

## PATENT ASSIGNMENT COVER SHEET

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EPAS ID: PAT4642178

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
JIAN GAO	10/13/2017
GENG HAN	10/13/2017
JIBING DONG	10/13/2017
SHAOQIN GONG	10/13/2017
REE SUN	10/13/2017
NAIZHONG CHIU	10/11/2017
XINLEI XU	10/13/2017
JAMIN KANG	10/12/2017
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	EMC IP HOLDING COMPANY, LLC
<b>Street Address:</b>	176 SOUTH STREET
<b>City:</b>	HOPKINTON
<b>State/Country:</b>	MASSACHUSETTS
<b>Postal Code:</b>	01748
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	15784657
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(617)523-6850
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>	
<b>Phone:</b>	617-523-2700
<b>Email:</b>	patentdocketing@hkclaw.com, toni.sousa@hkclaw.com
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<b>Address Line 1:</b>	10 ST. JAMES AVENUE
<b>Address Line 4:</b>	BOSTON, MASSACHUSETTS 02116
<b>ATTORNEY DOCKET NUMBER:</b>	113454.00296/109338
<b>NAME OF SUBMITTER:</b>	TONI M. SOUSA
<b>SIGNATURE:</b>	/Toni M. Sousa/

<b>DATE SIGNED:</b>	10/16/2017
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**Total Attachments: 10**  
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**ASSIGNMENT**

**WHEREAS**, we, Jian Gao, Geng Han, Jibing Dong, Shaoqin Gong, Ree Sun, Naizhong Chiu, Xinlei Xu, and Jamin Kang, have invented an invention comprising and/or embodying certain improvements or discoveries or both as described in an application for Letters Patent of the United States entitled Balancing Mapped RAID Background I/O with User I/O via Dynamically Changing Background Credits on Mapped RAID System and Method (Application), the specification of which:

- [ X ] is being executed on even date herewith and is about to be filed in the United States Patent Office;
- [ ] was filed on \_\_\_\_\_ as U.S. Application No. \_\_\_\_\_;
- [ ] was patented under U.S. Patent No. \_\_\_\_\_ on \_\_\_\_\_.

**WHEREAS**, EMC IP Holding Company, LLC (hereinafter "ASSIGNEE"), a corporation organized and existing under the laws of the State of Delaware and having a usual place of business at 176 South Street, Hopkinton, Massachusetts 01748 desires to acquire an interest therein in accordance with agreements duly entered into with us;

**NOW, THEREFORE**, to all whom it may concern be it known that for and in consideration of said agreements and of other good and valuable consideration, the receipt of which is hereby acknowledged, we have sold, assigned and transferred and by these presents do hereby sell, assign and transfer unto said ASSIGNEE, its successors, assigns and legal representatives, the entire right, title and interest in and throughout the United States of America, its territories and all foreign countries, in and to said invention as described in said application, together with the entire right, title and interest in and to said application and such Letters Patent as may issue thereon; said invention, application and Letters Patent to be held and enjoyed by said ASSIGNEE for its own use and behalf and for its successors, assigns and legal representatives, to the full end of the term for which said Letters Patent may be granted as fully and entirely as the same would have been held by us had this assignment and sale not been made; we hereby convey to ASSIGNEE all rights arising under or pursuant to any and all international agreements, treaties or laws relating to the protection of industrial property by filing any such applications for Letters Patent. We hereby acknowledge that this assignment, being of the entire right, title and interest in and to said invention, carries with it the right in ASSIGNEE to apply for and obtain from competent authorities in all countries of the world any and all Letters Patent by attorneys and agents of ASSIGNEE's selection and the right to procure the grant of all such Letters Patent to ASSIGNEE for its own name as assignee of the entire right, title and interest therein;

**AND**, we hereby further agree for ourselves and our executors and administrators to execute upon request any other lawful documents and likewise to perform any other lawful acts which may be deemed necessary to secure fully the aforesaid invention to said ASSIGNEE, its successors, assigns and legal representatives, but at its or their expense and charges, including

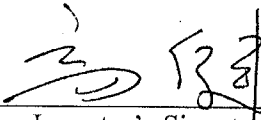
the execution of applications for patents in foreign countries, and the execution of substitution, reissue, divisional or continuation applications and preliminary or other statements and the giving of testimony in any interference or other proceeding in which said invention or any application or patent directed thereto may be involved;

**AND**, we do hereby authorize and request the Commissioner of Patents of the United States to issue such Letters Patent as shall be granted upon said application or applications based thereon to said ASSIGNEE, its successors, assigns, and legal representatives;

**AND**, we hereby authorize our attorneys, EMC Corporation, to insert here in parenthesis ( \_\_\_\_\_ ) the application number and filing date of said Application (or foreign counterpart application) to facilitate the recording or other official processing of this Assignment.

**IN TESTIMONY WHEREOF**, we have hereunto set our hands and affixed our seals as set forth below:

Date: 2017.10.13

  
\_\_\_\_\_  
Inventor's Signature

Print full name of inventor                      Jian Gao  
Residence    Beijing, China  
  
Citizenship    China  
Mailing Address                                      601# Building 16, Rongfeng 2008  
    Guanganmen Wai Street, Xicheng District  
    Beijing, China

I, Rongrong Shang (name of first witness), whose residential address is  
7th Floor, Tower D, Qinghua Science & Technology Park, Haidian District, Beijing, P.R. China  
was personally present and did see Jian Gao (name of person signing the assignment), who is  
personally known to me, execute the above assignment.

Rongrong Shang (signature of first witness)  
Signed at 7th Floor, Tower D, Qinghua Science & Technology Park (location of witness signature)  
on this day, Oct. 13th, 2017 (date of signature).

I, Wangpo Gao (name of second witness), whose residential address is  
7th Block D, Tsinghua Science Park, Haidian district, Beijing China  
was personally present and did see Jian Gao (name of person signing the assignment), who is  
personally known to me, execute the above assignment.

Wangpo Gao (signature of second witness)  
Signed at 7th Block D, TSP, Haidian District Beijing, China (location of witness signature)  
on this day, 10.13, 2017 (date of signature).

Date: 郭耕, 2017.10.13

郭耕  
Inventor's Signature

Print full name of inventor: Geng Han  
Residence: Beijing, China  
Citizenship: China  
Mailing Address: 2-1-601, Block 1, ShangDiDongLi  
Haidian District, Beijing, China

I, rongrong shang (name of first witness), whose residential address is 7th Floor, Tower D, Qinghua Science & Technology Park, Haidian District, Beijing, P. R. China was personally present and did see Geng Han (name of person signing the assignment), who is personally known to me, execute the above assignment.

rongrong shang (signature of first witness)  
Signed at 7th Floor, Tower D, Qinghua Science & Technology Park (location of witness signature)  
on this day, Oct. 13th, 2017 (date of signature).

I, Hongpo Gao (name of second witness), whose residential address is 7/F, Block D, Tsinghua Science Park, Haidian District, Beijing China was personally present and did see Geng Han (name of person signing the assignment), who is personally known to me, execute the above assignment.

Hongpo Gao (signature of second witness)  
Signed at 7/F, Block D, Tsinghua Science Park (location of witness signature)  
on this day, 10.13, 2017 (date of signature).  
Haidian District, Beijing China

Date: 2017. 10. 13

Jibing Dong  
Inventor's Signature

Print full name of inventor:

Jibing Dong

Residence:

Beijing, China

Citizenship:

China

Mailing Address:

2-2903 Building 5, Zaoyuanxiang No. 3  
Qingyuan Street, Daxing District  
Beijing, China

I, Rongrong Shang (name of first witness), whose residential address is 7th Floor, Tower D, Qinghua Science & Technology Park, Haidian District, Beijing, P.R. China was personally present and did see Jibing Dong (name of person signing the assignment), who is personally known to me, execute the above assignment.

Rongrong Shang (signature of first witness)

Signed at 7th Floor, Tower D, Qinghua Science & Technology Park (location of witness signature)

on this day, Oct. 13th, 2017 (date of signature).

I, Hongpo Gao (name of second witness), whose residential address is

7/F, Block D, Tsinghua Science Park, Haidian District, Beijing, China

was personally present and did see Jibing Dong (name of person signing the assignment), who is personally known to me, execute the above assignment.

Hongpo Gao (signature of second witness)

Signed at 7/F, Block D, TSP, Haidian district, Beijing, China (location of witness signature)

on this day, 10. 13, 2017 (date of signature).

Date: 2017. 10. 13

Shaoqin Gong  
Inventor's Signature

Print full name of inventor: Shaoqin Gong

Residence: Beijing, China

Citizenship: China

Mailing Address: No. 29, Chengfu Road  
Haidian District  
Beijing, China

I, rongrong shang (name of first witness), whose residential address is 7th Floor, Tower D, Qinghua Science & Technology Park, Haidian District, Beijing, P. R. China was personally present and did see Shaoqin Gong (name of person signing the assignment), who is personally known to me, execute the above assignment.

rongrong shang (signature of first witness)  
Signed at 7th Floor, Tower D, Qinghua Science & Technology Park (location of witness signature)  
on this day, Oct. 13th, 2017 (date of signature).

I, Hongpo Gao (name of second witness), whose residential address is 7th, Block D, Tsinghua Science Park, Haidian District, Beijing, China was personally present and did see Shaoqin Gong (name of person signing the assignment), who is personally known to me, execute the above assignment.

Hongpo Gao (signature of second witness)  
Signed at 7th, Block D, Tsinghua Science Park, Haidian District, Beijing, China (location of witness signature)  
on this day, 10.13, 2017 (date of signature).



Date: 2017. 10. 13

Sun lei  
Inventor's Signature

Print full name of inventor:

Ree Sun

Residence:

Beijing, China

Citizenship:

China

Mailing Address:

9-1-301, GuoFengMeiTang  
Beijing, China

I, rongrong shang (name of first witness), whose residential address is  
7th Floor, Tower D, Qinghua Science & Technology Park, Haidian District, Beijing, P.R. China  
was personally present and did see Ree Sun (name of person signing the assignment), who is  
personally known to me, execute the above assignment.

rongrong shang (signature of first witness)  
Signed at 7th Floor, Tower D, Qinghua Science & Technology Park (location of witness signature)  
on this day, Oct. 13th, 2017 (date of signature).

I, Hongpo Gao (name of second witness), whose residential address is  
7th, Block D, Tsinghua Science Park, Haidian District, Beijing, China  
was personally present and did see Ree Sun (name of person signing the assignment), who is  
personally known to me, execute the above assignment.

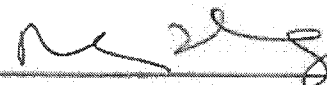
Hongpo Gao (signature of second witness)  
Signed at 7th, Block D, TSP, Haidian District, Beijing, China (location of witness signature)  
on this day, 10.13, 2017 (date of signature).

Date: 10-11-2017

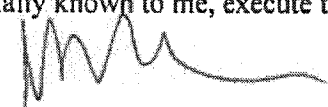
  
\_\_\_\_\_  
Inventor's Signature

Print full name of inventor: Naizhong Chiu  
Residence: Newton, MA  
Citizenship: United States  
Mailing Address: 15 Shumaker Path  
Newton, MA 02459

I, Ping Zhang (name of first witness), whose residential address is  
23 Trowbridge Ln, Shrewsbury MA  
was personally present and did see Naizhong Chiu (name of person signing the assignment), who  
is personally known to me, execute the above assignment.

  
\_\_\_\_\_  
(signature of first witness)  
Signed at 228 South St, Hopkinton, MA (location of witness signature)  
on this day, Oct 11th, 2017 (date of signature).

I, Gregory Lazar (name of second witness), whose residential address is  
10 Rockdale Hill Circle Upton MA  
was personally present and did see Naizhong Chiu (name of person signing the assignment), who  
is personally known to me, execute the above assignment.

  
\_\_\_\_\_  
(signature of second witness)  
Signed at 228 South St, Hopkinton, MA (location of witness signature)  
on this day, 10/11, 2017 (date of signature).

Date: 2017.10.13

Xinlei Xu  
Inventor's Signature

Print full name of inventor:

Xinlei Xu

Residence:

Beijing, China

Citizenship:

China

Mailing Address:

6-6-602, zhongyuan, tiantongyuan,  
Changping district  
Beijing, China

I, hongrong sheng (name of first witness), whose residential address is  
7th Floor, Tower D, Qinghua Science & Technology Park, Haidian District, Beijing, P.R. China  
was personally present and did see Xinlei Xu (name of person signing the assignment), who is  
personally known to me, execute the above assignment.

hongrong sheng (signature of first witness)

Signed at 7th Floor, Tower D, Qinghua Science & Technology Park (location of witness signature)  
on this day, Oct. 13th, 2017 (date of signature).

I, Hongpo Gao (name of second witness), whose residential address is  
7/F, Block D, Tsinghua Science Park, Haidian District, Beijing, China  
was personally present and did see Xinlei Xu (name of person signing the assignment), who is  
personally known to me, execute the above assignment.

Hongpo Gao (signature of second witness)  
Signed at 7/F, Block D, TSP, Haidian District, Beijing China (location of witness signature)  
on this day, 10.13, 2017 (date of signature).

Date: 2017.10.12

Jamin Kang

Inventor's Signature

Print full name of inventor:

Jamin Kang

Residence:

Beijing, China

Citizenship:

China

Mailing Address:

902 Building 13, Wenhuiyuan, Haidian District  
Beijing, China

I, rongrong shang (name of first witness), whose residential address is 7th Floor, Tower D, Qinghua Science & Technology Park, Haidian District, Beijing, P.R.China was personally present and did see Jamin Kang (name of person signing the assignment), who is personally known to me, execute the above assignment.

rongrong shang (signature of first witness)

Signed at 7th Floor, Tower D, Qinghua Science & Technology Park (location of witness signature)  
on this day, Oct. 13th, 2017 (date of signature).

I, Hongpo Gao (name of second witness), whose residential address is 7/F, Block D, Tsinghua Science Park, Haidian district, Beijing, China was personally present and did see Jamin Kang (name of person signing the assignment), who is personally known to me, execute the above assignment.

Hongpo Gao (signature of second witness)  
Signed at 7/F, Block D, TSP, Haidian district, Beijing, China (location of witness signature)  
on this day, 10.13, 2017 (date of signature).