



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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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
61/233,773	08/13/2009	Drew Houston	PA4908PRV

CONFIRMATION NO. 2598

POA ACCEPTANCE LETTER



758
FENWICK & WEST LLP
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041

Date Mailed: 08/11/2010

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 08/01/2010.

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.

/s/brahim/

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

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

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

I hereby appoint:



Practitioners associated with the Customer Number:

00758

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 assignment documents attached to this form in accordance with 37 CFR 3.73(b).

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



The address associated with Customer Number:

00758

OR

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

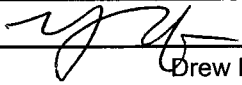
Assignee Name and Address:

Dropbox, Inc.
153 Kearny Street, Floor Mezzanine
San Francisco, CA 94108

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

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

Signature		Date	2-5-10
Name	Drew Houston	Telephone	617-697-6795
Title	Founder/CEO		

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

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

Electronic Acknowledgement Receipt

EFS ID:	8130018
Application Number:	61233773
International Application Number:	
Confirmation Number:	2598
Title of Invention:	Systems and Methods for File Synchronization
First Named Inventor/Applicant Name:	Drew Houston
Customer Number:	22830
Filer:	Daniel R. Brownstone
Filer Authorized By:	
Attorney Docket Number:	PA4908PRV
Receipt Date:	01-AUG-2010
Filing Date:	13-AUG-2009
Time Stamp:	04:28:17
Application Type:	Provisional

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Assignee showing of ownership per 37 CFR 3.73(b).	15916_US_373b.pdf	427221 e5a0aeb6d0c00724d6556abd7c551f521db4e385	no	2

Warnings:

Information:

Motion Offense Exhibit 2026

2	Power of Attorney	Dropbox__Inc__Executed_General_POA_Universal_Power_of_Attorney_2010-02-05.pdf	64089 2cd3f75a034f92b87e8369534445dc8bbc388b62	no	1
Warnings:					
Information:					
Total Files Size (in bytes):				491310	
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. <u>New Applications Under 35 U.S.C. 111</u> 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. <u>National Stage of an International Application under 35 U.S.C. 371</u> 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. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

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

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Drew Houston and Arash Ferdowsi

Application No./Patent No.: 61/233,773 Filed/Issue Date: August 13, 2009

Titled: Systems And Methods For File Synchronization

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

states that it is:

1. ☒ the assignee of the entire right, title, and interest in;
2. ☐ an assignee of less than the entire right, title, and interest in
(The extent (by percentage) of its ownership interest is _____ %); or
3. ☐ the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

the patent application/patent identified above, by virtue of either:

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

OR

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

1. From: Drew Houston and Arash Ferdowsi To: EvenFlow, Inc.

The document was recorded in the United States Patent and Trademark Office at
Reel 023227, Frame 0330, or for which a copy thereof is attached.

2. From: EvenFlow, Inc. To: Dropbox, Inc.

The document was recorded in the United States Patent and Trademark Office at
Reel 023994, Frame 0040, or for which a copy thereof is attached.

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

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

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

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

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

/Daniel R. Brownstone 46581/

Signature

2010-07-31

Date

Daniel R. Brownstone, Reg. No. 46,581

Printed or Typed Name

Attorney for Assignee

Title

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Motion Offense Exhibit 2026

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.



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MAILED

FEB 01 2010

OFFICE OF PETITIONS

**CARR & FERRELL LLP
2200 GENG ROAD
PALO ALTO CA 94303**

In re Application of
Drew Houston et al.
Application No. 61/233,773
Filed: August 13, 2009
Attorney Docket No. PA4908PRV

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:
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:

**DECISION ON PETITION
TO WITHDRAW
FROM RECORD**

This is a decision on the Request to Withdraw as attorney or agent of record under 37 C.F.R. § 1.36(b), filed November 23, 2009.

The request is **NOT APPROVED**.

A review of the file record indicates that Myrna M. Schelling and attorneys/agents associated with customer number 22830: (1) do not have power of attorney in this patent application; and (2) have been employed or otherwise engaged in the proceedings in this patent application. Accordingly, the request to withdraw under 37 C.F.R. § 1.36(b) is not applicable. Our records indicate that no power of attorney was filed in this application.

The request to change the correspondence address can not be accepted at this time because the change of address requested should be that of: (1) the first named inventor; or (2) an assignee of the entire interest under 37 C.F.R. 3.71, who has properly intervened. If an assignee has intervened in this application, then a Statement under 37 CFR 3.73(b) or a copy of the actual assignment must be submitted.

All future communications from the Office will continue to be forwarded to the address above until notified by the applicant.

Telephone inquires concerning this decision should be directed to Kimberly Inabinet at 571-272-4618.


Kimberly Inabinet
Petitions Examiner
Office of Petitions



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
61/233,773	08/13/2009	Drew Houston	PA4908PRV

22830
CARR & FERRELL LLP
2200 GENG ROAD
PALO ALTO, CA 94303

CONFIRMATION NO. 2598
IMPROPER CPOA LETTER



Date Mailed: 12/14/2009

NOTICE REGARDING POWER OF ATTORNEY

This is in response to the Power of Attorney filed 11/23/2009. The Power of Attorney in this application is not accepted for the reason(s) listed below:

- The Request for Withdrawal of Attorney or Agent does not properly identify the attorney(s)/agent(s) to be withdrawn.

/hgray/

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

CARR & FERRELL *LLP*
ATTORNEYS AT LAW

WRITER'S DIRECT DIAL NUMBER
(650) 812-3440
MSchelling@CarrFerrell.com

November 20, 2009

Fenwick & West LLP
c/o Veronica Doucet
Silicon Valley Center
801 California Street
Mountain View, CA 94041

Re: EvenFlow, Inc. File Transfer

U.S. Provisional Patent Application No. 61/233,787

Title: Systems and Methods for Sharing Data
Filed: August 13, 2009
Our Ref: PA4909PRV

Re: U.S. Provisional Patent Application No. 61/233,773

Title: Systems and Methods for File Synchronization
Filed: August 13, 2009
Our Ref: PA4908PRV

Re: Closed File

Title: User Interface
Our Ref: PA4976DISC

Dear Veronica:

Pursuant to Drew Houston's instructions of November 18, 2009, please find EvenFlow, Inc.'s entire patent portfolio as maintained by Carr & Ferrell *LLP* transferred herewith.

Please be advised that Carr & Ferrell *LLP* **will not perform further work** as it pertains to these matters. We are transferring the **original** files to you and **will not maintain any copies of the files**. It is our understanding you will be **solely responsible** for these matters as of **November 20, 2009**.

We suggest that you, or any successor attorney, also file the necessary documents to change the correspondence address for these matters. We will, of course, forward any correspondence that may be misdirected to us in the interim.

Fenwick & West LLP
Re: EvenFlow, Inc. File Transfer
November 20, 2009
Page 2 of 2

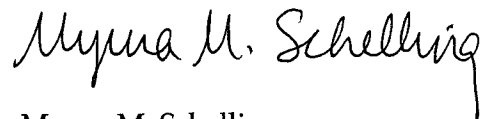
Below please find additional information regarding these transferred files, including references to any upcoming deadlines. These deadlines are provided merely as a courtesy; Carr & Ferrell *LLP* assumes no responsibility for the accuracy of these dates and strongly suggests that your firm performs its own audit of these files immediately upon receipt.

Our Reference No.	Application No.	Title	Comments and Action Items
PA4908PRV	61/233,773	Systems and Methods for File Synchronization	Utility and Foreign Filing Due August 13, 2010
PA4909PRV	61/233,787	Systems and Methods for Sharing Data	Utility and Foreign Filing Due August 13, 2010

We would greatly appreciate your acknowledgement of receipt of the above-referenced files. Please sign the copy of this letter where indicated and return it to us in the enclosed self-addressed stamped envelope.

Thank you for your attention to these matters. If you have any questions, please do not hesitate to contact us.

Sincerely,



Myrna M. Schelling

MMS:bmp

Encl: Two (2) Original Files
Closed File documents

cc: Drew Houston (without encl.)

Fenwick & West LLP acknowledges receipt of the above-mentioned enclosures.

By: _____ Dated: _____

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.

**REQUEST FOR WITHDRAWAL
AS ATTORNEY OR AGENT
AND CHANGE OF
CORRESPONDENCE ADDRESS**

Application Number	61233773
Filing Date	2009-08-13
First Named Inventor	Drew Houston
Art Unit	Unknown
Examiner Name	Unknown
Attorney Docket Number	PA4908PRV

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

Please withdraw me as attorney or agent for the above identified patent application, and

- ☐ all the practitioners of record;
- ☐ the practitioners (with registration numbers) of record listed on the attached paper(s); or
- ☒ the practitioners of record associated with Customer Number: 22830

NOTE: The immediately preceding box should only be marked when the practitioners were appointed using the listed Customer Number.

The reason(s) for this request are those described in 37 CFR :

- | | | | |
|---|---|--|--|
| ☐ 10.40(b)(1) | ☐ 10.40(b)(2) | ☐ 10.40(b)(3) | ☐ 10.40(b)(4) |
| ☐ 10.40(c)(1)(i) | ☐ 10.40(c)(1)(ii) | ☐ 10.40(c)(1)(iii) | ☐ 10.40(c)(1)(iv) |
| ☐ 10.40(c)(1)(v) | ☐ 10.40(c)(1)(vi) | ☐ 10.40(c)(2) | ☐ 10.40(c)(3) |
| ☐ 10.40(c)(4) | ☒ 10.40(c)(5) | ☐ 10.40(c)(6) Please explain below: | |

Certifications

Check each box below that is factually correct. WARNING: If a box is left unchecked, the request will likely not be approved.

- ☒ I/We have given reasonable notice to the client, prior to the expiration of the response period, that the practitioner(s) intend to withdraw from employment.
- ☒ I/We have delivered to the client or a duly authorized representative of the client all papers and property (including funds) to which the client is entitled.
- ☒ I/We have notified the client of any responses that may be due and the time frame within which the client must respond.

Please provide an explanation, if necessary:

[Page 1 of 2]

This collection of information is required by 37 CFR 1.36. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

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.

REQUEST FOR WITHDRAWAL AS ATTORNEY OR AGENT AND CHANGE OF CORRESPONDENCE ADDRESS

Complete the following section only when the correspondence address will change. *Changes of address will only be accepted to an inventor or an assignee that has properly made itself of record pursuant to 37 CFR 3.71.*

Change the correspondence address and direct all future correspondence to:

A. ☐ The address of the inventor or assignee associated with Customer Number: _____

OR

B. ☒ Inventor or Assignee name EvenFlow, Inc.

Address 153 Kearney Street, Floor Mezzanine

City San Francisco	State CA	Zip 94108	Country USA
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Telephone	415-986-7057	Email
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I am authorized to sign on behalf of myself and all withdrawing practitioners.

Signature	/Myrna M. Schelling/
-----------	----------------------

Name Myrna M. Schelling	Registration No. 54,426
-------------------------	-------------------------

Address 2200 Geng Road

City Palo Alto	State CA	Zip 94303	Country USA
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Date	November 23 2009	Telephone No. 650-812-3400
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NOTE: Withdrawal is effective when approved rather than when received.

[Page 2 of 2]

This collection of information is required by 37 CFR 1.36. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

Electronic Acknowledgement Receipt

EFS ID:	6499426
Application Number:	61233773
International Application Number:	
Confirmation Number:	2598
Title of Invention:	Systems and Methods for File Synchronization
First Named Inventor/Applicant Name:	Drew Houston
Customer Number:	22830
Filer:	Myrna Marca Schelling.
Filer Authorized By:	
Attorney Docket Number:	PA4908PRV
Receipt Date:	23-NOV-2009
Filing Date:	13-AUG-2009
Time Stamp:	13:53:39
Application Type:	Provisional

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Petition for review by the Office of Petitions.	File_Transfer_Letter.pdf	232143 1fe60c677ba0ed58b1b024b2a0df1df264e de145	no	2

Warnings:

Information:

Motion Offense Exhibit 2026

2	Petition for review by the Office of Petitions.	4908PRV_PTO_SB_83.pdf	72029 5dce856fadd2bd343171ca063cdef43be2af39	no	2
Warnings:					
Information:					
Total Files Size (in bytes):				304172	
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. <u>New Applications Under 35 U.S.C. 111</u> 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. <u>National Stage of an International Application under 35 U.S.C. 371</u> 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. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY,DOCKET,NO	TOT CLAIMS	IND CLAIMS
61/233,773	08/13/2009		110	PA4908PRV		

CONFIRMATION NO. 2598

22830
CARR & FERRELL LLP
2200 GENG ROAD
PALO ALTO, CA 94303

FILING RECEIPT



OC000000037532550

Date Mailed: 08/31/2009

Receipt is acknowledged of this provisional patent application. It will not be examined for patentability and will become abandoned not later than twelve months after its filing date. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Drew Houston, San Francisco, CA;
Arash Ferdowsi, San Francisco, CA;

Power of Attorney:

Myrna Schelling--54426

If Required, Foreign Filing License Granted: 08/26/2009

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 61/233,773**

Projected Publication Date: None, application is not eligible for pre-grant publication

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

Systems and Methods for File Synchronization

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

Systems and Methods for File Synchronization

Attorney Docket Number (if applicable)

PA4908PRV

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Direct all correspondence to (select one):

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Customer Number

22830

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☒ No.☐ Yes, the name of the U.S. Government agency and the Government contract number are:

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Applicant claims small entity status under 37 CFR 1.27

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First Name	Myrna M.	Last Name	Schelling	Registration Number (If appropriate)	54426

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Example: New file on client

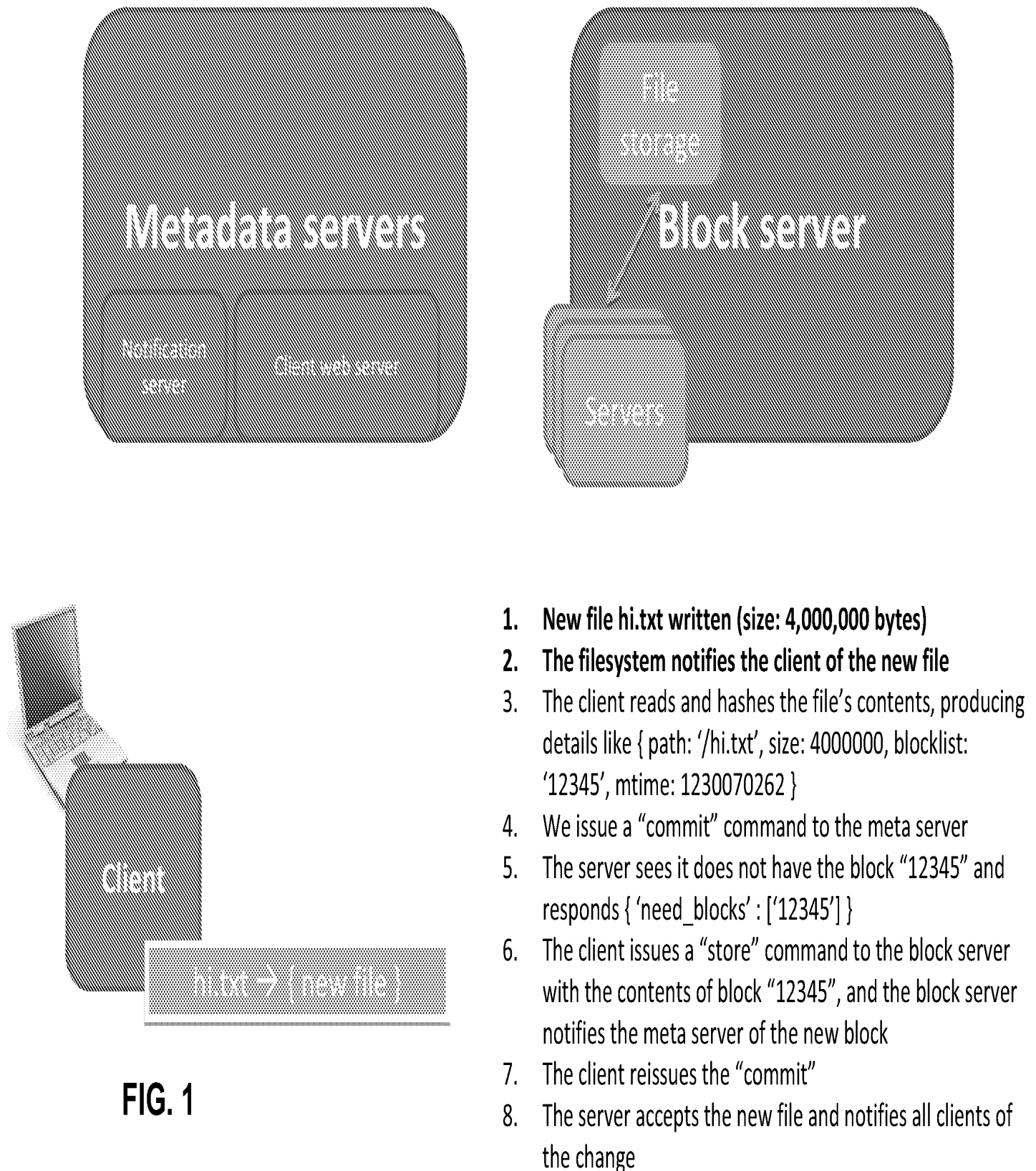


FIG. 1

Example: New file on client

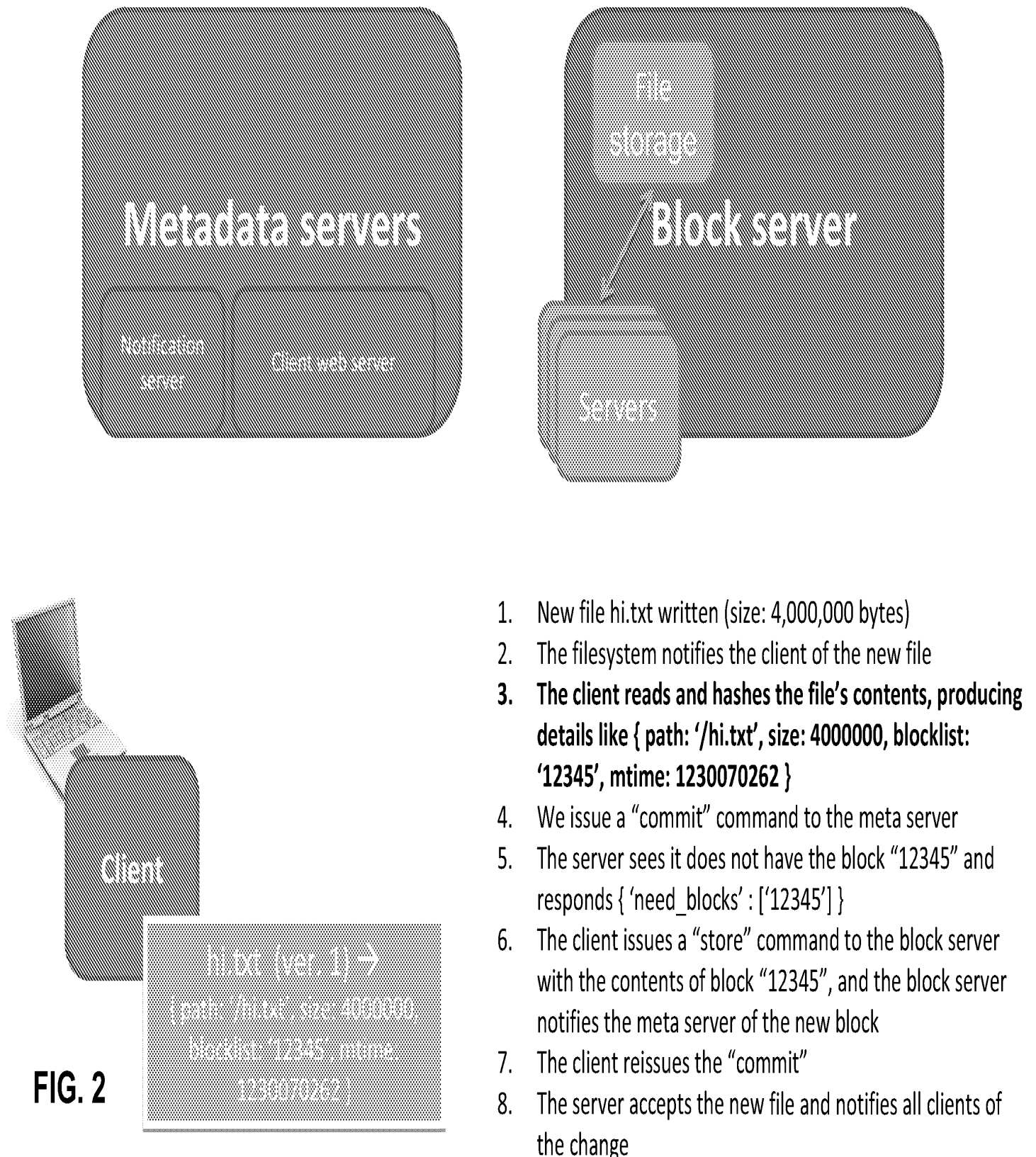
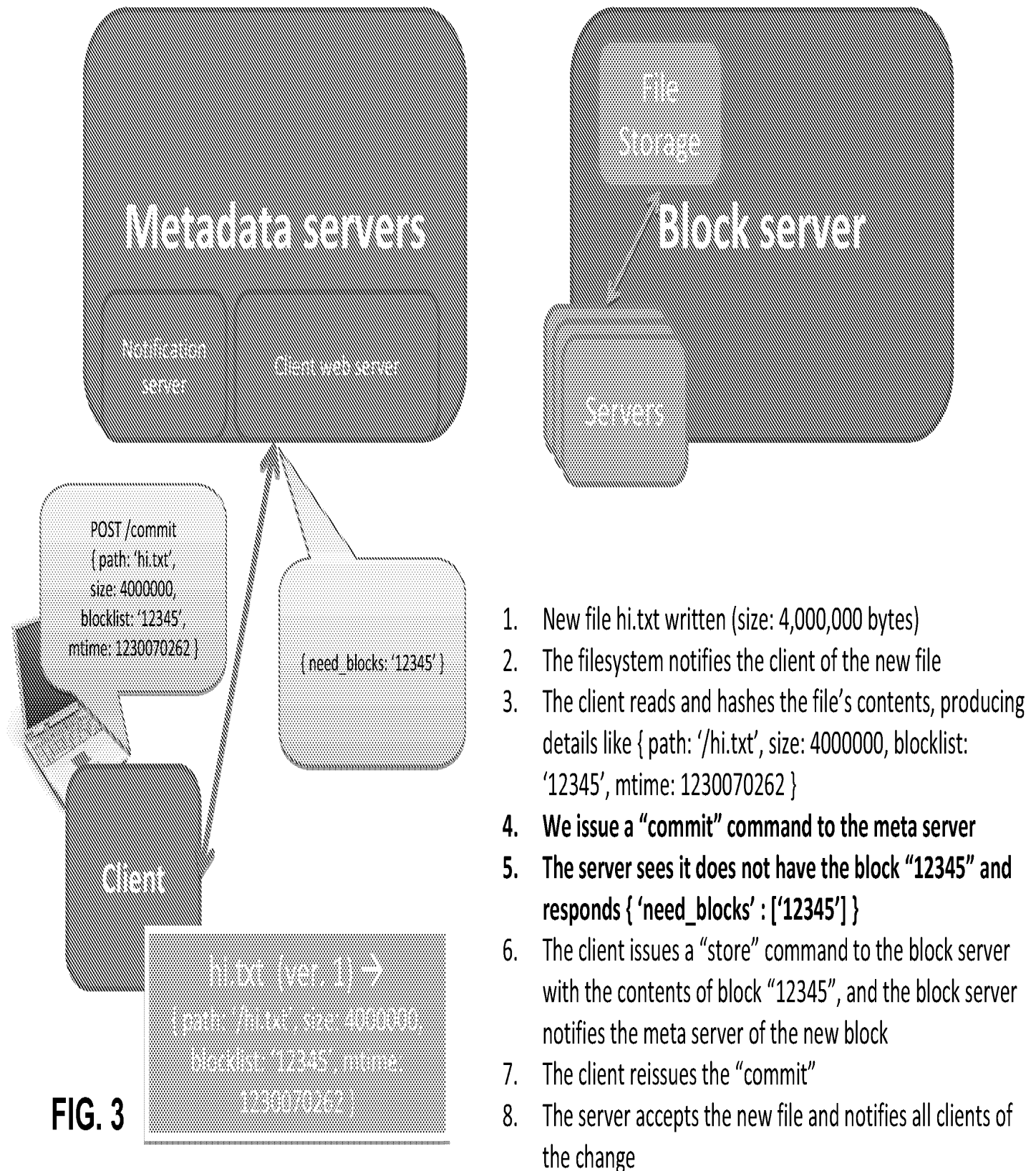


FIG. 2

Example: New file on client



Example: New file on client

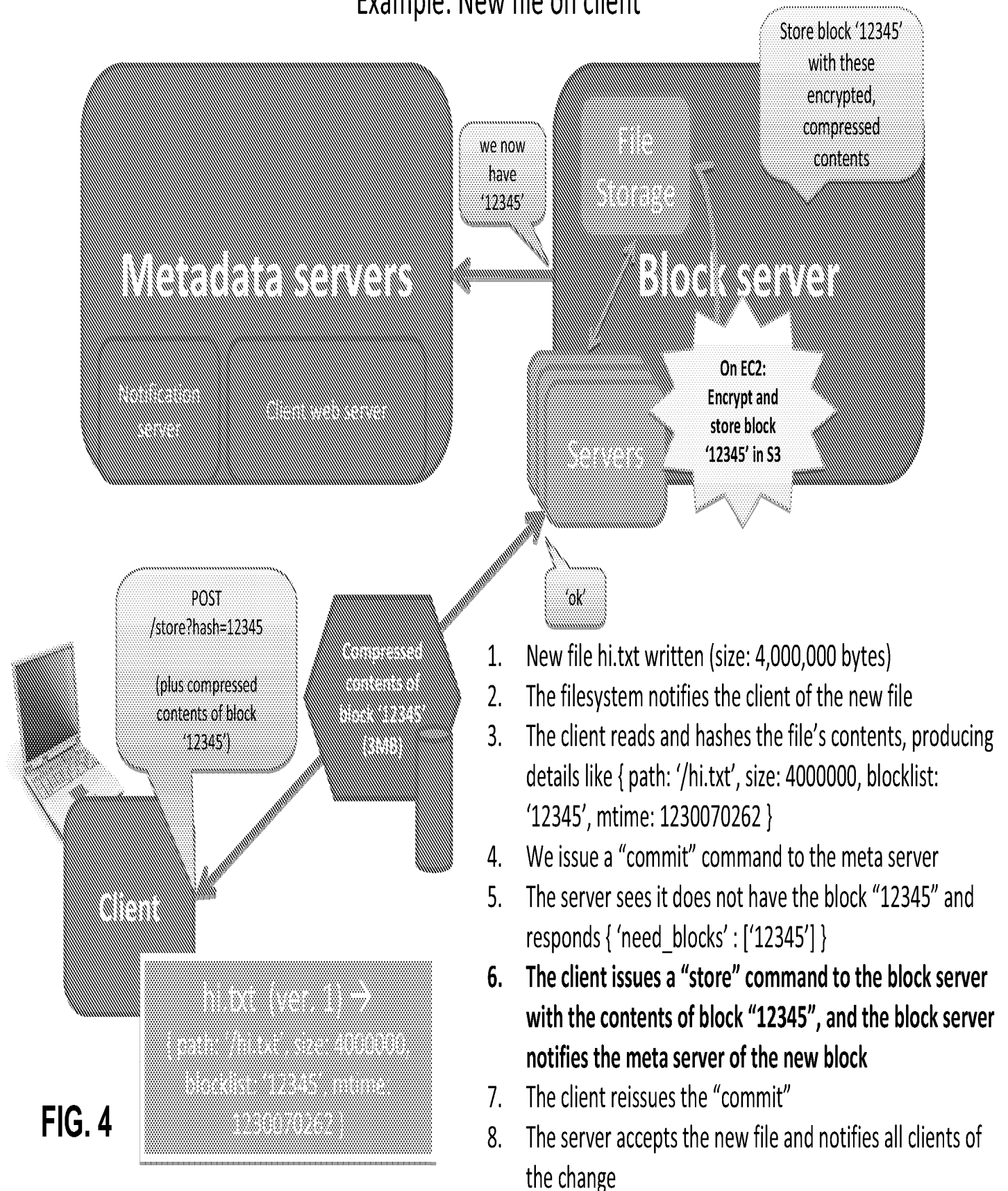


FIG. 4

Example: New file on client

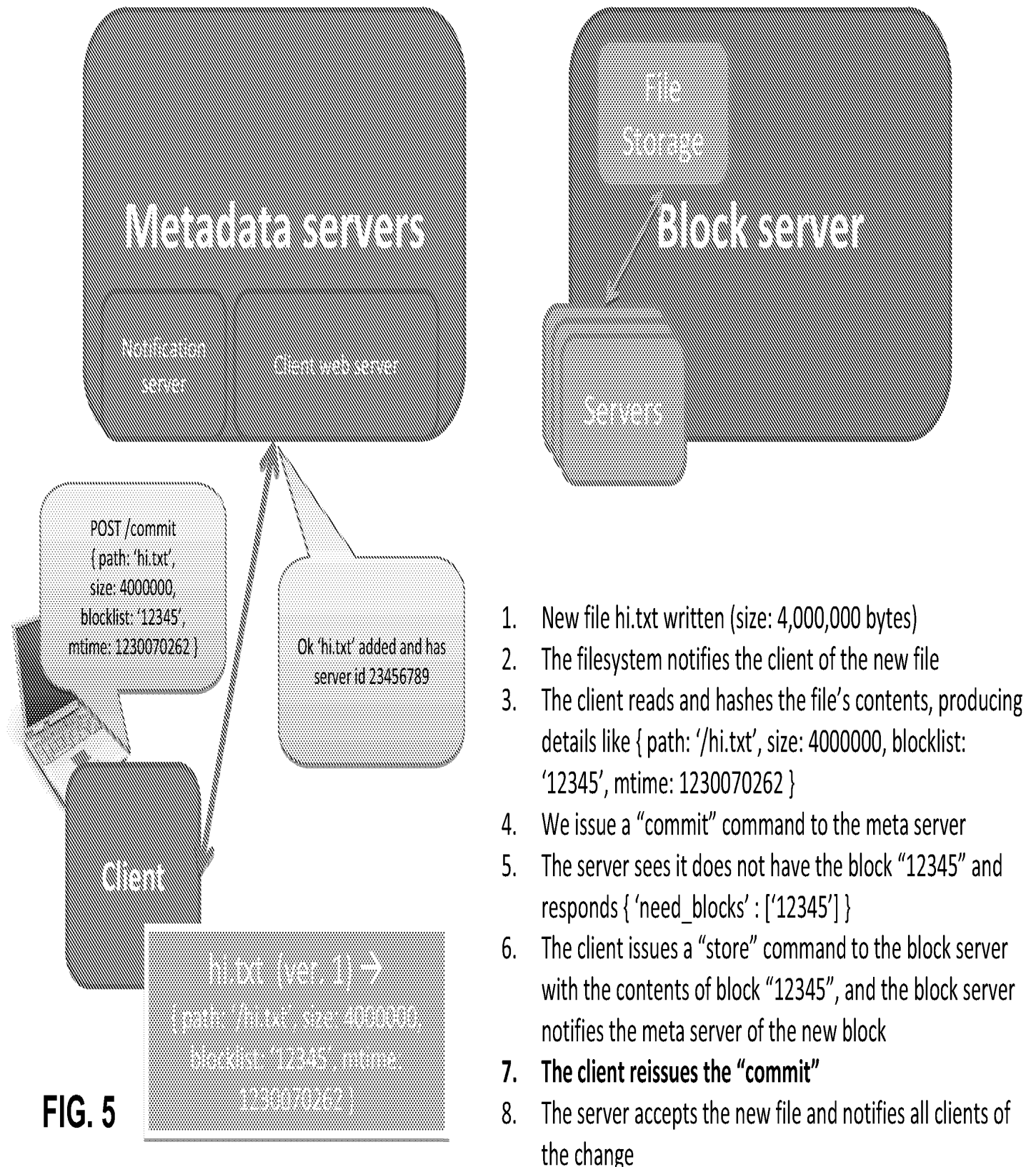


FIG. 5

Example: New file on client

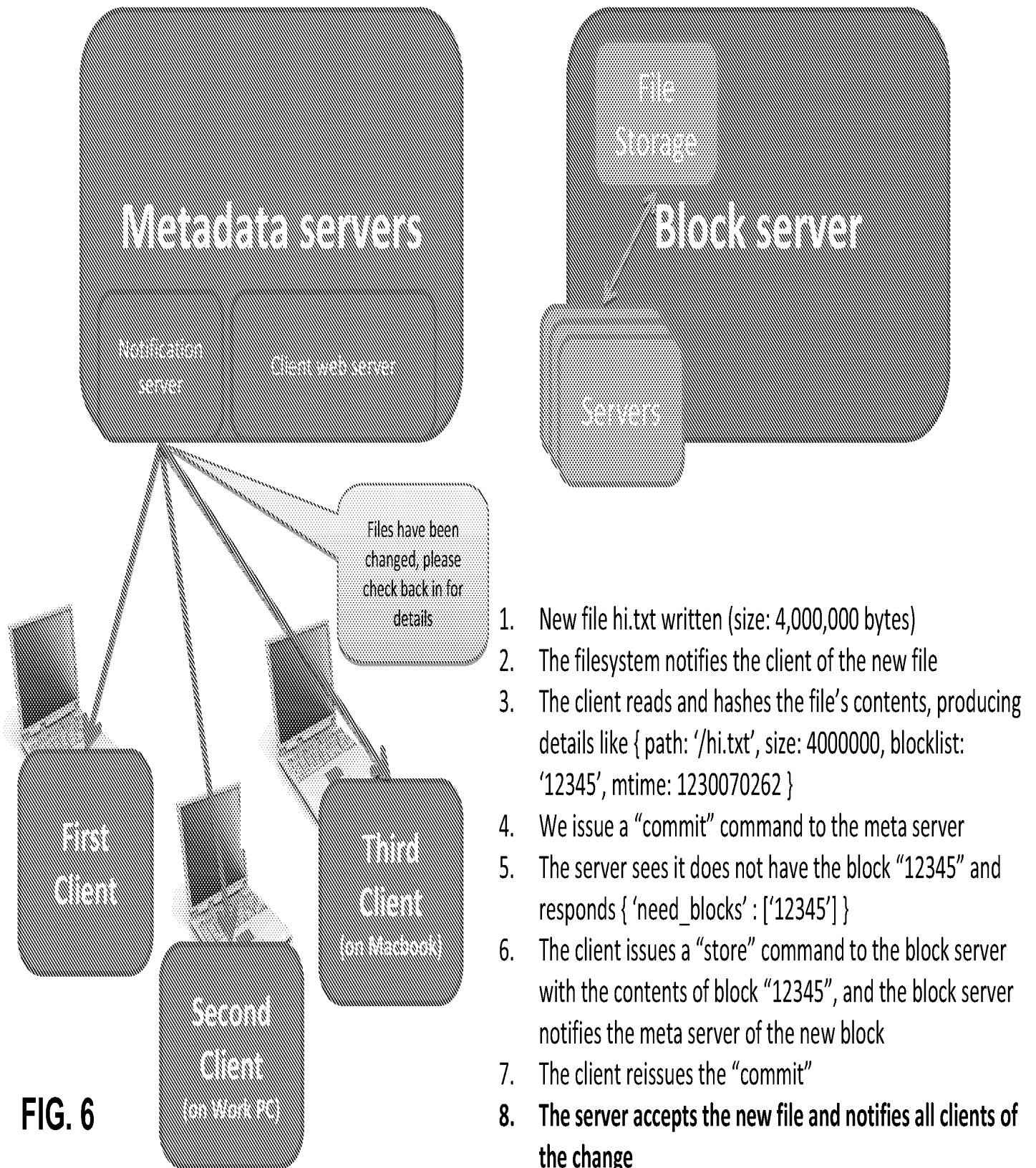


FIG. 6

Example: File edited with new contents

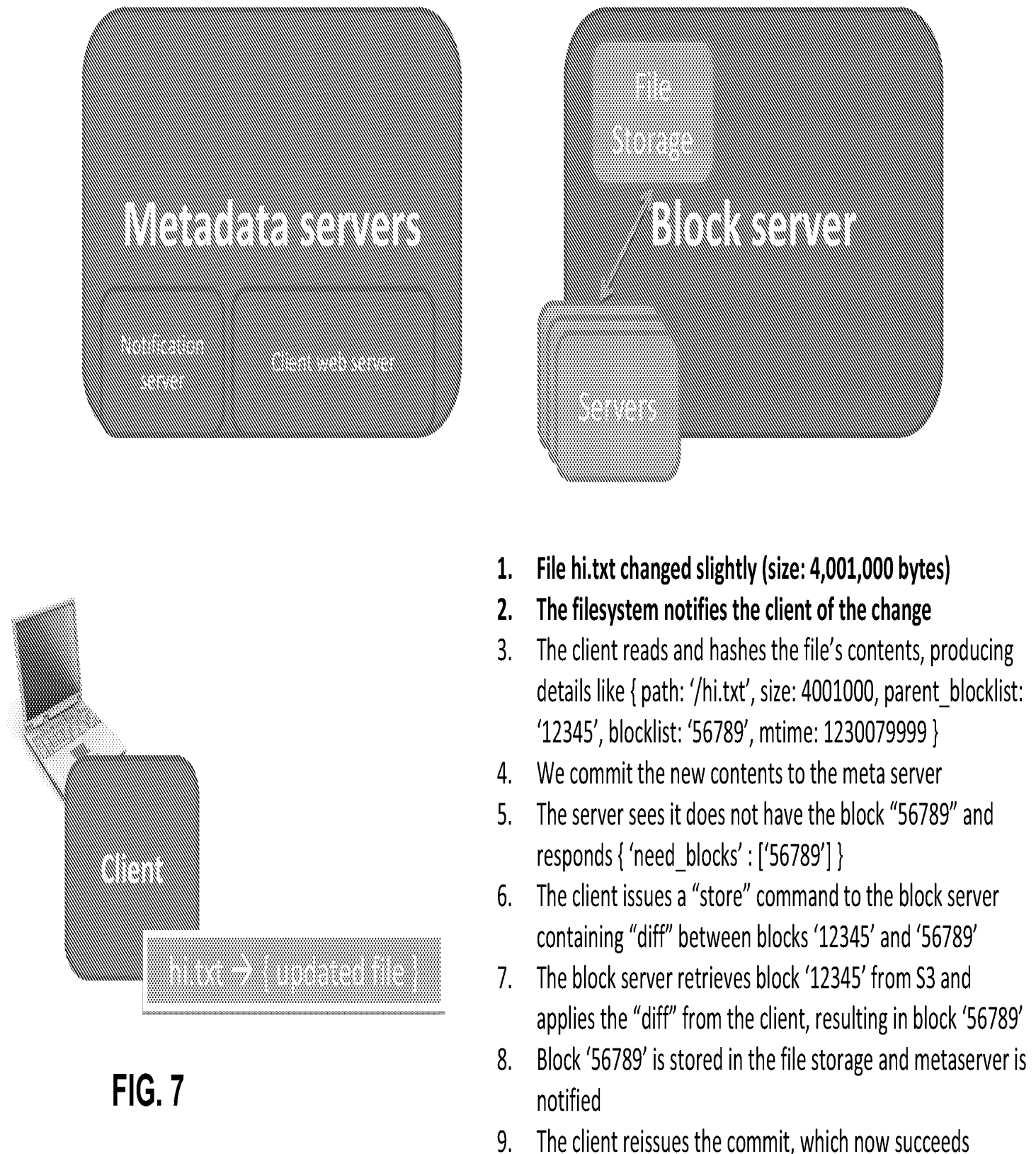
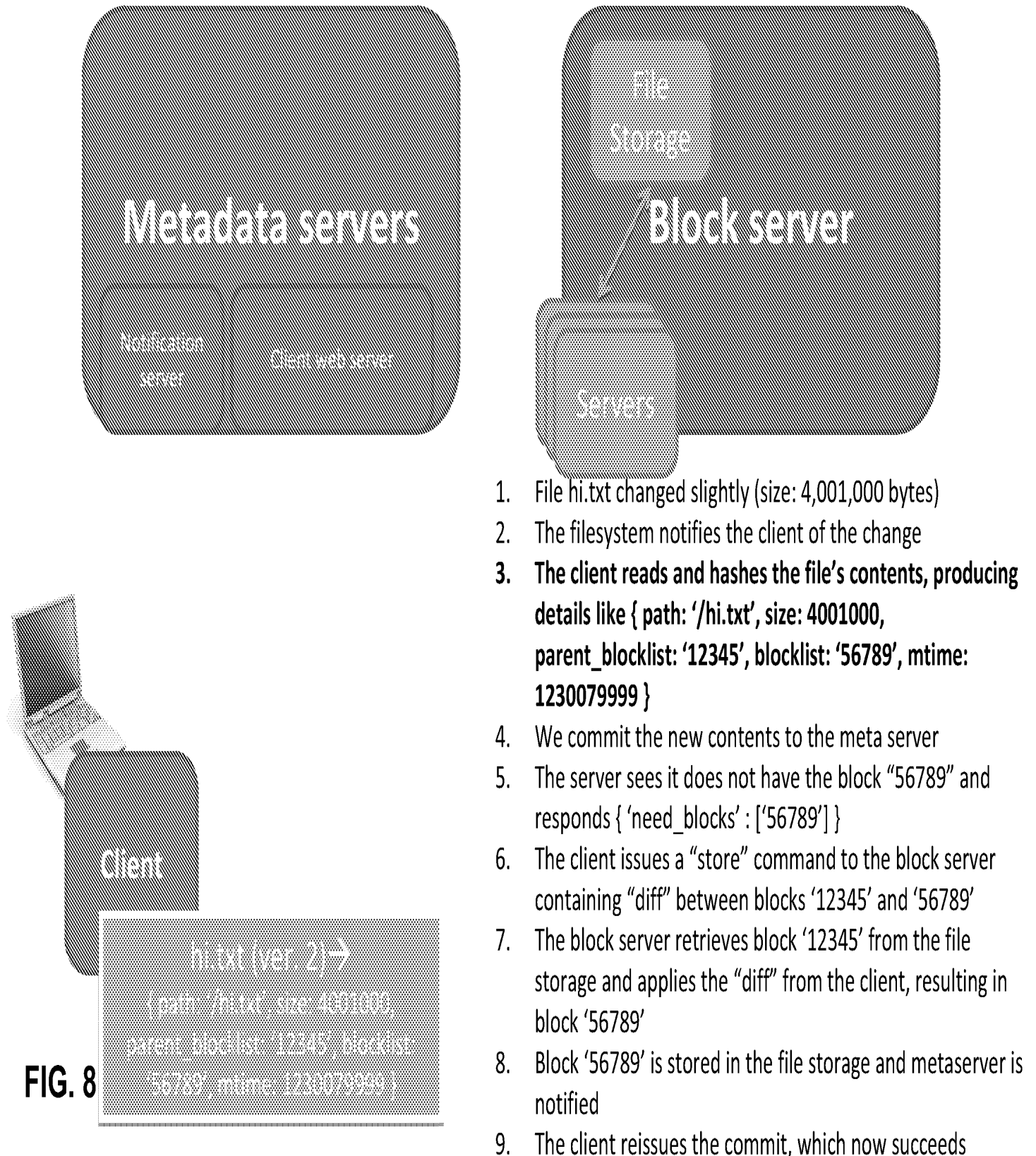


FIG. 7

Example: File edited with new contents



Example: File edited with new contents

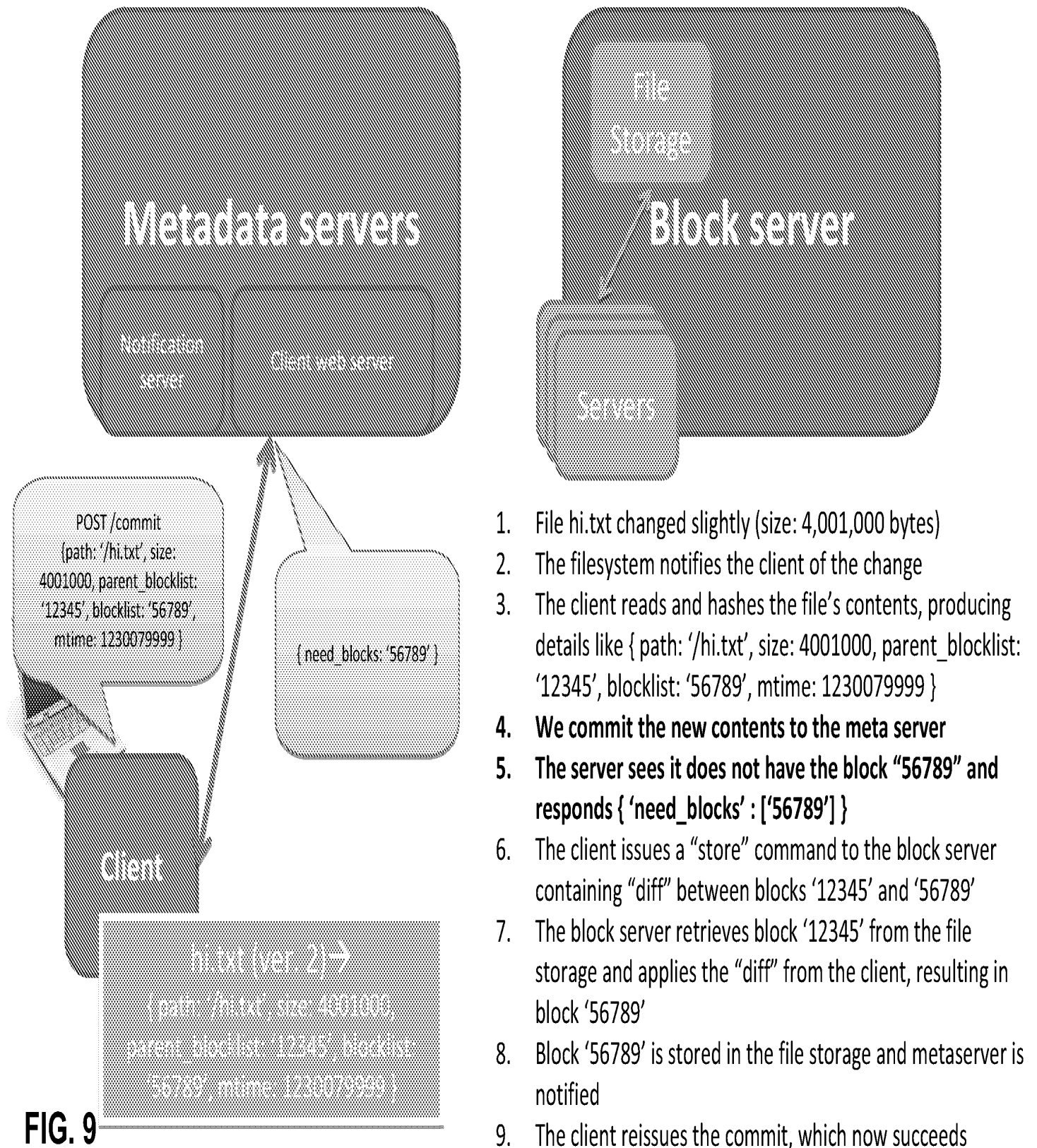


FIG. 9

Example: File edited with new contents

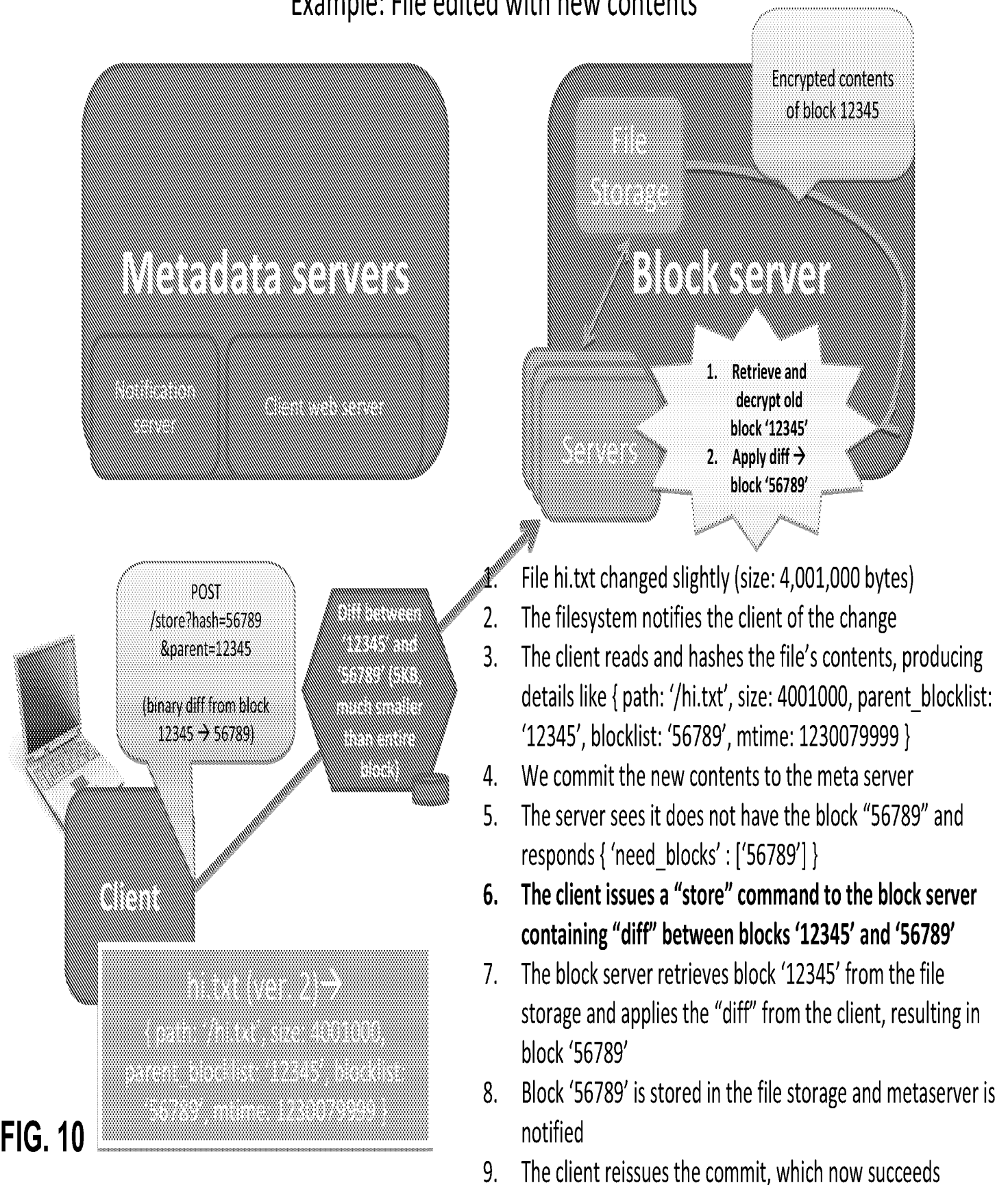


FIG. 10

Example: File edited with new contents

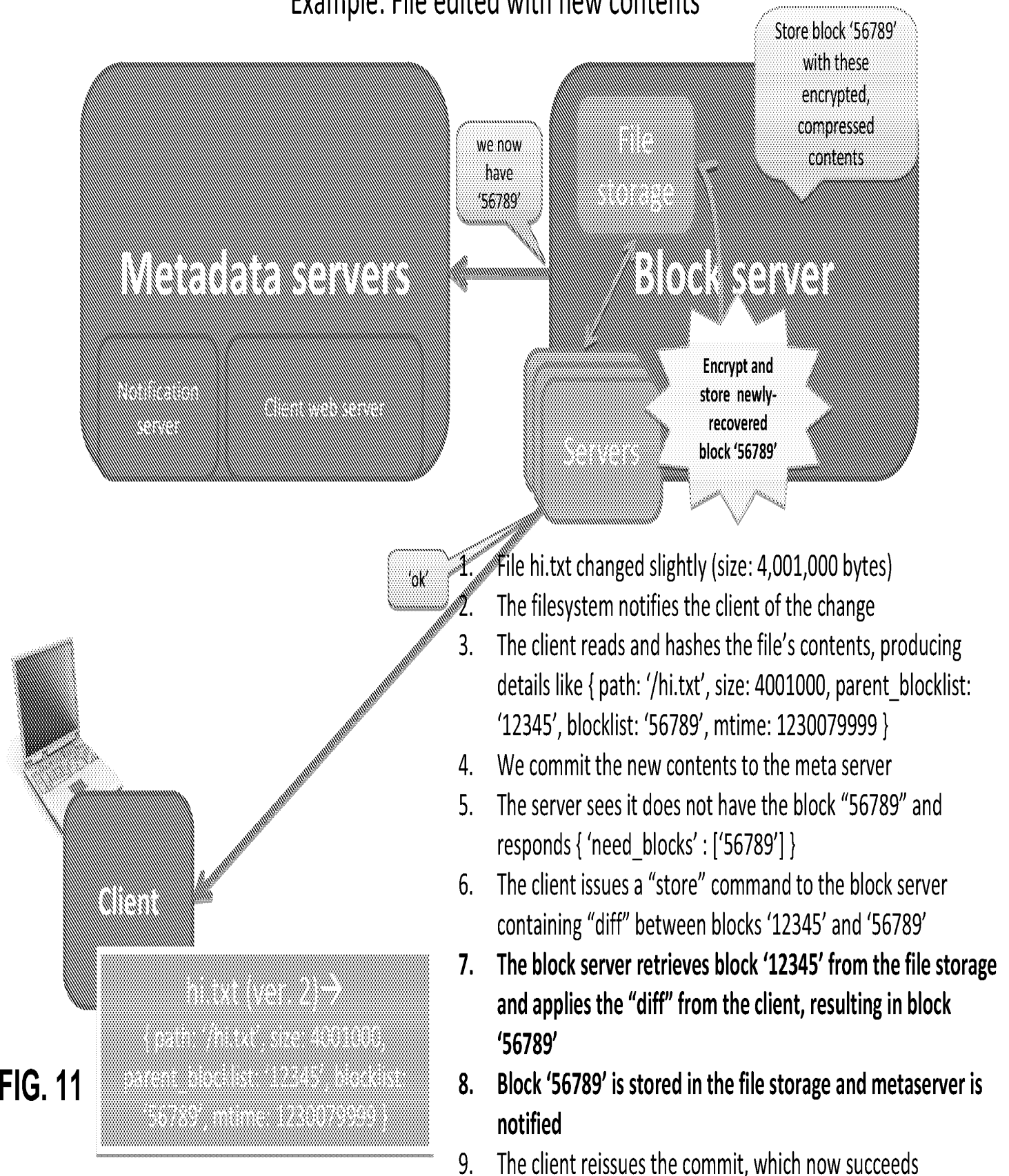


FIG. 11

Example: File edited with new contents

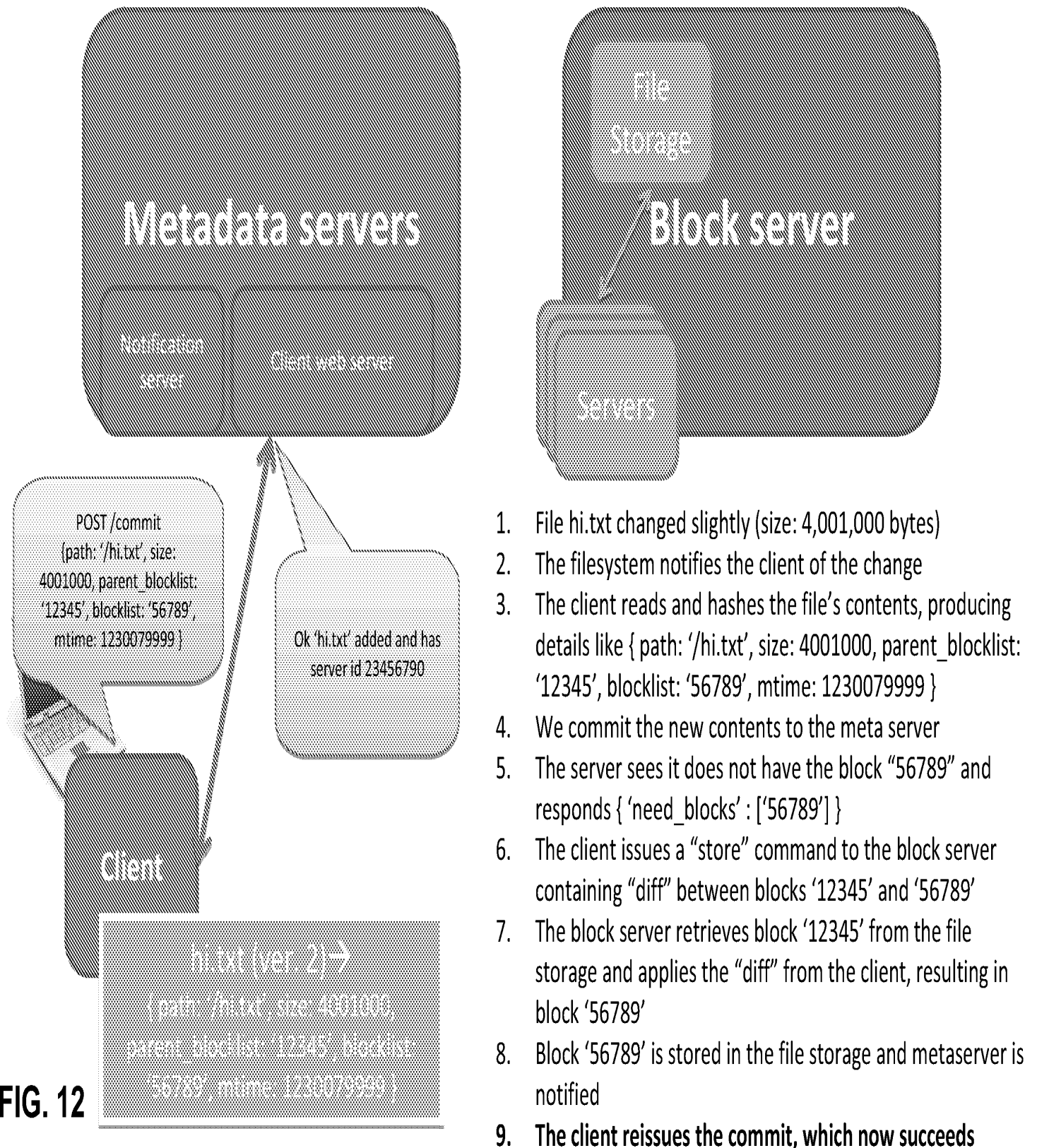


FIG. 12

Example: Other clients download the new file

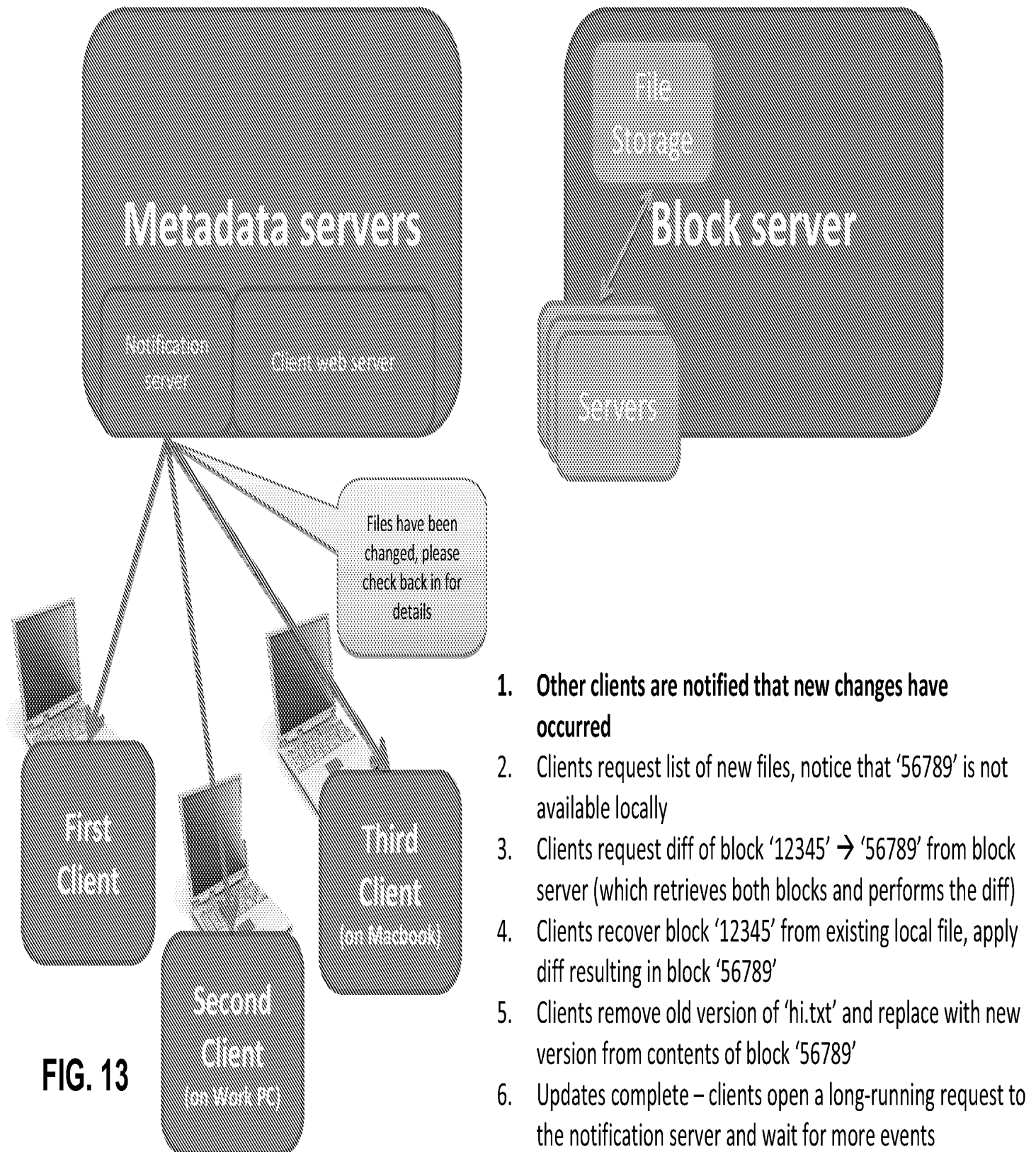


FIG. 13

FIG. 14

Example: Other clients download the new file

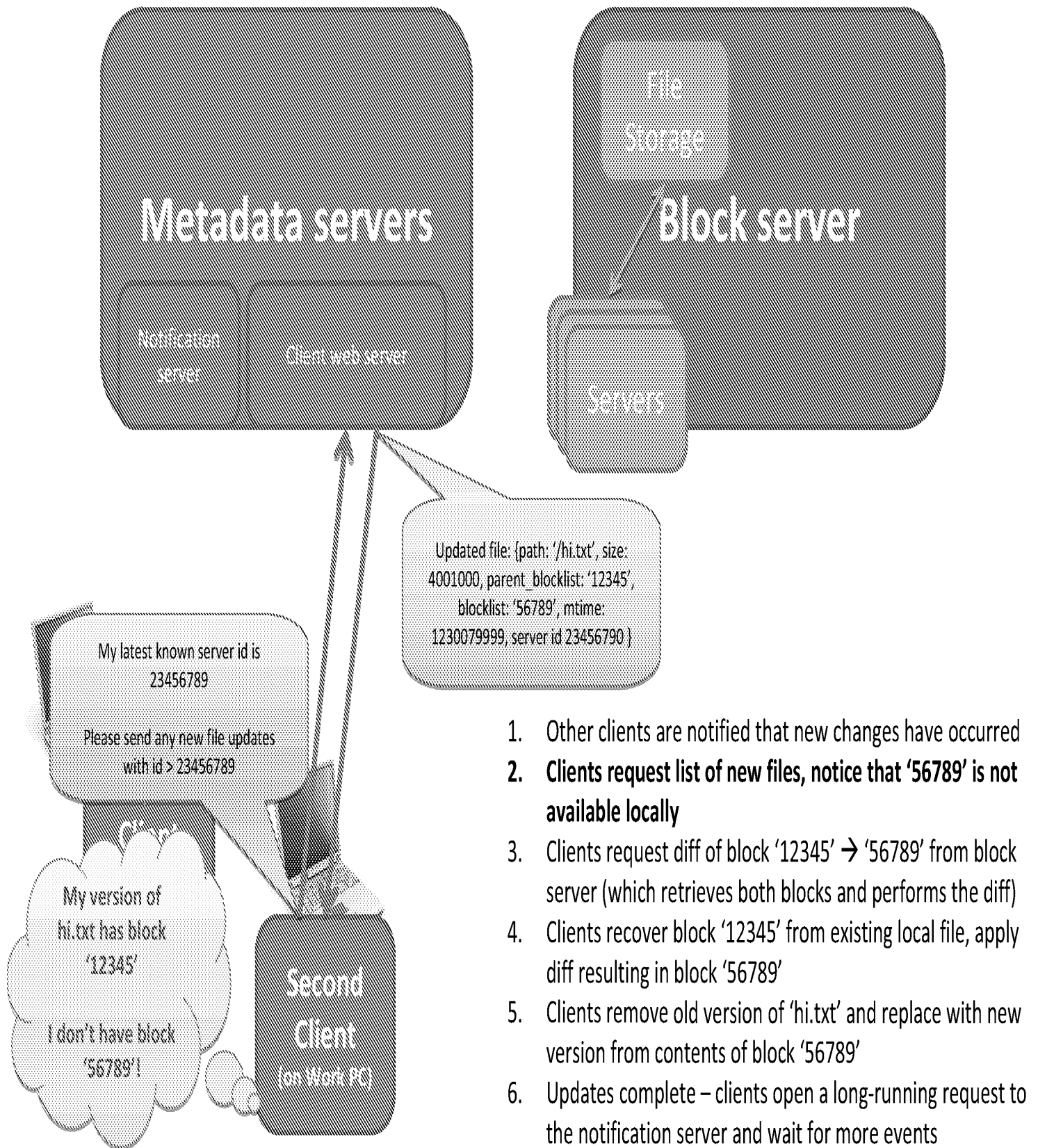


FIG. 15

Example: Other clients download the new file

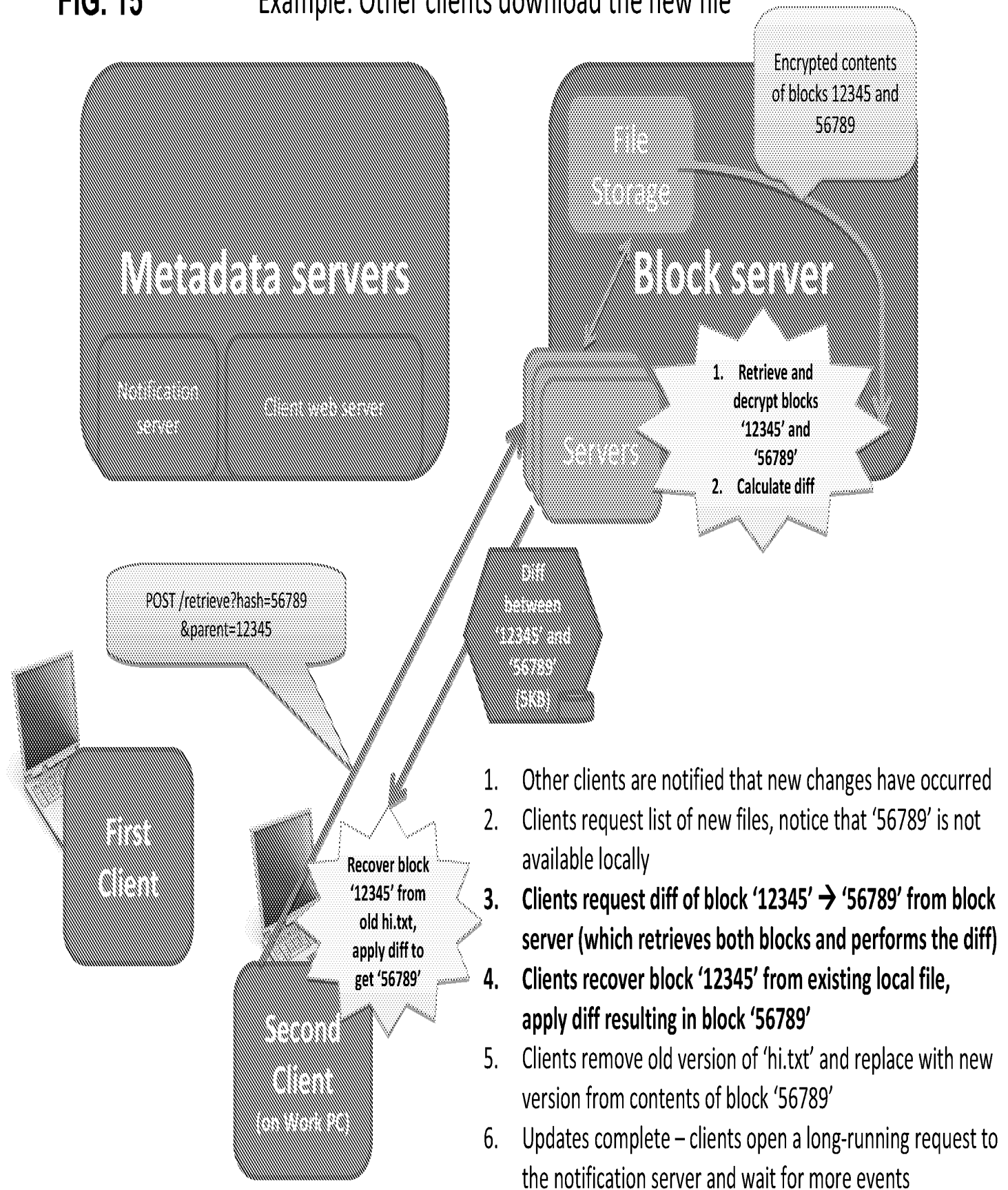
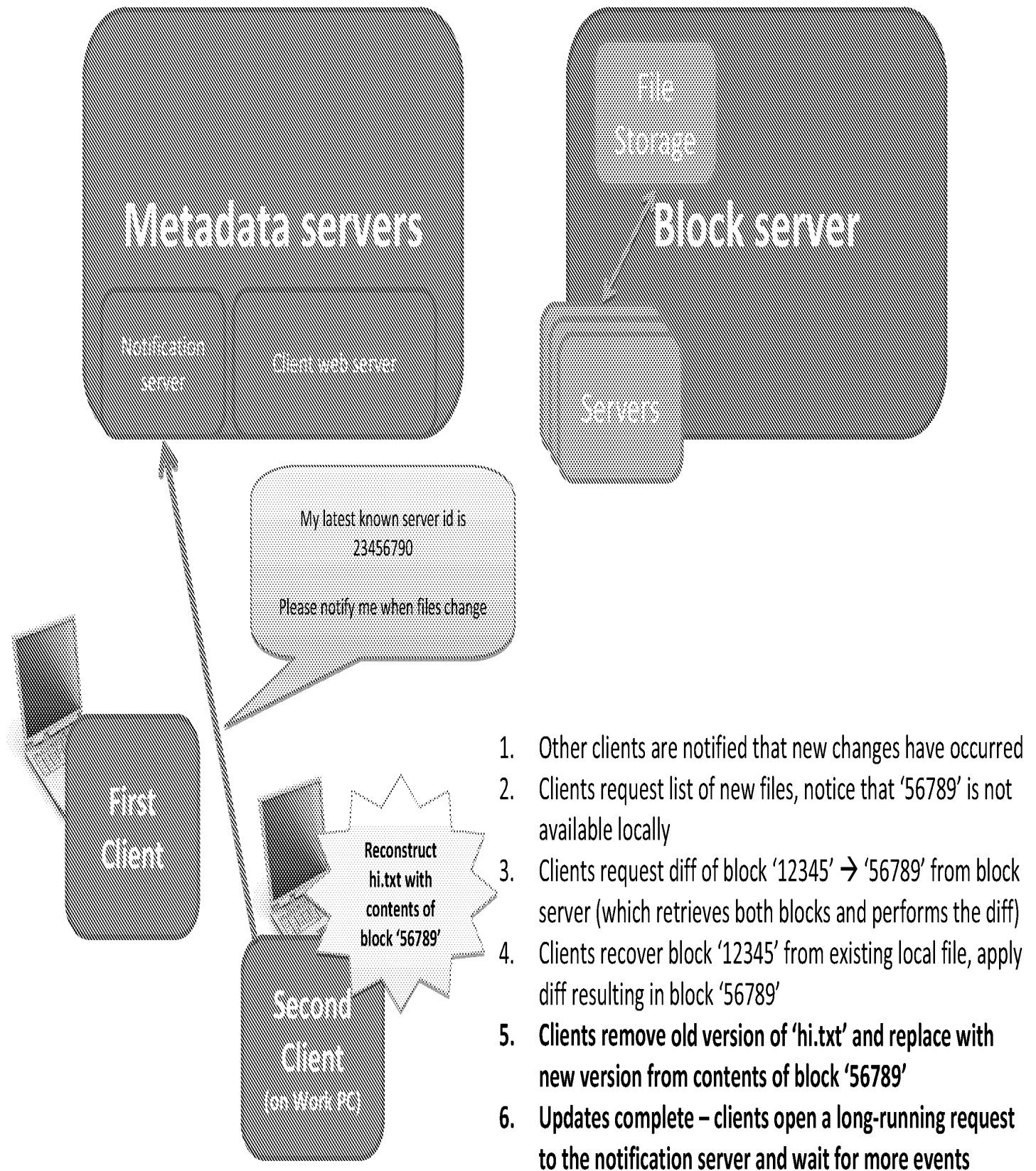


FIG. 16

Example: Other clients download the new file



SYSTEMS AND METHODS FOR FILE SYNCHRONIZATION

SUMMARY

[0001] Computer file synchronization is achieved in an efficient, reliable, and seamless manner. In some embodiments, the file synchronization can utilize delta sync (for example, binary diffing) across computers and networks quickly and easily.

[0002] Synchronization of a file across a networked computer and network servers can include transmitting a request for a notification of when the file has been changed. The request can be sent to a networked server. Upon receipt of a notification of a file change, the file can be processed to identify the file change. The file can be synchronized with the plurality of network servers based on the identification of the file change.

[0003] This summary is provided to introduce a selection of concepts in a simplified form that are further described below in the description. This summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended to be used as an aid in determining the scope of the claimed subject matter

BRIEF DESCRIPTION OF DRAWINGS

[0004] FIGs. 1-6 are exemplary figures that illustrate an example of how a new file at a client can be synchronized with over a network with one or more network servers.

[0005] FIGs. 7-12 are exemplary figures showing embodiments of delta sync where modifications to an existing file at a client are synchronized with a network server.

[0006] FIGs. 13-16 are exemplary figures showing embodiments of synchronizing a server file with remote client files.

DETAILED DESCRIPTION

[0007] Embodiments of efficient, reliable, and seamless computer file synchronization are presented herein. Specifically, file synchronization in the form of delta sync (also known as binary diffing) may allow for files to be synchronized across

computers and/or on the Internet quickly and easily. Embodiments of file synchronization may be accomplished across computers without the need for access through an Internet browser on one or more computers. Also, through binary diffing, only the bits of files that are changed or transformed through editing or revisions are sent to a server for storage. In other words, the contents of a given file are not required to be reloaded for each revision to be saved. Instead, only the edited or revised portions of a given file are uploaded to the server(s), thereby minimizing the effort and time it takes to synchronize the file across computers.

[0008] In some embodiments, the present technology enables one or more client computers to synchronize files, data, media and other content. The synchronized content and synchronization data may be maintained at one or more servers over a network in addition to the one or more clients. When one user changes the file (stored on one of the clients) to be kept synchronized, file synchronization is automatically initiated to update the file version maintained at the one or more servers. The updated file can then be synchronized with an additional client that is configured to synchronize to the most recent version of the file.

[0009] Overall, in some embodiments, file synchronization may occur over a series of steps. A file system is monitored for changes which takes place to a file. A file is read when changes or edits have occurred to the file. The changes or edits are then identified. Finally, synchronization (“syncing”) is accomplished based on the identification of the changes. Further details of syncing are provided later herein.

[0010] FIGs. 1-16 are exemplary figures of the embodiments presented herein. In some embodiments, in a system for file synchronization, a client may be coupled and/or otherwise be in communication with one or more servers. One skilled in the art may appreciate that the client may be on a work PC, a laptop computer, a workstation, mobile device and on any other type of networked computer. In some embodiments, the client is coupled to at least one metadata server and at least one block server through a network (not shown). The network may include any type of network, including but not limited to a local area network, a mobile network, a VPN, a wide area network, a metropolitan area network, the Internet, a public network, a private network, and any combination thereof.

[0011] The metadata server (also known as a “meta server”) stores all the versions and version data of a given file. In some embodiments, the metadata server includes a number of servers, including at least one notification server and at least one client web server.

[0012] The block server stores all the actual data of a given file. The metadata server may have pointers to one or more block servers. The block server stores blocks of data (e.g., hash contents) of a given file. The block server may include or be coupled to one or more services and one or more file storages that are tightly coupled, such that application specific actions (such as diffing) may be accomplished on the blocks supplied.

[0013] FIGs. 1-6 are exemplary figures that illustrate an example of how a new file at a client can be synchronized with over a network with one or more network servers.. Exemplary FIG. 1 shows an example where a new file called ‘hi.txt’ (which is hi.txt, version 1) has been written or created at step 1. The ‘hi.txt’ file has a size of 4,000,000 bytes (4 MB). A file system (in the operating system of a computer) detects the created file and then notifies a client application on the client of the existence of a new file called ‘hi.txt.’ The client application can be implemented as software stored on memory in the client and executed by one or more client processors to perform synching, file change detection, file management and storing and other operations at the client. Then, as set forth in FIG. 2, the client application reads and hashes the file’s content. Details may be produced as a result of the hash. For ‘hi.txt’ (version 1), details produced by the hash may include “{ path: ‘hi.txt,’ size: 4000000, blocklist: ‘12345,’ mtime (or modification time): 1230070262 }.” The blocklist provides the identification of blocks in the file. For ‘hi.txt,’ the block ‘12345’ is identified.

[0014] Turning to FIG. 3, the client application then issues a “commit” command to the metadata server. Referring to the example shown in FIG. 3 of the new file of ‘hi.txt,’ the “commit” command issued by the client application may include an instruction, such as “POST /commit { path: ‘hi.txt’, size: 4000000, blocklist: ‘12345’, mtime: 1230070262 }.” If the metadata server determines that it does not have the block ‘12345,’ the metadata server responds to the “commit” command with a response indicating to the client that the metadata server needs blocks ‘12345.’ The response sent by the metadata server may be in the exemplary form of “{ need_blocks: ‘12345’}”.

[0015] In some embodiments, the client web server of the metadata server receives the “commit” command issued by the client and provides the response indicating to the client that it needs the missing blocks.

[0016] Now referring to FIG. 4, once the client application has received a response from the metadata server indicating to the client that missing blocks are needed, the client issues a “store” command to the block server with the contents of block “12345.” This “store” command may be in the exemplary form of “POST /store?hash=12345” (plus the compressed contents of block ‘12345’) may be sent to the block server by the client. The block server may include hardware and software for storing files (i.e., a file storage application “file storage” illustrated in Figs. 1-16 and stored in memory and executable by a processor of a block server) and/or one or more servers for accessing the stored files. The one or more servers are configured to receive the compressed contents of blocks such as block ‘12345.’ The block server may also notify the metadata server of the new block stored at the block server. In the example presented in FIG. 4, the block server may indicate to the client that it contains block ‘12345.’

[0017] In some embodiments, the block server may include file storage and/or servers, one or more of which may be online. Referring still to the example of storing ‘hi.txt,’ a file storage of the block server may receive the compressed contents of block ‘12345,’ which are then encrypted and stored in servers of the block server to store block ‘12345’ with the encrypted, compressed contents.

[0018] Turning now to FIG. 5, once the block server has stored the contents of a received block of data, the client reissues the “commit” command. Referring still to the example of the new file ‘hi.txt,’ once the block server has stored the contents of block ‘12345,’ the client reissues the “commit” command to the metadata server. The “commit” command may include an instruction, such as “POST /commit { path: ‘hi.txt’, size: 4000000, blocklist: ‘12345’, mtime: 1230070262 }” for the ‘hi.txt’ new file. In the example presented in FIG. 5, the client web server of the metadata server then transmits a message to the client that the new file has been added and now has a server identifier (server id). For example, in Figure 5, the new file ‘hi.txt’ has a server id of 23456789. Once the reissuance of the “commit” command has occurred, as shown in FIG. 6, the metadata server accepts the new file and notifies the clients of the change. In some

embodiments, the notification server of the metadata server may send a notification to one or more clients that files have been changed and thus clients should check back in for details. For example, the notification can be sent to all clients in which the file is contained or shared. In the exemplary figure of FIG. 6, the clients may be on a laptop, a work PC, a work station, a mobile device and a Macbook, but one skilled in the art may appreciate that any number of clients may be coupled to the metadata server and may receive the notification from the metadata server that the new file has been accepted.

[0019] FIGs. 7-12 are exemplary figures showing embodiments of delta sync where modifications to an existing file at a client are synchronized with a network server. As FIG. 7 shows, a file (such as 'hi.txt') is changed slightly to produce a new version of 'hi.txt.' For example, a user may change a document or image locally on a client computer. In FIGs. 7-12, 'hi.txt' (version 1) has been revised to create hi.txt (version 2). The size of the exemplary file 'hi.txt' (version 2) is 4,001,000 bytes. The file system notifies the client application of the change, indicating that the file 'hi.txt' has been updated. At this point, the client application reads and hashes the file's content, producing certain details (FIG. 8). Such details may include "{ path: '/hi.txt,' size: 4001000, parent blocklist: '12345,' blocklist: '56789', mtime (or modification time): 1230079999. }"

[0020] Then, as shown in FIG. 9, a "commit" command is issued from the client to the metadata server. In some embodiments, the "commit" command is sent to the client web server of the metadata server by the client. FIG. 9 is similar to FIG. 3, except that the request sent by the client to the metadata server is for the new contents found in blocks '56789.' The client may send an exemplary "commit" command, such as "POST /commit { path: 'hi.txt', size: 4001000, parent_blocklist:'12345', blocklist: '56789', mtime: 1230079999 }." In response, the metadata server determines that it does not have the block '56789' and provides a response to the client indicating this. An exemplary response by the metadata server may be "{need_blocks: '56789' }."

[0021] In FIG. 10, once the client has received a response from the metadata server indicating to the client that missing blocks are needed, the client issues a "store command" to the block server with the "diff" between certain blocks. One skilled in the art will know that the diff may be data representing the difference between the current

version of a given file and a former version of the given file. In the example provided in FIG. 10, the diff is between blocks '12345' and '56789' of the same file 'hi.txt.' This "store" command may be in the exemplary form of "POST /store?hash=56789&parent = 12345." In other words, the binary diff from block '12345' to block '56789' is provided by the client to the block server. The diff may be much smaller than the entire block. In some embodiments, the diff may be 5KB, which means that the diff that is stored by the block server utilizing binary diffing is smaller in size and takes less effort than the reloading and storing of an entire file altogether.

[0022] Now referring to FIG. 11, the block server may retrieve and decrypt the contents of a parent or original block (such as block '12345') and then apply the diff from the client. In the example provided in FIG. 11, applying the diff from the client will result in the block '56789.' In some embodiments, the encrypted, compressed contents of block '12345' are obtained from the file service and sent to the servers coupled to the block server. The block '56789' is stored in the block server and the metadata server is notified by the block server.

[0023] FIG. 12 shows that once the block server has stored the contents of a previously missing block (such as previously missing block '56789,') the client reissues the "commit" command to the metadata server, which now succeeds. Still referring to the example with the revised 'hi.txt,' the client web server of the metadata server may indicate to the client that the new file 'hi.txt' has been added and now has a server id 23456790.

[0024] Once the new file 'hi.txt' has been added with changes to the file, clients may be notified that new changes have occurred. FIGs. 13-16 are exemplary figures showing embodiments of synchronizing a server file with remote client files, for example with respect to the file 'hi.txt.' As shown in FIG. 13, which is similar to FIG. 6, the metadata server accepts the new file and notifies the clients of the change. In some embodiments, the notification server of the metadata server may send a notification to one or more clients that files have been changed, thereby indicating to the clients that the clients should check back in for details. In some embodiments, clients having a link or relationship to the file are notified, for example a client which includes a copy of the file in local memory and synchronizes the local file with the file stored by the one or more

block servers. In the exemplary figure of FIG. 13, the clients may be on a laptop, a work PC, and a Macbook, but one skilled in the art may appreciate that any number and type of clients may be coupled to the metadata server and may receive the notification from the metadata server that a new file has been accepted.

[0025] Turning to FIG. 14, one or more clients may request a list of the new files. Further, the one or more clients may notice that the block '56789' is not available locally. For instance, in FIG. 14, an exemplary client on a work PC can determine that the updated version of 'hi.txt' includes blocks '12345' and '56789' from information received from the metadata server. The exemplary client can further determine that its local version of 'hi.txt' has block '12345', but it does not have block '56789' based on the information received from the metadata server. Specifically, the metadata server may indicate to the client that it has an updated file with certain details. In the example shown in FIG. 14, the updated file has details such as "{ path: 'hi.txt', size: 4001000, parent_blocklist: '12345', blocklist: '56789,' mtime: 1230079999, server id 23456790}." The client notifies the metadata server that its last known server id is 23456789, and it requests the metadata server to send any new file updates with an id greater than 23456789. In some embodiments, the client is in communication with the client web server of the metadata server.

[0026] Then, as shown in FIG. 15, one or more clients may request the diff between blocks. For instance, a diff between blocks '12345' and '56789' from the block server is sought. An exemplary request may be in the form of "POST /retrieve?hash=56789&parent = 12345." The block server may retrieve both blocks '12345' and '56789,' and perform the diff. In other words, the block server may obtain the encrypted contents of blocks 12345 and 56789. Once the retrieval and decryption of blocks '12345' and '56789' are accomplished, then the diff between the two blocks is calculated by the block server. The diff between blocks '12345' and '56789' in the example provided in FIG. 15 has a size of 5KB. The one or more clients may then recover block '12345' from the existing local file (from the old 'hi.txt' (version 1)) and apply the diff obtained from the block server, resulting in block '56789.'

[0027] Finally, as shown in FIG. 16, the one or more clients remove the old version of 'hi.txt' and replace it with a new version from the contents of block '56789.' In other

words, 'hi.txt' is reconstructed with the contents of block '56789.' Once the updates are completed, the one or more clients may open a long-running request to the notification server of the metadata server and wait for more events. An exemplary long-running request sent by the one or more clients may be in the form of an instruction, such as "My latest known server id is 23456790. Please notify me when files change." In other words, embodiments of the present invention allow for a constant monitoring of the file system for changes or edits of files, to ensure reliability in the file synchronization throughout the system.

[0028] It will be appreciated by one of ordinary skill that databases may be included in the systems for file synchronization provided herein. For instance, a local database may store an inventory of details of the file contents, providing an active status of a file on the disk, with one entry of the database provided for each file. Further, one skilled in the art will understand that a computer readable storage medium may be included in the clients to assist in the file synchronization. Examples of computer readable storage medium may include discs, memory cards, servers and/or computer discs. Instructions may be retrieved and executed by a processor. Some examples of instructions include software, program code, and firmware. Instructions are generally operational when executed by the processor to direct the processor to operate in accord with embodiments of the invention. Although various components of the system may be configured to perform some or all of the various steps described herein, fewer or more components may be provided and still fall within the scope of various embodiments. Further, it will be understood by one skilled in the art that the various steps described in FIGs. 1-16 and/or throughout this discussion are not necessary for the technology to work. Steps may be modified, combined, repeated, and/or accomplished in a different order than what is described herein, and still fall within the spirit and scope of this technology.

[0029] The systems and methods of file synchronization provide a variety of advantages, including but not limited to minimizing latency, minimizing bandwidth usage, and minimizing extra storage of previous versions. The technology presented herein may detect file change instead of polling.

[0030] While the technology described herein is susceptible to various modifications and alternative constructions, certain illustrated embodiments thereof are shown in the

drawings and have been described above in detail. It should be understood, however, that there is no intention to limit the technology to the specific form or forms disclosed, but on the contrary, the intention is to cover all modifications, alternative constructions, and equivalents falling within the spirit and scope of the technology.

CLAIMS

1. A computerized method for synchronizing a file across a networked computer and a plurality of networked servers, comprising the steps of:
 - immediately detecting when a file modification has occurred;
 - transmitting a request to a networked server for a notification of when the file has been changed;
 - upon receipt of the notification that the file has been changed, processing the file to identify only the subset of the file that has changed; and
 - synchronizing the file with the plurality of networked servers, based on the identification of the change to the file.
2. The computerized method of claim 1, wherein the step of processing the file to identify a change further comprises hashing the file to produce file details.
3. The computerized method of claim 2, wherein the file details may include a hash of the file's contents or a list of hashes of subsets of the file's contents, and a signature of the file's contents generated by a rolling hash algorithm or other method
4. The computerized method of claim 1, wherein the plurality of networked servers may include a metadata server and a block server.
5. The computerized method of claim 1, wherein the network computer may store file details for each synchronized file.
6. The computerized method of claim 1, wherein the step of synchronizing the file based on the identification of the change to the file includes:
 - determining a difference between two versions of a file, the difference being associated with the change that has been made to the file; and
 - transmitting the difference to the block server.

7. The computerized method of claim 6, wherein the difference is stored as metadata persistently, which further helps with the performance of the method.

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		Systems and Methods for File Synchronization		
First Named Inventor/Applicant Name:		Drew Houston		
Filer:		Myrna Marca Schelling./Patricia Thompson		
Attorney Docket Number:		PA4098PRV		
Filed as Small Entity				
Provisional Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Provisional Application filing fee	2005	1	110	110
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:				
Total in USD (\$)				110

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First Named Inventor/Applicant Name:	Drew Houston
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Application Type:	Provisional

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Provisional Cover Sheet (SB16)	PA4908PRV_Cover_Sheet_SB16.pdf	35200 9f915b5504135c271b68c8ad705cef5f27e67ada	no	3

Warnings:

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2	Drawings-only black and white line drawings	PA4908PRV_Figures.pdf	7728137 b741376298be877e0e86c8ad1b3e8109e27b8265	no	16
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Warnings:

Information:

3		PA4908PRV_Specification.pdf	64151 a7e0102885e5051a368be71ae753328c44b7b5fc	yes	11
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Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	9
Claims	10	11

Warnings:

Information:

4	Fee Worksheet (PTO-875)	fee-info.pdf	29266 5ef89d149fed89dccc419bb660e8c7eb1a1ffa32c	no	2
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