#### 504508122 08/17/2017

# PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT4554827

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

#### **CONVEYING PARTY DATA**

Name	Execution Date
SHENG WANG	08/16/2017
JIBING DONG	08/16/2017
GENG HAN	08/16/2017
XINLEI XU	08/16/2017
JIAN GAO	08/16/2017
REE SUN	08/16/2017
MICHAEL WAHL	08/16/2017

# 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:	15662742

#### CORRESPONDENCE DATA

Fax Number: (508)366-4688

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: 508-616-2900

Email: Docket@BainwoodHuang.com

BAINWOOD, HUANG & ASSOCIATES, LLC **Correspondent Name:** 

2 CONNECTOR ROAD Address Line 1:

Address Line 4: WESTBOROUGH, MASSACHUSETTS 01581

ATTORNEY DOCKET NUMBER:	1003-542
NAME OF SUBMITTER:	DAVID A. DAGG, ESQ.
SIGNATURE:	/David Dagg/
DATE SIGNED:	08/17/2017

**PATENT** REEL: 043583 FRAME: 0847

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# **Total Attachments: 21** source=1003-542-Inv1-assignment-WENG#page1.tif source=1003-542-Inv1-assignment-WENG#page2.tif source=1003-542-Inv1-assignment-WENG#page3.tif source=1003-542-Inv2-assignment-DONG#page1.tif source=1003-542-Inv2-assignment-DONG#page2.tif source=1003-542-Inv2-assignment-DONG#page3.tif source=1003-542-Inv3-assignment-HAN#page1.tif source=1003-542-Inv3-assignment-HAN#page2.tif source=1003-542-Inv3-assignment-HAN#page3.tif source=1003-542-Inv4-assignment-XU#page1.tif source=1003-542-Inv4-assignment-XU#page2.tif source=1003-542-Inv4-assignment-XU#page3.tif source=1003-542-Inv5-assignment-GAO#page1.tif source=1003-542-Inv5-assignment-GAO#page2.tif source=1003-542-Inv5-assignment-GAO#page3.tif source=1003-542-Inv6-assignment-SUN#page1.tif source=1003-542-Inv6-assignment-SUN#page2.tif source=1003-542-Inv6-assignment-SUN#page3.tif source=1003-542-Inv7-assignment-WAHL#page1.tif source=1003-542-Inv7-assignment-WAHL#page2.tif source=1003-542-Inv7-assignment-WAHL#page3.tif

PATENT REEL: 043583 FRAME: 0848

Client Docket No.: <u>108835.01</u>

# **ASSIGNMENT**

WHEREAS, I, Sheng Wang, as the original inventor or an original joint inventor 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

ASSIGNMENT OF NEWLY ADDED DATA STORAGE DRIVES TO AN ORIGINAL DATA STORAGE DRIVE PARTNERSHIP GROUP AND A NEW DATA STORAGE DRIVE PARTNERSHIP GROUP IN A MAPPED RAID (REDUNDANT ARRAY OF INDEPENDENT DISKS) SYSTEM

which is further identified by Attorney Docket Number 1003-542;

WHEREAS, EMC IP Holding Company LLC (hereinafter "ASSIGNEE"), a limited liability company organized and existing under the laws of the state of Delaware and having a usual place of business at 176 South Street, Hopkinton, MA, 01748, USA, desires to acquire an interest therein in accordance with agreements duly entered into with me:

Client Docket No.: 108835.01

AND, I hereby further agree for myself and my 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, I 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** I hereby authorize the attorneys at Bainwood Huang & Associates LLC to insert here in parentheses

Date: 8/16	Sheng . Warry Inventor's Signature
Legal name of inventor:	Sheng Wang
Residence:	Room 508, Building 15, Beiyuan Home Mo Quinoa Garden Chaoyang District Beijing, China (People's Republic)
Mailing Address: Citizenship:	Same as Above CN
	(name) whose residential address is
was personally present and did see assignment) who is personally know	Science (location of witness)  of 20_1/. (date of signature)
was personally present and did see assignment) who is personally know	(name) whose residential address is  (name) whose residential address is  (name) whose residential address is  Sheng Wang (name of person signing the year to me, execute the above assignment.  (signature of second witness)  (signature)  (date of signature)

Client Docket No.: 108835.01

# **ASSIGNMENT**

WHEREAS, I, <u>Jibing Dong</u>, as the original inventor or an original joint inventor 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

ASSIGNMENT OF NEWLY ADDED DATA STORAGE DRIVES TO AN ORIGINAL DATA STORAGE DRIVE PARTNERSHIP GROUP AND A NEW DATA STORAGE DRIVE PARTNERSHIP GROUP IN A MAPPED RAID (REDUNDANT ARRAY OF INDEPENDENT DISKS) SYSTEM

which is further identified by Attorney Docket Number 1003-542;

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Client Docket No.: 108835.01

AND, I hereby further agree for myself and my 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, I 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** I hereby authorize the attorneys at Bainwood Huang & Associates LLC to insert here in parentheses

Date: 2017. 8. 16	Jibag Dung
	Jibrg Dung Inventor's Signature
Legal name of inventor:	Jibing Dong
Residence:	#5-2-2903, Zhong Jian Guo Ji GanG Xing Hua Road, Daxing District Beijing, 1002600 China (People's Republic)
Mailing Address: Citizenship:	Same as Above CN
1 Baste Thuo	(name) whose residential address is
7/7. Block D. Tsinghua Science	(name) whose residential address is  Dark, Haidian Diswict, beijing P.R.C.
assignment) who is personally know	vn to me, execute the above assignment.
Baste Thuo	(signature of first witness)
Signed at 7/4, Blook D. Isinghua	(signature of first witness)  Scient (location of witness signature)  of 2017. (date of signature)
on this day 28.16	of 20_ <i>t</i> . (date of signature)
	<b>1</b>
1_ Zhac Zhenhua	(name) whose residential address is
7 F. Polock D. Tringhua Science	Park, Hailian District, feizing P. R.C.
was personally present and did see	ا <u>لله لإنافاني المنافعة لله لله المنافعة لله لله المنافعة لله المنافعة لله المنافعة لله المنافعة لله المنافعة </u>
Signed at 7F, Brock V. Tsingling	(signature of second witness)  Signature of second witness)  Signature of light of l
on this day	of 20 (date of signature)
On this day	or zo (date or signature)

Client Docket No.: 108835.01

### **ASSIGNMENT**

WHEREAS, I, Geng Han, as the original inventor or an original joint inventor 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

ASSIGNMENT OF NEWLY ADDED DATA STORAGE DRIVES TO AN ORIGINAL DATA STORAGE DRIVE PARTNERSHIP GROUP AND A NEW DATA STORAGE DRIVE PARTNERSHIP GROUP IN A MAPPED RAID (REDUNDANT ARRAY OF INDEPENDENT DISKS) SYSTEM

which is further identified by Attorney Docket Number 1003-542;

WHEREAS, EMC IP Holding Company LLC (hereinafter "ASSIGNEE"), a limited liability company organized and existing under the laws of the state of Delaware and having a usual place of business at 176 South Street, Hopkinton, MA, 01748, USA, desires to acquire an interest therein in accordance with agreements duly entered into with me;

Client Docket No.: 108835.01

AND, I hereby further agree for myself and my 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, I 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** I hereby authorize the attorneys at Bainwood Huang & Associates LLC to insert here in parentheses

Date: 2017.08.16 Inventor's Signature Geng Han Legal name of inventor: #1-5-601, Shang, Di Dong Li Community Residence: Haidian District Beijing, 1002600 China (People's Republic) Mailing Address: Same as Above Citizenship: CN Daote Thuo (name) whose residential address is 7/7. Brook D Isinghua Science Dark, HaiDian District Beijing. P.R.C was personally present and did see Geng Han (name of person signing the assignment) who is personally known to me, execute the above assignment. (signature of first witness) Signed at 7/F, Brook D. Tsing hua Science park, Hai Dian District . Bei of 20\_//. (date of signature) on this day \_ (name) whose residential address is was personally present and did see Geng Han (name of person signing the assignment) who is personally known to me, execute the above assignment. (signature of second witness) (date of signature) on this day

PATENT ASSIGNMENT

Attorney Docket No.: 1003-542 Client Docket No.: 108835.01

### **ASSIGNMENT**

WHEREAS, I, Xinlei Xu, as the original inventor or an original joint inventor 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

ASSIGNMENT OF NEWLY ADDED DATA STORAGE DRIVES TO AN ORIGINAL DATA STORAGE DRIVE PARTNERSHIP GROUP AND A NEW DATA STORAGE DRIVE PARTNERSHIP GROUP IN A MAPPED RAID (REDUNDANT ARRAY OF INDEPENDENT DISKS) SYSTEM

which is further identified by Attorney Docket Number 1003-542;

WHEREAS, EMC IP Holding Company LLC (hereinafter "ASSIGNEE"), a limited liability company organized and existing under the laws of the state of Delaware and having a usual place of business at 176 South Street, Hopkinton, MA, 01748, USA, desires to acquire an interest therein in accordance with agreements duly entered into with me:

Client Docket No.: 108835.01

AND, I hereby further agree for myself and my 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, I 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** I hereby authorize the attorneys at Bainwood Huang & Associates LLC to insert here in parentheses

PATENT ASSIGNMENT

Attorney Docket No.: <u>1003-542</u> Client Docket No.: <u>108835.01</u>

Date: 2017.8.16	Xin(ε) χα Inventor's Signature
Legal name of inventor:	Xinlei Xu
Residence:	6-6-602, Zhongyuan,Tiantongyuan Changping District Beijing, 102218 China (People's Republic)
Mailing Address: Citizenship:	Same as Above CN
1_ Baote Thus	(name) whose residential address is park, Haidian Diswirt, Beijing, P.R.C.
7/P. Blocko, Tsinghua Science	Park, HaiDian Diswirt Beijing P.R.C
was personally present and did see who is personally known to me, exe	Xinlei Xu (name of person signing the assignment)
Baste Thus	(signature of first witness)
Signed at7/7.Block D. Tsinghua So	ieme far(tocation of witness signature) P.R.C. of 2017. (date of signature)
on this day 08. 16	of 20 <u>/</u> . (date of signature)
	1
who is personally known to me, exe	- · · · · · · · · · · · · · · · · · · ·
Signed at 7F, brock D, Singhua	(signature of second witness)  Schence   Sale
on this day <u>03. 16</u>	of 20 / . (date of signature)

Client Docket No.: 108835.01

# **ASSIGNMENT**

**WHEREAS**, I, <u>Jian Gao</u>, as the original inventor or an original joint inventor 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

ASSIGNMENT OF NEWLY ADDED DATA STORAGE DRIVES TO AN ORIGINAL DATA STORAGE DRIVE PARTNERSHIP GROUP AND A NEW DATA STORAGE DRIVE PARTNERSHIP GROUP IN A MAPPED RAID (REDUNDANT ARRAY OF INDEPENDENT DISKS) SYSTEM

which is further identified by Attorney Docket Number 1003-542;

WHEREAS, EMC IP Holding Company LLC (hereinafter "ASSIGNEE"), a limited liability company organized and existing under the laws of the state of Delaware and having a usual place of business at 176 South Street, Hopkinton, MA, 01748, USA, desires to acquire an interest therein in accordance with agreements duly entered into with me:

Client Docket No.: 108835.01

AND, I hereby further agree for myself and my 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, I 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** I hereby authorize the attorneys at Bainwood Huang & Associates LLC to insert here in parentheses

Attorney Docket No.: 1003-542 Client Docket No.: 108835.01 Date: 7017, 8.16 Inventor¦s Signature Jian Gao Legal name of inventor: 601#, Building 16, Rongfeng 2008 Residence: Guanganmen Wai Street, Xicheng District Beijing, 100000 China (People's Republic) Same as Above Mailing Address: Citizenship: CN 1 haste Thus (name) whose residential address is Block D Tsinghua Science Park, HaiDian District, Beijing. P.R.C. was personally present and did see Jian Gao (name of person signing the assignment) who is personally known to me, execute the above assignment. baste Thuo (signature of first witness) Signed at 7/F, Burk D. Isinghua Science participation of witness signature) of 20\_//. (date of signature) on this day (name) whose residential address is was personally present and did see <u>Jian Gao</u> (name of person signing the assignment) who is personally known to me, execute the above assignment. (signature of second witness)

on this day

District beining f.R.C

. (date of signature)

PATENT ASSIGNMENT

Client Docket No.: 108835.01

### **ASSIGNMENT**

WHEREAS, I, Ree Sun, as the original inventor or an original joint inventor 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

ASSIGNMENT OF NEWLY ADDED DATA STORAGE DRIVES TO AN ORIGINAL DATA STORAGE DRIVE PARTNERSHIP GROUP AND A NEW DATA STORAGE DRIVE PARTNERSHIP GROUP IN A MAPPED RAID (REDUNDANT ARRAY OF INDEPENDENT DISKS) SYSTEM

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Client Docket No.: 108835.01

AND, I hereby further agree for myself and my 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, I 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** I hereby authorize the attorneys at Bainwood Huang & Associates LLC to insert here in parentheses

Date: 2017. 8. 1 b	<u>Lei Sun</u>
	Inventor's Signature
Legal name of inventor:	Ree Sun
Residence:	No. 1, Zhongguancun Dong Road Tsinghua Science Park, Block D Haidian District Beijing, 100084 China (People's Republic)
Mailing Address: Citizenship:	Same as Above CN
was personally present and did see who is personally known to me, exe	(name) whose residential address is  Park, Mai Dian District. Beijing P.R.C.,  Ree Sun (name of person signing the assignment) cute the above assignment.  (signature of first witness)  Science Mocation of witness signature)  of 20/). (date of signature)
was personally present and did see who is personally known to me, exe   Zhuo Zhen hua  Signed at 7F, block ). Shehua	(name) whose residential address is  Ree Sun (name of person signing the assignment)  cute the above assignment.  (signature of second witness)  (signature of second witness)

Attorney Docket No.: 1003-542 Client Docket No.: 108835.01

# <u>ASSIGNMENT</u>

WHEREAS, I, Michael Wahl, as the original inventor or an original joint inventor 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

ASSIGNMENT OF NEWLY ADDED DATA STORAGE DRIVES TO AN ORIGINAL DATA STORAGE DRIVE PARTNERSHIP GROUP AND A NEW DATA STORAGE DRIVE PARTNERSHIP GROUP IN A MAPPED RAID (REDUNDANT ARRAY OF INDEPENDENT DISKS) SYSTEM

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PATENT ASSIGNMENT

Attorney Docket No.: 1003-542 Client Docket No.: 108835.01

AND, I hereby further agree for myself and my 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**, I 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** I hereby authorize the attorneys at Bainwood Huang & Associates LLC to insert here in parentheses

Date: 8 (1) 12017	Inventor's Signature
Legal name of inventor:	Michael Wahl
Residence:	1257 Glenwood Loop Bulverde, TX 78163 United States of America
Mailing Address: Citizenship:	Same as Above US
1 Mallory Kopodze 19413 Brie St., 1	ey (name) whose residential address is Phugerville, TX 78(eleo
was personally present and did s	see <u>Michael Wahl</u> (name of person signing the nown to me, execute the above assignment.
Mallory Koloda	(signature of first witness) (location of witness signature)
Signed at Bulvende, T	(location of witness signature)
on this day August 11	of 20 of 20 (date of signature)
1 Alexandra Wah	(name) whose residential address is
113 Watson Ln. B	ngan, TX 77801
was personally present and did assignment) who is personally k	see Michael Wahl (name of person signing the nown to me, execute the above assignment.
Alghor of Wal	(signature of second witness)
Signed at 1257 Glenway Bullyeral TX	(location of witness signature)
on this day August 1	of 20 ☐. (date of signature)

-3-

PATENT REEL: 043583 FRAME: 0869