504599731 10/18/2017

PATENT ASSIGNMENT COVER SHEET

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SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
JIBING DONG	10/13/2017
JIAN GAO	10/13/2017
JAMIN KANG	10/13/2017
HONGPO GAO	10/13/2017
XINLEI XU	10/13/2017
NAIZHONG CHIU	10/12/2017
RONALD D. PROULX	10/12/2017
SHAOQIN GONG	10/13/2017

RECEIVING PARTY DATA

Name:	EMC IP HOLDING COMPANY, LLC	
Street Address:	176 SOUTH STREET	
City:	HOPKINTON	
State/Country:	MASSACHUSETTS	
Postal Code:	01748	

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	15787095

CORRESPONDENCE DATA

Fax Number: (617)523-6850

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.

Phone: 617-523-2700

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Address Line 4: BOSTON, MASSACHUSETTS 02116

ATTORNEY DOCKET NUMBER:	113454.00293/109339	
NAME OF SUBMITTER:	TONI M. SOUSA	
SIGNATURE:	/Toni M. Sousa/	

PATENT 504599731 REEL: 043894 FRAME: 0854

DATE SIGNED:	10/18/2017
Total Attachments: 10	
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PATENT REEL: 043894 FRAME: 0855

ASSIGNMENT

WHEREAS, we, Jibing Dong, Jian Gao, Jamin Kang, Hongpo Gao, Xinlei Xu, Naizhong Chiu, Ronald D. Proulx and Shaoqin Gong, 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 System and Method for Improving I/O Performance By Introducing Extent Pool Level I/O Credits and User I/O Credits Throttling on Mapped RAID (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

PATENT REEL: 043894 FRAME: 0856

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.	Jibing Dong
	Jibing Dong Inventor's Signature
Print full name of inventor:	Jibing Dong
Residence:	Beijing, China
Citingualin	
Citizenship:	China
Mailing Address:	2-2903 Building 5, Zaoyuanxiang No. 3
	Qingyuan Street, Daxing District
	Beijing, China
I, <u>Sun lei</u> (na	ame of first witness), whose residential address is
7/F, Block D. Tsighua Science Park, Hai Dian	Diothles Rainin R. O. C.
was personally present and did see Jihing D	ong (name of person signing the assignment), who is
personally known to me, execute the above	assignment.
0 / 1	
Jun lei	(signature of first witness) k. Harban District, (location of witness signature) , 2017 (date of signature).
Signed at 7/F, Block D. Tighna Science Par	k. Hai Dian District, (location of witness signature)
on this day,	_, 2017 (date of signature).
I, Odyfun Lhu (na	ame of second witness), whose residential address is
TF, Blook D. Tshyhua Schence Park.	me of second witness), whose residential address is Mod Zhongguanaun East Rd., Beiting
was personally present and did see libing D	ong (name of person signing the assignment), who is
personally known to me, execute the above	assignment.
Qire Yun /m	_ (signature of second witness)
Signed at the same as above	(loostion of with an airest and
and the design of the control of the	(location of witness signature)
on this day $\frac{1}{\sqrt{2}}$, 2017 (date of signature).	

Date: 2017.10,13	35157
	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, Sun lei (nam	e of first witness), whose residential address is
71f. Block D. Tizhna Science Park, Hai Dian Di	
	name of person signing the assignment), who is
personally known to me, execute the above as	signment.
Sur Lei	(signature of first witness)
Signed at 71F, Block D. Tay hua Science Park.	(signature of first witness) Beily, P.R.C Hai Dian Districts (location of witness signature) 2017 (date of signature).
on this day,	2017 (date of signature).
	,
I, Oryyun Lin (nam	e of second witness), whose residential address is
7F, Rhodo D. Tsinghua schence par	k, Mol Zhongguanam East Rol., Beining
was personally present and did see Jian Gao (1	name of person signing the assignment), who is
personally known to me, execute the above as	
, , , , , , , , , , , , , , , , , , , ,	
Ogreyun Lin	(signature of second witness)
Signed at the sane as above	(location of witness signature)
Signed at the sane as above on this day, 10/13,	2017 (date of signature).

Date: Wh. W. Py	Tanin kun
	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, <u>Sun lei (</u> nan	ne of first witness), whose residential address is
was personally present and did see <u>Jamin Kar</u> personally known to me, execute the above as	ig (name of person signing the assignment), who is
Signed at 7/f. Block D. Toje hna Science Park	(signature of first witness) (signature of first witness) (Really of witness signature) (2017 (date of signature).
on this day,	, 2017 (date of signature).
I, <u>Qingyun Lin</u> (nan II-, Block D, Tsinghua Schenep Park, 14	ne of second witness), whose residential address is No. Zhungguan Cun Fast Rd., Beijing
was personally present and did see <u>Jamin Kar</u>	ng (name of person signing the assignment), who is
personally known to me, execute the above as	ssignment.
Oàngyan Lin	(signature of second witness)
Signed at the same as abone	(location of witness signature)
on this day, (0/13	, 2017 (date of signature).

Date:	Inventor's Signature
V	Inventor's Signature
Print full name of inventor:	Hongpo Gao
Residence:	Beijing, China
Citizenship:	China
Mailing Address:	5-301 Building 1, Longyue Street No 10,
	Changping District, Beijing, China
I, <u>Sur lei</u>	(name of first witness), whose residential address is
7Fl. Block D. Tingha Science Park,	Hai Dian District, Beijisp, P. R.C
was personally present and did see \underline{H}	ongpo Gao (name of person signing the assignment), who is
personally known to me, execute the	
Sur lei	(signature of first witness)
Signed at 7/F. Block D. Tsinghua Science	(signature of first witness) P.P.C Pork . Hai Dian District , Beijig (location of witness signature) , 2017 (date of signature).
on this day,	. 2017 (date of signature)
	, , , , , , , , , , , , , , , , , , , ,
1 Omeyan Lin	(name of accord witness) where well-util 111
75 Blood D. Tuchua Stavan Par	(name of second witness), whose residential address is
17, Fuel primar schene juri	RNO.1 27 WHO GUARGUM EASKRA., DEGING
	longpo Gao (name of person signing the assignment), who is
personally known to me, execute the	above assignment.
Wigyun Lin	(signature of second witness)
Signed at the same as above	(signature of second witness)(location of witness signature)
on this day,	, 2017 (date of signature).

Date: 2017. 10, 13	Xin (a) 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, <u>Sun lei</u> (nar	me of first witness), whose residential address is
7/F. Block D. Tsing how Science Park, Hai Dian D	istrict, Briging, P. R.C
was personally present and did see <u>Xinlei Xu</u>	(name of person signing the assignment), who is
personally known to me, execute the above a	ssignment.
Sun lei	(signature of first witness)
Signed at 7/F, Block D. Tichna Science Park	(signature of first witness)
on this day.	2017 (date of signature)
	, 2017 (date of bighttate).
I Dialytra /das (nor	mo of account witness) who are unidential address.
IT Rich D Tild Oli h	me of second witness), whose residential address is W. Zhongguan aun East Rd., Berjing
11-, b mor v, Isnyma scrence payr, 1	N Zwigguanaun East Kol., Derful
was personally present and did see Aimer Au	(name of person signing the assignment), who is
personally known to me, execute the above a	ssignment.
Osyvun Lhu	(signature of second witness)
Signed at the same as above	(location of witness signature)
on this day,	(signature of second witness) (location of witness signature) , 2017 (date of signature).
t .	

Date: 10-12-2017	
	Inventor's Signature
Print full name of inventor:	Naizhong Chiu
Residence:	Newton, MA
Citizenship:	United States
Mailing Address:	15 Shumaker Path
	Newton, MA 02459
$\sim \sim \sim \sim$	me of first witness), whose residential address is
was personally present and did see Naizhong	Chiu (name of person signing the assignment), who
is personally known to me, execute the above	e assignment.
M	(signature of first witness) (Signature of first witness) (Signature of first witness)
Signed at 228 Sax Stroot	Achieve (location of witness signature)
on this day, 69 12 2017	, 2017 (date of signature).
I, Marion Meirlaen (na 27 Harmony Drive, Millyd	me of second witness), whose residential address is
	Chiu (name of person signing the assignment), who
is personally known to me, execute the abov	
Marion Monkey	(signature of second witness)
Signed at 228 South 5t Hopkin	ton MA (location of witness signature)
on this day, 09/12/2017	

Date: 10/12/2017	Ruald May	
	Inventor's Signature	
Print full name of inventor:	Ronald D. Proulx	
Residence:	Boxborough, MA	
Citizenship:	United States	
Mailing Address:	50 Whitney Lane	
	Boxborough, MA 01719	
I, SHUYU LEE (no.	nme of first witness), whose residential address is	
was personally present and did see Ronald D. Proulx (name of person signing the assignment),		
who is personally known to me, execute the above assignment.		
Signed at V 228 SOUTH STO on this day, OC+ 12	(signature of first witness)(location of witness signature), 2017 (date of signature).	
I, Robert Foley (no 705 C Ridge Field Circl	name of second witness), whose residential address is \mathcal{L}	
was personally present and did see Ronald D. Proulx (name of person signing the assignment),		
who is personally known to me, execute the above assignment.		
WY =	(signature of second witness)	
Signed at 228 504455+ HoP	(signature of second witness) to 100 100 100 100 100 100 100 100 100 10	
on this day. 10/12	. 2017 (date of signature).	

Date: 2017. 12.13	Shaoqia Gong Inventor's Signature	
	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,		
is personally known to me, execute the above		
Signed at 7/F. Block D. Taghna Science Park, Hail on this day,	(signature of first witness) P.R. C. (location of witness signature) 2017 (date of signature).	
I, Origin Lin (nan TL, Block D, Tshiphua schence Park,	ne of second witness), whose residential address is No. Zhongguan cun Fast Rol., Bering	
was personally present and did see Shaoqin Gong (name of person signing the assignment), who		
is personally known to me, execute the above assignment.		
Ongyan Lin	(signature of second witness)	
Signed at the same as above	(location of witness signature)	
on this day,	(signature of second witness) (location of witness signature) 2017 (date of signature).	
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