# PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT5006427

| SUBMISSION TYPE:      | NEW ASSIGNMENT |
|-----------------------|----------------|
| NATURE OF CONVEYANCE: | ASSIGNMENT     |

#### **CONVEYING PARTY DATA**

| Name                    | Execution Date |
|-------------------------|----------------|
| GANESH ANANTHANARAYANAN | 12/16/2017     |
| MATTHAI PHILIPOSE       | 02/21/2018     |
| PETER BODIK             | 01/17/2018     |
| CHIEN-CHUN HUNG         | 05/18/2018     |
| PARAMVIR BAHL           | 03/27/2018     |

#### **RECEIVING PARTY DATA**

| Name:           | MICROSOFT TECHNOLOGY LICENSING, LLC |
|-----------------|-------------------------------------|
| Street Address: | ONE MICROSOFT WAY                   |
| City:           | REDMOND                             |
| State/Country:  | WASHINGTON                          |
| Postal Code:    | 98052                               |

## **PROPERTY NUMBERS Total: 1**

| Property Type       | Number   |
|---------------------|----------|
| Application Number: | 15844278 |

## **CORRESPONDENCE DATA**

Fax Number:

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.

**Email:** usdocket@microsoft.com

Correspondent Name: SCHWEGMAN LUNDBERG & WOESSNER P.A.

Address Line 1: PO BOX 2938

Address Line 4: MINNEAPOLIS, MINNESOTA 55402-0938

| ATTORNEY DOCKET NUMBER: | 402854-US-NP 1777.336US1  |  |
|-------------------------|---------------------------|--|
| NAME OF SUBMITTER:      | JACQUELINE PENNINGTON     |  |
| SIGNATURE:              | / Jacqueline Pennington / |  |
| DATE SIGNED:            | 06/14/2018                |  |

**Total Attachments: 11** 

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PATENT REEL: 046085 FRAME: 0541

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# RECORDATION FORM COVER SHEET PATENTS ONLY

| Atty Ref/Docket No.: 402854-US-NP (1777.336US1)  | Patent and Trademark Office  |
|--|--|
| To the Director of the U.S. Patent and Trademark Office:   | Please record the attached original documents or copy thereof.   |
| 1. Name of conveying party(ies):   | 2. Name and address of receiving party(ies):   |
| Ganesh Ananthanarayanan, Matthai Philipose, Peter  | Name: Microsoft Technology Licensing, LLC  |
| Bodik, Chien-Chun Hung, Paramvir Bahl  | Street Address: One Microsoft Way  |
| Additional name(s) of conveying party(ies) attached?   | City: Redmond State: WA Zip: 98052   |
| [ ]Yes [X]No   | Country: United States of America  |
| 3. Nature of conveyance:  [X] Assignment [ ] Merger  [ ] Security Agreement [ ] Change of Name  [ ] Other        | Additional name(s) & address(es) attached? [ ]Yes [X]No  |
| Execution Date: <u>December 16, 2017, February 21, 2018, January 17, 2018, May 18, 2018, March 27, 2018</u>      |  |
| 4. Application number(s) or patent number(s):  |  |
| If this document is being filed together with a new applica  | ation, the execution date of the application is:   |
| A. Patent Application No.(s)   | B. Patent No.(s)   |
| Serial No. 15/844,278  |  |
| Additional numbers attached? [ ]Yes [X]No  |  |
| 5. Name and address of neutrite whem correspondence  | 6. Total number of applications and patents involved: 1  |
| 5. Name and address of party to whom correspondence concerning document should be mailed:                        | 7. Total fee (37 CFR 3.41):\$ <u>0.00</u>  |
| Name: Joshua E. Garfield  Address: Schwegman Lundberg & Woessner, P.A.   | [] Enclosed [] Authorized to be charged to deposit account 19-0743   |
| P.O. Box 2938<br>Minneapolis, Minnesota 55402  | 8. Please charge any additional fees or credit any over payments to our Deposit Account No.: 19-0743   |
| DO NOT U   | SE THIS SPACE  |
| 9. Statement and signature. To the best of my knowledge and belief, the foregoing infe of the original document. | ormation is true and correct and any attached copy is a true copy  |
| Name of Person Signing   | /Joshua E. Garfield/ June 13, 2018 Signature Date  Fotal number of pages including cover sheet: 11   |
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Mail documents to be recorded with required cover sheet information to: Commissioner of Patents and Trademarks Mail Stop Assignment Recordation Services P.O. Box 1450

F.O. DOX 1430

Alexandria, VA 22313-1450

PATENT REEL: 046085 FRAME: 0543

| joint inventor of sub  | ject matter ("INVENTION") dis  | n the original inventor or an original sclosed and/or claimed in a patent .MS OVER HIERARCHICAL CLUSTERS",  |
|--|--|---|
| ASSIGNE LLC, On LEGAL on the fol APPLICA  Was filed 15/844   | filed. ASSIGNOR hereby EE'S legal representative, Mice e Microsoft Way, Redmond, Wa REPRESENTATIVES), to insertand given Appli lowing OfficeTION's Application No., filing of d on December 15, 2017 and w _278 by the following Office "U | rosoft Technology Licensing, ashington 98052 (ASSIGNEE'S here in parentheses (filed ication No  |
| behalf of itself and its<br>of acquiring, the ent<br>priority, in the INVEN<br>derived therefrom, su | successors and assigns ("ASSI<br>ire and exclusive rights, title<br>TION and the APPLICATION (ar<br>Ich as continuing applications   | nington limited liability company, on GNEE"), is entitled to, and is desirous and interest, including the right of all other applications and patents, in whole or in part, in and for the es ("APPLICATION DERIVATIVES")); |
| to insert the Applica  |  | ASSIGNEE'S LEGAL REPRESENTATIVES<br>ice into the following table for any  |
| Application No.  | Filing Date  | Office  |

MS Docket No.: 402854-US-NP

For good and valuable consideration, the receipt of which is hereby acknowledged by the ASSIGNOR, the ASSIGNOR hereby sells, assigns and transfers to the ASSIGNEE, ASSIGNOR's entire and exclusive rights, title and interest, including the right of priority, in the INVENTION and the APPLICATION (and all other applications and patents derived therefrom, such as continuing applications, in whole or in part, in and for the United States, its territories, and all foreign countries ("APPLICATION DERIVATIVES"));

|                         | 16 <sup>th</sup> Dec 2017       |
|-------------------------|---------------------------------|
| Inventor's Signature    | Date                            |
| Ganesh Ananthanarayanan |                                 |
| Printed Name in English | Printed Name in Native Language |
|                         | (if other than English)         |

| PATENT ASSIGNMENT  | М   | S Docket No.: 402854-US-NP   |
|--|---|--|
| I Matthal Philipose ("ASS inventor of subject matter (" application entitled "PROCESSING which:  | INVENTION") disclosed a   | ER HIERARCHICAL CLUSTERS".   |
|  | ASSIGNOR hereby autho   |  |
| ASSIGNEE'S legal i<br>LLC, One Microsofi<br>LEGAL REPRESENT  | representative, Microsoft<br>t Way, Redmond, Washingt<br>'ATIVES'), to insert here<br>and given Application             | Technology Licensing, on 98052 (ASSIGNEE'S in parentheses (filed Noby                              |
| and the second of the second o | olication No., filing date, ar  | ***************************************  |
|  | <u>nber 15, 2017</u> and was giv<br>· following Office " <u>US Pater</u>  |  |
| Microsoft Technology Lice<br>behalf of itself and its successors<br>of acquiring, the entire and ex-<br>priority, in the INVENTION and t<br>derived therefrom, such as cont<br>United States, its territories, and   | s and assigns ("ASSIGNEE"),<br>clusive rights, title and in<br>he APPLICATION (and all o<br>cinuing applications, in wh | terest, including the right of<br>ther applications and patents<br>tole or in part, in and for the |
| ASSIGNOR hereby authori<br>to insert the Application No., f<br>APPLICATION DERIVATIVES after   | iling date, and Office into   | EE'S LEGAL REPRESENTATIVES  the following table for any  |
| Application No.  | Filing Date   | Office   |

For good and valuable consideration, the receipt of which is hereby acknowledged by the ASSIGNOR, the ASSIGNOR hereby sells, assigns and transfers to the ASSIGNEE, ASSIGNOR's entire and exclusive rights, title and interest, including the right of priority, in the INVENTION and the APPLICATION (and all other applications and patents derived therefrom, such as continuing applications, in whole or in part, in and for the United States, its territories, and all foreign countries ("APPLICATION DERIVATIVES"));

|                         | 2/21/2018                       |
|-------------------------|---------------------------------|
| Inventor's Signature    | Date                            |
| Matthai Philipose       |                                 |
| Printed Name in English | Printed Name in Native Language |
|                         | (if other than English)         |

| I Peter Bodik ("ASSIGNOR") am the original inventor or an original joint inventor of   |
|--|
| subject matter ("INVENTION") disclosed and/or claimed in a patent application entitled |
| "PROCESSING LIVE VIDEO STREAMS OVER HIERARCHICAL CLUSTERS", which:                     |

| will b | e filed.   | ASSIGNOR       | hereby       | author    | izes, a   | nd req   | uests, |
|--------|------------|----------------|--------------|-----------|-----------|----------|--------|
| ASSIGN | IEE'S lega | l representat  | ive, Micr    | osoft T   | echnolo   | gy Lice  | nsing, |
| LLC, O | ne Micros  | oft Way, Redr  | nond, Wa     | tshingto  | n 98052   | 2 (ASSIC | NEE'S  |
| LEGAL  | REPRESE    | VTATIVES), t   | o insert     | here i    | n paren   | theses   | (filed |
| on     |            | and gi         | ven Appli    | cation N  | lo        |          | by     |
| the fo | ollowing   | Office         |              |           |           |          | this   |
| APPLIC | ATION'S A  | application No | o., filing c | iate, and | d Office, | when k   | nown;  |

was filed on <u>December 15, 2017</u> and was given Application No <u>15/844,278</u> by the following Office "<u>US Patent Office</u>";

Microsoft Technology Licensing, LLC, a Washington limited liability company, on behalf of itself and its successors and assigns ("ASSIGNEE"), is entitled to, and is desirous of acquiring, the entire and exclusive rights, title and interest, including the right of priority, in the INVENTION and the APPLICATION (and all other applications and patents derived therefrom, such as continuing applications, in whole or in part, in and for the United States, its territories, and all foreign countries ("APPLICATION DERIVATIVES"));

ASSIGNOR hereby authorizes, and requests, ASSIGNEE'S LEGAL REPRESENTATIVES to insert the Application No., filing date, and Office into the following table for any APPLICATION DERIVATIVES after they are known;

| recerce                               | Application No. | Filing Date | Office |
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MS Docket No.: 402854-US-NP

For good and valuable consideration, the receipt of which is hereby acknowledged by the ASSIGNOR, the ASSIGNOR hereby sells, assigns and transfers to the ASSIGNEE, ASSIGNOR's entire and exclusive rights, title and interest, including the right of priority, in the INVENTION and the APPLICATION (and all other applications and patents derived therefrom, such as continuing applications, in whole or in part, in and for the United States, its territories, and all foreign countries ("APPLICATION DERIVATIVES"));

| <u> </u>                | 1/17/18                         |  |  |
|-------------------------|---------------------------------|--|--|
| Inventor's Signature    | Date                            |  |  |
| Peter Bodik             |                                 |  |  |
| Printed Name in English | Printed Name in Native Language |  |  |
|                         | (if other than English)         |  |  |

| PATENT ASSIGNMENT   |   | MS Docket No.: 402854-US-NF   |
|---|---|---|
| inventor of subject matter  | ("INVENTION") disclosed   | al inventor or an original joint<br>and/or claimed in a patent<br>VER HIERARCHICAL CLUSTERS"  |
| ASSIGNEE'S leg LLC, One Micro LEGAL REPRESS on the following                                      | ASSIGNOR hereby aut al representative, Microsol soft Way, Redmond, Washin ENTATIVES), to insert her and given Applicatio Office Application No., filing date, | it Technology Licensing, sigton 98052 (ASSIGNEE'S e in parentheses (filed on No   |
|   | cember 15, 2017 and was c<br>the following Office " <u>US Pa</u>  |   |
| behalf of itself and its success<br>of acquiring, the entire and<br>priority, in the INVENTION an | sors and assigns ("ASSIGNEE<br>exclusive rights, title and<br>id the APPLICATION (and all<br>continuing applications, in v                                    | on limited liability company, or it, is entitled to, and is desirous interest, including the right of other applications and patents whole or in part, in and for the APPLICATION DERIVATIVES")); |
| ·   | ., filing date, and Office in   | INEE'S LEGAL REPRESENTATIVES ito the following table for any  |
| Application No.   | Filing Date   | Office  |

For good and valuable consideration, the receipt of which is hereby acknowledged by the ASSIGNOR, the ASSIGNOR hereby sells, assigns and transfers to the ASSIGNEE, ASSIGNOR's entire and exclusive rights, title and interest, including the right of priority, in the INVENTION and the APPLICATION (and all other applications and patents derived therefrom, such as continuing applications, in whole or in part, in and for the United States, its territories, and all foreign countries ("APPLICATION DERIVATIVES"));

ASSIGNOR agrees to execute all instruments and documents required for the making and prosecution of the APPLICATION (and APPLICATION DERIVATIVES), for litigation regarding letters patent derived therefrom, and for the purpose of protecting and perfecting title to the APPLICATION (and APPLICATION DERIVATIVES).

5/18/2018

Inventor's Signature,

Chien-Chun Hung

Printed Name in English

Date

洪健淳

Printed Name in Native Language

(if other than English)

| l Para  | ımvir Rahl ("ASSIGN   | NOR") am the original in         | iventor or an original joint    |  |  |
|---|---|----------------------------------|---------------------------------|--|--|
|   |   | <del>-</del>                     | nd/or claimed in a patent       |  |  |
| application   | •   |                                  |                                 |  |  |
| • •   |   |                                  |                                 |  |  |
| CLUSILICS, V  | $\overline{\text{CLUSTERS}}^n$ , which: $\overline{\square}$ will be filed. ASSIGNOR hereby authorizes, and requests, |                                  |                                 |  |  |
| Li  |   | •                                |                                 |  |  |
|   |   | representative, Microsoft        | <b>u</b> ,                      |  |  |
|   | LLC, One Microsoft  | : Way, Redmond, Washingt         | on 98052 (ASSIGNEE'S            |  |  |
|   | LEGAL REPRESENT   | ATIVES), to insert here          | in parentheses (filed           |  |  |
|   |   | and given Application            |                                 |  |  |
|   | the following Of  | ffice                            | ) this                          |  |  |
|   | APPLICATION'S App   | olication No., filing date, an   | d Office, when known;           |  |  |
| $\boxtimes$   | was filed on Decem  | <u>1ber 15, 2017</u> and was giv | en Application No               |  |  |
|   |   | following Office "US Pater       |                                 |  |  |
|   | ,   |                                  | <del></del>                     |  |  |
| Micro   | soft Technology Lice  | ensing, LLC, a Washington        | limited liability company, on   |  |  |
| behalf of itse  | lf and its successors   | and assigns ("ASSIGNEE"),        | is entitled to, and is desirous |  |  |
| of acquiring  | , the entire and exc  | clusive rights, title and in     | terest, including the right of  |  |  |
| -   |   | -                                | ther applications and patents   |  |  |
| •   |   |                                  |                                 |  |  |
| derived therefrom, such as continuing applications, in whole or in part, in and for the United States, its territories, and all foreign countries ("APPLICATION DERIVATIVES")); |   |                                  |                                 |  |  |
|   | ,   |                                  |                                 |  |  |
| ASSIG   | NOR hereby authori:   | zes, and requests. ASSIGNI       | EE'S LEGAL REPRESENTATIVES      |  |  |
|   | •   | •                                |                                 |  |  |
| to insert the Application No., filing date, and Office into the following table for any APPLICATION DERIVATIVES after they are known;   |   |                                  |                                 |  |  |
| ,   |   |                                  |                                 |  |  |
| Application   | No.   | Filing Date                      | Office                          |  |  |
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|   |   |                                  |                                 |  |  |

MS Docket No.: 402854-US-NP

**RECORDED: 06/14/2018** 

MS Docket No.: 402854-US-NP

For good and valuable consideration, the receipt of which is hereby acknowledged by the ASSIGNOR, the ASSIGNOR hereby sells, assigns and transfers to the ASSIGNEE, ASSIGNOR's entire and exclusive rights, title and interest, including the right of priority, in the INVENTION and the APPLICATION (and all other applications and patents derived therefrom, such as continuing applications, in whole or in part, in and for the United States, its territories, and all foreign countries ("APPLICATION DERIVATIVES"));

| Paroni Rue              | March 27, 2018                  |  |  |
|-------------------------|---------------------------------|--|--|
| Inventor's Signature    | Date                            |  |  |
| Paramvir Bahl           |                                 |  |  |
| Printed Name in English | Printed Name in Native Language |  |  |
|                         | (if other than English)         |  |  |