

| |
|--------------------------------------|
| PATENT ASSIGNMENT COVER SHEET |
|--------------------------------------|

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT4844114

| | |
|---|--------------------------------|
| SUBMISSION TYPE: | NEW ASSIGNMENT |
| NATURE OF CONVEYANCE: | ASSIGNMENT |
| CONVEYING PARTY DATA | |
| Name | Execution Date |
| TAO XU | 06/30/2017 |
| MAN LV | 06/29/2017 |
| BING LIU | 06/29/2017 |
| 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: | 15629011 |
| CORRESPONDENCE DATA | |
| Fax Number: | |
| <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> | |
| Email: | Holly_Vigliatura@dell.com |
| Correspondent Name: | EMC IP HOLDING COMPANY LLC |
| Address Line 1: | 176 SOUTH STREET |
| Address Line 4: | HOPKINTON, MASSACHUSETTS 01748 |
| ATTORNEY DOCKET NUMBER: | EMC-16-0313.02 |
| NAME OF SUBMITTER: | HOLLY VIGLIATURA |
| SIGNATURE: | /Holly Vigliatura/ |
| DATE SIGNED: | 02/28/2018 |
| Total Attachments: 6 | |
| source=ExecutedAssignment#page1.tif | |
| source=ExecutedAssignment#page2.tif | |
| source=ExecutedAssignment#page3.tif | |
| source=ExecutedAssignment#page4.tif | |
| source=ExecutedAssignment#page5.tif | |

ASSIGNMENT

WHEREAS, we, Tao Xu, Man Lv, Bing Liu and James Lei, 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 *METHOD AND DEVICE FOR MANAGING INPUT/OUTPUT (I/O) OF STORAGE DEVICE* (Application), the specification of which:

- is being executed on even date herewith and is about to be filed in the United States Patent Office;
- was filed on June 21, 2017 as U.S. Application No. 15/629,011;
- 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 IP HOLDING COMPANY LLC, to insert here in parenthesis (15/629,011 filed June 21, 2017) 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: 2017.06.30


Inventor's Signature


Print full name of inventor Tao Xu

Residence 1001, Block 20, ~~Flat 612, Rongshangmu,~~

88 Zefeng Rd, Fengxian District ~~No. 2 West Wadaokou Road, Haidian District~~ 201400 Shanghai, CN ~~100880 Beijing, CN~~

Citizenship CN

Mailing Address Same as above

I,  Jimmy Pei (name of first witness), whose residential address is #316 Sunhu Rd. #5 KCC, Shanghai was personally present and did see Tao Xu (name of person signing the assignment), who is personally known to me, execute the above assignment.

Jimmy Pei (Signature of first witness)
Signed at #316 Sunhu Rd. #5 KCC, Shanghai (location of witness signature)
on this day, June 30th, 2017 (date of signature).

I, Maot Song (name of second witness), whose residential address is # 316 Sunhu Rd. #5 KCC, Shanghai was personally present and did see Tao Xu (name of person signing the assignment), who is personally known to me, execute the above assignment.

Maot Song (Signature of second witness)
Signed at # 316 Sunhu Rd. #5 KCC, Shanghai (location of witness signature)
on this day, June 30th, 2017 (date of signature).

Date: 2017.16.29

Man Lv
Inventor's Signature

Print full name of inventor

Man Lv

Residence

Tsinghua Science Park

100084 Beijing, CN

Citizenship

CN

Mailing Address

Same as above

I, Eric Song (name of first witness), whose residential address is

Longhuayuan, Changping District, Beijing, China

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

Eric Song (Signature of first witness)

Signed at Tsinghua Science Park, Haidian District, Beijing, China (location of witness signature)

on this day, Jun. 29, 2017 (date of signature).

I, Ried Liu (name of second witness), whose residential address is

Longzeyuan, Changping District, Beijing, China

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

Ried Liu (Signature of second witness)

Signed at Tsinghua Science Park, Haidian District, Beijing, China (location of witness signature)

on this day, Jun 29, 2017 (date of signature).

Date: 2017/6/29

Bing Liu

Inventor's Signature

Print full name of inventor

Bing Liu

Residence

Tianjin Kunwei Street Kunpuli 4-35

300140 Tianjin, CN

Citizenship

CN

Mailing Address

Same as above

I, Eric Song (name of first witness), whose residential address is

Zonghuayuan, Changping District, Beijing, China

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

Eric Song (Signature of first witness)

Signed at Tsinghua Science Park, Haidian District, Beijing, China (location of witness signature)

on this day, Jun. 29, 2017 (date of signature).

I, Ried Liu (name of second witness), whose residential address is

Longzeyuan, changping District, Beijing, China

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

Ried Liu (Signature of second witness)

Signed at Tsinghua Science Park, Haidian, Beijing, China (location of witness signature)

on this day, Jun 29, 2017 (date of signature).

Date: _____
Inventor's Signature

Print full name of inventor James Lei Ni
Residence Building 27, Room 3011
Enjili Community, Haidian District
100142 Beijing, CN
Citizenship CN
Mailing Address Same as above

I, _____ (name of first witness), whose residential address is

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

_____ (Signature of first witness)
Signed at _____ (location of witness signature)
on this day, _____, 20____ (date of signature).

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

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

_____ (Signature of second witness)
Signed at _____ (location of witness signature)
on this day, _____, 20____ (date of signature).