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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/578,124	02/07/2017	9565707	RALEP037D1	1830

106963 7590 01/18/2017

Headwater Research LLC
1011 Pruitt Place
Tyler, TX 75703

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

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

The Patent Term Adjustment is 194 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

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

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

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Gregory G. Raleigh, Woodside, CA;
Headwater Partners I LLC, Redwood City, CA;
Alireza Raissinia, Saratoga, CA;
Jeffrey Green, Sunnyvale, CA;

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14/578,124	12/19/2014	Gregory G. Raleigh	RALEP037D1	1830

106963 7590 10/17/2016

Headwater Partners I LLC
1011 Pruitt Place
Tyler, TX 75703

EXAMINER	
RUDY, ANDREW J	

ART UNIT	PAPER NUMBER
3687	

NOTIFICATION DATE	DELIVERY MODE
10/17/2016	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):

patent@headwaterllc.com

Corrected ***Notice of Allowability***	**Application No.** 14/578,124	**Applicant(s)** RALEIGH ET AL.	
	Examiner ANDREW JOSEPH RUDY	**Art Unit** 3687	**AIA (First Inventor to File) Status** No

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

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

1. ☒ This communication is responsive to *the 13 & 14 September 2016 IDS's*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *2-13*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

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

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

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

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☒ Other *Applicant's Information Disclosure Statements (IDS's) submitted September 13, 2016 (two) and September 14, 2016 have been reviewed. Note the attached IDS's. The claims remain allowed*.

/ANDREW JOSEPH RUDY/
Primary Examiner
Art Unit: 3687

PTO/SB/08a (03-15)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	14578124
Filing Date	2014-12-19
First Named Inventor	Gregory G. Raleigh
Art Unit	3687
Examiner Name	Rudy, Andrew J.
Attorney Docket Number	RALEP037D1

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	1545114	EP	A1	2005-06-22	Alcatel		
	2	1887732	EP	A1	2008-02-13	Huawei Technologies Co., Ltd.		
	3	2007065	EP	A1	2008-12-24	Huawei Technologies Co., Ltd.		

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.R./

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	First Named Inventor	Gregory G. Raleigh
	Art Unit	3687
	Examiner Name	Rudy, Andrew J.
	Attorney Docket Number	RALEP037D1

	4	2002067616	WO	A1	2002-08-29	Sonera Oyj			
	5	2003017063	WO	A2	2003-02-27	Apogee Networks			
	6	2003017065	WO	A2	2003-02-27	Apogee Networks			
	7	2011002450	WO	A1	2011-01-06	Alcatel-Lucent USA Inc.			

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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[5]
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EXAMINER SIGNATURE

Examiner Signature	/Andrew Joseph Rudy/	Date Considered	09/30/2016

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6141565	A	2000-10-31	Feuerstein et al.	
	2	6510152	B1	2003-01-21	Gerszberg et al.	
	3	6542500	B1	2003-04-01	Gerszberg et al.	
	4	6546016	B1	2003-04-08	Gerszberg et al.	
	5	6570974	B1	2003-05-27	Gerszberg et al.	
	6	6636721	B2	2003-10-21	Threadgill et al.	
	7	6690918	B2	2004-02-10	Evans et al.	
	8	6959393	B2	2005-10-25	Hollis et al.	

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	9	7082422	B1	2006-07-25	Zirngibl et al.	
	10	7177919	B1	2007-02-13	Truong et al.	
	11	7369848	B2	2008-05-06	Jiang, Yue Jun	
	12	7369856	B2	2008-05-06	Ovadia, Shlomo	
	13	7428750	B1	2008-09-23	Dunn et al.	
	14	7577431	B2	2009-08-18	Jiang, Yue Jun	
	15	7657920	B2	2010-02-02	Arseneau et al.	
	16	7664494	B2	2010-02-16	Jiang, Yue Jun	
	17	7719966	B2	2010-05-18	Luft et al.	
	18	7724716	B2	2010-05-25	Fadell, Anthony M.	
	19	7873001	B2	2011-01-18	Silver, Andrew	

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	20	7979069	B2	2011-07-12	Hupp et al.	
	21	8132256	B2	2012-03-06	Bari, Farooq	
	22	8145194	B2	2012-03-27	Yoshikawa et al.	
	23	8219134	B2	2012-07-10	Maharajh et al.	
	24	8291439	B2	2012-10-16	Jethi et al.	
	25	8307095	B2	2012-11-06	Clark et al.	
	26	8320902	B2	2012-11-27	Moring et al.	
	27	8363799	B2	2013-01-29	Gruchala et al.	
	28	8380247	B2	2013-02-19	Engstrom	
	29	8412798	B1	2013-04-02	Wang, Frank C.	
	30	8418168	B2	2013-04-09	Tyhurst et al.	

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	31	8494559	B1	2013-07-23	Malmi	
	32	8543814	B2	2013-09-24	Laitinen et al.	
	33	8670752	B2	2014-03-11	Fan et al.	
	34	9413546	B2	2016-08-09	Meier et al.	
	35	8719397	B2	2014-05-06	Levi et al.	
	36	8731519	B2	2014-05-20	Flynn et al.	
	37	8837322	B2	2014-09-16	Venkataramanan et al.	
	38	8838686	B2	2014-09-16	Getchius, Jeffery M.	
	39	8838752	B2	2014-09-16	Lor et al.	
	40	8855620	B2	2014-10-07	Sievers et al.	
	41	8943551	B2	2015-01-27	Ganapathy et al.	

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	42	9032427	B2	2015-05-12	Gallant et al.	
	43	9173090	B2	2015-10-27	Tuchman et al.	
	44	9325737	B2	2016-04-26	Gutowski et al.	
	45	9344557	B2	2016-05-17	Gruchala et al.	
	46	9367680	B2	2016-06-14	Mahaffey et al.	

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	1	20080279216	A1	2008-11-13	Sharif-Ahmadi et al.	
	2	20040225561	A1	2004-11-11	Hertzberg et al.	

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	1	20070130283	A1	2007-06-07	Klein et al.	
	2	20080096559	A1	2008-04-24	Phillips et al.	
	3	20090016310	A1	2009-01-15	Rasal, Digambar L.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2007120310	WO		2007-10-25	Qualcomm Inc.		

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	Attorney Docket Number	RALEP037D1

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Examiner Signature	/Andrew Joseph Rudy/	Date Considered	09/30/2016

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/578,124	12/19/2014	3687	800	RALEP037D1	12	1

CONFIRMATION NO. 1830

CORRECTED FILING RECEIPT

106963
Headwater Partners I LLC
1011 Pruitt Place
Tyler, TX 75703

OC000000083882718

Date Mailed: 09/19/2016

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

Inventor(s)

Gregory G. Raleigh, Woodside, CA;
Alireza Raissinia, Saratoga, CA;
Jeffrey Green, Sunnyvale, CA;

Applicant(s)

Headwater Partners I LLC, Redwood City, CA;

Power of Attorney: The patent practitioners associated with Customer Number 106963

Domestic Priority data as claimed by applicant

This application is a DIV of 13/248,028 09/28/2011 PAT 8924469
which claims benefit of 61/387,243 09/28/2010
and is a CIP of 12/380,778 03/02/2009 PAT 8321526
and is a CIP of 12/380,780 03/02/2009 PAT 8839388
and said 12/380,778 03/02/2009
claims benefit of 61/206,354 01/28/2009
and claims benefit of 61/206,944 02/04/2009
and claims benefit of 61/207,393 02/10/2009
and claims benefit of 61/207,739 02/13/2009
and said 12/380,780 03/02/2009
claims benefit of 61/206,354 01/28/2009
and claims benefit of 61/206,944 02/04/2009
and claims benefit of 61/207,393 02/10/2009
and claims benefit of 61/207,739 02/13/2009

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.

Permission to Access Application via Priority Document Exchange: No

Permission to Access Search Results: No

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If Required, Foreign Filing License Granted: 01/07/2015
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/578,124**
Projected Publication Date: Not Applicable
Non-Publication Request: No
Early Publication Request: No
**** SMALL ENTITY ****
Title

Wireless End-User Device With Wireless Data Attribution to Multiple Personas

Preliminary Class

370

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

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign

patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

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

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

NOT GRANTED

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

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14578124	RALEIGH ET AL.
	Examiner	**Art Unit**
	ANDREW J RUDY	3687

CPC						
Symbol					**Type**	**Version**
H04W		76	/	022	F	2013-01-01
H04W		4	/	24	A	2013-01-01
H04L		12	/	1457	I	2013-01-01
H04M		15	/	8033	I	2013-01-01
			/			
			/			
			/			
			/			
			/			
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			/			
			/			
			/			

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	12	
/ANDREW JOSEPH RUDY/ Primary Examiner.Art Unit 3687	9/19/16	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14578124	RALEIGH ET AL.
	Examiner	**Art Unit**
	ANDREW J RUDY	3687

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
370	329	H	0	4	W	4 / 00 (2009.01.01)						
CROSS REFERENCE(S)												
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)											

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	12	
/ANDREW JOSEPH RUDY/ Primary Examiner.Art Unit 3687	9/19/16	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office

Part of Paper No. 20160919

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14578124	RALEIGH ET AL.
	Examiner	**Art Unit**
	ANDREW J RUDY	3687

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	2														
2	13														
3	3														
4	4														
5	5														
6	6														
7	7														
8	8														
9	9														
10	10														
11	11														
12	12														

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	12	
/ANDREW JOSEPH RUDY/ Primary Examiner.Art Unit 3687	9/19/16	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

PART B - FEE(S) TRANSMITTAL

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

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

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

106963 7590 09/12/2016
Headwater Partners I LLC
1011 Pruitt Place
Tyler, TX 75703

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

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

Ann Taylor	(Depositor's name)
/Ann Taylor/	(Signature)
September 15, 2016	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/578,124	12/19/2014	Gregory G. Raleigh	RALEP037D1	1830

TITLE OF INVENTION: ~~ENTERPRISE ACCESS CONTROL AND ACCOUNTING ALLOCATION FOR ACCESS NETWORKS~~ Wireless End-User Device With Wireless Data Attribution to Multiple Personas

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	12/12/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
RUDY, ANDREW J	3687	370-329000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 James E. Harris
2
3

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

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

(A) NAME OF ASSIGNEE: Headwater Partners I LLC

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Tyler, TX

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

4a. The following fee(s) are submitted:
- ☒ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☒ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 505876 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ☐ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ☐ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ☐ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /James E. Harris/ Date September 15, 2016

Typed or printed name James E. Harris Registration No. 40013

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Raleigh et al.	Examiner:	Rudy, Andrew J.
Serial No.:	14/578,124	Art Unit:	3687
Filed:	December 19, 2014	Conf. No.:	1830
Title:	Wireless End-User Device With Wireless Data Attribution to Multiple Personas		

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

REQUEST FOR CORRECTED TITLE OF INVENTION

Applicants are submitting the issue fee for this referenced Application, but have noted on the issue fee transmittal a previously requested change in the Title of Invention. A request for corrected filing receipt reflecting the amended title (as corrected in the April 3, 2015 Preliminary Amendment) was filed on July 22, 2016. A new filing receipt has not yet been mailed. Applicant requests that the corrected Title of Invention be reflected on the issued patent.

CONCLUSION

The Commissioner is authorized to charge any fee deficiency or credit any overpayment to Deposit Account 50-5876.

Respectfully submitted,

Date: September 15, 2016

By: /James E. Harris/

James E. Harris
Reg. No. 40,013
Headwater Partners I LLC
1011 Pruitt Place
Tyler, TX 75703
(903) 201-6212

CERTIFICATE OF ELECTRONIC TRANSMISSION

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being filed electronically via EFS-Web addressed to the Commissioner for Patents on:

Date: Sept. 15, 2016 By: /Ann Taylor/
Ann Taylor

Electronic Patent Application Fee Transmittal

Application Number:	14578124
Filing Date:	19-Dec-2014
Title of Invention:	ENTERPRISE ACCESS CONTROL AND ACCOUNTING ALLOCATION FOR ACCESS NETWORKS
First Named Inventor/Applicant Name:	Gregory G. Raleigh
Filer:	James E. Harris/Ann Taylor
Attorney Docket Number:	RALEP037D1

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	2501	1	480	480

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**480**

Electronic Acknowledgement Receipt	
EFS ID:	26937679
Application Number:	14578124
International Application Number:	
Confirmation Number:	1830
Title of Invention:	ENTERPRISE ACCESS CONTROL AND ACCOUNTING ALLOCATION FOR ACCESS NETWORKS
First Named Inventor/Applicant Name:	Gregory G. Raleigh
Customer Number:	106963
Filer:	James E. Harris/Ann Taylor
Filer Authorized By:	James E. Harris
Attorney Docket Number:	RALEP037D1
Receipt Date:	15-SEP-2016
Filing Date:	19-DEC-2014
Time Stamp:	15:10:49
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$480
RAM confirmation Number	1640
Deposit Account	505876
Authorized User	TAYLOR, ANN
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 CFR 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 CFR 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 CFR 1.19 (Document supply fees)

Charge any Additional Fees required under 37 CFR 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	P037D1_IssueFee.pdf	137763 39e9e4b4d77fd12630bd61e9b33fe9513b914c02	no	1
Warnings:					
Information:					
2	Transmittal Letter	P037D1_Letter.pdf	62816 0e95c9833ebbf95a7a14dc3a187988cbbb88b342	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30523 8cdf7781ae48168082b387d3a057da3152b05520	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	231102		

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	14578124
	Filing Date	2014-12-19
	First Named Inventor	Gregory G. Raleigh
	Art Unit	3687
	Examiner Name	Rudy, Andrew J.
	Attorney Docket Number	RALEP037D1

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

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

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

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FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	1545114	EP	A1	2005-06-22	Alcatel		
	2	1887732	EP	A1	2008-02-13	Huawei Technologies Co., Ltd.		
	3	2007065	EP	A1	2008-12-24	Huawei Technologies Co., Ltd.		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14578124
	Filing Date	2014-12-19
	First Named Inventor	Gregory G. Raleigh
	Art Unit	3687
	Examiner Name	Rudy, Andrew J.
	Attorney Docket Number	RALEP037D1

	4	2002067616	WO	A1	2002-08-29	Sonera Oyj		
	5	2003017063	WO	A2	2003-02-27	Apogee Networks		
	6	2003017065	WO	A2	2003-02-27	Apogee Networks		
	7	2011002450	WO	A1	2011-01-06	Alcatel-Lucent USA Inc.		

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

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[5]
	1		

If you wish to add additional non-patent literature document citation information please click the Add button Add

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.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] 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	14578124
	Filing Date	2014-12-19
	First Named Inventor	Gregory G. Raleigh
	Art Unit	3687
	Examiner Name	Rudy, Andrew J.
	Attorney Docket Number	RALEP037D1

CERTIFICATION STATEMENT

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

X 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.

X 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	/James E. Harris/	Date (YYYY-MM-DD)	2016-09-14
Name/Print	James E. Harris	Registration Number	40013

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

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 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					
Application Number:	14578124				
Filing Date:	19-Dec-2014				
Title of Invention:	ENTERPRISE ACCESS CONTROL AND ACCOUNTING ALLOCATION FOR ACCESS NETWORKS				
First Named Inventor/Applicant Name:	Gregory G. Raleigh				
Filer:	James E. Harris/Ann Taylor				
Attorney Docket Number:	RALEP037D1				
Filed as Small Entity					
Filing Fees for Utility under 35 USC 111(a)					
Description		**Fee Code**	**Quantity**	**Amount**	**Sub-Total in USD($)**
Basic Filing:					
Pages:					
Claims:					
Miscellaneous-Filing:					
Petition:					
Patent-Appeals-and-Interference:					
Post-Allowance-and-Post-Issuance:					
Extension-of-Time:					

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	2806	1	90	90
		Total in USD ($)		**90**

Electronic Acknowledgement Receipt	
EFS ID:	26929384
Application Number:	14578124
International Application Number:	
Confirmation Number:	1830
Title of Invention:	ENTERPRISE ACCESS CONTROL AND ACCOUNTING ALLOCATION FOR ACCESS NETWORKS
First Named Inventor/Applicant Name:	Gregory G. Raleigh
Customer Number:	106963
Filer:	James E. Harris/Ann Taylor
Filer Authorized By:	James E. Harris
Attorney Docket Number:	RALEP037D1
Receipt Date:	14-SEP-2016
Filing Date:	19-DEC-2014
Time Stamp:	18:59:22
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$90
RAM confirmation Number	5730
Deposit Account	505876
Authorized User	TAYLOR, ANN
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	P037D1.pdf	1054101 b1cd1ee95df29fe10b5d043729410b3733a50601	no	4
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Information:					
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2	Foreign Reference	2084.pdf	1397656 9e6a8957ad2e807f979431120ddbd1741e2acde7	no	57
Warnings:					
Information:					
3	Foreign Reference	2085.pdf	441333 e8defb411cdca2f87d3c0c97eae168e0c2960826	no	19
Warnings:					
Information:					
4	Foreign Reference	2086.pdf	232424 fbefdfe44bda45a08d0dfa2e2b40b5d0f577f976	no	29
Warnings:					
Information:					
5	Foreign Reference	2087.pdf	922375 5370f148f48d4def4ad535f2c2b1762f0ca57119	no	47
Warnings:					
Information:					

6	Foreign Reference	2088.pdf	255944 b4b8ef7ddc1f98c4716aaed35917fdb84c9b e0fa	no	18
Warnings:					
Information:					
7	Foreign Reference	2089.pdf	172902 9025822de8f174376f282787af6b3524407b e5db	no	13
Warnings:					
Information:					
8	Foreign Reference	2090.pdf	643809 f84e3fb9347dd0d758241de1f737fa384a62 bebe	no	38
Warnings:					
Information:					
9	Fee Worksheet (SB06)	fee-info.pdf	30617 7a3a210c963bf3c57e78eaaf0ef0b05ef9edf 24f	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	5151161		

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

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PTO/SB/08a (03-15)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	14578124
Filing Date	2014-12-19
First Named Inventor	Gregory G. Raleigh
Art Unit	3687
Examiner Name	Rudy, Andrew J.
Attorney Docket Number	RALEP037D1

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6141565	A	2000-10-31	Feuerstein et al.	
	2	6510152	B1	2003-01-21	Gerszberg et al.	
	3	6542500	B1	2003-04-01	Gerszberg et al.	
	4	6546016	B1	2003-04-08	Gerszberg et al.	
	5	6570974	B1	2003-05-27	Gerszberg et al.	
	6	6636721	B2	2003-10-21	Threadgill et al.	
	7	6690918	B2	2004-02-10	Evans et al.	
	8	6959393	B2	2005-10-25	Hollis et al.	

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	First Named Inventor	Gregory G. Raleigh
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	Attorney Docket Number	RALEP037D1

	9	7082422	B1	2006-07-25	Zirngibl et al.	
	10	7177919	B1	2007-02-13	Truong et al.	
	11	7369848	B2	2008-05-06	Jiang, Yue Jun	
	12	7369856	B2	2008-05-06	Ovadia, Shlomo	
	13	7428750	B1	2008-09-23	Dunn et al.	
	14	7577431	B2	2009-08-18	Jiang, Yue Jun	
	15	7657920	B2	2010-02-02	Arseneau et al.	
	16	7664494	B2	2010-02-16	Jiang, Yue Jun	
	17	7719966	B2	2010-05-18	Luft et al.	
	18	7724716	B2	2010-05-25	Fadell, Anthony M.	
	19	7873001	B2	2011-01-18	Silver, Andrew	

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	20	7979069	B2	2011-07-12	Hupp et al.	
	21	8132256	B2	2012-03-06	Bari, Farooq	
	22	8145194	B2	2012-03-27	Yoshikawa et al.	
	23	8219134	B2	2012-07-10	Maharajh et al.	
	24	8291439	B2	2012-10-16	Jethi et al.	
	25	8307095	B2	2012-11-06	Clark et al.	
	26	8320902	B2	2012-11-27	Moring et al.	
	27	8363799	B2	2013-01-29	Gruchala et al.	
	28	8380247	B2	2013-02-19	Engstrom	
	29	8412798	B1	2013-04-02	Wang, Frank C.	
	30	8418168	B2	2013-04-09	Tyhurst et al.	

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	Attorney Docket Number	RALEP037D1

	31	8494559	B1	2013-07-23	Malmi	
	32	8543814	B2	2013-09-24	Laitinen et al.	
	33	8670752	B2	2014-03-11	Fan et al.	
	34	9413546	B2	2016-08-09	Meier et al.	
	35	8719397	B2	2014-05-06	Levi et al.	
	36	8731519	B2	2014-05-20	Flynn et al.	
	37	8837322	B2	2014-09-16	Venkataramanan et al.	
	38	8838686	B2	2014-09-16	Getchius, Jeffery M.	
	39	8838752	B2	2014-09-16	Lor et al.	
	40	8855620	B2	2014-10-07	Sievers et al.	
	41	8943551	B2	2015-01-27	Ganapathy et al.	

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	Art Unit	3687
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	Attorney Docket Number	RALEP037D1

	42	9032427	B2	2015-05-12	Gallant et al.	
	43	9173090	B2	2015-10-27	Tuchman et al.	
	44	9325737	B2	2016-04-26	Gutowski et al.	
	45	9344557	B2	2016-05-17	Gruchala et al.	
	46	9367680	B2	2016-06-14	Mahaffey et al.	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20080279216	A1	2008-11-13	Sharif-Ahmadi et al.	
	2	20040225561	A1	2004-11-11	Hertzberg et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14578124
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	Attorney Docket Number	RALEP037D1

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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[5]
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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] 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)		
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	Filing Date	2014-12-19
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	Art Unit	3687
	Examiner Name	Rudy, Andrew J.
	Attorney Docket Number	RALEP037D1

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).

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See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

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Signature	/James E. Harris/	Date (YYYY-MM-DD)	2016-09-13
Name/Print	James E. Harris	Registration Number	40013

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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.

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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (03-15)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	14578124
	Filing Date	2014-12-19
	First Named Inventor	Gregory G. Raleigh
	Art Unit	3687
	Examiner Name	Rudy, Andrew J.
	Attorney Docket Number	RALEP037D1

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20070130283	A1	2007-06-07	Klein et al.	
	2	20080096559	A1	2008-04-24	Phillips et al.	
	3	20090016310	A1	2009-01-15	Rasal, Digambar L.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2007120310	WO		2007-10-25	Qualcomm Inc.		

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14578124
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	Examiner Name	Rudy, Andrew J.
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	Attorney Docket Number	RALEP037D1

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See attached certification statement.

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Signature	/James E. Harris/	Date (YYYY-MM-DD)	2016-09-13
Name/Print	James E. Harris	Registration Number	40013

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Electronic Patent Application Fee Transmittal					
Application Number:	14578124				
Filing Date:	19-Dec-2014				
Title of Invention:	ENTERPRISE ACCESS CONTROL AND ACCOUNTING ALLOCATION FOR ACCESS NETWORKS				
First Named Inventor/Applicant Name:	Gregory G. Raleigh				
Filer:	James E. Harris/Ann Taylor				
Attorney Docket Number:	RALEP037D1				
Filed as Small Entity					
Filing Fees for Utility under 35 USC 111(a)					
Description		**Fee Code**	**Quantity**	**Amount**	**Sub-Total in USD($)**
Basic Filing:					
Pages:					
Claims:					
Miscellaneous-Filing:					
Petition:					
Patent-Appeals-and-Interference:					
Post-Allowance-and-Post-Issuance:					
Extension-of-Time:					

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	2806	1	90	90
		Total in USD ($)		**90**

Electronic Acknowledgement Receipt	
EFS ID:	26915332
Application Number:	14578124
International Application Number:	
Confirmation Number:	1830
Title of Invention:	ENTERPRISE ACCESS CONTROL AND ACCOUNTING ALLOCATION FOR ACCESS NETWORKS
First Named Inventor/Applicant Name:	Gregory G. Raleigh
Customer Number:	106963
Filer:	James E. Harris/Ann Taylor
Filer Authorized By:	James E. Harris
Attorney Docket Number:	RALEP037D1
Receipt Date:	13-SEP-2016
Filing Date:	19-DEC-2014
Time Stamp:	18:37:24
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$90
RAM confirmation Number	5367
Deposit Account	505876
Authorized User	TAYLOR, ANN
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 CFR 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 CFR 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 CFR 1.19 (Document supply fees)

Charge any Additional Fees required under 37 CFR 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	P037D1_IDS1.pdf	1055254 0d896d56cf8cfec9395bf9ce214ced62c76ee00d	no	8
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	P037D1_IDS2.pdf	1053926 2c629071e964147e5d326cc59023ac5585050b39	no	4
Warnings:					
Information:					
3	Foreign Reference	2083.pdf	782462 2ce1ee70705ca2f54e4571f31517ddc96b1c19c4	no	8
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	30618 4d330e68a851d55a28ea965774c6bd7b6635f205	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	2922260		

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

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

106963 7590 09/12/2016

Headwater Partners I LLC
1011 Pruitt Place
Tyler, TX 75703

EXAMINER	
RUDY, ANDREW J	
ART UNIT	PAPER NUMBER
3687	

DATE MAILED: 09/12/2016

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/578,124	12/19/2014	Gregory G. Raleigh	RALEP037D1	1830

TITLE OF INVENTION: ENTERPRISE ACCESS CONTROL AND ACCOUNTING ALLOCATION FOR ACCESS NETWORKS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	12/12/2016

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

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

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

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

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

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

PART B - FEE(S) TRANSMITTAL

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

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

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

106963 7590 09/12/2016
Headwater Partners I LLC
1011 Pruitt Place
Tyler, TX 75703

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

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

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/578,124	12/19/2014	Gregory G. Raleigh	RALEP037D1	1830

TITLE OF INVENTION: ENTERPRISE ACCESS CONTROL AND ACCOUNTING ALLOCATION FOR ACCESS NETWORKS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	12/12/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
RUDY, ANDREW J	3687	370-329000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 _____
2 _____
3 _____

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

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

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

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

4a. The following fee(s) are submitted:
- ❑ Issue Fee
- ❑ Publication Fee (No small entity discount permitted)
- ❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ❑ A check is enclosed.
- ❑ Payment by credit card. Form PTO-2038 is attached.
- ❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ❑ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ❑ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/578,124	12/19/2014	Gregory G. Raleigh	RALEP037D1	1830

106963 7590 09/12/2016

Headwater Partners I LLC
1011 Pruitt Place
Tyler, TX 75703

EXAMINER	
RUDY, ANDREW J	

ART UNIT	PAPER NUMBER
3687	

DATE MAILED: 09/12/2016

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

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

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

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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.

Notice of Allowability	Application No. 14/578,124	Applicant(s) RALEIGH ET AL.	
	Examiner ANDREW JOSEPH RUDY	Art Unit 3687	AIA (First Inventor to File) Status No

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

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

1. ☒ This communication is responsive to *03 April 2015 Amendment*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *2-13*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

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

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

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

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☒ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

2. Applicant cancelled claim 1 from the April 3, 2015 Amendment.

3. Pertinent references of interest are noted on the attached PTO-892.

4. Applicant's nine (9) Information Disclosure Statement's (IDS's) have been reviewed. Note the attached IDS's.

Allowable Subject Matter

5. Claims 2-13 are allowed.

6. The following is an examiner's statement of reasons for allowance: Applicant's April 3, 2015 Amendment regarding claims 2-13 have been reviewed. Claims 2-13 are allowed as the prior art, either alone or in combination, does not disclose Applicant's inventive claim language.

Claims 2-13 have been reviewed in light of Alice Corporation Pty. Ltd. v. CLS Bank International, et al., 573 U. S. ___ (2014) and are not deemed invalidated by such.

Claims 2-13 are determined to be directed to patent-eligible subject matter and the Examiner does not consider any of the pending claims to be directed to an abstract idea. Even if the Examiner were to identify an abstract idea for any claim, then under a further analysis under Alice all claims would still be found to be patent eligible for the following reasons. The Examiner finds that when all of the elements of each claim are considered individually and as an ordered combination, each claim contains an inventive concept which is directed to an application, a particular application, or a special application, of the identified abstract idea. Further the Examiner finds that issuance of a patent for any claim would not preempt the identified abstract idea, or the field of the identified abstract idea.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW JOSEPH RUDY whose telephone number is (571)272-6789. The examiner can normally be reached on Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Fahd A. Obeid can be reached on 571-270-3324. 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.

/ANDREW JOSEPH RUDY/
Primary Examiner
Art Unit 3687

Notice of References Cited	Application/Control No. 14/578,124	Applicant(s)/Patent Under Reexamination RALEIGH ET AL.	
	Examiner ANDREW JOSEPH RUDY	Art Unit 3687	Page 1 of 2

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-9,253,663 B2	02-2016	Raleigh; Gregory G.	H04W24/02	1/1
*	B	US-9,137,701 B2	09-2015	Raleigh; Gregory G.	H04L41/0893	1/1
*	C	US-9,225,797 B2	12-2015	Raleigh; Gregory G.	G06Q30/0601	1/1
*	D	US-8,862,751 B2	10-2014	Faccin; Stefano	H04L63/104	709/219
*	E	US-8,788,661 B2	07-2014	Raleigh; Gregory G.	G06Q50/06	455/406
*	F	US-8,787,249 B2	07-2014	Giaretta; Gerardo	H04L12/14	370/328
*	G	US-8,194,581 B1	06-2012	Schroeder; Derek Andrew	H04M3/38	370/313
*	H	US-8,160,056 B2	04-2012	Van der Merwe; Jacobus E.	H04L45/04	370/351
*	I	US-7,650,137 B2	01-2010	Jobs; Steven P.	H04M1/72519	455/405
*	J	US-7,643,411 B2	01-2010	Andreasen; Flemming S.	G06Q20/102	370/229
*	K	US-7,610,047 B2	10-2009	Hicks, III; John A.	H04M3/42263	370/329
*	L	US-7,602,746 B2	10-2009	Calhoun; Patrice R.	H04W28/26	370/328
*	M	US-7,599,714 B2	10-2009	Kuzminskiy; Alexandr	H04B7/0691	343/725

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

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

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

Notice of References Cited	Application/Control No. 14/578,124	Applicant(s)/Patent Under Reexamination RALEIGH ET AL.	
	Examiner ANDREW JOSEPH RUDY	Art Unit 3687	Page 2 of 2

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-7,486,658 B2	02-2009	Kumar; Rajneesh	H04L47/10	370/252
*	B	US-6,601,040 B1	07-2003	Kolls; H. Brock	G07F5/18	705/14.23
*	C	US-5,617,539 A	04-1997	Ludwig; Lester F.	G06Q10/10	348/14.03
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
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	Application Number	14578124
	Filing Date	2014-12-19
	First Named Inventor	Raleigh
	Art Unit	2642
	Examiner Name	not yet assigned
	Attorney Docket Number	RALEP037D1

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	29	6725031		2004-04-20	WATLER et al.	
	30	6765864		2004-07-20	NATARAJAN et al.	

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	31	6785889		2004-08-31	WILLIAMS, Peter	
	32	6829596		2004-12-07	FRAZEE, Steve	
	33	6829696		2004-12-07	BALMER et al.	
	34	6920455		2005-07-19	WESCHLER, Paul	
	35	6952428		2005-10-04	NECKA et al.	
	36	6965667		2005-11-15	TRABANDT et al.	
	37	6996076		2006-02-07	FORBES et al.	
	38	6998985		2006-02-14	REISMAN et al.	
	39	7024200		2006-04-04	McKENNA et al.	
	40	7027408		2006-04-11	NABKEL et al.	
	41	7042988		2006-05-09	JUITT et al.	

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	42	7058968		2006-06-06	ROWLAND et al.	
	43	7069248		2006-06-27	HUBER, Adriano	
	44	7092696		2006-08-15	HOSAIN et al.	
	45	7142876		2006-11-28	TROSSEN et al.	
	46	7158792		2007-01-02	COOK et al.	
	47	7174174		2007-02-06	BORIS et al.	
	48	7180855		2007-02-20	LIN , Wei	
	49	7197321		2007-03-27	ERSKINE et al.	
	50	7242920		2007-07-10	MORRIS, Robert P.	
	51	7245901		2007-07-17	McGREGOR et al.	
	52	7280816		2007-10-09	FRATTI et al.	

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	53	7280818		2007-10-09	CLAYTON, Steve	
	54	7289489		2007-10-30	KUNG et al.	
	55	7290283		2007-10-30	COPELAND III, John A.	
	56	7317699		2008-01-08	GODFREY et al.	
	57	7322044		2008-01-22	HRASTAR, Scott E.	
	58	7324447		2008-01-29	MORFORD, Michael Robert	
	59	7325037		2008-01-29	LAWSON, Karen L.	
	60	7349695		2008-03-25	OOMMEN et al.	
	61	7353533		2008-04-01	WRIGHT et al.	
	62	7356337		2008-04-08	FLORENCE, Shahar	
	63	7366497		2008-04-29	NAGATA, Hideaki	

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	64	7373136		2008-05-13	WATLER et al.	
	65	7388950		2008-06-17	ELSEY et al.	
	66	7401338		2008-07-15	BOWEN et al.	
	67	7403763		2008-07-22	MAES, Stephane H.	
	68	7418253		2008-08-26	KAVANAH, Alan	
	69	7421004		2008-09-02	FEHER, Kamilo	
	70	7450591		2008-11-11	KORLING et al.	
	71	7450927		2008-11-11	CRESWELL et al.	
	72	7486185		2009-02-03	CULPEPPER et al.	
	73	7499537		2009-03-03	ELSEY et al.	
	74	7516219		2009-04-07	MOGHADDAM et al.	

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	75	7574731		2009-08-11	FASCENDA, Anthony C.	
	76	7580857		2009-08-25	VanFLEET et al.	
	77	7610328		2009-10-27	HAASE et al.	
	78	7617516		2009-11-10	HUSLAK et al.	
	79	7620065		2009-11-17	FALARDEAU, Eric	
	80	7620162		2009-11-17	AARON et al.	
	81	7647047		2010-01-12	MOGHADDAM et al.	
	82	7650137		2010-01-19	JOBS et al.	
	83	7668903		2010-02-23	EDWARDS et al.	
	84	7693720		2010-04-06	KENNEWICK et al.	
	85	7720505		2010-05-18	GOPI et al.	

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	86	7734784		2010-06-08	ARAUJO et al.	
	87	7747240		2010-06-29	BRISCOE et al.	
	88	7747699		2010-06-29	PRUEITT et al.	
	89	7792708		2010-09-07	ALVA, Jessi	
	90	7797204		2010-09-14	BALENT, Bruce F.	
	91	7797401		2010-09-14	STEWART et al.	
	92	7822837		2010-10-26	URBAN et al.	
	93	7848768		2010-12-07	OMORI et al.	
	94	7868778		2011-01-11	KENWRIGHT, David Norris	
	95	7873705		2011-01-18	KALISH, Dan	
	96	7882029		2011-02-01	WHITE, Craig R.	

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	97	7929960		2011-04-19	MARTIN et al.	
	98	7937069		2011-05-03	RASSAM, Frederic	
	99	7941184		2011-05-10	PRENDERGAST et al.	
	100	7949529		2011-05-24	WEIDER et al.	
	101	7957511		2011-06-07	DRUDIS et al.	
	102	7975184		2011-07-05	GOFF et al.	
	103	7984130		2011-07-19	BOGINENI et al.	
	104	7986935		2011-07-26	D'SOUZA et al.	
	105	8005459		2011-08-23	BALSILLIE, Jim	
	106	8010080		2011-08-30	THENTHIRUPERAI et al.	
	107	8010081		2011-08-30	ROSKOWSKI, Steve	

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	108	8015133		2011-09-06	WU et al.	
	109	8015234		2011-09-06	LUM et al.	
	110	8019687		2011-09-13	WANG et al.	
	111	8023425		2011-09-20	RALEIGH, Gregory G.	
	112	8095666		2012-01-10	SCHMIDT et al.	
	113	8099077		2012-01-17	CHOWDHURY et al.	
	114	8099517		2012-01-17	JIA et al.	
	115	8144591		2012-03-27	GHAI et al.	
	116	8170553		2012-05-01	BENNETT, James D.	
	117	6606744		2003-08-12	MIKURAK, Michael G.	
	118	7336960		2008-02-26	ZAVALKOVSKY et al.	

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	119	8190675		2012-05-29	TRIBBETT, David	
	120	8194549		2012-06-05	HUBER et al.	
	121	8200775		2012-06-12	MOORE, James F.	
	122	8135392		2012-03-13	MARCELLINO et al.	
	123	7953808		2011-05-31	SHARP et al.	
	124	6502131		2002-12-31	VAID, Aseem et al.	
	125	6505114		2003-01-07	LUCIANI, Sergio	
	126	6763000		2004-07-13	WALSH, Peter J.	
	127	6967958		2005-11-22	ONO, Yoshiyuki et al.	
	128	7644267		2010-01-05	YLIKOSKI, Martti et al.	
	129	7710932		2010-05-04	MUTHUSWAMY, Sivakumar et al.	

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	130	7881199		2011-02-01	KRSTULICH, Zlatko	
	131	7886047		2011-02-08	POTLURI, Dora	
	132	7911975		2011-03-22	DROZ, Patrick et al.	
	133	8050275		2011-11-01	IYER, Jayaraman R.	
	134	8194553		2012-06-05	LIANG, Zhi Yong et al.	
	135	8239520		2012-08-07	GRAH, Adrian	
	136	7890084		2011-02-15	Dudziak, Thaddeus Jude et al.	
	137	7890111		2011-02-15	Bugenhagen, Michael K.	
	138	6226277		2001-05-01	Chuah, Mooi Choo	
	139	6839340		2005-01-04	Voit, Eric A. et al.	
	140	6922562		2005-07-26	Ward, Stephen L. et al.	

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	141	7620041		2009-11-17	Dunn, Jeffrey H. et al.	
	142	7627314		2009-12-01	Carlson, Steven I. et al.	
	143	7792538		2010-09-07	Kozisek, Steven E.	
	144	7801523		2010-09-21	Kenderov, Stoyan	
	145	7877090		2011-01-25	Maes, Stephane H.	
	146	7912025		2011-03-22	Pattenden, Christopher E. S. et al.	
	147	7948968		2011-05-24	Voit, Eric A. et al.	
	148	7970426		2011-06-28	Poe, Brian R. et al.	
	149	8185158		2012-05-22	Tamura, Motoshi et al.	
	150	8254915		2012-08-28	Kozisek, Steven E.	
	151	7418257		2008-08-26	Kim, Myong-Ju	

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	152	8126123		2012-02-28	Cai, Yigang et al.	
	153	7903553		2011-03-08	Liu, Enhui	
	154	8155620		2012-04-10	Wang, Jun et al.	
	155	8238287		2012-08-07	Gopi, Paramesh et al.	
	156	7113997		2006-09-26	Jayapalan, Jay et al.	
	157	5594777		1997-01-14	Makkonen, Matti et al.	
	158	8244241		2012-08-14	Montemurro, Michael	
	159	7756534		2010-07-13	Anupam, Vinod et al.	
	160	7636574		2009-12-22	Poosala, Viswanath	
	161	6678516		2004-01-13	Nordman, Ian et al.	
	162	6477670		2002-11-05	Ahmadvand, Nima	

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	163	6038452		2000-03-14	Strawczynski, Leo et al.	
	164	8108520		2012-01-31	Ruutu, Jussi et al.	
	165	7778643		2010-08-17	Laroia, Rajiv et al.	
	166	7668176		2010-02-23	Chuah, Mooi Choo	
	167	7515608		2009-04-07	Yuan, Yuan et al.	
	168	7251218		2007-07-31	Jorgensen, Jacob W.	
	169	7002920		2006-02-21	Ayyagari, Deepak et al.	
	170	7685131		2010-03-23	Batra, Vishal Singh et al.	
	171	7283561		2007-10-16	Picher-Dempsey, Heidi	
	172	7212491		2007-05-01	Koga, Takahiro	
	173	6683853		2004-01-27	Kannas, Chris et al.	

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	175	8160015		2012-04-17	RASHID, Mohammed H. et al.	
	176	8275830		2012-09-25	Raleigh, Gregory G.	
	177	7609700		2009-10-27	Ying, Wen-Ping et al.	
	178	8255515		2012-08-28	MELMAN, David et al.	
	179	7945240		2011-05-17	KLOCK, Jacqueline et al.	
	180	7912056		2011-03-22	BRASSEM, Wayne	
	181	7920529		2011-04-05	MAHLER, Roger et al.	
	182	8184530		2012-05-22	SWAN, Tim L. et al.	
	183	8214536		2012-07-03	ZHAO, Wen	
	184	8213363		2012-07-03	Ying, Wen-Ping et al.	

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	186	7746854		2010-06-29	AMBE, Shekhar et al.	
	187	7068600		2006-06-27	CAIN, Joseph Bibb	
	188	6876653		2005-04-05	AMBE, Shekhar et al.	
	189	6631122		2003-10-07	ARUNACHALAM, Vaidhyanathan et al.	
	190	7599288		2009-10-06	COLE, Raymond E. et al.	
	191	7546629		2009-06-09	ALBERT, Anthony et al.	
	192	7747730		2010-06-29	HARLOW, James D.	
	193	7609650		2009-10-27	ROSKOWSKI, Steve et al.	
	194	6581092		2003-06-17	MOTOYAMA, Tetsuro	
	195	7283963		2007-10-16	FITZPATRICK, John E. et al.	

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	196	8271049		2012-09-18	SILVER, Andrew et al.	
	197	7644151		2010-01-05	JERRIM, John et al.	
	198	8291238		2012-10-16	GINTER, Karl L. et al.	
	199	8068824		2011-11-29	SHAN, Xueshan et al.	
	200	7228354		2007-06-05	CHAMBLISS, David Darden et al.	
	201	5283904		1994-02-01	CARSON, David G. et al.	
	202	8208919		2012-06-26	KOTECHA, Lalit Ratilal	
	203	8185152		2012-05-22	GOLDNER, Alla	
	204	7844728		2010-11-30	ANDERSON, Thomas W. et al.	
	205	7873344		2011-01-18	BOWSER, Robert et al.	
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	207	7948952		2011-05-24	HURTTA, Tuija et al.	
	208	7957020		2011-06-07	MINE, Ryuta et al.	
	209	7346410		2008-03-18	UCHIYAMA, Kenji	
	210	7167078		2007-01-23	POURCHOT, Shawn C.	
	211	8102814		2012-01-24	RAHMAN, Shahriar I. et al.	
	212	7970350		2011-06-28	SHEYNMAN, Arnold	
	213	8094551		2012-01-10	HUBER, Kurt Donald et al.	
	214	8335161		2012-12-18	Foottit, Tom et al.	
	215	8315594		2012-11-20	Mauser, Edward Ronald et al.	
	216	8135388		2012-03-13	Gailloux, Michael A. et al.	
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	218	8353001		2013-01-08	Herrod, Allan	
	219	8195093		2013-06-05	Garrett, Darrin et al.	
	220	8036600		2011-10-11	Garrett, Darrin et al.	
	221	8301513		2012-10-30	Peng, Shih-Ta et al.	
	222	8230061		2012-07-24	Hassan, Amer A. et al.	
	223	8204794		2012-06-19	Peng, Shih-Ta et al.	
	224	8350700		2013-01-08	Fast, Raymond D. et al.	
	225	8204190		2012-06-19	Bang, Jung-Hee et al.	
	226	7865182		2011-01-04	Macaluso, Anthony G.	
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	229	7565141		2009-07-21	Macaluso, Anthony G.	
	230	7373179		2008-05-13	Stine, Ted et al.	
	231	7236780		2007-06-26	Benco, David S.	
	232	7039403		2006-05-02	Wong, Gregory A.	
	233	8370477		2013-02-05	Short, Joel E. et al.	
	234	8364806		2013-01-29	Short, Joel E. et al.	
	235	8279067		2012-10-02	BERGER, Thomas R. et al.	
	236	8213296		2012-07-03	SHANNON, Frank M. et al.	
	237	8019868		2011-09-13	RAO, Goutham et al.	
	238	8005988		2011-08-23	MAES, Stephane H.	
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	241	6782412		2004-08-24	BROPHY, Kevin et al.	
	242	6081591		2000-06-27	SKOOG, Frederick H.	
	243	6064878		2000-05-16	DENKER, John Stewart et al.	
	244	7730123		2010-06-01	ERICKSON, Richard R. et al.	
	245	8024397		2011-09-20	ERICKSON, Richard R. et al.	
	246	8156206		2012-04-10	KILEY, Kevin J. et al.	
	247	8126722		2012-02-28	ROBB, Terence Alan et al.	
	248	8364089		2013-01-29	PHILLIPS, Derek	
	249	6754470		2004-06-22	Hendrickson, Keith et al.	
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	252	8326359		2012-12-04	Kauffman, Donald C.	
	253	8131256		2012-03-06	MARTTI, Jyrki et al.	
	254	6381316		2002-04-30	JOYCE, Simon James et al.	
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	Application Number	14578124
	Filing Date	2014-12-19
	First Named Inventor	Raleigh
	Art Unit	2642
	Examiner Name	not yet assigned
	Attorney Docket Number	RALEP037D1

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	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

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SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
14/578,124	12/19/2014	370	3687	RALEP037D1

APPLICANTS
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INVENTORS
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Alireza Raissinia, Saratoga, CA;
Jeffrey Green, Sunnyvale, CA;

**** CONTINUING DATA ***************************
This application is a DIV of 13/248,028 09/28/2011 PAT 8924469
which claims benefit of 61/387,243 09/28/2010
and is a CIP of 12/380,778 03/02/2009 PAT 8321526
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TITLE
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Examiner	**Art Unit**
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Class	Subclass	Date	Examiner
370	229,252, 313 328,329	8/30/2016	AJR
H04W	72/04	8/30/2016	AJR
H04W	76/02	8/30/2016	AJR
H04W	4/00	8/30/2016	AJR

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner
370	**329**	**8/30/2016**	**AJR**
H04W	4/00	8/30/2016	AJR

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
Continuity data reviewed.	8/23/2016	AJR
Inventor name search conducted.	8/23/2016	AJR
Bibliographic data updated.	8/31/2016	AJR

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14578124	RALEIGH ET AL.
	Examiner	**Art Unit**
	ANDREW J RUDY	3687

CPC						
Symbol					**Type**	**Version**
H04W	/	76	/	022	F	2013-01-01
H04W	/	4	/	24	A	2013-01-01
H04L	/	12	/	1457	I	2013-01-01
H04M	/	15	/	8033	I	2013-01-01
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CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	12	
/ANDREW JOSEPH RUDY/ Primary Examiner.Art Unit 3687		O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14578124	RALEIGH ET AL.
	Examiner	**Art Unit**
	ANDREW J RUDY	3687

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
370	329	H	0	4	W	4 / 00 (2009.01.01)						
CROSS REFERENCE(S)												
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)											

NONE (Assistant Examiner) (Date)	**Total Claims Allowed:** 12	
/ANDREW JOSEPH RUDY/ Primary Examiner.Art Unit 3687 (Primary Examiner) (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14578124	RALEIGH ET AL.
	Examiner	**Art Unit**
	ANDREW J RUDY	3687

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1														
2	13														
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6	6														
7	7														
8	8														
9	9														
10	10														
11	11														
12	12														

NONE (Assistant Examiner) (Date)	**Total Claims Allowed:** 12	
/ANDREW JOSEPH RUDY/ Primary Examiner.Art Unit 3687 (Primary Examiner) (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

U.S. Patent and Trademark Office Part of Paper No. 20160831

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	14578124
Filing Date	2014-12-19
First Named Inventor	Gregory G. Raleigh
Art Unit	2464
Examiner Name	Ngo, Ricky Quoc
Attorney Docket Number	RALEP037D1

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	5633868	A	1997-05-27	Baldwin et al.	
	2	6061571	A	2000-05-09	Tamura, Hideo	
	3	6157636	A	2000-12-05	Voit et al.	
	4	6725256	B1	2004-04-20	Albal et al.	
	5	6751296	B1	2004-06-15	Albal et al.	
	6	6792461	B1	2004-09-14	Hericourt, Olivier	
	7	6934751	B2	2005-08-23	Jayapalan et al.	
	8	7027055	B2	2006-04-11	Anderson et al.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.R./

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	Filing Date	2014-12-19
	First Named Inventor	Gregory G. Raleigh
	Art Unit	2464
	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

	9	7043225	B1	2006-05-09	Patel et al.	
	10	7110753	B2	2006-09-19	Campen, Kenneth Brian	
	11	7174156	B1	2007-02-06	Mangal, Manish	
	12	7636626	B2	2009-12-22	Oesterling et al.	
	13	7680086	B2	2010-03-16	Eglin	
	14	7720206	B2	2010-05-18	Devolites et al.	
	15	7765294	B2	2010-07-27	Edwards et al.	
	16	7843831	B2	2010-11-30	Morrill et al.	
	17	8005913	B1	2011-08-23	Carlander, Carrie	
	18	8131858	B2	2012-03-06	Agulnik et al.	
	19	8160056	B2	2012-04-17	Van der Merwe et al.	

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	Art Unit	2464
	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

	20	8180333	B1	2012-05-15	Wells et al.	
	21	8223655	B2	2012-07-17	Heinz et al.	
	22	8315198	B2	2012-11-20	Corneille et al.	
	23	8340678	B1	2012-12-25	Pandey, Vinod	
	24	8385199	B1	2013-02-26	Coward et al.	
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	30	9172553	B2	2015-10-27	Dawes et al.	

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	First Named Inventor	Gregory G. Raleigh
	Art Unit	2464
	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

	31	9177455	B2	2015-11-03	Remer, David M.	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20030028623	A1	2003-02-06	Hennessey et al.	
	2	20050060525	A1	2005-03-17	Schwartz et al.	
	3	20060200663	A1	2006-09-07	Thornton, Andrew J.	
	4	20070061800	A1	2007-03-15	Cheng et al.	
	5	20070255769	A1	2007-11-01	Agrawal et al.	
	6	20070299965	A1	2007-12-27	Nieh et al.	
	7	20080066181	A1	2008-03-13	Haveson et al.	
	8	20080126287	A1	2008-05-29	Cox et al.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.R./

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	First Named Inventor	Gregory G. Raleigh
	Art Unit	2464
	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

	9	20080212751	A1	2008-09-04	Chung, Simon		
	10	20090203352	A1	2009-08-13	Fordon et al.		
	11	20100041365	A1	2010-02-18	Lott et al.		
	12	20100121744	A1	2010-05-13	Belz et al.		
	13	20140073291	A1	2014-03-13	Hildner et al.		

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FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2002045315	WO	A2	2002-06-06	Micromuse		
	2	2009008817	WO	A1	2009-01-15	Ericsson		

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NON-PATENT LITERATURE DOCUMENTS Remove

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[5]

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	Filing Date	2014-12-19
	First Named Inventor	Gregory G. Raleigh
	Art Unit	2464
	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

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EXAMINER SIGNATURE

Examiner Signature	/Andrew Joseph Rudy/	Date Considered	08/31/2016

*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.

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

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Raleigh et al.	Examiner:	Ngo, Ricky Quoc
Serial No.:	14/578,124	Art Unit:	2464
Filed:	December 19, 2014	Conf. No.:	1830
Title:	Wireless End-User Device With Wireless Data Attribution to Multiple Personas		

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

REQUEST FOR A CORRECTED FILING RECEIPT

Applicants respectfully request a corrected filing receipt for the above-captioned application. Submitted with this request are:

(1) A copy of the Filing Receipt mailed April 9, 2015 with the requested changes noted thereon.

Applicants respectfully note that this request is not a request to add or correct a benefit claim. Applicant filed a Preliminary Amendment on April 3, 2015, and that amended the title of the application. Applicants are simply seeking a filing receipt that reflects the amended title as listed in the April 3, 2015 preliminary amendment.

CONCLUSION

The Commissioner is authorized to charge any fee deficiency or credit any overpayment to Deposit Account 50-5876.

Respectfully submitted,

Date: July 22, 2016

By: /James E. Harris/

James E. Harris
Reg. No. 40,013
Headwater Partners I LLC
1011 Pruitt Place
Tyler, TX 75703
(903) 201-6212

CERTIFICATE OF ELECTRONIC TRANSMISSION

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being filed electronically via EFS-Web addressed to the Commissioner for Patents on:

Date: July 22, 2016 By: /Ann Taylor/
Ann Taylor

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/578,124	12/19/2014	2642	800	RALEP037D1	12	1

CONFIRMATION NO. 1830

106963
Headwater Partners I LLC
555 Twin Dolphin Drive, Suite 310
Redwood Shores, CA 94065

UPDATED FILING RECEIPT

OC00000074485791

Date Mailed: 04/09/2015

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

Inventor(s)

Gregory G. Raleigh, Woodside, CA;
Alireza Raissinia, Saratoga, CA;
Jeffrey Green, Sunnyvale, CA;

Applicant(s)

Headwater Partners I LLC, Redwood City, CA

Power of Attorney: The patent practitioners associated with Customer Number 106963

Domestic Priority data as claimed by applicant

This application is a DIV of 13/248,028 09/28/2011 PAT 8924469
which claims benefit of 61/387,243 09/28/2010
and is a CIP of 12/380,778 03/02/2009 PAT 8321526
and is a CIP of 12/380,780 03/02/2009 PAT 8839388
and said 12/380,778 03/02/2009
claims benefit of 61/206,354 01/28/2009
and claims benefit of 61/206,944 02/04/2009
and claims benefit of 61/207,393 02/10/2009
and claims benefit of 61/207,739 02/13/2009
and said 12/380,780 03/02/2009
claims benefit of 61/206,354 01/28/2009
and claims benefit of 61/206,944 02/04/2009
and claims benefit of 61/207,393 02/10/2009
and claims benefit of 61/207,739 02/13/2009

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.

If Required, Foreign Filing License Granted: 01/07/2015
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/578,124**
Projected Publication Date: 07/16/2015
Non-Publication Request: No
Early Publication Request: No
**** SMALL ENTITY ****
Title

~~Enterprise Access Control And Accounting Allocation For Access Networks~~ Wireless End-User Device With Wireless Data Attribution to Multiple Personas

Preliminary Class

455

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

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

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Electronic Acknowledgement Receipt	
EFS ID:	26433823
Application Number:	14578124
International Application Number:	
Confirmation Number:	1830
Title of Invention:	Enterprise Access Control And Accounting Allocation For Access Networks
First Named Inventor/Applicant Name:	Gregory G. Raleigh
Customer Number:	106963
Filer:	James E. Harris/Ann Taylor
Filer Authorized By:	James E. Harris
Attorney Docket Number:	RALEP037D1
Receipt Date:	22-JUL-2016
Filing Date:	19-DEC-2014
Time Stamp:	16:50:23
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Corrected Filing Receipt	P037D1_ReqFilingRct.pdf	710078 f61817d29f96ba4467b4eddb3b0fdf5a817159ab	no	4

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Total Files Size (in bytes):	710078

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

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

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

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Number	14578124
Filing Date	2014-12-19
First Named Inventor	Gregory G. Raleigh
Art Unit	2464
Examiner Name	Ngo, Ricky Quoc
Attorney Docket Number	RALEP037D1

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6535855	B1	2003-03-18	Cahill et al.	
	2	6654786	B1	2003-11-25	Fox et al.	
	3	6947985	B2	2005-09-20	Hegli et al.	
	4	7133386	B2	2006-11-07	Holur et al.	
	5	7272660	B1	2007-09-18	Powers et al.	
	6	7440433	B2	2008-10-21	Rink et al.	
	7	7661124	B2	2010-02-09	Ramanathan et al.	
	8	7770785	B2	2010-08-10	Jha et al.	

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	Attorney Docket Number	RALEP037D1

	9	7817983	B2	2010-10-19	Cassett et al.	
	10	8065365	B2	2011-11-22	Saxena et al.	
	11	8085808	B2	2011-12-27	Brusca et al.	
	12	8151205	B2	2012-04-03	Follmann et al.	
	13	8191106	B2	2012-05-29	Choyi et al.	
	14	8194549	B2	2012-06-05	Huber et al.	
	15	8195153	B1	2012-06-05	Frencel et al.	
	16	8271025	B2	2012-09-18	Brisebois et al.	
	17	8325906	B2	2012-12-04	Fullarton et al.	
	18	8340628	B2	2012-12-25	Taylor et al.	
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	20	8503358	B2	2013-08-06	Hanson et al.	
	21	8505073	B2	2013-08-06	Taglienti et al.	
	22	8538421	B2	2013-09-17	Brisebois et al.	
	23	8600895	B2	2013-12-03	Felsher, David Paul	
	24	8675852	B2	2014-03-18	Maes, Stephane H.	
	25	8744339	B2	2014-06-03	Halfmann et al.	
	26	8811338	B2	2014-08-19	Jin et al.	
	27	8898748	B2	2014-11-25	Burks et al.	
	28	8908516	B2	2014-12-09	Tzamaloukas et al.	
	29	8971841	B2	2015-03-03	Menezes et al.	
	30	8971912	B2	2015-03-03	Chou et al.	

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	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

	31	8995952	B1	2015-03-31	Baker et al.	
	32	9030934	B2	2015-05-12	Shah et al.	
	33	9282460	B2	2016-03-08	Souissi, Slim Salah	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20050108075	A1	2005-05-19	Douglis et al.	
	2	20070255797	A1	2007-11-01	Dunn et al.	
	3	20070297378	A1	2007-12-27	Poyhonen et al.	
	4	20090006229	A1	2009-01-01	Sweeney et al.	
	5	20090042536	A1	2009-02-12	Bernard et al.	
	6	20090217364	A1	2009-08-27	Salmela et al.	

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	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

	7	20090307696	A1	2009-12-10	Vals et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	1345154	CN	A	2002-04-17	Datang Microelectronics Tech. Co.		
	2	2005339247A	JP		2005-12-08	Secured Communications		
	3	2006155263A	JP		2006-06-15	NEC Corporation		
	4	2006197137	JP		2006-07-27	NTT Docomo Inc.		
	5	2006344007	JP	A	2006-12-21	Hitachi Ltd.		
	6	2002093877	WO	A1	2002-11-21	Nokia Corp.		
	7	2006004784	WO	A1	2006-01-12	Japan Communications Inc.		
	8	2009091295	WO	A1	2009-07-23	Telefonaktiebolaget LM Ericsson		

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14578124
	Filing Date	2014-12-19
	First Named Inventor	Gregory G. Raleigh
	Art Unit	2464
	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

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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.	T5
	1	3rd Generation Partnership Project, "Technical Specification Group Core Network and Terminals; Access Network Discovery and Selection Function (ANDSF) Management Object (MO)," Release 9, Document No. 3GPP TS 24.312, V9.1.0, March 2010	
	2	3rd Generation Partnership Project; "Technical Specification Group Services and System Aspects; IP Flow Mobility and seamless WLAN offlload; Stage 2," Release 10, Document No. 3GPP TS 23.261, V1.0.0, March 2010	
	3	Ahmed et al., "Multi Access Data Network Connectivity and IP Flow Mobility in Evolved Packet System (EPS)," 2010 IEEE	
	4	Blackberry Mobile Data System, version 4.1, Technical Overview, 2006	
	5	Client Guide for Symantec Endpoint Protection and Symantec Network Access Control, 2007	
	6	Ehnert, "Small application to monitor IP trafic on a Blackberry - 1.01.03 ", March 27, 2008; http://www.ehnert.net/MiniMoni/	
	7	Fujitsu, "Server Push Technology Survey and Bidirectional Communication in HTTP Browser," January 9, 2008 (JP)	
	8	Kasper et al., "Subscriber Authentication in mobile cellular Networks with virtual software SIM Credentials using Trusted Computing," Fraunhofer-Institute for Secure Information Technology SIT, Darmstadt, Germany; ICACT 2008	
	9	Kuntze et al., "Trustworthy content push," Fraunhofer-Institute for Secure Information Technology SIT; Germany; WCNC 2007 proceedings, IEEE	

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	Attorney Docket Number	RALEP037D1

	10	Muntermann et al., "Potentiale und Sicherheitsanforderungen mobiler Finanzinformationsdienste und deren Systeminfrastrukturen," Chair of Mobile Commerce & Multilateral Security, Goethe Univ. Frankfurt, 2004
	11	NetLimiter Lite 4.0.19.0; http://www.heise.de/download/netlimiter-lite-3617703.html from vol. 14/2007
	12	Open Mobile Alliance (OMA), Push Architecture, Candidate Version 2.2; Oct. 2, 2007; OMA-AD-Push-V2_2-20071002-C
	13	Quintana, David, "Mobile Multitasking," April 14, 2010
	14	Roy et al., "Energy Management in Mobile Devices with the Cinder Operating System", Stanford University, MIT CSAIL, June 3, 2010
	15	Windows7 Power Management, published April 2009

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Examiner Signature		Date Considered	

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See attached certification statement.

Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

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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	/James E. Harris/	Date (YYYY-MM-DD)	2016-06-15
Name/Print	James E. Harris	Registration Number	40013

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EFS ID:	26081472
Application Number:	14578124
International Application Number:	
Confirmation Number:	1830
Title of Invention:	Enterprise Access Control And Accounting Allocation For Access Networks
First Named Inventor/Applicant Name:	Gregory G. Raleigh
Customer Number:	106963
Filer:	James E. Harris/Ann Taylor
Filer Authorized By:	James E. Harris
Attorney Docket Number:	RALEP037D1
Receipt Date:	16-JUN-2016
Filing Date:	19-DEC-2014
Time Stamp:	10:09:11
Application Type:	Utility under 35 USC 111(a)

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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)	P037D1_IDS.pdf	614321 083285d2f23fb84c74d131f4570c7f66dd7b0b59	no	9
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2	Foreign Reference	2074.pdf	7047386 8fcf0ca549f5be7aaa631006e8ff2b73a8defc71	no	40
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3	Foreign Reference	2075.pdf	1121298 941f56ab8972334f740a42da0f64323e27525f22	no	46
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4	Foreign Reference	2076.pdf	972543 b6cc2b50dfba5f9dafe28939427a6228d7218933	no	39
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5	Foreign Reference	2077.pdf	1901018 6539164475086ad9ab3c492961440050eb14eb60	no	51
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6	Foreign Reference	2078.pdf	1128425 34d3158d2965f487838e0079c67c3c6926679a7c	no	38
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7	Foreign Reference	2079.pdf	1123981 085b25ad47976d8c5eaa309e384a85cf56ef2e6a	no	3
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8	Foreign Reference	2080.pdf	877755 277dd25bee280796f81a1943a6d00e1e91ac213a	no	11
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9	Foreign Reference	2081.pdf	975121 23277e1884ea272e116216d6e83b5c822a6a2d58	no	14
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EFS ID:	26081550
Application Number:	14578124
International Application Number:	
Confirmation Number:	1830
Title of Invention:	Enterprise Access Control And Accounting Allocation For Access Networks
First Named Inventor/Applicant Name:	Gregory G. Raleigh
Customer Number:	106963
Filer:	James E. Harris/Ann Taylor
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Attorney Docket Number:	RALEP037D1
Receipt Date:	16-JUN-2016
Filing Date:	19-DEC-2014
Time Stamp:	10:15:45
Application Type:	Utility under 35 USC 111(a)

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1	Non Patent Literature	3055.pdf	10370496 db66223e77b303b72c707b13a3bf1588e151bc42	no	20
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2	Non Patent Literature	3056.pdf	24448035 1be0315565d698a68e100c21470940 4b6b456701	no	85
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3	Non Patent Literature	3057.pdf	1369098 4c887fb7b9fe8033365febea8b25f1275100a8cc	no	6
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4	Non Patent Literature	3058.pdf	201178 0bdd69f18a3fd0292aa6cfb96076e8b9ccf310d5	no	4
Warnings:					
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5	Non Patent Literature	3059.pdf	984650 b3abbccb529e99d2c6635add88044e98852f41b7	no	20
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6	Non Patent Literature	3060.pdf	2689325 2571b02a20421247b52538c8c218f2e3c8e6627f	no	336
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9	Non Patent Literature	3063_Muntermann.pdf	400365 d732f8457b3d7b48773e6de195057acc9b18e201	no	36
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13	Non Patent Literature	3067.pdf	2952523 18992a26a8917fcacb584769c943714abeee008d	no	14
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14	Non Patent Literature	3068.pdf	749607 9e51f82ae6f112f5983929992b1d151a477fe5f9	no	5
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Information:					
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Art Unit	2464
Examiner Name	Ngo, Ricky Quoc
Attorney Docket Number	RALEP037D1

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	1	5633868	A	1997-05-27	Baldwin et al.	
	2	6061571	A	2000-05-09	Tamura, Hideo	
	3	6157636	A	2000-12-05	Voit et al.	
	4	6725256	B1	2004-04-20	Albal et al.	
	5	6751296	B1	2004-06-15	Albal et al.	
	6	6792461	B1	2004-09-14	Hericourt, Olivier	
	7	6934751	B2	2005-08-23	Jayapalan et al.	
	8	7027055	B2	2006-04-11	Anderson et al.	

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	Attorney Docket Number	RALEP037D1

	9	7043225	B1	2006-05-09	Patel et al.	
	10	7110753	B2	2006-09-19	Campen, Kenneth Brian	
	11	7174156	B1	2007-02-06	Mangal, Manish	
	12	7636626	B2	2009-12-22	Oesterling et al.	
	13	7680086	B2	2010-03-16	Eglin	
	14	7720206	B2	2010-05-18	Devolites et al.	
	15	7765294	B2	2010-07-27	Edwards et al.	
	16	7843831	B2	2010-11-30	Morrill et al.	
	17	8005913	B1	2011-08-23	Carlander, Carrie	
	18	8131858	B2	2012-03-06	Agulnik et al.	
	19	8160056	B2	2012-04-17	Van der Merwe et al.	

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	20	8180333	B1	2012-05-15	Wells et al.	
	21	8223655	B2	2012-07-17	Heinz et al.	
	22	8315198	B2	2012-11-20	Corneille et al.	
	23	8340678	B1	2012-12-25	Pandey, Vinod	
	24	8385199	B1	2013-02-26	Coward et al.	
	25	8520595	B2	2013-08-27	Yadav et al.	
	26	8523547	B2	2013-09-03	Pekrul, Merton W.	
	27	8621056	B2	2013-12-31	Coussemaeker et al.	
	28	8875042	B2	2014-10-28	LeJeune et al.	
	29	9135037	B1	2015-09-15	Petrescu-Prahova et al.	
	30	9172553	B2	2015-10-27	Dawes et al.	

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	31	9177455	B2	2015-11-03	Remer, David M.	

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	1	20030028623	A1	2003-02-06	Hennessey et al.	
	2	20050060525	A1	2005-03-17	Schwartz et al.	
	3	20060200663	A1	2006-09-07	Thornton, Andrew J.	
	4	20070061800	A1	2007-03-15	Cheng et al.	
	5	20070255769	A1	2007-11-01	Agrawal et al.	
	6	20070299965	A1	2007-12-27	Nieh et al.	
	7	20080066181	A1	2008-03-13	Haveson et al.	
	8	20080126287	A1	2008-05-29	Cox et al.	

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	9	20080212751	A1	2008-09-04	Chung, Simon		
	10	20090203352	A1	2009-08-13	Fordon et al.		
	11	20100041365	A1	2010-02-18	Lott et al.		
	12	20100121744	A1	2010-05-13	Belz et al.		
	13	20140073291	A1	2014-03-13	Hildner et al.		

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	1	2002045315	WO	A2	2002-06-06	Micromuse		
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☐ 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.

Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

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	/James E. Harris/	Date (YYYY-MM-DD)	2016-03-09
Name/Print	James E. Harris	Registration Number	40013

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt	
EFS ID:	25158410
Application Number:	14578124
International Application Number:	
Confirmation Number:	1830
Title of Invention:	Enterprise Access Control And Accounting Allocation For Access Networks
First Named Inventor/Applicant Name:	Gregory G. Raleigh
Customer Number:	106963
Filer:	James E. Harris/Ann Taylor
Filer Authorized By:	James E. Harris
Attorney Docket Number:	RALEP037D1
Receipt Date:	10-MAR-2016
Filing Date:	19-DEC-2014
Time Stamp:	13:03:25
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	P037D1.pdf	613135 d6e02f27a35dc3848b1a9623db49d4127792d7d3	no	8

Warnings:
Information:

2	Foreign Reference	2072.pdf	819567 9bd3134bd27e9dd9d134e7565086a86315c0ab30	no	33
Warnings:					
Information:					
3	Foreign Reference	2073.pdf	1463202 ba90a6bf82143d32fc7a1fbab25c6e727606a4c3	no	59
Warnings:					
Information:					
			Total Files Size (in bytes):	2895904	

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<u>New Applications Under 35 U.S.C. 111</u>
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PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	14578124
Filing Date	2014-12-19
First Named Inventor	Gregory G. Raleigh
Art Unit	2464
Examiner Name	Ngo, Ricky Quoc
Attorney Docket Number	RALEP037D1

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	5974439	A	1999-10-26	Bollella, Gregory	
	2	6038540	A	2000-03-14	Krist et al.	
	3	6058434	A	2000-05-02	Wilt et al.	
	4	6125391	A	2000-09-26	Meltzer et al.	
	5	6393014	B1	2002-05-21	Daly et al.	
	6	6397259	B1	2002-05-28	Lincke et al.	
	7	6735206	B1	2004-05-11	Oki et al.	
	8	6748437	B1	2004-06-08	Mankude et al.	

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	Art Unit	2464
	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

	9	6882718	B1	2005-04-19	Smith, Benjamin V.	
	10	7017189	B1	2006-03-21	DeMello et al.	
	11	7024460	B2	2006-04-04	Koopmas et al.	
	12	7047276	B2	2006-05-16	Liu et al.	
	13	7058022	B1	2006-06-06	Carolan et al.	
	14	7149521	B2	2006-12-12	Sundar et al.	
	15	7162237	B1	2007-01-09	Silver et al.	
	16	7200112	B2	2007-04-03	Sundar et al.	
	17	7248570	B2	2007-07-24	Bahl et al.	
	18	7266371	B1	2007-09-04	Amin et al.	
	19	7366654	B2	2008-04-29	Moore, Robert C.	

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	20	7391724	B2	2008-06-24	Alakoski et al.	
	21	7395244	B1	2008-07-01	Kingsford, Bryan	
	22	7411930	B2	2008-08-12	Montojo et al.	
	23	7454191	B2	2008-11-18	Dawson et al.	
	24	7508799	B2	2009-03-24	Sumner et al.	
	25	7512128	B2	2009-03-31	DiMambro et al.	
	26	7554983	B1	2009-06-30	Muppala, Suresh	
	27	7564799	B2	2009-07-21	Holland et al.	
	28	7627767	B2	2009-12-01	Sherman et al.	
	29	7676673	B2	2010-03-09	Weller et al.	
	30	7817615	B1	2010-10-19	Breau et al.	

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	31	7844034	B1	2010-11-30	Oh et al.	
	32	7849161	B2	2010-12-07	Koch et al.	
	33	7849477	B2	2010-12-07	Cristofalo et al.	
	34	7860088	B2	2010-12-28	Lioy, Marcello	
	35	7889384	B2	2011-02-15	Armentrout et al.	
	36	7894431	B2	2011-02-22	Goring et al.	
	37	7899039	B2	2011-03-01	Andreasen et al.	
	38	7966405	B2	2011-06-21	Sundaresan et al.	
	39	7978686	B2	2011-07-12	Goyal et al.	
	40	7987496	B2	2011-07-26	Bryce et al.	
	41	8032168	B2	2011-10-04	Ikaheimo, Jorma	

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	42	8073427	B2	2011-12-06	Koch et al.	
	43	8104080	B2	2012-01-24	Burns et al.	
	44	8131840	B1	2012-03-06	Denker, Richard E.	
	45	8150394	B2	2012-04-03	Bianconi et al.	
	46	8190122	B1	2012-05-29	Alexander et al.	
	47	8385964	B2	2013-02-26	Haney, Richard D.	
	48	8407763	B2	2013-03-26	Weller et al.	
	49	8484568	B2	2013-07-09	Rados et al.	
	50	8503455	B2	2013-08-06	Heikens, Heico	
	51	8504032	B2	2013-08-06	Lott et al.	
	52	8504687	B2	2013-08-06	Maffione et al.	

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	53	8504690	B2	2013-08-06	Shah et al.	
	54	8522337	B2	2013-08-27	Adusumilli et al.	
	55	8527662	B2	2013-09-03	Biswas et al.	
	56	8572256	B2	2013-10-29	Babbar, Uppinder Singh	
	57	8644813	B1	2014-02-04	Gailloux et al.	
	58	8667542	B1	2014-03-04	Bertz et al.	
	59	8793304	B2	2014-07-29	Lu et al.	
	60	8812525	B1	2014-08-19	Taylor III, Buford Leonard	
	61	8863111	B2	2014-10-14	Selitser et al.	
	62	8948726	B2	2015-02-03	Smith et al.	
	63	8966018	B2	2015-02-24	Bugwadia et al.	

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	64	8972537	B2	2015-03-03	Bastian et al.	
	65	9002342	B2	2015-04-07	Tenhunen et al.	
	66	9176913	B2	2015-11-03	Millet et al.	
	67	RE44412		2013-08-06	Naqvi et al.	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20030134650	A1	2003-07-17	Sundar et al.	
	2	20030159030	A1	2003-08-21	Evans, Junius A.	
	3	20040127208	A1	2004-07-01	Nair et al.	
	4	20040260766	A1	2004-12-23	Barros et al.	
	5	20050041617	A1	2005-02-24	Huotari et al.	

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	Filing Date	2014-12-19
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	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

	6	20050096024	A1	2005-05-05	Bicker et al.	
	7	20060075506	A1	2006-04-06	Sanda et al.	
	8	20060095517	A1	2006-05-04	O'Connor et al.	
	9	20060126562	A1	2006-06-15	Liu, Huitao	
	10	20060277590	A1	2006-12-07	Limont et al.	
	11	20060291419	A1	2006-12-28	McConnell et al.	
	12	20070257767	A1	2007-11-08	Beeson, Curt	
	13	20080018494	A1	2008-01-24	Waite et al.	
	14	20080034063	A1	2008-02-07	Yee, Robert	
	15	20090036111	A1	2009-02-05	Danford et al.	
	16	20120108225	A1	2012-05-03	Luna et al.	

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	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
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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[5]
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Examiner Signature		Date Considered	

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] 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	14578124
	Filing Date	2014-12-19
	First Named Inventor	Gregory G. Raleigh
	Art Unit	2464
	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

CERTIFICATION STATEMENT

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See attached certification statement.

Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

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Signature	/James E. Harris/	Date (YYYY-MM-DD)	2015-12-15
Name/Print	James E. Harris	Registration Number	40013

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Electronic Acknowledgement Receipt	
EFS ID:	24374036
Application Number:	14578124
International Application Number:	
Confirmation Number:	1830
Title of Invention:	Enterprise Access Control And Accounting Allocation For Access Networks
First Named Inventor/Applicant Name:	Gregory G. Raleigh
Customer Number:	106963
Filer:	James E. Harris/Ann Taylor
Filer Authorized By:	James E. Harris
Attorney Docket Number:	RALEP037D1
Receipt Date:	15-DEC-2015
Filing Date:	19-DEC-2014
Time Stamp:	22:59:38
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	P037D1_IDS.pdf	613960 33b6fffe79b3496c62cb5b755e2e0a1a260f28fe	no	11
Warnings:					
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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	Art Unit	2464
	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14578124
	Filing Date	2014-12-19
	First Named Inventor	Gregory G. Raleigh
	Art Unit	2464
	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

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	Attorney Docket Number	RALEP037D1

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	Attorney Docket Number	RALEP037D1

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Application Number:	14578124
International Application Number:	
Confirmation Number:	1830
Title of Invention:	Enterprise Access Control And Accounting Allocation For Access Networks
First Named Inventor/Applicant Name:	Gregory G. Raleigh
Customer Number:	106963
Filer:	James E. Harris/Ann Taylor
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Attorney Docket Number:	RALEP037D1
Receipt Date:	18-SEP-2015
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Application Type:	Utility under 35 USC 111(a)

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14/578,124	12/19/2014	Gregory G. Raleigh	RALEP037D1

CONFIRMATION NO. 1830

106963
Headwater Partners I LLC
555 Twin Dolphin Drive, Suite 310
Redwood Shores, CA 94065

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Title: Enterprise Access Control And Accounting Allocation For Access Networks

Publication No.US-2015-0201417-A1
Publication Date:07/16/2015

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	Attorney Docket Number	RALEP037D1

	9	7271765	B2	2007-09-18	Stilp et al.	
	10	7318111	B2	2008-01-08	Zhao, Wen	
	11	7627872	B2	2009-12-01	Hebeler et al.	
	12	7684370	B2	2010-03-23	Kezys, Vytautas Robertas	
	13	7685530	B2	2010-03-23	Sherrard et al.	
	14	7760137	B2	2010-07-20	Martucci et al.	
	15	7843843	B1	2010-11-30	Papp III et al.	
	16	7925778	B1	2011-04-12	Wijnands et al.	
	17	7936736	B2	2011-05-03	Proctor, Jr. et al.	
	18	7937450	B2	2011-05-03	Janik, Craig M.	
	19	8010082	B2	2011-08-30	Sutaria et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14578124
	Filing Date	2014-12-19
	First Named Inventor	Gregory G. Raleigh
	Art Unit	2464
	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

	20	8019846	B2	2011-09-13	Roelens et al.	
	21	8050705	B2	2011-11-01	Sicher et al.	
	22	8064418	B2	2011-11-22	Maki, Lasse	
	23	8086791	B2	2011-12-27	Caulkins, Jason	
	24	8103285	B2	2012-01-24	Kalhan, Amit	
	25	8155666	B2	2012-04-10	Alizadeh-Shabdiz, Farshid	
	26	8233433	B2	2012-07-31	Kalhan, Amit	
	27	8249601	B2	2012-08-21	Emberson et al.	
	28	8259692	B2	2012-09-04	Bajko, Gabor	
	29	8406736	B2	2013-03-26	Das et al.	
	30	8489110	B2	2013-07-16	Frank et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	First Named Inventor	Gregory G. Raleigh
	Art Unit	2464
	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

	31	8495181	B2	2013-07-23	Venkatraman et al.	
	32	8514927	B2	2013-08-20	Sundararajan et al.	
	33	8532610	B2	2013-09-10	Manning Cassett et al.	
	34	8571598	B2	2013-10-29	Valavi, John J.	
	35	8631428	B2	2014-01-14	Scott et al.	
	36	8634425	B2	2014-01-21	Gorti et al.	
	37	8739035	B2	2014-05-27	Trethewey, Jim	
	38	8804517	B2	2014-08-12	Oerton, Kevin John	
	39	8825109	B2	2014-09-02	Montemurro et al.	
	40	8831561	B2	2014-09-09	Sutaria et al.	
	41	8880047	B2	2014-11-04	Konicek et al.	

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	First Named Inventor	Gregory G. Raleigh
	Art Unit	2464
	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

	42	8930238	B2	2015-01-06	Coffman et al.	
	43	8949597	B1	2015-02-03	Reeves et al.	
	44	8977284	B2	2015-03-10	Reed, Mark J.	
	45	9014973	B2	2015-04-21	Ruckart, John	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20040259534	A1	2004-12-23	Chaudhari et al.	
	2	20060072451	A1	2006-04-06	Ross, Alan D.	
	3	20070005795	A1	2007-01-04	Gonzalez, Ruben	
	4	20070293191	A1	2007-12-20	Mir et al.	
	5	20070294410	A1	2007-12-20	Pandya et al.	

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	First Named Inventor	Gregory G. Raleigh
	Art Unit	2464
	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

	6	20080050715	A1	2008-02-28	Golczewski et al.	
	7	20080282319	A1	2008-11-13	Fontijn et al.	
	8	20090049518	A1	2009-02-19	Roman et al.	
	9	20090197612	A1	2009-08-06	Kiiskinen, Arto	
	10	20100151866	A1	2010-06-17	Karpov et al.	
	11	20100248719	A1	2010-09-30	Scholaert, Hugh	
	12	20110145920	A1	2011-06-16	Mahaffey et al.	
	13	20130326356	A9	2013-12-05	Zheng et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	101080055	CN	A	2007-11-28	Tencent Technology (Shenzhen) Co., Ltd.		☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14578124
	Filing Date	2014-12-19
	First Named Inventor	Gregory G. Raleigh
	Art Unit	2464
	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

	2	101335666	CN	A	2008-12-31	Hangzhou H3C Technologies Co., Ltd.		☐
	3	101815275A	CN	A	2010-08-25	Yang, Liu		☐
	4	1567818	CN	A	2005-01-19	Huawei Tech. Co. Ltd.		☐
	5	1801829A	CN		2006-07-12	Kunda Computer Technology (Kunshan) Co., Ltd.		☐
	6	1867024A	CN		2006-11-22	Huawei Technologies Co., Ltd.		☐

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NON-PATENT LITERATURE DOCUMENTS Remove

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[5]
	1	Ahmed et al., "A Context-Aware Vertical Handover Decision Algorithm for Multimode Mobile Terminals and Its Performance," BenQ Mobile, Munich Germany; University of Klagenfurt, Klagenfurt, Austria; 2006	☐
	2	Dixon et al., "Triple Play Digital Services: Comcast and Verizon (Digital Phone, Television, and Internet), August 2007	☐
	3	Kassar et al., "An overview of vertical handover decision strategies in heterogeneous wireless networks," ScienceDirect, University Pierre & Marie Curie, Paris, France, 6/5/2007	☐
	4	Sadeh et al., "Understanding and Capturing People's Privacy Policies in a Mobile Social Networking Application," ISR School of Computer Science, Carnegie Mellon University, 2007	☐

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	Application Number	14578124
	Filing Date	2014-12-19
	First Named Inventor	Gregory G. Raleigh
	Art Unit	2464
	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

	5	Schiller et al., "Location-Based Services," The Morgan Kaufmann Series in Data Management Systems, 2004	☐

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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.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] 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	14578124
	Filing Date	2014-12-19
	First Named Inventor	Gregory G. Raleigh
	Art Unit	2464
	Examiner Name	Ngo, Ricky Quoc
	Attorney Docket Number	RALEP037D1

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.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

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	/James E. Harris/	Date (YYYY-MM-DD)	2015-06-26
Name/Print	James E. Harris	Registration Number	40013

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Electronic Acknowledgement Receipt	
EFS ID:	22762074
Application Number:	14578124
International Application Number:	
Confirmation Number:	1830
Title of Invention:	Enterprise Access Control And Accounting Allocation For Access Networks
First Named Inventor/Applicant Name:	Gregory G. Raleigh
Customer Number:	106963
Filer:	James E. Harris/Ann Taylor
Filer Authorized By:	James E. Harris
Attorney Docket Number:	RALEP037D1
Receipt Date:	26-JUN-2015
Filing Date:	19-DEC-2014
Time Stamp:	19:33:38
Application Type:	Utility under 35 USC 111(a)

Payment information:

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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)	P037D1.pdf	614155 47c249816461fb0d0851d03b0054a4c19692d5d8	no	10
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Warnings:					
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5	Foreign Reference	2063.pdf	2400276 5c7addfc40b293a3442a4c140083d3fc5d876114	no	21
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6	Foreign Reference	2064.pdf	2345898 db3b0051c6d9ab3dfa64f05d6324394e5fc54486	no	20
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7	Foreign Reference	2065.pdf	2381976 7796f26254f7db3b899626b2e7332663eaff0633	no	25
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8	Non Patent Literature	3039_Dixon.pdf	1271520 5ff7631e8a8dfa2c00f75e44b77d86a2e9719407	no	12
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9	Non Patent Literature	3040_Ahmed.pdf	698684 312cdbfa74f55adbbd7f0eee7032be26a77e3ad5	no	10
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10	Non Patent Literature	3041_Kassar.pdf	840076 1b87a4e38876abbcb73a0c7a689d940a997ba013	no	14
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11	Non Patent Literature	3042_Kaufmann.pdf	3412131 987a5e9e6c5cadcf6cd5982f4c181ac27b6dafe7	no	283
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12	Non Patent Literature	3043_Sadeh.pdf	1095284 adc744cb7b194a97b6f3ac3e1b28a65e042a8d9f	no	16
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			Total Files Size (in bytes):	19111938	

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/578,124	12/19/2014	Gregory G. Raleigh	RALEP037D1

CONFIRMATION NO. 1830

106963
Headwater Partners I LLC
555 Twin Dolphin Drive, Suite 310
Redwood Shores, CA 94065

POA ACCEPTANCE LETTER

OC000000074485754

Date Mailed: 04/09/2015

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 04/03/2015.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/mtegene/

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

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 14/578,124

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	70		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	300		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	360		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	12 minus 20 =	*	x 40 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*	x 210 =	0.00			
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).			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	730		TOTAL	

APPLICATION AS AMENDED - PART II

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

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	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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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/578,124	12/19/2014	2642	800	RALEP037D1	12	1

CONFIRMATION NO. 1830

UPDATED FILING RECEIPT

106963
Headwater Partners I LLC
555 Twin Dolphin Drive, Suite 310
Redwood Shores, CA 94065

OC000000074485791

Date Mailed: 04/09/2015

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

Inventor(s)

Gregory G. Raleigh, Woodside, CA;
Alireza Raissinia, Saratoga, CA;
Jeffrey Green, Sunnyvale, CA;

Applicant(s)

Headwater Partners I LLC, Redwood City, CA

Power of Attorney: The patent practitioners associated with Customer Number 106963

Domestic Priority data as claimed by applicant

This application is a DIV of 13/248,028 09/28/2011 PAT 8924469
which claims benefit of 61/387,243 09/28/2010
and is a CIP of 12/380,778 03/02/2009 PAT 8321526
and is a CIP of 12/380,780 03/02/2009 PAT 8839388
and said 12/380,778 03/02/2009
claims benefit of 61/206,354 01/28/2009
and claims benefit of 61/206,944 02/04/2009
and claims benefit of 61/207,393 02/10/2009
and claims benefit of 61/207,739 02/13/2009
and said 12/380,780 03/02/2009
claims benefit of 61/206,354 01/28/2009
and claims benefit of 61/206,944 02/04/2009
and claims benefit of 61/207,393 02/10/2009
and claims benefit of 61/207,739 02/13/2009

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.

If Required, Foreign Filing License Granted: 01/07/2015

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/578,124**

Projected Publication Date: 07/16/2015

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

Enterprise Access Control And Accounting Allocation For Access Networks

Preliminary Class

455

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

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

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

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Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Raleigh et al.	Examiner:	not yet assigned
Serial No.:	14/578,124	Art Unit:	2642
Filed:	December 19, 2014	Conf. No.:	1830
Title:	Enterprise Access Control and Accounting Allocation for Access Networks		

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

RESPONSE TO NOTICE TO FILE MISSING PARTS AND PRELIMINARY AMENDMENT

In response to the Notice to File Missing Parts dated January 9, 2015 (the "Notice"), the deadline for response being April 9, 2015 with a one-month extension of time, please enter the following amendments and remarks:

Amendments to the Specification begin on page 2.

Amendments to the Claims begin on page 3.

Remarks begin on page 6.

AMENDMENTS TO THE SPECIFICATION

Please amend the **Application Title** as follows:

Wireless End-User Device With Wireless Data Attribution to Multiple Personas

Please replace the **Abstract** with the following:

A wireless end-user device has wireless wide-area network (WWAN) and wireless local-area network (WLAN) modems. One or more processors attribute data communications for at least one of the modems to respective personas, including a first persona for usage of the device that is personal to the user and a second persona for usage of the device that is on behalf of an enterprise. The device transmits information to a network element that reflects the attribution of the data communications. The information is adapted for use in allocating a first amount of wireless data consumption to one of the personas.

AMENDMENTS TO THE CLAIMS

1. (Canceled).

2. (New) A wireless end-user device, comprising:

a plurality of wireless modems to communicate data related to one or more Internet access activities, the plurality of modems including

a wireless wide area network (WWAN) modem to communicate data related to one or more Internet access activities between the device and at least one WWAN, when configured for and connected to the WWAN, and

a wireless local area network (WLAN) modem to communicate data related to one or more Internet access activities between the device and at least one WLAN, when configured for and connected to the WLAN;

one or more processors configured to, for data communications associated with at least one of the wireless modems and related to one or more Internet access activities,

attribute the data communications to a respective one of at least two persona, the at least two persona including a first persona representing usage of the wireless end-user device that is personal to the user and a second persona representing usage of the wireless end-user device that is on behalf of an enterprise, and

transmit information to a network element, the information reflecting the attribution of data communications and adapted for use in allocating an amount of wireless data consumption by the wireless end-user device to one of the first and second personas.

3. (New) The wireless end-user device of claim 2,

further comprising a non-transitory memory to store a policy specifying at least one of (a) an association between the first persona and one or more first applications installed on the device, the execution of which is to be associated with the first persona, and (b) an association between the second persona and one or more second applications installed on the device, the execution of which is to be associated with the second persona,

wherein the one or more processors are configured to attribute the data communications to a respective one of the at least two persona based at least in part on the policy.

4. (New) The wireless end-user device of claim 2,

further comprising a non-transitory memory to store policy information specifying a list of applications associated with the second persona,

wherein the one or more processors are configured to attribute the data communications exchanged by the wireless end-user device, when related to one or more Internet access activities on behalf of an application in the list, to the second persona.

5. (New) The wireless end-user device of claim 2, wherein the one or more processors are further configured to:

establish, using at least one of the modems, a private tunnel between the wireless end-user device and a selected proxy; and

enforce a first condition where first data communications attributed to the second persona are exchanged by the at least one of the modems exclusively via the private tunnel.

6. (New) The wireless end-user device of claim 5, wherein the one or more processors are further configured to:

identify second data communications as attributed to the first persona and not the second persona; and

enforce a second condition where the second data communications are exchanged by the at least one of the modems exclusively outside of the private tunnel.

7. (New) The wireless end-user device of claim 6, wherein the private tunnel forms at least a portion of a virtual private network (VPN).

8. (New) The wireless end-user device of claim 6, wherein the wireless end-user device comprises a first secure partition and a second partition, the one or more processors configured to enforce the first and second conditions such that the first data communications cannot be exchanged with the second partition and the second data communications cannot be exchanged with the first secure partition.

9. (New) The wireless end-user device of claim 8, wherein each of the first secure partition and the second partition is embodied using respective device hardware.

10. (New) The wireless end-user device of claim 6, wherein the one or more processors are configured to establish the first and second conditions based on a policy, and wherein the

wireless end-user device is configurable to receive at least a portion of the policy information from a network destination.

11. (New) The wireless end-user device of claim 5, wherein the one or more processors are further configured to:

detect a network type in use for the data communications; and

condition enforcement of the first condition upon the detected network type.

12. (New) The wireless end-user device of claim 2, the one or more processors configured to cause the wireless end-user device to calculate a first count of the data consumption attributable to only one of the first persona and the second persona, the information transmitted to the network element dependent on the first count.

13. (New) The wireless end-user device of claim 2, further comprising a non-transitory memory to store policy information specifying a list of Internet destinations associated with the second persona, and wherein the one or more processors are configured to attribute the data communications to the second persona when the data communications are exchanged with an Internet destination that is on the list.

REMARKS

Claim 1 has been canceled, and new claims 2-13 have been added. No new matter has been added. Applicant respectfully requests the entry of the amendments herein.

Applicant is also submitting the required fees and surcharge, as noted in the Notice.

The Commissioner is authorized to charge any fee deficiency or credit any overpayment to Deposit Account 50-5876.

Respectfully submitted,

Date: 4/3/2015 By: /James E. Harris/

James E. Harris
Reg. No. 40,013
Headwater Partners I LLC
555 Twin Dolphin Dr., Suite 310
Redwood City, CA 94065
(650) 517-2798

CERTIFICATE OF ELECTRONIC TRANSMISSION

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being filed electronically via EFS-Web addressed to the Commissioner for Patents on:

Date: April 3, 2015 By: /Ann Taylor /
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UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/578,124	12/19/2014	Gregory G. Raleigh	RALEP037D1

CONFIRMATION NO. 1830

106963
Headwater Partners I LLC
555 Twin Dolphin Drive, Suite 310
Redwood Shores, CA 94065

FORMALITIES LETTER

OC000000072725535

Date Mailed: 01/09/2015

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

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

- The statutory basic filing fee is missing.
- The application search fee must be submitted.
- The application examination fee must be submitted.
- Surcharge as set forth in 37 CFR 1.16(f) must be submitted.
  The surcharge is due for any one of:
  - late submission of the basic filing fee, search fee, or examination fee,
  - late submission of inventor's oath or declaration,
  - filing an application that does not contain at least one claim on filing, or
  - submission of an application filed by reference to a previously filed application.

SUMMARY OF FEES DUE:

The fee(s) required within **TWO MONTHS** from the date of this Notice to avoid abandonment is/are itemized below. Small entity discount is in effect. If applicant is qualified for micro entity status, an acceptable Certification of Micro Entity Status must be submitted to establish micro entity status. (See 37 CFR 1.29 and forms PTO/SB/15A and 15B.)

- $ **70** basic filing fee.
- $ **70** surcharge.
- $ **300** search fee.
- $ **360** examination fee.
- $(**0**) previous unapplied payment amount.
- $ **800** TOTAL FEE BALANCE DUE.

Items Required To Avoid Processing Delays:

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's

oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
  Gregory G. Raleigh
  Alireza Raissinia
  Jeffrey Green

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

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P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice". https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

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

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/tnguyen/

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

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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	Enterprise Access Control and Accounting Allocation for Access Networks

As the below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application, or

■ United States application or PCT international application number 14/578,124 filed on December 19, 2014.

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 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.

WARNING:

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LEGAL NAME OF INVENTOR

Inventor: Jeffrey Green Date (Optional) :

Signature:

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. 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 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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filed on December 19, 2014.

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

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LEGAL NAME OF INVENTOR

Inventor: Alireza Raissinia Date (Optional): 1/10/2015

Signature:

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

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☐ The attached application, or

■ United States application or PCT international application number 14/578,124 filed on December 19, 2014.

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.

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LEGAL NAME OF INVENTOR

Inventor: Gregory G. Raleigh Date (Optional): _____

Signature: _____

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This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. 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 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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	Application Number	14578124
	Filing Date	2014-12-19
	First Named Inventor	Raleigh
	Art Unit	2642
	Examiner Name	not yet assigned
	Attorney Docket Number	RALEP037D1

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	1	20070259656		2007-11-08	Jeong, Jong Woo	
	2	20080263348		2008-10-23	Zaltsman, Etai et al.	
	3	20080313315		2008-12-18	Karaoguz, Jeyhan et al.	
	4	20090282127		2009-11-12	LeBlanc, Michael et al.	
	5	20100167696		2010-07-01	Smith, Christopher David et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Filing Date	2014-12-19
	First Named Inventor	Raleigh
	Art Unit	2642
	Examiner Name	not yet assigned
	Attorney Docket Number	RALEP037D1

	6	20030188006		2003-10-02	Bard, Steven R.	
	7	20060160536		2006-07-20	Chou, Joey	
	8	20060168128		2006-07-27	Sistla, Amber et al.	
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	10	20050186948		2005-08-25	Gallagher, Michael D. et al.	
	11	20070147317		2007-06-28	Smith, Brian K. et al.	
	12	20080270212		2008-10-30	Blight, Jeffrey et al.	
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	15	20100030890		2010-02-04	Dutta, Satadip et al.	
	16	20110238545		2011-09-29	Fanaian, Nabil Ruh et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Filing Date	2014-12-19
	First Named Inventor	Raleigh
	Art Unit	2642
	Examiner Name	not yet assigned
	Attorney Docket Number	RALEP037D1

	17	20080025230		2008-01-31	Patel, Alpesh et al.	
	18	20040170191		2004-09-02	Guo, Zihua et al.	
	19	20020188732		2002-12-12	Buckman, Charles R. et al.	
	20	20080034419		2008-02-07	Mullick, Amarnath et al.	
	21	20080010379		2008-01-10	Zhao, Hang	
	22	20080139210		2008-06-12	Gisby, Doug et al.	
	23	20040243992		2004-12-02	Gustafson, James P. et al.	
	24	20070226775		2007-09-27	Andreasen, Flemming Stig et al.	
	25	20100235329		2010-09-16	Koren, David et al	
	26	20090254857		2009-10-08	Romine, Christopher et al.	
	27	20120101952		2012-04-26	Raleigh, Gregory G. et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	28	20080166993		2008-07-10	Gautier et al.	
	29	20040137890		2004-07-15	Kalke, Catherine	
	30	20070143824		2007-06-21	Shahbazi, Majid	
	31	20070266422		2007-11-15	Germano et al.	
	32	20090044185		2009-02-12	Krivopaltsev, Eugene	
	33	20040039792		2004-02-26	Nakanishi, Tomoaki	
	34	20050075115		2005-04-07	Corneille et al.	
	35	20050239447		2005-10-27	Holzman et al.	
	36	20070213054		2007-09-13	Han, Seung-Wook	
	37	20080032715		2008-02-07	Jia et al.	
	38	20090163173		2009-06-25	Williams, Timothy D.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14578124
	Filing Date	2014-12-19
	First Named Inventor	Raleigh
	Art Unit	2642
	Examiner Name	not yet assigned
	Attorney Docket Number	RALEP037D1

	39	20100075666		2010-03-25	Garner, Neil Robert	
	40	20080293395		2008-11-27	Matthews, Ajit et al.	
	41	20050245241		2005-11-03	Durand, Terry et al.	
	42	20080125079		2008-05-29	O'Neil, Douglas et al.	
	43	20050135264		2005-06-23	Popoff, Jeff et al.	
	44	20070165630		2007-07-19	Rasanen, Jorma	
	45	20100287599		2010-11-11	HE, Xianhui	
	46	20070060200		2007-03-15	Boris et al.	
	47	20060030306		2006-02-09	Kuhn, Brian Gerald	
	48	20060035631		2006-02-16	White et al.	
	49	20060206709		2006-09-14	Labrou et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14578124
	Filing Date	2014-12-19
	First Named Inventor	Raleigh
	Art Unit	2642
	Examiner Name	not yet assigned
	Attorney Docket Number	RALEP037D1

	50	20090046707		2009-02-19	Smires et al.	
	51	20100311402		2010-12-09	Srinivasan et al.	
	52	20110277019		2011-11-10	Pritchard Jr., John Russell	
	53	20050250536		2005-11-10	Deng et al.	
	54	20070192460		2007-08-16	Choi et al.	
	55	20080080457		2008-04-03	Cole, Terry L.	

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

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	1310401A	CN		2000-02-22	Wang, Di Xing		☐
	2	1878160A	CN		2006-12-13	Jiang, Yong		☐
	3	2012047275	WO		2012-04-19	Raleigh, Gregory G. et al.		☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14578124
	Filing Date	2014-12-19
	First Named Inventor	Raleigh
	Art Unit	2642
	Examiner Name	not yet assigned
	Attorney Docket Number	RALEP037D1

	4	101127988A	CN		2008-02-20	ZTE Corporation		☐
	5	1503548 A1	EP		2005-02-02	FG Microtec GmbH		☐
	6	3148713 B2	JP		2001-03-26	ATR Kankyo Tekio Tsushin Kenkyusho		☐
	7	2009-218773	JP		2009-09-24	Advanced Telecommunication Research Institute Inte		☐
	8	2006093961	WO		2006-09-08	Kyocera Wireless Corp.		☐
	9	2007-318354	JP		2007-12-06	Fujitsu Ten Ltd.		☐
	10	2007126352	WO		2007-11-08	Telefonaktiebolaget LM Ericsson		☐
	11	2009-212707	JP		2009-09-17	Fujitsu Ltd.		☐
	12	2008-301121	JP		2008-12-11	Kyocera Corp.		☐

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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.	T5

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14578124
	Filing Date	2014-12-19
	First Named Inventor	Raleigh
	Art Unit	2642
	Examiner Name	not yet assigned
	Attorney Docket Number	RALEP037D1

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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.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] 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	14578124
	Filing Date	2014-12-19
	First Named Inventor	Raleigh
	Art Unit	2642
	Examiner Name	not yet assigned
	Attorney Docket Number	RALEP037D1

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.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

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	/James E. Harris/	Date (YYYY-MM-DD)	2015-04-03
Name/Print	James E. Harris	Registration Number	40013

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

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 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

Application Number:	14578124
Filing Date:	19-Dec-2014
Title of Invention:	Enterprise Access Control And Accounting Allocation For Access Networks
First Named Inventor/Applicant Name:	Gregory G. Raleigh
Filer:	James E. Harris/Ann Taylor
Attorney Docket Number:	RALEP037D1

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	70	70
Utility Search Fee	2111	1	300	300
Utility Examination Fee	2311	1	360	360
Pages:				
Claims:				
Miscellaneous-Filing:				
Publ. Fee- Early, Voluntary, or Normal	1504	1	0	0
Late Filing Fee for Oath or Declaration	2051	1	70	70

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 1 month with $0 paid	2251	1	100	100
Miscellaneous:				
		Total in USD ($)		**900**

Electronic Acknowledgement Receipt	
EFS ID:	21970444
Application Number:	14578124
International Application Number:	
Confirmation Number:	1830
Title of Invention:	Enterprise Access Control And Accounting Allocation For Access Networks
First Named Inventor/Applicant Name:	Gregory G. Raleigh
Customer Number:	106963
Filer:	James E. Harris/Ann Taylor
Filer Authorized By:	James E. Harris
Attorney Docket Number:	RALEP037D1
Receipt Date:	03-APR-2015
Filing Date:	19-DEC-2014
Time Stamp:	18:40:28
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$900
RAM confirmation Number	3826
Deposit Account	505876
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Extension of Time	01P037D1_Extension.pdf	163211 b54401168d4044f94b85080db4fa27859abdd4c9	no	2
Warnings:					
Information:					
2		02P037D1_ResponseNFMP.pdf	183288 8e2d6ae6c941ee79235b3bb05a43bfd4924d4733	yes	8

Multipart Description/PDF files in .zip description

Document Description	Start	End
Applicant Response to Pre-Exam Formalities Notice	1	1
Specification	2	2
Claims	3	5
Applicant Arguments/Remarks Made in an Amendment	6	8

Warnings:					
Information:					
3	Oath or Declaration filed	03P037D1GreenDecl.pdf	182323 02c1b79a716a9bac4449d7bfb9acc040ed8663f6	no	1
Warnings:					
Information:					
4	Oath or Declaration filed	04P037D1RaissiniaDecl.pdf	188957 895fffe4fbe391bc73c63025b168e0b3f296a4c7	no	1
Warnings:					
Information:					
5	Oath or Declaration filed	05P037D1RaleighDecl.pdf	123628 fafa89396be438f15fe2541c33c48f4efe34e10c	no	1
Warnings:					
Information:					

6	Power of Attorney	06POA.pdf	645382 515a132f616634774378 81ed77cd308133200ab1	no	2
Warnings:					
Information:					
7	Assignee showing of ownership per 37 CFR 3.73	07P037D1_statement.pdf	118211 fbfb467eabd9cb7365d94948a4864605b8d5e035	no	3
Warnings:					
Information:					
8	Transmittal Letter	08P037D1_IDSTransLtr.pdf	59087 9015fa6d1798e9dc0453b2b8ceb83eacba40040b	no	2
Warnings:					
Information:					
9	Information Disclosure Statement (IDS) Form (SB08)	09IDS1.pdf	623003 4615b06b1657670e963d358a9b1637985c86fd22	no	37
Warnings:					
Information:					
10	Information Disclosure Statement (IDS) Form (SB08)	10IDS2.pdf	620446 e71cdd59b7fe776252ef7389528888b4bce80898	no	30
Warnings:					
Information:					
11	Information Disclosure Statement (IDS) Form (SB08)	11IDS3.pdf	619011 92573a370962ab6f8a49f599aa9e7997ef99a67b	no	31
Warnings:					
Information:					
12	Information Disclosure Statement (IDS) Form (SB08)	12IDS4.pdf	614091 91a8e86e4b09a0ba021c5b8c74a77a6c2c552c19	no	10
Warnings:					
Information:					
13	Fee Worksheet (SB06)	fee-info.pdf	40448 7329976491 50f0eb19835a75290219a9f0ab5967	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	4181086		

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

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

PTO/AIA/22 (03-13)
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PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)	Docket Number (Optional) RALEP037D1
Application Number 14/578,124	Filed December 19, 2014
For Enterprise Access Control and Accounting Allocation for Access Networks	
Art Unit 2642	Examiner not yet assigned

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

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

		Fee	Small Entity Fee	Micro Entity Fee	
☑	One month (37 CFR 1.17(a)(1))	$200	$100	$50	$ 100
☐	Two months (37 CFR 1.17(a)(2))	$600	$300	$150	$
☐	Three months (37 CFR 1.17(a)(3))	$1,400	$700	$350	$
☐	Four months (37 CFR 1.17(a)(4))	$2,200	$1,100	$550	$
☐	Five months (37 CFR 1.17(a)(5))	$3,000	$1,500	$750	$

☑ Applicant asserts small entity status. See 37 CFR 1.27.

☐ Applicant certifies micro entity status. See 37 CFR 1.29.
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☑ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 505876.

☑ Payment made via EFS-Web.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant.

☑ attorney or agent of record. Registration number 40013.

☐ attorney or agent acting under 37 CFR 1.34. Registration number _____.

/James E. Harris/ — Signature

April 3, 2015 — Date

James E. Harris — Typed or printed name

650-517-2798 — Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☐ * Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.136(a). 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 6 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: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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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.

PTO/AIA/80 (07-12)
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U.S. Patent and Trademark Office; U.S DEPARTMENT OF COMMERCE
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POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

☒ Practitioners associated with Customer Number: 106963

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

☒ The address associated with Customer Number: 106963

OR

☐	Firm or Individual Name			
	Address			
	City		State	Zip
	Country			
	Telephone		Email	

Assignee Name and Address: Headwater Partners I LLC
555 Twin Dolphin Drive, Suite 310
Redwood City, CA 94065 U.S.A.

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be Filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of The practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature	/David R. Johnson/	Date	25 June 2014
Name	David R. Johnson	Telephone	650-517-2782
Title	Chief Financial Officer		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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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.

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STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Headwater Partners I LLC

Application No./Patent No.: 14/578,124 Filed/Issue Date: December 19, 2014

Titled: Enterprise Access Control and Accounting Allocation for Access Networks

Headwater Partners I LLC, a limited liability company

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☑ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 034561, Frame 0772, or for which a copy thereof is attached.

B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: _____ To: _____

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This collection of information is required by37 CFR3.73(b). The information is required toobtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentialityis governed by35 U.S.C. 122and 37 CFR1.11 and1.14. Thiscollection is estimated to take 12 minutes to complete, including gathering, preparing, and submittingthe 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 tothe Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.**SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450**

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STATEMENT UNDER 37 CFR 3.73(c)

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☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☑ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/James E. Harris/	4/3/2015
Signature	Date
James E. Harris	40013
Printed or Typed Name	Title or Registration Number

[Page 2 of 2]

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Raleigh et al.	Examiner:	not yet assigned
Serial No.:	14/578,124	Art Unit:	2642
Filed:	December 19, 2014	Conf. No.:	1830
Title:	Enterprise Access Control and Accounting Allocation for Access Networks		

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

INFORMATION DISCLOSURE STATEMENT

The references cited on attached form PTO/SB/08A are being called to the attention of the Examiner. Copies of the references are not enclosed.

In accordance with 37 CFR §1.98(d), copies of the references can be found in related U.S. Patent Application No. 13/248,028 filed September 28, 2011, of which the instant application is a divisional. Any foreign or non-patent references not submitted in that parent application are transmitted herewith.

It is respectfully requested that the cited references be expressly considered during the prosecution of this application, and the references be made of record therein and appear among the "references cited" on any patent to issue therefrom.

As provided for by 37 CFR § 1.97(g) and (h), no inference should be made that the information and references cited are prior art merely because they are in this statement and no

representation is being made that a search has been conducted or that this statement encompasses all the possible relevant information.

Applicant believes that no fee is required for submission of this statement, but if for any reason an insufficient fee has been paid, please charge the insufficiency to Deposit Account No. **50-5876**.

Respectfully submitted,

Date: April 3, 2015

By: /James E. Harris/

James E. Harris
Reg. No. 40,013
Headwater Partners I LLC
555 Twin Dolphin Dr., Suite 310
Redwood City, CA 94065
(650) 517-2798

CERTIFICATE OF ELECTRONIC TRANSMISSION

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being filed electronically via EFS-Web addressed to the Commissioner for Patents on:

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	14578124
	Filing Date	2014-12-19
	First Named Inventor	Raleigh
	Art Unit	2642
	Examiner Name	not yet assigned
	Attorney Docket Number	RALEP037D1

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	1	20020022472		2002-02-21	WATLER et al.	
	2	20020120540		2002-08-29	KENDE et al.	
	3	20020131404		2002-09-19	MEHTA et al.	
	4	20020138601		2002-09-26	PIPONIUS et al.	
	5	20020176377		2002-11-28	HAMILTON, Thomas E.	

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	6	20020199001		2002-12-26	WENOCUR et al.	
	7	20030004937		2003-01-02	SALMENKAITA et al.	
	8	20030005112		2003-01-02	KRAUTKREMER, Todd Joseph	
	9	20030013434		2003-01-16	ROSENBERG et al.	
	10	20030018524		2003-01-23	FISHMAN et al.	
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	13	20030050837		2003-03-13	KIM, Do Sik	
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	15	20030133408		2003-07-17	CHENG et al.	
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	17	20030182420		2003-09-25	JONES et al.	
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	21	20030229900		2003-12-11	REISMAN, Richard	
	22	20030236745		2003-12-25	HARTSELL et al.	
	23	20040019539		2004-01-29	RAMAN et al.	
	24	20040021697		2004-02-05	BEATON et al.	
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	26	20040044623		2004-03-04	WAKE et al.	
	27	20040047358		2004-03-11	CHEN et al.	

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	Attorney Docket Number	RALEP037D1

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	29	20040082346		2004-04-29	SKYTT et al.	
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	31	20040103193		2004-05-27	PANDYA et al.	
	32	20040107360		2004-06-03	HERRMANN et al.	
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	34	20040132427		2004-07-08	LEE et al.	
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	40	20050048950		2005-03-03	MORPER, Hans-Jochen	
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	82	20060291477		2006-12-28	CROAK et al.	

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	84	20070022289		2007-01-25	ALT et al.	
	85	20070036312		2007-02-15	CAI et al.	
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	93	20070130315		2007-06-07	FRIEND et al.	

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	94	20070140113		2007-06-21	GEMELOS, Steven	
	95	20070140275		2007-06-21	BOWMAN et al.	
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	115	20080059474		2008-03-06	LIM, Keng	

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	Attorney Docket Number	RALEP037D1

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	118	20080062900		2008-03-13	RAO, Bindu Rama	
	119	20080064367		2008-03-13	NATH et al.	
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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.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

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	/James E. Harris/	Date (YYYY-MM-DD)	2015-04-03
Name/Print	James E. Harris	Registration Number	40013

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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.

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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	18	8332517		2012-12-11	Russell, Jesse E.	
	19	8315718		2012-11-20	Caffrey, Paul Oliver et al.	

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	20	8447980		2013-05-21	Godfrey, James A. et al.	
	21	8429403		2013-04-23	Moret, Eric et al.	
	22	8411587		2013-04-02	Curtis, William et al.	
	23	8396929		2013-03-12	Helfman, Nadav et al.	
	24	8363658		2013-01-29	Delker, Jason R. et al.	
	25	8265004		2012-09-11	Toutonghi, Michael J.	
	26	8233895		2012-07-31	Tysowski, Piotr Konrad	
	27	7685254		2010-03-23	Pandya, Ashish A.	
	28	7181017		2007-02-20	Nagel, Robert H. et al.	
	29	6965872		2005-11-15	Grdina, Jerome M.	
	30	8406427		2013-03-26	Chand, Naresh et al.	

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	31	8429409		2013-04-23	Wall, Jonathan et al.	
	32	8402540		2013-03-19	Kapoor, Harsh et al.	
	33	8135657		2012-03-13	Kapoor, Harsh et al.	
	34	8271992		2012-09-18	Chatley, Scott P. et al.	
	35	8315999		2012-11-20	Chatley, Scott P. et al.	
	36	8332375		2012-12-11	Chatley, Scott P. et al.	
	37	8468337		2013-06-18	Gaur, Santosh P. et al.	
	38	8477778		2013-07-02	Lehmann Jr., L. Curtis et al.	
	39	8352630		2013-01-08	Hart, Justin Scott	
	40	6640097		2003-10-28	Corrigan, Louis et al.	
	41	7039713		2006-05-02	Van Gunter, David et al.	

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	42	5915008		1999-06-22	Dulman, Scott	
	43	8126476		2012-02-28	Vardi, Yosef et al.	
	44	8000276		2011-08-16	Scherzer, Shimon et al.	
	45	8358638		2013-01-22	Scherzer, Tamir et al.	
	46	8356336		2013-01-15	Johnston, Keith et al.	
	47	8307067		2012-11-06	Ryan, Nicholas M.	
	48	7286848		2007-10-23	Vireday, Richard P. et al.	
	49	7313237		2007-12-25	Bahl, Paramvir et al.	
	50	7444669		2008-10-28	Bahl, Paramvir et al.	
	51	7548976		2009-06-16	Bahl, Paramvir et al.	
	52	8027339		2011-09-27	Short, Joel E. et al.	

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	53	8095112		2012-01-10	Chow, Richard et al.	
	54	8369274		2013-02-05	Sawai, Ryo	
	55	7881697		2011-02-01	Baker, Matthew Donald et al.	
	56	7899438		2011-03-01	Baker, Matthew Donald et al.	
	57	7945238		2011-05-17	Baker, Matthew Donald et al.	
	58	8078140		2011-12-13	Baker, Matthew Donald et al.	
	59	8285249		2012-10-09	Baker, Matthew Donald et al.	
	60	7493659		2009-02-17	Wu, Handong et al.	
	61	7801985		2010-09-21	Pitkow, Jim et al.	
	62	8242959		2012-08-14	Mia, Rashidus S. et al.	
	63	8326319		2012-12-04	Davis, Richard W.	

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	64	8019886		2011-09-13	Harrang, Jeffrey Paul et al.	
	65	7102620		2006-09-05	Harries, Andrew Stanely Guy et al.	
	66	7139569		2006-11-21	Kato, Akira	
	67	7529204		2009-05-05	Bourlas, Yair et al.	
	68	7720960		2010-05-18	Pruss, Richard Manfred et al.	
	69	7969950		2011-06-28	Iyer, Pradeep J. et al.	
	70	8032409		2011-10-04	Mikurak, Michael G.	
	71	8045973		2011-10-25	Chambers, Michael D.	
	72	8116781		2012-02-14	Chen, Xixian et al.	
	73	8126396		2012-02-28	Bennett, James D.	
	74	8351898		2013-01-08	Raleigh, Gregory G.	

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	75	5630159		1997-05-13	Zancho, William F.	
	76	5633484		1997-05-27	Zancho, William F. et al.	
	77	5814798		1998-09-29	Zancho, William F.	
	78	7039403		2006-05-02	Wong, Gregory A.	
	79	7583964		2009-09-01	Wong, Gregory A.	
	80	7593730		2009-09-22	Khandelwal, Deepak et al.	
	81	7948953		2011-05-24	Melkote, Keerti G. et al.	
	82	8200509		2012-06-12	Kenedy, Andrew Alexander et al.	
	83	8270972		2012-09-18	Otting, Marcia J. et al.	
	84	7929959		2011-04-19	DeAtley, Dallas et al.	
	85	7478420		2009-01-13	Wright, Michael et al.	

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	86	7502672		2009-03-10	Kolls, H. Brock	
	87	7756757		2010-07-13	Oakes III, Charles Lee	
	88	7930446		2011-04-19	Kesselman, Alex et al.	
	89	8078163		2011-12-13	Lemond, Eric et al.	
	90	8068829		2011-11-29	Lemond, Eric et al.	
	91	8086497		2011-12-27	Oakes III, Charles Lee	
	92	8166040		2012-04-24	Brindisi, Richard G. et al.	
	93	6934249		2005-08-23	Bertin, Olivier et al.	
	94	7774456		2010-08-10	Lownsbrough, Derek Leigh et al.	
	95	8447607		2013-05-21	Weider, Chris et al.	
	96	8504729		2013-08-06	Pezzutti, David A.	

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	97	8495227		2013-07-23	Kaminsky, David L. et al.	
	98	8472371		2013-06-25	Bari, Farooq et al.	
	99	8134954		2012-03-13	Godfrey, James A. et al.	
	100	7535880		2009-05-19	Hinman, Brian L. et al.	
	101	7499438		2009-03-03	Hinman, Brian L. et al.	
	102	7496652		2009-02-24	Pezzutti, David	
	103	6957067		2005-10-18	Iyer, Pradeep J. et al.	
	104	6654814		2003-11-25	Britton, Kathryn H. et al.	
	105	8374592		2013-02-12	Proctor, Jr. James A. et al.	
	106	8325638		2012-12-04	Jin, Haipeng et al.	
	107	8116749		2012-02-14	Proctor Jr., James Arthur et al.	

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	108	8090616		2012-01-03	Proctor Jr., James Arthur et al.	
	109	8090359		2012-01-03	Proctor Jr., James Arthur et al.	
	110	8150431		2012-04-03	Wolovitz, Lionel et al.	
	111	8483135		2013-07-09	Cai, Yigang et al.	
	112	6104700		2000-08-15	Haddock, Stephen R. et al.	
	113	8185127		2012-05-22	Cai, Zheng et al.	
	114	8521110		2013-08-27	Rofougaran, Ahmadreza	
	115	7310424		2007-12-18	Gehring, Stephan Walter et al.	
	116	7356011		2008-04-08	Waters, Christopher J.F. et al.	
	117	7546460		2009-06-09	Maes, Stephane H.	
	118	7921463		2011-04-05	Sood, Kapil et al.	

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	119	7940751		2011-05-10	Hansen, Christopher J.	
	120	8122249		2012-02-21	Falk, Rainer et al.	
	121	8495360		2013-07-23	Falk, Rainer et al.	
	122	8520589		2013-08-27	Bhatt, Yogesh et al.	
	123	6542992		2003-04-01	Peirce, Kenneth L. et al.	
	124	8379847		2013-02-19	Bell, Robert H. et al.	
	125	8185093		2012-05-22	Jheng, Yu-Syuan et al.	
	126	8296404		2012-10-23	McDysan, Dave et al.	
	127	8195163		2012-06-05	Gisby, Doug et al.	
	128	8437734		2013-05-07	Ray, Amar N. et al.	
	129	8280351		2012-10-02	Ahmed, Shahid et al.	

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	130	7460837		2008-12-02	Diener, Neil R.	
	131	7653394		2010-01-26	McMillin, Brian K.	
	132	8130793		2012-03-06	Edwards, Stephen K. et al.	
	133	8509082		2013-08-13	Heinz, John M. et al.	
	134	8526329		2013-09-03	Mahany, Ronald L. et al.	
	135	5983270		1999-11-09	Abraham, Dalen M. et al.	
	136	6598034		2003-07-22	Kloth, Axel K.	
	137	7032072		2006-04-18	Quinn, Michael J. et al.	
	138	7580356		2009-08-25	Mishra, Sanjeev K. et al.	
	139	7742406		2010-06-22	Muppala, Suresh	
	140	7953877		2011-05-31	Vemula, Narendra et al.	

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	141	7957381		2011-06-07	Clermidy, Fabien et al.	
	142	8031601		2011-10-04	Feroz, Azeem et al.	
	143	8255534		2012-08-28	Assadzadeh, Alireza	
	144	8489720		2013-07-16	Morford, Michael Robert et al.	
	145	7774323		2010-08-10	Helfman, Nadav	
	146	7043268		2006-05-09	Yukie, Satoru et al.	
	147	8391262		2013-03-05	Maki, Lasse et al.	
	148	7113780		2006-09-26	McKenna, Daniel Bernard et al.	
	149	8166554		2012-04-24	John, Pramod	
	150	7697540		2010-04-13	Haddad, Reda et al.	
	151	6748195		2004-06-08	Phillips, W. Garland	

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	152	8583499		2013-11-12	De Judicibus, Dario et al.	
	153	8352360		2013-01-08	De Judicibus, Dario et al.	
	154	8463232		2013-06-11	Tuli, Amol et al.	
	155	7958029		2011-06-07	Bobich, Thomas et al.	
	156	7540408		2009-06-02	Levine, Judah Joseph et al.	
	157	7826427		2010-11-02	Sood, Kapil et al.	
	158	8185088		2012-05-22	Klein, Robert S. et al.	
	159	8548428		2013-10-01	Raleigh, Gregory G.	
	160	8483694		2013-07-09	Lewis, Allan D. et al.	
	161	8351592		2013-01-08	Freeny, Jr., Charles C. et al.	
	162	8452858		2013-05-28	Wu, John et al.	

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	163	7610396		2009-10-27	Taglienti, Claudio et al.	
	164	7984511		2011-07-19	Kocher, Paul Carl et al.	
	165	7987510		2011-07-26	Kocher, Paul C. et al.	
	166	8571993		2013-10-29	Kocher, Paul C. et al.	
	167	8543265		2013-09-24	Ekhaguere, David E. et al.	
	168	8385975		2013-02-26	Forutanpour, Babak	
	169	6873988		2005-03-29	Hermann, Conrad K. et al.	
	170	7013469		2006-03-14	Smith, Adam W. et al.	
	171	7203169		2007-04-10	Okholm, Jon Eric et al.	
	172	7286834		2007-10-23	Walter, Edward	
	173	7555757		2009-06-30	Smith, Adam W. et al.	

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	174	7574509		2009-08-11	Nixon, Mark J. et al.	
	175	7826607		2010-11-02	de Carvalho Resende, Mauricio Guilherme et al.	
	176	7940685		2011-05-10	Breslau, Lee Michel et al.	
	177	8196199		2012-06-05	Hrastar, Scott E. et al.	
	178	8204505		2012-06-19	Jin, Haipeng et al.	
	179	8228818		2012-07-24	Chase, Christopher J. et al.	
	180	8320244		2012-11-27	Muqattash, Alaa et al.	
	181	8411691		2013-04-02	Aggarwal, Rahul	
	182	8461958		2013-06-11	Saenz, Jorge E. et al.	
	183	8484327		2013-07-09	Werner, Eran et al.	
	184	8522039		2013-08-27	Hyndman, Arn et al.	

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	185	8544105		2013-09-24	Mclean, Ivan H. et al.	
	186	8571474		2013-10-29	Chavez, Timothy R. et al.	
	187	8194572		2012-06-05	Horvath, Robert et al.	
	188	8516552		2013-08-20	Raleigh, Gregory G.	
	189	8441955		2013-05-14	Wilkinson, Robert Todd et al.	
	190	5774532		1998-06-30	Gottlieb, Louis G. et al.	
	191	8095124		2012-01-10	Balia, Hinal K.	
	192	7797060		2010-09-14	Grgic, Richard J. et al.	
	193	7930327		2011-04-19	Craft, David Jones et al.	
	194	8264965		2012-09-11	Dolganow, Andrew et a.	
	195	8626115		2014-01-07	Raleigh, Gregory G. et al.	

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	196	6885997		2005-04-26	Roberts, David T.	
	197	8229394		2012-07-24	Karlberg, Johan	
	198	8495700		2013-07-23	Shahbazi, Majid	
	199	8548427		2013-10-01	Chow, Paulo S.T. et al.	
	200	8572117		2013-10-29	Rappaport, Theodore S.	
	201	8589955		2013-11-19	Roundtree, Brian et al.	
	202	8660853		2014-02-25	Robb, Terence A. et al.	
	203	8601125		2013-12-03	Huang, Shibi et al	
	204	8046449		2011-10-25	Yoshiuchi, Hideya	
	205	8635164		2014-01-21	Rosenhaft, Matthew et al.	
	206	8566236		2013-10-22	Busch, James David	

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	207	8528068		2013-09-03	Weglein, Joseph et al.	
	208	8442015		2013-05-14	Behzad, Arya et al	
	209	7853255		2010-12-14	Karaoguz, Jeyhan et al	
	210	7720464		2010-05-18	Batta, Puneet	
	211	8300575		2012-10-30	Willars, Per	
	212	8666395		2014-03-04	Silver, Andrew	
	213	8315593		2012-11-20	Gallant, John K. et al.	
	214	8180881		2012-05-15	Seo, Kyoung-Il et al.	
	215	7539132		2009-05-26	Werner, Carl E. et al.	
	216	8589541		2013-11-19	Raleigh, Gregory G. et al.	
	217	7805606		2010-09-28	Birger, Chet et al.	

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	218	8347378		2013-01-01	Merkin, Aaron E. et al.	
	219	8391834		2013-03-05	Raleigh, Gregory G.	
	220	6185576		2001-02-06	McIntosh, Lowrie	
	221	8175574		2012-05-08	Panda, Biswaranjan et al.	
	222	8375128		2013-02-12	Tofighbakhsh, Mostafa et al.	
	223	8527410		2013-09-03	Markki, Outi et al.	
	224	7320029		2008-01-15	Rinne, Janne Petri et al.	
	225	8275415		2012-09-25	Huslak, Nicholas S.	
	226	8539561		2013-09-17	Gupta, Akhilesh et al.	
	227	8554876		2013-10-08	Winsor, Gerald W.	
	228	8191124		2012-05-29	Wynn, Simon et al.	

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	229	7805140		2010-09-28	Friday, Robert J. et al.	
	230	8605691		2013-12-10	Soomro, Amjad et al.	
	231	8655357		2014-02-18	Gazzard, Daryl Robert et al.	
	232	8706863		2014-04-22	Fadell, Anthony	
	233	6640334		2003-10-28	Rasmussen, John H.	
	234	7668612		2010-02-23	Okkonen, Harri	
	235	5325532		1994-06-28	Crosswy, Wm. Caldwell et al.	
	236	7614051		2009-11-03	Glaum, Jeffrey D. et al.	
	237	5131020		1992-07-14	Liebesny, John P. et al.	
	238	8223741		2012-07-17	Bartlett, Roger Danforth et al.	
	239	8396458		2013-03-12	Raleigh, Gregory G.	

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	240	8370483		2013-02-05	Choong et al.	
	241	8670334		2014-03-11	Keohane et al.	
	242	8693323		2014-04-08	McDysan, David E.	
	243	7409447		2008-08-05	Assadzadeh, Alireza	
	244	8725899		2014-05-13	Short, Joel et al.	
	245	8676925		2014-03-18	Liu, Jiawei et al.	
	246	8645518		2014-02-04	David, Scott L.	
	247	7756056		2010-07-13	Kim et al	
	248	8131281		2012-03-06	Hildner et al.	
	249	8160598		2012-04-17	Savoor, Raghvendra	
	250	8375136		2013-02-12	Roman et al.	

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	251	6119933		2000-09-19	Wong et al.	
	252	8694772		2014-04-08	Kao et al.	
	253	8719423		2014-05-06	Wyld, Jeremy	
	254	8347104		2013-01-01	Pathiyal, Krishna K.	
	255	7149229		2006-12-12	Leung, Kent K.	
	256	7242668		2007-07-10	Kan, Chao et al.	
	257	8095640		2012-01-10	Guingo, Pierrick et al.	
	258	8705361		2014-04-22	Venkataraman, Ramesh et al.	
	259	8780857		2014-07-15	Balasubramanian, Srinivasan et al.	
	260	8811991		2014-08-19	Jain, Nikhil et al.	
	261	7809351		2010-10-05	Panda et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14578124
	Filing Date	2014-12-19
	First Named Inventor	Raleigh
	Art Unit	2642
	Examiner Name	not yet assigned
	Attorney Docket Number	RALEP037D1

	262	8346210		2013-01-01	Balsan, Damien et al.	
	263	8355696		2013-01-15	Olding et al.	
	264	8488597		2013-07-16	Nie et al.	
	265	6438575		2002-08-20	Khan et al.	
	266	7222304		2007-05-22	Beaton et al.	
	267	7561899		2009-07-14	Lee, Changseok	
	268	8200200		2012-06-12	Belser et al.	
	269	8229914		2012-07-24	Ramer et al.	
	270	8522249		2013-08-27	Beaule, Stephane	
	271	8701015		2014-04-15	Bonnat, Pierre	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14578124
	Filing Date	2014-12-19
	First Named Inventor	Raleigh
	Art Unit	2642
	Examiner Name	not yet assigned
	Attorney Docket Number	RALEP037D1

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

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FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	1538730A	CN		2004-10-20	Zhongxing Communication Co., Ltd.		☐
	2	101115248A	CN		2008-01-30	Lenovo Beijing Ltd.		☐
	3	101341764A	CN		2009-01-07	Telefonaktiebolaget LM Ericsson		☐
	4	2007068288A1	WO		2007-06-21	Telefonaktiebolaget LM Ericsson		☐
	5	1802839A	CN		2006-07-12	Motorola Inc.		☐
	6	2004064306A2	WO		2004-07-29	Motorola Inc.		☐
	7	101123553A	CN		2007-09-11	SouTheast University		☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14578124
	Filing Date	2014-12-19
	First Named Inventor	Raleigh
	Art Unit	2642
	Examiner Name	not yet assigned
	Attorney Docket Number	RALEP037D1

	8	1937511A	CN		2007-03-28	ZTE		☐
	9	2466831A1	EP		2012-06-20	Openet Telecom Ltd./ McNamee et al.		☐
	10	1999027723 A1	WO		1999-06-03	Telefonaktiebolaget LM Ericsson		☐
	11	2007133844	WO		2007-11-22	Camiant, Inc.		☐
	12	2011149532 A1	WO		2011-12-01	Raleigh, Gregory G. et al.		☐
	13	101183958A	CN		2008-05-21	Huawei Tech. Co. Ltd.		☐

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

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.	T5
	1	VerizonWireless.com news, "Verizon Wireless Adds to Portfolio of Cosumer-Friendly Tools With Introduction of Usage Controls, Usage Controls and Chaperone 2.0 Offer Parents Full Family Security Solution," August 18, 2008	☐
	2	"The Construction of Intelligent Residential District in Use of Cable Television Network," Shandong Science, Vol. 13, No. 2, June 2000	☐
	3	"Communication Concepts for Mobile Agent Systems," by Joachim Baumann et al.; Inst. Of Parallel and Distributed High-Performance Systems, Univ. of Stuttgart, Germany, pp. 123-135, 1997	☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14578124
	Filing Date	2014-12-19
	First Named Inventor	Raleigh
	Art Unit	2642
	Examiner Name	not yet assigned
	Attorney Docket Number	RALEP037D1

	4	"Prevent iCloud Documents & Data from using your data plan," October 26, 2011; CNET webarchive, by Jason Cipriani	☐
	5	"3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Policy and charging control architecture (Release 11)," 3GPP Standard; 3GPP TS 23.203 v11.6.0; Sophia Antipolis, France; pp. 1-177; June 2012	☐
	6	"End to End QoS Solution for Real-time Multimedia Application;" Computer Engineering and Applications, 2007, 43 (4): 155-159, by Tan Zu-guo, Wang Wen-juan; Information and Science School, Zhanjian Normal College, Zhan jiang, Guangdong 524048, China	☐
	7	"ASA/PIX: Allow Split Tunneling for VPN Clients on the ASA Configuration Example," Document ID 70917, January 10, 2008	☐

If you wish to add additional non-patent literature document citation information please click the Add button Add

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.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] 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	14578124
	Filing Date	2014-12-19
	First Named Inventor	Raleigh
	Art Unit	2642
	Examiner Name	not yet assigned
	Attorney Docket Number	RALEP037D1

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.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

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	/James E. Harris/	Date (YYYY-MM-DD)	2015-04-03
Name/Print	James E. Harris	Registration Number	40013

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

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 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 Acknowledgement Receipt

EFS ID:	21970488
Application Number:	14578124
International Application Number:	
Confirmation Number:	1830
Title of Invention:	Enterprise Access Control And Accounting Allocation For Access Networks
First Named Inventor/Applicant Name:	Gregory G. Raleigh
Customer Number:	106963
Filer:	James E. Harris/Ann Taylor
Filer Authorized By:	James E. Harris
Attorney Docket Number:	RALEP037D1
Receipt Date:	03-APR-2015
Filing Date:	19-DEC-2014
Time Stamp:	18:45:17
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Foreign Reference	2047.pdf	5227173 abf39a10aa9302a631c02c725b5937a58682176c	no	240
Warnings:					
Information:					

2	Foreign Reference	2048.pdf	10963497 3beb6debdf2ebd6470e65bb7d92def5fd16d49ae	no	34
Warnings:					
Information:					
3	Foreign Reference	2050.pdf	1136346 21c4e4c1c0f43b05ddbed691b4fd8f87df8a12e4	no	24
Warnings:					
Information:					
4	Foreign Reference	2051.pdf	403577 d22e03358f57684914e973be2726a1020d61e766	no	20
Warnings:					
Information:					
5	Foreign Reference	2052.pdf	1089309 3986e176217ff4aabd958d4f301240ea4896296e	no	18
Warnings:					
Information:					
6	Foreign Reference	2053.pdf	513453 31e57d218f8274c4e588a81a345b9edf1e8d8125	no	16
Warnings:					
Information:					
7	Foreign Reference	2054.pdf	2451546 a2c79b6c1cd0073c23ae4a918ee197b9cb71a217	no	25
Warnings:					
Information:					
8	Foreign Reference	2055.pdf	362706 ade124f75667a4d2298f9390e64074e1a9570494	no	11
Warnings:					
Information:					
9	Foreign Reference	2056.pdf	2575701 24e70f7771bb68b3a29f93429c429d7c7fd9c846	no	34
Warnings:					
Information:					
10	Foreign Reference	2057.pdf	454629 1b7453dae97f43e4d44e293e6b2f7514f5bbcdd6	no	18
Warnings:					
Information:					

11	Foreign Reference	2058.pdf	1109411 4c2d545dca3e076795bb8a190443c7bf2fae96ad	no	29
Warnings:					
Information:					
12	Foreign Reference	2059.pdf	2523856 a966775427c913978f6580b049bab43a01a3cdd8	no	28
Warnings:					
Information:					
			Total Files Size (in bytes):	28811204	

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

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/578,124	12/19/2014	Gregory G. Raleigh	RALEP037D1

CONFIRMATION NO. 1830

106963
Headwater Partners I LLC
555 Twin Dolphin Drive, Suite 310
Redwood Shores, CA 94065

FORMALITIES LETTER

OC000000072725535

Date Mailed: 01/09/2015

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

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

- The statutory basic filing fee is missing.
- The application search fee must be submitted.
- The application examination fee must be submitted.
- Surcharge as set forth in 37 CFR 1.16(f) must be submitted.
  The surcharge is due for any one of:
  - late submission of the basic filing fee, search fee, or examination fee,
  - late submission of inventor's oath or declaration,
  - filing an application that does not contain at least one claim on filing, or
  - submission of an application filed by reference to a previously filed application.

SUMMARY OF FEES DUE:

The fee(s) required within **TWO MONTHS** from the date of this Notice to avoid abandonment is/are itemized below. Small entity discount is in effect. If applicant is qualified for micro entity status, an acceptable Certification of Micro Entity Status must be submitted to establish micro entity status. (See 37 CFR 1.29 and forms PTO/SB/15A and 15B.)

- $ **70** basic filing fee.
- $ **70** surcharge.
- $ **300** search fee.
- $ **360** examination fee.
- $(**0**) previous unapplied payment amount.
- $ **800** TOTAL FEE BALANCE DUE.

Items Required To Avoid Processing Delays:

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's

oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
  Gregory G. Raleigh
  Alireza Raissinia
  Jeffrey Green

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

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

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice". https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

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

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

/tnguyen/

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

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 14/578,124

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	70		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	300		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	360		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	1 minus 20 =	*	x 40 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*	x 210 =	0.00			
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).			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	730		TOTAL	

APPLICATION AS AMENDED - PART II

AMENDMENT A

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

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
Application Size Fee (37 CFR 1.16(s))									
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".

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

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

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United States Patent and Trademark Office
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/578,124	12/19/2014	2642	0.00	RALEP037D1	1	1

CONFIRMATION NO. 1830

106963
Headwater Partners I LLC
555 Twin Dolphin Drive, Suite 310
Redwood Shores, CA 94065

FILING RECEIPT

OC000000072725534

Date Mailed: 01/09/2015

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

Inventor(s)

Gregory G. Raleigh, Woodside, CA;
Alireza Raissinia, Saratoga, CA;
Jeffrey Green, Sunnyvale, CA;

Applicant(s)

Headwater Partners I LLC, Redwood City, CA

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a DIV of 13/248,028 09/28/2011 PAT 8924469
which claims benefit of 61/387,243 09/28/2010
and is a CIP of 12/380,778 03/02/2009 PAT 8321526
and is a CIP of 12/380,780 03/02/2009 PAT 8839388
and said 12/380,778 03/02/2009
claims benefit of 61/206,354 01/28/2009
and claims benefit of 61/206,944 02/04/2009
and claims benefit of 61/207,393 02/10/2009
and claims benefit of 61/207,739 02/13/2009
and said 12/380,780 03/02/2009
claims benefit of 61/206,354 01/28/2009
and claims benefit of 61/206,944 02/04/2009
and claims benefit of 61/207,393 02/10/2009
and claims benefit of 61/207,739 02/13/2009

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.

If Required, Foreign Filing License Granted: 01/07/2015

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/578,124**

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

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

Enterprise Access Control And Accounting Allocation For Access Networks

Preliminary Class

455

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

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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

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

NOT GRANTED

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

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The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	RALEP037D1
	Application Number	
Title of Invention	Enterprise Access Control And Accounting Allocation For Access Networks	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Gregory	G.	Raleigh	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Woodside	State/Province	CA	Country of Residence i	US

Mailing Address of Inventor:

Address 1	555 Twin Dolphin Drive, Suite 310		
Address 2			
City	Redwood City	State/Province	CA
Postal Code	94065	Country i	US

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Alireza		Raissinia	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Saratoga	State/Province	CA	Country of Residence i	US

Mailing Address of Inventor:

Address 1	555 Twin Dolphin Drive, Suite 310		
Address 2			
City	Redwood City	State/Province	CA
Postal Code	94065	Country i	US

Inventor 3 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Jeffrey		Green	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	RALEP037D1
	Application Number	
Title of Invention	Enterprise Access Control And Accounting Allocation For Access Networks	

City	Sunnyvale	State/Province	CA	Country of Residence i	US

Mailing Address of Inventor:

Address 1	555 Twin Dolphin Drive, Suite 310		
Address 2			
City	Redwood City	State/Province	CA
Postal Code	94065	Country i	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	106963		
Email Address	patent@headwaterllc.com	Add Email	Remove Email

Application Information:

Title of the Invention	Enterprise Access Control And Accounting Allocation For Access Networks		
Attorney Docket Number	RALEP037D1	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	28	Suggested Figure for Publication (if any)	

Filing By Reference :

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country i

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	RALEP037D1
	Application Number	
Title of Invention	Enterprise Access Control And Accounting Allocation For Access Networks	

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	106963		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the application number blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
notyetassigned	Division of	13248028	2011-09-28
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
13248028	Claims benefit of provisional	61387243	2010-09-28
Prior Application Status	Patented		Remove

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13248028	Continuation in part of	12380778	2009-03-02	8321526	2012-11-27
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13248028	Continuation in part of	12380780	2009-03-02	8839388	2014-09-16

Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
12380778	Claims benefit of provisional	61206354	2009-01-28
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
12380778	Claims benefit of provisional	61206944	2009-02-04
Prior Application Status	Expired		Remove

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	RALEP037D1
	Application Number	
Title of Invention	Enterprise Access Control And Accounting Allocation For Access Networks	

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
12380778	Claims benefit of provisional	61207393	2009-02-10
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
12380778	Claims benefit of provisional	61207739	2009-02-13
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
12380780	Claims benefit of provisional	61206354	2009-01-28
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
12380780	Claims benefit of provisional	61206944	2009-02-04
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
12380780	Claims benefit of provisional	61207393	2009-02-10
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
12380780	Claims benefit of provisional	61207739	2009-02-13
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.			Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) [i]the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			Remove
Application Number	Country [i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
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	Application Number	
Title of Invention	Enterprise Access Control And Accounting Allocation For Access Networks	

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Authorization to Permit Access:

☐ Authorization to Permit Access to the Instant Application by the Participating Offices

If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date o f filing this Authorization.

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	RALEP037D1
	Application Number	
Title of Invention	Enterprise Access Control And Accounting Allocation For Access Networks	

Applicant 1 [Remove]

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

[Clear]

◉ Assignee	○ Legal Representative under 35 U.S.C. 117	○ Joint Inventor
○ Person to whom the inventor is obligated to assign.	○ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :

If the Applicant is an Organization check here. ☒

Organization Name	Headwater Partners I LLC

Mailing Address Information For Applicant:

Address 1	555 Twin Dolphin Drive, Suite 310		
Address 2			
City	Redwood City	**State/Province**	CA
Country [i]	US	Postal Code	94065
Phone Number	650-517-2798	Fax Number	
Email Address	patent@headwaterllc.com		

Additional Applicant Data may be generated within this form by selecting the Add button. [Add]

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not subsitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication . An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

[Remove]

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

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	Application Number	
Title of Invention	Enterprise Access Control And Accounting Allocation For Access Networks	

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Signature	/James E. Harris/			Date (YYYY-MM-DD)	2014-12-19
First Name	James E.	Last Name	Harris	Registration Number	40013

Additional Signature may be generated within this form by selecting the Add button. Add

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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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 the Freedom of Information Act requires disclosure of these records.

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 C o o p eration 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 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.

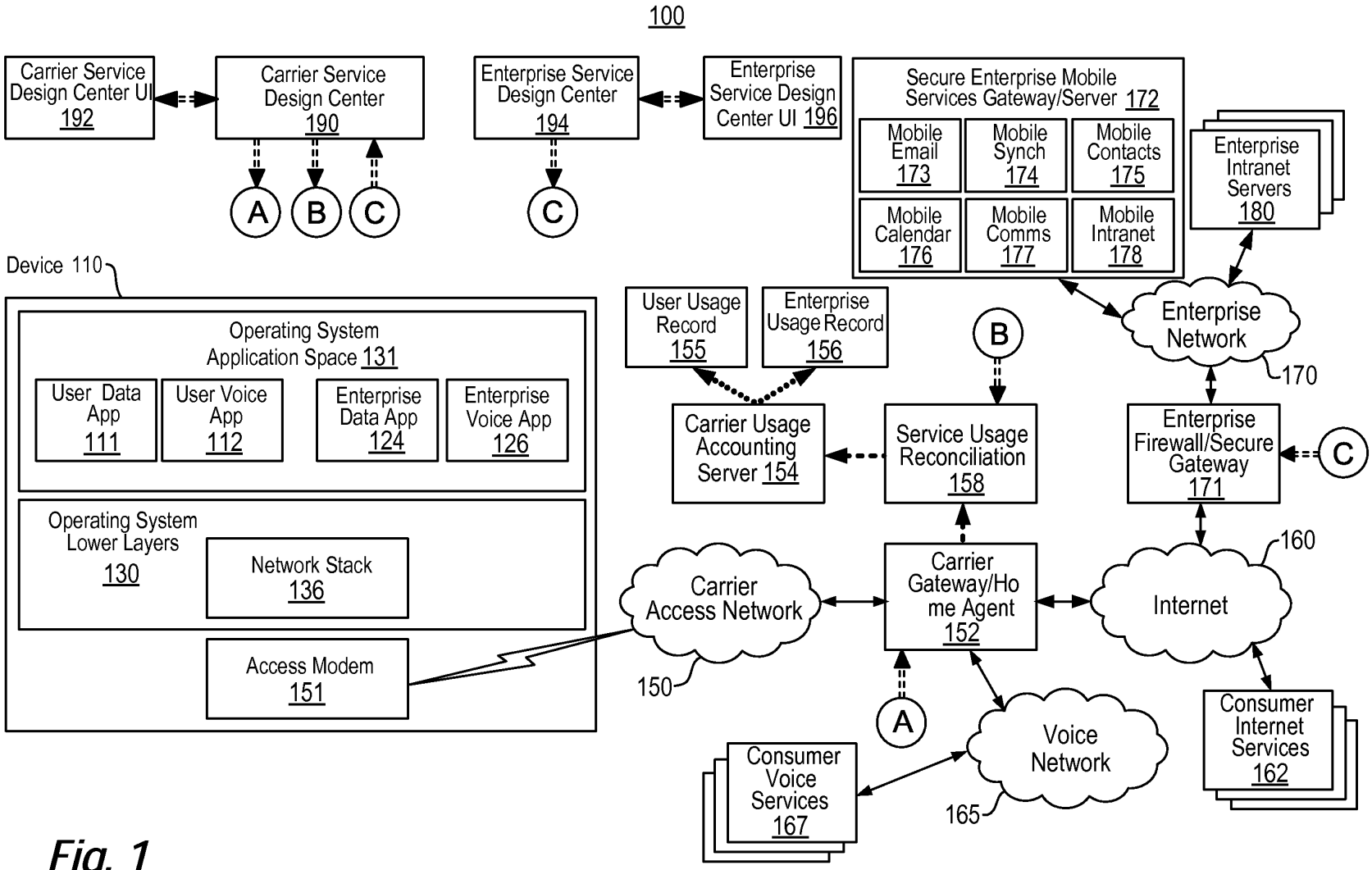

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Fig. 1

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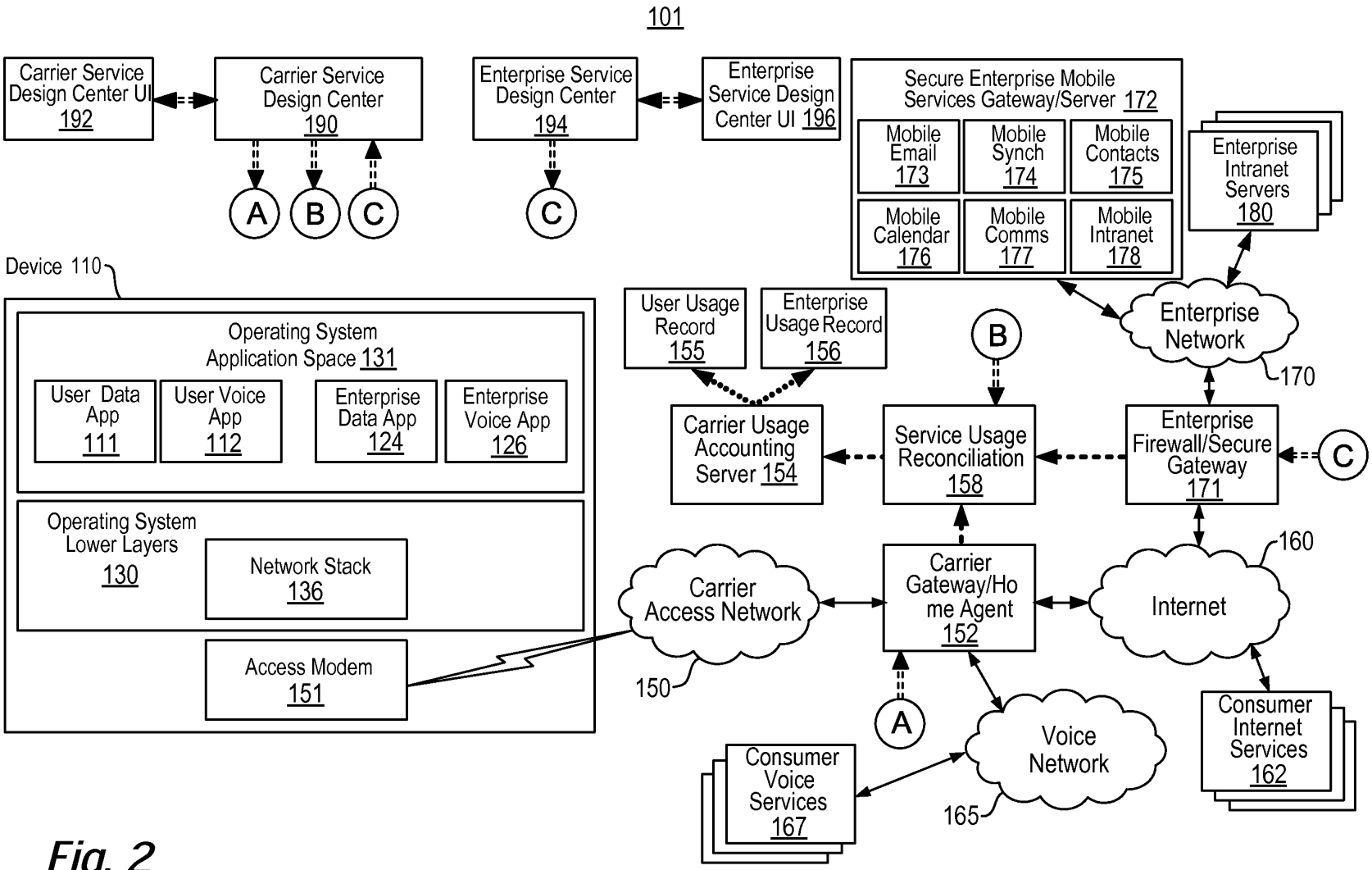

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Fig. 2

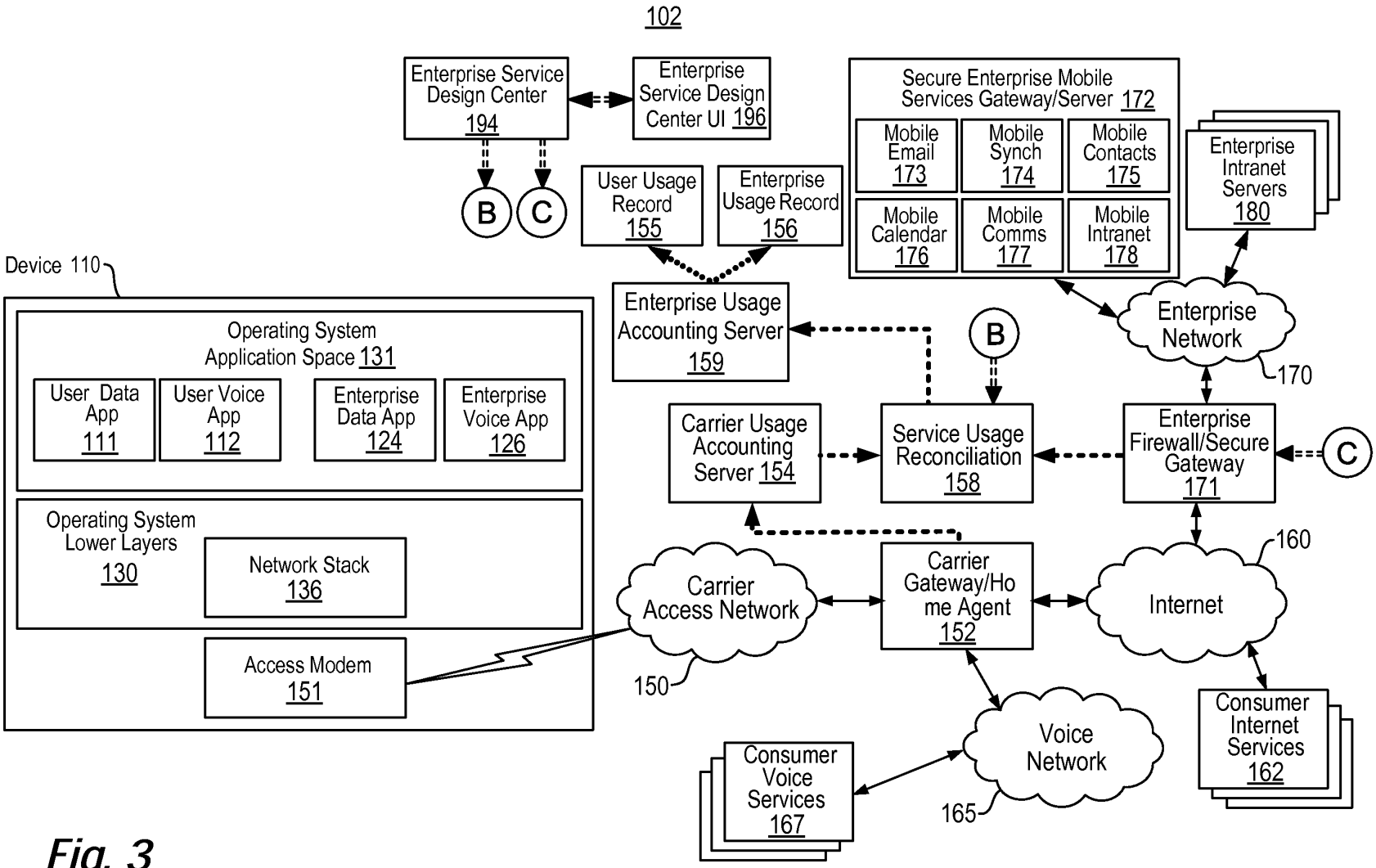

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Fig. 3

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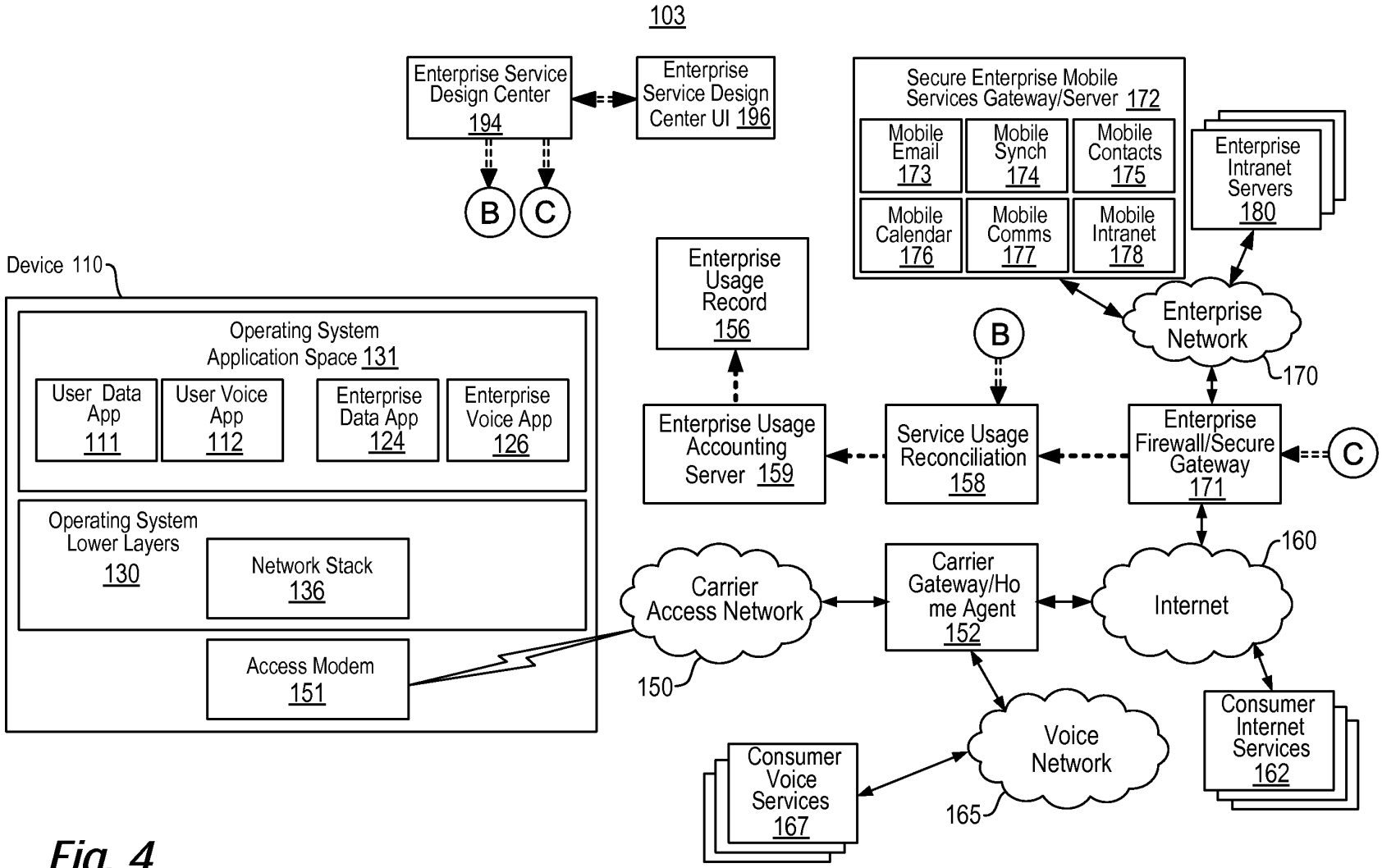

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Fig. 4

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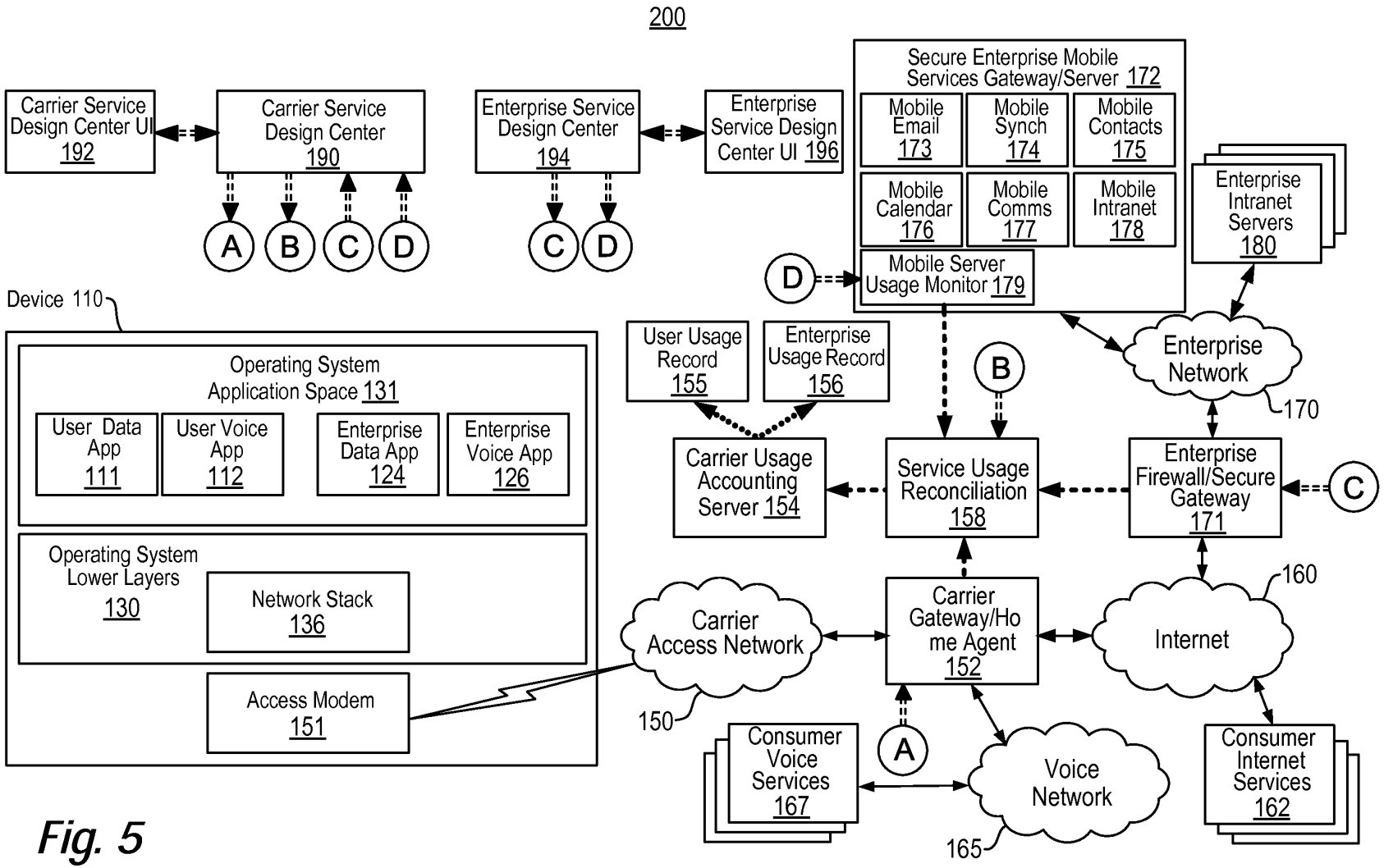

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Fig. 5

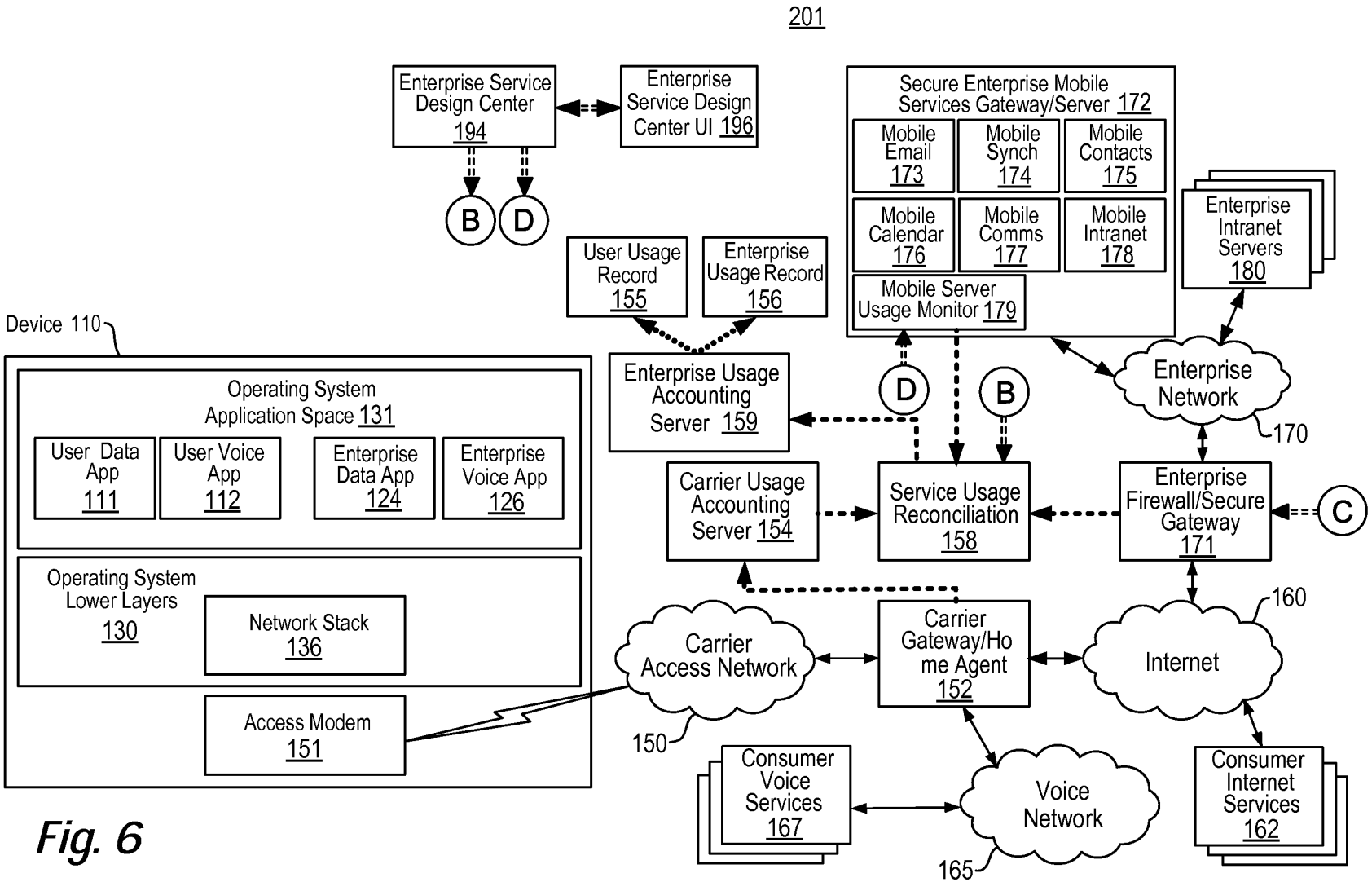

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Fig. 6

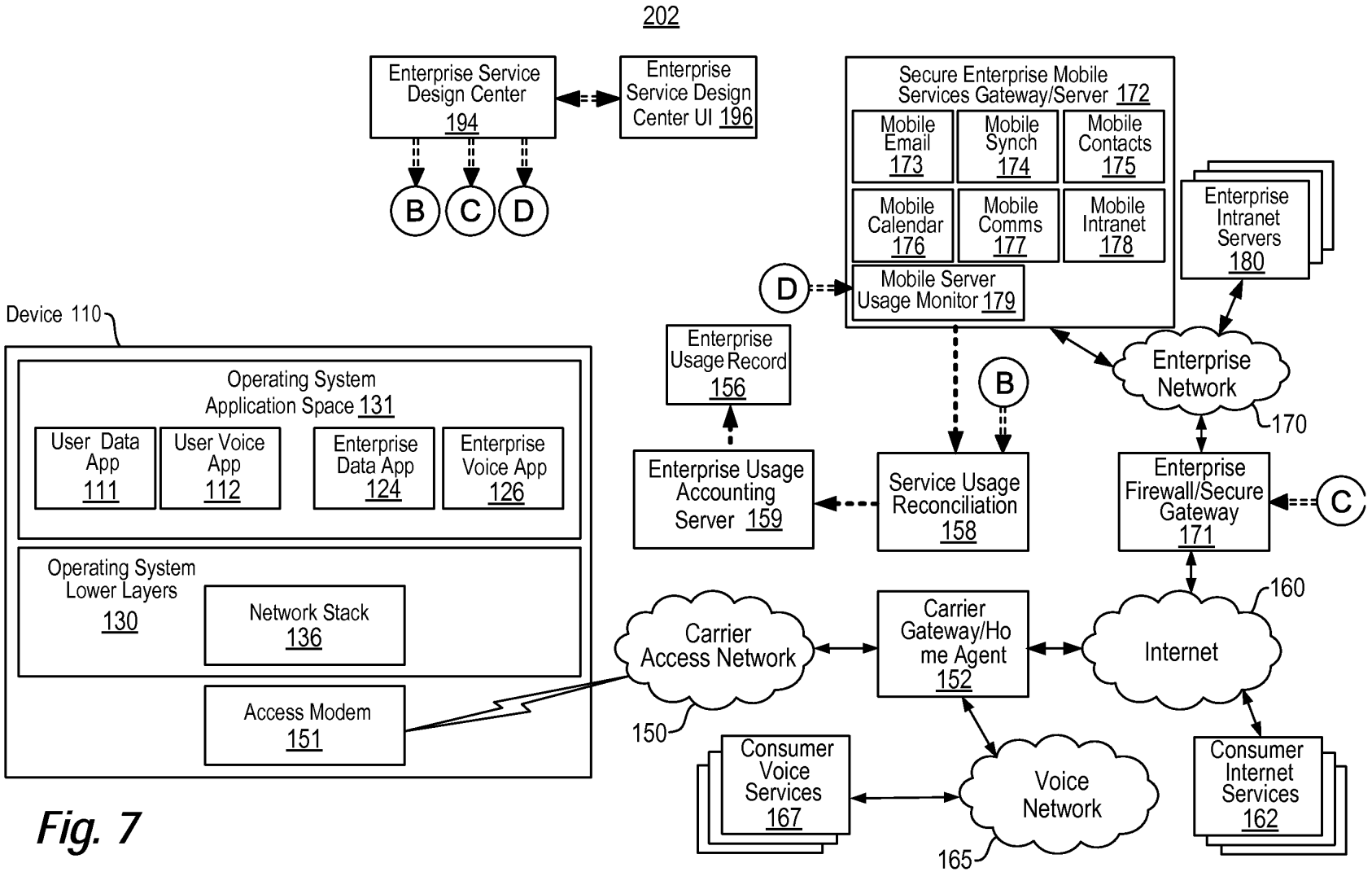

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Fig. 7

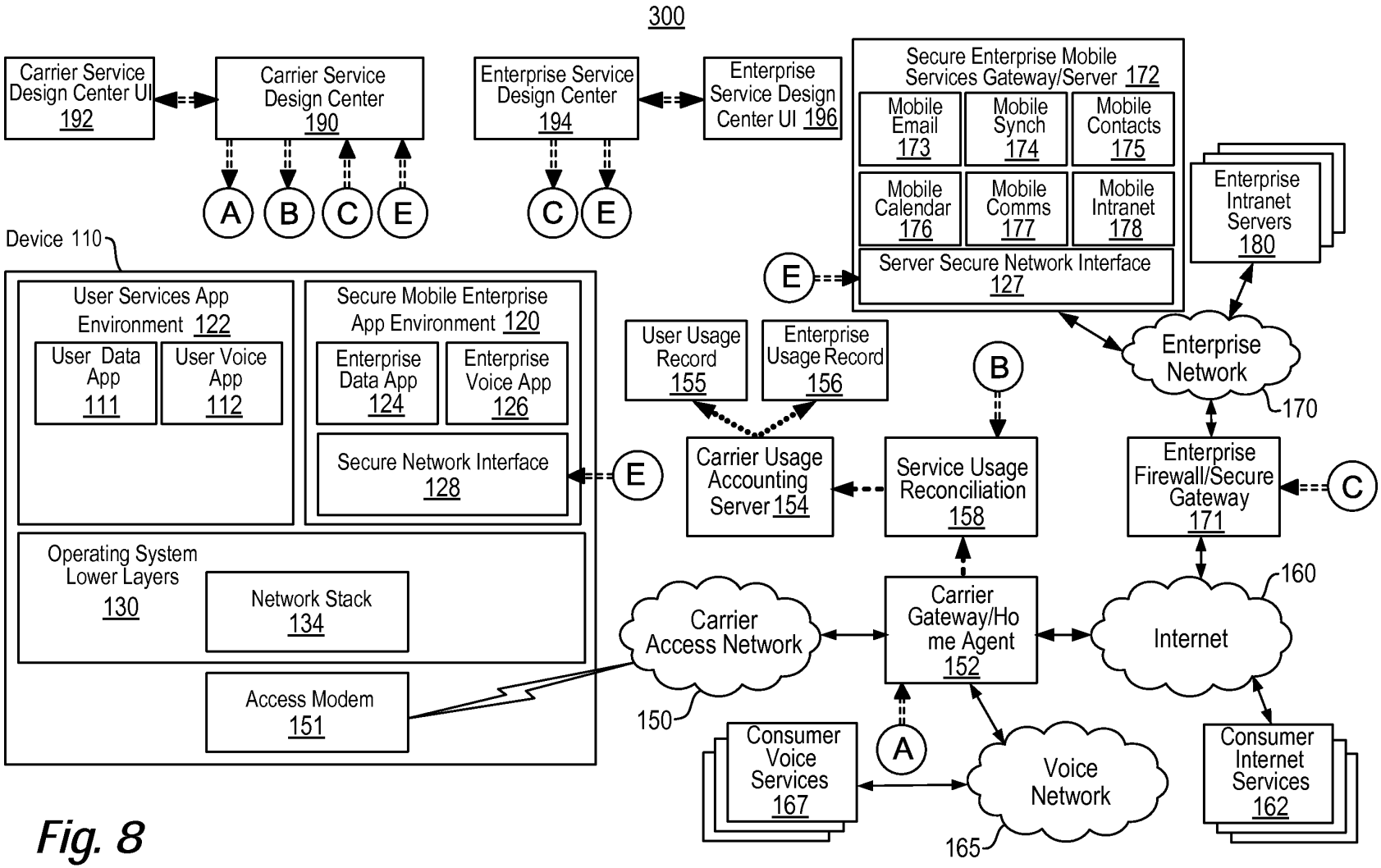

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Fig. 8

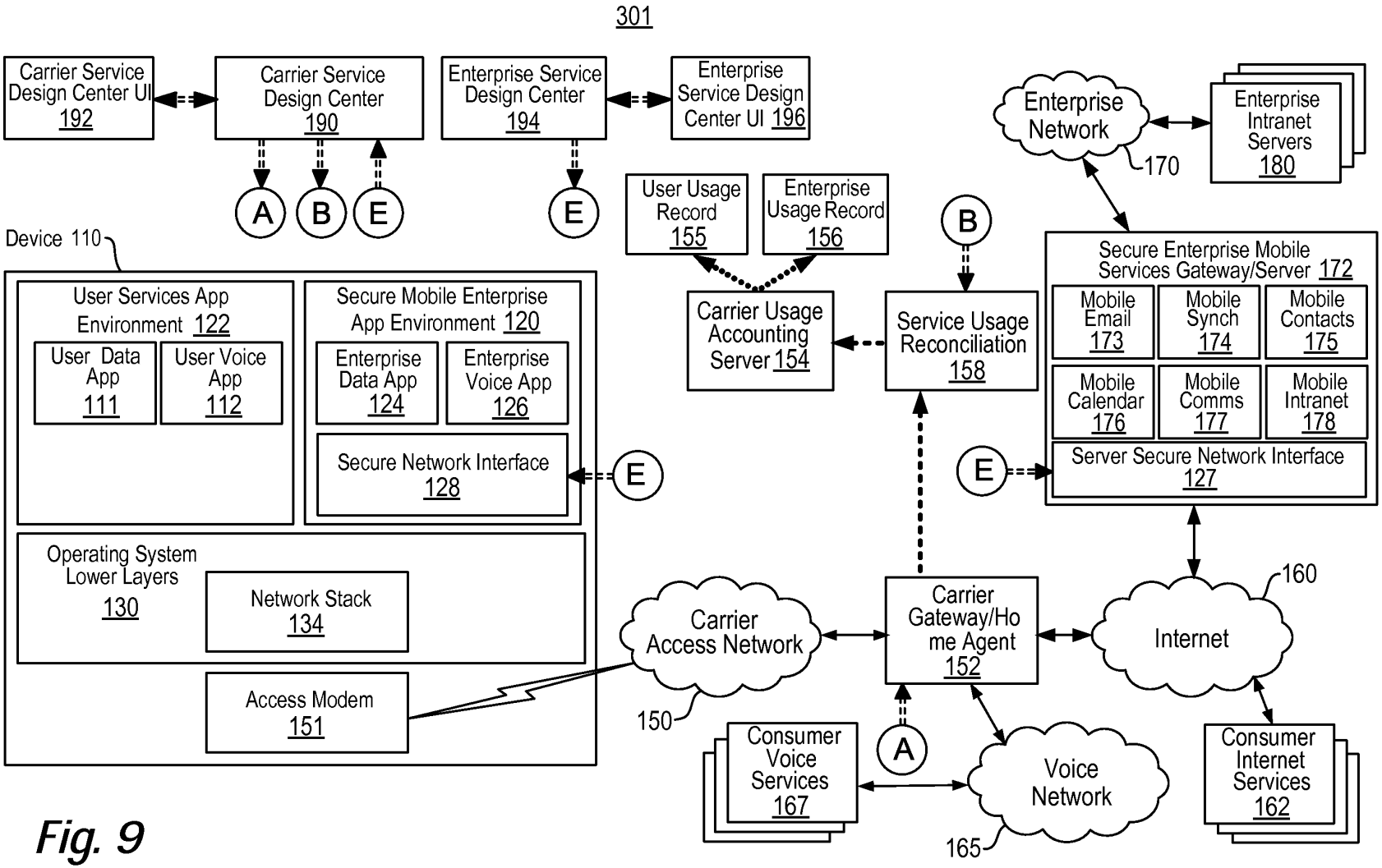

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Fig. 9

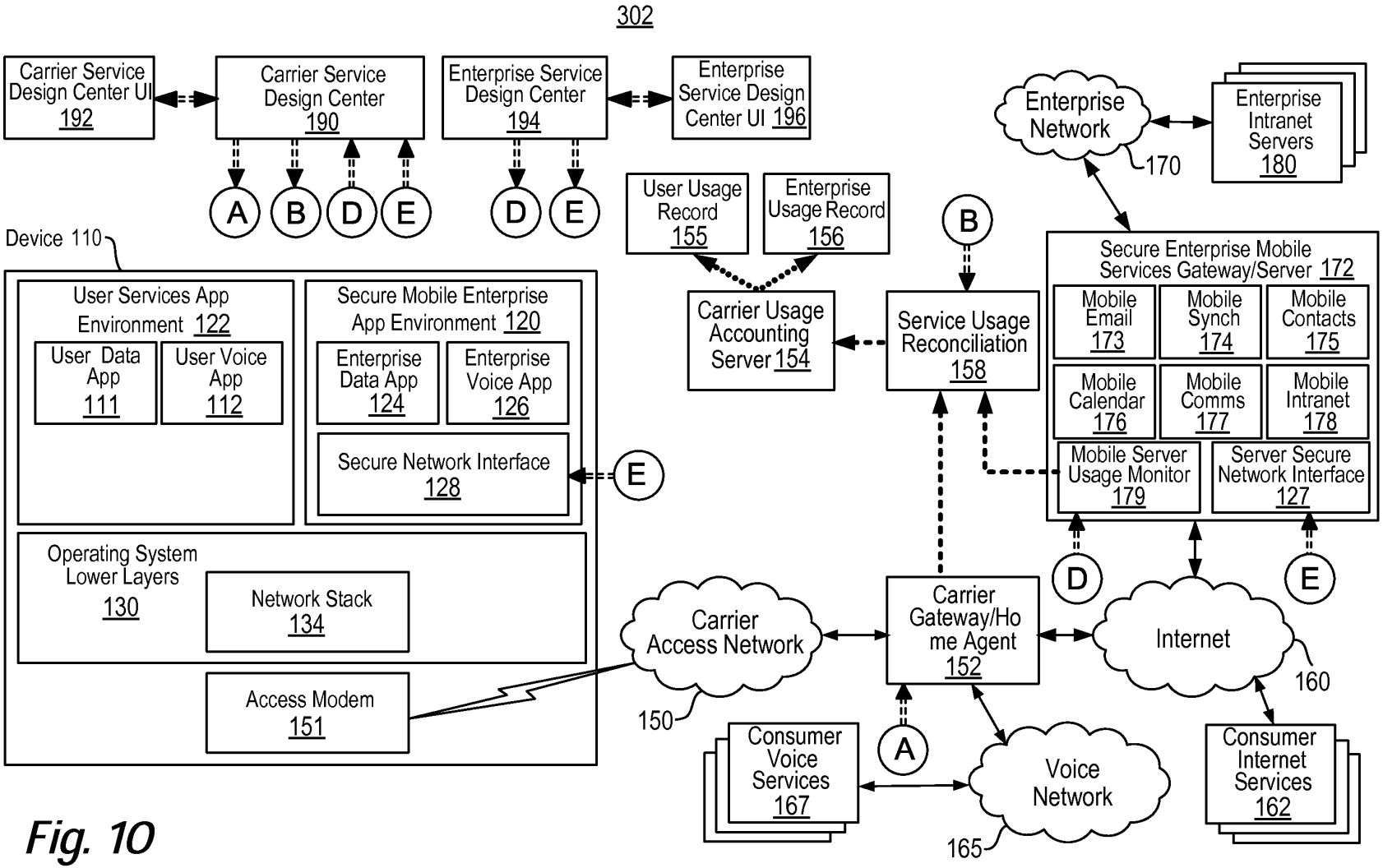

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Fig. 10

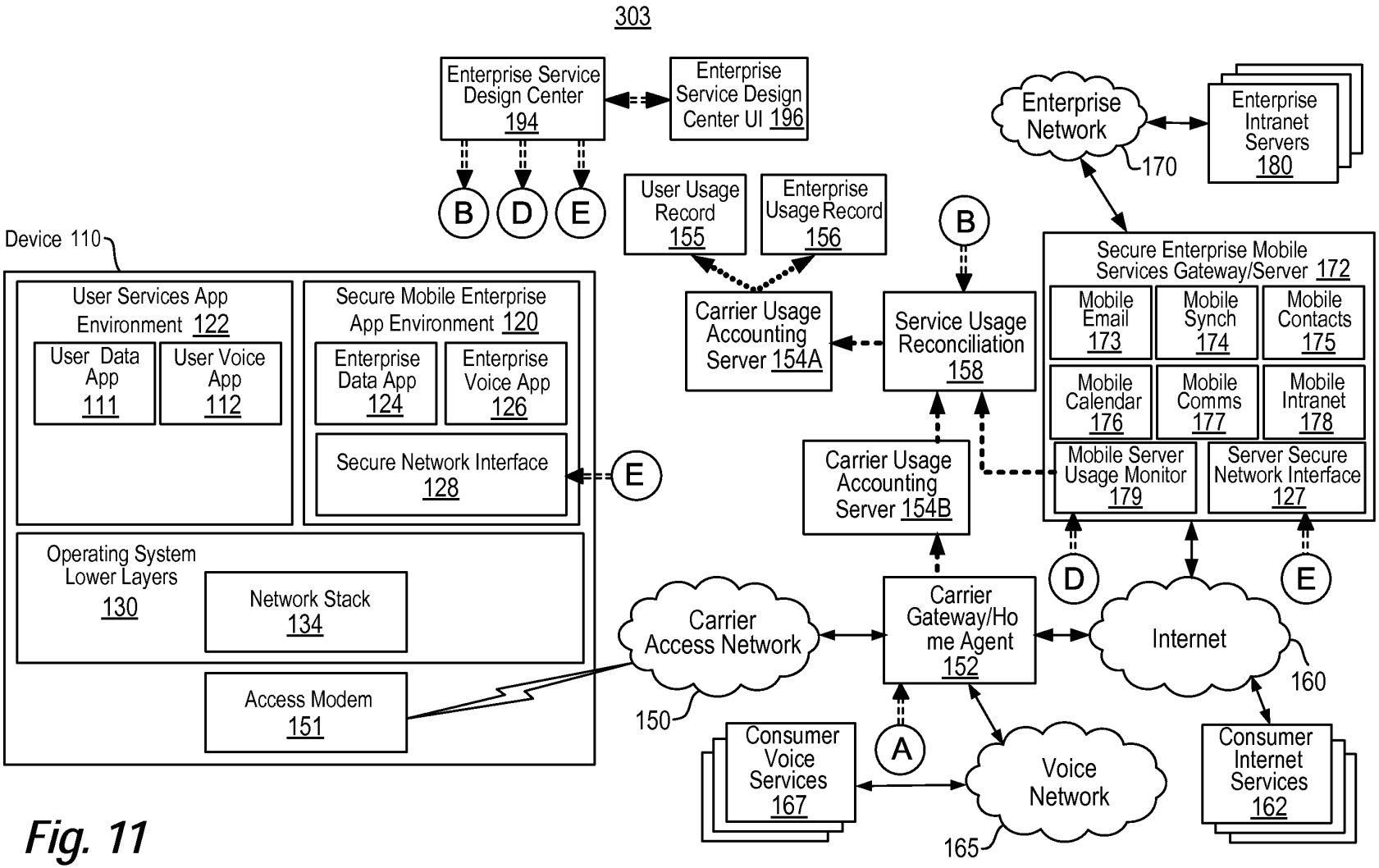

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Fig. 11

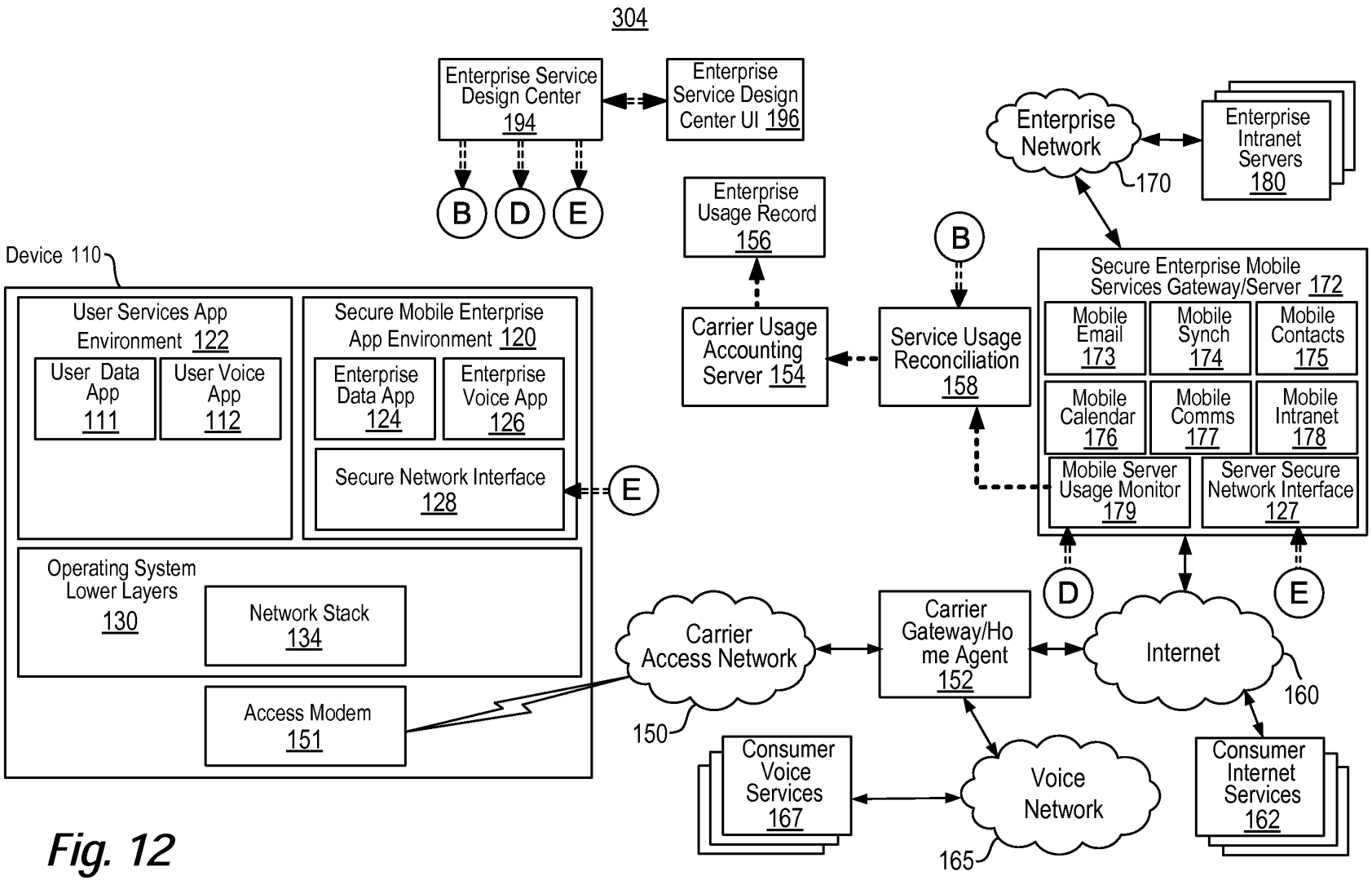

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Fig. 12

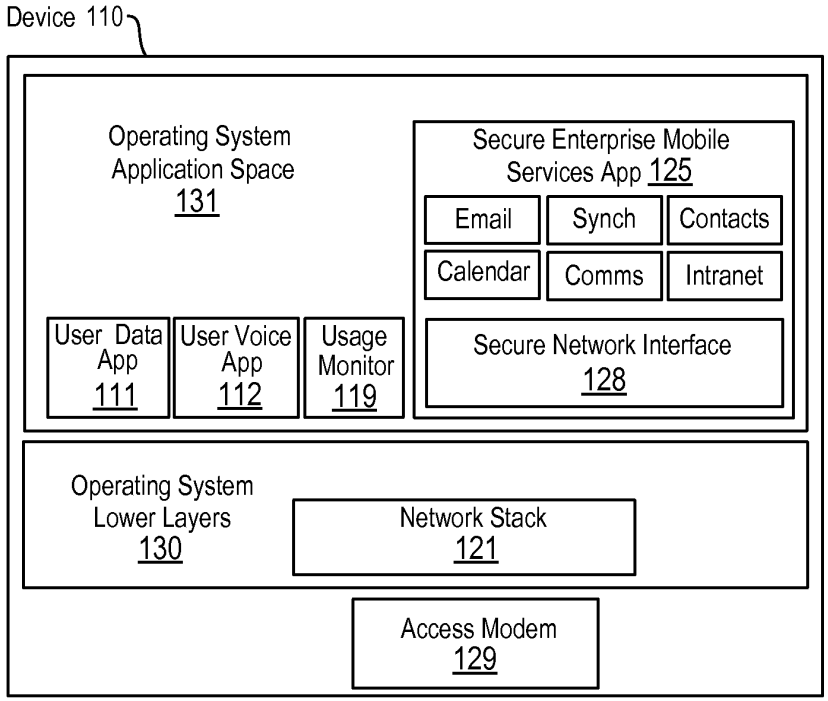

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Fig. 13

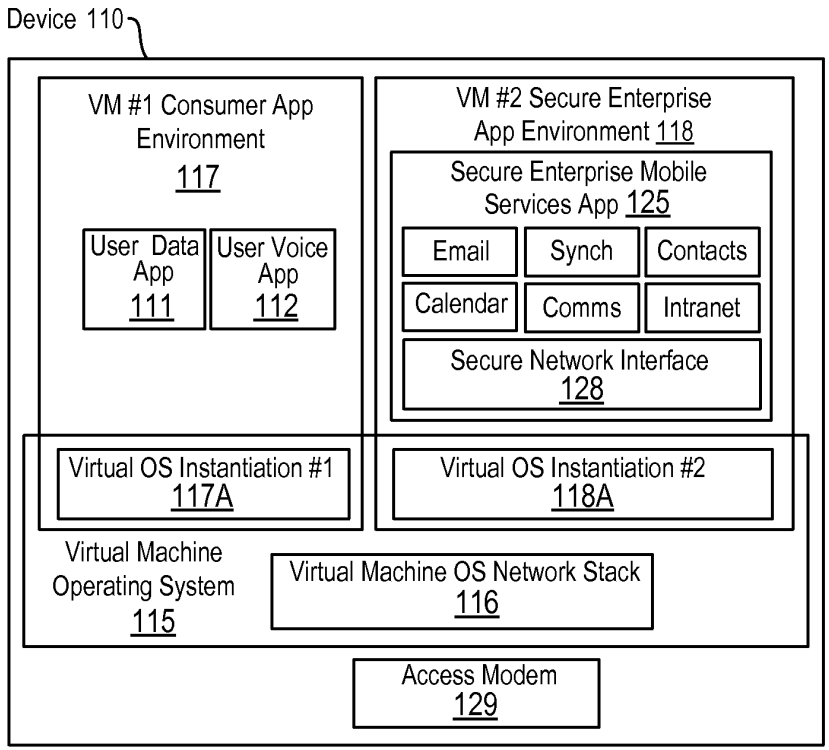

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Fig. 14

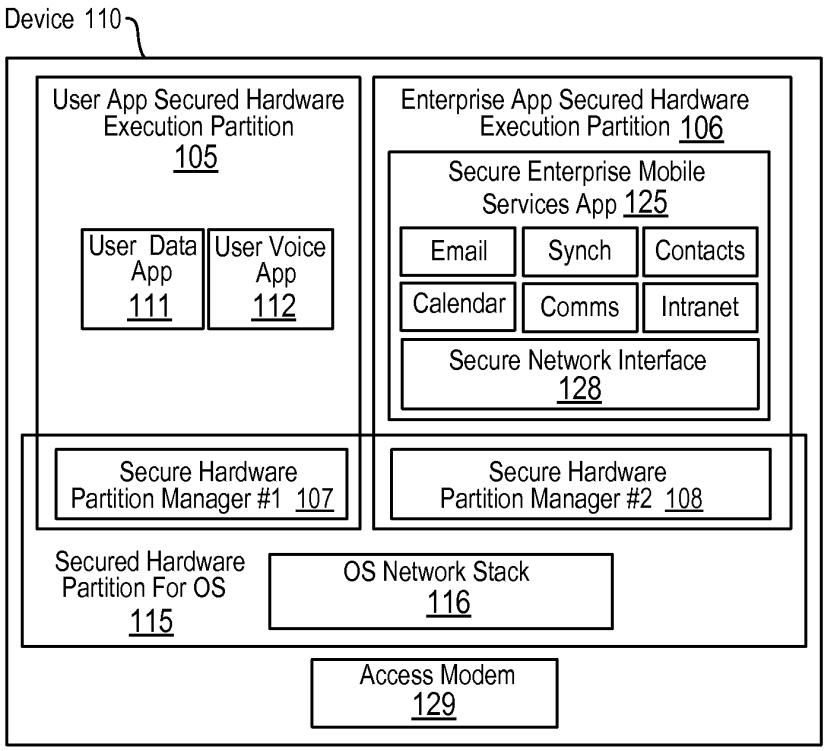

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Fig. 15

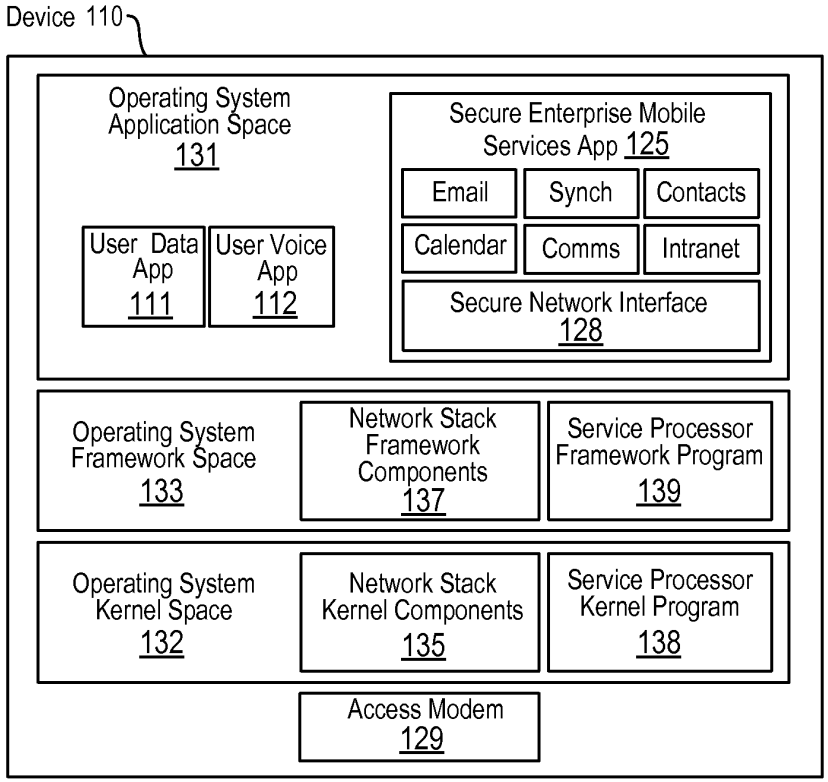

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Fig. 16

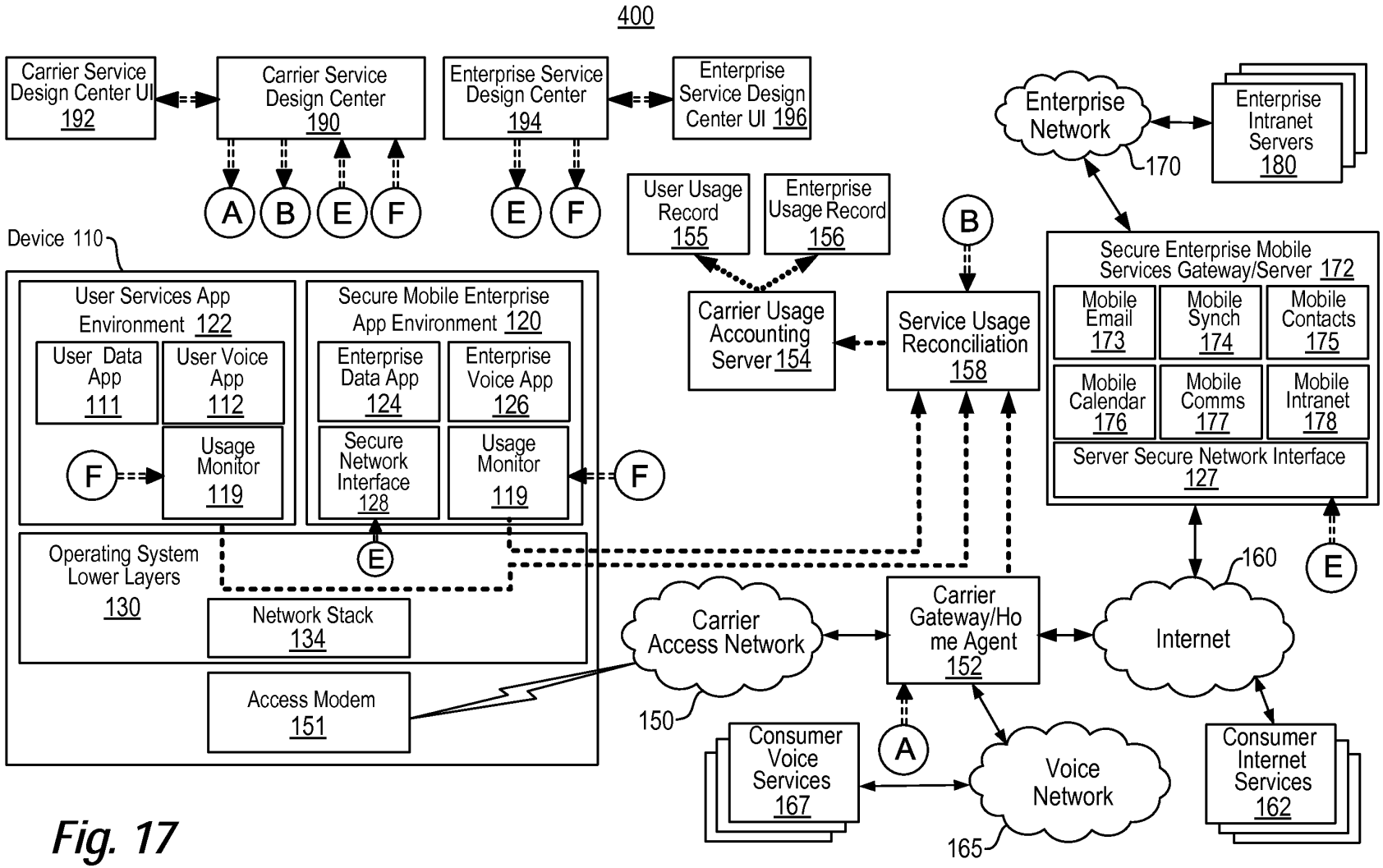

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Fig. 17

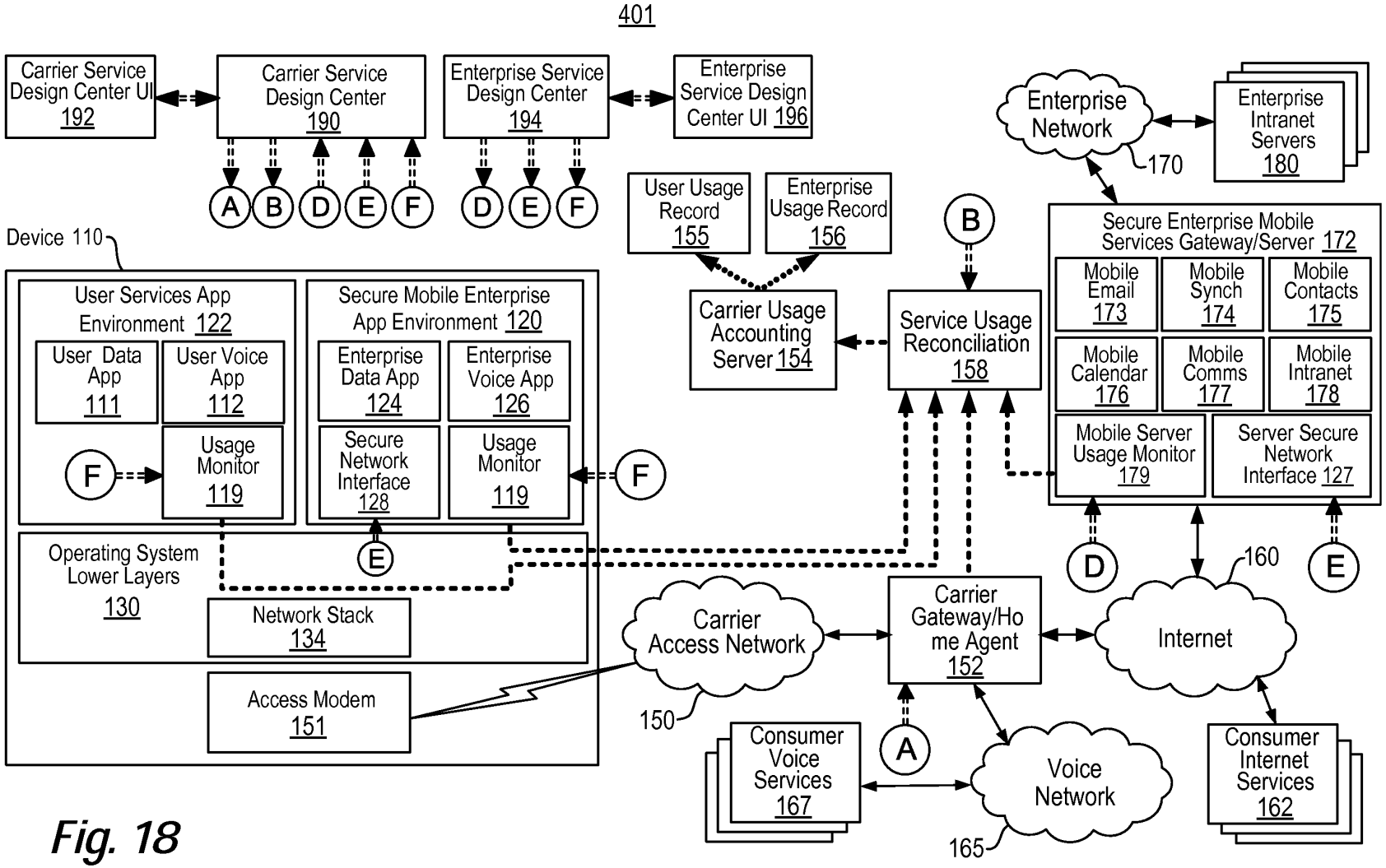

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Fig. 18

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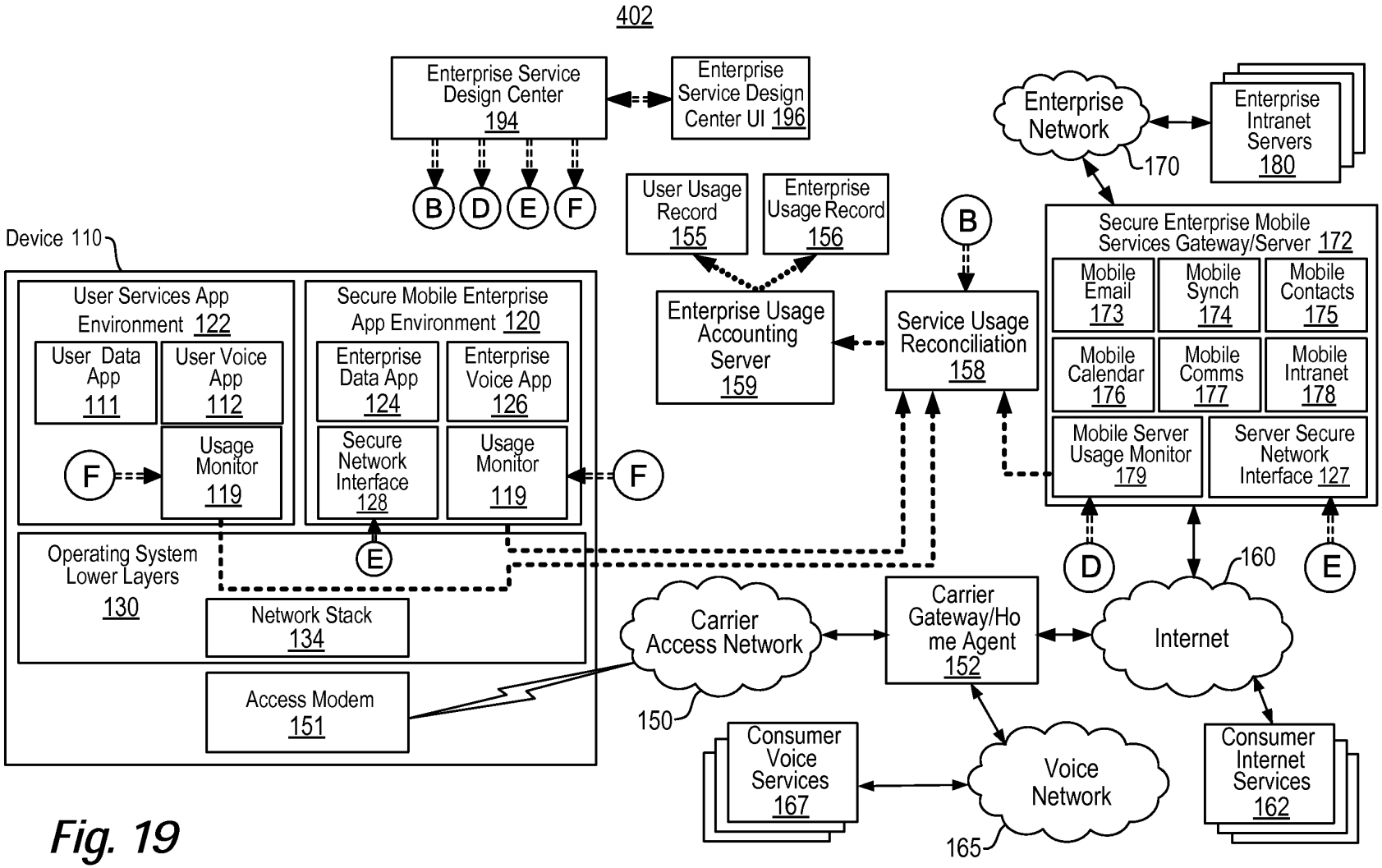

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Fig. 19

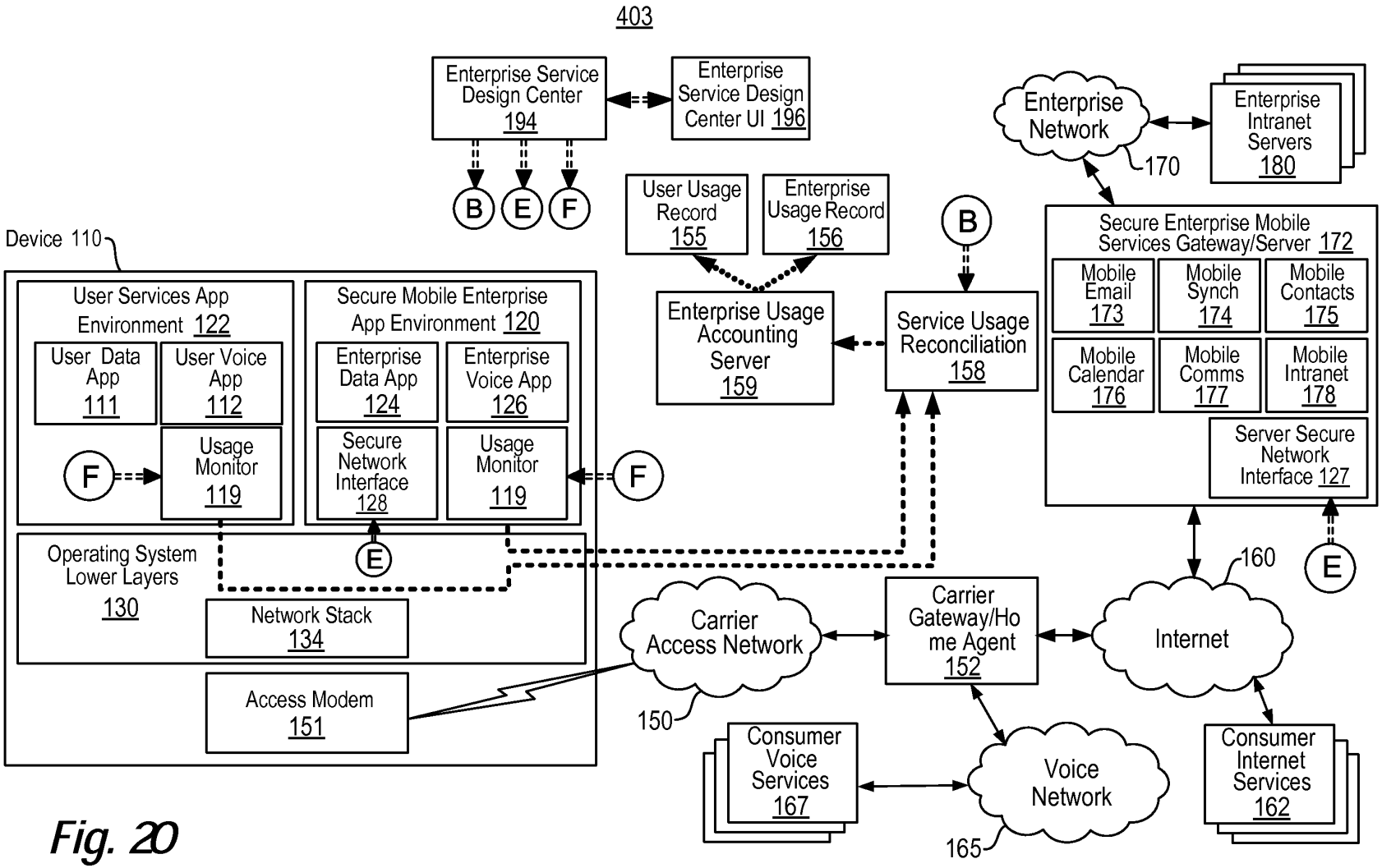

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Fig. 20

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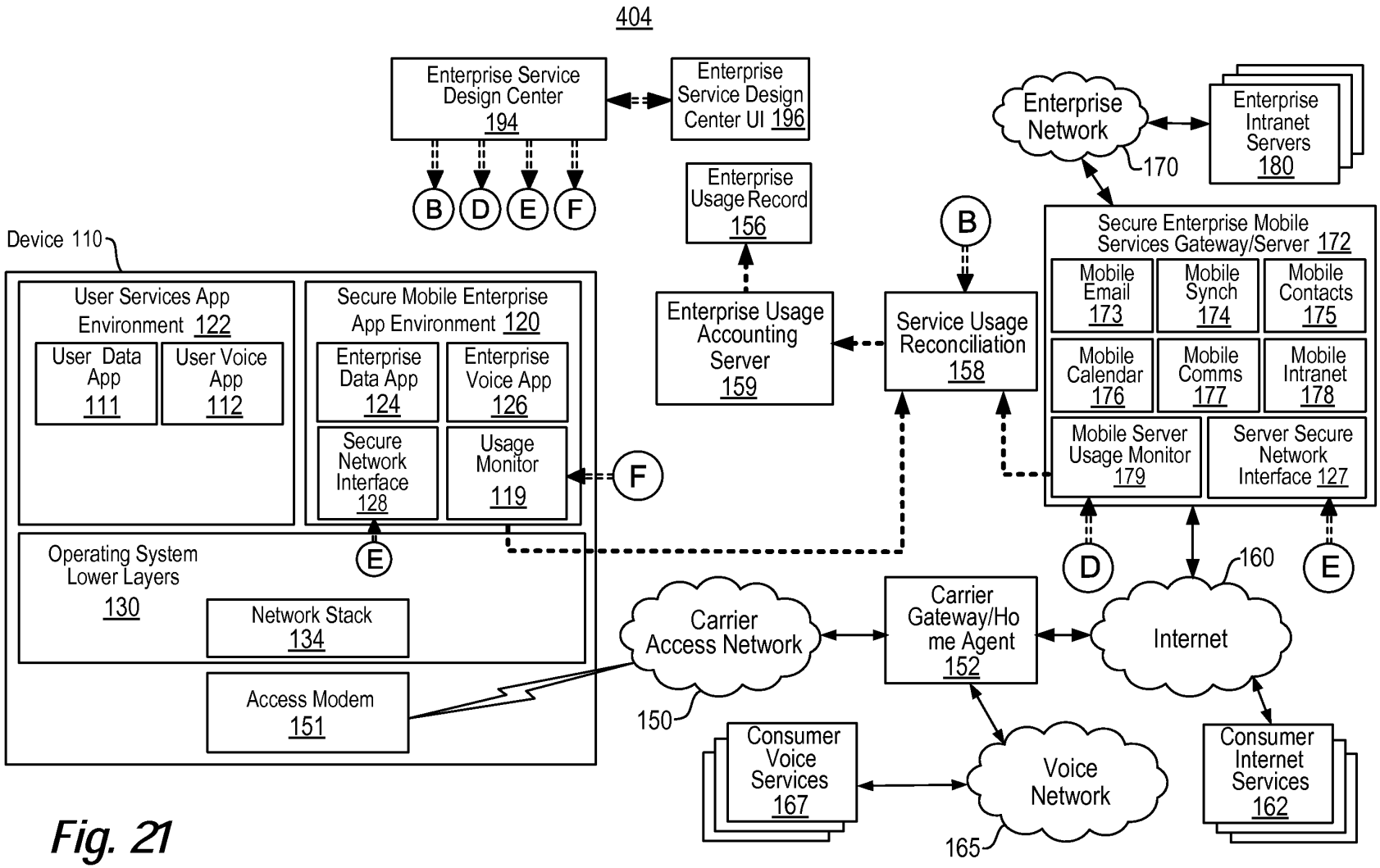

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Fig. 21

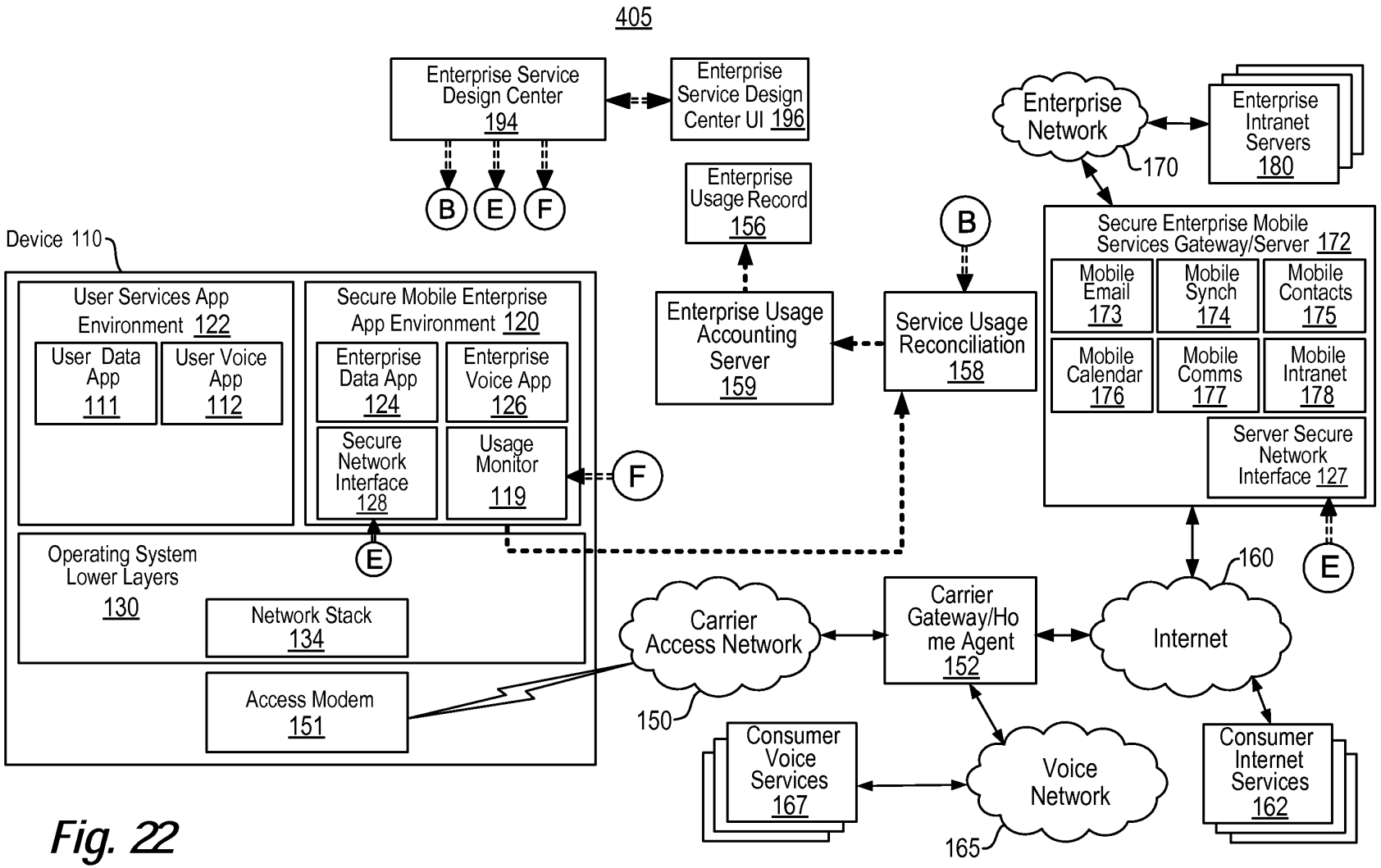

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Fig. 22

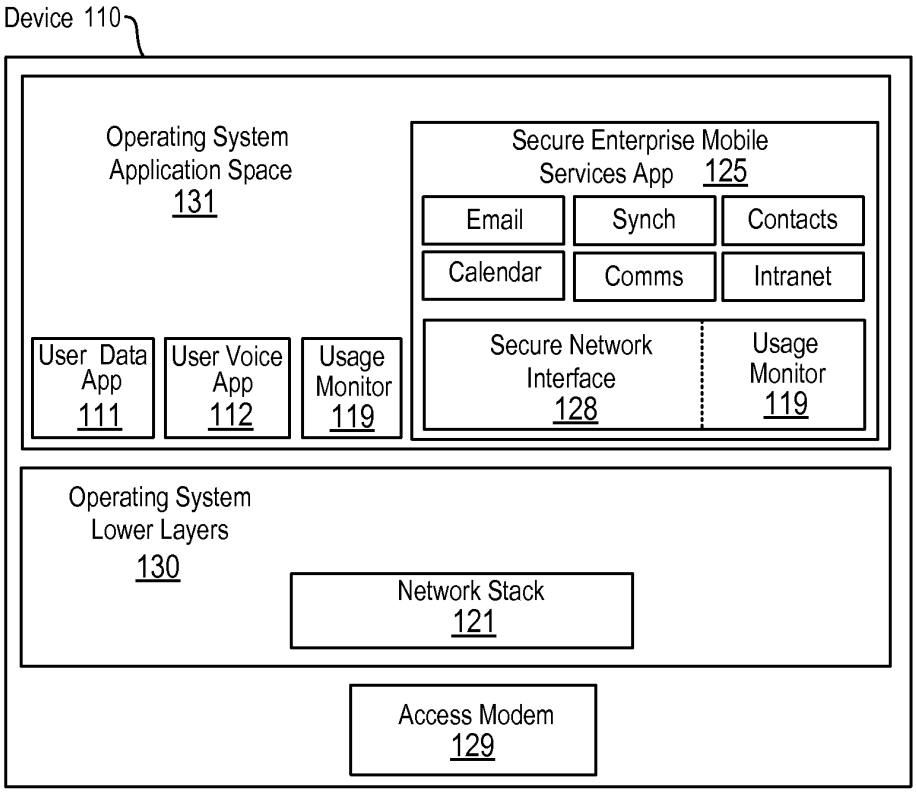

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Fig. 23

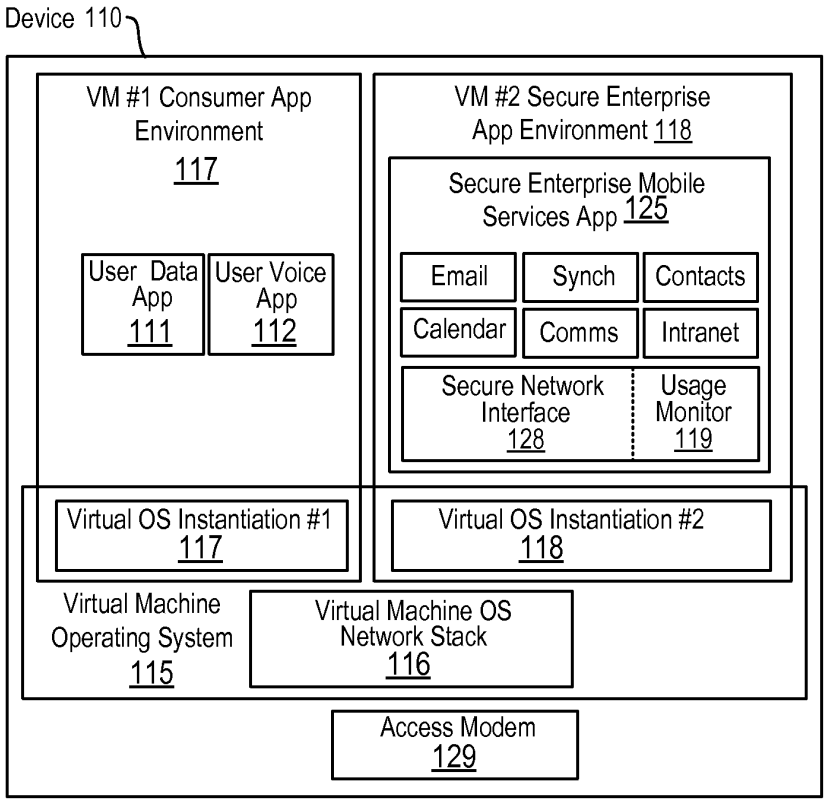

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Fig. 24

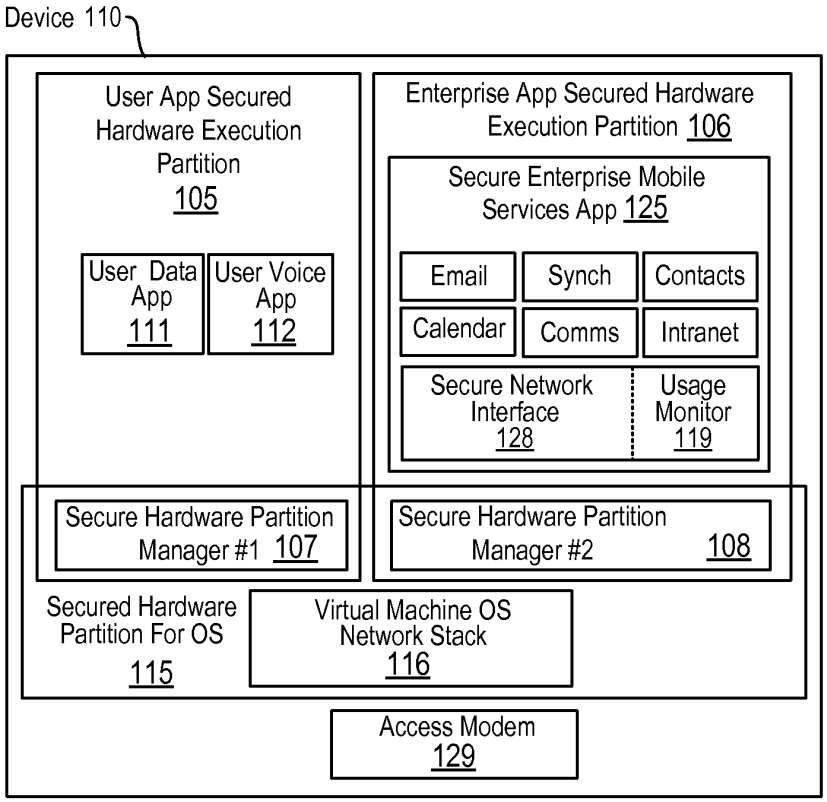

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Fig. 25

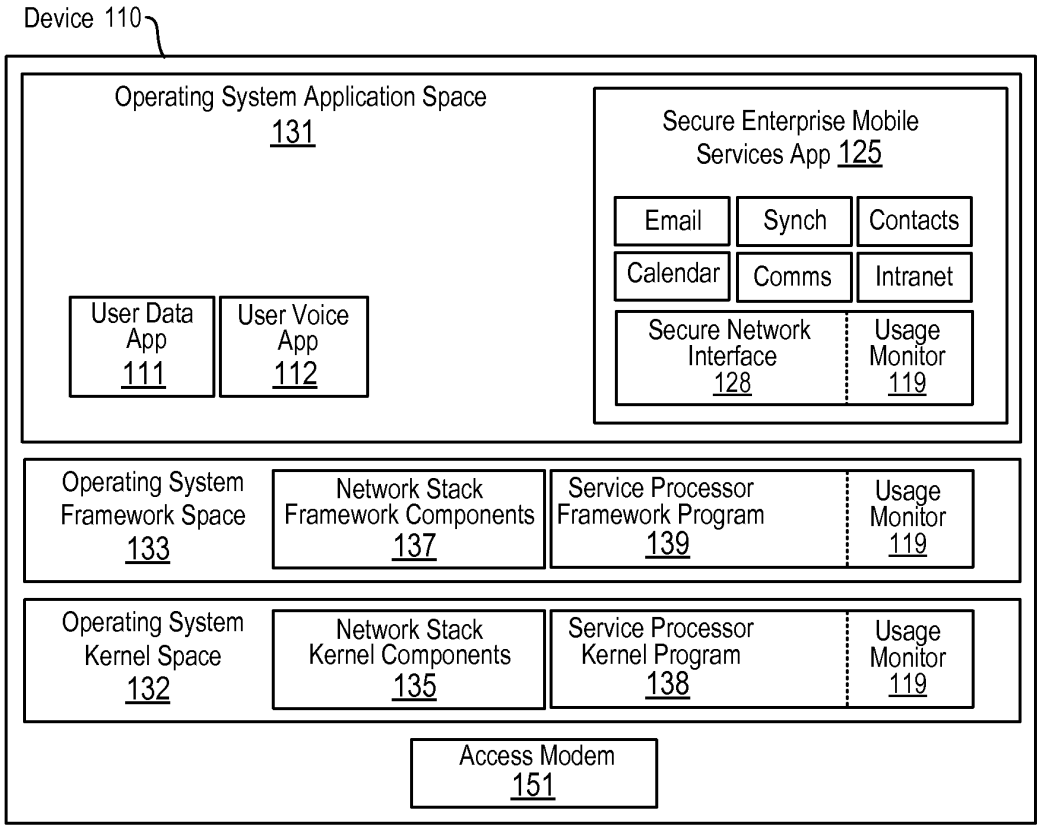

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Monitor
119
Access Modem
151

Fig. 26

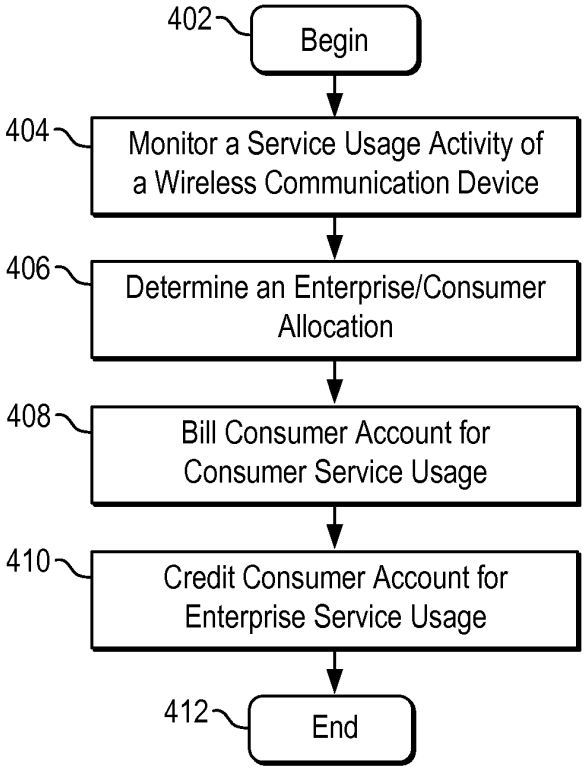

402
Begin
404
Monitor a Service Usage Activity of a Wireless Communication Device
406
Determine an Enterprise/Consumer Allocation
408
Bill Consumer Account for Consumer Service Usage
410
Credit Consumer Account for Enterprise Service Usage
412
End

Fig. 27

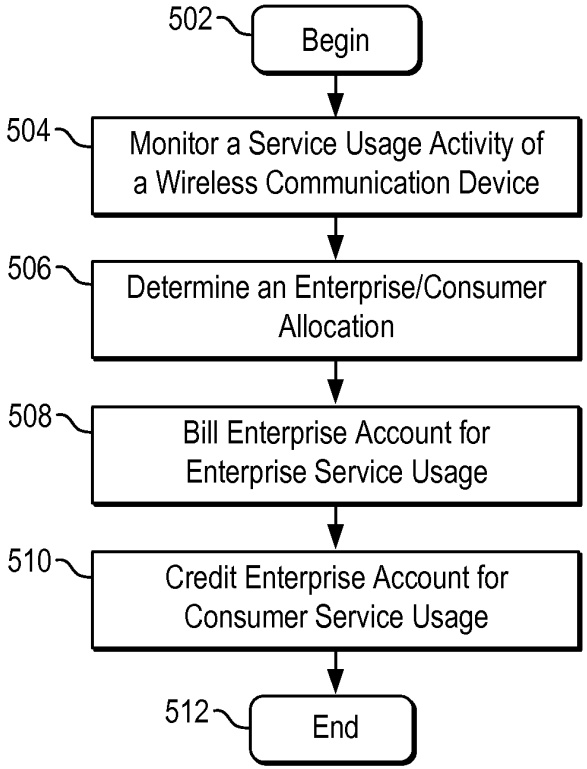

502
Begin
504
Monitor a Service Usage Activity of a Wireless Communication Device
506
Determine an Enterprise/Consumer Allocation
508
Bill Enterprise Account for Enterprise Service Usage
510
Credit Enterprise Account for Consumer Service Usage
512
End

Fig. 28

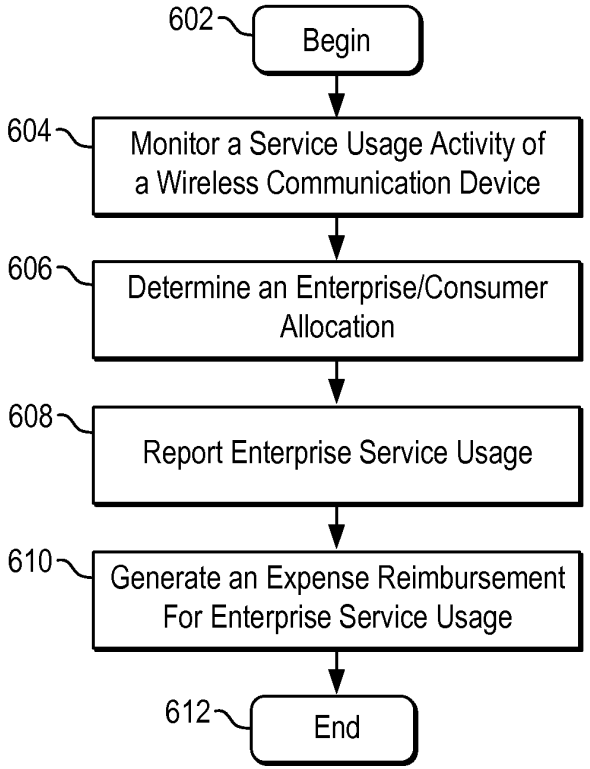

602
Begin
604
Monitor a Service Usage Activity of a Wireless Communication Device
606
Determine an Enterprise/Consumer Allocation
608
Report Enterprise Service Usage
610
Generate an Expense Reimbursement For Enterprise Service Usage
612
End

Fig. 29

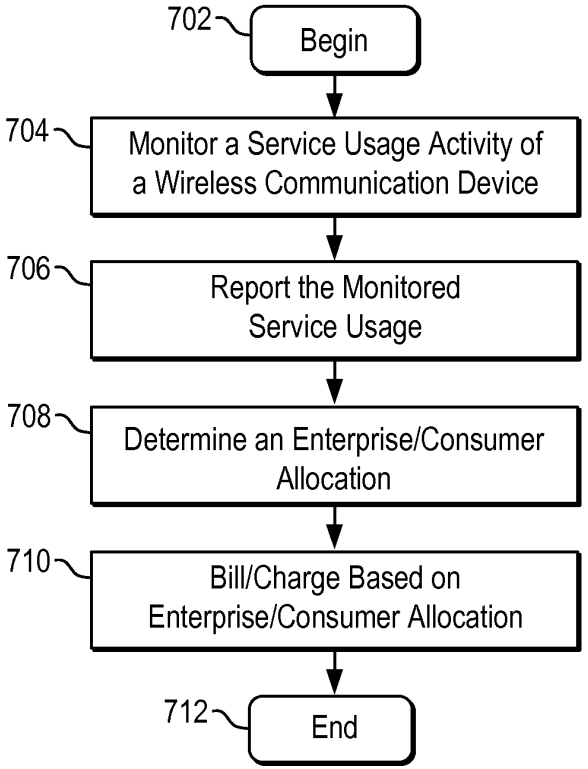

702
Begin
704
Monitor a Service Usage Activity of a Wireless Communication Device
706
Report the Monitored Service Usage
708
Determine an Enterprise/Consumer Allocation
710
Bill/Charge Based on Enterprise/Consumer Allocation
712
End

Fig. 30

ENTERPRISE ACCESS CONTROL AND ACCOUNTING ALLOCATION FOR ACCESS NETWORKS

BACKGROUND

[0001] With the advent of mass market digital communications and content distribution, many access networks such as wireless networks, cable networks and DSL (Digital Subscriber Line) networks are pressed for user capacity, with, for example, EVDO (Evolution-Data Optimized), HSPA (High Speed Packet Access), LTE (Long Term Evolution), WiMax (Worldwide Interoperability for Microwave Access), and Wi-Fi (Wireless Fidelity) wireless networks increasingly becoming user capacity constrained. Although wireless network capacity will increase with new higher capacity wireless radio access technologies, such as MIMO (Multiple-Input Multiple-Output), and with more frequency spectrum being deployed in the future, these capacity gains are likely to be less than what is required to meet growing digital networking demand.

[0002] Similarly, although wire line access networks, such as cable and DSL, can have higher average capacity per user, wire line user service consumption habits are trending toward very high bandwidth applications that can quickly consume the available capacity and degrade overall network service experience. Because some components of service provider costs go up with increasing bandwidth, this trend will also negatively impact service provider profits.

BRIEF DESCRIPTION OF THE DRAWINGS

[0003] Various embodiments of the invention are disclosed in the following detailed description and the accompanying drawings.

[0004] **Figure 1** illustrates a functional diagram of a network architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0005] **Figure 2** illustrates a functional diagram of another network architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0006] **Figure 3** illustrates a functional diagram of another network architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0007] **Figure 4** illustrates a functional diagram of another network architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0008] **Figure 5** illustrates a functional diagram of another network architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0009] **Figure 6** illustrates a functional diagram of another network architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0010] **Figure 7** illustrates a functional diagram of another network architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0011] **Figure 8** illustrates a functional diagram of another network architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0012] **Figure 9** illustrates a functional diagram of another network architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0013] **Figure 10** illustrates a functional diagram of another network architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0014] **Figure 11** illustrates a functional diagram of another network architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0015] **Figure 12** illustrates a functional diagram of another network architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0016] **Figure 13** illustrates a functional diagram of a secure device application architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0017] **Figure 14** illustrates a functional diagram of another secure device virtual machine architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0018] **Figure 15** illustrates a functional diagram of another secure device hardware execution partition architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0019] **Figure 16** illustrates a functional diagram of another secure device service processor architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0020] **Figure 17** illustrates a functional diagram of another network architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0021] **Figure 18** illustrates a functional diagram of another network architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0022] **Figure 19** illustrates a functional diagram of another network architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0023] **Figure 20** illustrates a functional diagram of another network architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0024] **Figure 21** illustrates a functional diagram of another network architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0025] **Figure 22** illustrates a functional diagram of another network architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0026] **Figure 23** illustrates a functional diagram of a secure device application architecture with device based service usage monitoring for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0027] **Figure 24** illustrates a functional diagram of a secure device virtual machine architecture with device based service usage monitoring for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0028] **Figure 25** illustrates a functional diagram of a secure device hardware execution partition architecture with device based service usage monitoring for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0029] **Figure 26** illustrates a functional diagram of a secure device service processor architecture with device based service usage monitoring for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0030] **Figure 27** illustrates a flow diagram for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0031] **Figure 28** illustrates another flow diagram for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0032] **Figure 29** illustrates another flow diagram for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

[0033] **Figure 30** illustrates another flow diagram for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments.

DETAILED DESCRIPTION

[0034] The invention can be implemented in numerous ways, including as a process; an apparatus; a system; a composition of matter; a computer program product embodied on a computer readable storage medium; and/or a processor, such as a processor configured to execute instructions stored on and/or provided by a memory coupled to the processor. In this specification, these implementations, or any other form that the invention may take, may be referred to as techniques. In general, the order of the steps of disclosed processes may be altered within the scope of the invention. Unless stated otherwise, a component such as a processor or a memory described as being configured to perform a task may be implemented as a general component that is temporarily configured to perform the task at a given time or a specific component that is manufactured to perform the task. As used herein, the term 'processor' refers to one or more devices, circuits, and/or processing cores configured to process data, such as computer program instructions.

[0035] A detailed description of one or more embodiments of the invention is provided below along with accompanying figures that illustrate the principles of the invention. The invention is described in connection with such embodiments, but the invention is not limited to any embodiment. The scope of the invention is limited only by the claims and the invention encompasses numerous alternatives, modifications and equivalents. Numerous specific details are set forth in the following description in order to provide a thorough understanding of the invention. These details are provided for the purpose of example and the invention may be practiced according to the claims without some or all of these specific details. For the purpose of clarity, technical material that is known in the technical fields related to the invention has not been described in detail so that the invention is not unnecessarily obscured.

[0036] Some enterprises only allow certain specialized wireless devices to be used for connection to their enterprise network. Such devices typically contain secure data storage and enterprise program execution environments to protect enterprise information and network access. This approach is generally directed towards maintaining enterprise data integrity and enterprise network security. However, this approach does not address the various problems associated with

allocating service usage or billing between consumer or non-enterprise service usage activities and enterprise service usage activities.

[0037] Accordingly, there is a need to provide for an enterprise and consumer billing allocation for wireless communication device service usage activities. There is also a need to address various issues with enterprise policies that can vary from employee to employee. For example, roaming policies can be configured differently for a global sales person than for a finance administrator who does not travel as much on enterprise business. Furthermore, some enterprises may not elect to pay for employee wireless communication device purchase or all employee wireless communication service usage needs or desires. As a result, some enterprises would benefit from techniques that allowed such enterprises to piggy back on consumer device or service purchases while maintaining an enterprise and consumer billing allocation for wireless communication device service usage activities.

[0038] Also, some consumers prefer to select their own wireless communication device that may not be an enterprise approved wireless communication device or a specialized enterprise device specified by enterprise IT managers. For example, certain enterprises may only offer certain Blackberry smart phone devices, and certain employees may prefer Apple iPhone and/or various Android based smart phone devices. Another trend suggests that a growing number of enterprise employees desire to use a single wireless communication device for their enterprise mobile communication, enterprise information access, and enterprise network access as well as for, for example, their personal mobile communication, access, and application needs (e.g., consumer/personal, that is, non-enterprise, use of cellular calls, text messaging, web browsing, social networking, games, and various other service usage activities). Such dual persona devices, where a first persona is oriented to enterprise access and/or application needs and a second persona is oriented to personal access and/or application needs, are enabled by the disclosure herein.

[0039] As a result, enterprise network managers generally need a way to safely allow consumers to perform consumer mobile access services that the enterprise can specify that will not be paid for by the enterprise. Various network architectures and techniques are described herein that allow an enterprise to determine how much service usage (e.g., how much of a

corresponding service bill) should be allocated to device user services or consumer services and how much should be allocated to enterprise services in which the enterprise sponsors the enterprise access. Various design approaches and techniques are described herein for allocating enterprise and consumer billing in a secure manner that works with both specialized enterprise wireless communication devices as well as other wireless communication devices. For example, crediting a user bill with sponsored enterprise service usage is provided using various techniques described herein. As another example, providing enterprise employee reimbursement for enterprise services used on the employee wireless communication device or allowing an enterprise to deduct employee consumer service usage from their paycheck is provided using various techniques described herein. As yet another example, allowing a consumer to select from an instant activation platform on a wireless communication device that comes pre-loaded with various enterprise services is provided using various techniques described herein. As yet a further example, providing for a capability to install or download an enterprise application that provides secure enterprise mobile services access and allocating enterprise and consumer billing for consumer wireless communication devices is provided using various techniques described herein.

[0040] Various techniques for monitoring service usage and providing for secured and verifiable device assisted services (DAS), including DAS based service usage monitoring, are disclosed in co-pending U.S. Patent Application No. 12/380,758 (Attorney Docket No. RALEP003), entitled VERIFIABLE DEVICE ASSISTED SERVICE USAGE MONITORING WITH REPORTING, SYNCHRONIZATION, AND NOTIFICATION, filed on March 2, 2009, published as U.S. Pub. App. No. 20100191612, co-pending U.S. Patent Application No. 12/695,019 (Attorney Docket No. RALEP022), entitled DEVICE ASSISTED CDR CREATION, AGGREGATION, MEDIATION and BILLING, filed on January 27, 2010, published as U.S. Pub. App. No. 20100197266, co-pending U.S. Patent Application No. 12/695,020 (Attorney Docket No. RALEP024), entitled ADAPTIVE AMBIENT SERVICES, filed on January 27, 2010, published as U.S. Pub. App. No. 20100198698, co-pending U.S. Patent Application No. 12/694,445 (Attorney Docket No. RALEP025), entitled SECURITY TECHNIQUES FOR DEVICE ASSISTED SERVICES, filed on January 27, 2010, published as U.S. Pub. App. No. 20100199325, co-pending U.S. Patent Application No. 12/694,451 (Attorney Docket No. RALEP026), entitled DEVICE GROUP PARITIONS AND SETTLEMENT PLATFORM, filed

on January 27, 2010, published as U.S. Pub. App. No. 20100197267, which are incorporated herein by reference for all purposes.

[0041] In some embodiments, allocating enterprise and consumer billing for service usage activities on a wireless communication device is provided for service usage activities that an enterprise configures as approved and/or sponsored for enterprise billing (e.g., such service usage activities are paid for at least in part by the enterprise) and consumer applications and service usage activities that the device user chooses to use from the wireless communication device and that the enterprise does not sponsor. Various embodiments are disclosed herein describing a wide range of devices that users and enterprises may desire to use for such dual-purpose application scenarios. In some embodiments, devices for such applications can include a less specialized and secure device program execution environment as further described herein.

[0042] Accordingly, enterprise and consumer billing allocation for wireless communication device service usage activities is provided. In some embodiments, enterprise and consumer billing allocation for wireless communication device service usage activities includes monitoring a service usage activity of a wireless communication device (e.g., the monitoring can be performed in the wireless communication device and/or the monitoring of enterprise application service usage can be performed using a secure application server in the enterprise network), and determining an enterprise and consumer billing allocation for the monitored service usage activity. In some embodiments the allocation is determined by classifying the service usage activities as associated with a consumer service usage activity (e.g., in a consumer service usage activity list) or associated with an enterprise service usage activity (e.g., in an enterprise service usage activity list; or, as another example, if the monitored service usage activity is not included in the enterprise service usage activity list, then it can be automatically classified as a consumer service usage activity by default).

[0043] In some embodiments, enterprise and consumer billing allocation for wireless communication device service usage activities includes providing a service design center (SDC) for configuring an enterprise and consumer billing allocation of monitored service usage activities for a plurality of wireless communication devices associated with an enterprise account, and implementing the configured enterprise and consumer billing allocation for

monitored service usage activities for the plurality of wireless communication devices associated with the enterprise account.

[0044] In some embodiments, enterprise and consumer billing allocation for wireless communication device service usage activities includes monitoring service usage of a wireless communication device, and determining whether a user is acting as a consumer (e.g., personal service usage activities on the wireless communication device) or a professional (e.g., enterprise service usage activities on the wireless communication device, that is, the user is working on the wireless communication device in his or her capacity as an employee for an enterprise, in which the wireless communication device is associated with an enterprise account for the enterprise) based on the monitored service usage activity (e.g., based on place, time of day, application or service activity, and/or other criteria or factors). In some embodiments, enterprise and consumer billing allocation for wireless communication device service usage activities differentially charges and/or allocates billing between the enterprise and the consumer based on a classification of the monitored service usage activity as allocated to the enterprise or to the consumer for billing/charging purposes. Such embodiments enable a dual persona device user experience.

[0045] In some embodiments, enterprise and consumer billing allocation for wireless communication device service usage activities includes monitoring a service usage activity of a wireless communication device, and reporting the monitored service usage activity to a network element (e.g., a service controller, a service usage reconciliation function, another service control or billing/charging function in the network, or another network element), in which the network element determines an enterprise and consumer billing allocation for the monitored service usage activity. In some embodiments, the network element (e.g., a service controller, a service usage reconciliation function, another service control or billing/charging function in the network, or another network element) determines an enterprise and consumer billing allocation for the monitored service usage activity. In some embodiments, a service usage reconciliation function determines how much service usage is due to enterprise service usage activities and how much is due to consumer service usage activities. In some embodiments, after determining the allocation between consumer and enterprise service usage activities, the service usage reconciliation function provides the information to a service usage accounting function (e.g., a carrier billing

server or an enterprise service usage accounting server), which in turn delivers a consumer usage report or bill and/or an enterprise usage report or bill. In some embodiments, the service usage reconciliation function determines the amount of enterprise service usage and creates a service usage credit record so that a device user's account can be credited or a device user can be compensated or reimbursed for enterprise service usage costs. In some embodiments, a service usage monitor is configured to monitor service usage activities of a device. In some embodiments, the service usage monitor is configured to classify the monitored service usage activities as enterprise service usage activities. In some embodiments, the service usage monitor is configured to classify the monitored service usage activities as consumer service usage activities. In some embodiments, the service usage monitor is configured to monitor a first group of service usage activities for service usage allocation to a device user (e.g., using a list of service usage activities associated with a consumer service usage), and a second group of service usage activities for service usage allocation to an enterprise (e.g., using a list of service usage activities associated with an enterprise service usage). In some embodiments, service usage activities (e.g., service activities, such as applications, network, and/or voice based activities that use wireless network service usage resources) are classified using various techniques described herein, such as based on application (e.g., application credential), device (e.g., device credential), time of day, network destination, network traffic protocol and/or port, and various other criteria/factors. In some embodiments, the service usage monitor is implemented in the network (e.g., on one or more network elements in the carrier network and/or enterprise network, as described herein). In some embodiments, the service usage monitor is implemented in the device (e.g., using various techniques described herein, including verifiable and/or secured device-based implementations). In some embodiments, the service usage monitor is implemented using both network-based and device-based techniques, as described herein with respect to various embodiments.

[0046] In some embodiments, a set of service activities that will be sponsored by an enterprise (e.g., a specified or configured list of enterprise sponsored service activities) is managed by an enterprise service design center. In some embodiments, a list of service activities and the associated service policies for each service activity are compiled to form an enterprise sponsored service activity policy set. For example, enterprise email, enterprise calendar, and enterprise contacts can be configured as sponsored service activities. In some embodiments, the sponsored

enterprise services list includes a list of network destinations that are associated with the services (e.g., an enterprise mail server address and/or an enterprise internal corporate network). For example, the enterprise email can be a sponsored service that is associated with an enterprise sponsored email service policy, which can limit destinations for corporate email, sizes of emails and/or email attachments, and/or other email related usage criteria or factors (e.g., a service usage charging policy).

[0047] In some embodiments, the monitored service usage is reported to the reconciliation function by a carrier network service usage monitoring element (e.g., a home agent (HA), access network gateway, or other network element, such as a deep packet inspection (DPI) function). In some embodiments, the monitored service usage is reported to the reconciliation function by an enterprise network service usage monitoring element (e.g., a carrier network gateway or a mobile services gateway/server or other element in the enterprise network that can measure service usage and associate it with a given device credential or application credential). In some embodiments, the monitored service usage is reported to the reconciliation function by an element in the mobile device (e.g., a service usage monitor in a secure enterprise mobile services application or a Service Processor function, which can be securely implemented and/or verified using various techniques described herein).

[0048] In some embodiments, a service design center for implementing enterprise and consumer billing allocation for wireless communication device service usage activities is provided. For example, an enterprise manager can use the service design center to select one or more services that the enterprise agrees to pay for/is responsible for paying for and to select one or more other services that the employees of the enterprise must agree to pay for/are responsible for paying for (e.g., if the employee elects to use/have such services that are not charged to the enterprise, or included as enterprise services that are charged to or paid for by the enterprise).

[0049] In some embodiments, a service design center that facilitates configuration of sponsored enterprise services for implementing enterprise and consumer billing allocation for wireless communication device service usage activities is provided. In some embodiments, a service design center for implementing enterprise and consumer billing allocation for wireless communication device service usage activities includes providing a service design center for a

carrier network and another service design center for an enterprise network (e.g., in some cases, these service design centers can be combined).

[0050] In some embodiments, an enterprise sponsored service activity policy set is created by an enterprise network administrator through an enterprise service design center user interface (UI). In some embodiments, the enterprise sponsored service activity policy set includes a list of network destination addresses that corresponds to the desired sponsored service activity list, along with an access policy or service usage charging policy for the service activities. In some embodiments, all service activities in the enterprise sponsored service activity policy set receive the same access policies or charging policies. In some embodiments, a first subset of one or more of the service activities in the enterprise sponsored service activity policy set receive access policies or charging policies that are different than that of a second subset of service activities. For example, a sponsored enterprise email service can be in the first subset, and sponsored mobile voice services can be in the second subset, as certain employees (e.g., traveling sales personnel and/or executives) can be granted international and/or roaming mobile voice services, and other employees can be granted more limited sponsored mobile voice services.

[0051] In some embodiments, the enterprise network administrator uses the enterprise service design center to create an enterprise sponsored service device group list that includes device credentials or device application credentials that the carrier network and/or the enterprise network can use to identify a device or an application on a device as belonging to the group of devices for which the enterprise desires to sponsor enterprise service activities. In some embodiments, a sponsored service activity policy set is created by an enterprise network administrator through an enterprise service design center UI, and an enterprise sponsored service device group list is created by an enterprise network administrator through an enterprise service design center UI, and the two lists are stored in the enterprise service design center in which they are associated with one another for the purpose of provisioning the carrier network, the enterprise network, and/or the devices to provide the desired enterprise sponsored services policy set to the enterprise sponsored services device group, as described herein with respect to various embodiments.

[0052] In some embodiments, the association between an enterprise sponsored services device group and an enterprise sponsored service policy set is used by a service design center to create a provisioning table, in which the provisioning table is a list of the provisioning programming required for the various carrier network elements, enterprise network elements, and/or device elements to implement the desired sponsored service activity policy set for the enterprise sponsored services device group.

[0053] For example, an enterprise can use the service design center to configure certain destinations/services as enterprise services or potentially enterprise services based on various factors (e.g., corporate sites, corporate email/email servers, corporate web pages/intranet, and can, for example, agree to pay for a certain level of general web browsing by usage/time of day and/or other factors, corporate contacts/calendars, corporate videoconferencing; and certain applications, such as web conferencing applications or other applications; certain telephone service usages, etc.). As another example, the service design center can present a configuration interface that allows users to select from one or more service plans that include various consumer and enterprise allocations and/or to select an enterprise only service plan.

[0054] In some embodiments, the service design center specifies one or more service plans the device user can select from and these service plan selection options are configured into a configuration interface on a device software application that allows users to select from one or more service plans that includes various consumer and enterprise allocations and/or to select an enterprise only service plan. In some embodiments, the configuration interface is made available directly on the device via a device client that provides a service plan selection user interface that displays one or more service plan options configured in the service design center or the enterprise service design center. In some embodiments, the configuration interface is presented directly on a device user interface (UI) when the user attempts to use an access service usage activity that requires a service plan to be activated or purchased. In some embodiments, the configuration interface presented via the device UI accepts a user response, transmits it to a carrier network element responsible for provisioning a new user service plan that in turn activates the service plan chosen by the user, possibly after confirming service payment credit for the user or enterprise entity. In some embodiments, the carrier network element responsible for provisioning a new user service plan is a carrier usage accounting server. In some

embodiments, the carrier network element responsible for provisioning a new user service plan is a consumer internet services element. In some embodiments, the carrier network element responsible for provisioning a new user service plan is a carrier gateway or home agent. In some embodiments the carrier network element responsible for provisioning a new user service plan is a billing system or service plan provisioning system. In some embodiments, the configuration interface is made available to the user in the form of a web site that provides a service plan selection user interface that displays one or more service plan options configured in the service design center or the enterprise service design center.

[0055] In some embodiments, the initial configuration of the end-user device includes one or more enterprise access service plans that allow the user to access certain applications or network destinations associated with enterprise access services, and the user can choose from one or more additional consumer oriented service plans offered directly on the device UI by a device software application in communication with a carrier network element responsible for provisioning a new user service plan that in turn activates the service plan chosen by the user, possibly after confirming service payment credit for the user or enterprise entity. In some embodiments, these access service plan options are configured with a service design center. In some embodiments, these access service plan options are configured with an enterprise service design center.

[0056] In some embodiments, enterprise data locally stored on the wireless communication device is secured and access to an enterprise network from the wireless communication device is secured so that only authorized devices or applications can access the network. In some embodiments, security for enterprise data and network access is accomplished by connecting the wireless communication device to the enterprise network via a secure mobile services application on the wireless communication device that connects via a secure channel to a secure mobile services gateway server in the enterprise network. In some embodiments, the SDC is programmed to provision the network and/or device apparatus to detect service usage communication with the mobile services gateway server and record that as a usage charge for network services. In some embodiments, such service usage communication with the mobile services gateway server is credited to the user's carrier account or used as a reimbursement to the user bill.

[0057] In some embodiments, determining the enterprise and consumer billing allocation for wireless communication device service usage activities is performed using a classifier implemented on the wireless communication device that classifies the monitored service usage activity (e.g., service usage can also be measured by the classifier and/or another function implemented on the wireless communication device, which can similarly be implemented in a secure execution area or in a secure memory), in which the classifier is executed in a secure execution area or a secure memory of the wireless communication device. In some embodiments, the security of the classifier is verified, periodically or at other times, using various techniques, such as by comparing a local service usage measure with a network based service usage measure and/or comparing a secured local service usage measure with another local service usage measure. In some embodiments, a secured application protects one or more enterprise applications (e.g., email, calendar, contacts, intranet access, and/or other enterprise specified applications, such as applications configured as approved or authorized enterprise applications for a particular enterprise by an enterprise manager using a service design center) from unauthorized use or tampering.

[0058] In some embodiments, the secure mobile services application also provides for usage monitoring of the enterprise service usage of the device. In some embodiments, the secure mobile services application also provides for service access control for the enterprise services of the device so that enterprise network access policies can be locally enforced on the device.

[0059] In some embodiments, security for enterprise data and network access is provided by connecting to the enterprise network via a secure mobile services application executed securely (e.g., in a virtual machine or in a hardware secured execution partition) on the wireless communications device that connects via a secure channel to a secure mobile services gateway server in the enterprise network. In some embodiments, security for enterprise data and network access is provided by connecting to the enterprise network via a secure mobile services application executed on a wireless communications device that includes a service processor, as described herein, that connects via a secure channel to a secure mobile services gateway server in the enterprise network. In some embodiments, the SDC is programmed to provision the network and/or wireless communications device apparatus to detect service usage communication with the mobile services gateway server, and record that as a usage charge for network services. In

some embodiments, such service usage communication with the mobile services gateway server is credited to the user's carrier account or used as a reimbursement to the user bill.

[0060] In some embodiments, the service processor also provides for service usage monitoring of the enterprise service usage of the device, as described herein with respect to various embodiments. In some embodiments, the service processor also provides for service access control for the enterprise services of the device so that enterprise network access policies can be enforced on the device, as described herein with respect to various embodiments.

[0061] In some embodiments, enterprise and consumer billing allocation for wireless communication device service usage activities includes associating the wireless communication device and/or an authorized user of the wireless communication device (e.g., using device/user credentials) with an enterprise account (and, in some embodiments, a consumer account), associating an application with a service, and associating the service with the enterprise account (e.g., a service for the wireless communication device that the enterprise agreed to pay for). In some embodiments, enterprise and consumer billing allocation for wireless communication device service usage activities further includes using application-based monitoring and/or control using, for example, device assisted services.

[0062] In some embodiments, enterprise and consumer billing allocation for wireless communication device service usage activities includes crediting an associated consumer account for service usage allocated to an enterprise account. In some embodiments, enterprise and consumer billing allocation for wireless communication device service usage activities includes billing the enterprise for service usage allocated to the enterprise account. In some embodiments, enterprise and consumer billing allocation for wireless communication device service usage activities includes reporting to the enterprise (and, in some embodiments, the consumer) service usage allocated to the enterprise account, and the enterprise can, for example, provide an expense reimbursement to the consumer (e.g., employee, partner, associate, or contractor of the enterprise).

[0063] In some embodiments, enterprise and consumer billing allocation for wireless communication device service usage activities includes associating the wireless communication device with an enterprise account and a consumer account, associating an application with a

service, and associating the service with the consumer account (e.g., a service for the wireless communication device that the consumer, such as an employee of the enterprise, agreed to personally pay for). In some embodiments, enterprise and consumer billing allocation for wireless communication device service usage activities further includes using application-based monitoring and/or control using, for example, device assisted services.

[0064] In some embodiments, enterprise and consumer billing allocation for wireless communication device service usage activities includes crediting an associated enterprise account for service usage allocated to a consumer account. In some embodiments, enterprise and consumer billing allocation for wireless communication device service usage activities includes billing the consumer for service usage allocated to the consumer account. In some embodiments, enterprise and consumer billing allocation for wireless communication device service usage activities includes reporting to the enterprise (and, in some embodiments, the consumer) service usage allocated to the consumer account, and the enterprise can, for example, deduct the cost for such service usage as an expense from the consumer's periodic/next paycheck.

In some embodiments, enterprise and consumer billing allocation for wireless communication device service usage activities does not require a network element or a device element to control services. For example, a user with a device associated with a bulk service usage plan can be automatically credited for sponsored enterprise service usage. If the bulk service usage plan has a service plan cap associated with the user's consumer service plan, then the service usage classified as sponsored enterprise service usage can be deducted from the total service usage such that the sponsored enterprise service usage does not count towards the user's capped consumer service plan usage. As another example, an enterprise account associated with the wireless communication device and/or user can allow the user to exceed a monthly or other service plan cap for sponsored enterprise service usage (e.g., based on various criteria and/or other factors, such as a more restrictive enterprise service policy to avoid potential misuse of sponsored enterprise services for personal use).

[0065] In some embodiments, enterprise and consumer billing allocation for wireless communication device service usage activities is provided using network-based and/or device-based techniques as described herein with respect to various embodiments. For example, using

various techniques described herein, an enterprise manager can control the services for wireless communication devices for the enterprise, including access to such services and/or charging for such services (e.g., services used by employees in which some are charged to the enterprise on behalf of the employee and some are charged to the employee as a consumer of such services) and user notification messages. For example, the enterprise manager or another network element/function can cap and/or control service usage for consumer services and/or enterprise services.

[0066] In some embodiments, a service usage reconciliation function is provided. In some embodiments, the service usage reconciliation function implements the rules for a billing split for the enterprise and consumer billing allocation for wireless communication device service usage activities, as described herein with respect to various embodiments. In some embodiments, the service usage reconciliation function also facilitates fraud detection, as described herein with respect to various embodiments.

Carrier Managed Billing Allocation With Service Usage Monitoring In Carrier Network

[0067] **Figure 1** illustrates a functional diagram of a network architecture 100 for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. In some embodiments, a wireless communication device 110 includes a memory, an application processor (e.g., or more than one application processor or general processor), and a wireless modem, shown as an access modem 151. As shown, the wireless communication device 110 includes an operating system application space 131 for executing applications and communicating wirelessly using operating system lower layers 130, network stack 136, and the access modem 151. As used herein, application space refers to a portion of memory and a portion of a processor operating system execution environment for executing application programs. As also shown, the wireless communications device 110 includes operating system lower layers 130. As used herein, operating system lower layers refers to one or more OS layers that typically implement networking functions (e.g., network stack 136). In some embodiments, operating system lower layers 130 is where certain application data and communications security functions are implemented as described herein. In some embodiments, operating system lower layers 130 is

where certain service usage monitoring and reporting functions are implemented as described herein. In some embodiments, operating system application space 131 executes various user applications, including one or more of user data application 111 and user voice application 112, and various enterprise applications, including enterprise data application 124 and enterprise voice application 126. In some embodiments, the execution environment for user applications and enterprise applications is the same (e.g., as shown in Figures 1 through 7). For example, a consumer Internet browser can execute in the operating system application space 131 for providing Internet web site browsing or web based email service via network stack 136 and wireless access modem 151 (e.g., a wireless modem), and an enterprise email program can also execute in the operating system application space 131 to communicate with an enterprise email server also via network stack 136 and wireless access modem 151. In some embodiments, the execution environment for user applications and enterprise applications are not the same (e.g., as shown in Figures 8 through 12).

[0068] In some embodiments, device 110 accesses various network-based voice services, such as consumer voice services 167 and/or enterprise sponsored/paid-for consumer voice services usage, via voice network 165. As shown, voice network 165 is in communication with carrier access network 150 via carrier gateway/home agent (HA) 152. In some embodiments, device 110 accesses various Internet based services, such as consumer Internet services 162 and/or enterprise sponsored/paid-for consumer Internet services usage, via Internet 160.

[0069] As also shown in Figure 1, device 110 is in wireless communication (e.g., 2G/3G/4G access) with carrier access network 150. The carrier provides a carrier usage accounting server 154 (e.g., a carrier billing server) in communication with carrier access network 150. Carrier network access 150 is shown in communication with both Internet 160 and enterprise network 170 via Internet 160. Enterprise network 170 is shown in communication with Internet 160 as via enterprise firewall and secure access gateway 171 for protecting enterprise network 170 from unauthorized access. In some embodiments, to access enterprise network 170 through enterprise firewall and secure access gateway 171, device 110 includes a secure data application or a virtual private network application/function to facilitate secure authorization with enterprise firewall and secure access gateway 171 and to also protect the communication (e.g., encrypt such data communications). As also shown, behind enterprise firewall and secure access gateway 171,

enterprise network 170 provides communication with secure enterprise mobile services gateway/server 172 in communication with enterprise network 170. As shown, secure enterprise mobile services gateway server 172 includes various enterprise applications/functions, including as shown, mobile email 173, mobile synchronization 174, mobile contacts 175, mobile calendar 176, mobile communications 177, and mobile intranet 178. In some embodiments, secure enterprise mobile services gateway server 172 provides mobile device mobile access to various enterprise network intranet services via enterprise intranet servers 180. In some embodiments, the enterprise mobile services include email, contacts, calendar, enterprise communications, mobile device synchronization services, intranet internal web sites, internal enterprise applications, enterprise file systems, and/or other enterprise networking services. In some embodiments, secure enterprise mobile services gateway server 172 provides optimized mobile application formatting of the enterprise information or synchronization services to synchronize the enterprise database for the above services in an efficient and/or timely manner.

[0070] In some embodiments, carrier usage accounting server 154 (e.g., the carrier billing server) communicates (e.g., using secure communication techniques) with service usage reconciliation server function 158 to obtain reconciled service charging reports (e.g., reconciled billing reports) and/or enterprise service usage charging credit reports. In some embodiments, the reconciled service charging reports (e.g., reconciled billing reports) and/or enterprise service usage charging credit reports are processed by carrier usage accounting server 154 and reported as user usage record(s) 155 and/or enterprise usage record(s) 156. For example, mediating such charging and credit reports can be based on various factors as described herein (e.g., by application, time of day/day of week, and/or other factors). For example, the service usage charges that occur due to communication with the servers or services that are part of enterprise network 170, including secure enterprise mobile services gateway server 172 and intranet servers 180, can be counted as an enterprise service usage credit.

[0071] In some embodiments, enterprise service design center 194 issues device provisioning instructions for the device credential list from the enterprise services device group, and for each of the credentials, a service control policy is set on enterprise firewall/secure gateway 171 to allow properly authorized devices to reach the desired destinations listed on the enterprise service activity policy set. The provisioning of enterprise firewall/secure gateway 171 with the

enterprise service device group credentials and the enterprise service policy set is illustrated in Figure 1 by the "C" input designator.

[0072] In some embodiments, enterprise service design center UI 196 and enterprise service design center 194 are provided as shown in Figure 1. In some embodiments, enterprise service design center UI 196 and enterprise service design center 194 provide dedicated enterprise control of the network policy provisioning for configuring the service charging, accounting or billing allocation policies for differentiating between enterprise device service usage activities and consumer device service usage activities. Furthermore, in some embodiments, the portion of the enterprise network policy provisioning information that is needed to provision the carrier network elements to implement various techniques for allocating device service usage between enterprise and consumer activities is communicated between enterprise service design center 194 and carrier service design center 190.

[0073] A carrier provisioning system is typically not capable of providing direct access to an enterprise network administrator (e.g., carrier or enterprise personnel) for the purpose of provisioning such service charging capabilities. For example, such direct access is often not provided due to concerns related to the risk to the entire network that exists if network provisioning controls are made available to many different administrators to program charging allocation policies for many enterprises. However, as described herein, by isolating the required carrier network provisioning information to a secure service design center UI and policy configuration that only influences a small portion of the carrier network policy provisioning available to the carrier service design center and UI, the risk of causing such problems with the carrier network configuration is significantly reduced. Additionally, the process of performing the carrier side of the necessary provisioning is simplified for an administrator or in some cases can be automated.

[0074] The service design centers (e.g., carrier service design center 190 and enterprise service design center 194) are shown in Figure 1 and various other figures as separate network elements in order to more clearly define and discuss the functions of the service design centers. In some embodiments, enterprise service design center 194 is implemented in various other network elements (e.g., in enterprise network management apparatus, such as management

functions of secure enterprise mobile services gateway server 172 or other enterprise network management apparatus). In some embodiments, enterprise service design center 194 is implemented as a securely partitioned and managed device group interface to a subset of the provisioning capabilities of carrier network service design center 190. In some embodiments, enterprise service design center 194 is implemented as a securely partitioned and managed device group interface to a subset of the provisioning capabilities of a cloud-based secure enterprise mobile services network that is run by a centralized enterprise services provider such as an ASP or MVNO. As would be appreciated by one of ordinary skill in the art in view of the various embodiments described herein, enterprise service design center 194 can be implemented using various network and software/hardware architectures while providing for secure and controlled access as described herein.

[0075] In some embodiments, the enterprise service design center administrator creates or imports the enterprise service device group credentials and the enterprise service policy set using enterprise service design center UI 196. In some embodiments, the information included in the enterprise service device group credentials and the enterprise service policy set is also communicated from enterprise service design center 194 to carrier service design center 190 via the "C" connection designator as shown. For each of the device credentials listed in the enterprise services device group, carrier service design center 190 determines the information it needs to properly provision carrier gateway/home agent 152 with the proper access policy allowances and service usage charging policies to provide enterprise service access and usage credit for communications from device 110 to the enterprise network destination addresses specified in the enterprise service policy set. Programming of this provisioning information to carrier gateway/home agent 152 is indicated by the "A" information connector from carrier service design center 190 to carrier gateway/home agent 152. In some embodiments, this provisioning (e.g., programming) information sent via provisioning communication link "A" to carrier gateway/home agent 152 includes information to facilitate programming the enterprise device group credentials to: (i) receive the desired access service policy permissions, and (ii) implement the desired service usage accounting/charging policy settings. From the enterprise device group credentials list and the enterprise service activity policy set information provided in "C," carrier service design center 190 determines the information needed to properly provision the service usage reconciliation server function 158. Programming of this provisioning

information to service usage reconciliation server function 158 is indicated by the "B" information connector from carrier service design center 190 to service usage reconciliation server function 158. In some embodiments, service usage reconciliation function 158 is part of the carrier network, and service usage reconciliation function 158 implements the charging reconciliation rules to determine how much of the recorded device 110 service usage to place on the user's usage record or service bill (e.g., consumer service usage cost allocation) and how much to place on the enterprise's usage record or service bill (e.g., enterprise service usage cost allocation).

[0076] An enterprise may wish to allow consumer services on an end-user device that also allows an employee to access enterprise services over the access network. In some such embodiments, service design center 190 specifies one or more service plans from which the device user can select, and these service plan selection options are configured into a configuration interface on a device software application (e.g., user data app 111, user voice app 112 or service processor framework program 139 (shown, e.g., in Figure 16)) that allows users to select from one or more service plans, for example, one or more plans with both consumer and enterprise allocations, and/or an enterprise-only service plan. In some embodiments, the configuration interface is made available directly on the device via a device client that provides a service plan selection user interface that displays one or more service plan options configured in service design center 190 or enterprise service design center 194. In some embodiments, the configuration interface is presented directly on the device user interface (UI) when the user attempts an access service usage activity that requires a service plan to be activated or purchased. In some embodiments, the configuration interface presented to the device UI accepts a user response and assists in sending the user response to a carrier network element responsible for provisioning a new user service plan that in turn activates the service plan chosen by the user, possibly after confirming service payment credit for the user or enterprise entity. In some embodiments, the carrier network element responsible for provisioning a new user service plan is carrier usage accounting server 154. In some embodiments, the carrier network element responsible for provisioning a new user service plan is consumer Internet services elements 162. In some embodiments, the carrier network element responsible for provisioning a new user service plan is a carrier gateway/home agent 152. In some embodiments, the carrier network element responsible for provisioning a new user service plan is a billing system or service plan

provisioning system. In some embodiments, the configuration interface is made available to the user in the form of a web site that provides a service plan selection user interface that displays one or more service plan options configured in service design center 190 or enterprise service design center 194.

[0077] In some embodiments, the initial configuration of device 110 includes one or more enterprise access service plans that allow the user to access certain applications or network destinations associated with enterprise access services, and the user can choose from one or more additional consumer-oriented service plans offered directly on the device UI by a device software application (e.g., user data app 111, user voice app112, or service processor framework program 139) in communication with a carrier network element responsible for provisioning a new user service plan that in turn activates the service plan chosen by the user, possibly after confirming service payment credit for the user or enterprise entity. In some embodiments, these access service plan options are configured using service design center 190. In some embodiments, these access service plan options are configured using enterprise service design center 194.

[0078] In some embodiments in which a user has selected a consumer-oriented service plan in addition to an enterprise service plan, service usage reconciliation function 158 distinguishes between data usage within the enterprise service plan and data usage within the consumer-oriented service plan. In some embodiments, the enterprise does not pay for, backhaul, process, or police data usage associated with the consumer-oriented plan. In some embodiments, service usage reconciliation function 158 determines how much data usage by device 110 is enterprise data usage, and how much data usage by device 110 is consumer data usage. In some embodiments, service usage reconciliation function 158 allocates data usage associated with applications and/or services specified by the enterprise service plan to the enterprise, and data usage associated with applications and/or services specified by the consumer-oriented data plan to the consumer.

[0079] The various embodiments described herein with respect to Figure 1 support a variety of techniques for allocating service usage accounting or billing between enterprise services and consumer services. For example, service usage reconciliation function 158 can report measured

total usage, measured consumer usage, and/or measured enterprise usage to carrier usage accounting server 154. In some embodiments, the reconciliation service usage function (e.g., provided by service usage reconciliation function 158 and/or another element/function) implements the business rules that determine how much of the service usage to charge the user (e.g., a consumer service usage allocation) and how much of the service usage to charge the enterprise (e.g., an enterprise service usage allocation). In some embodiments, the service usage reconciliation service usage function records total device service usage, records total enterprise service activity service usage, and then subtracts the enterprise service usage from the total device service usage to determine a consumer service usage (e.g., a consumer service usage allocation). In some embodiments, service usage reconciliation function 158 passes on the enterprise service usage as a credit to the consumer account. In some embodiments, this credit is accounted for by the carrier billing the user at a reduced amount according to the credit and billing the enterprise for an increased amount according to the credit. In some embodiments, the credit is accounted for by communicating the credit to the enterprise so the enterprise can reimburse the consumer (e.g., generating an expense reimbursement for the credit to the consumer as an employee or contractor of the enterprise, directly paying the enterprise allocation of the carrier bill for the consumer, and/or various other approaches as described herein). In some embodiments, the credit is reported to the enterprise so that the enterprise can seek payment for the non-enterprise service usage (e.g., consumer service usage allocation) from the consumer (e.g., who can be an employee or contractor of the enterprise).

[0080] As another example, an enterprise allocation can also include providing an allowance for a certain level of monthly usage of data and/or voice. In some embodiments, carrier usage accounting server 154 generates a bill for the associated consumer account (e.g., associated with device 110, such as based on the device/user credentials) that reflects the cost of the service usage allocated to consumer service usage and a credit for the cost of service usage allocated to enterprise service usage (e.g., to offset the cost of the enterprise service usage, which can be billed to the enterprise account associated with the enterprise service usage for the device 110). As described herein, based on an allocation of enterprise and consumer service usage, various techniques for billing/charging and generating credits/reporting (e.g., the enterprise can generate the user/employee monthly expense reimbursements to compensate the user/employee for the determined cost of the enterprise service usage and/or other approaches as described herein) can

be provided using the network architecture 100 and/or other network architectures, as described herein.

[0081] In some embodiments, an enterprise manager manages service usage by specifying an access network service usage limit for a service usage activity (such as data service, voice service, text service, a roaming service, or a more detailed classification of data service such as one or more websites or one or more device applications), and, when that usage limit is reached for a device that is managed by the enterprise manager, a service usage notification message is generated. In some embodiments, the service usage notification message is configured through enterprise service design center UI 196. In some embodiments, the service usage notification message is delivered to device 110. In some embodiments, the service usage notification message is presented to the user via a user interface of device 110.

[0082] In some embodiments, the service usage notification message provides information about data usage or the status of device 100. In some embodiments, the service usage notification message is triggered by an event, e.g., detection that device 110 reaches a data usage ceiling, determination that device 110 is roaming, etc. In some embodiments, the service usage notification message provides real-time or near-real-time information about data usage. In some embodiments, the service usage notification message provides information about remaining data usage availability or entitlement. In some embodiments, the service usage notification message comprises a detailed report of enterprise usage by user, user group, device, device group, or location.

[0083] In some embodiments, secure enterprise mobile services gateway server 172 is a dedicated enterprise application server for a particular enterprise (e.g., company, government organization, school/university, or another entity). In some embodiments, secure enterprise mobile services gateway server 172 is a carrier or a third party service provider (e.g., a carrier for wireless network services, such as AT&T, Sprint, T-Mobile, and/or various other wireless network service providers/carriers or third party service providers) controlled/managed application server that performs the application server functions for various different enterprises (e.g., as a service/outsourced IT services model). In some embodiments, device 110 is partitioned (e.g., associated with a particular enterprise/MVNO partition and associated

enterprise account) based on device credentials and/or VPN to determine a service plan for managing (e.g., to determine how to allocate enterprise/consumer service usage for) device 110. In some embodiments, based on the partition determination of device 110, and the associated service plan for managing device 110, appropriate service usage monitoring and classification can be determined for providing an enterprise and consumer allocation for service usage activities of device 110 based on the associated service plan(s).

[0084] For example, by programming the business rules in service usage reconciliation function 158 that determine the service usage accounting allocation between enterprise services and consumer services, many approaches can be provided for creating a service that provides an enterprise service to a device when the device user has selected a consumer service plan or elected to pay for a consumer service plan. As an example, if the device user has chosen a service plan, the enterprise service usage accounted for in enterprise usage record 156 can be billed to the enterprise rather than the consumer. As another example, if the device user has chosen a service plan, the consumer service usage accounted for in user usage record 155 can be billed to the device user rather than the enterprise. As yet another example, if the device user has selected a service plan, the enterprise service usage can be communicated to the enterprise (e.g., and/or the device user), and the enterprise can issue a reimbursement to the device user for the enterprise portion of the user's bill, or pay the carrier directly for a portion of the user's bill, thus reducing the amount the user must pay. In some embodiments, the business rules in service usage reconciliation function 158 are programmed to provide the device user with a certain amount of service usage that may or may not be directly related to enterprise services.

[0085] For example, the user can be allocated a certain amount of general purpose browsing that includes network destinations that are not specified in the enterprise service activity policy set. In some embodiments, there is a cap to such general purpose browsing, and carrier service design center 190 can provision the network and/or the device to alert the user regarding how much of the enterprise sponsored browsing remains or when the enterprise sponsored internet browsing cap is reached or exceeded. In some embodiments, the business rules in service usage reconciliation function 158 are programmed to deduct the service usage associated with the enterprise sponsored general purpose browsing, up to the specified cap, from the user's bill. In this way, the user can be allocated an allowance for services that either the enterprise sponsors to

account for enterprise related service usage that may not be included in the enterprise service activity policy set or that the enterprise simply desires to sponsor to reduce the device user's consumer service plan billing.

[0086] In a similar manner, services other than browsing that are not necessarily associated with enterprise service usage can also be sponsored by the enterprise by properly provisioning the business rules in service usage reconciliation function 158. For example, a catch-all enterprise sponsored allowance (e.g., or cap) for "bulk" internet usage can be provided. The fact that the user is provided with such an allowance may be pointed out to the user if the user disputes how much of his or her device service usage cost should be covered by the enterprise and how much the user should cover personally. Another example is to provide a certain amount of voice minutes to any phone number or to phone numbers not in the enterprise service activity policy set.

[0087] In some embodiments, the business rules in service usage reconciliation function 158 are provisioned so that the enterprise specifically does not allow, sponsor, or pay for certain device service usage activities. In some embodiments, these service usage activities can include access to network destinations, applications, or services that pose security risks to enterprise data stored on device 110 or pose security risks to enterprise network 170. In some embodiments, these activities include access to network destinations, applications, or services that the enterprise does not wish to sponsor or that are potentially associated with user activity that violates enterprise policy or laws. For example, the business rules may be configured to allow only transmission of business data on approved networks, e.g., excluding free or unknown WiFi hotspots, or only when device 110 is connected to the network via a VPN. In some embodiments, such service usage activities that violate enterprise security policies or other service usage policies are blocked by the business rules programmed into the network or the device as specified in the enterprise service activity policy set.

[0088] By programming the business rules in service usage reconciliation function 158 that determine the service usage accounting allocation between enterprise services and consumer services, many approaches can be provided for creating a service that provides an enterprise service to a device when the device user has not selected a consumer service plan or elected to

pay for a consumer service plan. For example, if the device user has not chosen to select or pay for a consumer service plan, carrier gateway/home agent 152 can be programmed to allow service usage for the enterprise service policy set but deny all other access until the user chooses a consumer service plan. In some embodiments, when/if the consumer chooses a consumer service plan then access would be expanded beyond just the enterprise services, because when the service plan activation occurs, consumer service policy set in carrier gateway/home agent 152 will be updated to allow service (e.g., as the carrier administrator user of carrier service design center 190 programs a different set of consumer service access policies for each consumer service plan that can be chosen). In some embodiments, the user is allocated a certain amount of general purpose data access or voice minutes as described above even though the user does not have a consumer data plan. Another example is to provide the user with a certain monetary allowance that is sponsored by the enterprise rather than a service usage amount.

[0089] Although enterprise service design center 194 is shown provisioning mobile server usage counter 179 (e.g., shown in Figure 5) and enterprise firewall/secure gateway 171, it should be understood that not all device provisioning connections as shown from secure enterprise mobile services gateway/server 172 to device 110 are shown for device functions including secure mobile services application access, communication link provisioning (e.g., cryptographic encryption keys, VPN settings, and various other security/communication provisioning), security programs, service control programs, and program settings for enterprise service applications, such as email, calendar, contacts, mobile synchronization services, and traffic control. As shown, the labeled provisioning connections are provided as exemplary embodiments to assist in identifying the network elements that are provisioned for network access control and network service usage charging reporting. Those of ordinary skill in the art will appreciate that these additional device provisioning functions are not necessarily specifically called out with provisioning connection labels in each figure, and it will be apparent to one of ordinary skill in the art which of these device provisioning functions and connections are needed from enterprise service design center 194 and device 110. It will also be apparent to one of ordinary skill in the art in view of the various embodiments described herein that the various device provisioning connections and device element programming configurations needed to provision these device functions can be managed by secure enterprise mobile services gateway/server 172 via a device management communications link. It will also be apparent to one of ordinary skill in the art that,

in some embodiments, the flow of policy provisioning information for the various device elements that participate in establishing service usage monitoring and reporting policies or service access control policies starts in enterprise service design center 194 and flows through secure enterprise mobile services gateway/server 172 over a device management link, and through the device management link on device 110 to the device 110 functional elements that need to be provisioned. In various embodiments described herein, the device elements that are provisioned in some embodiments to set up enterprise services, service usage monitoring and reporting policies, or service usage access control policies include one or more of enterprise data application 124, enterprise voice application 126, secure mobile enterprise application environment 120 (shown, e.g., in Figure 8), secure network interface 128 (shown, e.g., in Figure 8), secure enterprise mobile services application 125 (shown, e.g., in Figure 13), virtual machine #2 secure enterprise application environment 118 (shown, e.g., in Figure 14), enterprise application secured hardware execution partition 106 (shown, e.g., in Figure 15), device service usage monitor 119 (shown, e.g., in Figure 17), service processor framework program 139 (shown, e.g., in Figure 16), and/or service processor kernel program 138 (shown, e.g., in Figure 16).

[0090] In some embodiments, service usage reconciliation function 158, or secure enterprise mobile services gateway/server 172, or another similar network function, is programmed to review traffic usage patterns of mobile device 110 for the purpose of determining if the device may have fallen into unauthorized hands or if the device secure enterprise communications and data management software may have been hacked or tampered with in a way that endangers enterprise security or causes the enterprise to be billed for usage that is not enterprise usage. For example, service usage reconciliation function 158 (e.g., or secure enterprise mobile services gateway/server 172) can be programmed to monitor "bulk" enterprise service usage for the enterprise device group and trigger a fraud detection alert for a device that exhibits enterprise usage that is higher than a pre-determined "normal" limit. As another example, service usage reconciliation function 158 can be programmed to monitor "bulk" enterprise service usage for the enterprise device group and trigger a fraud detection alert for a device that exhibits enterprise usage access patterns that are determined to be outside of "normal" limits. Examples of usage patterns can include usage as a function of time of day, duration of usage, usage above a certain

limit for a subset of service usage activities, and/or usage above a certain limit for all service usage activities.

[0091] In some embodiments, enterprise service design center 194 is configured to receive or accept a specification for an access network service usage limit (e.g., a service amount in minutes, bytes, or cost) for a service usage activity (such as a data service, a voice service, a text service, a roaming service, or a more detailed classification of a data service, such as one or more websites or one or more device applications), and the service usage limit is applied to one or more devices 110 or device groups (or users or user groups) managed by enterprise service design center 194. In some embodiments, enterprise service design center 194 is further configured to receive service usage records for device 110, which is managed by enterprise service design center 194, from a network element configured to monitor and report device 110 service usage (e.g., carrier usage accounting server 154, enterprise firewall/security gateway 171, or another network element), and when the usage limit is reached, to generate a service usage notification message. In some embodiments, enterprise service design center 194 is configured to deliver the service usage notification message to enterprise service design center UI 196. In some embodiments, enterprise service design center 194 is configured to deliver the service usage notification message to a software application of device 110 (e.g., service processor framework program 139 or user data app 111) for presentation to the device user through a user interface of device 110.

[0092] In some embodiments, enterprise service design center 194 is configured to receive or accept a specification for an access network service notification event consisting of a network access pattern achieved or attempted by device 110 that belongs to a device group (or user group) managed by enterprise service design center 194, wherein the network access pattern is access attempted or achieved by one or more pre-defined device applications, or access attempted or achieved by device 110 to one or more network destinations, websites or network servers. In some embodiments, enterprise service design center 194 is further configured to receive service usage records for device 110, which is managed by enterprise service design center 194, from a network element configured to monitor and report device 110 service usage (e.g., carrier usage accounting server 154, enterprise firewall/security gateway 171, or another network element), and when the service usage indicates that the network access pattern has

occurred, enterprise service design center 194 is further configured to send a notification message to enterprise service design center UI 196.

Carrier Managed Billing Allocation With Service Usage Monitoring In Carrier Network and Enterprise Firewall/Gateway

[0093] **Figure 2** illustrates a functional diagram of another network architecture 101 for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Network architecture 101 of Figure 2 is similar to network architecture 100 of Figure 1, except that in network architecture 101 of Figure 2, service usage reconciliation function158 receives service usage information from enterprise firewall/secure gateway 171 in addition to carrier gateway/home agent 152. This allows for various techniques that augment the capabilities of carrier gateway/home agent 152. For example, in networks in which it is impractical or infeasible for carrier gateway/home agent 152 to keep track of the service usage accounting allocation between the enterprise service policy set and consumer services for the devices in the device group, service usage reconciliation function 158 can receive total device service usage from carrier gateway/home agent 152, and receive the enterprise service usage from enterprise firewall/secure gateway 171. With this information, service usage reconciliation service usage function 158 can perform the allocation between enterprise service usage and consumer service usage without any detailed service usage reports from carrier gateway/home agent 152.

[0094] There are several reasons that the carrier network may not support numerous enterprise service customers with an enterprise/consumer allocation architecture that requires carrier gateway/home agent 152 to perform the necessary traffic classification or service usage classification as in the Figure 1 embodiment. For example, these reasons can include: (i) carrier gateway/home agent 152 does not have the detailed service usage classification capability (e.g., deep packet inspection function(s)) required to allocate service usage between the enterprise service policy set and consumer services for the devices in the device group, (ii) carrier gateway/home agent 152 is capable of performing the service monitoring required but can only do it for a limited number of devices (e.g., scaling issues), and/or (iii) there are too many device groups being managed by enterprise partners of the carrier creating a situation where the number

of specialized profiles that must be supported by carrier gateway/home agent 152 is larger than can be accommodated by the profile management capacity of the gateway system (e.g., scaling issues). As would now be apparent to those of ordinary skill in the art in view of the embodiments described herein, there are other reasons that can make it advantageous to provide the enterprise service usage from the enterprise network.

[0095] In some embodiments, provisioning with the service design centers and UIs for the embodiment shown in Figure 2 is similar to that of Figure 1. In some embodiments, the billing allocation capabilities of the two embodiments are similar if carrier gateway/home agent 152 is fully capable of differentiating service usage between the enterprise service policy set and the consumer services, but if not, then as discussed above, the billing allocation capabilities of the Figure 2 embodiment can be preferable in such environments.

[0096] Because the enterprise service usage is monitored by the enterprise network elements in the embodiments depicted in Figure 2, various service accounting or billing policies are available to the enterprise or carrier. For example, the amount of service usage resulting from enterprise services that occur during roaming conditions can be accounted for even when the carrier network does not receive detailed classification of service usage from roaming network partners. The business rules programmed into service usage reconciliation function 158 that are determined by the enterprise service activity policy set can break-out enterprise-service-related roaming charges separately from consumer-service-related roaming charges so that the enterprise-service-related roaming charges are sponsored or paid by the enterprise and consumer roaming service usage activities are not subsidized or are only partially subsidized. In addition, in some embodiments, secure enterprise mobile services gateway/server 172 includes the capability to determine if device 110 is roaming so that the access control policies specified in the enterprise service activity policy set can include modification or denial of access to enterprise network 170 services allowed by enterprise firewall/secure gateway 171 or secure enterprise mobile services gateway/server 172 during roaming conditions even though the access is not controlled by the carrier home network.

[0097] In some embodiments, an active network detection function is included on the device to assist the network policy enforcement elements to determine the type of network the device is

connected to or to determine if the device is on a home or roaming network, as described herein. For example, the service usage policy allowances provided by the enterprise service activity policy set can be programmed so that the allowances change depending on the availability of a particular network or set of networks, the time of day, the congestion state of a network, or the current cost of service on the network. For example, if the carrier home network is not available and only a roaming network is available, the allowance may be decreased or removed. As another example, if a certain network type is not available but another network type is (e.g., 2G is available instead of 3G or 3G is available instead of 4G), then the allocation can be reduced. As yet another example, if a variable charging policy is in place with the carrier for access when the network is busy or during certain times of day, then the enterprise sponsored allowance can be reduced during times of higher charging.

Enterprise Managed Billing Allocation With Service Usage Monitoring in Carrier Network And Enterprise Firewall/Gateway

[0098] **Figure 3** illustrates a functional diagram of another network architecture 102 for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Network architecture 102 of Figure 3 is similar to network architecture 101 of Figure 2, except that in network architecture 102 of Figure 3, service usage reconciliation function 158 receives overall device service usage information from carrier usage accounting server 154 and also receives enterprise device service usage information from enterprise firewall/secure gateway 171. In some embodiments, there is no interaction between the provisioning of the carrier network and the provisioning of the enterprise network, and it is assumed that service usage reconciliation function 158 and enterprise usage accounting server 159 are both under the control of the enterprise administrator. This approach allows for various techniques that provide for enterprise allocation of consumer service usage and enterprise service usage without the need to interface to the carrier network other than to get the overall usage summary. For example, service usage reconciliation function 158 can receive total or "bulk" usage from carrier usage accounting server 154, receive enterprise service usage from enterprise firewall/secure gateway 171, and determine the amount of consumer service usage, enterprise service usage, and/or an enterprise service usage credit.

[0099] In some embodiments, provisioning with the service design centers and UIs for the embodiment shown in Figure 3 is similar to that of Figure 1 except that no provisioning of enterprise service parameters is required in the carrier network. The billing allocation capabilities are also similar if carrier gateway/home agent 152 is fully capable of differentiating service usage between the enterprise service policy set and the consumer services, but if not, then as discussed above, the billing allocation capabilities of the Figure 3 embodiment can be preferable in such environments. For example, using network architecture 102, the enterprise can deal directly with its employees without the need to bring the carrier into the consumer-versus-enterprise allocation process. As an example, the enterprise could have a policy in which consumers purchase their own mobile device services and then get credit for enterprise mobile device services at the end of each billing period. This credit can be provided back to the employee in the form of an expense reimbursement or an increase in their next paycheck.

Enterprise Usage Credit With Service Usage Monitoring in Enterprise Firewall/Gateway

[00100] **Figure 4** illustrates a functional diagram of another network architecture 103 for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Network architecture 103 of Figure 4 is similar to network architecture 102 of Figure 3, except that in network architecture 103 of Figure 4, service usage reconciliation server function 158 receives no overall device service usage information from the carrier network. As shown in Figure 4, the source of service usage information is enterprise network 170 (e.g., via the enterprise firewall/secure gateway 171). In some embodiments, there is no interaction between the provisioning of the carrier network and the provisioning of the enterprise network, and it is assumed that service usage reconciliation function 158 and enterprise usage accounting server 159 could both be under the control of the enterprise administrator. For example, network architecture 103 of Figure 4 can be less dependent on the carrier than network architecture 102 of Figure 3 in that no billing information feed is provided. Using various techniques described herein, an enterprise service usage credit can be determined, and the determined enterprise service usage credit can be reimbursed to the device user.

Carrier Managed Billing Allocation With Service Usage Monitoring In Carrier Gateway/Home Agent And Enterprise Mobile Services Gateway Server

[00101] **Figure 5** illustrates a functional diagram of another network architecture 200 for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Network architecture 200 of Figure 5 is similar to network architecture 101 of Figure 2, except that in network architecture 200 of Figure 5, secure enterprise mobile services gateway/server 172 includes mobile server usage monitor 179, and the enterprise service usage reports from this function are sent to service usage reconciliation function 158 instead of usage reports being sent from enterprise firewall/secure gateway 171. In some embodiments, various specialized needs of monitoring, recording, and reporting enterprise service usage are confined to the special-purpose secure enterprise mobile services gateway/server 172 rather than requiring the often more general-purpose enterprise firewall/secure gateway 171 to perform these functions.

Enterprise Managed Billing Allocation With Service Usage Monitoring in Carrier Network And Enterprise Mobile Services Gateway Server

[00102] **Figure 6** illustrates a functional diagram of another network architecture 201 for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Network architecture 201 of Figure 6 is similar to network architecture 102 of Figure 3, except that in network architecture 201 of Figure 6, secure enterprise mobile services gateway/server 172 includes mobile server usage monitor 179, and the enterprise service usage reports from this function are sent to service usage reconciliation function 158 instead of usage reports being sent from enterprise firewall/secure gateway 171. For example, this approach allows for the specialized needs of monitoring, recording, and reporting enterprise service usage to be performed by the special-purpose secure enterprise mobile services gateway/server 172 rather than requiring the often more general-purpose enterprise firewall/secure gateway 171 to perform such functions.

Enterprise Usage Credit With Service Usage Monitoring in Enterprise Mobile Services Gateway Server

[00103] **Figure 7** illustrates a functional diagram of another network architecture 202 for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Network architecture 202 of Figure 7 is similar to network architecture 103 of Figure 4, except that in network architecture 202 of Figure 7, secure enterprise mobile services gateway/server 172 includes mobile server usage counter 179, and the enterprise service usage reports from this function are sent to service usage reconciliation function 158 instead of usage reports being sent from enterprise firewall/secure gateway 171. For example, this approach allows for the specialized needs of monitoring, recording and reporting enterprise service usage to be performed by the special-purpose secure enterprise mobile services gateway/server 172 rather than requiring the often more general-purpose enterprise firewall/secure gateway 171 to perform such functions.

Carrier Managed Billing Allocation With Device Mobile Enterprise Services Application Environment and Service Usage Monitoring In Carrier Network

[00104] **Figure 8** illustrates a functional diagram of another network architecture 300 for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. As shown, secure mobile enterprise application environment 120 and secure network interface 128 within secure mobile enterprise application environment 120 are included in device 110. Also, server secure network interface 127 is included in secure enterprise mobile services gateway/server 172. In some embodiments, secure mobile enterprise application environment 120 protects sensitive enterprise information that is stored on device 110 (e.g., email text and downloads, calendar information, contacts, intranet data, or any other enterprise data) and provides a secure communication channel function to allow for authentication with server secure network interface 127 on secure enterprise mobile services gateway/server 172. As also shown, a user services application environment in device 110 includes various user applications, such as user data application 111 and user voice application 112.

[00105] In some embodiments, provisioning of the various network architecture elements to facilitate the allocation between enterprise service usage accounting or billing and consumer service usage accounting or billing is established as follows. The device portion of secure

network interface 128 and the enterprise server portion of server secure network interface 127 are provisioned with connection "E." In some embodiments, this provisioning operation with the connection labeled "E" includes programming information for secure network interface 128 to direct enterprise network 170 access traffic associated with application functions running in secure mobile enterprise application environment 120 to enterprise network 170 destinations that are to be sponsored (and, in some embodiments, possibly intermediate network routes) according to the enterprise services policy set, including, for example, the addresses (e.g., IP, IP/port or other higher layer address identifiers) of secure enterprise mobile services gateway/server 172 or enterprise intranet servers 180. In some embodiments, the provisioning operation designated with the connection label "E" also establishes the parameters required for the secure communication of information between secure network interface 128 and server secure network interface 127. In some embodiments, this provisioning step sets up the policies for the authentication process, data encryption, and cryptographic key exchange processes take place to establish secure communication between secure mobile enterprise application environment 120 and secure enterprise services gateway/server 172.

[00106] In some embodiments, the enterprise network destinations that are to be sponsored according to the enterprise services policy set identified by provisioning connection "E" are also communicated to carrier service design center 190. For example, this allows carrier service design center 190 to determine and transmit the proper provisioning information to establish the access control policies or service usage accounting policies for these aspects of the enterprise services policy set. Carrier service design center provisioning connections "A" communicate the provisioning information (programming) to carrier gateway/home agent 152. Carrier service design center provisioning connections "B" communicate the provisioning information (programming) to service usage reconciliation function 158.

[00107] In some embodiments, the provisioning operation associated with the provisioning connection label "C" provisions enterprise firewall/secure gateway 171 to admit devices 110 with device credentials or application credentials that belong to the desired enterprise services device group associated with the enterprise service policy set. In some embodiments, the provisioning information labeled as "C" includes enterprise network 170 destinations that are to be sponsored (and, in some embodiments, possibly intermediate network routes) according to the

enterprise services policy set. In some embodiments, the provisioning information labeled as "C" includes only the network destinations for secure enterprise mobile services gateway/server 172, and devices 110 are not allowed access to other parts of enterprise network 170.

[00108] In some embodiments, network architecture 300 for providing enterprise and consumer billing allocation for wireless communication device service usage activities includes executing an enterprise application as a secure enterprise data application 124 in secure mobile enterprise application environment 120 of device 110 in which the secure applications are in network communication (e.g., secure network communication, such as via a virtual private network (VPN) or other secure network communication techniques) with secure enterprise mobile services gateway/server 172 (e.g., executing an enterprise server side of the enterprise authorized/sponsored applications, such as an enterprise email server, an enterprise calendar server, an enterprise contacts server, and/or an enterprise network access server) of the enterprise. In some embodiments, the secure enterprise mobile services gateway/server 172 performs application monitoring that includes counting application service usage (e.g., bytes used in communicating with the device's execution of secure enterprise application 124). In some embodiments, secure enterprise mobile services gateway/server 172 performs application monitoring that further includes classifying application service usage (e.g., classifying secure enterprise application 124 by application/service usage activity such as based on application name or using signed code/hash techniques, by time of day/day of week, enterprise server, destinations, enterprise intranet, and/or other factors).

Carrier Managed Billing Allocation With Device Mobile Enterprise Services Application Environment and Mobile Services Gateway Server With Service Usage Monitoring In Carrier Network

[00109] **Figure 9** illustrates a functional diagram of another network architecture 301 for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Network architecture 301 of Figure 9 is similar to network architecture 300 of Figure 8, except that in network architecture 301 of Figure 9, secure enterprise mobile services gateway/server 172 is located between the Internet 160 and enterprise network 170. For example, this approach allows for server secure network interface

127 of secure enterprise mobile services gateway/server 172 to restrict access to enterprise network 170 and enterprise intranet servers 180 based on device authentication and/or various other security techniques (e.g., secure access, authentication, and/or communication techniques), as would be apparent to one of ordinary skill in the art in view of the various embodiments described herein.

Carrier Managed Billing Allocation With Device Mobile Enterprise Services Application Environment and Mobile Services Gateway Server With Service Usage Monitoring In Carrier Network And Mobile Services Gateway Server

[00110] **Figure 10** illustrates a functional diagram of another network architecture 302 for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Network architecture 302 of Figure 10 is similar to network architecture 301 of Figure 9, except that in network architecture 302 of Figure 10, secure enterprise mobile services gateway/server 172 includes mobile service usage monitor 179 that reports enterprise service usage to the service usage reconciliation function 158. In some embodiments, various specialized needs of monitoring, recording, and reporting enterprise service usage are confined to the special-purpose enterprise mobile services gateway/server 172 rather than requiring the often more general-purpose enterprise firewall/secure gateway 171 and/or other network elements/functions to perform such functions.

Enterprise Managed Billing Allocation With Device Mobile Enterprise Services Application Environment and Mobile Services Gateway Server With Service Usage Monitoring In Mobile Services Gateway Server

[00111] **Figure 11** illustrates a functional diagram of network architecture 303 for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Network architecture 303 of Figure 11 is similar to network architecture 302 of Figure 10, except that network architecture 303 of Figure 11 includes another carrier usage accounting server 154B that reports service usage to service usage reconciliation function 158. In some embodiments, carrier usage accounting server 154B receives overall or bulk service usage data from carrier gateway/home agent 152 and forwards such information to service usage reconciliation function 158. Service usage reconciliation

function 158 reconciles the overall or bulk service usage received from carrier accounting server 154B and the enterprise service usage received from mobile server usage monitor 179 and provides such reconciled service usage information to carrier usage accounting server 154A.

Enterprise Usage Credit With Device Mobile Enterprise Services Application Environment and Mobile Services Gateway Server With Service Usage Monitoring In Mobile Services Gateway Server

[00112] **Figure 12** illustrates a functional diagram of network architecture 304 for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Network architecture 304 of Figure 12 is similar to network architecture 303 of Figure 11, except that in network architecture 304 of Figure 12, the only service usage reported to service usage reconciliation function 158 is the enterprise service usage received from mobile server usage monitor 179. In some embodiments, service usage reconciliation function 158 reconciles the enterprise service usage received from mobile server usage monitor 179 and provides such reconciled service usage information to carrier usage accounting server 154, which generates enterprise service usage record(s) 156.

Device Configurations Without Service Usage Monitoring and Reporting

[00113] **Figure 13** illustrates a functional diagram of a secure device application architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. As shown, device 110 includes an operating system application space 131, operating system lower layers 130 including network stack 121, and access modem (e.g., wireless modem) 129. As also shown, operating system application space 131 includes various user applications, such as user data application 111 and user voice application 119, and service usage monitor 119. Operating system application space 131 also includes secure enterprise mobile services application 125, which includes various enterprise applications, such as email, synchronization, contacts, calendar communications, and intranet. Secure enterprise mobile services application 125 also includes secure network interface 128 (e.g., for securely communicating with an enterprise network).

[00114] **Figure 14** illustrates a functional diagram of another secure device virtual machine architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Figure 14 is similar to Figure 13, except that in Figure 14 the user applications are executed/stored within virtual machine (VM) #1 consumer application environment117, and secure enterprise mobile services application 125 is included within virtual machine (VM) #2 secure enterprise application environment 118. Device 110 also includes virtual machine operating system 115 that includes virtual OS instantiation #1 117A for VM #1 consumer application environment 117 and virtual OS instantiation #2 118A for VM #2 secure enterprise application environment 118. As also shown, virtual machine operating system 115 includes virtual machine OS network stack 116.

[00115] **Figure 15** illustrates a functional diagram of another secure device hardware execution partition architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Figure 15 is similar to Figure 14, except that in Figure 15 hardware partitions are provided instead of virtual partitions. As shown, the user applications are executed/stored within user application secured hardware execution partition 105 and secure enterprise mobile services application 125 is included within enterprise application secured hardware execution partition 106. Device 110 also includes secured hardware partition for OS 115 that includes secure hardware partition manager #1 107 for user application secured hardware execution partition 105 and secure hardware partition manager #2 108 for enterprise application secured hardware execution partition 106. As also shown, secured hardware partition for OS 115 includes OS network stack 116.

[00116] **Figure 16** illustrates a functional diagram of another secure device service processor architecture for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. As similarly described herein with respect to various embodiments, the device architecture of Figure 16 includes service processor framework program 139 (e.g., framework space agent/function) and network stack framework components 137 in operating system framework space 133, and service processor kernel program 138 (e.g., kernel space agent/function) and network stack kernel components 135 in operating system kernel space 132. In some embodiments, the service processor functions

provide a user interface function to communicate to a user of device 110 whether or not a service usage activity is an approved/authorized service usage activity, or whether it is a disallowed service usage activity for device 110 (e.g., the enterprise has disallowed the usage of device 110 for such service usage activities, such as online gaming and/or certain other online activities or certain long distance calling or voice usage during certain days, such as weekends) or whether such would/will be charged/billed to the user as a consumer under the user's consumer plan. In some embodiments, the service processor functions provide a user interface function to communicate to a user of device 110 an associated cost of certain service usage activities allocated to consumer service usage. In some embodiments, the service processor functions provide a user interface function to communicate to a user of device 110 an associated credit of certain service usage activities allocated to enterprise service usage. In some embodiments, the service processor functions provide a user interface function to communicate to a user of device 110 various other information as described herein with respect to providing an enterprise and consumer allocation for service usage activities. In some embodiments, the service processor shown in Figure 16 communicates with a service controller, such as described herein with respect to various embodiments.

Carrier Managed Billing Allocation With Device Mobile Enterprise Services Application Environment and Mobile Services Gateway Server With Service Usage Monitoring In Carrier Network And On Device

[00117] **Figure 17** illustrates a functional diagram of another network architecture 400 for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Network architecture 400 of Figure 17 is similar to network architecture 302 of Figure 10, except that as shown in Figure 17, device 110 also includes service usage monitor 119 (e.g., agent/function) in secure mobile enterprise application environment 120. In some embodiments, service usage monitor 119 performs application monitoring that includes counting application service usage for secure data application 124 and secure voice application 126 (and, in some embodiments, for also counting application service usage for user applications that are not enterprise or secure enterprise applications 124 or 126). In some embodiments, counting application service usage includes counting bytes or network connection time used in communicating via carrier access network

150 during the device's execution of monitored data applications. In some embodiments, counting application service usage includes counting voice network connection time used in communicating via carrier access network 150 during the device's execution of monitored voice applications. In some embodiments, service usage monitor 119 performs application monitoring that further includes classifying application service usage for secure enterprise applications 124, 126 (e.g., classifying various secure enterprise applications 124, 126 and in some embodiments, including ambient services classification/determination, by application/service usage activity such as based on application name or using signed code/hash techniques, by time of day/day of week, enterprise server, destinations, enterprise intranet, and/or other factors).

[00118] In some embodiments, carrier usage accounting server 154 communicates (e.g., using secure communication techniques) with service usage monitor 119 to mediate billing/charging and credit reports, for example, using the various approaches and techniques as described herein.

[00119] In some embodiments, service usage monitor 119 and/or another function/agent executed in secure mobile enterprise application environment 120 of device 110 blocks user access for non-enterprise activities that the user has not agreed to pay for.

[00120] Because the enterprise service usage is monitored by the device network elements in the embodiments depicted in Figure 17, various service accounting or billing policies are available to the enterprise or carrier. For example, the amount of service usage resulting from enterprise services that occur during roaming conditions may be accounted for even when the carrier network does not receive detailed classification of service usage from roaming network partners. The business rules programmed into service usage reconciliation function 158 that are determined by the enterprise service activity policy set can break-out enterprise service related roaming charges separate from consumer service related roaming charges. In addition, in some embodiments, the device secure mobile enterprise environment includes an access control function so that the access control policies specified in the enterprise service activity policy set can be enforced on roaming networks that have access that is not controlled by the carrier home network.

[00121] For example, the allowances provided by the enterprise service activity policy set can be programmed so that the allowances change depending on the availability of a particular

network or set of networks, the time of day, the congestion state of a network, or the current cost of service on the network. As another example, if the carrier home network is not available and only a roaming network is available, the allowance can be decreased or removed. As yet another example, if a certain network type is not available but another network type is (e.g., 2G is available instead of 3G or 3G is available instead of 4G), then the allocation can be reduced. As yet a further example, if a variable charging policy is in place with the carrier for access when the network is busy or during certain times of day, then the enterprise sponsored allowance can be reduced during times of higher charging. As described herein, in some embodiments, an active network detection function can be included on the device to assist the network policy enforcement to determine the type of network the device is connected to or to determine if the device is on a home or roaming network. As also described herein, in some embodiments, a network busy state monitor function can be included on the device to assist the network policy enforcement to determine the network busy state or state of network congestion.

Carrier Managed Billing Allocation With Device Mobile Enterprise Services Application Environment and Mobile Services Gateway Server With Service Usage Monitoring In Carrier Network, On Device, And In Enterprise Mobile Services Gateway Server

[00122] **Figure 18** illustrates a functional diagram of another network architecture 401 for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Network architecture 401 of Figure 18 is similar to network architecture 400 of Figure 17, except that in network architecture 401 of Figure 18, secure enterprise mobile services gateway/server 172 includes mobile server usage counter 179, and the enterprise service usage reports from this function are sent to service usage reconciliation function 158. In some embodiments, various specialized needs of monitoring, recording, and reporting enterprise service usage are confined to the special-purpose secure enterprise mobile services gateway/server 172.

Enterprise Managed Billing Allocation With Device Mobile Enterprise Services Application Environment and Mobile Services Gateway Server With Service Usage Monitoring On Device And In Enterprise Mobile Services Gateway Server

[00123] **Figure 19** illustrates a functional diagram of another network architecture 402 for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Network architecture 402 of Figure 19 is similar to network architecture 401 of Figure 18, except that network architecture 402 of Figure 19 does not include the service usage feed from carrier gateway/home agent 152, and service usage reconciliation function 158 relies solely on a device service usage feed from device 110 usage monitors 119 and secure enterprise mobile services gateway/server 172 mobile service usage monitor 179. In some embodiments, service usage reconciliation function 158 and enterprise service usage accounting server 159 are under the control of the enterprise or the carrier. For example, an enterprise entity can establish enterprise service and consumer service usage allocation accounting without the need to tie into the carrier network for usage feeds and usage accounting. Using various techniques described herein, an enterprise service usage credit can be determined, and the determined enterprise service usage credit can be reimbursed to the device user.

Enterprise Managed Billing Allocation With Device Mobile Enterprise Services Application Environment and Mobile Services Gateway Server With Service Usage Monitoring On Device

[00124] **Figure 20** illustrates a functional diagram of another network architecture 403 for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Network architecture 403 of Figure 20 is similar to network architecture 402 of Figure 19, except that in network architecture 403 of Figure 20, service usage reconciliation function 158 receives feeds from device 110 service usage monitors 119 and there is no feed from the secure enterprise mobile services gateway server.

Enterprise Usage Credit With Device Mobile Enterprise Services Application Environment and Mobile Services Gateway Server With Service Usage Monitoring On Device And In Enterprise Mobile Services Gateway Server

[00125] **Figure 21** illustrates a functional diagram of another network architecture 404 for providing enterprise and consumer billing allocation for wireless communication device service

usage activities in accordance with some embodiments. Network architecture 404 of Figure 21 is similar to network architecture 402 of Figure 19, except that in network architecture 404 of Figure 21, there is no service usage monitor function 119 in user services application environment 122 providing service usage reports/information to service usage reconciliation function 158, and enterprise usage accounting server 159 only generates enterprise usage records 156.

Enterprise Usage Credit With Device Mobile Enterprise Services Application Environment and Mobile Services Gateway Server With Usage Monitoring On Device

[00126] **Figure 22** illustrates a functional diagram of another network architecture 405 for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Network architecture 405 of Figure 22 is similar to network architecture 404 of Figure 21, except that network architecture 405 of Figure 22 does not include mobile server usage monitor 179 providing enterprise service usage reports/information to service usage reconciliation function 158.

Device Configurations With Service Usage Monitoring and Reporting

[00127] In some embodiments, secure enterprise mobile services application 125 and network stack 121 can be implemented in access modem 129, as described below with respect to Figures 23 through 26.

[00128] **Figure 23** illustrates a functional diagram of a secure device application architecture with device-based service usage monitoring (and in some embodiments, access control) for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Figure 23 is similar to Figure 13 except that in Figure 23 usage monitor 119 is provided as shown, and secure enterprise mobile services application 125 and network stack 121 can be implemented in access modem 129 as also shown.

[00129] **Figure 24** illustrates a functional diagram of a secure device virtual machine architecture with device-based service usage monitoring (and in some embodiments, access control) for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Figure 24 is similar to

Figure 14 except that in Figure 24, usage monitor 119 is provided as shown, and secure enterprise mobile services application 125 and virtual machine OS network stack 116 can be implemented in access modem 129 as also shown.

[00130] **Figure 25** illustrates a functional diagram of a secure device hardware execution partition architecture with device-based service usage monitoring (and in some embodiments access control) for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Figure 25 is similar to Figure 15 except that in Figure 25 usage monitor 119 is provided as shown, and secure enterprise mobile services application 125 and virtual machine OS network stack 116 can be implemented in access modem 129 as also shown.

[00131] **Figure 26** illustrates a functional diagram of a secure device service processor architecture with device based service usage monitoring (and in some embodiments, access control) for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. Figure 263 is similar to Figure 16 except that in Figure 26 usage monitor 119 is provided as shown, and secure enterprise mobile services application 125, service processor framework 139, and service processor kernel program 138, can be implemented in the access modem 129 as also shown.

[00132] In some embodiments, service processor framework program 139 (or service processor kernel program 138) interacts with network stack framework components 137 or network stack kernel components 135 to inspect traffic for service usage classification and service policy enforcement (e.g., access control policy enforcement, traffic control policy enforcement, service usage accounting, charging policy enforcement, or service notification policy enforcement) purposes. In some embodiments, one or more of network stack framework components 137 and network stack kernel components 135 provides classification information on one or more traffic flows to service processor framework program 139 (or service processor kernel program 138). In some embodiments, service processor framework program 139 (or service processor kernel program 138) seeks to match the classification information to one or more classification parameters contained in the service policy definitions in order to determine the service policy enforcement actions that may be required for a traffic flow. In some embodiments, a traffic flow

is a flow of data packets. In some embodiments, a traffic flow is a flow of one or more data packets that are associated with a device application, the association of a traffic flow to a device application being identified by network stack framework components 137 or network stack kernel components 135 or service processor framework program 139 (or service processor kernel program 138). In some embodiments, the service usage classification determines that the traffic flow is associated with a combination of one or more of: a device application, a network destination, a traffic type, a content type, a QoS level, a roaming network, a home network.

[00133] In some embodiments, the association of traffic flow to a specific device application is used to determine a service policy enforcement action that is dependent on the specific device application. In some embodiments, a specific device application identifier (e.g., an application name, application signature, application hash or application certificate) forms an application credential that is used to index a service policy enforcement action that is intended to be implemented following a service usage activity or attempted service usage activity by the specific device application. In some embodiments, a specific device application is verified as consistent with an application credential in order to ensure that an application service policy enforcement action intended to be applied to the specific device application is applied to the correct application. In some embodiments, the verification that a specific application is consistent with an application credential associated with a service policy enforcement action is performed in service processor framework program 139 (or service processor kernel program 138) to ensure that ensure that an application service policy enforcement action intended to be applied to the specific device application is applied to the correct application. In some embodiments, the verification that a specific application is consistent with an application credential associated with a service policy enforcement action is performed in network stack framework components 137 or network stack kernel components 135, and service processor framework program 139 (or service processor kernel program 138) ascertains the application credential verification to ensure that ensure that an application service policy enforcement action intended to be applied to the specific device application is applied to the correct application.

[00134] In some embodiments, the association of traffic flow to a specific device application is used to determine a service policy enforcement action that is dependent on the specific device application, and service processor framework program 139 (or service processor kernel program

138) instructs network stack framework components 137 or network stack kernel components 135 to implement the service policy enforcement action on the traffic flow associated with the specific device application. In some embodiments, the association of traffic flow to a specific device application is used to determine a service policy enforcement action that is dependent on the specific device application, and service processor framework program 139 (or service processor kernel program 138) implements the service policy enforcement action. In some embodiments, a traffic flow is buffered pending classification (e.g., buffered in one or more of network stack framework components 137, network stack kernel components 135, service processor framework program 139, or service processor kernel program 138). In some embodiments, upon classification of the traffic flow (e.g., determination of an association of the traffic flow to a specific device application), a service policy enforcement action that is dependent on the specific device application is determined by service processor framework program 139 (or service processor kernel program 138) and implemented in one or more of network stack framework components 137, network stack kernel components 135, service processor framework program 139, and service processor kernel program 138. In some embodiments, the service policy enforcement action for the traffic flow is implemented in service processor framework program 139 (or service processor kernel program 138). In some embodiments, service processor framework program 139 (or service processor kernel program 138) instructs a device UI program that displays a device service notification (e.g., a service usage notification, a service plan offer notification, or an indication of a service usage event or attempted service usage event that requires a user notification) to implement the service policy enforcement action for the traffic flow. In some embodiments, service processor framework program 139 (or service processor kernel program 138) instructs a service usage monitor (e.g., accounting traffic to bulk classification or a more detailed classification of service usage) to implement the service policy enforcement action for the traffic flow.

[00135] In some embodiments, the network destination of a traffic flow is used to determine if a service policy enforcement action that is dependent on a specific network destination should be applied to the traffic flow. In some embodiments, a traffic flow is inspected by network stack framework components 137 or network stack kernel components 135, and one or more traffic characteristics (e.g., an address, a socket/flow tuple, a layer-7 packet information, or a packet header string) are passed to service processor framework program 139 (or service processor

kernel program 138), wherein the one or more traffic characteristics are matched against one or more classification parameters contained in a service policy definition, and if a match is present then a service policy enforcement action is implemented for the traffic flow. In some embodiments, a traffic flow is inspected by service processor framework program 139 (or service processor kernel program 138), and one or more traffic characteristics (e.g., an address, a socket/flow tuple, a layer-7 packet information, or a packet header string) are matched against one or more classification parameters contained in a service policy definition, and if a match is present then a service policy enforcement action is implemented for the traffic flow. In some embodiments, the service policy enforcement action for the traffic flow is implemented in service processor framework program 139 (or service processor kernel program 138). In some embodiments, service processor framework program 139 (or service processor kernel program 138) instructs network stack framework components 137 or network stack kernel components 135 to implement the service policy enforcement action for the traffic flow. In some embodiments, the service policy enforcement action for the traffic flow is implemented by a device UI program that displays a device service notification (e.g., a service usage notification, a service plan offer notification, or an indication of a service usage event or attempted service usage event that requires a user notification). In some embodiments, the service policy enforcement action for the traffic flow is implemented by a service usage monitor (e.g., accounting traffic to bulk classification or a more detailed classification of service usage).

[00136] In some embodiments, an enterprise manger can define or select service plan policies that confine enterprise-sponsored access services to a pre-defined list of device applications. For example, an enterprise manager might choose to define or select a service plan wherein only corporate applications may be accessed (e.g., email, contacts, intranet services, text, and/or voice). In such embodiments, enterprise service design user interface 196 may be used by the enterprise manager to define or select the allowable applications that are to have access. In some embodiments, an enterprise access manager may define or select a different set of applications to be accessible when device 110 is roaming than when device 110 is on a home network or on a WiFi network. In some embodiments, an enterprise manager may define or select a set of applications that are to be not allowed access when a device is on a certain network (e.g., a roaming network). For example, many modern smart phone, tablet, and laptop operating systems have background services that have the potential to incur large roaming charges during

roaming conditions (e.g., Google Android "gallery" functions that share device data with the Google network, Microsoft "system" functions that do the same, software update programs, etc.). In such cases, enterprise service design center 194 may be used to specify the device applications that are not allowed to access the network during certain network conditions.

[00137] In some embodiments, the identification and network access control for a device application is performed with a device software program or agent (e.g., service processor framework program 139 or service processor kernel program 138), and enterprise service design center 194 programs the device agent with the application identification parameters and associated access policies. In some embodiments, the device agent identifies the application using an application name, certificate, signature, or hash for an application running on the device and a policy instruction stored on the device.

[00138] In some embodiments, the identification and network access control for a device application is performed with one or more network access policy enforcement elements (e.g., carrier gateway/home agent 152, carrier usage accounting server 154, enterprise firewall/security gateway 171), and enterprise service design center 194 causes the one or more network access policy enforcement elements to be provisioned with the application identification parameters and associated access policies. In some embodiments, the one or more network access policy enforcement elements identify an application by observing the traffic headers inserted by the application. In some embodiments, the one or more network access policy enforcement elements identify an application by observing the network destinations or destination patterns accessed by the application. In some embodiments, the one or more network access policy enforcement elements identify an application by routing or tunneling the application traffic to one or more network gateways or servers associated with the application (e.g., APN routes, dedicated application addressing, or a device agent that steers the application traffic to a server). In some embodiments, the device assists in this routing or tunneling with a device agent that is programmed to route or re-direct the traffic for an application.

[00139] In some embodiments, an enterprise manger can define or select service plan policies that confine enterprise-sponsored access services to a pre-defined list of network destinations, servers, or resources. For example, an enterprise manager might choose to define or select a

service plan wherein only corporate network destinations may be accessed (e.g., email server, contacts server, intranet servers, text service servers, and VOIP servers). In some embodiments, enterprise service design center interface 196 may be used by an enterprise manager to define or select the allowable network destinations that device 110 may access. In some embodiments, the enterprise access manager may define or select a different set of network destinations when device 110 is roaming than when device 110 is on a home network or on a WiFi network. In some embodiments, an enterprise manager may define or select a set of network destinations that device 110 cannot access when device 110 is on a certain network (e.g., a roaming network). For example, many websites and enterprise services exhibit network access service usage behavior that can incur large roaming charges during roaming conditions (e.g., software update websites or servers, contact database synchronization websites, email download synchronization websites, video conference websites, etc.). In such cases, enterprise service design center 194 may be used to specify the device applications, services, and/or websites that are not to be accessed or used during certain network connection conditions.

[00140] In some embodiments, a device agent identifies the network destination and applies the appropriate access policy by comparing traffic characteristics with pre-defined characteristics in the access policy instructions provisioned on device 110, and then applies the corresponding traffic control rule, and enterprise service design center 194 performs the provisioning of the device agent. In some embodiments, the identification and network access control for a network destination is performed with one or more network access policy enforcement elements (e.g., carrier gateway/home agent 152, carrier usage accounting server 154, enterprise firewall/security gateway 171) and enterprise service design center 194 performs the provisioning of the one or more network elements.

[00141] In some embodiments, enterprise service design center 194 is configured to receive or accept a specification for an access network service usage limit (e.g., a service amount in minutes, bytes, or cost) for a service usage activity (such as a data service, a voice service, a text service, a roaming service, or a more detailed classification of data service such as one or more websites or one or more device applications), and the service usage limit is applied to one or more devices 110 or device groups (or users or user groups) managed by enterprise service design center 194. In some embodiments, enterprise service design center 194 is further

configured to receive service usage records for device 110, which is managed by enterprise service design center 194, from a device-based element that monitors and reports device 110 service usage (e.g., one or more device usage monitors 119, device service processor framework program 139, or service processor kernel program 138, network stack 134, or access modem 151), and when the usage limit is reached a service usage notification message is generated. In some embodiments, enterprise service design center 194 is configured to deliver the service usage notification message to enterprise service design center UI 196. In some embodiments, enterprise service design center 194 is configured to deliver the service usage notification message to a device 110 software application (e.g., service processor framework program 139 or user data app 111) for presentation to the device user via a user interface.

[00142] In some embodiments, enterprise service design center 194 is configured to receive or accept a specification for an access network service usage limit (e.g., a service amount in minutes, bytes, or cost) for a service usage activity (such as a data service, a voice service, a text service, a roaming service, or a more detailed classification of data service such as one or more websites or one or more device applications), and the service usage limit is applied to one or more devices 110 or device groups (or users or user groups) managed by enterprise service design center 194. In some embodiments, enterprise service design center 194 is further configured to receive service usage records for device 110, which is managed by the enterprise service design center 194, from a device-based element configured to monitor and report device 110 service usage (e.g., one or more device usage monitors 119, device service processor framework program 139 or service processor kernel program 138, network stack 134, or access modem 151), and when the usage limit is reached a restriction or limitation on further usage is applied by the service design center by provisioning one or more network elements responsible for enforcing network access policy (e.g., carrier gateway/home agent 152, carrier usage accounting server 154, enterprise firewall/security gateway 171). In some embodiments, enterprise service design center 194 is configured to send the user a notification message or a message to contact an enterprise manager.

[00143] In some embodiments, secure network interface 128 on device 110 is configured with a VPN device client function to securely communicate between one or more approved enterprise applications (e.g., enterprise data app 124, enterprise voice app 126, secure enterprise mobile

services app 125) and a counterpart VPN function that secures access to enterprise network 170 (e.g., enterprise firewall/security gateway 171 or server secure network interface 127). In some embodiments, a device software application or agent (e.g., service processor framework program 139 or service processor kernel program 138, secure network interface 128, secure hardware partition manager 108) is configured to identify network access activity associated with individual applications and allow network access to one or more approved enterprise applications when a VPN device client function is in operation, or not allow network access to one or more approved enterprise applications when a VPN device client function is not in operation. In some embodiments, service design center 190 or enterprise service design center 194 is configured to provision a device 110 software application or agent (e.g., service processor framework program 139 or service processor kernel program 138, secure network interface 128, secure hardware partition manager 108) with application access policy rules to identify network access activity associated with individual applications and allow network access to one or more approved enterprise applications when a VPN device client function is in operation, or not allow network access to one or more approved enterprise applications when a VPN device client function is not in operation. In this manner, enterprise applications that might be subject to spoofing by network elements, websites, servers, or programs operating outside the secure enterprise environment are not placed in communication with such network elements.

[00144] In some embodiments, a device software application or agent (e.g., service processor framework program 139 or service processor kernel program 138, secure network interface 128, secure hardware partition manager 108) is configured to identify network access activity associated with individual applications and not allow network access to one or more non-approved applications when a VPN device client function is in operation, or allow network access to one or more non-approved applications when a VPN device client function is not in operation. In some embodiments, service design center 190 or enterprise service design center 194 is configured to provision a device 110 software application or agent (e.g., service processor framework program 139 or service processor kernel program 138, secure network interface 128, secure hardware partition manager 108) with application access policy rules to identify network access activity associated with individual applications and not allow network access to one or more non-approved applications when a VPN device client function is in operation, or allow network access to one or more enterprise applications when a VPN device client function is not

in operation. In this manner, applications that might maliciously access enterprise network resources when the VPN is running are not permitted to do so.

[00145] In some embodiments, the application access policy rules are enforced by allowing or not allowing an application to access the network. In some embodiments, the application access policy rules are enforced by allowing or not allowing the application to run. In some embodiments, the identification of approved enterprise applications associated with traffic flows is confirmed or secured by identifying the application certificate and comparing it to an application signature or hash on the device. In some embodiments, the identity of an approved enterprise application is confirmed by inspecting an application certificate, signature or hash that is provided by service design center 190 or enterprise service design center 194.

[00146] In some embodiments, secure network interface 128 is configured with a split-tunnel VPN device client function, wherein an enterprise side of the split tunnel is configured to securely communicate between one or more enterprise applications (e.g., enterprise data app 124, enterprise voice app 126, secure enterprise mobile services app 125) and a counterpart VPN function that secures access to the enterprise network 170 (e.g., enterprise firewall/security gateway 171 or server secure network interface 127), and a consumer side of the split tunnel is configured to communicate without encryption for access network services provided to consumer applications on the device. In some embodiments, a device software application or agent (e.g. service processor framework program 139 or service processor kernel program 138, secure network interface 128, secure hardware partition manager 108) is configured to identify network access activity associated with individual applications and route or direct traffic associated with one or more enterprise applications to the enterprise side of the split VPN tunnel, and route or direct traffic associated with one or more consumer applications to the consumer side of the VPN tunnel. In some embodiments, service design center 190 or enterprise service design center 194 is configured to provision a device 110 software application or agent (e.g., service processor framework program 139 or service processor kernel program 138, secure network interface 128, secure hardware partition manager 108) with application access policy rules to identify network access activity associated with individual applications and specify which applications are to be routed or directed to the enterprise side of the VPN tunnel and which applications are to be routed or directed to the consumer side of the VPN tunnel. In some

embodiments, the identification of applications associated with traffic flows is secured by identifying the application certificate and comparing it to an application signature or hash on the device. In some embodiments, the application certificate, signature or hash is provided by service design center 190 or enterprise service design center 194.

[00147] In some embodiments, the policy rules only enable secure applications on device 110 to access enterprise data. In some embodiments, an enterprise manager sets policy rules that do not allow secure applications on device 110 to upload data to unsecure destinations.

[00148] In some embodiments, service design center 190 is configured to provide enterprise service design center 194. In some embodiments, enterprise service design center 194 comprises a policy management system configured to select a set of access network policies to be enforced for one or more device groups (or user groups) where the set of access network policies consists of a subset of the full set of access network policies capable of being enforced by the access network policy enforcement elements. In some embodiments, the subset of the full set of policies capable of being enforced by the access network policy enforcement elements comprises a pre-defined subset of the policy configuration capabilities. In some embodiments, the enterprise service design center policy management subset limitations for enterprise service design center 194 provide the ability to define and manage one or more of the policies that define a service policy set or service plan that is applied to a given device, user, device group or user group. In some embodiments, the enterprise service design center policy management subset limitations for enterprise service design center 194 can provide the ability to enroll a device, user, device group or user group in a set limited to one or more pre-defined service policy configurations or service plans.

[00149] As an example embodiment, the enterprise service design center policy management subset limitations for enterprise service design center 194 may provide the following policy definition and management capabilities for a device (or user) or device group (or user group): specify service usage limits (caps) for bulk access service or for a specific classification of access service activities, require all traffic or certain traffic associated with enterprise-critical applications or content to be communicated via an enterprise VPN, define controls for which applications that can access the network or certain defined destinations on the network, specify

network destinations that are allowed or not allowed, specify roaming service limitations, specify WiFi networks that are allowed or not allowed, specify security settings in the device access control or I/O access control ports, specify service usage notification triggers and notification content associated with the triggers (e.g., warnings when a specified service usage activity occurs, access is not allowed for a given attempted service usage activity, or service usage reaches a limit), and other such examples that are allowed to be managed under the policy management subset limitations. In some embodiments, the charging rates for such services may not be allowed to be managed under the policy management subset limitations.

[00150] In some embodiments, enterprise service design center 194 has an allowable subset of the full set of policies capable of being enforced by the access network policy enforcement elements that comprises a pre-defined set of one or more access network policy configurations (e.g., service plans). As an example embodiment, the set of pre-configured service plans may be defined for a certain implementation of enterprise service design center 194 comprising multiple pre-defined service plans, each of which provides variations in one or more of service notification policy, access control policy, service classification policy, service QoS policy, or service charging policy.

[00151] In some embodiments, enterprise service design center 194 is configured to allow a service design administrator to select one or more pre-configured access network policy configurations (or service plans) to be applied to a device, a user, a device group or a user group.

[00152] In some embodiments, enterprise service design center 194 comprises a device enrollment management system configured to enroll a device credential into a device group (or a user credential into a user group), where the set of device credentials (or user credentials) that enterprise service design center 194 is capable of managing is a subset of the device credentials (or user credentials) allowed on the access network. In some embodiments, the subset of device credentials (or user credentials) that are subject to management by enterprise service design center 194 is defined using service design center 190.

[00153] As an example embodiment, the set of pre-defined service plans that are made available to a first enterprise service design center 194 implementation managed by a first enterprise entity might consist of three service plans, wherein the first service plan comprises

network policies (e.g., access policies, charging policies, or notification policies) that provide for limited or restricted home network access service but do not provide for roaming access services, the second service plan comprises network policies that provide for unlimited or unrestricted home network access service and also provide for limited roaming access services, and the third service plan comprises network policies that provide for unlimited or unrestricted home network access service and also provide for unlimited or unrestricted roaming access services. In another example embodiment, on the same carrier access network as the previous example, a second enterprise service design center 194 implementation managed by a second enterprise entity might consist of two service plans, wherein the two service plans might be the same as two of the service plans from the previous example embodiment, or they might be completely different.

[00154] Given these examples, it will now be understood and appreciated by one of ordinary skill in the art that enterprise service design center 194 provides a convenient means of designing and distributing custom service plans to different enterprise entities that meet the needs of each enterprise entity, wherein the various policy definition capabilities disclosed herein can be used in a large number of combinations to create the service plans, with the number of combinations of service plan design capabilities being too numerous to list here. It will also now be understood and appreciated by one of ordinary skill in the art that each enterprise can effectively manage its devices (or users) and device groups (or user groups) to provide the appropriate level of policy control needed by the enterprise in a simplified manner, without the need to manage all the full policy capabilities of the access network.

[00155] For example, the embodiments of service design center 190 and enterprise service design center 194 disclosed herein support a carrier network business process wherein a carrier network manager utilizes service design center 190 to create a set of access network policies that consist of a subset of the full set of access network policies capable of being enforced by the access network policy enforcement elements (referred to as specialized enterprise service plans), and the specialized enterprise service plans are designed and offered to meet the special needs of one or more enterprise entities. In some embodiments, an enterprise manager uses enterprise service design center 194 to apply the one or more specialized enterprise service plans to one or more devices (or users) or device groups (or user groups) that belong to the enterprise entity's mobile device inventory (or employee list). The different needs of various employee groups (or

device types) can be among the factors that determine which service plan is assigned to a given user group (or device group). The specific needs of an employee can assist in determining which user group (or device group) the employee should be assigned to. The carrier manager can also create other specialized enterprise service plans for other enterprise entities to meet varied needs among enterprise market customers.

[00156] In some embodiments, an enterprise manager controls access network usage, costs, and access limits for an employee user group (e.g., a group of devices that could be as small as a single device or as large as all devices under the enterprise manager's control). In some embodiments, the enterprise manager establishes at least two user groups and establishes and manages different network-access policies for different employee user groups. For example, the enterprise manager may set and manage different policies for data usage on WiFi, 3G, 4G, or other networks for different employee user groups. Likewise, the enterprise manager may set different roaming privileges for different employee user groups.

[00157] In some embodiments, an enterprise manager sets expenditure ceilings by limiting allowed data usage for secure business applications to enforce security rules. In some embodiments, an enterprise manager tracks enterprise data access to improve compliance records. For example, the enterprise manager can track enterprise data usage by employee, device, application, location, network, or time of day.

[00158]

Process Flows For Providing Enterprise And Consumer Billing Allocation For Wireless Communication Device Service Usage Activities

[00159] **Figure 27 i**llustrates a flow diagram for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. At 402, the process begins. At 404, a service usage activity of a wireless communication device (e.g., application based service usage that uses a wireless network in which the wireless communication device has an associated service plan) is performed. In some embodiments, the monitoring is performed on the wireless communication device. In some embodiments, the monitoring is performed by a network element, such as a secure application

server for monitoring enterprise applications, as described herein with respect to various embodiments. At 406, an enterprise/consumer allocation is determined. In some embodiments, the monitored service usage activity is reported to a network element that determines the enterprise/consumer allocation based on the associated service plan that includes a defined enterprise/consumer allocation based on various factors, such as can be performed by a carrier billing server as described herein with respect to various embodiments. At 408, an associated consumer account is billed for the consumer service usage. At 410, the consumer account is credited for the enterprise service usage. At 412, the process is completed.

[00160] **Figure 28** illustrates another flow diagram for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. At 502, the process begins. At 504, a service usage activity of a wireless communication device (e.g., application based service usage that uses a wireless network in which the wireless communication device has an associated service plan) is performed. At 506, an enterprise/consumer allocation is determined. At 508, an associated enterprise account is billed for the enterprise service usage. At 510, the enterprise account is credited for the consumer service usage. At 512, the process is completed.

[00161] **Figure 29** illustrates another flow diagram for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. At 602, the process begins. At 604, a service usage activity of a wireless communication device (e.g., application based service usage that uses a wireless network in which the wireless communication device has an associated service plan) is performed. At 606, an enterprise/consumer allocation is determined. At 608, the enterprise service usage is reported. At 610, an expense reimbursement for the enterprise service usage is generated (e.g., by the enterprise for the consumer, who is, for example, an employee of the enterprise). At 612, the process is completed.

[00162] **Figure 30** illustrates another flow diagram for providing enterprise and consumer billing allocation for wireless communication device service usage activities in accordance with some embodiments. At 702, the process begins. At 704, a service usage activity of a wireless communication device (e.g., application based service usage that uses a wireless network in

which the wireless communication device has an associated service plan) is performed. At 706, the monitored service usage is reported. At 708, an enterprise/consumer allocation is determined. At 710, a bill/charge based on the enterprise/consumer allocation is generated. At 712, the process is completed.

[00163] Although the foregoing embodiments have been described in some detail for purposes of clarity of understanding, the invention is not limited to the details provided. There are many alternative ways of implementing the invention. The disclosed embodiments are illustrative and not restrictive. In particular, many of the embodiments are not limited to supporting an enterprise/consumer split. As would be appreciated by one of ordinary skill in the art, the disclosed embodiments may be applied, for example, when a sponsor entity subsidizes a cost associated with an end-user device's use of a sponsored (or ambient) data service or application, and the user pays for the end-user device's use of non-sponsored (or non-ambient) data services or applications. The sponsor entity may use enterprise service design center 194 to configure devices that may use the sponsored service, policies applicable to the sponsored service, etc. Moreover, the disclosed embodiments may be applied when a first sponsor subsidizes a cost associated with an end-user device's use of a first sponsored data service or application, a second sponsor subsidizes a cost associated with the end-user device's use of a second sponsored data service or application, and the user pays for the end-user device's use of non-sponsored data services or applications. The sponsor entities may use one or more enterprise service design centers to configure aspects of the sponsored services. As would be appreciated by one of ordinary skill in the art, there are many other environments in which the disclosed embodiments are useful or applicable.

[00164] Several advantageous combination embodiments are now disclosed for allocating enterprise service usage accounting and personal service usage accounting. These combinations are for example purposes, are not meant to be exhaustive or limiting in any way; as will be apparent to one of ordinary skill in the art, these combinations represent only a fraction of the embodiments provided herein.

[00165] In some embodiments, a network system for classifying the accounting of access network service usage for an end user device comprises (i) a first service design center

configured to receive an accounting split classification policy defining the classification rules for dividing an overall access network service usage into an enterprise service usage allocation and a personal service usage allocation, (ii) a network provisioning instruction translator configured to receive the accounting split classification policy and translate it to a set of network service usage classification and reporting instructions for one or more network elements responsible for classifying service usage, (iii) a network provisioning system for communicating the set of network service usage classification and reporting instructions to the one or more network elements responsible for classifying service usage, (iv) the one or more network elements responsible for classifying service usage configured to classify service usage to determine the enterprise service usage allocation and the personal service usage allocation, and generate service usage reports, and (v) a service usage accounting system that receives the service usage reports and (a) accrues the enterprise service usage allocation, and (b) accrues the personal service usage allocation.

[00166] In some embodiments, the network system for classifying the accounting of access network service usage for an end user device can be augmented wherein the first network access notification message policy is associated with a first device group defined by a first list of device credentials or a first user group defined by a first list of user credentials, and the service design center is further configured to obtain a second network access notification message policy comprising a plurality of second network access trigger conditions and, for each of the plurality of second network access trigger conditions, an associated second network access notification message, the second network access notification message policy associated with a second device group defined by a second list of device credentials or a second user group defined by a second list of user credentials.

[00167] In some embodiments, the network system for classifying the accounting of access network service usage for an end user device further comprises a master service design center configured to define a first notification policy design capability set for the first service design center, the first notification policy design capability set comprising a first subset of a master policy capability set. This embodiment can be further augmented wherein the master service design center is further configured to define a second notification policy design capability set for a second service design center, the second notification policy design capability set comprising a

second subset of the master policy capability set, the second subset of the master policy capability set either identical to or different from the first subset of the master policy capability set.

[00168] In some embodiments, the network system for classifying the accounting of access network service usage for an end user device is further augmented wherein the first service design center is hosted on an operator network. In some embodiments, the network system for classifying the accounting of access network service usage for an end user device is optimized for smaller enterprise data center deployments wherein the first service design center is hosted on an enterprise business network.

[00169] In some embodiments, the network system for classifying the accounting of access network service usage for an end user device can be augmented wherein the enterprise service usage allocation comprises a classification of service usage that specifies one or more enterprise device software applications. In some embodiments, the enterprise applications can be one or more of email, calendar, contacts, enterprise intranet (e.g., a secure intranet browser with a secure SSL connection or other secure connection to enterprise services), mobile device synchronization or mobile enterprise communications.

[00170] In some embodiments, the network system for classifying the accounting of access network service usage for an end user device can be augmented wherein the enterprise service usage allocation comprises a classification of service usage that specifies one or more enterprise network destinations.

[00171] In some embodiments, the network system for classifying the accounting of access network service usage for an end user device can be augmented wherein the enterprise service usage allocation comprises a classification of service usage that specifies one or more enterprise network destinations and the one or more enterprise network destinations comprise an address or identifier for a secure enterprise gateway. In some embodiments, the enterprise gateway comprises a VPN server.

[00172] In some embodiments, the network system for classifying the accounting of access network service usage for an end user device can be augmented wherein the enterprise service

usage allocation comprises a classification of service usage that specifies one or more enterprise network destinations and the one or more enterprise network destinations comprise an address or identifier for one or more secure enterprise mobile services gateways or servers comprising one or more of an email server, a calendar server, a contacts server, an enterprise intranet access server, a mobile device synchronization services server or a mobile enterprise communication server.

[00173] In some embodiments, the network system for classifying the accounting of access network service usage for an end user device can be augmented wherein the one or more network elements responsible for classifying service usage and generating service usage reports comprises a service usage monitor located in a wireless operator network.

[00174] In some embodiments, the network system for classifying the accounting of access network service usage for an end user device can be augmented wherein the one or more network elements responsible for classifying service usage and generating service usage reports comprises a service usage monitor located in an enterprise access network.

[00175] In some embodiments, the network system for classifying the accounting of access network service usage for an end user device can be augmented wherein the one or more network elements responsible for classifying service usage and generating service usage reports comprises a service usage monitor located on a wireless device.

[00176] In some embodiments, the network system for classifying the accounting of access network service usage for an end user device can be augmented wherein the service usage accounting system is located in an enterprise network.

[00177] In some embodiments, the network system for classifying the accounting of access network service usage for an end user device can be augmented wherein the service usage accounting system is managed by an enterprise manager under the control of the entity that manages an enterprise business.

[00178] In some embodiments, the network system for classifying the accounting of access network service usage for an end user device can be augmented wherein the service usage accounting system is located in an operator network.

[00179] In some embodiments, the network system for classifying the accounting of access network service usage for an end user device can be augmented wherein the service usage accounting system is managed by an operator manager under the control of the entity that manages a network operator.

[00180] In some embodiments, the network system for classifying the accounting of access network service usage for an end user device can be augmented wherein the service usage accounting system is further configured to credit a user account with a service usage credit or monetary credit associated with the accrued enterprise service usage allocation.

[00181] In some embodiments, the network system for classifying the accounting of access network service usage for an end user device can be augmented wherein the service usage accounting system is further configured to debit a user account with a service usage debit or monetary cost associated with the accrued personal service usage allocation.

[00182] In some embodiments, the network system for classifying the accounting of access network service usage for an end user device can be augmented wherein the service usage accounting system is further configured to credit an enterprise account with a service usage credit or monetary credit associated with the accrued personal service usage allocation.

[00183] In some embodiments, the network system for classifying the accounting of access network service usage for an end user device can be augmented wherein the service usage accounting system is further configured to debit an enterprise account with a service usage debit or monetary cost associated with the accrued enterprise service usage allocation.

[00184] In some embodiments, the network system for classifying the accounting of access network service usage for an end user device can be augmented by further configuring the service design center to: (i) receive a personal service plan offer comprising one or more service plans for personal network access services accounted to the personal service usage allocation, (ii) configure a device user interface service plan offer notification message, (iii) communicate the device user interface service plan offer notification message to one or more device groups comprising a collection of devices identified by device credentials, (iv) receive a service plan selection option from an end user device user in response to the device user interface service plan

offer notification message, and (v) cause one or more network elements responsible for activating service plans to activate the service plan selection chosen by the end user device user.

[00185] In some embodiments the end-user device system in communication with the network system for classifying the accounting of access network service usage comprises: (i) a device software application environment comprising: (a) an enterprise application execution environment configured with: (1) an enterprise application execution memory and data memory to support secure execution of enterprise software applications, the enterprise software applications comprising applications approved to execute in the secure execution environment and to communicate with secure enterprise services, (2) a secure enterprise communication link configured to provide communication between the enterprise software applications and enterprise network services, the enterprise network services comprising enterprise network resources and servers, (b) a personal application execution environment configured with execution memory and data memory to support execution of personal software applications not approved to execute in the secure execution environment, (ii) a personal service plan selection user interface comprising a notification software agent configured to receive personal service plan offer from a network element and display the service plan offers, the personal service plan offer comprising one or more service plans for personal network access services accounted to a personal service usage allocation, and receive a service plan selection option from an end user device user and forward the service plan selection option to a network element.

[00186] In some embodiments, the end-user device system can be augmented wherein the secure enterprise communication link comprises a VPN client in communication with an enterprise VPN gateway.

[00187] In some embodiments, the end-user device system can be augmented wherein the enterprise network services comprise access to one or more secure enterprise mobile services gateways or servers comprising one or more of an email server, a calendar server, a contacts server, an enterprise intranet access server, a mobile device synchronization services server or a mobile enterprise communication server.

[00188] In some embodiments, the end-user device system can be augmented wherein the enterprise application execution environment is further configured to: (i) acquire a device

software application signature prior to allowing execution of the device software application in the virtual machine operating environment, (ii) compare the signature to an approved list of signatures, (iii) allow the application to execute if it is on the list, and (iv) not allow the application to execute if it is not on the list.

[00189] In some embodiments, the end-user device system can be augmented wherein enterprise application execution environment comprises a virtual machine operating environment.

[00190] In some embodiments, the end-user device system can be augmented wherein enterprise application execution environment comprises a secure CPU hardware execution partition.

[00191] In some embodiments, the end-user device system can be augmented wherein enterprise application execution environment comprises a secure operating system execution partition.

[00192] In some embodiments, the end-user device system can be augmented wherein enterprise application execution environment comprises a secure memory area protected by an enterprise application software program that encrypts the enterprise data stored on device memory and runs a secure encrypted communication protocol for communication with a secure mobile enterprise services gateway server.

[00193] Several advantageous combination embodiments are now disclosed for providing enterprise control of network access service to an end user device. These combinations are for example purposes, are not meant to be exhaustive or limiting in any way; as would be appreciated by one of ordinary skill in the art, these combinations represent only a fraction of the advantageous embodiment combinations provided herein.

[00194] In some embodiments, a network system for providing network access service control for an end user device comprising: (i) a first service design center configured to receive from an administrator user or a configuration file a first network access policy comprising a first set of network access service permissions associated with an end user device or end user device user, (ii) a network provisioning instruction translator configured to receive the first network access

policy and translate it to a set of network access policy enforcement instructions for one or more network elements responsible for controlling network access, (iii) a network provisioning system for communicating the set of network access policy enforcement instructions to the one or more network elements responsible for controlling network access, (iv) the one or more network elements responsible for controlling network access configured to execute the set of network access policy enforcement instructions to enforce network access service permissions and limits.

[00195] In some embodiments, the network system for providing network access service control can be augmented wherein the first network access policy is associated with a first device group defined by a first list of device credentials or a first user group defined by a first list of user credentials, and the service design center is further configured to obtain a second network access policy comprising a second set of network access service permissions and, the second network access policy associated with a second device group defined by a second list of device credentials or a second user group defined by a second list of user credentials.

[00196] In some embodiments, the network system for classifying the accounting of access network service usage for an end user device further comprises a master service design center configured to define a first network access policy design capability set for the first service design center, the first network access policy design capability set comprising a first subset of a master policy capability set. This embodiment can be further augmented wherein the master service design center is further configured to define a second network access policy design capability set for a second service design center, the second network access policy design capability set comprising a second subset of the master policy capability set, the second subset of the master policy capability set either identical to or different from the first subset of the master policy capability set.

[00197] In some embodiments, the network system for providing network access service control can be augmented wherein the first network access policy defines a set of one or more service usage limits or service cost limits.

[00198] In some embodiments, the network system for providing network access service control can be augmented wherein the first network access policy defines a set of one or more roaming network service usage limits or service cost limits.

[00199] In some embodiments, the network system for providing network access service control can be augmented wherein the first network access policy defines a set of one or more network type restrictions, wherein a network type comprises one or more of a cellular network, a 2G network, a 3G network, a 4G network, a WiFi network, a particular WiFi network APN, roaming cellular network, a particular cellular operator network.

[00200] In some embodiments, the network system for providing network access service control can be augmented wherein the first network access policy defines a set of one or more device application software network access restrictions.

[00201] In some embodiments, the network system for providing network access service control can be augmented wherein the first network access policy defines a set of one or more network destination access restrictions.

[00202] In some embodiments, the network system for providing network access service control can be augmented wherein the first network access policy defines a set of one or more enterprise network destination allowances or restrictions.

[00203] In some embodiments, the network system for providing network access service control can be augmented wherein the first network access policy defines a set of one or more enterprise network destination allowances or restrictions communicated over a secure VPN communication link.

[00204] In some embodiments, the network system for providing network access service control can be augmented wherein the first network access policy defines a set of one or more application or network destination allowances or restrictions communicated over a non-secure communication link.

[00205] In some embodiments, the network system for providing network access service control can be augmented wherein the first network access policy defines a set of one or more personal application or network destination allowances or restrictions.

[00206] In some embodiments, the network system for providing network access service control can be augmented wherein the first network access policy defines a set of one or more geographic location allowances or restrictions.

[00207] In some embodiments, the network system for providing network access service control can be augmented wherein the one or more network elements responsible for controlling network access comprises a service usage monitor located in a wireless operator network.

[00208] In some embodiments, the network system for providing network access service control can be augmented wherein the one or more network elements responsible for controlling network access comprises a service usage monitor located in an enterprise access network. In some embodiments, the one or more network elements responsible for controlling network access comprises a service usage monitor located in an enterprise access network comprise a VPN gateway wherein all device traffic is communicated from the device to the VPN gateway configured to control the device traffic. In some embodiments, the VPN gateway performs service usage classification to identify and control enterprise traffic. In some embodiments, the VPN gateway performs service usage classification to identify and control personal traffic.

[00209] In some embodiments, the network system for providing network access service control can be augmented wherein the one or more network elements responsible for controlling network access comprises a service usage monitor located on a wireless device.

INCORPORATION BY REFERENCE

[00210] The following U.S. applications are hereby incorporated by reference for all purposes: Application No. 13/248,028, filed September 28, 2011, entitled ENTERPRISE ACCESS CONTROL AND ACCOUNTING ALLOCATION FOR ACCESS NETWORKS; Application No. 12/380,780, entitled AUTOMATED DEVICE PROVISIONING AND ACTIVATION, filed March 2, 2009, now U.S. Patent No. 8,839,388 (issued September 16, 2014); Application No. 12/380,778, filed March 2, 2009, entitled VERIFIABLE DEVICE ASSISTED SERVICE USAGE BILLING WITH INTEGRATED ACCOUNTING, MEDIATION ACCOUNTING, AND MULTI-ACCOUNT, now U.S. Patent No. 8,321,526 (issued November 27, 2012); Provisional Application No. 61/206,354, entitled SERVICES

POLICY COMMUNICATION SYSTEM AND METHOD, filed January 28, 2009; Provisional Application No. 61/206,944, entitled SERVICES POLICY COMMUNICATION SYSTEM AND METHOD, filed February 4, 2009; Provisional Application No. 61/207,393, entitled SERVICES POLICY COMMUNICATION SYSTEM AND METHOD filed February 10, 2009; Provisional Application No. 61/207,739, entitled SERVICES POLICY COMMUNICATION SYSTEM AND METHOD filed February 13, 2009; and Provisional Application No. 61/387,243, entitled ENTERPRISE AND CONSUMER BILLING ALLOCATION FOR WIRELESS COMMUNICATION DEVICE SERVICE USAGE ACTIVITIES filed September 28, 2010.

CLAIMS

1. A network system for classifying an accounting of access network service usage by an end-user device, the network system comprising:

a first service design center configured to:

obtain a first accounting split classification policy defining classification rules for dividing an overall access network service usage into an enterprise service usage allocation and a personal service usage allocation;

a network provisioning instruction translator configured to:

receive the first accounting split classification policy from the first service design center, and

determine, based on the first accounting split classification policy, one or more network service usage classification and reporting instructions;

a network provisioning system configured to communicate the one or more network service usage classification and reporting instructions to one or more network elements responsible for classifying the service usage, the one or more network elements responsible for classifying the service usage configured to:

execute the one or more network service usage classification and reporting instructions to determine the enterprise service usage allocation and the personal service usage allocation, and

generate a service usage report; and

a service usage accounting system configured to receive the service usage report and, based on the usage report, accrue the enterprise service usage allocation and accrue the personal service usage allocation.

ABSTRACT OF THE DISCLOSURE

Enterprise and consumer billing allocation for wireless communication device service usage activities is provided. In some embodiments, enterprise and consumer billing allocation for wireless communication device service usage activities includes: monitoring a service usage activity of a wireless communication device, and determining an enterprise and consumer billing allocation for the monitored service usage activity; reporting the monitored service usage activity to a network element, in which the network element determines an enterprise and consumer billing allocation for the monitored service usage activity; or providing a service design center for configuring an enterprise and consumer billing allocation of monitored service usage activities for a plurality of wireless communication devices associated with an enterprise account, and implementing the configured enterprise and consumer billing allocation for monitored service usage activities for the plurality of wireless communication devices associated with the enterprise account.

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EFS ID:	21025885
Application Number:	14578124
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Confirmation Number:	1830
Title of Invention:	Enterprise Access Control And Accounting Allocation For Access Networks
First Named Inventor/Applicant Name:	Gregory G. Raleigh
Customer Number:	106963
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	P037D1ADS.pdf	1895383 c2e2ed7f6d975649cd9bf82d9d7d8f22c9967eb9	no	8
Warnings:					
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2	Drawings-only black and white line drawings	P037D1Drawings.pdf	374092 bdf7fe5aca6374664b2ca9cfff70323ed6e3d362	no	28
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3		P037D1Spec.pdf	403972 63204331165f9ab4cbd902d10b632a94ec4892ac	yes	75

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