                                                                                  |
| <b>Filer:</b>                               | Benjamin Bainbridge Matthew/April Skovmand                                             |
| <b>Filer Authorized By:</b>                 | Benjamin Bainbridge Matthew                                                            |
| <b>Attorney Docket Number:</b>              | 091066-0014                                                                            |
| <b>Receipt Date:</b>                        | 12-APR-2018                                                                            |
| <b>Filing Date:</b>                         | 11-JUN-2008                                                                            |
| <b>Time Stamp:</b>                          | 18:18:13                                                                               |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                                            |

### Payment information:

|                        |    |
|------------------------|----|
| Submitted with Payment | no |
|------------------------|----|

### File Listing:

| Document Number | Document Description | File Name                    | File Size(Bytes)/<br>Message Digest                | Multi Part /.zip | Pages (if appl.) |
|-----------------|----------------------|------------------------------|----------------------------------------------------|------------------|------------------|
| 1               | Power of Attorney    | 093046_592130_POA_041218.pdf | 831680<br>8f96c06e6e7a957d39eae791c6d98cd8ca8c8f86 | no               | 1                |

### Warnings:

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                               |                               |                                          |        |   |
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| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                               |                               |                                          |        |   |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Assignee showing of ownership per 37 CFR 3.73 | 093046_592130_373b_041218.pdf | 104289                                   | no     | 2 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                               |                               | 1e4adea27b6331286ae12ef3817625e8cc4311db |        |   |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                               |                               |                                          |        |   |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                               |                               |                                          |        |   |
| Total Files Size (in bytes):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                               |                               |                                          | 935969 |   |
| <p><b>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</b></p> <p><b><u>New Applications Under 35 U.S.C. 111</u></b><br/> <b>If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</b></p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b><br/> <b>If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</b></p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b><br/> <b>If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</b></p> |                                               |                               |                                          |        |   |



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| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|--------------------|-----------------------|-----------------------|------------------------|
| 12/137,258         | 06/11/2008            | BILL CHIN             | 091066-0014            |

120954  
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1000 Louisiana Street, 53rd Floor  
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**CONFIRMATION NO. 7163**  
**POA ACCEPTANCE LETTER**



Date Mailed: 04/18/2018

**NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY**

This is in response to the Power of Attorney filed 04/12/2018.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/mtklemichael/



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|--------------------|-----------------------|-----------------------|------------------------|
| 12/137,258         | 06/11/2008            | BILL CHIN             | 091066-0014            |

**CONFIRMATION NO. 7163**

**POWER OF ATTORNEY NOTICE**



31824  
MCDERMOTT WILL & EMERY LLP  
The McDermott Building  
500 North Capitol Street, N.W.  
Washington, DC 20001

Date Mailed: 04/18/2018

**NOTICE REGARDING CHANGE OF POWER OF ATTORNEY**

This is in response to the Power of Attorney filed 04/12/2018.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/mtklemichael/