

## PATENT ASSIGNMENT

Electronic Version v1.1  
 Stylesheet Version v1.1

SUBMISSION TYPE:	NEW ASSIGNMENT																				
NATURE OF CONVEYANCE:	ASSIGNMENT																				
<b>CONVEYING PARTY DATA</b>																					
<table border="1"> <thead> <tr> <th>Name</th> <th>Execution Date</th> </tr> </thead> <tbody> <tr> <td>Marik Marshak</td> <td>05/02/2013</td> </tr> <tr> <td>Dan Aharoni</td> <td>05/02/2013</td> </tr> <tr> <td>Stephen Richard Ives</td> <td>05/01/2013</td> </tr> <tr> <td>Amnon Naamad</td> <td>05/02/2013</td> </tr> <tr> <td>Peng Yin</td> <td>05/02/2013</td> </tr> <tr> <td>Ningdong Li</td> <td>05/02/2013</td> </tr> <tr> <td>Sanjay Narahari</td> <td>05/02/2013</td> </tr> <tr> <td>Manickavasasaham M. Senguden</td> <td>05/02/2013</td> </tr> <tr> <td>Jeffrey Wilson</td> <td>05/02/2013</td> </tr> </tbody> </table>		Name	Execution Date	Marik Marshak	05/02/2013	Dan Aharoni	05/02/2013	Stephen Richard Ives	05/01/2013	Amnon Naamad	05/02/2013	Peng Yin	05/02/2013	Ningdong Li	05/02/2013	Sanjay Narahari	05/02/2013	Manickavasasaham M. Senguden	05/02/2013	Jeffrey Wilson	05/02/2013
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Manickavasasaham M. Senguden	05/02/2013																				
Jeffrey Wilson	05/02/2013																				
<b>RECEIVING PARTY DATA</b>																					
Name:	EMC Corporation																				
Street Address:	176 South Street																				
City:	Hopkinton																				
State/Country:	MASSACHUSETTS																				
Postal Code:	01748																				
<b>PROPERTY NUMBERS Total: 1</b>																					
<table border="1"> <thead> <tr> <th>Property Type</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>Application Number:</td> <td>13875490</td> </tr> </tbody> </table>		Property Type	Number	Application Number:	13875490																
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<b>CORRESPONDENCE DATA</b>																					
Fax Number:																					
<i>Correspondence will be sent via US Mail when the fax attempt is unsuccessful.</i>																					
Phone:	508-898-8601																				
Email:	docketing@WESTBORO-IP.COM																				
Correspondent Name:	MUIRHEAD AND SATURNELLI, LLC																				
Address Line 1:	200 FRIBERG PARKWAY, SUITE 1001																				
Address Line 4:	WESTBOROUGH, MASSACHUSETTS 01581																				

CH \$40.00 13875490

ATTORNEY DOCKET NUMBER:	EMS-509US; EMC-13-0091
NAME OF SUBMITTER:	Anne E. Saturnelli
Signature:	/Anne E. Saturnelli/
Date:	05/02/2013
<p><b>Total Attachments: 10</b></p> <p>source=EMS-509US, Executed Assignment#page1.tif  source=EMS-509US, Executed Assignment#page2.tif  source=EMS-509US, Executed Assignment#page3.tif  source=EMS-509US, Executed Assignment#page4.tif  source=EMS-509US, Executed Assignment#page5.tif  source=EMS-509US, Executed Assignment#page6.tif  source=EMS-509US, Executed Assignment#page7.tif  source=EMS-509US, Executed Assignment#page8.tif  source=EMS-509US, Executed Assignment#page9.tif  source=EMS-509US, Executed Assignment#page10.tif</p>	

### ASSIGNMENT

WHEREAS, we, Marik MARSHAK, Dan AHARONI, Stephen Richard IVES, Amnon NAAMAD, Peng YIN, Ningdong LI, Sanjay NARAHARI, Manickavasasaham SENGUDEN and Jeffrey WILSON 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 **TECHNIQUES USING CACHELESS READ AND DEFERRED CACHING**, 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 \_\_\_\_\_ as U.S. Application No. \_\_\_\_\_;
- was patented under U.S. Patent No. \_\_\_\_\_ on \_\_\_\_\_.

WHEREAS, EMC Corporation (hereinafter "ASSIGNEE"), a corporation organized and existing under the laws of the Commonwealth of Massachusetts 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 attorneys of Muirhead and Saturnelli, LLC to insert here in parenthesis (13575,490 filed 5-2-13) 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: May 2, 2013

[Signature]  
Inventor's Signature

Print full name of first inventor: Marik MARSHAK

Residence: 14 Juniper Lane

Newton, MA 02459

Citizenship: U.S.A.

Mailing Address: Same

STATE OF MASSACHUSETTS

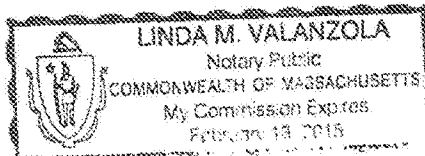
COUNTY OF Middlesex

On this 2 day of May, 2013, then personally appeared before me the above-named Marik MARSHAK known to me through satisfactory evidence of identification [] employee identification card; [] driver's license; [] (other) \_\_\_\_\_ to be the person whose name is subscribed to the foregoing Assignment and acknowledged that he/she executed the same as his/her free act and deed for the purposes therein contained.

[Signature]  
Notary Public

Print Name: Linda M. Valanzola

My Commission expires:



Date: 5/2/2013

Dan Aharoni  
Inventor's Signature

Print full name of second inventor:

Dan AHARONI

Residence:

47 Winchester Street, #1  
Brookline, MA 02446

Citizenship:

ISRAEL

Mailing Address:

Same

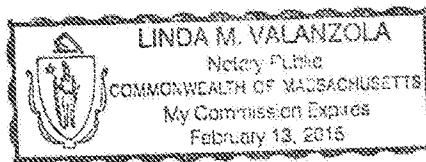
STATE OF MASSACHUSETTS  
COUNTY OF Middlesex

On this 2 day of May, 2013, then personally appeared before me the above-named Dan AHARONI known to me through satisfactory evidence of identification [] employee identification card; [] driver's license; [] (other) \_\_\_\_\_ to be the person whose name is subscribed to the foregoing Assignment and acknowledged that he/she executed the same as his/her free act and deed for the purposes therein contained.

Linda M. Valanzola  
Notary Public

Print Name: Linda M. Valanzola

My Commission expires:




Date: 5/1/13

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

Print full name of third inventor: **Stephen Richard IVES**  
Residence: **26 Shrewsbury Street  
West Boylston, MA 01583**  
Citizenship: **U.S.A.**  
Mailing Address: **Same**

STATE OF MASSACHUSETTS  
COUNTY OF Middlesex

On this 1 day of May, 2013, then personally appeared before me the above-named **Stephen Richard IVES** known to me through satisfactory evidence of identification [  ] employee identification card; [  ] driver's license; [  ] (other) known to me to be the person whose name is subscribed to the foregoing Assignment and acknowledged that he/she executed the same as his/her free act and deed for the purposes therein contained.

  
\_\_\_\_\_  
Notary Public  
Print Name: Nancy E. Buck  
My Commission expires: 8/11/2017

Date: 5/21 2013

Amnon Naamad  
Inventor's Signature

Print full name of fourth inventor:  
Residence:  
Citizenship:  
Mailing Address:

Amnon NAAMAD  
84 Beal Street, Unit 2  
Brookline, MA 02446  
U.S.A.  
Same

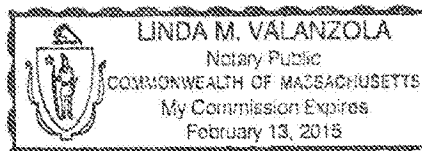
STATE OF MASSACHUSETTS  
COUNTY OF Middlesex

On this 2 day of May, 2013, then personally appeared before me the above-named Amnon NAAMAD known to me through satisfactory evidence of identification [] employee identification card; [] driver's license; [] (other) \_\_\_\_\_ to be the person whose name is subscribed to the foregoing Assignment and acknowledged that he/she executed the same as his/her free act and deed for the purposes therein contained.

Linda M. Valanzola  
Notary Public

Print Name: Linda M. Valanzola

My Commission expires:



Date: 05/02/2013

  
Inventor's Signature

Print full name of fifth inventor:

Peng YIN

Residence:

1 Whistler Lane  
Southborough, MA 01772

Citizenship:

U.S.A.

Mailing Address:

Same

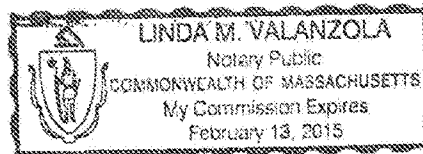
STATE OF MASSACHUSETTS  
COUNTY OF Middlesex

On this 2 day of May, 2013, then personally appeared before me the above-named Peng YIN known to me through satisfactory evidence of identification [] employee identification card; [] driver's license; [] (other) \_\_\_\_\_ to be the person whose name is subscribed to the foregoing Assignment and acknowledged that he/she executed the same as his/her free act and deed for the purposes therein contained.

  
Notary Public

Print Name: Linda M. Valanzola

My Commission expires:





Date: 5/2/2013

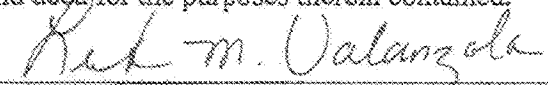
  
\_\_\_\_\_  
Inventor's Signature

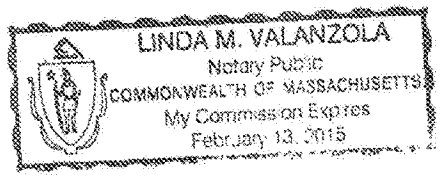
Print full name of sixth inventor:  
Residence:  
Citizenship:  
Mailing Address:

Ningdong LI  
12 Canterbury Hill  
Acton, MA 01720  
U.S.A.  
Same

STATE OF MASSACHUSETTS  
COUNTY OF Middlesex

On this 2 day of May, 2013, then personally appeared before me the above-named Ningdong LI known to me through satisfactory evidence of identification  employee identification card;  driver's license;  (other) \_\_\_\_\_ to be the person whose name is subscribed to the foregoing Assignment and acknowledged that he/she executed the same as his/her free act and deed for the purposes therein contained.

  
\_\_\_\_\_  
Notary Public  
Print Name: Linda M. Valanzola  
My Commission expires:



Date: 5/2/2013

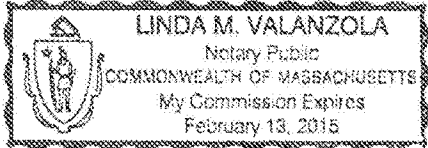
Sanjay N  
Inventor's Signature

Print full name of seventh inventor: **Sanjay NARAHARI**  
Residence: 3 Honeysuckle Circle  
Hopkinton, MA 01748  
Citizenship: U.S.A.  
Mailing Address: Same


STATE OF MASSACHUSETTS  
COUNTY OF Middlesex

On this 2 day of May, 2013, then personally appeared before me the above-named Sanjay NARAHARI known to me through satisfactory evidence of identification  employee identification card;  driver's license;  (other) \_\_\_\_\_ to be the person whose name is subscribed to the foregoing Assignment and acknowledged that he/she executed the same as his/her free act and deed for the purposes therein contained.

Linda M. Valanzola  
Notary Public  
Print Name: Linda M. Valanzola  
My Commission expires:



Date: 02 - MAY - 2013



Inventor's Signature

Print full name of eighth inventor:

**Manickavasasaham M. SENGUDEN**

Residence:

B3-0406, elita Promenade  
JP Nagar 7th Phase, Bangalore 560078, India

Citizenship:

India

Mailing Address:

Same as above

I PRAFASH VENKATAPADMANJAN (name) whose residential address is  
# 23, 40th ASHOK KAVANAHALLY RD, BANGALORE - 560 099  
was personally present and did see MANICKAVASASAHAM M. SENGUDEN (name of person signing  
the assignment) who is personally known to me, execute the above assignment.

UPrakey (signature of first witness)

Signed at BANGALORE, INDIA (location of witness signature)

on this day 2 MAY of 2013. (date of signature)

I SURESH KRISHNAN (name) whose residential address is  
#376, 6th, 8th CROSS, TK RESIDENCY, C.V. RAMAN NAGAR, BURE - 560093  
was personally present and did see MANICKAVASASAHAM M. SENGUDEN (name of person signing  
the assignment) who is personally known to me, execute the above assignment.

[Signature] (signature of second witness)

Signed at BANGALORE, INDIA (location of witness signature)

on this day 2 - MAY of 2013 (date of signature)

Date: 5/2/2013

*Jeffrey Wilson*  
Inventor's Signature

Print full name of ninth inventor:  
Residence:  
Citizenship:  
Mailing Address:

Jeffrey WILSON  
24 Summer Heights Drive  
Franklin, MA 02038  
U.S.A.  
Same

STATE OF MASSACHUSETTS  
COUNTY OF Middlesex

On this 2 day of May, 2013, then personally appeared before me the above-named Jeffrey WILSON known to me through satisfactory evidence of identification [] employee identification card; [] driver's license; [] (other) \_\_\_\_\_ to be the person whose name is subscribed to the foregoing Assignment and acknowledged that he/she executed the same as his/her free act and deed for the purposes therein contained.

*Linda M. Valanzola*  
Notary Public

Print Name: Linda M. Valanzola  
My Commission expires:

