

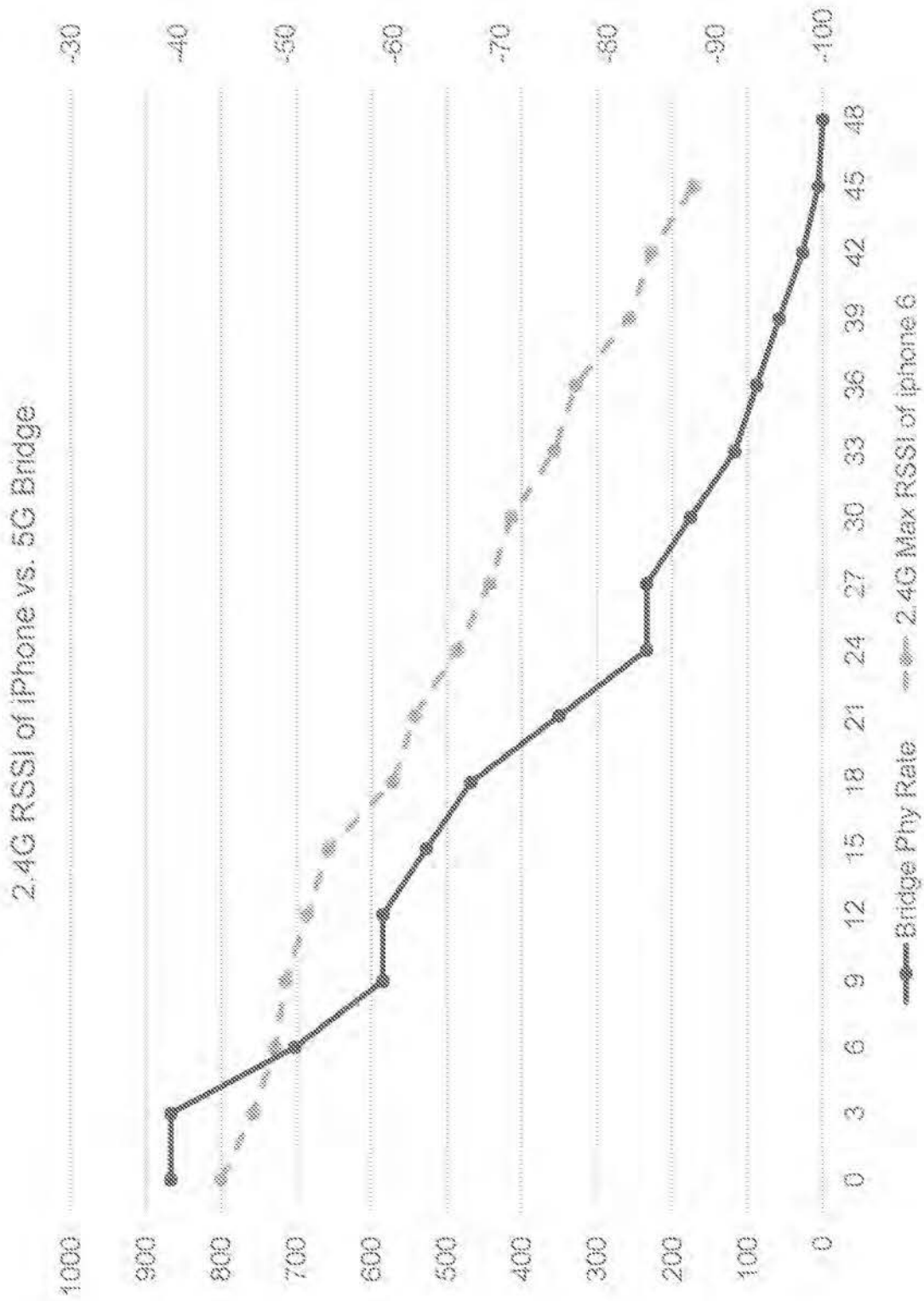


FIG. 14B

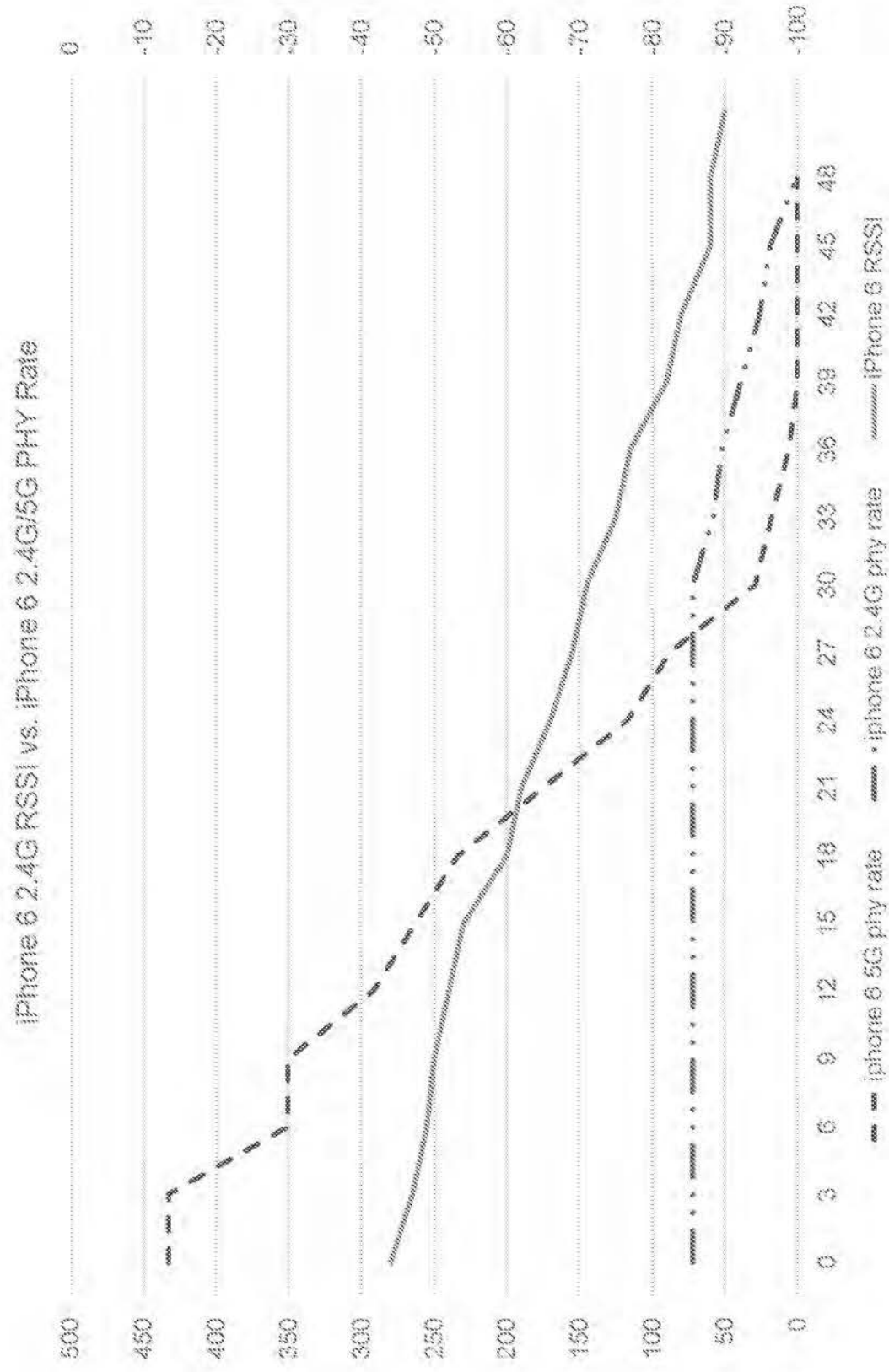


FIG. 14C

5G 80MHz 2x2 Rates

| MCS | Modulation | NSS | LGI PHY rate(Mbps) |
|-----|------------|-----|--------------------|
| 0   | BPSK       | 2   | 58.5               |
| 1   | QPSK       | 2   | 117                |
| 2   | QPSK       | 2   | 175.5              |
| 3   | 16-QAM     | 2   | 234                |
| 4   | 16-QAM     | 2   | 351                |
| 5   | 64-QAM     | 2   | 468                |
| 6   | 64-QAM     | 2   | 526.5              |
| 7   | 64-QAM     | 2   | 585                |
| 8   | 256-QAM    | 2   | 702                |
| 9   | 256-QAM    | 2   | 780                |

FIG. 15A

5G 80MHz 1x1 Rates

| MCS | Modulation | NSS | LGI PHY rate(Mbps) |
|-----|------------|-----|--------------------|
| 0   | BPSK       | 1   | 29.3               |
| 1   | QPSK       | 1   | 58.5               |
| 2   | QPSK       | 1   | 87.8               |
| 3   | 16-QAM     | 1   | 117                |
| 4   | 16-QAM     | 1   | 175.5              |
| 5   | 64-QAM     | 1   | 234.0              |
| 6   | 64-QAM     | 1   | 263.3              |
| 7   | 64-QAM     | 1   | 292.5              |
| 8   | 256-QAM    | 1   | 351.5              |
| 9   | 256-QAM    | 1   | 390.0              |

FIG. 15B

2.4G 20MHz 2x2 Rates

| MCS | Modulation | NSS | LGI PHY rate(Mbps) |
|-----|------------|-----|--------------------|
| 0   | BPSK       | 2   | 13                 |
| 1   | QPSK       | 2   | 26                 |
| 2   | QPSK       | 2   | 39                 |
| 3   | 16-QAM     | 2   | 52                 |
| 4   | 16-QAM     | 2   | 78                 |
| 5   | 64-QAM     | 2   | 104                |
| 6   | 64-QAM     | 2   | 117                |
| 7   | 64-QAM     | 2   | 130                |

FIG. 15C

2.4G 20MHz 1x1 Rates

| MCS | Modulation | NSS | LGI PHY rate(Mbps) |
|-----|------------|-----|--------------------|
| 0   | BPSK       | 1   | 6.5                |
| 1   | QPSK       | 1   | 13                 |
| 2   | QPSK       | 1   | 19.5               |
| 3   | 16-QAM     | 1   | 26                 |
| 4   | 16-QAM     | 1   | 39                 |
| 5   | 64-QAM     | 1   | 52                 |
| 6   | 64-QAM     | 1   | 58.5               |
| 7   | 64-QAM     | 1   | 65                 |

FIG. 15D

| Instruction | TPUT (mbps) |
|-------------|-------------|
| Too close   | > 180       |
| A bit close | 140-180     |
| Good        | 120-140     |
| A bit far   | 80-120      |
| Too far     | < 80        |

Example Instruction Mapping for  
Link-Orbi-5G

FIG. 16

| WLAN Coverage | TPUT (mbps) |
|---------------|-------------|
| Good          | > 30        |
| Ok            | 10-30       |
| Bad           | < 10        |

FIG. 17A

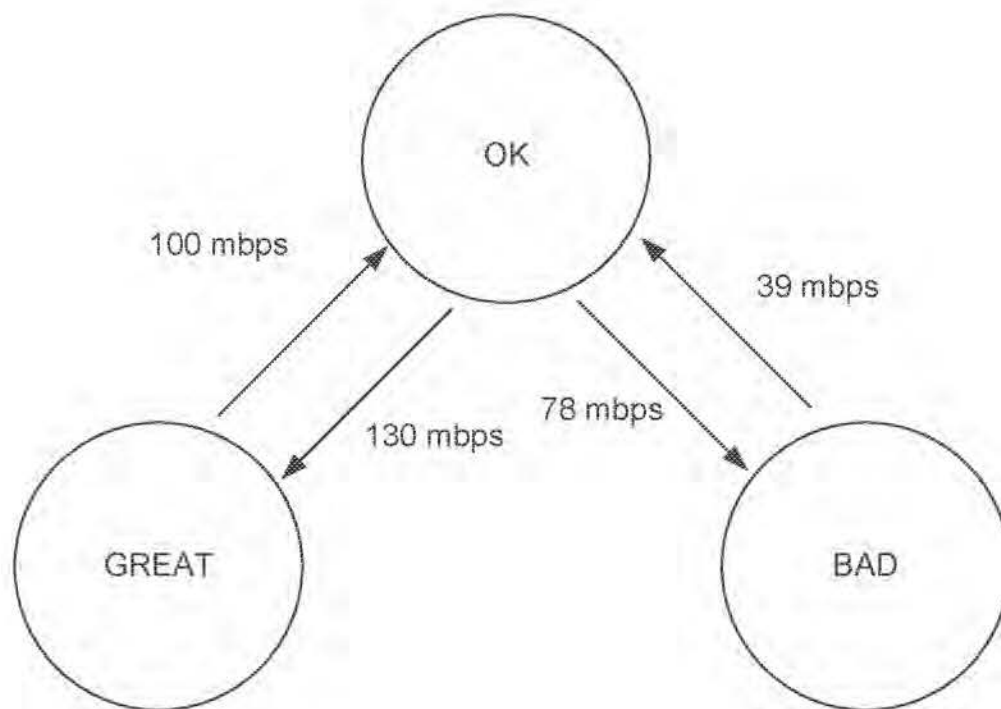


FIG. 17B

| Device             | 802.11v | 802.11k | 802.11r |
|--------------------|---------|---------|---------|
| iPhone 6s          | Yes     | Yes     | Yes     |
| iPhone 6s Plus     | Yes     | Yes     | Yes     |
| iPhone 6           | Yes     | Yes     | Yes     |
| iPhone 6 Plus      | Yes     | Yes     | Yes     |
| iPhone 5s          | Yes     | Yes     | Yes     |
| iPhone 5c          | Yes     | Yes     | Yes     |
| iPad Air           | Yes     | Yes     | Yes     |
| iPad Air 2         | Yes     | Yes     | Yes     |
| iPad Mini 3        | Yes     | Yes     | Yes     |
| iPad Mini 2 Retina | Yes     | Yes     | Yes     |

FIG. 18A

| Device    | 802.11v | 802.11k | 802.11r |
|-----------|---------|---------|---------|
| Galaxy s6 | No      | Yes     | Yes     |
| Galaxy s5 | No      | Yes     | Yes     |
| Galaxy s4 | No      | Yes     | Yes     |
| HTC One   | Yes     | Yes     | Yes     |

FIG. 18B

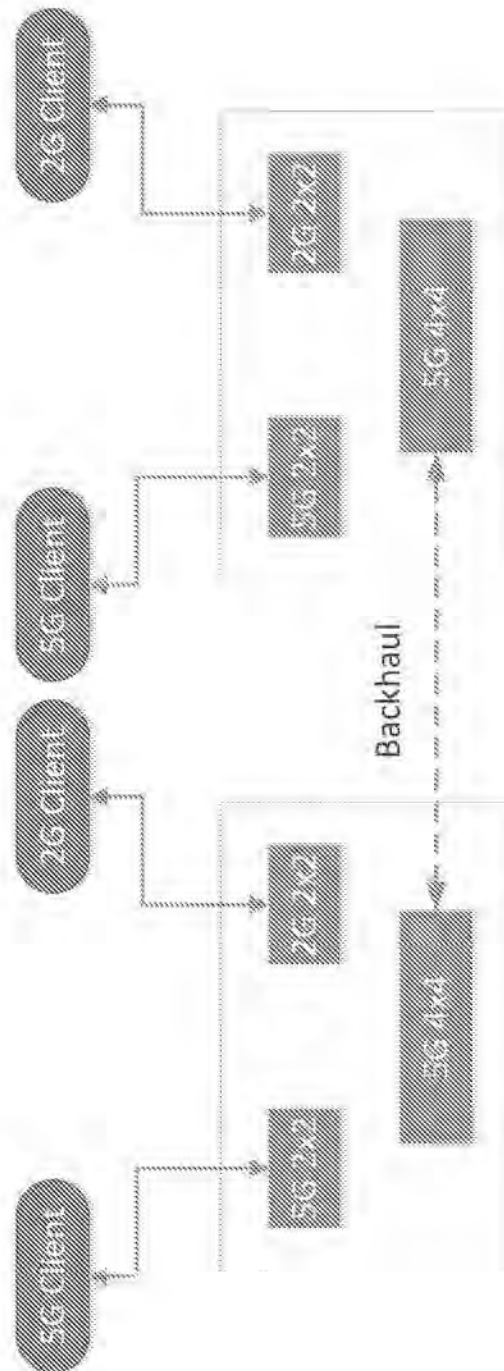
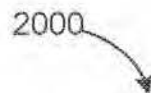


FIG. 19

2000



Rate Estimation Process Based on Device Class

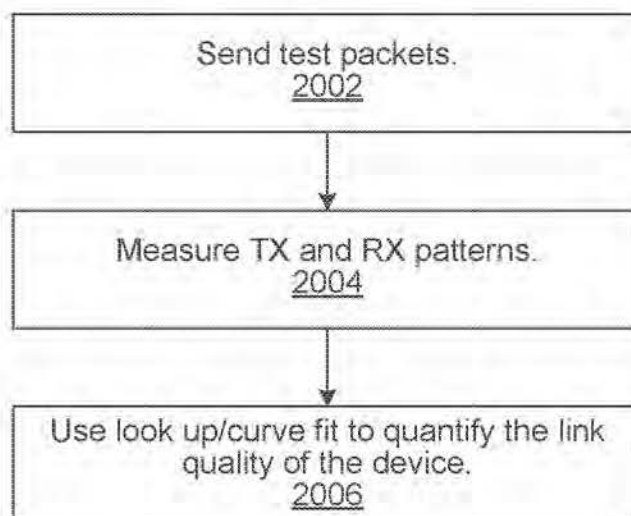
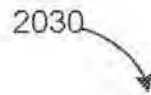


FIG. 20A

2030



Characterization of Device Type  
and Collection of Training Data

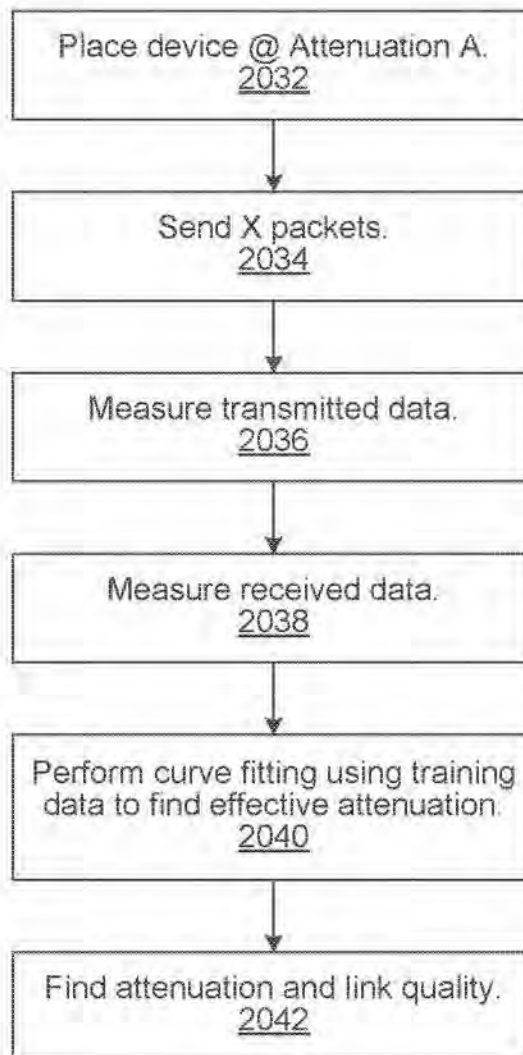
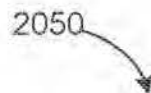


FIG. 20B

2050



Device Classification

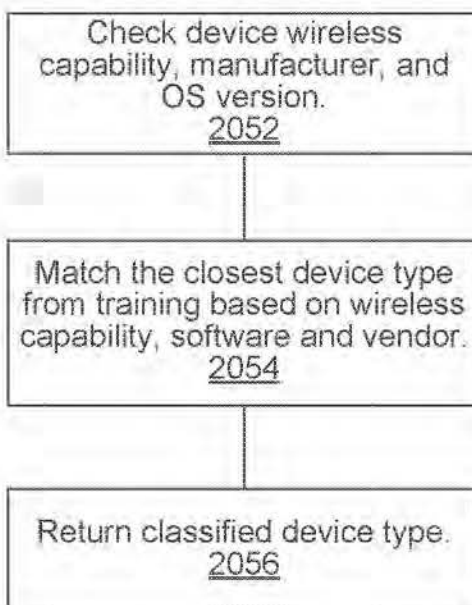


FIG. 20C

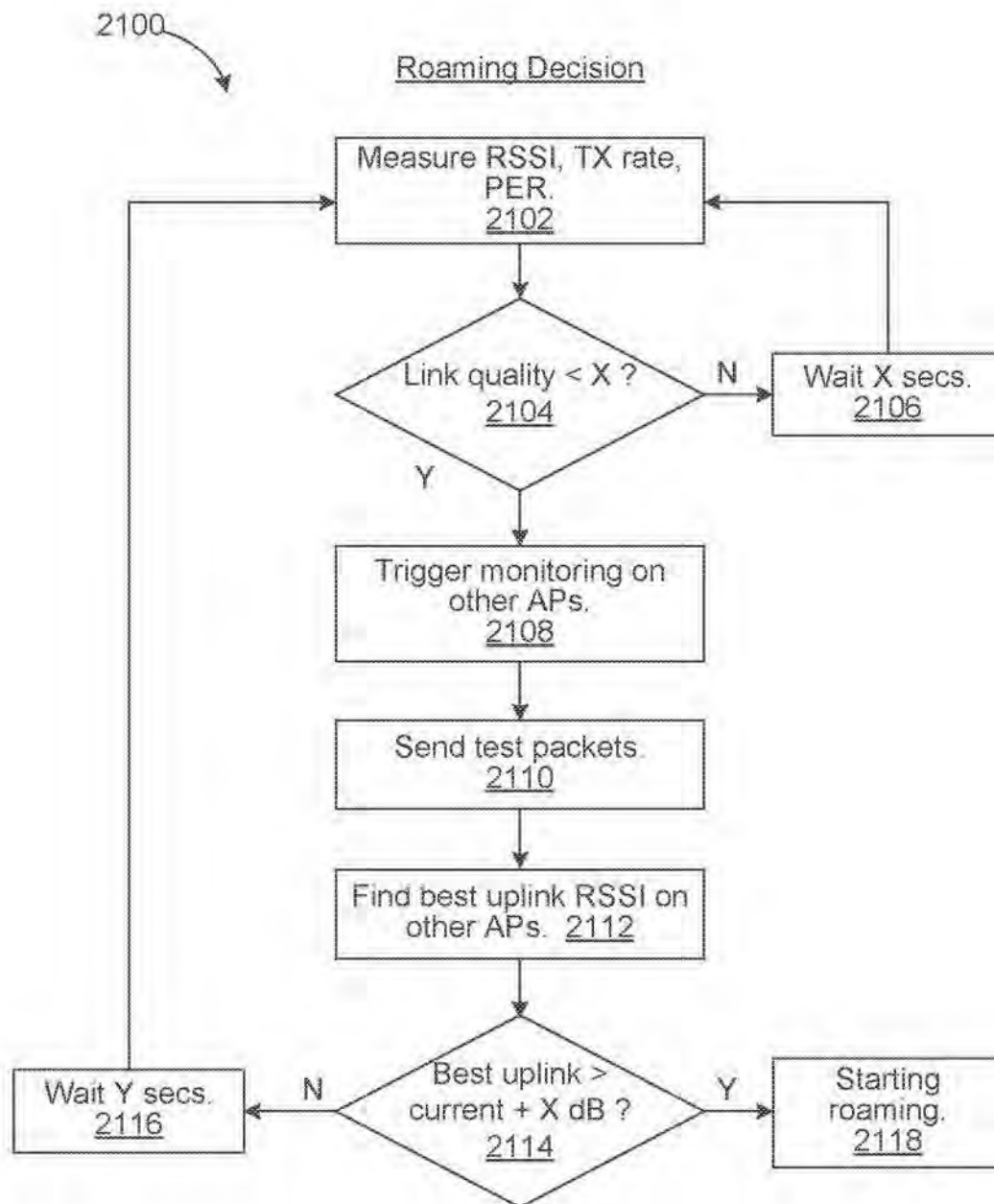


FIG. 21

2200

Evaluate Backhaul

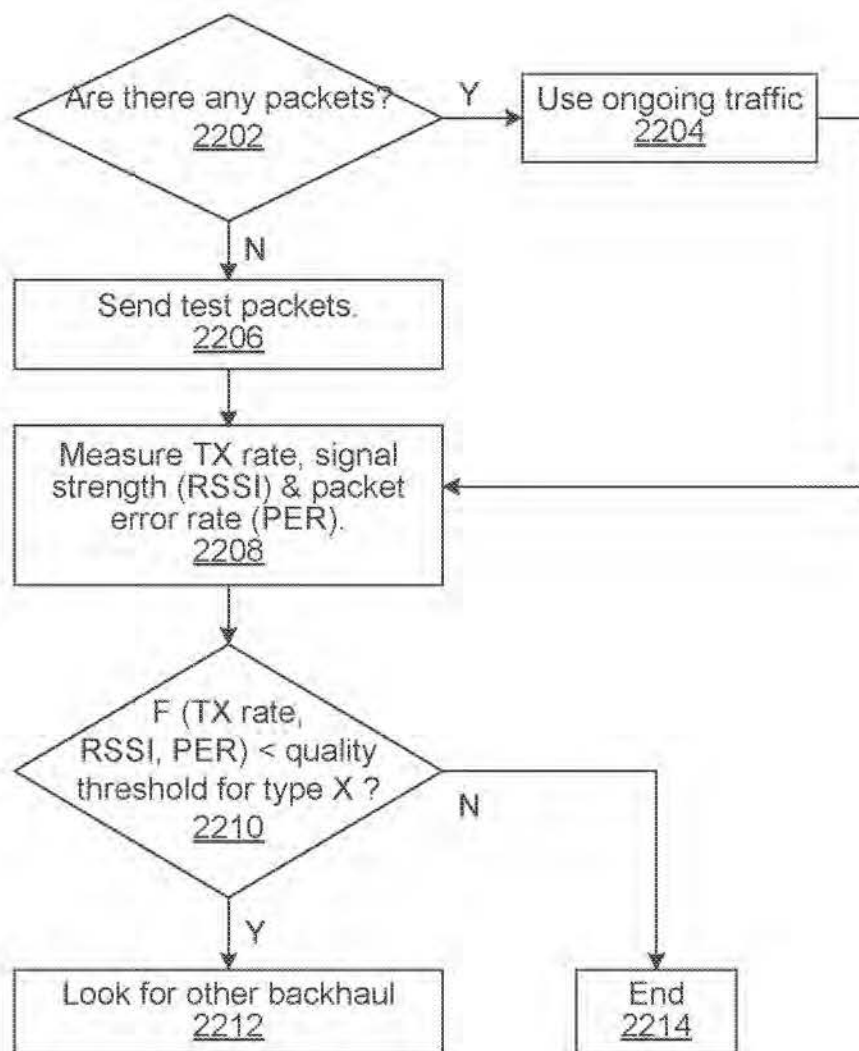


FIG. 22A

2230

Finding Alternative Backhaul

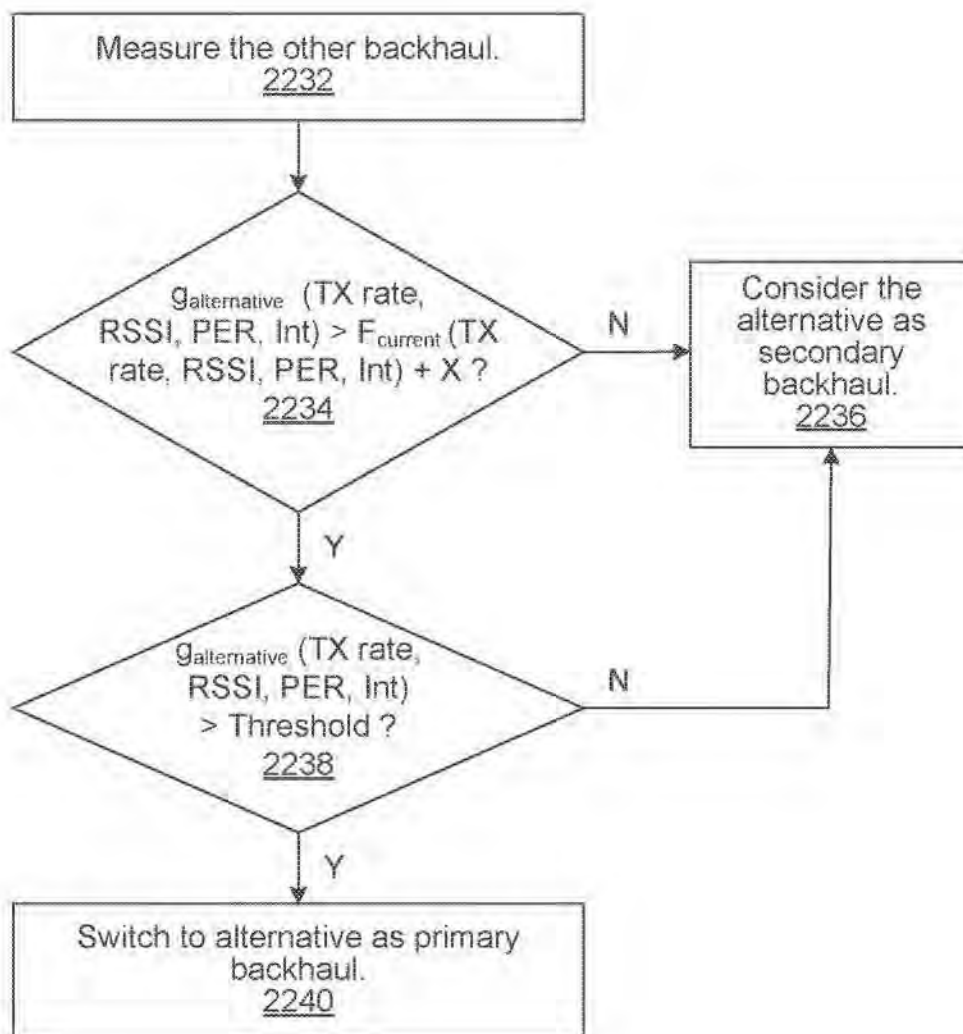


FIG. 22B

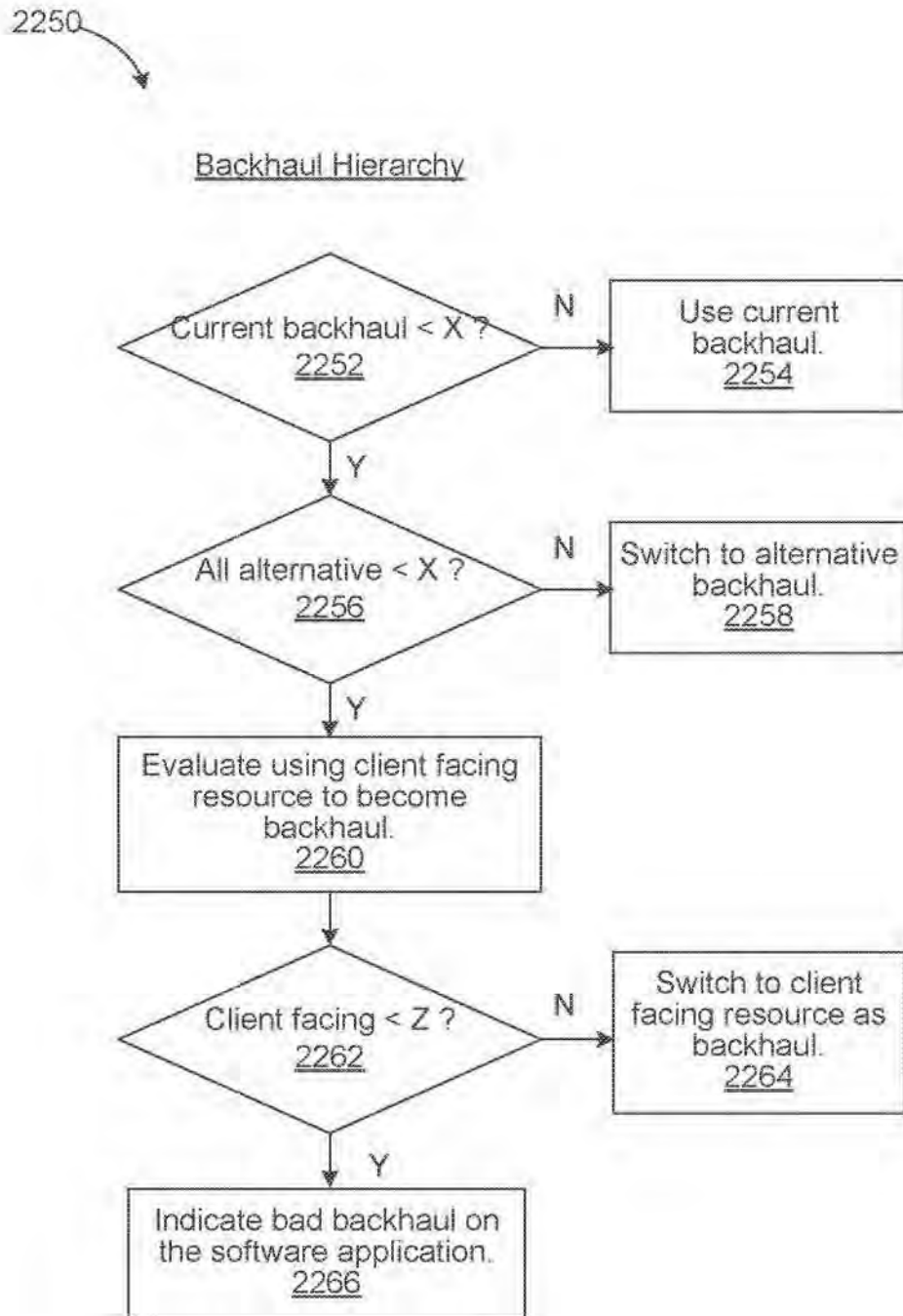


FIG. 22C

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Application Number: 15287711

Document Date: 10/06/2016

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# PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number  
15/287,711

## APPLICATION AS FILED - PART I

| (Column 1)                                                                |                                                                                                                                                                                                                               | (Column 2)   | SMALL ENTITY |         | OR | OTHER THAN SMALL ENTITY |         |
|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|---------|----|-------------------------|---------|
| FOR                                                                       | NUMBER FILED                                                                                                                                                                                                                  | NUMBER EXTRA | RATE(\$)     | FEE(\$) |    | RATE(\$)                | FEE(\$) |
| BASIC FEE<br>(37 CFR 1.16(a), (b), or (c))                                | N/A                                                                                                                                                                                                                           | N/A          | N/A          |         |    | N/A                     | 280     |
| SEARCH FEE<br>(37 CFR 1.16(k), (l), or (m))                               | N/A                                                                                                                                                                                                                           | N/A          | N/A          |         |    | N/A                     | 600     |
| EXAMINATION FEE<br>(37 CFR 1.16(o), (p), or (q))                          | N/A                                                                                                                                                                                                                           | N/A          | N/A          |         |    | N/A                     | 720     |
| TOTAL CLAIMS<br>(37 CFR 1.16(i))                                          | 21 minus 20 = *                                                                                                                                                                                                               | 1            |              |         | OR | x 80 =                  | 80      |
| INDEPENDENT CLAIMS<br>(37 CFR 1.16(h))                                    | 2 minus 3 = *                                                                                                                                                                                                                 |              |              |         |    | x 420 =                 | 0.00    |
| 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 \$310 (\$155 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). |              |              |         |    |                         | 0.00    |
| MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))                         |                                                                                                                                                                                                                               |              |              |         |    |                         | 0.00    |
| * If the difference in column 1 is less than zero, enter "0" in column 2. |                                                                                                                                                                                                                               |              | TOTAL        |         |    | TOTAL                   | 1680    |

## APPLICATION AS AMENDED - PART II

| (Column 1)                                                      |                                  | (Column 2)                         | (Column 3)    | SMALL ENTITY |                    | OR | OTHER THAN SMALL ENTITY |                    |
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| AMENDMENT A                                                     | CLAIMS REMAINING AFTER AMENDMENT | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA | RATE(\$)     | ADDITIONAL FEE(\$) |    | RATE(\$)                | ADDITIONAL FEE(\$) |
| Total<br>(37 CFR 1.16(i))                                       | *                                | Minus **                           | =             | x            | =                  | OR | x                       | =                  |
| Independent<br>(37 CFR 1.16(h))                                 | *                                | Minus ***                          | =             | x            | =                  | OR | x                       | =                  |
| Application Size Fee (37 CFR 1.16(s))                           |                                  |                                    |               |              |                    | OR |                         |                    |
| FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) |                                  |                                    |               |              |                    | OR |                         |                    |
| TOTAL ADD'L FEE                                                 |                                  |                                    |               |              |                    | OR | TOTAL ADD'L FEE         |                    |

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| AMENDMENT B                                                     | CLAIMS REMAINING AFTER AMENDMENT | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA | RATE(\$)     | ADDITIONAL FEE(\$) |    | RATE(\$)                | ADDITIONAL FEE(\$) |
| Total<br>(37 CFR 1.16(i))                                       | *                                | Minus **                           | =             | x            | =                  | OR | x                       | =                  |
| Independent<br>(37 CFR 1.16(h))                                 | *                                | Minus ***                          | =             | x            | =                  | OR | x                       | =                  |
| Application Size Fee (37 CFR 1.16(s))                           |                                  |                                    |               |              |                    | OR |                         |                    |
| FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) |                                  |                                    |               |              |                    | OR |                         |                    |
| 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.

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

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|-----------------------|--------------------------|-----------------|---------------|------------------|------------|------------|
| 15/287,711            | 10/06/2016               | 2414            | 1820          | 110729-8053.US01 | 21         | 2          |

CONFIRMATION NO. 6154

FILING RECEIPT



0000000086379919

22918  
PERKINS COIE LLP - PAO General  
P.O. BOX 1247  
SEATTLE, WA 98111-1247

Date Mailed: 10/20/2016

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**Inventor(s)**

Peiman Amini, Mountain View, CA;  
Joseph Amalan Arul Emmanuel, Cupertino, CA;

**Applicant(s)**

NETGEAR, INC., San Jose, CA

**Power of Attorney:** The patent practitioners associated with Customer Number 22918

**Domestic Priority data as claimed by applicant**

This appln claims benefit of 62/253,540 11/10/2015  
and claims benefit of 62/336,503 05/13/2016

**Foreign Applications** for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

*Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.*

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The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/287,711**

**Projected Publication Date:** 05/11/2017

**Non-Publication Request:** No

**Early Publication Request:** No

**Title**

DEDICATED BACKHAUL LINK FOR A ROBUST WIRELESS MESH NETWORK

**Preliminary Class**

370

**Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications:** No

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|--------------------|-----------------------|-----------------------|------------------------|
| 15/287,711         | 10/06/2016            | Peiman Amini          | 110729-8053.US01       |

**CONFIRMATION NO. 6154**

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Date Mailed: 10/20/2016

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The item(s) indicated below are also required and should be submitted with any reply to this notice to avoid further processing delays.

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):  
Peiman Amini  
Joseph Amalan Arul Emmanuel

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| 15287711    | APP.FILE.REC | 10/20/2016    | 110729-8053.US01    |
|             | M327         | 10/20/2016    | 110729-8053.US01    |

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|--------------------|-----------------------|-----------------------|------------------------|
| 15/287,711         | 10/06/2016            | Peiman Amini          | 110729-8053.US01       |

**CONFIRMATION NO. 6154**

## PUBLICATION NOTICE



OC000000091304077

22918  
PERKINS COIE LLP - PAO General  
P.O. BOX 1247  
SEATTLE, WA 98111-1247

**Title:** DEDICATED BACKHAUL LINK FOR A ROBUST WIRELESS MESH NETWORK

**Publication No.** US-2017-0135022-A1

**Publication Date:** 05/11/2017

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| 15287711    | NTC.PUB  | 05/11/2017    | 110729-8053.US01    |

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| APPLICATION NO.                | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--------------------------------|-------------|----------------------|---------------------|------------------|
| 15/287,711                     | 10/06/2016  | Peiman Amini         | 110729-8053.US01    | 6154             |
| 22918                          | 7590        | 05/17/2018           | EXAMINER            |                  |
| PERKINS COIE LLP - PAO General |             |                      | YUEN, KAN           |                  |
| P.O. BOX 1247                  |             |                      |                     |                  |
| SEATTLE, WASHINGTON 98111-1247 |             |                      |                     |                  |
| UNITED STATES OF AMERICA       |             |                      |                     |                  |
|                                |             |                      | ART UNIT            | PAPER NUMBER     |
|                                |             |                      | 2464                |                  |
|                                |             |                      | NOTIFICATION DATE   | DELIVERY MODE    |
|                                |             |                      | 05/17/2018          | ELECTRONIC       |

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**DETAILED ACTION**

***Notice of Pre-AIA or AIA Status***

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of 35 U.S.C. 112(b):  
(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 11, 15-18 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.

**Regarding claim 11**, the term “the aggregated backhaul links” has no antecedent basis.

**Regarding claim 15**, the term “the dedicated backhaul” has no antecedent basis. Similar problem exists in **claim 18**.

***Claim Rejections - 35 USC § 102***

3. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale or otherwise available to the public before the effective filing date of the claimed invention.

4. Claim(s) 1-5, 7, 9, 12-16, 19 is/are rejected under 35 U.S.C. 102(a)(1) as being anticipated by Gatewood et al. (Pat No.: 9,001,767).

**Regarding claim 1**, Gatewood et al. discloses a computer-implemented method for implementing a dedicated backhaul in a wireless mesh network formed with one or more mesh points, the method being performed by a first mesh point and comprising:

**establishing a forward wireless communication** (read as second/backup wireless backhaul link in step 403 of fig. 4) **with a second mesh point** (read as one of the other wireless access nodes) (Gatewood et al. see figs. 1-4; column 4, lines 59-67; in step 403, the WLAN access node 330 selects a second wireless backhaul link as a backup for the first backhaul link 341. The second wireless backhaul link is between the WLAN access node 330 and the other wireless access nodes), **and**

**establishing a backhaul communication** (read as first wireless backhaul link in step 402 of fig. 4), **separate from the forward wireless communication, with the second mesh point** (Gatewood et al. see figs. 1-4; column 2, lines 23-34; column 4, lines 29-39; in fig. 4, step 402, WLAN access node 330 selects a first wireless backhaul link, wherein the link is between WLAN access node 330 and other wireless access nodes. In some examples, WLAN access node and the other wireless access nodes comprise similar devices or equipment, such as in a mesh wireless local area network);

**wherein the forward wireless communication is established using a wireless communication technology using frequency bands including one or more of: a 2.4 GHz band, or a 5 GHz band**

(Gatewood et al. column 6, lines 48-58; the first and second wireless backhaul links use frequency spectrum such as 5 GHz), and

wherein the backhaul communication is established using a communication technology that is one or more of: a power line based communication, a 2.4 GHz or 5 GHz radio frequency (RF) technology using a dedicated radio, or a sub-1 GHz RF technology (Gatewood et al. column 6, lines 48-58; the first and second wireless backhaul links use frequency spectrum such as 5 GHz).

**Claim 12** is rejected similarly to claim 1.

**Regarding claims 2, 13**, Gatewood et al. discloses the feature wherein the backhaul communication is dedicated for controlling packets (Gatewood et al. see fig. 5; column 7, lines 30-45; wirelessly exchanging user communications and overhead communications over the associated links 561-563).

**Regarding claims 3, 14**, Gatewood et al. discloses the feature upon determining that a quality of service of the backhaul communication has dropped to below a predetermined threshold, redirecting backhaul traffic to the forward wireless communication (Gatewood et al. see column 6, lines 25-40; when first backhaul link does not meet the performance criteria, WLAN access node provides backhaul over the second backhaul link).

**Regarding claims 4, 15**, Gatewood et al. discloses the feature upon determining whether a quality of service of the dedicated backhaul has dropped to below a predetermined threshold, establishing an alternative backhaul communication with the second mesh point; and redirecting backhaul traffic to the alternative backhaul communication (Gatewood et al. see column 6, lines 25-40; when first backhaul link does not meet the performance criteria, WLAN access node provides backhaul over the second backhaul link).

**Regarding claims 5, 16**, Gatewood et al. discloses the feature wherein the alternative backhaul communication is a direct link that links to the second mesh point through no other mesh point

(Gatewood et al. see figs. 1-4; column 4, lines 59-67; this second/backup backhaul link can be a link between WLAN access node 330 and other wireless access nodes). As shown in fig. 1; other wireless access nodes are parallel to the WLAN access node.

**Regarding claim 7**, Gatewood et al. discloses the feature wherein different backhauls are used for different clients (Gatewood et al. see figs. 1-4; column 2, lines 23-34; column 4, lines 29-39; in fig. 4, step 402, WLAN access node 330 selects a first wireless backhaul link, wherein the link is between WLAN access node 330 and other wireless access nodes).

**Regarding claims 9, 19**, Gatewood et al. discloses the feature for measuring a plurality of qualitative parameters for the established backhaul communication (Gatewood et al. see figs. 1-4; column 2, lines 23-34; column 4, lines 29-58; in fig. 4, step 402, WLAN access node 330 selects a first wireless backhaul link based on signal strength of wireless links provided by ones of WLAN access nodes 331-334); and causing the measured qualitative parameters to be transmitted to a controlling entity (read as processing system 520 in fig. 5) to facilitate a selection of a communication technology used for a backhaul communication between each two mesh points in the wireless mesh network (Gatewood et al. see fig. 5; column 8, lines 12-40; software 532 can include data structures which indicate signal strengths and uptime information to the processing system 520 to select the first and second backhaul links based on the signal strengths).

#### ***Claim Rejections - 35 USC § 103***

5. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103 are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6, 17 is/are rejected under 35 U.S.C. 103 as being unpatentable over Gatewood et al. (Pat No.: 9,001,767) in view of Thubert et al. (Pub No.: 2008/0080414).

**Regarding claims 6, 17**, Gatewood et al. does not explicitly disclose the feature wherein the alternative backhaul communication is an indirect direct link that links to the second mesh point through another mesh point.

Thubert et al. from the same or similar fields of endeavor discloses the feature wherein the alternative backhaul communication is an indirect direct link that links to the second mesh point through another mesh point (Thubert et al. see fig. 1; relay mesh APs 105, 107; paragraphs 0025, 0077).

It would have been obvious to a person having ordinary skill in the art before the effective filing date of the claimed invention to modify the disclosure of Gatewood et al. and to implement the feature/teaching as taught by Thubert et al. to implement relay mesh APs to improve signal quality.

The motivation would be to increase transmission reliability.

7. Claims 8, 18 is/are rejected under 35 U.S.C. 103 as being unpatentable over Gatewood et al. (Pat No.: 9,001,767) in view of Lu (Pub No.: 2010/0260146).

**Regarding claims 8, 18,** Gatewood et al. does not explicitly disclose the feature for constructing a list of backhaul candidates, each backhaul candidate having a score indicative of an estimated quality of a potential link between the first mesh point and the second mesh point; upon determining that a quality of service of the dedicated backhaul has dropped to below a predetermined threshold, establishing an alternative backhaul communication with the second mesh point using a backhaul candidate with the highest score on the list.

Lu from the same or similar fields of endeavor discloses the feature for constructing a list of backhaul candidates, each backhaul candidate having a score indicative of an estimated quality of a potential link between the first mesh point and the second mesh point; upon determining that a quality of service of the dedicated backhaul has dropped to below a predetermined threshold, establishing an alternative backhaul communication with the second mesh point using a backhaul candidate with the highest score on the list (Lu see paragraphs 0040, 0044, 0045, 0050, 0079, 0080; each AP includes a dedicated wireless interface or antenna to actively monitor operations such as routing information of neighboring/candidate APs in order to determine an optimum route for its associated uplink path, downlink path, and local link path). Optimum route may be determined based on signal strength, number of downlink stations, etc.

It would have been obvious to a person having ordinary skill in the art before the effective filing date of the claimed invention to modify the disclosure of Gatewood et al. and to implement the feature/teaching as taught by Lu to actively monitor neighboring/candidate APs to determine an optimum route.

The motivation would be to improve transmission efficiency.

8. Claims 10, 11, 20, 21 is/are rejected under 35 U.S.C. 103 as being unpatentable over Gatewood et al. (Pat No.: 9,001,767) in view of Cao et al. (Pub No.: 2016/0212755).

**Regarding claims 10, 20,** Gatewood et al. does not explicitly disclose the feature for aggregating a plurality of backhaul links available on different communication technologies to create an aggregated backhaul communication.

Cao et al. from the same or similar fields of endeavor discloses the feature for aggregating a plurality of backhaul links available on different communication technologies to create an aggregated backhaul communication (Cao et al. see paragraph 0068).

It would have been obvious to a person having ordinary skill in the art before the effective filing date of the claimed invention to modify the disclosure of Gatewood et al. and to implement the feature/teaching as taught by Cao et al. to aggregate communications.

The motivation would be to improve transmission throughput.

**Regarding claims 11, 21,** Cao et al. discloses the feature wherein the aggregated backhaul links are aggregated on a media access control (MAC) layer or a transport layer (Cao et al. see paragraphs 0016, 0024).

#### ***Examiner's Note***

9. The Applicant is welcome to request a telephonic interview if the Applicant has any questions or requires any additional information that would further or expedite the prosecution of the application.

#### ***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KAN YUEN whose telephone number is (571)270-1413. The examiner can normally be reached on Monday - Friday 11pm-7pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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 is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.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.

/KAN YUEN/  
Primary Examiner, Art Unit 2464

|                                   |                                       |  |                                                            |             |
|-----------------------------------|---------------------------------------|--|------------------------------------------------------------|-------------|
| <b>Notice of References Cited</b> | Application/Control No.<br>15/287,711 |  | Applicant(s)/Patent Under<br>Reexamination<br>Amini et al. |             |
|                                   | Examiner<br>KAN YUEN                  |  | Art Unit<br>2464                                           | Page 1 of 1 |

**U.S. PATENT DOCUMENTS**

| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Name            | CPC Classification | US Classification |
|---|---|--------------------------------------------------|-----------------|-----------------|--------------------|-------------------|
| * | A | US-20160212755-A1                                | 07-2016         | Cao; Yang       | H04W40/12          | 1/1               |
| * | B | US-9001767-B1                                    | 04-2015         | Gatewood; John  | H04W72/04          | 370/328           |
| * | C | US-20080080414-A1                                | 04-2008         | Thubert; Pascal | H04W76/12          | 370/328           |
| * | D | US-20100260146-A1                                | 10-2010         | Lu; Wenchen     | H04L12/4633        | 370/331           |
|   | E |                                                  |                 |                 |                    |                   |
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**FOREIGN PATENT DOCUMENTS**

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\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
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|                                                                                                                    |                                              |                                                                |
|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------|----------------------------------------------------------------|
| <b><i>Index of Claims</i></b><br> | <b>Application/Control No.</b><br>15/287,711 | <b>Applicant(s)/Patent Under Reexamination</b><br>Amini et al. |
|                                                                                                                    | <b>Examiner</b><br>KAN YUEN                  | <b>Art Unit</b><br>2464                                        |

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|---|-----------------|---|-------------------|---|---------------------|---|-----------------|
| ✓ | <b>Rejected</b> | - | <b>Cancelled</b>  | N | <b>Non-Elected</b>  | A | <b>Appeal</b>   |
| = | <b>Allowed</b>  | ÷ | <b>Restricted</b> | I | <b>Interference</b> | O | <b>Objected</b> |

| CLAIMS                                                                                                                                                                            |          |            |      |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------|------|--|--|--|--|--|--|--|
| <input 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 |          |            |      |  |  |  |  |  |  |  |
| CLAIM                                                                                                                                                                             |          |            | DATE |  |  |  |  |  |  |  |
| Final                                                                                                                                                                             | Original | 03/20/2018 |      |  |  |  |  |  |  |  |
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| <b>Search Notes</b><br> | <b>Application/Control No.</b><br>15/287,711 | <b>Applicant(s)/Patent Under Reexamination</b><br>Amini et al. |
|                                                                                                          | <b>Examiner</b><br>KAN YUEN                  | <b>Art Unit</b><br>2464                                        |

| CPC - Searched*                                                                                                                                                                                                                                   |            |          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|
| Symbol                                                                                                                                                                                                                                            | Date       | Examiner |
| H04L12/44 ; H04L43/0888 ; H04L43/0894 ; H04L43/10 ; H04L43/16 ;<br>H04L45/20 ; H04W24/04 ; H04W24/06 ; H04W24/08 ; H04W36/30 ;<br>H04W36/36 ; H04W40/12 ; H04W4/023 ; H04W72/0453 ; H04W72/085 ;<br>H04W76/10 ; H04W76/15 ; H04W84/12 ; H04W84/18 | 03/20/2018 | KY       |

| CPC Combination Sets - Searched* |      |          |
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| Symbol                           | Date | Examiner |
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| US Classification - Searched* |          |      |          |
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| Class                         | Subclass | Date | Examiner |
|                               |          |      |          |

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| Search Notes                         |            |          |
|--------------------------------------|------------|----------|
| Search Notes                         | Date       | Examiner |
| EAST SEARCH; MANUAL SEARCH H04L12/44 | 03/20/2018 | KY       |
| INVENTORSHIP SEARCH                  | 03/20/2018 | KY       |

| Interference Search |                       |      |          |
|---------------------|-----------------------|------|----------|
| US Class/CPC Symbol | US Subclass/CPC Group | Date | Examiner |
|                     |                       |      |          |

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| /KAN YUEN/<br>Primary Examiner, Art Unit 2464 |  |
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CONFIRMATION NO. 6154

| SERIAL NUMBER                                                                                                                                                                                                                                                                                                                                                                                                     | FILING or 371(c)<br>DATE                                                                                          | CLASS                                                    | GROUP ART UNIT                | ATTORNEY DOCKET<br>NO.                                                                                                                                                                                                                                                    |                           |                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------------------------|
| 15/287,711                                                                                                                                                                                                                                                                                                                                                                                                        | 10/06/2016                                                                                                        | 370                                                      | 2464                          | 110729-8053.US01                                                                                                                                                                                                                                                          |                           |                                |
| <b>RULE</b>                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                   |                                                          |                               |                                                                                                                                                                                                                                                                           |                           |                                |
| <b>APPLICANTS</b><br>NETGEAR, INC., San Jose, CA<br><b>INVENTORS</b><br>Peiman Amini, Mountain View, CA;<br>Joseph Amalan Arul Emmanuel, Cupertino, CA;<br><b>** CONTINUING DATA *****</b><br>This appln claims benefit of 62/253,540 11/10/2015<br>and claims benefit of 62/336,503 05/13/2016<br><b>** FOREIGN APPLICATIONS *****</b><br><b>** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **</b><br>10/18/2016 |                                                                                                                   |                                                          |                               |                                                                                                                                                                                                                                                                           |                           |                                |
| 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>/KAN YUEN/</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>61                                                                                                                                                                                                                                              | <b>TOTAL CLAIMS</b><br>21 | <b>INDEPENDENT CLAIMS</b><br>2 |
| <b>ADDRESS</b><br>PERKINS COIE LLP - PAO General<br>P.O. BOX 1247<br>SEATTLE, WA 98111-1247<br>UNITED STATES                                                                                                                                                                                                                                                                                                      |                                                                                                                   |                                                          |                               |                                                                                                                                                                                                                                                                           |                           |                                |
| <b>TITLE</b><br>DEDICATED BACKHAUL LINK FOR A ROBUST WIRELESS MESH NETWORK                                                                                                                                                                                                                                                                                                                                        |                                                                                                                   |                                                          |                               |                                                                                                                                                                                                                                                                           |                           |                                |
| <b>FILING FEE RECEIVED</b><br>1820                                                                                                                                                                                                                                                                                                                                                                                | FEES: Authority has been given in Paper<br>No. _____ to charge/credit DEPOSIT ACCOUNT<br>No. _____ for following: |                                                          |                               | <input type="checkbox"/> All Fees<br><input type="checkbox"/> 1.16 Fees (Filing)<br><input type="checkbox"/> 1.17 Fees (Processing Ext. of time)<br><input type="checkbox"/> 1.18 Fees (Issue)<br><input type="checkbox"/> Other _____<br><input type="checkbox"/> Credit |                           |                                |

## EAST Search History

## EAST Search History (Prior Art)

| Ref # | Hits   | Search Query                                                                                                                                                                                                                                                          | DBs                                              | Default Operator | Plurals | Time Stamp          |
|-------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|------------------|---------|---------------------|
| S1    | 1      | 15/287711                                                                                                                                                                                                                                                             | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT | AND              | ON      | 2018/03/19<br>12:57 |
| S2    | 133928 | ( (H04L12/44 OR H04L43/0888 OR H04L43/0894 OR H04L43/10 OR H04L43/16 OR H04L45/20 OR H04W24/04 OR H04W24/06 OR H04W24/08 OR H04W36/30 OR H04W36/36 OR H04W40/12 OR H04W4/023 OR H04W72/0453 OR H04W72/085 OR H04W76/10 OR H04W76/15 OR H04W84/12 OR H04W84/18).CPC. ) | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT | AND              | ON      | 2018/03/19<br>13:08 |
| S3    | 1      | 15/287711 (backhaul and forward\$4 near3 link)                                                                                                                                                                                                                        | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT | AND              | ON      | 2018/03/19<br>13:08 |
| S4    | 632    | (backhaul\$4 or back-haul\$4 or (back adj2 haul\$4)) near7 (link or channel or transmission or connection) with mesh                                                                                                                                                  | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT | AND              | ON      | 2018/03/19<br>13:41 |
| S5    | 56     | (redundan\$4 or alternative or second\$4 or supplement\$4 or standby or backup or spar\$3 or slave or protect\$3) near4 (backhaul\$4 or back-haul\$4 or (back adj2 haul\$4)) near7 (link or channel or transmission or connection) with mesh                          | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT | AND              | ON      | 2018/03/19<br>13:43 |
| S6    | 38     | S2 S5                                                                                                                                                                                                                                                                 | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT | AND              | ON      | 2018/03/19<br>13:46 |
| S7    | 38     | S2 S5                                                                                                                                                                                                                                                                 | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT | AND              | ON      | 2018/03/19<br>13:46 |
| S9    | 111    | (redundan\$4 or alternative or second\$4 or supplement\$4 or standby or backup or spar\$3 or slave or protect\$3) near8 (backhaul\$4 or back-haul\$4 or (back adj2 haul\$4)) with mesh                                                                                | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT | AND              | ON      | 2018/03/19<br>14:18 |
| S10   | 57     | S2 S9                                                                                                                                                                                                                                                                 | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;            | AND              | ON      | 2018/03/19<br>14:18 |

|     |      |                                                                                                          |                                                  |     |    |                     |
|-----|------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------|-----|----|---------------------|
| S11 | 57   | S2 S9                                                                                                    | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT | AND | ON | 2018/03/19<br>14:18 |
| S12 | 1    | 15/002383 (connection with reserv\$6)                                                                    | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT | AND | ON | 2018/03/19<br>18:19 |
| S13 | 1140 | (LTE near6 (connection or interface or communication)) with (backhaul\$4)                                | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT | AND | ON | 2018/03/19<br>19:58 |
| S14 | 226  | (LTE near6 (connection or interface or communication)) with ("2.4ghz" or "2.4 ghz" or "5 ghz" or "5ghz") | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT | AND | ON | 2018/03/19<br>19:58 |
| S15 | 18   | S13 S14                                                                                                  | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT | AND | ON | 2018/03/19<br>19:59 |
| S16 | 2    | 15/002383 (backhaul or (back adj2 haul\$4))                                                              | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT | AND | ON | 2018/03/19<br>19:59 |
| S17 | 1    | 13/787313                                                                                                | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT | AND | ON | 2018/03/19<br>20:29 |
| S18 | 1    | 13/787313 (backhaul near3 link same (packet or control))                                                 | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT | AND | ON | 2018/03/19<br>21:41 |
| S19 | 1    | 15/002383 (aggregat\$5 near8 backhaul)                                                                   | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT | AND | ON | 2018/03/19<br>22:23 |
| S20 | 140  | aggregat\$5 with (backhaul\$4 or back-haul\$4 or (back adj2 haul\$4)) with mesh                          | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT | AND | ON | 2018/03/19<br>22:24 |
| S21 | 1    | 13/787313 (processing near2 system or "520") and ("532")                                                 | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT | AND | ON | 2018/03/19<br>23:18 |
| S22 | 130  | (relay\$4 or intermediat\$4) with (backhaul\$4 or back-haul\$4 or (back adj2 haul\$4)) with mesh         | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;            | AND | ON | 2018/03/19<br>23:40 |

|     |     |                                                                                                                      |                                                                            |     |     |                     |
|-----|-----|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-----|-----|---------------------|
|     |     |                                                                                                                      | DERWENT                                                                    |     |     |                     |
| S23 | 286 | (select\$4 or choos\$4) near9 (relay\$4 or intermediat\$4) with (backhaul\$4 or back-haul\$4 or (back adj2 haul\$4)) | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT                           | AND | ON  | 2018/03/20<br>11:30 |
| S24 | 12  | mesh with (backhaul\$4 or back-haul\$4 or (back adj2 haul\$4)) S23                                                   | US-PGPUB;<br>USPAT;<br>USOCR;<br>EPO;<br>DERWENT                           | AND | ON  | 2018/03/20<br>11:30 |
| S25 | 2   | ("20100260146").PN.                                                                                                  | US-PGPUB;<br>USPAT;<br>USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR  | OFF | 2018/03/20<br>11:36 |

## EAST Search History (Interference)

| Ref # | Hits | Search Query                                           | DBs                | Default Operator | Plurals | Time Stamp          |
|-------|------|--------------------------------------------------------|--------------------|------------------|---------|---------------------|
| S26   | 4983 | (establish\$4 near5 forward\$4).clm.                   | US-PGPUB;<br>USPAT | AND              | ON      | 2018/03/20<br>14:05 |
| S27   | 62   | (establish\$4 near5 backhaul near4 communication).clm. | US-PGPUB;<br>USPAT | AND              | ON      | 2018/03/20<br>14:05 |
| S28   | 2    | S26 S27                                                | US-PGPUB;<br>USPAT | AND              | ON      | 2018/03/20<br>14:05 |
| S29   | 2    | S26 S27                                                | US-PGPUB;<br>USPAT | AND              | ON      | 2018/03/20<br>14:06 |
| S30   | 3828 | (wireless near4 technolog\$4).clm.                     | US-PGPUB;<br>USPAT | AND              | ON      | 2018/03/20<br>14:06 |
| S31   | 1    | S29 S30                                                | US-PGPUB;<br>USPAT | AND              | ON      | 2018/03/20<br>14:07 |

3/ 20/ 2018 4:57:44 PM

C:\Users\kyuen\Documents\EAST\Workspaces\15287711.wsp

**To:** patentprocurement@perkinscoie.com,  
**From:** PAIR\_eOfficeAction@uspto.gov  
**Cc:** PAIR\_eOfficeAction@uspto.gov  
**Subject:** Private PAIR Correspondence Notification for Customer Number 22918

May 17, 2018 03:41:50 AM

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P.O. BOX 1247  
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UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 22918 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

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| Application | Document | Mailroom Date | Attorney Docket No. |
|-------------|----------|---------------|---------------------|
| 15287711    | CTNF     | 05/17/2018    | 110729-8053.US01    |
|             | 892      | 05/17/2018    | 110729-8053.US01    |

To view your correspondence online or update your email addresses, please visit us anytime at <https://portal.uspto.gov/secure/myportal/privatepair>.

If you have any questions, please email the Electronic Business Center (EBC) at [EBC@uspto.gov](mailto:EBC@uspto.gov) with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

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

| APPLICATION NO.                | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--------------------------------|-------------|----------------------|---------------------|------------------|
| 15/287,711                     | 10/06/2016  | Peiman Amini         | 110729-8053.US01    | 6154             |
| 22918                          | 7590        | 07/09/2018           | EXAMINER            |                  |
| PERKINS COIE LLP - PAO General |             |                      | YUEN, KAN           |                  |
| P.O. BOX 1247                  |             |                      |                     |                  |
| SEATTLE, WASHINGTON 98111-1247 |             |                      |                     |                  |
| UNITED STATES OF AMERICA       |             |                      |                     |                  |
|                                |             |                      | ART UNIT            | PAPER NUMBER     |
|                                |             |                      | 2464                |                  |
|                                |             |                      | NOTIFICATION DATE   | DELIVERY MODE    |
|                                |             |                      | 07/09/2018          | ELECTRONIC       |

**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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentprocurement@perkinscoie.com

|                                                     |                                      |                                     |                          |
|-----------------------------------------------------|--------------------------------------|-------------------------------------|--------------------------|
| <b><i>Applicant-Initiated Interview Summary</i></b> | <b>Application No.</b><br>15/287,711 | <b>Applicant(s)</b><br>Amini et al. |                          |
|                                                     | <b>Examiner</b><br>KAN YUEN          | <b>Art Unit</b><br>2464             | <b>AIA Status</b><br>Yes |

All participants (applicant, applicants representative, PTO personnel):

(1) KAN YUEN (3) \_\_\_\_\_

(2) HARVEY CHEN (4) \_\_\_\_\_

Date of Interview: 03 July 2018.

Type: ☒ Telephonic ☐ Video Conference  
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.  
If Yes, brief description: \_\_\_\_\_.

Issues Discussed ☐101 ☐112 ☒102 ☐103 ☐Others

(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: 1.

Identification of prior art discussed: GATEWOOD.

#### Substance of Interview

(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Attorney Chen called to discuss about the differences between Gatewood and the applicant's invention. The Examiner suggested the applicant to further define claim 1 and the applicant agreed. No other agreement has been reached.

**Applicant recordation instructions:** The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

**Examiner recordation instructions:** Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☒ Attachment

/KAN YUEN/  
Primary Examiner, Art Unit 2464

## Summary of Record of Interview Requirements

### Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

### Title 37 Code of Federal Regulations (CFR) 1.133 Interviews Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

#### 37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiners responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicants correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,-
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,  
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicants record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

### Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiners version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, Interview Record OK on the paper recording the substance of the interview along with the date and the examiners initials.

**Applicant Initiated Interview Request Form**

Application No.: 15/287,711

First Named Applicant: Netgear, Inc.

Examiner: Kan Yuen

Art Unit: 2464

Status of Application: Pending

**Tentative Participants:**

(1) Examiner Kan Yuen

(2) Han-Wei (Harvey) Chen

(3) \_\_\_\_\_

(4) \_\_\_\_\_

Proposed Date of Interview: July 3, 2018

Proposed Time: 1:00 (ET) ( ☐ AM ☐ PM )**Type of Interview Requested:**(1) ☒ Telephonic(2) ☐ Personal(3) ☐ Video ConferenceExhibit To Be Shown or Demonstrated: ☐ YES☐ NO

If yes, provide brief description: \_\_\_\_\_

**Issues To Be Discussed**

| Issues<br>(Rej., Obj., etc) | Claims/<br>Fig. #s    | Prior<br>Art               | Discussed                | Agreed                   | Not Agreed               |
|-----------------------------|-----------------------|----------------------------|--------------------------|--------------------------|--------------------------|
| (1) Rej. 112                | 11,15-18              |                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| (2) Rej. 102                | 1-5,7,9,12-19,19      | Gatewood                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| (3) Rej. 103                | 6,8,10,11,17,18,20,21 | Gatewood, Thubert, Lu, Cao | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| (4) _____                   | _____                 | _____                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

☐ Continuation Sheet Attached☐ Proposed Amendment or Arguments Attached

Brief Description of Arguments to be Presented: \_\_\_\_\_

An interview was conducted on the above-identified application on \_\_\_\_\_

**NOTE:** This form should be completed and filed by applicant in advance of the interview (see MPEP § 713.01). If this form is signed by a registered practitioner not of record, the Office will accept this as an indication that he or she is authorized to conduct an interview on behalf of the principal (37 CFR 1.32(a)(3)) pursuant to 37 CFR 1.34. This is not a power of attorney to any above named practitioner. See the Instruction Sheet for this form, which is incorporated by reference. By signing this form, applicant or practitioner is certifying that he or she has read the Instruction Sheet. After the interview is conducted, applicant is advised to file a statement of the substance of this interview (37 CFR 1.133(b)) as soon as possible. This application will not be delayed from issue because of applicant's failure to submit a written record of this interview.

Applicant/Applicant's Representative Signature

Examiner/SPE Signature

Han-Wei (Harvey) Chen

(650)838-4303

Typed/Printed Name of Applicant or Representative

Applicant's/Applicant's Representative's Telephone Number

75,350

Registration Number, if applicable

This collection of information is required by 37 CFR 1.133. 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 24 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.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2 TP Link Ex. 1004

**Instruction Sheet for:**  
**APPLICANT INITIATED INTERVIEW REQUEST FORM**  
(Not to be Submitted to the USPTO)

1. If this form is signed by a registered practitioner not of record, the authority to submit the Applicant Initiated Interview Request Form is pursuant to limited authority to act in a representative capacity under 37 CFR 1.34 and further proof of authority to act in a representative capacity may be required. See 37 CFR 1.34.

The Office will accept the signed form as an indication that the registered practitioner not of record is authorized to conduct an interview on behalf of the principal in pursuant to 37 CFR 1.34.

For more information, see the "Conducting an Interview with a Registered Practitioner Acting in a Representative Capacity" notice which is available on the USPTO Web site at: <http://www.uspto.gov/patents/law/notices/2010.jsp>.

2. This is not a power of attorney to any named practitioner. Accordingly, any registered practitioner not of record named on the form does not have authority to sign a request to change the correspondence address, a request for express abandonment, a disclaimer, a power of attorney, or other document requiring the signature of the applicant, assignee of the entire interest or an attorney of record. If appropriate, a separate power of attorney to the named practitioner should be executed and filed in the US Patent and Trademark Office.
3. Any interview concerning an unpublished application under 35 U.S.C. § 122(b) with a registered practitioner not of record who obtains authorization through use of the PTOL-413A will be conducted based on the information and files supplied by the practitioner in view of the confidentiality requirements of 35 U.S.C. § 122(a).

## 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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In re Application of:  
Peiman Amini et al.

Customer No.: 22918

Application No.: 15/287,711

Confirmation No.: 6154

Filed: October 6, 2016

Art Unit: 2464

For: **DEDICATED BACKHAUL LINK FOR  
A ROBUST WIRELESS MESH NETWORK**

---

Examiner: Kan Yuen

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

**RESPONSE TO NON-FINAL OFFICE ACTION UNDER 37 C.F.R. 1.111**

Dear Commissioner:

This is in response to the Office Action dated May 17, 2018 (“the Office Action”). The Examiner is requested to reconsider the application in view of the remarks below:

**Amendments to the Specification** begin on page 2 of this paper.

**A Listing of the Claims** begins on page 3 of this paper.

**Remarks** begin on page 8 of this paper.

**IN THE SPECIFICATION:**

Please amend paragraph [0003] of the specification as follows:

**[0003]** This application is related to co-pending U.S. Patent Application No.       ,       ,        15/287,678, entitled "AUTOMATED MESH POINT SURVEY AND GUIDED INSTALLATION FOR A WIRELESS MESH NETWORK" (Attorney Docket No. 110729-8050,US01), filed October 6, 2016; U.S. Patent Application No.       ,       ,        15/287,704, entitled "RATE ESTIMATION IN A WIRELESS MESH NETWORK" (Attorney Docket No. 110729-8051,US01), filed October 6, 2016; U.S. Patent Application No.       ,       ,        15/287,706, entitled "ROAMING IN A WIRELESS MESH NETWORK" (Attorney Docket No. 110729-8052,US01), filed October 6, 2016; and U.S. Patent Application No. 15/271,912, entitled "DEDICATED BACKHAUL FOR WHOLE HOME COVERAGE" (Attorney Docket No. 110729-8058,US01), filed September 21, 2016; all of which are hereby incorporated by reference in their entireties.

**IN THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the present application:

1. (Currently Amended) A computer-implemented method for implementing a dedicated backhaul in a wireless mesh network formed with one or more mesh points, the method being performed by a first mesh point and comprising:

establishing a forward wireless communication with a second mesh point; and

establishing a backhaul communication, separate from the forward wireless communication, with the second mesh point,

wherein the forward wireless communication is established using a wireless communication technology using frequency bands ~~including one or more~~selected from the group consisting of: a 2.4 GHz band, ~~or~~and a 5 GHz band, and

wherein the backhaul communication is established using a communication technology ~~that is one or more~~selected from the group consisting of: a power line based communication, a 2.4GHz or 5 GHz radio frequency (RF) technology using a dedicated radio, ~~or~~and a sub-1GHz RF technology.

2. (Original) The method of claim 1, wherein the backhaul communication is dedicated for controlling packets.

3. (Original) The method of claim 1, further comprising:

upon determining that a quality of service of the backhaul communication has dropped to below a predetermined threshold, redirecting backhaul traffic to the forward wireless communication.

4. (Original) The method of claim 1, further comprising:

upon determining whether a quality of service of the dedicated backhaul has dropped to below a predetermined threshold, establishing an alternative backhaul communication with the second mesh point; and

redirecting backhaul traffic to the alternative backhaul communication.

5. (Original) The method of claim 4, wherein the alternative backhaul communication is a direct link that links to the second mesh point through no other mesh point.

6. (Original) The method of claim 4, wherein the alternative backhaul communication is an indirect direct link that links to the second mesh point through another mesh point.

7. (Original) The method of claim 1, wherein different backhauls are used for different clients.

8. (Original) The method of claim 1, further comprising:

constructing a list of backhaul candidates, each backhaul candidate having a score indicative of an estimated quality of a potential link between the first mesh point and the second mesh point;

upon determining that a quality of service of the dedicated backhaul has dropped to below a predetermined threshold, establishing an alternative backhaul communication with the second mesh point using a backhaul candidate with the highest score on the list.

9. (Original) The method of claim 1, further comprising:

measuring a plurality of qualitative parameters for the established backhaul communication; and

causing the measured qualitative parameters to be transmitted to a controlling entity to facilitate a selection of a communication technology used for a backhaul communication between each two mesh points in the wireless mesh network

10. (Original) The method of claim 1, further comprising:

aggregating a plurality of backhaul links available on different communication technologies to create an aggregated backhaul communication.

11. (Currently Amended) The method of claim ~~1~~10, wherein the aggregated backhaul links are aggregated on a media access control (MAC) layer or a transport layer

12. (Currently Amended) A computing device that implements a mesh point in a wireless mesh network formed with a plurality of mesh points, the computing device being configured to perform a method comprising:

establishing a forward wireless communication with a second mesh point; and

establishing a backhaul communication, separate from the forward wireless communication, with the second mesh point,

wherein the forward wireless communication is established using a wireless communication technology using frequency bands ~~including one or more~~selected from the group consisting of: a 2.4 GHz band, ~~or~~and a 5 GHz band, and

wherein the backhaul communication is established using a communication technology ~~that is one or more~~selected from the group consisting of: a power line based communication, a 2.4GHz or 5 GHz radio frequency (RF) technology using a dedicated radio, ~~or~~and a sub-1GHz RF technology.

13. (Original) The device of claim 12, wherein the backhaul communication is dedicated for controlling packets.

14. (Original) The device of claim 12, the method performed by the device further comprising:

upon determining that a quality of service of the backhaul communication has dropped to below a predetermined threshold, redirecting backhaul traffic to the forward wireless communication.

15. (Currently Amended) The device of claim 12, the method performed by the device further comprising:

upon determining whether a quality of service of the ~~dedicated~~established backhaul has dropped to below a predetermined threshold, establishing an alternative backhaul communication with the second mesh point; and

redirecting backhaul traffic to the alternative backhaul communication.

16. (Original) The device of claim 15, wherein the alternative backhaul communication is a direct link that links to the second mesh point through no other mesh point.

17. (Original) The device of claim 15, wherein the alternative backhaul communication is an indirect direct link that links to the second mesh point through another mesh point.

18. (Currently Amended) The device of claim 12, the method performed by the device further comprising:

constructing a list of backhaul candidates, each backhaul candidate having a score indicative of an estimated quality of a potential link between the first mesh point and the second mesh point;

upon determining that a quality of service of the ~~dedicated~~established backhaul has dropped to below a predetermined threshold, establishing an alternative backhaul

communication with the second mesh point using a backhaul candidate with the highest score on the list.

19. (Original) The device of claim 12, the method performed by the device further comprising:

measuring a plurality of qualitative parameters for the established backhaul communication; and

causing the measured qualitative parameters to be transmitted to a controlling entity to facilitate a selection of a communication technology used for a backhaul communication between each two mesh points in the wireless mesh network

20. (Original) The device of claim 12, the method performed by the device further comprising:

aggregating a plurality of backhaul links available on different communication technologies to create an aggregated backhaul communication.

21. (Original) The device of claim 12, wherein the aggregated backhaul links are aggregated on a media access control (MAC) layer or a transport layer.

## **REMARKS**

### **Summary of Office Action**

#### *Rejections Under 35 U.S.C. § 112*

Claims 11, 15-18 stand rejected under 35 U.S.C. § 112(b) as allegedly being indefinite.

#### *Rejections Under 35 U.S.C. § 102*

Claims 1-5, 7, 9, 12-16 and 19 stand rejected under 35 U.S.C. § 102 as allegedly being anticipated by Gatewood et al. (U.S. Patent No.: 9,001,767)("Gatewood").

#### *Rejections Under 35 U.S.C. § 103*

Claims 6 and 17 stand rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Gatewood in view of Thubert et al. (U.S. Patent Publication No.: 2008/0080414)("Thubert").

Claims 8 and 18 stand rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Gatewood in view of Lu (U.S. Patent Publication No.: 2010/0260146)("Lu").

Claims 10, 11, 20 and 21 stand rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Gatewood in view of Cao et al. (Pub No.: 2016/0212755)("Cao")

### **Summary of Response**

Claims 1-21 were pending at the time of the issued Office Action. In this response, claims 1, 11-12, 15, and 18 have been amended. No claim has been canceled or added. Support for the amendments can be found throughout the original specification as filed. No new matter has been added. Accordingly, claims 1-21 are now pending in this application.

Reconsideration of the present application is respectfully requested.

### **Interview Summary**

A telephonic interview was conducted between the Examiner Yuen and Applicant's representative (Han-Wei Chen, Reg. No. 75,350) on July 3, 2018. Several features of the claimed embodiments were discussed relative to the rejections. In particular, a proposed amendment to claim 1 was discussed. Agreement was reached that the proposed amendment can overcome all prior art references of record. An additional search and further consideration will be done after receiving the written response.

Applicant thanks the Examiner for the time and assistance provided in the interview.

### **Request for Telephone Interview**

Applicant respectfully requests that the Examiner contact the undersigned at (650) 838-4303 to schedule a telephone interview, in the event the Examiner does not find the present application to be allowable after considering this response.

### **Detailed Discussion**

#### **Rejections Under 35 U.S.C. § 112**

Claims 11, 15-18 stand rejected under 35 U.S.C. § 112(b) as allegedly being indefinite. Without conceding to any position taken by the Examiner, Applicant has amended claims 11, 15, and 18 to remove clerical errors, and submits that the grounds for the rejections are no longer applicable. Withdrawal of the rejections is respectfully requested.

#### **Rejections Under 35 U.S.C. § 102**

Claims 1-20 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Gatewood. Applicant disagrees. Applicant respectfully traverses the rejections, as discussed below with respect to the independent claims.

For the sole purpose of expediting prosecution, Applicant has amended claim 1 for additional clarity.

#### **Independent Claim 1**

Applicant's amended claim 1 recites, in part:

wherein the forward wireless communication is established using a wireless communication technology using frequency bands selected from the group consisting of: a 2.4 GHz band, and a 5 GHz band, and

wherein the backhaul communication is established using a communication technology selected from the group consisting of: a power line based communication, a 2.4GHz or 5 GHz radio frequency (RF) technology using a dedicated radio, and a sub-1GHz RF technology.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631 (Fed. Cir. 1987); M.P.E.P. § 2131.

Further, M.P.E.P. § 803.02 states that: “If the members of a proper Markush group are sufficiently few in number or so closely related that a search and examination of the entire claim can be made without serious burden, the examiner **must** examine **all** the members of the Markush group in the claim on the merits, even though they may be directed to independent and distinct inventions.”

Applicant submits that Gatewood does not disclose, either expressly or inherently, each and every element of claim 1, and therefore does not anticipate Applicant's claim 1 under 35 U.S.C. § 102.

Specifically, Applicant submits that Gatewood fails to disclose “wherein the forward wireless communication is established using a wireless communication technology using frequency bands selected from the group consisting of: a 2.4 GHz band, and a 5 GHz band” or “wherein the backhaul communication is established using a communication technology selected from the group consisting of: a power line based communication, a 2.4GHz or 5 GHz radio frequency (RF) technology using a dedicated radio, and a sub-1GHz RF technology,” both now recited in Applicant’s claim 1.

Since Gatewood does not disclose, either expressly or inherently, each and every element recited in Applicant’s claim 1 as required by 35 U.S.C. § 102, it is submitted that Gatewood fails to anticipate Applicant’s claim 1, and that Applicant’s claim 1 is patentable over Gatewood.

#### Independent Claim 12

Applicant’s claim 12 recites similar limitation to that of claim 1, and therefore is patentable over the cited art reference for at least the same reason as discussed above.

#### Dependent Claim 2

Applicant’s claim 2 depends upon claim 1, and therefore is patentable over the cited art reference for at least the same reason as discussed above.

In addition, claim 2 recites:

“wherein the backhaul communication is **dedicated** for controlling packets.”

(Emphasis added.)

In the Office Action, the Examiner relies on Gatewood’s FIG. 5 and col. 7, ll. 30-45 for rejecting the above. However, a review of Gatewood shows that Gatewood is silent about the backhaul communication being “**dedicated** for controlling packets,” as recited in claim 2. The Examiner has not cited any exact language in Gatewood that discloses this feature. As such, the Office Action fails to present a *prima facie* case of rejection.

Withdrawal of the rejection is respectfully requested.

#### Dependent Claim 3

Applicant’s claim 3 depends upon claim 1, and therefore is patentable over the cited art reference for at least the same reason as discussed above.

In addition, claim 3 recites:

“upon determining that a quality of service of the backhaul communication has dropped to below a predetermined threshold, **redirecting** backhaul traffic to the **forward** wireless communication.”

(Emphasis added.)

In the Office Action, the Examiner relies on Gatewood’s col. 6, ll. 30-45 for rejecting the above. However, a review of Gatewood shows that Gatewood is silent about the backhaul communication being “**redirecting** backhaul traffic to the **forward** wireless communication,” as recited in claim 3. In fact, the Examiner concedes in the Office Action at p. 4 that Gatewood discloses redirecting to a second backhaul link, which is not “forward wireless communication.” The Examiner has not cited any other language in Gatewood that discloses this feature. As such, the Office Action fails to present a *prima facie* case of rejection.

Withdrawal of the rejection is respectfully requested.

#### Other Dependent Claims

In view of the above remarks, a specific discussion of the rest of the dependent claims is considered to be unnecessary. Therefore, Applicant’s silence regarding any dependent claim is not to be interpreted as agreement with, or acquiescence to, the rejection of such claim or as waiving any argument regarding that claim.

#### Reservation of Rights

For the sake of conciseness and clarity, Applicant may not have addressed every assertion or rejection made in the Office Action, particularly where Applicant has presented amendments or arguments that Applicant believes render such assertions/rejections moot. Therefore, Applicant’s silence regarding any such assertions or rejections does not constitute an admission or acquiescence regarding such assertions/rejections or a waiver of any argument relating to such assertions/rejections. Applicant reserves the right to challenge at a later time any rejection or any factual or legal assertion made by the Office in relation to the present application. Applicant does not admit that any of the references cited in the Office Action are prior art. Applicant reserves the right to swear behind any cited reference at a later date, to the extent permitted by law.

#### No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that

previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

#### **Authorization for Email Communications**

Recognizing that Internet communications are not secure, Applicant hereby authorizes the USPTO to communicate with Applicant's attorney concerning any subject matter of this application by electronic mail. See M.P.E.P. § 502.03. Applicant understands that a copy of these communications may be made of record in the application file.

#### **CONCLUSION**

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 50-0665, under Order No. 110729-8053,US01 from which the undersigned is authorized to draw.

Dated: 7/3/2018

Respectfully submitted,

By /Han-Wei Chen/

Han-Wei Chen  
Registration No.: 75,350  
PERKINS COIE LLP  
P.O. Box 1247  
Seattle, WA 98111-1247  
Phone: (650) 838-4303  
Fax: (206) 359-7198  
Attorney for Applicant

# **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** ( Not for submission under 37 CFR 1.99)

|                        |                  |
|------------------------|------------------|
| Application Number     | 15287711         |
| Filing Date            | 2016-10-06       |
| First Named Inventor   | Peiman Amini     |
| Art Unit               | 2464             |
| Examiner Name          | Kan Yuen         |
| Attorney Docket Number | 110729-8053.US01 |

| U.S.PATENTS                                                                                 |         |                    |                        |                  |                                                 | Remove                                                                 |
|---------------------------------------------------------------------------------------------|---------|--------------------|------------------------|------------------|-------------------------------------------------|------------------------------------------------------------------------|
| Examiner Initial*                                                                           | Cite No | Patent Number      | Kind Code <sup>1</sup> | Issue Date       | Name of Patentee or Applicant of cited Document | Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear |
|                                                                                             | 1       | 9179495            | B1                     | 2015-11-03       | SCHERZER, et al.                                |                                                                        |
|                                                                                             | 2       | 9832796            | B2                     | 2017-11-28       | MEHTA                                           |                                                                        |
| If you wish to add additional U.S. Patent citation information please click the Add button. |         |                    |                        |                  |                                                 | Add                                                                    |
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| Examiner Initial*                                                                           | Cite No | Publication Number | Kind Code <sup>1</sup> | Publication Date | Name of Patentee or Applicant of cited Document | Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear |
|                                                                                             | 1       | 20080025208        | A1                     | 2008-01-31       | CHAN                                            |                                                                        |
|                                                                                             | 2       | 20090046655        | A1                     | 2009-02-19       | ZHAO, et al.                                    |                                                                        |
|                                                                                             | 3       | 20090252127        | A1                     | 2009-10-08       | RANGARAJAN, et al.                              |                                                                        |
|                                                                                             | 4       | 20100118830        | A1                     | 2010-05-13       | STEPHENSON, et al.                              |                                                                        |

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| Attorney Docket Number | 110729-8053.US01 |

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|----|-------------|----|------------|-------------------|
| 5  | 20110081903 | A1 | 2011-04-07 | CAI, et al.       |
| 6  | 20110286404 | A1 | 2011-11-24 | ABRAHAM, et al.   |
| 7  | 20120020319 | A1 | 2012-01-26 | SONG, et al.      |
| 8  | 20120294200 | A1 | 2012-11-22 | WANG, et al.      |
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| 12 | 20150029067 | A1 | 2015-01-29 | DONALDSON, et al. |
| 13 | 20150049616 | A1 | 2015-02-19 | COWAN, et al.     |
| 14 | 20150264614 | A1 | 2015-09-17 | STAGER, et al.    |
| 15 | 20150334750 | A1 | 2015-11-19 | MEHTA             |

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| Attorney Docket Number | 110729-8053.US01 |            |

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| 16 | 20160007273 | A1 | 2016-01-07 | PANG, et al.    |  |
| 17 | 20160142163 | A1 | 2016-05-19 | SIROTKIN        |  |
| 18 | 20160286374 | A1 | 2016-09-29 | PATIL, et al.   |  |
| 19 | 20160366632 | A1 | 2016-12-15 | CUI, et al.     |  |
| 20 | 20170048913 | A1 | 2017-02-16 | TEYEB, et al.   |  |
| 21 | 20170070919 | A1 | 2017-03-09 | CHANDOK, et al. |  |
| 22 | 20170125920 | A1 | 2017-05-04 | SPIEL, et al.   |  |
| 23 | 20170127295 | A1 | 2017-05-04 | BLACK, et al.   |  |
| 24 | 20170127325 | A1 | 2017-05-04 | VIKBERG, et al. |  |
| 25 | 20170164260 | A1 | 2017-06-08 | SHI, et al.     |  |
| 26 | 20170215091 | A1 | 2017-07-27 | LING            |  |

# **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** ( Not for submission under 37 CFR 1.99)

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| Examiner Name          | Kan Yuen         |
| Attorney Docket Number | 110729-8053.US01 |

|    |             |    |            |                  |
|----|-------------|----|------------|------------------|
| 27 | 20170251410 | A1 | 2017-08-31 | COMSTOCK         |
| 28 | 20170325243 | A1 | 2017-11-09 | YASUKAWA, et al. |

If you wish to add additional U.S. Published Application citation information please click the Add button.

## **FOREIGN PATENT DOCUMENTS**

| Examiner Initial* | Cite No | Foreign Document Number <sup>3</sup> | Country Code <sup>2</sup> i | Kind Code <sup>4</sup> | Publication Date | Name of Patentee or Applicant of cited Document | Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear | T <sup>5</sup> |
|-------------------|---------|--------------------------------------|-----------------------------|------------------------|------------------|-------------------------------------------------|--------------------------------------------------------------------------|----------------|
|                   | 1       |                                      |                             |                        |                  |                                                 |                                                                          |                |

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## **NON-PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No | 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, pages(s), volume-issue number(s), publisher, city and/or country where published. | T <sup>5</sup> |
|--------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|                    | 1       | "WLAN High Availability", Technical white paper; Hewlett-Packard Development Company, L.P., Oct. 2014, 8 pages                                                                                                                                                  |                |

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## **EXAMINER SIGNATURE**

|                    |  |                 |  |
|--------------------|--|-----------------|--|
| Examiner Signature |  | Date Considered |  |
|--------------------|--|-----------------|--|

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

<sup>1</sup> See Kind Codes of USPTO Patent Documents at [www.USPTO.GOV](http://www.USPTO.GOV) or MPEP 901.04. <sup>2</sup> Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>3</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>4</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>5</sup> Applicant is to place a check mark here if English language translation is attached.

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**  
( Not for submission under 37 CFR 1.99)

|                        |                  |
|------------------------|------------------|
| Application Number     | 15287711         |
| Filing Date            | 2016-10-06       |
| First Named Inventor   | Peiman Amini     |
| Art Unit               | 2464             |
| Examiner Name          | Kan Yuen         |
| Attorney Docket Number | 110729-8053.US01 |

**CERTIFICATION STATEMENT**

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement 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 the information disclosure statement. See 37 CFR 1.97(e)(1).

**OR**

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

- ✓ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.
- ✓ A certification statement is not submitted herewith.

**SIGNATURE**

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

|            |                |                     |            |
|------------|----------------|---------------------|------------|
| Signature  | /Han-Wei Chen/ | Date (YYYY-MM-DD)   | 2018-07-05 |
| Name/Print | Han-Wei Chen   | Registration Number | 75350      |

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# WLAN high availability

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## Overview

In a large-sized WLAN, ACs are required to provide uninterrupted services when single points of failure occur. Users have different requirements for failure detection speed, switchover time, redundancy ratio, usability, performance, and costs. The HP WLAN high availability technology provides device-level and service-level high availability to meet different network requirements:

- As shown in Table 1, device-level high availability has the following backup features:
  - **1+1 fast backup**—Two ACs back up each other. When the primary AC fails, the backup AC takes place immediately to provide WLAN services.
  - **N+1 backup**—One AC backs up multiple ACs.
  - **N+N backup**—Each AC acts as the backup AC for the other ACs.
  - **VRRP**—The primary AC and the backup AC form a VRRP group and use one virtual IP address to provide services.

**Table 1.** Backup methods characters

| Item                | 1+1 fast backup                                                         | N+1 backup                                                                                                                           | N+N backup                                                          | VRRP backup                                                    |
|---------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|----------------------------------------------------------------|
| Focus               | Reliability                                                             | Maintainability                                                                                                                      | Flexibility                                                         | Reliability                                                    |
| Feature             | AC failure detection and primary and backup AC switchover in subseconds | One backup AC for multiple primary ACs. All APs connect to their respective primary AC as long as the primary AC operates correctly. | Easy and flexible, and can meet the requirements of most scenarios. | Two ACs form one VRRP group to provide one virtual IP address. |
| Availability        | High                                                                    | Middle                                                                                                                               | Middle                                                              | High                                                           |
| Maintainability     | High                                                                    | High                                                                                                                                 | Middle                                                              | High                                                           |
| Flexibility         | Middle                                                                  | Low                                                                                                                                  | High                                                                | Middle                                                         |
| Load balancing      | Supported                                                               | Not supported                                                                                                                        | Supported                                                           | Supported                                                      |
| Heartbeat detection | Supported                                                               | Not supported                                                                                                                        | Not supported                                                       | Not supported                                                  |
| Cost                | High                                                                    | Low                                                                                                                                  | Low                                                                 | High                                                           |
| Performance         | High                                                                    | Middle                                                                                                                               | Low                                                                 | Middle                                                         |

- Service-level high availability has the following failover features:
  - 802.1X stateful failover.
  - Portal stateful failover.
  - DHCP stateful failover.

## WLAN high availability implementation

### Fundamental high availability technologies

This section describes fundamental high availability technologies.

#### AP connection priority

You can configure the AP connection priority for an AC. The priority value is in the range of 0 to 7. A larger value represents a higher priority. An AP prefers to connect to an AC with higher priority.

#### AC selection

AC selection is performed in the following descending order:

1. An AC that has APs with manually configured serial IDs.
2. An AC with higher AP connection priority
3. An AC with a lower load.  
The load of an AC is determined by the numbers of supported and online APs and clients.
4. The first discovered AC.

#### Dual-link

Dual-link enables an AP to establish LWAPP tunnels with a primary and a backup AC. The primary AC provides services for the AP. When the primary AC fails, the backup AC becomes the new primary AC to provide services.

Together with the heartbeat detection function, the backup AC can immediately detect primary AC failure and become the primary AC to provide services. The heartbeat detection function requires the two ACs to be in the same Layer 2 network.

#### VRRP

VRRP is an error-tolerant protocol. It enables hosts on a LAN to communicate with the external network when the gateway fails.

VRRP has the following benefits:

- Simplified network management.  
VRRP avoids single points of failure and simplifies the configuration on hosts. When the master in the VRRP group on a multicast or broadcast LAN fails, another router in the VRRP group takes over. The switchover is complete without causing dynamic route recalculation, route re-discovery, gateway reconfiguration on the hosts, or traffic interruption.
- Strong adaptability.  
VRRP packets are encapsulated in IP packets and support all kinds of upper-layer protocols.
- Low cost.  
Only masters send periodic VRRP advertisements.

VRRP can be used to realize portal stateful failover, 802.1X stateful failover, and AC virtualization backup in WLAN high availability.

### 1+1 fast backup

An AP establishes LWAPP tunnels with a primary AC and a backup AC. The primary AC provides services for the AP. When the primary AC fails, the backup AC can detect the failure in subseconds, and it becomes the new primary to provide services without service interruption.

1+1 fast backup uses the heartbeat detection mechanism. It has a higher redundancy ratio (1:1) but occupies more system resources.

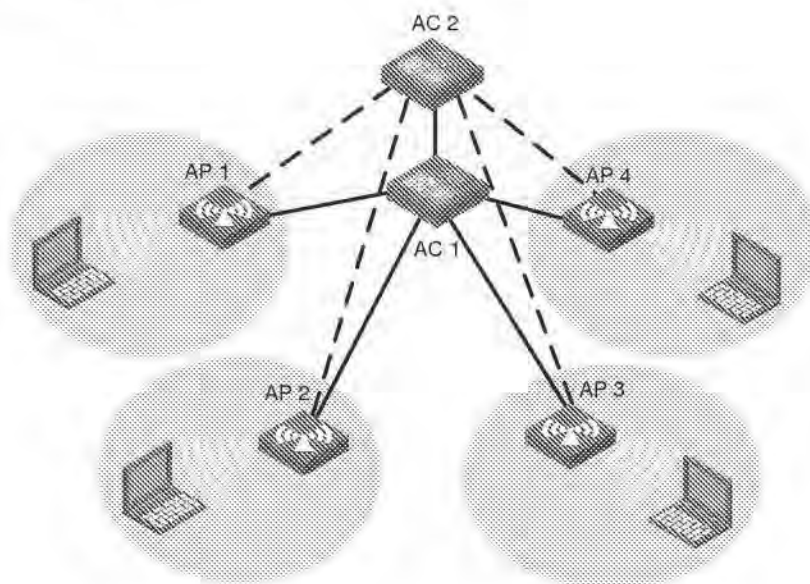
HP recommends using one AC as the backup AC to simplify maintenance. You can also configure the two ACs to balance load for each other to meet specific requirements.

As shown in Figure 1, AC 1 is the primary AC for all APs. 1+1 fast backup operates as follows:

1. The APs select AC 1 as the primary AC because AC 1 has higher AP connection priority.
2. When the primary AC fails, the APs connect to the backup AC.

- When the primary AC recovers, the APs connect to the primary AC

**Figure 1.** Network diagram



## N+1 backup

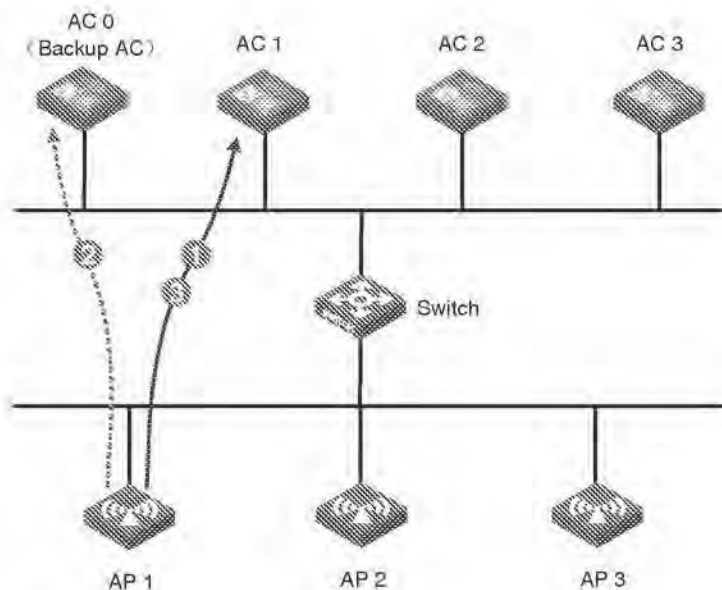
A backup AC can back up a maximum of four primary ACs. The backup AC provides services only when a primary AC fails. When the primary AC recovers, all APs switch back to the primary AC automatically.

1+1 backup is the same as 1+1 fast backup except that 1+1 backup does not support heartbeat detection.

As shown in Figure 2, AC 1, AC 2, and AC 3 are the primary AC for AP 1, AP 2, and AP 3, respectively. AC 0 is the backup AC for the other three ACs. N+1 backup operates as follows:

- AP 1, AP 2, and AP 3 use AC 1, AC 2, and AC 3 as their primary AC, respectively because the ACs are configured with different AP connection priorities.
- When AC 1 fails, AP 1 switches to AC 0.
- When AC 1 recovers, AP 1 switches back to AC 1.

**Figure 2.** Network diagram



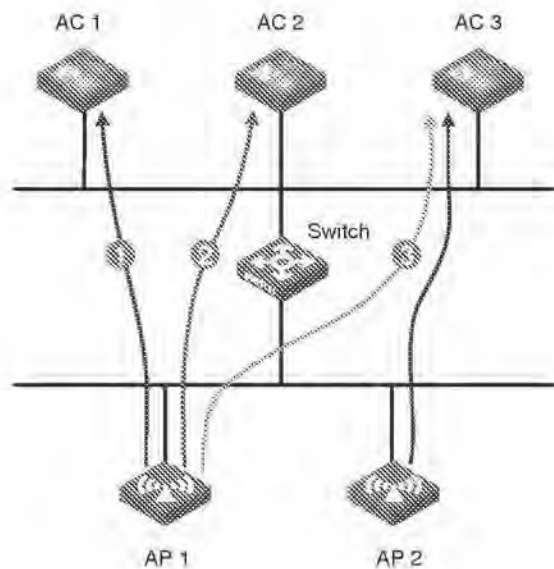
## N+N backup

Each AC acts as the backup AC for the other ACs. APs select an optimum AC as the primary AC. When the primary AC fails, the APs select another AC to connect to. When the primary AC recovers, the APs do not switch back to the primary AC.

As shown in Figure 3, AC 1, AC 2, and AC 3 provide services for all APs. N+N backup operates as follows:

1. All ACs have the same priority, so AP 1 can select an AC to connect to. Assume AP 1 selects AC 1.
2. When AC 1 fails, AP 1 selects AC 2.
3. When both AC 1 and AC 2 fail, AP 1 connects to AC 3.
4. When AC 1 recovers, AP 1 does not switch back to AC 1.

**Figure 3.** Network diagram



## Portal stateful failover

Stateful failover supports hot backup of services on two devices. Stateful failover can be configured on key devices to avoid service interruptions caused by single point failures. When operating correctly, the two devices synchronize service information. If one device fails, the other device takes over the services.

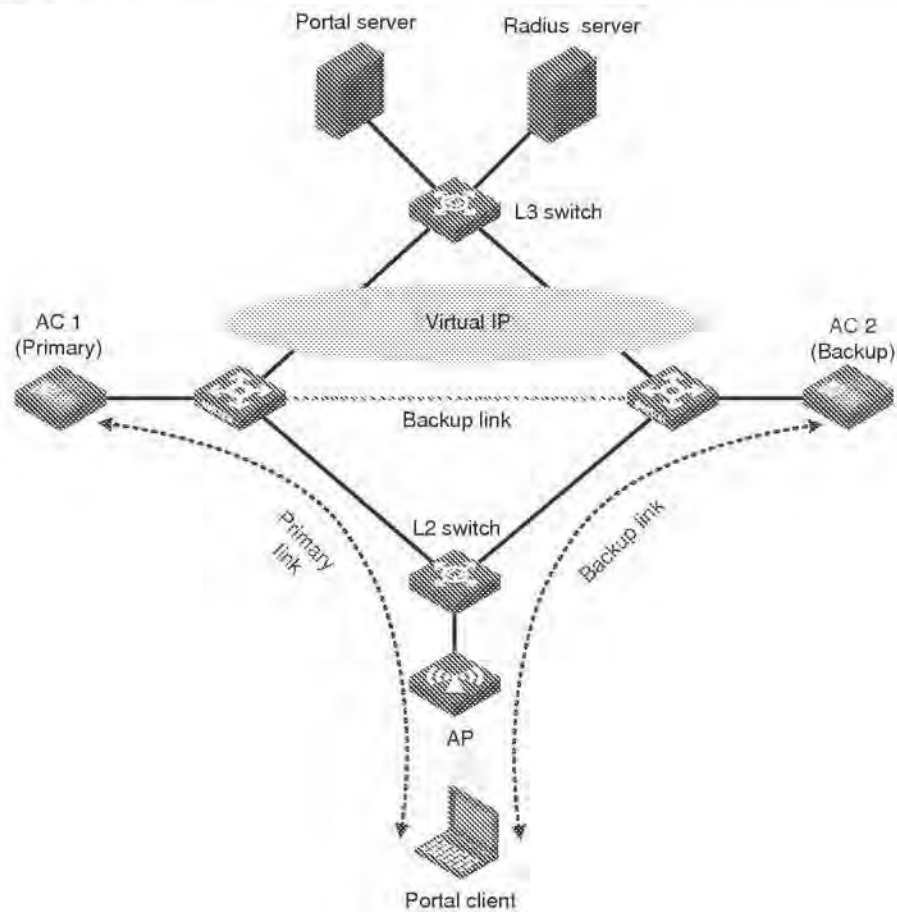
Portal stateful failover supports local and remote portal server, and local user and remote AAA server.

To implement stateful failover for portal, configure VRRP for traffic switchover. You can also configure 1+1 fast backup between the two ACs.

For a remote portal server, HP recommends that you use portal stateful failover with 1+1 fast backup, and enable VRRP on the Layer 3 interfaces that connect the ACs to the switches.

As shown in Figure 4, when portal stateful failover is enabled, the ACs back up their portal online user information through the failover link. If either AC fails, the other can guarantee data communication of the online portal users and perform portal authentication for new portal users.

**Figure 4.** Network diagram

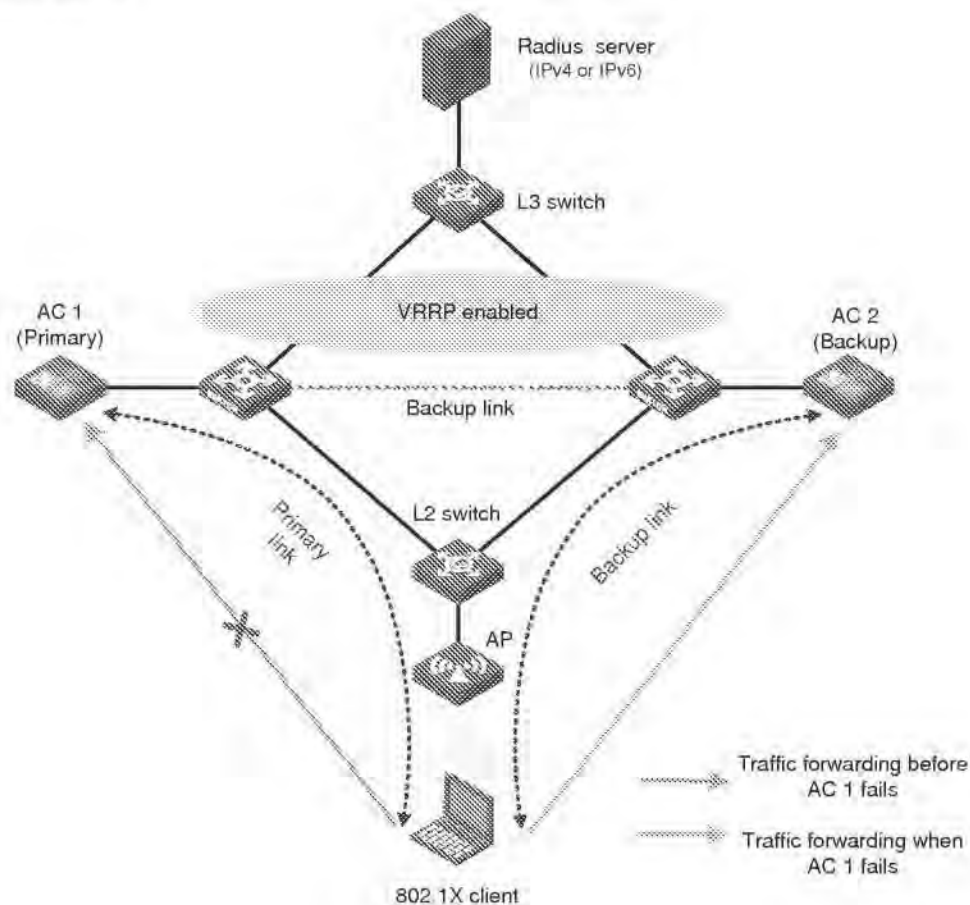


## 802.1X stateful failover

802.1X stateful failover backs up client information, client status information, and client authentication information between two ACs. This ensures that the backup AC can immediately use backup information to provide WLAN services without service interruption.

Use 802.1X stateful failover together with the VRRP for communication with the RADIUS server with one virtual IP address, and 1+1 fast backup for fast failure detection in subseconds.

**Figure 5.** Network diagram

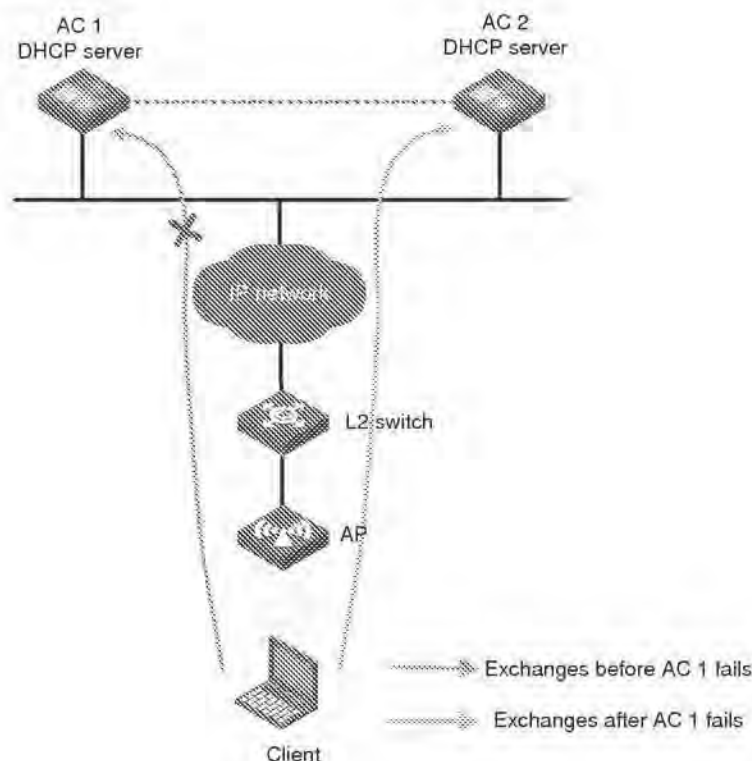


## DHCP stateful failover

DHCP stateful failover enables real-time synchronization of address allocation and lease extension information between two ACs that operate as DHCP servers. When one AC fails, the other AC takes over to provide address allocation and lease extension services for clients.

If the ACs and clients are not on the same subnet, a DHCP relay agent is required, and you must specify both ACs on the relay agent. When the interface receives request messages from clients, the relay agent forwards them to both ACs.

**Figure 6.** Network diagram



### VRRP for WLAN

VRRP for WLAN enables two ACs to form one VRRP group to provide one virtual IP address for APs and clients, and synchronize AP and client information between the two ACs in real time. When one AC fails, VRRP automatically switches services to the backup AC. The APs and clients still use the virtual IP address to access the external network without any service interruption.

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5998-7000, October 2014



## Electronic Patent Application Fee Transmittal

|                                                    |                                                            |                 |               |                             |
|----------------------------------------------------|------------------------------------------------------------|-----------------|---------------|-----------------------------|
| <b>Application Number:</b>                         | 15287711                                                   |                 |               |                             |
| <b>Filing Date:</b>                                | 06-Oct-2016                                                |                 |               |                             |
| <b>Title of Invention:</b>                         | DEDICATED BACKHAUL LINK FOR A ROBUST WIRELESS MESH NETWORK |                 |               |                             |
| <b>First Named Inventor/Applicant Name:</b>        | Peiman Amini                                               |                 |               |                             |
| <b>Filer:</b>                                      | Han-Wei Chen/Christine Ortt                                |                 |               |                             |
| <b>Attorney Docket Number:</b>                     | 110729-8053.US01                                           |                 |               |                             |
| Filed as Large Entity                              |                                                            |                 |               |                             |
| <b>Filing Fees for Utility under 35 USC 111(a)</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>                       |                                                            |                 |               |                             |
| <b>Petition:</b>                                   |                                                            |                 |               |                             |
| <b>Patent-Appeals-and-Interference:</b>            |                                                            |                 |               |                             |
| <b>Post-Allowance-and-Post-Issuance:</b>           |                                                            |                 |               |                             |
| <b>Extension-of-Time:</b>                          |                                                            |                 |               |                             |

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| <b>EFS ID:</b>                              | 33100801                                                   |
| <b>Application Number:</b>                  | 15287711                                                   |
| <b>International Application Number:</b>    |                                                            |
| <b>Confirmation Number:</b>                 | 6154                                                       |
| <b>Title of Invention:</b>                  | DEDICATED BACKHAUL LINK FOR A ROBUST WIRELESS MESH NETWORK |
| <b>First Named Inventor/Applicant Name:</b> | Peiman Amini                                               |
| <b>Customer Number:</b>                     | 22918                                                      |
| <b>Filer:</b>                               | Han-Wei Chen/Christine Ortt                                |
| <b>Filer Authorized By:</b>                 | Han-Wei Chen                                               |
| <b>Attorney Docket Number:</b>              | 110729-8053.US01                                           |
| <b>Receipt Date:</b>                        | 05-JUL-2018                                                |
| <b>Filing Date:</b>                         | 06-OCT-2016                                                |
| <b>Time Stamp:</b>                          | 19:10:50                                                   |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                |

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| 1                            |                                                       | 2018-07-05_Response_110729-8053US01.pdf | 136598<br><br>c2bb48949195151fa378d18b1f7792ade09a511    | yes              | 12               |
|                              | Multipart Description/PDF files in .zip description   |                                         |                                                          |                  |                  |
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|                              | Applicant Arguments/Remarks Made in an Amendment      |                                         | 8                                                        | 12               |                  |
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| 2                            | Information Disclosure Statement (IDS) Form (SB08)    | 2018-07-05_IDS_110729-8053US01.pdf      | 1039553<br><br>03d09dd086cc67d219c9d8c75ee1c8bd41d61x040 | no               | 6                |
| Warnings:                    |                                                       |                                         |                                                          |                  |                  |
| Information:                 |                                                       |                                         |                                                          |                  |                  |
| 3                            | Non Patent Literature                                 | NPL-WLAN-high-availability.pdf          | 289021<br><br>50fa38b0391007c88554081aa7e0dd17eef9177    | no               | 8                |
| Warnings:                    |                                                       |                                         |                                                          |                  |                  |
| Information:                 |                                                       |                                         |                                                          |                  |                  |
| 4                            | Fee Worksheet (SB06)                                  | fee-info.pdf                            | 30407<br><br>876k33835a2aa71e20a08d16f06082d4kaa008095   | no               | 2                |
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|-------------|--------------|---------------|---------------------|
| 15287711    | INTV.SUM.APP | 07/09/2018    | 110729-8053.US01    |
|             | OA.APPENDIX  | 07/09/2018    | 110729-8053.US01    |

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| <b>PATENT APPLICATION FEE DETERMINATION RECORD</b><br>Substitute for Form PTO-875                                               |                                                                                          |                                                                                                                                                                                                                               |              | Application or Docket Number<br>15/287,711                |                             | Filing Date<br>10/06/2016 |  | <input type="checkbox"/> To be Mailed |  |
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| <b>APPLICATION AS FILED - PART I</b>                                                                                            |                                                                                          |                                                                                                                                                                                                                               |              |                                                           |                             |                           |  |                                       |  |
|                                                                                                                                 |                                                                                          | (Column 1)                                                                                                                                                                                                                    | (Column 2)   |                                                           |                             |                           |  |                                       |  |
| FOR                                                                                                                             |                                                                                          | NUMBER FILED                                                                                                                                                                                                                  | NUMBER EXTRA | RATE (\$)                                                 |                             | FEE (\$)                  |  |                                       |  |
| <input type="checkbox"/> BASIC FEE<br>(37 CFR 1.16(a), (b), or (c))                                                             |                                                                                          | N/A                                                                                                                                                                                                                           | N/A          | N/A                                                       |                             |                           |  |                                       |  |
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| TOTAL CLAIMS<br>(37 CFR 1.16(i))                                                                                                |                                                                                          | minus 20 =                                                                                                                                                                                                                    | -            | x \$80 =                                                  |                             |                           |  |                                       |  |
| INDEPENDENT CLAIMS<br>(37 CFR 1.16(h))                                                                                          |                                                                                          | minus 3 =                                                                                                                                                                                                                     | -            | x \$420 =                                                 |                             |                           |  |                                       |  |
| <input type="checkbox"/> APPLICATION SIZE FEE (37 CFR 1.16(s))                                                                  |                                                                                          | If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 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). |              |                                                           |                             |                           |  |                                       |  |
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| * If the difference in column 1 is less than zero, enter "0" in column 2.                                                       |                                                                                          |                                                                                                                                                                                                                               |              | TOTAL                                                     |                             |                           |  |                                       |  |
| <b>APPLICATION AS AMENDED - PART II</b>                                                                                         |                                                                                          |                                                                                                                                                                                                                               |              |                                                           |                             |                           |  |                                       |  |
| <b>AMENDMENT</b>                                                                                                                | 07/05/2018                                                                               | (Column 1)<br>CLAIMS<br>REMAINING<br>AFTER<br>AMENDMENT                                                                                                                                                                       |              | (Column 2)<br>HIGHEST<br>NUMBER<br>PREVIOUSLY<br>PAID FOR | (Column 3)<br>PRESENT EXTRA | RATE (\$)                 |  | ADDITIONAL FEE (\$)                   |  |
|                                                                                                                                 | Total<br>(37 CFR 1.16(j))                                                                | * 21                                                                                                                                                                                                                          | Minus        | ** 21                                                     | = 0                         | x \$100 =                 |  | 0                                     |  |
|                                                                                                                                 | Independent<br>(37 CFR 1.16(h))                                                          | * 2                                                                                                                                                                                                                           | Minus        | *** 3                                                     | = 0                         | x \$460 =                 |  | 0                                     |  |
|                                                                                                                                 | <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                                     |  |
| <b>AMENDMENT</b>                                                                                                                |                                                                                          | (Column 1)<br>CLAIMS<br>REMAINING<br>AFTER<br>AMENDMENT                                                                                                                                                                       |              | (Column 2)<br>HIGHEST<br>NUMBER<br>PREVIOUSLY<br>PAID FOR | (Column 3)<br>PRESENT EXTRA | RATE (\$)                 |  | ADDITIONAL FEE (\$)                   |  |
|                                                                                                                                 | Total<br>(37 CFR 1.16(j))                                                                | *                                                                                                                                                                                                                             | Minus        | **                                                        | =                           | x \$0 =                   |  |                                       |  |
|                                                                                                                                 | Independent<br>(37 CFR 1.16(h))                                                          | *                                                                                                                                                                                                                             | Minus        | ***                                                       | =                           | x \$0 =                   |  |                                       |  |
|                                                                                                                                 | <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           |  |                                       |  |
| * If the entry in column 1 is less than the entry in column 2, write "0" in column 3.                                           |                                                                                          |                                                                                                                                                                                                                               |              |                                                           |                             | SLIE                      |  |                                       |  |
| ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".                                       |                                                                                          |                                                                                                                                                                                                                               |              |                                                           |                             | KIMBERLY D WILLIAMS       |  |                                       |  |
| *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".                                        |                                                                                          |                                                                                                                                                                                                                               |              |                                                           |                             |                           |  |                                       |  |
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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.

**DECLARATION (37 C.F.R. 1.63) FOR UTILITY OR DESIGN PATENT APPLICATION  
USING AN APPLICATION DATA SHEET (37 C.F.R. 1.76) AND ASSIGNMENT**

Title of Invention: DEDICATED BACKHAUL LINK FOR A ROBUST WIRELESS MESH  
NETWORK

As a below named inventor, I hereby declare that:

This declaration is directed to the attached application, or (if following box is checked):

☒ United States application or PCT international application number 15/287,711 filed  
on October 6, 2016.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the  
application.

I have reviewed and understand the contents of the application, including the claims.

I am aware of the duty to disclose to the United States Patent and Trademark Office all information  
known to me to be material to patentability as defined in 37 C.F.R. Section 1.56.

Whereas, the undersigned inventor(s) has/have made certain inventions, improvements, and discoveries  
(herein referred to as the "Invention") disclosed in the above-identified patent application and further  
identified by the Attorney Docket Number provided above in the header of this document:

Whereas, **NETGEAR, Inc.**, a corporation duly organized under and pursuant to the laws of the state of  
California, having its principal place of business at 350 East Plumeria Drive, San Jose, CA 95134, desires  
to acquire and each undersigned inventor desires to grant to **NETGEAR, Inc.** the entire worldwide right,  
title, and interest in and to the Invention and in and to any and all patent applications and patents directed  
thereto;

Now, therefore, for one dollar (\$1.00) and good and valuable consideration, the receipt and sufficiency  
thereof being hereby acknowledged, each undersigned inventor, hereinafter referred to as **ASSIGNOR**,  
hereby sells or has sold, assigns or has assigned, and otherwise transfers or has transferred to  
**NETGEAR, Inc.**, hereinafter referred to as **ASSIGNEE**, its successors, legal representatives, and  
assigns, the entire worldwide right, title, and interest in and to the Invention, the above-identified United  
States patent application, and any and all other patent applications and patents for the Invention which  
may be applied for or granted therefor in the United States and in all foreign countries and jurisdictions,  
including all divisions, continuations, reissues, reexaminations, renewals, extensions, counterparts,  
substitutes, and extensions thereof, and all rights of priority resulting from the filing of such applications  
and granting of such patents. In addition, each undersigned inventor hereby authorizes and requests the  
Director of the United States Patent and Trademark Office to issue any United States Patent, and foreign  
patent authorities to issue any foreign patent, granted for the Invention, to the Assignee, its successors,  
legal representatives, and assigns, the entire worldwide right, title, and interest in and to the same to be  
held and enjoyed by the Assignee, its successors, legal representatives, and assigns to the full end of the  
terms for which any and all such patents may be granted, as fully and entirely as would have been held  
and enjoyed by the undersigned had this Assignment not been made; and each undersigned inventor  
agrees to execute, without charge to said Assignee but at the Assignee's expense, any and all documents  
and instruments and perform all lawful acts reasonably related to recording this Assignment or perfecting

title to the Invention and all related patents and applications, in Assignee, its successors, legal representatives, and assigns, whenever requested by the Assignee, its successors, legal representatives, or assigns.

ASSIGNOR(S) grants the attorney of record the power to insert on this Assignment any further identification that may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document.

Each undersigned inventor acknowledges their prior and ongoing obligations to sell, assign, and transfer the rights under this Assignment to the Assignee and is unaware of any reason why they may not have the full and unencumbered right to sell, assign, and transfer the rights hereby sold, assigned, and transferred, and has not executed, and will not execute, any document or instrument in conflict herewith. Each undersigned inventor also hereby grants the assignee, its successors, legal representatives, and assigns, the right to insert in this Assignment any further identification (including, but not limited to, patent Application Number) which may be necessary or desirable for recordation of this Assignment.

This Assignment may be executed in one or more counterparts, each of which shall be deemed an original and all of which may be taken together as one and the same Assignment.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

1) Legal Name of Inventor: Peiman Amini

Signature:  Date: 07/07/2018

2) Legal Name of Inventor: Joseph Amalan Arul Emmanuel

Signature:  Date: 09/07/2018

## Electronic Acknowledgement Receipt

|                                             |                                                            |
|---------------------------------------------|------------------------------------------------------------|
| <b>EFS ID:</b>                              | 33713743                                                   |
| <b>Application Number:</b>                  | 15287711                                                   |
| <b>International Application Number:</b>    |                                                            |
| <b>Confirmation Number:</b>                 | 6154                                                       |
| <b>Title of Invention:</b>                  | DEDICATED BACKHAUL LINK FOR A ROBUST WIRELESS MESH NETWORK |
| <b>First Named Inventor/Applicant Name:</b> | Peiman Amini                                               |
| <b>Customer Number:</b>                     | 22918                                                      |
| <b>Filer:</b>                               | Han-Wei Chen/Christine Ortt                                |
| <b>Filer Authorized By:</b>                 | Han-Wei Chen                                               |
| <b>Attorney Docket Number:</b>              | 110729-8053.US01                                           |
| <b>Receipt Date:</b>                        | 13-SEP-2018                                                |
| <b>Filing Date:</b>                         | 06-OCT-2016                                                |
| <b>Time Stamp:</b>                          | 15:18:30                                                   |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                |

### Payment information:

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| Submitted with Payment | no |
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### File Listing:

| Document Number | Document Description      | File Name                                         | File Size(Bytes)/<br>Message Digest                 | Multi Part /.zip | Pages (if appl.) |
|-----------------|---------------------------|---------------------------------------------------|-----------------------------------------------------|------------------|------------------|
| 1               | Oath or Declaration filed | Declaration_Assignment_signed_110729-8053US01.pdf | 544469<br>97557d3662d582f0aee10e0a1sc918f0707051e95 | no               | 2                |

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |
| <b>Total Files Size (in bytes):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 544469 |
| <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> |        |

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|------------------------|------------------|
| Application Number     | 15287711         |
| Filing Date            | 2016-10-06       |
| First Named Inventor   | Peiman Amini     |
| Art Unit               | 2464             |
| Examiner Name          | Kan Yuen         |
| Attorney Docket Number | 110729-8053.US01 |

| U.S.PATENTS                                                                                 |         |               |                        |            |                                                 | Remove                                                                 |
|---------------------------------------------------------------------------------------------|---------|---------------|------------------------|------------|-------------------------------------------------|------------------------------------------------------------------------|
| Examiner Initial*                                                                           | Cite No | Patent Number | Kind Code <sup>1</sup> | Issue Date | Name of Patentee or Applicant of cited Document | Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear |
|                                                                                             | 1       | 7155167       | B1                     | 2006-12-26 | CARTY                                           |                                                                        |
|                                                                                             | 2       | 7502354       | B1                     | 2009-03-10 | MAUFER                                          |                                                                        |
|                                                                                             | 3       | 7567822       | B2                     | 2009-07-28 | HART, et al.                                    |                                                                        |
|                                                                                             | 4       | 8248948       | B2                     | 2012-08-21 | WEIL, et al.                                    |                                                                        |
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|                                     | 1       | 20020042274        | A1                     | 2002-04-11       | ADES                                            |                                                                        |
|                                     | 2       | 20050048963        | A1                     | 2005-03-03       | KUBLER, et al.                                  |                                                                        |

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| Examiner Name          | Kan Yuen         |            |
| Attorney Docket Number | 110729-8053.US01 |            |

|    |             |    |            |                   |
|----|-------------|----|------------|-------------------|
| 3  | 20070206528 | A1 | 2007-09-06 | WALTON, et al.    |
| 4  | 20070280453 | A1 | 2007-12-06 | KELLEY, et al.    |
| 5  | 20080247317 | A1 | 2008-10-09 | WEIL, et al.      |
| 6  | 20090067369 | A1 | 2009-03-12 | STAMOULIS, et al. |
| 7  | 20090135738 | A1 | 2009-05-28 | MHATRE, et al.    |
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| 9  | 20090221238 | A1 | 2009-09-03 | KO, et al.        |
| 10 | 20100157888 | A1 | 2010-06-24 | AGGARWAL, et al.  |
| 11 | 20100231473 | A1 | 2010-09-16 | SHTROM, et al.    |
| 12 | 20100246416 | A1 | 2010-09-30 | SINHA, et al.     |
| 13 | 20100291931 | A1 | 2010-11-18 | SUEMITSU, et al.  |

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| Attorney Docket Number | 110729-8053.US01 |            |

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|----|-------------|----|------------|-------------------|
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| 17 | 20120224484 | A1 | 2012-09-06 | BABIARZ, et al.   |
| 18 | 20120225646 | A1 | 2012-09-06 | MOCHIDA, et al.   |
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| 20 | 20150092681 | A1 | 2015-04-02 | FERNANDO, et al.  |
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| 22 | 20150215791 | A1 | 2015-07-30 | GELLER, et al.    |
| 23 | 20160029384 | A1 | 2016-01-28 | SIDHU, et al.     |
| 24 | 20160066249 | A1 | 2016-03-03 | DUKES, et al.     |

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| Attorney Docket Number | 110729-8053.US01 |

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|----|-------------|----|------------|-----------------|
| 25 | 20160094946 | A1 | 2016-03-31 | KEITHLEY        |
| 26 | 20160227544 | A1 | 2016-08-04 | KATAR, et al.   |
| 27 | 20160269097 | A1 | 2016-09-15 | ISLAM, et al.   |
| 28 | 20160308755 | A1 | 2016-10-20 | GARG            |
| 29 | 20170006431 | A1 | 2017-01-05 | DONOVAN, et al. |
| 30 | 20170118705 | A1 | 2017-04-27 | TRAN, et al.    |

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<sup>1</sup> See Kind Codes of USPTO Patent Documents at [www.USPTO.GOV](http://www.USPTO.GOV) or MPEP 901.04. <sup>2</sup> Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>3</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>4</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>5</sup> Applicant is to place a check mark here if English language translation is attached.

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| Application Number     | 15287711         |
| Filing Date            | 2016-10-06       |
| First Named Inventor   | Peiman Amini     |
| Art Unit               | 2464             |
| Examiner Name          | Kan Yuen         |
| Attorney Docket Number | 110729-8053.US01 |

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Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement 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 the information disclosure statement. See 37 CFR 1.97(e)(1).

**OR**

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

- ✓ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.
- ✓ A certification statement is not submitted herewith.

**SIGNATURE**

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

|            |                       |                     |            |
|------------|-----------------------|---------------------|------------|
| Signature  | /Han-Wei Chen/        | Date (YYYY-MM-DD)   | 2018-09-28 |
| Name/Print | Han-Wei (Harvey) Chen | Registration Number | 75350      |

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The information provided by you in this form will be subject to the following routine uses:

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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 inspections 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 Patent Application Fee Transmittal

|                                                    |                                                            |                 |               |                             |
|----------------------------------------------------|------------------------------------------------------------|-----------------|---------------|-----------------------------|
| <b>Application Number:</b>                         | 15287711                                                   |                 |               |                             |
| <b>Filing Date:</b>                                | 06-Oct-2016                                                |                 |               |                             |
| <b>Title of Invention:</b>                         | DEDICATED BACKHAUL LINK FOR A ROBUST WIRELESS MESH NETWORK |                 |               |                             |
| <b>First Named Inventor/Applicant Name:</b>        | Peiman Amini                                               |                 |               |                             |
| <b>Filer:</b>                                      | Han-Wei Chen/Christine Ortt                                |                 |               |                             |
| <b>Attorney Docket Number:</b>                     | 110729-8053.US01                                           |                 |               |                             |
| Filed as Large Entity                              |                                                            |                 |               |                             |
| <b>Filing Fees for Utility under 35 USC 111(a)</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>                       |                                                            |                 |               |                             |
| <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:                          |          |          |        |                      |
| SUBMISSION- INFORMATION DISCLOSURE STMT | 1806     | 1        | 240    | 240                  |
| Total in USD (\$)                       |          |          |        | 240                  |

## Electronic Acknowledgement Receipt

|                                             |                                                            |
|---------------------------------------------|------------------------------------------------------------|
| <b>EFS ID:</b>                              | 33871266                                                   |
| <b>Application Number:</b>                  | 15287711                                                   |
| <b>International Application Number:</b>    |                                                            |
| <b>Confirmation Number:</b>                 | 6154                                                       |
| <b>Title of Invention:</b>                  | DEDICATED BACKHAUL LINK FOR A ROBUST WIRELESS MESH NETWORK |
| <b>First Named Inventor/Applicant Name:</b> | Peiman Amini                                               |
| <b>Customer Number:</b>                     | 22918                                                      |
| <b>Filer:</b>                               | Han-Wei Chen/Christine Ortt                                |
| <b>Filer Authorized By:</b>                 | Han-Wei Chen                                               |
| <b>Attorney Docket Number:</b>              | 110729-8053.US01                                           |
| <b>Receipt Date:</b>                        | 28-SEP-2018                                                |
| <b>Filing Date:</b>                         | 06-OCT-2016                                                |
| <b>Time Stamp:</b>                          | 19:45:47                                                   |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                |

### Payment information:

|                                          |                       |
|------------------------------------------|-----------------------|
| Submitted with Payment                   | yes                   |
| Payment Type                             | CARD                  |
| Payment was successfully received in RAM | \$240                 |
| RAM confirmation Number                  | 100118INTEFSW19470100 |
| Deposit Account                          | 500665                |
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| Document Number | Document Description                               | File Name                          | File Size(Bytes)/ Message Digest        | Multi Part /.zip | Pages (if appl.) |
|-----------------|----------------------------------------------------|------------------------------------|-----------------------------------------|------------------|------------------|
| 1               | Information Disclosure Statement (IDS) Form (SB08) | 2018-09-28_IDS_110729-8053US01.pdf | 1039520                                 | no               | 7                |
|                 |                                                    |                                    | 160fcbee611a2f72ee3f41722808cd1b4474fc5 |                  |                  |

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

|   |                      |              |                                         |    |   |
|---|----------------------|--------------|-----------------------------------------|----|---|
| 2 | Fee Worksheet (SB06) | fee-info.pdf | 30407                                   | no | 2 |
|   |                      |              | 9947096eaf3cfaad7666176af6713e4dd8d1ee6 |    |   |

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| <b>Total Files Size (in bytes):</b> | 1069927 |
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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.



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| APPLICATION NO.                | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--------------------------------|-------------|----------------------|---------------------|------------------|
| 15/287,711                     | 10/06/2016  | Peiman Amini         | 110729-8053.US01    | 6154             |
| 22918                          | 7590        | 10/04/2018           | EXAMINER            |                  |
| PERKINS COIE LLP - PAO General |             |                      | YUEN, KAN           |                  |
| P.O. BOX 1247                  |             |                      |                     |                  |
| SEATTLE, WA 98111-1247         |             |                      |                     |                  |
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|                                |             |                      | 2464                |                  |
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|                                |             |                      | 10/04/2018          | ELECTRONIC       |

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

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**DETAILED ACTION**

***Notice of Pre-AIA or AIA Status***

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

***Claim Rejections - 35 USC § 103***

1. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103 are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7, 9, 12-16, 19 is/are rejected under 35 U.S.C. 103 as being unpatentable over Gatewood et al. (Pat No.: 9,001,767) in view of Gokturk et al. (Pub No.: 2016/0192203) and Nolan et al. (Pub No.: 2017/0238189).

**Regarding claim 1**, Gatewood et al. discloses a computer-implemented method for implementing a dedicated backhaul in a wireless mesh network formed with one or more mesh points, the method being performed by a first mesh point and comprising:

**establishing a forward wireless communication** (read as second/backup wireless backhaul link in step 403 of fig. 4) **with a second mesh point** (read as one of the other wireless access nodes) (Gatewood et al. see figs. 1-4; column 4, lines 59-67; in step 403, the WLAN access node 330 selects a second wireless backhaul link as a backup for the first backhaul link 341. The second wireless backhaul link is between the WLAN access node 330 and the other wireless access nodes), **and**

**establishing a backhaul communication** (read as first wireless backhaul link in step 402 of fig. 4), **separate from the forward wireless communication, with the second mesh point** (Gatewood et al. see figs. 1-4; column 2, lines 23-34; column 4, lines 29-39; in fig. 4, step 402, WLAN access node 330 selects a first wireless backhaul link, wherein the link is between WLAN access node 330 and other wireless access nodes. In some examples, WLAN access node and the other wireless access nodes comprise similar devices or equipment, such as in a mesh wireless local area network);

**wherein the forward wireless communication is established using a wireless communication technology using frequency bands including a 5 GHz band** (Gatewood et al. column 6, lines 48-58; the first and second wireless backhaul links use frequency spectrum such as 5 GHz), **and**

**wherein the backhaul communication is established using a communication technology that is a 5 GHz radio frequency (RF) technology using a dedicated radio** (Gatewood et al. column 6, lines 48-58; the first and second wireless backhaul links use frequency spectrum such as 5 GHz).

However, Gatewood et al. does not explicitly disclose wherein the forward wireless communication is established using a wireless communication technology using frequency bands selected from the group consisting of: a 2.4 GHz band, and a 5GHz band; and wherein the backhaul communication is established using a communication technology selected from the group consisting of: a power line based communication, a 2.4 GHz or 5 GHz radio frequency (RF) technology using a dedicated radio, and a sub-1 GHz RF technology.

Gokturk et al. from the same or similar fields of endeavor discloses the feature wherein the forward wireless communication is established using a wireless communication technology using frequency bands selected from the group consisting of: a 2.4 GHz band, and a 5GHz band (Gokturk et al. see fig. 2, fig. 5; paragraphs 0009, 0063; access points (APs) each can have multiple network interfaces, such network interface n is, but not limited to, multiple Wi-Fi interfaces (2.4 GHz and 5 GHz), etc.). Thus, the wireless communication interface is selected from the group consisting of 2.4GHz and 5GHz Wi-Fi interfaces, and; wherein the backhaul communication is established using a communication technology selected from the group consisting of: a power line based communication, and a 2.4 GHz or 5 GHz radio frequency (RF) technology using a dedicated radio (Gokturk et al. see fig. 2, fig. 5; paragraphs 0009, 0063; access points (APs) each can have multiple network interfaces, such as, but not limited to, multiple Wi-Fi interfaces (2.4 GHz and 5 GHz), PLC interface, MoCA interfaces, Ethernet interfaces, etc.). The wireless communication interface is selected from the group consisting of PLC interface, 2.4GHz and 5GHz Wi-Fi interfaces, and etc.

It would have been obvious to a person having ordinary skill in the art before the effective filing date of the claimed invention to modify the disclosure of Gatewood et al. and to implement with the feature as taught by Gokturk et al. to provide selection from a group consisting of PLC interface, 2.4GHz or 5GHz RF interface.

The motivation would be to improve transmission efficiency.

Gokturk et al. does not explicitly disclose the feature wherein the backhaul communication is established using a communication technology selected from a sub-1 GHz RF technology.

Nolan from the same or similar fields of endeavor discloses the feature wherein the backhaul communication is established using a communication technology selected from a sub-1 GHz RF technology (Nolan et al. see paragraph 0029, 0052, 0070).

It would have been obvious to a person having ordinary skill in the art before the effective filing date of the claimed invention to modify the disclosure of Gatewood et al. in view of Gokturk et al. and to implement with the feature as taught by Nolan et al. to provide selection of a sub-1 GHz RF technology.

The motivation would be to improve transmission interference.

**Claim 12** is rejected similarly to claim 1.

**Regarding claims 2, 13**, Gatewood et al. discloses the feature wherein the backhaul communication is dedicated for controlling packets (Gatewood et al. see fig. 5; column 7, lines 30-45; wirelessly exchanging user communications and overhead communications over the associated links 561-563).

**Regarding claims 3, 14**, Gatewood et al. discloses the feature upon determining that a quality of service of the backhaul communication has dropped to below a predetermined threshold, redirecting backhaul traffic to the forward wireless communication (Gatewood et al. see column 6, lines 25-40; when first backhaul link does not meet the performance criteria, WLAN access node provides backhaul over the second backhaul link).

**Regarding claims 4, 15**, Gatewood et al. discloses the feature upon determining whether a quality of service of the established backhaul has dropped to below a predetermined threshold, establishing an alternative backhaul communication with the second mesh point; and redirecting backhaul traffic to the alternative backhaul communication (Gatewood et al. see column 6, lines 25-40;

when first backhaul link does not meet the performance criteria, WLAN access node provides backhaul over the second backhaul link).

**Regarding claims 5, 16,** Gatewood et al. discloses the feature wherein the alternative backhaul communication is a direct link that links to the second mesh point through no other mesh point (Gatewood et al. see figs. 1-4; column 4, lines 59-67; this second/backup backhaul link can be a link between WLAN access node 330 and other wireless access nodes). As shown in fig. 1; other wireless access nodes are parallel to the WLAN access node.

**Regarding claim 7,** Gatewood et al. discloses the feature wherein different backhails are used for different clients (Gatewood et al. see figs. 1-4; column 2, lines 23-34; column 4, lines 29-39; in fig. 4, step 402, WLAN access node 330 selects a first wireless backhaul link, wherein the link is between WLAN access node 330 and other wireless access nodes).

**Regarding claims 9, 19,** Gatewood et al. discloses the feature for measuring a plurality of qualitative parameters for the established backhaul communication (Gatewood et al. see figs. 1-4; column 2, lines 23-34; column 4, lines 29-58; in fig. 4, step 402, WLAN access node 330 selects a first wireless backhaul link based on signal strength of wireless links provided by ones of WLAN access nodes 331-334); and causing the measured qualitative parameters to be transmitted to a controlling entity (read as processing system 520 in fig. 5) to facilitate a selection of a communication technology used for a backhaul communication between each two mesh points in the wireless mesh network (Gatewood et al. see fig. 5; column 8, lines 12-40; software 532 can include data structures which indicate signal strengths and uptime information to the processing system 520 to select the first and second backhaul links based on the signal strengths).

2. Claims 6, 17 is/are rejected under 35 U.S.C. 103 as being unpatentable over Gatewood et al. (Pat No.: 9,001,767) in view of Gokturk et al. (Pub No.: 2016/0192203) and Nolan et al. (Pub No.:

2017/0238189) as applied to claim 4 above, and further in view of Thubert et al. (Pub No.: 2008/0080414).

**Regarding claims 6, 17,** Gatewood et al. in view of Gokturk et al. and Nolan et al. does not explicitly disclose the feature wherein the alternative backhaul communication is an indirect direct link that links to the second mesh point through another mesh point.

Thubert et al. from the same or similar fields of endeavor discloses the feature wherein the alternative backhaul communication is an indirect direct link that links to the second mesh point through another mesh point (Thubert et al. see fig. 1; relay mesh APs 105, 107; paragraphs 0025, 0077).

It would have been obvious to a person having ordinary skill in the art before the effective filing date of the claimed invention to modify the disclosure of Gatewood et al. in view of Gokturk et al. and Nolan et al. and to implement the feature/teaching as taught by Thubert et al. to implement relay mesh APs to improve signal quality.

The motivation would be to increase transmission reliability.

3. Claims 8, 18 is/are rejected under 35 U.S.C. 103 as being unpatentable over Gatewood et al. (Pat No.: 9,001,767) in view of Gokturk et al. (Pub No.: 2016/0192203) and Nolan et al. (Pub No.: 2017/0238189) as applied to claim 1 above, and further in view of Lu (Pub No.: 2010/0260146).

**Regarding claims 8, 18,** Gatewood et al. in view of Gokturk et al. and Nolan et al. does not explicitly disclose the feature for constructing a list of backhaul candidates, each backhaul candidate having a score indicative of an estimated quality of a potential link between the first mesh point and the second mesh point; upon determining that a quality of service of the dedicated backhaul has dropped to below a predetermined threshold, establishing an alternative backhaul communication with the second mesh point using a backhaul candidate with the highest score on the list.

Lu from the same or similar fields of endeavor discloses the feature for constructing a list of backhaul candidates, each backhaul candidate having a score indicative of an estimated quality of a potential link between the first mesh point and the second mesh point; upon determining that a quality of service of the dedicated backhaul has dropped to below a predetermined threshold, establishing an alternative backhaul communication with the second mesh point using a backhaul candidate with the highest score on the list (Lu see paragraphs 0040, 0044, 0045, 0050, 0079, 0080; each AP includes a dedicated wireless interface or antenna to actively monitor operations such as routing information of neighboring/candidate APs in order to determine an optimum route for its associated uplink path, downlink path, and local link path). Optimum route may be determined based on signal strength, number of downlink stations, etc.

It would have been obvious to a person having ordinary skill in the art before the effective filing date of the claimed invention to modify the disclosure of Gatewood et al. in view of Gokturk et al. and Nolan et al. and to implement the feature/teaching as taught by Lu to actively monitor neighboring/candidate APs to determine an optimum route.

The motivation would be to improve transmission efficiency.

4. Claims 10, 11, 20, 21 is/are rejected under 35 U.S.C. 103 as being unpatentable over Gatewood et al. (Pat No.: 9,001,767) in view of Gokturk et al. (Pub No.: 2016/0192203) and Nolan et al. (Pub No.: 2017/0238189) as applied to claim 1 above, and further in view of Cao et al. (Pub No.: 2016/0212755).

**Regarding claims 10, 20,** Gatewood et al. in view of Gokturk et al. and Nolan et al. does not explicitly disclose the feature for aggregating a plurality of backhaul links available on different communication technologies to create an aggregated backhaul communication.

Cao et al. from the same or similar fields of endeavor discloses the feature for aggregating a plurality of backhaul links available on different communication technologies to create an aggregated backhaul communication (Cao et al. see paragraph 0068).

It would have been obvious to a person having ordinary skill in the art before the effective filing date of the claimed invention to modify the disclosure of Gatewood et al. in view of Gokturk et al. and Nolan et al. and to implement the feature/teaching as taught by Cao et al. to aggregate communications.

The motivation would be to improve transmission throughput.

**Regarding claims 11, 21,** Cao et al. discloses the feature wherein the aggregated backhaul links are aggregated on a media access control (MAC) layer or a transport layer (Cao et al. see paragraphs 0016, 0024).

***Examiner's Note***

5. The Applicant is welcome to request a telephonic interview if the Applicant has any questions or requires any additional information that would further or expedite the prosecution of the application.

***Conclusion***

6. 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