PATENT ASSIGNMENT COVER SHEET

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

CONVEYING PARTY DATA

| Name | Execution Date |
|-----------------------------|----------------|
| VERIZON COMMUNICATIONS INC. | 04/09/2014 |

RECEIVING PARTY DATA

| Name: | VERIZON PATENT AND LICENSING INC. | | | | |
|-----------------|-----------------------------------|--|--|--|--|
| Street Address: | Address: ONE VERIZON WAY | | | | |
| City: | BASKING RIDGE | | | | |
| State/Country: | NEW JERSEY | | | | |
| Postal Code: | 07920 | | | | |

PROPERTY NUMBERS Total: 74

| Property Type | Number |
|---------------------|----------|
| Application Number: | 08990210 |
| Application Number: | 09917803 |
| Application Number: | 10158583 |
| Application Number: | 10158586 |
| Application Number: | 07158325 |
| Application Number: | 08250791 |
| Application Number: | 08250792 |
| Application Number: | 08740519 |
| Application Number: | 08933485 |
| Application Number: | 08963944 |
| Application Number: | 09075094 |
| Application Number: | 09635695 |
| Application Number: | 09652095 |
| Application Number: | 09652140 |
| Application Number: | 09652750 |
| Application Number: | 09652822 |
| Application Number: | 09688213 |
| Application Number: | 09731053 |
| Application Number: | 09731054 |
| Application Number: | 09745467 |
| Application Number: | 09834573 |
| 502800744 | |

PATENT

502800744 REEL: 032851 FRAME: 0438

| Property Type | Number |
|---------------------|----------|
| Application Number: | 09835649 |
| Application Number: | 09910429 |
| Application Number: | 11003963 |
| Application Number: | 11247159 |
| Application Number: | 11312347 |
| Application Number: | 11612935 |
| Application Number: | 11942052 |
| Application Number: | 12347396 |
| Application Number: | 12390196 |
| Application Number: | 12884935 |
| Application Number: | 13332890 |
| Application Number: | 08304174 |
| Application Number: | 08380755 |
| Application Number: | 08498265 |
| Application Number: | 08677294 |
| Application Number: | 08679384 |
| Application Number: | 08980235 |
| Application Number: | 09283400 |
| Application Number: | 11069301 |
| Application Number: | 11744400 |
| Application Number: | 12715217 |
| Application Number: | 08811714 |
| Application Number: | 08812075 |
| Application Number: | 08815075 |
| Application Number: | 08815291 |
| Application Number: | 08815367 |
| Application Number: | 08931159 |
| Application Number: | 08931267 |
| Application Number: | 08931268 |
| Application Number: | 08931477 |
| Application Number: | 08931480 |
| Application Number: | 08998274 |
| Application Number: | 09014286 |
| Application Number: | 09362554 |
| Application Number: | 09363750 |
| Application Number: | 09512471 |
| Application Number: | 09750771 |
| Application Number: | 10353360 |
| Application Number: | 10979317 |

PATENT

REEL. 032851 FRAME. 0439

| Property Type | Number |
|---------------------|----------|
| Application Number: | 11930672 |
| Application Number: | 11930928 |
| Application Number: | 11930990 |
| Application Number: | 11931049 |
| Application Number: | 11931111 |
| Application Number: | 08499013 |
| Application Number: | 08806090 |
| Application Number: | 08977665 |
| Application Number: | 08533501 |
| Application Number: | 08651297 |
| Application Number: | 08656879 |
| Application Number: | 08656880 |
| Application Number: | 08725653 |
| Application Number: | 09007364 |

CORRESPONDENCE DATA

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| SIGNATURE: | /joseph.r.palmieri/ | | | | |
| DATE SIGNED: | 05/08/2014 | | | | |

Total Attachments: 6

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PATENT REEL: 032851 FRAME: 0440

<u>ASSIGNMENT</u>

This ASSIGNMENT is effective as of April 9, 2014 between Verizon Communications Inc., a corporation existing under the laws of Delaware and having an office located at 140 West Street, New York, NY 10007 (hereinafter "ASSIGNOR"), and Verizon Patent and Licensing Inc., a corporation existing under the laws of Delaware and having an office located at One Verizon Way, Basking Ridge, NJ 07920 (hereinafter "ASSIGNEE").

WHEREAS, ASSIGNEE is desirous of acquiring ownership of the United States and/or foreign Letters Patent and Applications for Letters Patent identified in Schedule A, as well as any legal equivalents and counterparts thereof in all countries or jurisdictions worldwide (whether listed on Schedule A or not), and the inventions disclosed therein (all hereinafter referred to as the "Patent Assets").

WHEREAS, ASSIGNOR is desirous of granting to ASSIGNEE its ownership of the aforesaid Patent Assets.

NOW, THEREFORE, in consideration of the premises and the mutual covenants set forth herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged by ASSIGNOR and ASSIGNEE, and subject to any rights and licenses under the Patent Assets granted to third parties on or before the effective date hereof, ASSIGNOR does hereby assign unto ASSIGNEE (a) all worldwide right, title and interest of ASSIGNOR in and to the Patent Assets (subject, however, to applicable patent laws in the respective countries or jurisdictions issuing such Patent Assets), the right to claim priority therefrom, and in and to all additional Letters Patent worldwide to be obtained from such Patent Assets and from any future applications, continuations, divisions, renewals, extensions, substitutes, reissues or re-examinations which claim priority therefrom, each and all to be held and enjoyed by ASSIGNEE, its successors and assigns, to the full end of the terms for which any such Letters Patent are granted, plus any extensions, as fully and entirely as the same would have been held and enjoyed by ASSIGNOR had this assignment not been made; and (b) all claims for past and future infringements of said Patent Assets, with the right to sue for and obtain all remedies for such infringements (including past and future damages and equitable relief) for its own use and enjoyment, and for the use and enjoyment of its successors, assigns or other legal representatives.

ASSIGNOR authorizes and requests the United States Commissioner of Patents and Trademarks (or similar official) to issue any and all United States Letters Patent resulting from the Patent Assets or any divisions, reissues, continuations, renewals, extensions, substitutes or re-examinations thereof to ASSIGNEE as assignee of ASSIGNOR's interest therein. ASSIGNOR further appoints ASSIGNEE as ASSIGNOR's attorney-in-fact (such appointment being irrevocable and coupled with the interest in the Patent Assets), with full authority in the place and stead of ASSIGNOR and in the name of ASSIGNOR from time to time to take any action and to execute any document which ASSIGNEE may deem reasonably necessary or advisable to accomplish the purposes of this ASSIGNMENT, including the execution and filing of confirmatory assignments, powers of attorney, declarations of transfer, or other documents relative to any of the Patent Assets in the name of ASSIGNOR where permitted by law.

| ASSIGNOR Verizon Communications Inc. | | | ASSIGNEE Verizon Patent and Licensing Inc. | | |
|---|---------------------|--------|--|--|--|
| Name: | Joseph Palmieri | Name: | Joseph Palmieri | | |
| Title: | Assistant Secretary | Title: | Vice President | | |

SCHEDULE A

| VZ ref | COUNTRY | APPLICATION NO | FILING DATE | PATENTNO | TITLE |
|------------|---------|-------------------|----------------|----------|--|
| VE73021009 | US | 12-Dec-97 | 08990210 | 6367078 | Electronic program-guide system with sideways-surfing capability |
| VE50107481 | US | 31-Jul-01 | 09917803 | 6590965 | Enhanced voice mail caller ID |
| VE50107491 | US | 31-May-02 | 10158583 | 6898276 | Soft network interface device for digital broadband local carrier networks |
| VE0795 | US | 31-May-02 | 10158586 | 6961335 | Multi-layer ring architecture for fiber-to-the- home telco carrier network |
| VE1601 | US | 19-Feb-88 | 07158325 | 4861287 | Telephone network multiple transmission line interface |
| VE0727 | US | 27-May-94 | 08250791 | 5635979 | Dynamically programmable digital entertainment terminal using downloaded software to control broadband data operations |
| VE0719 | US | 27-May-94 | 08250792 | 5608447 | Full service network |
| VE0719A | US | 30-Oct-96 | 08740519 | 5818511 | Full service network |
| VE2209A | US | 06-Mar-97 | 08811714 | 6205139 | Automatic called party locator over internet |
| VE2209 | US | 06-Mar-97 | 08812075 | 6104711 | Enhanced internet domain name server |
| VE2214A | US | 11-Mar-97 | 08815075 | 6721306 | Public wireless/cordless internet gateway |
| VE2214 | US | 11-Mar-97 | 08815291 | 6542497 | Public wireless/cordless internet gateway |
| VE2209B | US | 11-Mar-97 | 08815367 | 6215790 | Automatic called party locator over internet with provisioning |
| VE2233 | US | 16-Sep-97 | 08931159 | 6137869 | Network session management |
| VE2233D | US | 16-Sep-97 | 08931267 | 6292481 | Inter-carrier signaling and usage accounting architecture for internet telephony |
| VE2233B | US | 16-Sep-97 | 08931268 | 6157636 | Network session management with gateway- directory services and authorization control |
| VE2233C | US | 16-Sep-97 | 08931477 | 6157648 | Network session management |
| VE2233A | US | 16-Sep-97 | 08931480 | 6839340 | Network session management |
| VE2023 | US | 18-Sep-97 | 08933485 | 6438212 | Automated telephone line test apparatus with intelligent diagnostic function |
| VE73021016 | US | 04-Nov-97 | 08963944 | 7561214 | Two-dimensional navigation of multiplexed channels in a digital video distribution system |
| VE2235 | US | 24-Dec-97 | 08998274 | 6295292 | Inbound gateway authorization processing for inter-carrier internet telephony |
| VE2235A | US | 27-Jan-98 | 09014286 | 6289010 | Inbound gateway authorization processing for inter-carrier internet telephony |
| VE1727 | US | 08-May-98 | 09075094 | 6157716 | Power feed circuit providing both on-hook and off-hook power for telephone subscriber loop |
| VE2233E | US | 28-Jul-99 | 09362554 | 6430275 | Enhanced signaling for terminating resource |
| VE2214B | US | 30-Jul-99 | 09363750 | 6359880 | Public wireless/cordless internet gateway |
| VE2209C | US | 24-Feb-00 | 09512471 | 6282574 | Method, server and telecommunications system for name translation on a conditional basis and/or to a telephone number |

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PATENT REEL: 032851 FRAME: 0443

| | | | | | , |
|-------------|----|-----------|----------|---------|---|
| VE1515 | US | 10-Aug-00 | 09635695 | 6904054 | Support for quality of service and vertical services in digital subscriber line domain |
| VE2326 | US | 31-Aug-00 | 09652095 | 6993026 | Methods, apparatus and data structures for preserving address and service level information in a virtual private network |
| VE1516 | US | 31-Aug-00 | 09652140 | 6778525 | Automated service provisioning in combination of vertical services and digital subscriber line domains |
| VE2325 | US | 31-Aug-00 | 09652750 | 6850495 | Methods, apparatus and data structures for segmenting customers using at least a portion of a layer 2 address header or bits in the place of a layer 2 address header |
| VE2324 | US | 31-Aug-00 | 09652822 | 6771673 | Methods and apparatus and data structures for providing access to an edge router of a network |
| VE1517 | US | 16-Oct-00 | 09688213 | 7042880 | Congestion and throughput visibility and isolation |
| VE1355 | US | 07-Dec-00 | 09731053 | 6829250 | Automatic programming of customer premises equipment for vertical services integration |
| VE1354 | US | 07-Dec-00 | 09731054 | 6798751 | Customer premises equipment for vertical services integration |
| VE1518 | US | 26-Dec-00 | 09745467 | 6424657 | Traffic queueing for remote terminal DSLAMs |
| VE2209ACON | US | 02-Jan-01 | 09750771 | 6539015 | Automatic called party locator over internet |
| VE2327 | US | 12-Apr-01 | 09834573 | 7315554 | Simple peering in a transport network employing novel edge devices |
| VE2435 | US | 17-Apr-01 | 09835649 | 7170905 | Vertical services integration enabled content distribution mechanisms |
| VE2328 | US | 20-Jul-01 | 09910429 | 8087064 | SECURITY EXTENSION USING AT LEAST A PORTION OF LAYER 2 INFORMATION OR BITS IN THE PLACE OF LAYER 2 INFORMATION |
| VE2214DIV1 | US | 29-Jan-03 | 10353360 | 7088705 | Public wireless/cordless internet gateway |
| VE2233ACON1 | US | 02-Nov-04 | 10979317 | 7948968 | Network session management |
| VE2325CON1 | US | 03-Dec-04 | 11003963 | 7839802 | Methods, apparatus and data structures for segmenting customers using at least a portion of a layer 2 address header or bits in the place of a layer 2 address header |
| VE2326CON1 | US | 12-Oct-05 | 11247159 | | Methods, apparatus and data structures for preserving address and service level information in a virtual private network |
| VE1517D1 | US | 21-Dec-05 | 11312347 | 7801158 | Congestion and thru-put visibility and isolation |
| VE2435C1 | US | 19-Dec-06 | 11612935 | | Vertical Services Integration Enabled Content Distribution Mechanism |
| VE2233AC2 | US | 31-Oct-07 | 11930672 | | Network Session Management |
| VE2233AC3 | US | 31-Oct-07 | 11930928 | | Network Session Management |
| VE2233AC4 | US | 31-Oct-07 | 11930990 | | Network Session Management |
| VE2233AC5 | US | 31-Oct-07 | 11931049 | | Network Session Management |
| VE2233AC6 | US | 31-Oct-07 | 11931111 | | Network Session Management |

| VE2327C1 | US | 19-Nov-07 | 11942052 | | SIMPLE PEERING IN A TRANSPORT NETWORK EMPLOYING NOVEL EDGE DEVICES |
|-------------|----|-----------|----------|---------|--|
| VE2325CON2 | US | 31-Dec-08 | 12347396 | 8264987 | Methods, Apparatus and Data Structures for Segmenting Customers Using at Least a Portion of a Layer 2Address Header or Bits in the Place of a Layer 2 Address Header |
| VE2326CON2 | US | 20-Feb-09 | 12390196 | 8243627 | Methods, Apparatus and Data Structures for Preserving Address and Service Level Information in a VirtualPrivate Network |
| VE1517C1 | US | 17-Sep-10 | 12884935 | | Congestion and Thru-Put Visibility and Isolation |
| VE2328C1 | US | 21-Dec-11 | 13332890 | | SECURITY EXTENSIONS USING AT LEAST A PORTION OF LAYER 2 INFORMATION OR BITS IN THE PLACE OF LAYER 2 INFORMATION |
| VE0790 | US | 06-Jul-95 | 08499013 | 5826166 | Digital entertainment terminal providing dynamic execution in video dial tone networks |
| VE1506 | US | 25-Feb-97 | 08806090 | 6055077 | Multimedia distribution system using fiber optic lines |
| VE0790A | US | 24-Nov-97 | 08977665 | 5973684 | Digital entertainment terminal providing dynamic execution in video dial tone networks |
| VE0731 | US | 12-Sep-94 | 08304174 | 5682325 | Level 1 gateway for video tone networks |
| VE0727C | US | 31-Jan-95 | 08380755 | 5734589 | Digital entertainment terminal with channel mapping |
| VE0727D | US | 03-Jul-95 | 08498265 | 5666293 | Downloading operating system software through a broadcast channel |
| VE0778 | US | 25-Sep-95 | 08533501 | 5790543 | Apparatus and method for correcting jitter in data packets |
| VE0778B | US | 22-May-96 | 08651297 | 5966387 | Apparatus and method for correcting jitter in data packets |
| VE0774B | US | 30-May-96 | 08656879 | 5880864 | Advanced optical fiber communications network |
| VE0774 | US | 30-May-96 | 08656880 | 5808767 | Fiber optic network with wavelength-division- multiplexed transmission to customer premises |
| VE0731D | US | 09-Jul-96 | 08677294 | 5748493 | Level 1 Gateway for video dial tone networks |
| VE0731C | US | 09-Jul-96 | 08679384 | 5917537 | Level 1 gateway for video dial tone networks |
| VE0778C | US | 01-Oct-96 | 08725653 | 5805602 | Network monitoring system for cell delay variation |
| VE0727G | US | 28-Nov-97 | 08980235 | 5978855 | Downloading applications software through a broadcast channel |
| VE0774A | US | 15-Jan-98 | 09007364 | 5864415 | Fiber optic network with wavelength-division- multiplexed transmission to customer premises |
| VE07114 | US | 01-Apr-99 | 09283400 | 6538781 | Multimedia distribution system using fiber optic lines |
| VE07114CON1 | US | 01-Mar-05 | 11069301 | 7224896 | Methods and apparatus for generating local oscillation signals |
| VE07114D1 | US | 04-May-07 | 11744400 | 7684707 | Methods and apparatus for generating local oscillation signals |

| VE07114C2 | US | 01-Mar-10 | 12715217 | 8078056 | MULTIMEDIA DISTRIBUTION SYSTEM USING FIBER OPTIC LINES |
|-----------|----|-----------|----------|---------|--|
|-----------|----|-----------|----------|---------|--|