

PATENT ASSIGNMENT COVER SHEET

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Stylesheet Version v1.2

EPAS ID: PAT5266089

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|---|-----------------------------------|
| SUBMISSION TYPE: | NEW ASSIGNMENT |
| NATURE OF CONVEYANCE: | ASSIGNMENT |
| CONVEYING PARTY DATA | |
| Name | Execution Date |
| QIU SHANG | 11/05/2018 |
| VASU SUBRAMANIAN | 11/06/2018 |
| QI QU | 11/06/2018 |
| TIANFANG XIONG | 11/06/2018 |
| YUE QIAN | 11/05/2018 |
| 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: | 16175162 |
| CORRESPONDENCE DATA | |
| Fax Number: | (508)366-4688 |
| <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> | |
| Phone: | 508-616-2900 |
| Email: | Docket@BainwoodHuang.com |
| Correspondent Name: | BAINWOOD, HUANG & ASSOCIATES, LLC |
| Address Line 1: | 2 CONNECTOR ROAD |
| Address Line 4: | WESTBOROUGH, MASSACHUSETTS 01581 |
| ATTORNEY DOCKET NUMBER: | 1003-650 |
| NAME OF SUBMITTER: | DAVID E. HUANG, ESQ. |
| SIGNATURE: | /David E. Huang, Reg. No. 39,229/ |
| DATE SIGNED: | 12/04/2018 |
| Total Attachments: 15 | |
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ASSIGNMENT

WHEREAS, I, Qiu Shang, 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

PRESERVING REPLICATION TO A STORAGE OBJECT ON A STORAGE NODE

which is further identified by Attorney Docket Number 1003-650;

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;

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, I 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 me had this assignment and sale not been made; I 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. I 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, 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

PATENT ASSIGNMENT
Attorney Docket No.: 1003-650
Client Docket No.: 111586.01

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

(161175,162 , filed 10/30/2018)

the application number and filing date of said application (or foreign counterpart application) to facilitate the recording or other official processing of this Assignment.

Date: 11/5/2018

Shang Qiu (Qiu Shang)
Inventor's Signature

Legal name of inventor: Qiu Shang
Residence: Songhu Roa #252, Building #2
Yangpu District
Shanghai, 200433
China (People's Republic)
Mailing Address: Same as Above
Citizenship: CN

I Jeffery Huang (name) whose residential address is
Putuo District, Bayu Road No. 18, Floor 4

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

Jeffery Huang (signature of first witness)

Signed at Songhu Road, Yangpu District (location of witness signature)

on this day Nov. 5 of 20 18. (date of signature)

I David Ren (name) whose residential address is
Pu Dong District, Boxing Rd. No 799 Floor 6

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

David Ren (signature of second witness)

Signed at Songhu Rd Yangpu District (location of witness signature)

on this day Nov. 5 of 20 18. (date of signature)

ASSIGNMENT

WHEREAS, I, Vasu Subramanian, 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

PRESERVING REPLICATION TO A STORAGE OBJECT ON A STORAGE NODE

which is further identified by Attorney Docket Number 1003-650;

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;

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, I 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 me had this assignment and sale not been made; I 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. I 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, 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

(16/175,162 . filed 10/30/2018)

the application number and filing date of said application (or foreign counterpart application) to facilitate the recording or other official processing of this Assignment.

Date: Nov 6 2018



Inventor's Signature

Legal name of inventor: Vasu Subramanian
Residence: 108 North Haven Drive
Chapel Hill, NC 27516
United States of America
Mailing Address: Same as Above
Citizenship: US

I David F Haase (name) whose residential address is
904 Cedar Point, Fuquay Varina, NC 27526
was personally present and did see Vasu Subramanian (name of person signing the
assignment) who is personally known to me, execute the above assignment.

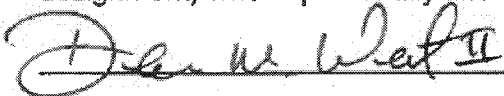


(signature of first witness)

Signed at 62 Tw. Alexander Dr (location of witness signature)

on this day Nov 6A of 2018. (date of signature)

I Dean M. West II (name) whose residential address is
6249 Kit Creek Rd Morristown, NC 27560
was personally present and did see Vasu Subramanian (name of person signing the
assignment) who is personally known to me, execute the above assignment.



(signature of second witness)

Signed at 62 Tw Alexander Dr RTP, NC 27709 (location of witness signature)

on this day Nov 6 of 2018. (date of signature)

ASSIGNMENT

WHEREAS, I, Qi Qu, 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

PRESERVING REPLICATION TO A STORAGE OBJECT ON A STORAGE NODE

which is further identified by Attorney Docket Number 1003-650;

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;

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, I 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 me had this assignment and sale not been made; I 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. I 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, 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

PATENT ASSIGNMENT
Attorney Docket No.: 1003-650
Client Docket No.: 111586.01

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

(16/175,162 , filed 10/30/2018)

the application number and filing date of said application (or foreign counterpart application) to facilitate the recording or other official processing of this Assignment.

Date: 11/6/2018

Qi Qu
Inventor's Signature

Legal name of inventor: Qi Qu
Residence: Room 501, No. 15, Lane 539, Liangcheng Road
Shanghai, 200434
China (People's Republic)
Mailing Address: Same as Above
Citizenship: CN

I Jiaojiao Zhang (name) whose residential address is
NO.17 Liaoyuan Road, Pu Dong District
was personally present and did see Qi Qu (name of person signing the assignment)
who is personally known to me, execute the above assignment.

Jiaojiao Zhang (signature of first witness)
Signed at NO.252 Songhu Road, Yangpu District (location of witness signature)
on this day Nov. 6 of 2018. (date of signature)

I Jeffery Huang (name) whose residential address is
Putuo District, Bayu Road, No.18, Floor 4
was personally present and did see Qi Qu (name of person signing the assignment)
who is personally known to me, execute the above assignment.

Jeffery Huang (signature of second witness)
Signed at NO.252 Songhu Road, Yangpu District (location of witness signature)
on this day Nov. 6th of 2018. (date of signature)

ASSIGNMENT

WHEREAS, I, Tianfang Xiong, 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

PRESERVING REPLICATION TO A STORAGE OBJECT ON A STORAGE NODE

which is further identified by Attorney Docket Number 1003-650;

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;

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, I 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 me had this assignment and sale not been made; I 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. I 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, 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

PATENT ASSIGNMENT
Attorney Docket No.: 1003-650
Client Docket No.: 111586.01

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

(16/175,162 , filed 10/30/2018)

the application number and filing date of said application (or foreign counterpart application) to facilitate the recording or other official processing of this Assignment.

Date: Nov. 6, 2018

Tianfang Xiong
Inventor's Signature

Legal name of inventor: Tianfang Xiong
Residence: 3-6A, No. 977 Hong Qiao Road
Changning District
Shanghai, 200051
China (People's Republic)
Mailing Address: Same as Above
Citizenship: CN

I Yibing Peng, (name) whose residential address is
Room 501, No. 49, Luoying Road, Shanghai, P.R. China

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

Yibing, Peng (signature of first witness)

Signed at KIC 1-3F, No. 252, SongHu Road (location of witness signature)

on this day Nov. 6 of 2018. (date of signature)

I Zhipeng, Zhang (name) whose residential address is
Room 201, No. 32 Sanmen Road, Shanghai, P.R. China

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

Zhipeng, Zhang (signature of second witness)

Signed at KIC 1-3F, No. 252, SongHu Road (location of witness signature)

on this day Nov. 6 of 2018. (date of signature)

ASSIGNMENT

WHEREAS, I, Yue Qian, 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

PRESERVING REPLICATION TO A STORAGE OBJECT ON A STORAGE NODE

which is further identified by Attorney Docket Number 1003-650;

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;

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, I 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 me had this assignment and sale not been made; I 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. I 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, 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

PATENT ASSIGNMENT
Attorney Docket No.: 1003-650
Client Docket No.: 111586.01

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;

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AND I hereby authorize the attorneys at Bainwood Huang & Associates LLC to insert here in parentheses

(16/175,162 , filed 10/30/2018)

the application number and filing date of said application (or foreign counterpart application) to facilitate the recording or other official processing of this Assignment.

Date: 2018/11/5

Yue Qian
Inventor's Signature

Legal name of inventor:

Yue Qian

Residence:

No. 51, Lane 1702, North Sichuan Road
Shanghai, 200080
China (People's Republic)

Mailing Address:

Same as Above

Citizenship:

CN

I Jeffery Huang (name) whose residential address is
Putuo District, Baiyu Road, No. 18, Floor 4.

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

Jeffery Huang (signature of first witness)

Signed at Songhua Road, Yangpu District (location of witness signature)

on this day Nov. 5 of 2018. (date of signature)

I David Ren (name) whose residential address is

Pudong District, Boxing Rd. No. 799 Floor 6

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

David Ren (signature of second witness)

Signed at Songhu Rd. Yangpu District (location of witness signature)

on this day NOV. 5 of 2018. (date of signature)