PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT7397434

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	RELEASE OF SECURITY INTEREST IN PATENTS PREVIOUSLY RECORDED AT REEL/FRAME (050724/0571)

CONVEYING PARTY DATA

Name	Execution Date
THE BANK OF NEW YORK MELLON TRUST COMPANY, N.A., AS NOTES COLLATERAL AGENT	03/29/2022

RECEIVING PARTY DATA

Name:	DELL PRODUCTS L.P.
Street Address:	ONE DELL WAY
City:	ROUND ROCK
State/Country:	TEXAS
Postal Code:	78682
Name:	EMC CORPORATION
Street Address:	176 SOUTH STREET
City:	HOPKINTON
State/Country:	MASSACHUSETTS
Postal Code:	01748
Name:	EMC IP HOLDING COMPANY LLC
Street Address:	ONE DELL WAY
City:	ROUND ROCK
State/Country:	TEXAS
Postal Code:	78682

PROPERTY NUMBERS Total: 541

Property Type	Number
Patent Number:	10291265
Application Number:	16404121
Application Number:	29690147
Application Number:	29690146
Application Number:	29690142
Application Number:	29690140
Application Number:	16404046
Application Number:	16403993
Application Number:	16404305

Property Type	Number
Application Number:	16404278
Application Number:	16403966
Application Number:	29690149
Application Number:	16405692
Application Number:	16405555
Application Number:	16405941
Application Number:	16405894
Application Number:	16405955
Application Number:	16405965
Application Number:	16407049
Application Number:	16408163
Application Number:	16408177
Application Number:	16408219
Application Number:	16408248
Application Number:	16408274
Application Number:	16409516
Application Number:	16408934
Application Number:	16408929
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Application Number:	16410807
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Property Type	Number
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Property Type	Number
Application Number:	16528869
Application Number:	16529292
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Application Number:	16530139
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Application Number:	16530198
Application Number:	16530111
Application Number:	16530962
Application Number:	16530237
Application Number:	16530947
Application Number:	16530936

CORRESPONDENCE DATA

Fax Number: (212)455-2502

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.

Phone: 2124552333
Email: jmull@stblaw.com
Correspondent Name: BOBBIE BURROWS
Address Line 1: 425 LEXINGTON AVENUE
Address Line 4: NEW YORK, NEW YORK 10017

ATTORNEY DOCKET NUMBER:	085706/0586
NAME OF SUBMITTER:	J. JASON MULL
SIGNATURE:	/J. Jason Mull/
DATE SIGNED:	06/23/2022

Total Attachments: 43
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NOTICE OF TERMINATION AND RELEASE OF SECURITY INTEREST IN PATENT RIGHTS

This NOTICE OF TERMINATION AND RELEASE (this "Release"), dated as of March 29, 2022 (the "Effective Date"), is made by THE BANK OF NEW YORK MELLON TRUST COMPANY, N.A., in its capacity as Notes Collateral Agent (the "Agent"), with respect to the grantor parties identified on the signature page hereto (each individually, a "Grantor," collectively the "Grantors").

WHEREAS, pursuant to the Indenture, dated as of June 1, 2016 (as amended and/or supplemented to the date hereof), among the Agent, the Grantor and certain other parties thereto (the "Indenture") and that certain Security Agreement, dated as of September 7, 2016 by and among the Agent, the Grantor and certain other parties thereto (as amended, amended and restated, or otherwise modified from time to time, the "Security Agreement"), the Grantor granted to the Agent a security interest in and to certain collateral, including Patents;

WHEREAS, pursuant to the Security Agreement, the Grantor executed and delivered a Patent Security Agreement, dated as of October 10, 2019 (the "Patent Security Agreement"), for recordal with the United States Patent and Trademark Office;

WHEREAS, the Patent Security Agreement was recorded with the United States Patent and Trademark Office on October 15, 2019 at Reel 50724 and Frame 0571;

WHEREAS, the security interest was terminated and released by the Agent on November 1, 2021, in accordance with the terms of the Indenture and the Security Agreement;

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Agent hereby agrees as follows:

Defined Terms. All capitalized terms used, but not otherwise defined herein, shall have the respective meanings ascribed in or otherwise referenced in the Patent Security Agreement or the Security Agreement, as applicable.

Release. The Agent, without recourse, representation or warranty of any kind, hereby disclaims, releases, discharges, terminates and cancels any security interest in and to the Patent Collateral, including the Patents set forth in Schedule 1 attached hereto (the "Released Patents") arising from the Security Agreement and the recordation of the Patent Security Agreement and reassigns all right, title and interest it has in the Released Patents to the Grantor.

Further Assurances. Promptly upon request by the Grantor from time to time, the Agent agrees to take all further actions, and provide to the Grantor and its successors, assigns or other legal representatives, all such cooperation and assistance (including, without limitation, the execution and delivery of any and all documents or other instruments), reasonably requested by the Grantor, at the Grantor's sole cost and expense, to more fully and effectively effectuate the purposes of this Release.

Governing Law. This Release shall be governed by and construed in accordance with the laws of the State of New York, and shall be binding on the Grantor's and the Agent's representatives, successors, assigns and transferees.

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IN WITNESS WHEREOF, the Agent has caused this Release to be executed by its duly authorized representative as of the Effective Date:

THE BANK OF NEW YORK MELLON TRUST COMPANY, N.A., not in its individual capacity but solely acting in its capacity as Agent for the Secured Parties

By: William Wallace Digitally signed by William Wallace Date: 2022.02.08 20:36:16 -06'00'

Name: William Wallace
Title: Vice President

GRANTOR(s)

Dell Products L.P.

By: _____
Name: Christopher Garcia
Title: Senior Vice President &
Assistant Secretary

EMC Corporation

By: _____
Name: Christopher Garcia
Title: Senior Vice President &
Assistant Secretary

EMC IP Holding Company LLC

By: _____
Name: Christopher Garcia
Title: Senior Vice President &
Assistant Secretary

SCHEDULE I

U.S. Patent Applications

Owner	Title	Date	App. No.
Dell Products L.P.	Modulating AHU VS Ram Air Cooling, Based on Vehicular Velocity	5/6/2019	16/404121
Dell Products L.P.	Information Handling System Bezel	5/6/2019	29/690147
Dell Products L.P.	Portable Information Handling System	5/6/2019	29/690146
Dell Products L.P.	Information Handling System Storage Device	5/6/2019	29/690142
Dell Products L.P.	Information Handling System	5/6/2019	29/690140
Dell Products L.P.	SYSTEMS AND METHODS FOR DYNAMICALLY ELECTRICALLY MARGINING DEVICES IN AN INFORMATION HANDLING SYSTEM	5/6/2019	16/404046
Dell Products L.P.	SYSTEMS AND METHODS FOR IMPLEMENTING HYPERTEXT TRANSFER PROTOCOL-BASED VIRTUAL MEDIA IN A MANAGEMENT CONTROLLER	5/6/2019	16/403993
Dell Products L.P.	SYSTEM AND METHOD FOR CONTROLLING MANAGEMENT COMMANDS AT DEVICES	5/6/2019	16/404305
Dell Products L.P.	METHOD AND SYSTEM FOR MANAGEMENT OF SECURE BOOT CERTIFICATES	5/6/2019	16/404278
Dell Products L.P.	Information Handling System Reflective Outer Housing	5/6/2019	16/403966
Dell Products L.P.	Information Handling System Bezel Having Multi-Angled Reflective Surfaces	5/6/2019	29/690149
Dell Products L.P.	Systems and Methods for Incrementally and Dynamically Updating Firmware	5/7/2019	16/405692
Dell Products L.P.	SYSTEM AND METHOD FOR CONTROLLING AN ELECTRO-PERMANENT MAGNET KEY SWITCH ASSEMBLY	5/7/2019	16/405555
Dell Products L.P.	SYSTEM AND METHOD FOR CALIBRATING AN ELECTRO-	5/7/2019	16/405941
	PERMANENT MAGNET KEY SWITCH ASSEMBLY		

PATENT
REEL: 060436 FRAME: 0109

Owner	Title	Date	App. No.
Dell Products L.P.	IMPROVED SCISSOR PLATE CONTROL SYSTEM AND METHOD FOR SLOWER MAGNETIC FORCE DECAY	5/7/2019	16/405894
Dell Products L.P.	MECHANICAL ELECTROPERMANENT MAGNET KEY ASSEMBLY SWITCH WITH DUAL PURPOSE SPRING	5/7/2019	16/405955
Dell Products L.P.	SYSTEM AND METHOD FOR INTEGRATING COMPONENTS OF AN ELECTRO-PERMANENT MAGNET KEY SWITCH ASSEMBLY	5/7/2019	16/405965
Dell Products L.P.	System and Method to Determine Facility Routing at Quote Level and to Provide Disruptive Demand Signal	5/8/2019	16/407049
Dell Products L.P.	Dynamic Keypress prediction based on learning of user behavior	5/9/2019	16/408163
Dell Products L.P.	Dynamic user identification based on HandID	5/9/2019	16/408177
Dell Products L.P.	Reconfigurable touchpad dynamically	5/9/2019	16/408219
Dell Products L.P.	Keyboard function and feature change based on gesture in the same session	5/9/2019	16/408248
Dell Products L.P.	Detection of 1D gesture with temporal GUI manipulation	5/9/2019	16/408274
Dell Products L.P.	SYSTEMS AND METHODS FOR FAST RESPONSE AND LOW TOTAL HARMONIC DISTORTION POWER FACTOR CORRECTION	5/10/2019	16/409516
Dell Products L.P.	Apparatus and Method for Improving Data Security	5/10/2019	16/408934
Dell Products L.P.	Information Handling System with Mechanism for Reporting Status of Persistent Memory Firmware Update	5/10/2019	16/408929
Dell Products L.P.	Firmware Update Architecture With OS-BIOS Communication	5/10/2019	16/409223
Dell Products L.P.	COPY AND PASTE IN VIRTUAL CONSOLE WITH KEYBOARD PLAY	5/10/2019	16/408914

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Owner	Title	Date	App. No.
Dell Products L.P.	System and Method for Performance Based Dynamic Optimal Block Size Data Deduplication	5/10/2019	16/408919
Dell Products L.P.	PERSISTING USER CONFIGURATION SETTINGS ON WRITE FILTER ENABLED DEVICES	5/10/2019	16/408831
Dell Products L.P.	Applied Security Analysis of BIOS/UEFI Configuration for Attack Detection	5/13/2019	16/410807
Dell Products L.P.	Encouragement of Conversion of Customers During Their Online Journeys	5/13/2019	16/410265
Dell Products L.P.	System and Method for Port Reduction using Multiple Chassis Link Aggregation Group for Stacked Devices	5/15/2019	16/412902
Dell Products L.P.	Information Handling System to Allow System Boot when an Amount of Installed Memory Exceeds Processor Limit	5/15/2019	16/413265
Dell Products L.P.	System and Method to Prevent Endless Machine Check Error of Persistent Memory Devices	5/15/2019	16/413392
Dell Products L.P.	Method and System of Content Based Dynamic Data Compression	5/15/2019	16/413064
Dell Products L.P.	Method for Determination of Screen Mode and Gap for Foldable Device	5/16/2019	16/413728
Dell Products L.P.	DIFFERENTIAL TRACE PAIR SYSTEM	5/16/2019	16/414078
Dell Products L.P.	Closed-loop control mechanism to optimize AI-based Customer Support Performance for Customer Satisfaction, Customer Effort, or any other Customer Satisfaction Metric	5/16/2019	16/413944
Dell Products L.P.	Using A Light Source to Temporarily Saturate a Camera Sensor of a Camera Connected to a Computer	5/17/2019	16/414949
Dell Products L.P.	SYSTEMS AND METHODS FOR THERMAL CONTROL OF INFORMATION HANDLING RESOURCES BASED ON USER PROXIMITY	5/17/2019	16/415999

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Owner	Title	Date	App. No.
Dell Products L.P.	System and Method for Tying Non-Volatile Dual Inline Memory Modules to a Particular Information Handling System	5/17/2019	16/415468
Dell Products L.P.	System and Method for Restoring a Previously Functional Firmware Image on a Non-Volatile Dual Inline Memory Module	5/17/2019	16/415432
Dell Products L.P.	System and Method for Storing Operating Life History on a Non-volatile Dual Inline Memory Module	5/17/2019	16/415378
Dell Products L.P.	Verification of Routing Scripts for a Dynamic Routing Engine of an Automatic Call Distribution System	5/21/2019	16/417822
Dell Products L.P.	Augmented Information Handling System User Presence Detection	5/22/2019	16/419779
Dell Products L.P.	Information Handling System	5/22/2019	29/692124
Dell Products L.P.	Method of Resolving ROI Overlaps in Distributed SLAM for Edge Cloud Compute XR Use Cases	5/22/2019	16/419963
Dell Products L.P.	Method for Mitigation of Gap and Screen Burn-in for Foldable OLED Devices	5/23/2019	16/421176
Dell Products L.P.	System and Methods for Proactively Preventing and Predicting Storage Media Failures	5/23/2019	16/421025
Dell Products L.P.	METHOD AND APPARATUS FOR AN ACCELEROMETER ASSISTED CONTROL SYSTEM FOR A RECONFIGURABLE ANTENNA COMMUNICATION DEVICE	5/24/2019	16/422842
Dell Products L.P.	Flexible Mid-Chassis Extension Module	5/24/2019	16/422600
Dell Products L.P.	NVDIMM Serial Interface for Out-of-Band Management by a Baseboard Management Controller and Method Therefor	5/24/2019	16/422060
Dell Products L.P.	SYSTEM AND METHOD FOR INTELLIGENT FIRMWARE UPDATES, FIRMWARE RESTORE, DEVICE ENABLE/DISABLE BASED ON TELEMETRY DATA	5/24/2019	16/422622

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Owner	Title	Date	App. No.
	ANALYTIC S AND DIAGNOSTIC FAILURE THRESHOLD FOR EACH FIRMWARE DEVICE FIRMWARE DEVICE		
Dell Products L.P.	A BIOS method to block the compromised Preboot feature.	5/24/2019	16/422667
Dell Products L.P.	System and Method of Managing Battery Cells	5/24/2019	16/421718
Dell Products L.P.	Method to Have User Configurable Mouse Pointer Identification on Displays Upon IHS Activity Resumption	5/24/2019	16/422694
Dell Products L.P.	System and Method for Persistent Memory Rotation Based on Remaining Write Endurance	5/24/2019	16/422033
Dell Products L.P.	Fabric with Ornamentation	5/28/2019	29/692663
Dell Products L.P.	Backpack with Ornamental Fabric	5/28/2019	29/692664
Dell Products L.P.	EFFICIENCY IMPROVEMENT FOR A DC-TO-DC BUCK VOLTAGE REGULATOR	5/28/2019	16/423530
Dell Products L.P.	Site Ambient Audio Collection	5/28/2019	16/423569
Dell Products L.P.	Projecting and Receiving Input From One or More Input Interfaces Attached to a Display Device	5/29/2019	16/425182
Dell Products L.P.	SYSTEMS AND METHODS FOR LEAK DETECTION IN LIQUID-COOLED INFORMATION HANDLING SYSTEMS	5/29/2019	16/424599
Dell Products L.P.	Method of Detecting And Resolving Incorrect SLAM Data in Distributed EKF SLAM	5/29/2019	16/425656
Dell Products L.P.	Method of Concealing SLAM Loss in Distributed EKF SLAM	5/29/2019	16/425722
Dell Products L.P.	Peripheral Device Expansion Card System	5/30/2019	16/426136
Dell Products L.P.	System and Method to Reduce Address Range Scrub Execution	5/30/2019	16/426372
	Time in Non-volatile Dual Inline Memory Modules		
Dell Products L.P.	Display Stand	5/30/2019	29/693071
Dell Products L.P.	USE MACHINE LEARNING TO VERIFY AND MODIFY A SPECIFICATION OF AN INTEGRATION INTERFACE FOR A SOFTWARE MODULE	5/31/2019	16/427436

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Owner	Title	Date	App. No.
Dell Products L.P.	CHASSIS OUTER SURFACE SUPPLEMENTAL PASSIVE COOLING SYSTEM	5/31/2019	16/428672
Dell Products L.P.	Decoding Parts with Encoded Geometry for Retrieving Passively Represented Information	5/31/2019	16/428119
Dell Products L.P.	Information Handling System Radio Antenna Selection and Control	6/3/2019	16/429339
Dell Products L.P.	Real Time Predictive Maintenance of Hardware Components using a Stacked Deep Learning Architecture on time-variant parameters combined with a Dense Neural Network supplied with exogeneous static outputs	6/3/2019	16/429435
Dell Products L.P.	System and Method for Shared End Device Authentication for In-Band Requests	6/3/2019	16/429362
Dell Products L.P.	LIGHT-EMITTING DIODE (LED) SWITCHING SYSTEM	6/4/2019	16/430693
Dell Products L.P.	Backpack	6/5/2019	29/693845
Dell Products L.P.	Mechanism to Secure Side Band Communication Between Service Processor and an End Point	6/5/2019	16/431944
Dell Products L.P.	Information Handling System Interchangeable Solder Pads	6/5/2019	16/432451
Dell Products L.P.	IN-BAND-TELEMETRY-BASED PATH MTU SIZE DETERMINATION SYSTEM	6/5/2019	16/432736
Dell Products L.P.	Surface Mount Technology (SMT) Pad Design for Next Generation Speeds	6/6/2019	16/433988
Dell Products L.P.	Modular Hard Drive Receiving Chassis Member With Vibration Damping Supports	6/6/2019	16/433956
Dell Products L.P.	Securely Entering Sensitive Information Using a Touch Screen Device	6/7/2019	16/434691
Dell Products L.P.	Display Backlight Illumination of a Housing Perimeter	6/10/2019	16/436163
Dell Products L.P.	Mechanically Adjustable Supplemental Cooling Systems And Methods For Portable Information Handling Systems	6/11/2019	16/437709

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Owner	Title	Date	App. No.
Dell Products L.P.	ADJUSTABLE COMPUTING CARD HOLDER IN INFORMATION HANDLING SYSTEMS	6/11/2019	16/437719
Dell Products L.P.	Split Chassis System	6/11/2019	16/438114
Dell Products L.P.	SERVER EVENT LOG STORAGE AND RETRIEVAL SYSTEM	6/11/2019	16/438151
Dell Products L.P.	INSTALLING, UPDATING OR RECONFIGURING AN APPLICATION WITHOUT DISABLING A WRITE FILTER	6/11/2019	16/438301
Dell Products L.P.	Identifying File Exclusions for Write Filter Overlays	6/11/2019	16/438236
Dell Products L.P.	COMPONENT AND OBJECT MANAGEMENT OF INFORMATION HANDLING SYSTEMS	6/11/2019	16/437466
Dell Products L.P.	System and Method of Determining Chassis Identifications for Information Handling Systems	6/11/2019	16/437557
Dell Products L.P.	SELECTIVE APPLICATION AND DATA OFFLOADING	6/11/2019	16/438181
Dell Products L.P.	SYNCHRONIZING THE LANGUAGE OF A REMOTE SESSION WITH A CLIENT'S LANGUAGE	6/11/2019	16/438275
Dell Products L.P.	PCIe Bus Allocation feature.	6/11/2019	16/438062
Dell Products L.P.	ALUA/AGGREGATED SWITCH LATENCY REDUCTION SYSTEM	6/12/2019	16/439515
Dell Products L.P.	Secure Firmware Capsule Update Using NVMe Storage and Method Therefors	6/12/2019	16/438807
Dell Products L.P.	ADAPTIVE FIBRE CHANNEL SWITCH PORT ROLE CONFIGURATION SYSTEM	6/12/2019	16/439479
Dell Products L.P.	UNIVERSAL LOW PROFILE TO FULL HEIGHT FORM FACTOR ADAPTER	6/13/2019	16/440756
Dell Products L.P.	Backpack	6/13/2019	29/694842
Dell Products L.P.	SPANNING TREE PROTOCOL ENABLED N-NODE LINK AGGREGATION SYSTEM	6/13/2019	16/440766
Dell Products L.P.	System and Method of Utilizing a Graphical User Interface with	6/13/2019	16/440167

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Owner	Title	Date	App. No.
	Radially Arranged Selectable Elements		
Dell Products L.P.	SYSTEMS AND METHODS FOR END USER EXPERIENCE BASED MIGRATION OF USER WORKLOADS ACROSS A COMPUTER CLUSTER	6/13/2019	16/440669
Dell Products L.P.	METHODS AND SYSTEMS FOR OPERABLY CONNECTING NOTEBOOK COMPUTING COMPONENTS USING ELECTROPERMANENT MAGNETS	6/13/2019	16/440176
Dell Products L.P.	Customer Address Components Classifier	6/14/2019	62/861699
Dell Products L.P.	Information Handling System Housing Split Anchor Automatic State-Holding Latch	6/14/2019	16/441462
Dell Products L.P.	MECHANISM FOR RAPID NETWORK FAILURE DETECTION FOR FASTER SWITCH-OVER IN SERVER-TO-SERVER APPLICATIONS	6/18/2019	16/444631
Dell Products L.P.	AUTOMATING AND MONITORING ROLLING CLUSTER REBOOTS	6/18/2019	16/444489
Dell Products L.P.	Compensating for Temperature Induced Differences in a Computing Device Having Dual-Displays or a Foldable Display	6/18/2019	16/443983
Dell Products L.P.	Method for Regulating System Management Mode Function Calls and System Therefor	6/19/2019	16/445966
Dell Products L.P.	MANAGEMENT OF INSTRUMENTATION DATA USING A RESOURCE DATABASE	6/19/2019	16/446224
Dell Products L.P.	System and Method of Utilizing a Non-Volatile Solid State Storage Device	6/19/2019	16/446193
Dell Products L.P.	SYSTEMS AND METHODS FOR TIERING OF HEATPIPES	6/20/2019	16/447440
Dell Products L.P.	System and Method for High Configurability High-Speed Interconnect	6/21/2019	16/449134

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Owner	Title	Date	App. No.
Dell Products L.P.	Machine Learning System for Identifying Potential Escalation of Customer Service Requests	6/21/2019	16/448618
Dell Products L.P.	Display	6/21/2019	29/695731
Dell Products L.P.	Method of Adaptive Back-Channel Sync in XR Edge Cloud Compute	6/21/2019	16/449258
Dell Products L.P.	System and Method for Electronic Mail Approval Paths	6/24/2019	16/450607
Dell Products L.P.	System and Method for Electronic Mail Escalation and Approval Paths	6/24/2019	16/450588
Dell Products L.P.	SYSTEM AND METHOD OF CONTROLLING AN ELECTROPERMANENT MAGNET AT A TRACKPAD	6/24/2019	16/450269
Dell Products L.P.	Method for Reducing Visual Fatigue and System Therefor	6/26/2019	16/453880
Dell Products L.P.	System and Method to Derive Health Information for a General Purpose Processing Unit Through Aggregation of Board Parameters	6/26/2019	16/453025
Dell Products L.P.	System and Method for Preboot Device Driver Provisioning for Remotely-Staged Operating System	6/26/2019	16/453045
Dell Products L.P.	System and Method of Configuring Field Programmable Logic Arrays	6/27/2019	16/455085
Dell Products L.P.	System for Providing Personalized Marketing at a Mobile Device When in Proximity to a Retail Location	6/28/2019	16/456595
Dell Products L.P.	System and Method for Visualization of System Components	6/28/2019	16/456892
Dell Products L.P.	HYPER-CONVERGED INFRASTRUCTURE (HCI) RESOURCE RESERVATION SYSTEM	6/28/2019	16/457376
Dell Products L.P.	Method of Adding NC-SI Sideband and Management to a High Consumption SmartNIC	6/30/2019	16/458076
Dell Products L.P.	Method and Apparatus for Improving Power Management to Extend Battery Cycle Life and System Operating Temperature Range	7/1/2019	16/458422
Dell Products L.P.	Multi-Generational Virtual Block Compaction	7/1/2019	16/458496

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Owner	Title	Date	App. No.
Dell Products L.P.	FASTER REBUILDING OF 2-DISK FAILURE IN RAID BY EFFICIENT, MODULAR, DIAGONAL, CONCURRENT PARITY)	7/2/2019	16/459929
Dell Products L.P.	Beveled Light Guide Plate	7/2/2019	16/459949
Dell Products L.P.	High Color Gamut LED Bar with Side Illumination LED Package	7/2/2019	16/459979
Dell Products L.P.	RESOURCE-UTILIZATION-BASED WORKLOAD RE-ALLOCATION SYSTEM	7/3/2019	16/502906
Dell Products L.P.	MICROSERVICE UPDATE SYSTEM	7/3/2019	16/503146
Dell Products L.P.	MULTI-USER DISPLAY COLLABORATION SYSTEM	7/5/2019	16/504124
Dell Products L.P.	Automated method of identifying troubleshooting & system repair instructions using complementary machine learning models	7/5/2019	16/503819
Dell Products L.P.	AGGREGATED SWITCH PATH OPTIMIZATION SYSTEM	7/5/2019	16/504086
Dell Products L.P.	Information Handling System Low Form Factor Interface Thermal Management	7/8/2019	16/504484
Dell Products L.P.	HYBRID DATA REDUCTION	7/10/2019	16/507362
Dell Products L.P.	IDENTIFYING A TRANSPORT ROUTE USING AN INFORMATION HANDLING SYSTEM FIRMWARE DRIVER	7/10/2019	16/507611
Dell Products L.P.	ARCHITECTURAL DATA MOVER FOR RAID XOR ACCELERATION IN A VIRTUALIZED STORAGE APPLIANCE	7/10/2019	16/507587
Dell Products L.P.	Apparatus and Method for Controlled Ejection of an Open Compute Project Module from an Information Handling System	7/10/2019	16/507554
Dell Products L.P.	WORKLOAD/PROCESSOR RESOURCE SCHEDULING SYSTEM	7/10/2019	16/508078
Dell Products L.P.	Defining a Zone to Perform an Action in a Dual-Screen Tablet	7/11/2019	16/508957
Dell Products L.P.	Systems and Processes For Data Backup And Recovery	7/11/2019	16/508661

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Owner	Title	Date	App. No.
Dell Products L.P.	PREDICTIVE STORAGE MANAGEMENT SYSTEM	7/11/2019	16/509322
Dell Products L.P.	Determining Micro-Expressions of a User	7/12/2019	16/510194
Dell Products L.P.	Apparatus and Method for Sealing Air Movers in an Information Handling System	7/12/2019	16/509914
Dell Products L.P.	METHOD AND SYSTEM FOR VERIFYING STATE MONITOR RELIABILITY IN HYPER-CONVERGED INFRASTRUCTURE APPLIANCES	7/12/2019	16/509931
Dell Products L.P.	MEMORY DEVICE FAILURE RECOVERY SYSTEM	7/12/2019	16/510653
Dell Products L.P.	PERFORMANCE-BASED WORKLOAD/STORAGE ALLOCATION SYSTEM	7/12/2019	16/510629
Dell Products L.P.	Bidirectional Trust Chaining For Trusted Boot	7/15/2019	16/512077
Dell Products L.P.	Power Stage with Vertical Integration for High-Density, Low-Noise Voltage Regulators	7/16/2019	16/512719
Dell Products L.P.	System and Method of Utilizing a Stylus with an Information Handling System	7/16/2019	16/512623
Dell Products L.P.	Real Time Clock Battery Power Management	7/16/2019	16/512508
Dell Products L.P.	WORKLOAD/CONVERGED INFRASTRUCTURE ASSET ALLOCATION SYSTEM	7/16/2019	16/513205
Dell Products L.P.	Gross Margin Recovery with supervised machine learning technique	7/17/2019	16/514259
Dell Products L.P.	Automatic Peripheral Pairing With Hand Assignments In Virtual, Augmented, And Mixed Reality (xR) Applications	7/17/2019	16/513981
Dell Products L.P.	Perppheral Component Protection in Information Handling Systems	7/17/2019	16/514023
Dell Products L.P.	Method to control characteristic impedance by employing irregular pad shapes	7/17/2019	16/514096

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Owner	Title	Date	App. No.
Dell Products L.P.	Machine Learning System for Detecting Fraud in Product Warranty Services	7/17/2019	16/514455
Dell Products L.P.	System for Migration of Data from Legacy Computer System Using Wireless Peer-to-Peer Connection	7/18/2019	16/515643
Dell Products L.P.	VIDEO CONTAINER WITH EDITABLE PRESENTATION OBJECTS	7/18/2019	16/515727
Dell Products L.P.	System Validator	7/19/2019	16/516399
Dell Products L.P.	SYSTEM AND METHOD FOR DATA PROCESSING DEVICE MANAGEMENT	7/19/2019	16/516371
Dell Products L.P.	Architecture of Providing Machine Learning Based Sales Facilitation	7/19/2019	16/516511
Dell Products L.P.	Sales Facilitation Architecture for Analyzing a Product Configuration to Determine an Optimum Configuration	7/19/2019	16/516522
Dell Products L.P.	Sales Facilitation Architecture for Using Operational Parameters to Determine a Candidate Product Configuration	7/19/2019	16/516531
Dell Products L.P.	Sales Facilitation Architecture for Analyzing a Product Configuration to Identify Replacement Options for the Product Configuration	7/19/2019	16/516542
Dell Products L.P.	Sales Facilitation Architecture for Using a Plurality of Solutions to Generate Sales Facilitation Content	7/19/2019	16/516553
Dell Products L.P.	Sales Facilitation Architecture for Determining Utilization of an Asset Within a Complex Asset Environment	7/19/2019	16/516570
Dell Products L.P.	Information Handling System Thin Wall Packaging	7/19/2019	16/517319
Dell Products L.P.	SYSTEM AND METHOD FOR MANAGING ELECTROMAGNETIC INTERFERENCE	7/19/2019	16/516404
Dell Products L.P.	SYSTEM AND METHOD FOR DEVICE LEVEL ELECTROMAGNETIC INTERFERENCE MANAGEMENT	7/19/2019	16/516433

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Owner	Title	Date	App. No.
Dell Products L.P.	SYSTEM AND METHOD FOR THERMAL MANAGEMENT AND ELECTROMAGNETIC INTERFERENCE MANAGEMENT	7/19/2019	16/516509
Dell Products L.P.	SYSTEM AND METHOD FOR COMMUNICATING EXTERNALLY FROM AN ELECTROMAGNETIC INTERFERENCE SUPPRESSED VOLUME	7/19/2019	16/516972
Dell Products L.P.	SYSTEM AND METHOD FOR MANAGING MULTIPLE CONNECTIONS	7/19/2019	16/516532
Dell Products L.P.	SYSTEM AND METHOD FOR MANAGING THERMAL STATES OF DEVICES	7/19/2019	16/516556
Dell Products L.P.	SYSTEM AND METHOD FOR THERMAL MANAGEMENT OF SHADOWED DEVICES	7/19/2019	16/516300
Dell Products L.P.	SYSTEM AND METHOD FOR DEVICE LEVEL THERMAL MANAGEMENT AND ELECTROMAGNETIC INTERFERENCE MANAGEMENT	7/19/2019	16/516312
Dell Products L.P.	SYSTEM AND METHOD FOR DEVICE STATE DETERMINATION	7/19/2019	16/516317
Dell Products L.P.	SYSTEM AND METHOD FOR OPERATING ELECTROMAGNETICALLY ISOLATED DEVICE	7/19/2019	16/516321
Dell Products L.P.	SYSTEM AND METHOD FOR PHYSICAL MANAGEMENT OF DEVICES	7/19/2019	16/516364
Dell Products L.P.	SYSTEM AND METHOD FOR OPTICAL STATE DETERMINATION	7/19/2019	16/516370
Dell Products L.P.	System and Method to Inhibit Firmware Downgrade	7/22/2019	16/517995
Dell Products L.P.	TOPOLOGY CHANGE PROCESSING IN BRIDGED NETWORKS USING A SPANNING TREE PROTOCOL	7/22/2019	16/518826

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Owner	Title	Date	App. No.
Dell Products L.P.	SYSTEM AND METHOD FOR CONSOLIDATED BIOS-LEVEL EVENT LOGGING	7/23/2019	16/519612
Dell Products L.P.	SYSTEM AND METHOD TO PREVENT BATTERY UNDER-VOLTAGE SHUTDOWN	7/23/2019	16/519485
Dell Products L.P.	ENCODING AND DECODING TROUBLESHOOTING ACTIONS WITH MACHINE LEARNING TO PREDICT REPAIR SOLUTIONS	7/25/2019	16/522217
Dell Products L.P.	Data Representations for a Sales Facilitation Operation	7/25/2019	16/522158
Dell Products L.P.	Data Representations for Collection of Complex Asset System Data	7/25/2019	16/522188
Dell Products L.P.	METHOD FOR FASTER AND SAFE DATA BACKUP USING GPT REMOTE ACCESS BOOT SIGNATURES TO SECURELY EXPOSE GPT PARTITIONS TO CLOUD DURING OS CRASH	7/25/2019	16/521767
Dell Products L.P.	Method to Manage Peripherals User Context for IHSs	7/25/2019	16/521972
Dell Products L.P.	METHOD TO TRANSFER FIRMWARE LEVEL SECURITY INDICATORS TO OS LEVEL THREAT PROTECTION TOOLS AT RUNTIME	7/25/2019	16/521835
Dell Products L.P.	Dell Experience Application Launcher - DEAL	7/26/2019	16/523200
Dell Products L.P.	Asymmetric High-Speed Interconnect Routing Interposer	7/26/2019	16/523091
Dell Products L.P.	HASH COLLISION MITIGATION SYSTEM	7/26/2019	16/523838
Dell Products L.P.	METHODS, DEVICES AND COMPUTER PROGRAM PRODUCTS FOR MANAGING SOFTWARE FUNCTION	7/26/2019	16/523625
Dell Products L.P.	Method and Apparatus for Compensating for Camera Error in a Multi-Camera Stereo Camera System	7/29/2019	16/525550
Dell Products L.P.	Automatically Adjusting a Size of Headphone Cushions	7/29/2019	16/524456
Dell Products L.P.	System and Method for	7/29/2019	16/524722

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Owner	Title	Date	App. No.
	Implementing a Web Application Firewall as a Customized Service		
Dell Products L.P.	Servicing System with Snapshot Function	7/29/2019	16/524980
Dell Products L.P.	Sales Facilitation Process Flow from Customer Insight to Proposal	7/30/2019	16/526448
Dell Products L.P.	Sales Facilitation Data Collection and Process Flow	7/30/2019	16/526470
Dell Products L.P.	Information Handling System Soft Carrying Case	7/30/2019	16/526199
Dell Products L.P.	Method of Silent Authentication for Subsites after SingleSignOn to the Master Site	7/30/2019	16/526616
Dell Products L.P.	Runtime Device Firmware Trust Chaining	7/30/2019	16/526467
Dell Products L.P.	Method to Detect Key Loggers Based on Frequency Signature	7/30/2019	16/526575
Dell Products L.P.	EXPANDER 1/0 MODULE DISCOVERY AND MANAGEMENT SYSTEM	7/30/2019	16/526624
Dell Products L.P.	Method to securely wake managed IHS via BT peripheral	7/30/2019	16/526528
Dell Products L.P.	SYSTEMS AND METHODS FOR PREDICTING INFORMATION HANDLING RESOURCE FAILURES USING DEEP RECURRENT NEURAL NETWORK WITH A MODIFIED GATED RECURRENT UNIT HAVING MISSING DATA IMPUTATION	7/31/2019	16/528081
Dell Products L.P.	System and Method for Slice Virtual Disk Encryption	7/31/2019	16/527716
Dell Products L.P.	METHOD AND SYSTEM FOR REDUNDANT DISTRIBUTION AND RECONSTRUCTION OF STORAGE METADATA	7/31/2019	16/528595
Dell Products L.P.	METHOD AND SYSTEM FOR A PROACTIVE HEALTH CHECK AND RECONSTRUCTION OF DATA	7/31/2019	16/528602
Dell Products L.P.	METHOD AND SYSTEM FOR OFFLOADING A CONTINUOUS HEALTH-CHECK AND	7/31/2019	16/528609

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Owner	Title	Date	App. No.
	RECONSTRUCTION OF DATA IN A NON-ACCELERATOR POOL		
Dell Products L.P.	METHOD AND SYSTEM FOR ANY-POINT-IN-TIME RECOVERY WITHIN A CONTINUOUS DATA PROTECTION SOFTWARE-DEFINED STORAGE	7/31/2019	16/528612
Dell Products L.P.	METHOD AND SYSTEM FOR IDENTIFYING ACTOR OF A FRAUDULENT ACTION DURING LEGAL HOLD AND LITIGATION	7/31/2019	16/528618
Dell Products L.P.	SYSTEM AND METHOD FOR INDIRECT DATA CLASSIFICATION IN A STORAGE SYSTEM	7/31/2019	16/528620
Dell Products L.P.	Thermoplastic Carbon Fiber Laminate with a Randomly Oriented Fiber Core Layer	7/31/2019	16/527311
Dell Products L.P.	SYSTEM AND METHOD TO SECURE EMBEDDED CONTROLLER FLASHING PROCESS	7/31/2019	16/527216
Dell Products L.P.	METHOD AND SYSTEM FOR PREDICTING UPGRADE COMPLETION TIMES IN HYPER-CONVERGED INFRASTRUCTURE ENVIRONMENTS	7/31/2019	16/528565
Dell Products L.P.	Converting Unlabeled Data into Labeled Data	8/1/2019	16/528990
Dell Products L.P.	SYSTEMS AND METHODS OF IMPLEMENTING SECURITY CONTEXT AWARE RESPONSE TIME OPTIMIZATION	8/1/2019	16/529709
Dell Products L.P.	Method to leverage authentication ticket for cross operating system SSO capabilities	8/1/2019	16/529317
Dell Products L.P.	System and Method for Detecting and Removing Electronic Mail Storms	8/2/2019	16/530032
Dell Products L.P.	Crowd Rating Media Content Based on Micro-Expressions of Viewers	8/2/2019	16/530196
Dell Products L.P.	Displaying Pre-Boot Error Messages	8/2/2019	16/530171

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Owner	Title	Date	App. No.
Dell Products L.P.	Gear Synchronized Dual Axis Pivot Hinge	8/2/2019	16/530367
Dell Products L.P.	Information Handling System Flexible Display Bezel	8/2/2019	16/530373
Dell Products L.P.	Information Handling System Flexible Display Rotational Orientation Monitoring and Management	8/2/2019	16/530519
Dell Products L.P.	Information Handling System Flexible Display Operating Condition Monitoring and Management	8/2/2019	16/530546
Dell Products L.P.	Information Handling System Flexible Display Smart Stylus	8/2/2019	16/530578
Dell Products L.P.	Synchronized Dual Axis Pivot Hinge	8/2/2019	16/530377
Dell Products L.P.	Operation for Generating Workload Recommendations	8/2/2019	16/530482
Dell Products L.P.	Detecting Customer Propensity for use in a Sales Facilitation Operation	8/2/2019	16/530484
Dell Products L.P.	Data Representations for Collection of Complex Asset System Data	8/2/2019	16/530489
Dell Products L.P.	All-In-One Information Handling System Stand	8/2/2019	29/700499
Dell Products L.P.	SYSTEMS AND METHODS OF ROOM PROFILING USING WIRELESS LOCAL AREA NETWORKS	8/2/2019	16/530978
Dell Products L.P.	Method for Network Access Control using Distributed Attestation of BIOS Forensics and Analytics	8/2/2019	16/530356
Dell Products L.P.	METHOD AND APPARATUS FOR MULTI-FACTOR VERIFICATION OF A COMPUTING DEVICE LOCATION WITHIN A PRESET GEOGRAPHIC AREA	8/2/2019	16/531004
Dell Products L.P.	SYSTEMS AND METHODS FOR IDENTIFYING PERSISTENTLY CONGESTED QUEUES	8/2/2019	16/530932
EMC Corporation	HANDLING DELETES WITH DISTRIBUTED ERASURE CODING	6/28/2019	16/457615
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER-READABLE MEDIUM FOR PROCESSING	5/6/2019	16/403756

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Owner	Title	Date	App. No.
	DATA GENERATED BY SERVICE		
EMC IP Holding Company LLC	Cloud to Cloud Disaster Recovery	5/7/2019	16/405465
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR A VIRTUAL MACHINE	5/9/2019	16/407572
EMC IP Holding Company LLC	EFFICIENT CAPACITY MANAGEMENT FOR A DATA STORAGE SYSTEM	5/10/2019	16/408694
EMC IP Holding Company LLC	MANAGING INLINE DATA COMPRESSION AND	5/10/2019	16/409366
	DEDUPLICATION IN STORAGE SYSTEMS		
EMC IP Holding Company LLC	TECHNIQUES FOR USER INTERFACE COMPONENTS	5/13/2019	16/410445
EMC IP Holding Company LLC	PATH-BASED DATA MIGRATION FROM SOURCE DEVICE TO TARGET DEVICE	5/13/2019	16/410706
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR WRITING DATA TO AND READ DATA FROM PERSISTENT STORAGE	5/14/2019	16/412398
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR SCALABLE BACKUP SEARCH	5/14/2019	16/412402
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR SCALABLE BACKUP SERVICES	5/14/2019	16/412400
EMC IP Holding Company LLC	STORAGE SYSTEM WITH COORDINATED RECOVERY ACROSS MULTIPLE INPUT-OUTPUT JOURNALS OF DIFFERENT TYPES	5/15/2019	16/413050
EMC IP Holding Company LLC	ADAPTIVE LOAD BALANCING IN STORAGE SYSTEM HAVING MULTIPLE INPUT-OUTPUT SUBMISSION QUEUES	5/15/2019	16/412621
EMC IP Holding Company LLC	Data Compression Using Nearest Neighbor Cluster	5/15/2019	16/412970
EMC IP Holding Company LLC	Deduplication Using Nearest Neighbor Cluster	5/15/2019	16/412946
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PRODUCT FOR PREDICTING DISK FAILURE	5/16/2019	16/414196
EMC IP Holding Company LLC	METHODS, DEVICES, AND COMPUTER PROGRAM	5/17/2019	16/415812

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Owner	Title	Date	App. No.
	PRODUCTS FOR PROCESSING DATA		
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR ASSIGNING TASKS TO DEDICATED PROCESSING RESOURCES	5/17/2019	16/415746
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR DEPLOYING A MACHINE LEARNING MODEL	5/20/2019	16/417147
EMC IP Holding Company LLC	Leverage OVA for upgrade	5/22/2019	16/419210
EMC IP Holding Company LLC	METHODS AND APPARATUS FOR APPLICATION PREDICTION THROUGH MACHINE LEARNING BASED ANALYSIS OF 10 PATTERNS	5/23/2019	16/420493
EMC IP Holding Company LLC	A Smart Pipeline with Parallel Data Loading & Pre-processing for GPUaaS	5/24/2019	16/422535
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR DATA PROCESSING	5/24/2019	16/422598
EMC IP Holding Company LLC	METHODS, SYSTEMS, AND COMPUTER READABLE MEDIUMS FOR IDENTIFYING COMPONENTS OF A COMPUTING SYSTEM	5/29/2019	16/425,453
EMC IP Holding Company LLC	FAST OBJECT LISTING IN GEOGRAPHICALLY DISTRIBUTED DATA STORAGE ENVIRONMENT	5/29/2019	16/424623
EMC IP Holding Company LLC	System to Synchronize and Secure Data into a Dark Site	5/29/2019	16/425071
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR IMPLEMENTING A DECENTRALIZED STORAGE POOL FOR AUTONOMOUS VEHICLE NAVIGATION GUIDANCE INFORMATION	5/29/2019	16/424542
EMC IP Holding Company LLC	DATA DRIVEN PARSER SELECTION FOR PARSING EVENT LOGS TO DETECT	5/30/2019	16/426338

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Owner	Title	Date	App. No.
	SECURITY THREATS IN AN ENTERPRISE SYSTEM		
EMC IP Holding Company LLC	Monitoring Subsystem for Computer Systems	5/30/2019	16/426179
EMC IP Holding Company LLC	data reduction improvement using aggregated machine learning	5/30/2019	16/426152
EMC IP Holding Company LLC	DISTRIBUTION OF SNAPS FOR LOAD BALANCING DATA NODE CLUSTERS	5/31/2019	16/427402
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR DEEP LEARNING	5/31/2019	16/428417
EMC IP Holding Company LLC	Uninterrupted Restore Operation Using a Time Probe Approach	6/3/2019	16/429205
EMC IP Holding Company LLC	Uninterrupted Backup Operation Using a Time probe approach	6/3/2019	16/429178
EMC IP Holding Company LLC	Market-Based Distributed Resource Allocation for Edge-Cloud Systems	6/3/2019	16/429514
EMC IP Holding Company LLC	IMPROVING INDEXES AND QUERIES FOR FILES BY INDEXING FILE DIRECTORIES	6/3/2019	16/429413
EMC IP Holding Company LLC	INCREMENTAL METADATA AGGREGATION FOR A FILE STORAGE SYSTEM	6/3/2019	16/429358
EMC IP Holding Company LLC	MODIFICATION AND PERIODIC CURATION OF METADATA COLLECTED FROM A FILE SYSTEM	6/3/2019	16/429327
EMC IP Holding Company LLC	Mechanism to simply erase personal data in backup copies for GDPR compliance	6/4/2019	16/431563
EMC IP Holding Company LLC	ADAPTIVE RE-KEYING IN A STORAGE SYSTEM	6/4/2019	16/431132
EMC IP Holding Company LLC	MANAGING DATA STORAGE	6/5/2019	16/432680
EMC IP Holding Company LLC	System to Automate the Recovery of a Data Mover Application in a Secure Enclave	6/5/2019	16/432195
EMC IP Holding Company LLC	Dynamic Optimization of Software License Allocation Using Machine Learning-Based User Clustering	6/5/2019	16/431941
EMC IP Holding Company LLC	SIGNATURE GENERATOR FOR USE IN COMPARING SETS OF	6/6/2019	16/433807

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Owner	Title	Date	App. No.
	DATA IN A CONTENT ADDRESSABLE STORAGE SYSTEM		
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR BACKUP DATA DISCRIMINATION	6/6/2019	16/434169
EMC IP Holding Company LLC	A FLASH INTERFACE FOR PROCESSING DATASETS	6/7/2019	16/434470
EMC IP Holding Company LLC	REMOTE PROCEDURE CALLS THAT OFFLOAD SEARCH PATTERN MATCHING FROM CLIENTS TO SERVERS	6/10/2019	16/436749
EMC IP Holding Company LLC	REMOTE PROCEDURE CALLS THAT OFFLOAD SEARCH PATTERN MATCHING FROM CLIENTS TO SERVERS	6/10/2019	16/436740
EMC IP Holding Company LLC	INCREMENTAL BACKUP WITH EVENTUAL NAME SPACE CONSISTENCY	6/11/2019	16/437924
EMC IP Holding Company LLC	METHOD OF BALANCING A SUPPLY CURRENT AND DEVICE FOR SUPPLYING POWER	6/11/2019	16/437,625
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR CREATING A SHORT HASH HANDLE HIGHLY CORRELATED WITH A GLOBALLY-UNIQUE HASH SIGNATURE	6/11/2019	16/438014
EMC IP Holding Company LLC	PATCHING SYSTEM CALLS IN DATA PROTECTION OPERATIONS	6/12/2019	16/438995
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR RECOVERING METADATA	6/12/2019	16/439597
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT OF STORAGE MANAGEMENT	6/12/2019	16/439588
EMC IP Holding Company LLC	AUTOMATED SURVEY GENERATOR FOR PROVISIONING INFRASTRUCTURE	6/13/2019	16/440529
EMC IP Holding Company LLC	SCALABLE DISTRIBUTED COMPUTATIONS UTILIZING	6/13/2019	16/440325

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Owner	Title	Date	App. No.
	MULTIPLE DISTINCT COMPUTATIONAL FRAMEWORKS		
EMC IP Holding Company LLC	SYSTEMS AND METHODS FOR REBUILDING A CACHE INDEX	6/13/2019	16/440457
EMC IP Holding Company LLC	SYSTEM AND METHOD OF SMART FRAMEWORK FOR TROUBLESHOOTING PERFORMANCE ISSUES	6/13/2019	16/440097
EMC IP Holding Company LLC	System to Deliver Secure Patches and Software Updates into a Secure Enclave	6/14/2019	16/441397
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR UPDATING USER INTERFACE	6/14/2019	16/440987
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT FOR PROCESSING TASK	6/14/2019	16/441459
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR DATA PROCESSING	6/14/2019	16/442374
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE, AND COMPUTER PROGRAM PRODUCT FOR HANDLING CONGESTION OF DATA TRANSMISSION	6/14/2019	16/442369
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR STORING METADATA	6/14/2019	16/442318
EMC IP Holding Company LLC	METHODS, ELECTRONIC DEVICES AND COMPUTER PROGRAM PRODUCT FOR REPLICATING METADATA	6/14/2019	16/442305
EMC IP Holding Company LLC	METHODS, DEVICES AND COMPUTER PROGRAM PRODUCTS FOR PROCESSING TASK	6/17/2019	16/443181
EMC IP Holding Company LLC	HOST PROCESSOR CONFIGURED WITH INSTRUCTION SET	6/18/2019	16/444577

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Owner	Title	Date	App. No.
	COMPRISING RESILIENT DATA MOVE INSTRUCTIONS		
EMC IP Holding Company LLC	PREFILL OF RAID STRIPES IN A STORAGE SYSTEM BY READING OF EXISTING DATA	6/19/2019	16/446138
EMC IP Holding Company LLC	AUTOMATIC PREFILL OF A STORAGE SYSTEM WITH CONDITIONING OF RAID STRIPES	6/19/2019	16/446161
EMC IP Holding Company LLC	Efficient and targeted Cloud Snapshot Manager restore and FLR	6/19/2019	16/445941
EMC IP Holding Company LLC	SECURITY FOR NETWORK ENVIRONMENT USING TRUST SCORING BASED ON POWER CONSUMPTION OF DEVICES WITHIN NETWORK	6/19/2019	16/446278
EMC IP Holding Company LLC	DISTRIBUTED GENERATION OF RANDOM DATA IN A STORAGE SYSTEM	6/19/2019	16/446183
EMC IP Holding Company LLC	METHOD, APPARATUS AND COMPUTER PROGRAM PRODUCT FOR MANAGING CACHE	6/19/2019	16/445990
EMC IP Holding Company LLC	HIGH PERFORMANCE LOGICAL DEVICE	6/20/2019	16/446679
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR COORDINATING ACCESS OPERATIONS	6/20/2019	16/447129
EMC IP Holding Company LLC	STORAGE SYSTEM CONFIGURED TO SUPPORT ONE-TO-MANY REPLICATION	6/21/2019	16/448726
EMC IP Holding Company LLC	STORAGE SYSTEM CONFIGURED TO SUPPORT CASCADE REPLICATION	6/21/2019	16/448681
EMC IP Holding Company LLC	Providing Data Deduplication in a Data Storage System with Parallelized Computation of Crypto-Digests for Blocks of Host 1/0 Data	6/24/2019	16/450390
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR FAILOVER PROCESSING	6/24/2019	16/450079
EMC IP Holding Company LLC	Uninterrupted Restore Operation Using a Data Probe Approach	6/26/2019	16/453674
EMC IP Holding Company LLC	Uninterrupted Backup Operation Using a Data Probe Approach	6/26/2019	16/453568

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	LIMITING BANDWIDTH USAGE FOR AN ASYNCHRONOUS REPLICATION SESSION IN A STORAGE SYSTEM	6/26/2019	16/453132
EMC IP Holding Company LLC	MAPPING OF DATA STORAGE SYSTEM FOR A REDUNDANT ARRAY OF INDEPENDENT NODES	6/26/2019	16/453774
EMC IP Holding Company LLC	LOCATION BASED APPLICATION MIGRATION FOR ENHANCING LIGHTWEIGHT IOT DEVICE APPLICATIONS	6/26/2019	16/453647
EMC IP Holding Company LLC	Automatic Snapshot and Journal Retention Systems With Large Data Flushes Using Machine Learning	6/27/2019	16/455429
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR ENSURING DATA CONSISTENCY	6/27/2019	16/454868
EMC IP Holding Company LLC	Uninterrupted Restore Operation Using an ISR Probe Approach	6/27/2019	16/454666
EMC IP Holding Company LLC	Uninterrupted Backup Operation Using an ISR Probe Approach	6/27/2019	16454654
EMC IP Holding Company LLC	ENSURING DATA AUTHENTICITY USING NOTARY AS A SERVICE	6/27/2019	16/455320
EMC IP Holding Company LLC	INFORMATION SECURITY SYSTEM WITH RISK ASSESSMENT BASED ON MULTI-LEVEL AGGREGATIONS OF RISK PREDICTORS	6/28/2019	16/455937
EMC IP Holding Company LLC	Adaptive Controller for Online Adaptation of Resource Allocation for Multiple Workloads	6/28/2019	16/456551
EMC IP Holding Company LLC	Security Policy Exchange and Enforcement for Question Delegation Environments	6/28/2019	16/456302
EMC IP Holding Company LLC	LIMITING BANDWIDTH USAGE ON ASYNCHRONOUS REPLICATION SESSIONS FOR A DESTINATION STORAGE SYSTEM	6/28/2019	16/456603
EMC IP Holding Company LLC	SNAPSHOTS FOR ANY POINT IN TIME REPLICATION	6/28/2019	16/457428
EMC IP Holding Company LLC	COST ANOMALY DETECTION IN CLOUD DATA PROTECTION	6/28/2019	16/457316

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	Replication progress for UPIT snapshots	6/28/2019	16/456829
EMC IP Holding Company LLC	Analyzing Cloud Backup Service Options Using Historical Data Protection Activities	6/28/2019	16/456756
EMC IP Holding Company LLC	METHOD, APPARATUS, AND COMPUTER PROGRAM PRODUCT FOR MANAGING STORAGE SYSTEM	6/28/2019	16/456848
EMC IP Holding Company LLC	METHOD, APPARATUS AND COMPUTER PROGRAM PRODUCT FOR STORING DATA	6/28/2019	16/456891
EMC IP Holding Company LLC	METHOD, APPARATUS, AND COMPUTER PROGRAM PRODUCT FOR MANAGING STORAGE SYSTEM	6/28/2019	16/456934
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER-READABLE MEDIUM FOR MANAGING METADATA	6/28/2019	16/456985
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR DATA PROCESSING	6/28/2019	16/457043
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR MONITORING ACCESS REQUEST	6/28/2019	16/457089
EMC IP Holding Company LLC	INTER-OBJECT VALIDATION SYSTEM AND METHOD USING CHAINED SPECIALIZED CONFIGURATION APPLICATIONS	7/1/2019	16/459288
EMC IP Holding Company LLC	CONTROLLED ACTIVATION OF PERFORMANCE MONITORING COMPONENT OF NETWORK PROTOCOL	7/1/2019	16/459012
EMC IP Holding Company LLC	METADATA COMPRESSION TECHNIQUES	7/1/2019	16/458864
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT FOR FILE MANAGEMENT	7/2/2019	16/460859

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	Automatically configuring boot sequence of container systems for disaster recovery	7/3/2019	16/503376
EMC IP Holding Company LLC	PAGE WRITE TO NON-VOLATILE DATA STORAGE WITH FAILURE RECOVERY	7/5/2019	16/503804
EMC IP Holding Company LLC	AUTHENTICATED BOOT TO PROTECT STORAGE SYSTEM DATA BY RESTRICTING DEPLOYMENT	7/8/2019	16/504575
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR BACKUP OF VMWARE CLOUD FOUNDATION	7/8/2019	16/504847
EMC IP Holding Company LLC	METHOD, APPARATUS AND COMPUTER PROGRAM PRODUCT FOR MANAGING STORAGE SYSTEM	7/8/2019	16/504624
EMC IP Holding Company LLC	FILE BLOCK ADDRESSING FOR BACKUPS	7/9/2019	16/506748
EMC IP Holding Company LLC	SECURITY FOR NETWORK COMPUTING ENVIRONMENT USING CENTRALIZED SECURITY SYSTEM	7/9/2019	16/506567
EMC IP Holding Company LLC	Discover Physical hosts from Fibre Channel fabric	7/9/2019	16/505974
EMC IP Holding Company LLC	Method and Apparatus for Optimizing Performance of a Storage System	7/9/2019	16/505767
EMC IP Holding Company LLC	FINE-GRAINED SHARED MULTI-TENANT DE-DUPLICATION SYSTEM	7/9/2019	16/506896
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR READING DATA	7/9/2019	16/506033
EMC IP Holding Company LLC	LAYOUT INDEPENDENT CRYPTOGRAPHIC STAMP OF A DISTRIBUTED DATASET	7/10/2019	16/507395
EMC IP Holding Company LLC	Vaulting Data From a Public Cloud	7/10/2019	16/507564
EMC IP Holding Company LLC	DATA MANAGEMENT IN MULTI-CLOUD COMPUTING ENVIRONMENT	7/10/2019	16/507578
EMC IP Holding Company LLC	Detecting and Correcting Cache Memory Leaks	7/10/2019	16/507442

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM	7/10/2019	16/508226
	PRODUCT FOR ACCESSING DATA		
EMC IP Holding Company LLC	METHODS, DEVICES, AND A COMPUTER PROGRAM PRODUCT FOR PROCESSING AN ACCESS REQUEST AND UPDATING A STORAGE SYSTEM	7/10/2019	16/508220
EMC IP Holding Company LLC	Method, device and computer program product for managing RAID	7/10/2019	16/507313
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR MANAGING STORAGE SYSTEM	7/10/2019	16/507359
EMC IP Holding Company LLC	VIRTUAL BLOCK REDIRECTION CLEAN-UP	7/11/2019	16/508472
EMC IP Holding Company LLC	Flexible RAID Splits Distribution	7/11/2019	16/508762
EMC IP Holding Company LLC	An efficient way to do the Location SLO validation	7/11/2019	16/509321
EMC IP Holding Company LLC	A smart compressor based on the adaptive CPU/QAT scheduling method	7/11/2019	16/509307
EMC IP Holding Company LLC	Real-time pre-fetch determination based on LUN-specific sequential patterns	7/11/2019	16/508347
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT FOR CREATING METADATA INDEX	7/12/2019	16/510826
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR RESTORATIONS OF VIRTUAL MACHINES IN VIRTUAL SYSTEMS	7/12/2019	16/510760
EMC IP Holding Company LLC	DYNAMIC PARALLELISM	7/15/2019	16/511924
EMC IP Holding Company LLC	ONLINE SYSTEM CHECKPOINT RECOVERY ORCHESTRATION	7/15/2019	16/511676
EMC IP Holding Company LLC	BLOOM FILTERS IN A FLASH MEMORY	7/15/2019	16/511261
EMC IP Holding Company LLC	LOW-OVERHEAD INDEX FOR A FLASH CACHE	7/15/2019	16/511256

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	DISTRIBUTED FILE SYSTEMS ON CONTENT DELIVERY NETWORKS	7/15/2019	16/511252
EMC IP Holding Company LLC	PLUGGABLE RECOVERY IN A DATA PROTECTION SYSTEM	7/15/2019	16/511246
EMC IP Holding Company LLC	MAPPED CLUSTER STRETCHING FOR INCREASING WORKLOAD IN A DATA STORAGE SYSTEM	7/15/2019	16/511161
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR MANAGING STORAGE SYSTEM	7/15/2019	16/512111
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT FOR DUAL-PROCESSOR STORAGE SYSTEM	7/16/2019	16/512641
EMC IP Holding Company LLC	METHODS, DEVICES AND COMPUTER PROGRAM PRODUCTS FOR COPYING DATA	7/16/2019	16/512639
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR MANAGING METADATA AT A CONTROL DEVICE	7/16/2019	16/512644
EMC IP Holding Company LLC	FLUSHING PAGES FROM SOLID-STATE STORAGE DEVICE	7/17/2019	16/514291
EMC IP Holding Company LLC	DATA MANAGEMENT FOR EDGE COMPUTING ENVIRONMENT	7/17/2019	16/514424
EMC IP Holding Company LLC	FACILITATING IMPROVED OVERALL PERFORMANCE OF REMOTE DATA FACILITY REPLICATION SYSTEMS	7/18/2019	16/515597
EMC IP Holding Company LLC	AUTOMATICALLY DETERMINING OPTIMAL STORAGE MEDIUM BASED ON SOURCE DATA CHARACTERISTICS	7/18/2019	16/516154
EMC IP Holding Company LLC	DATA INTEGRITY AND CONSENSUSES WITH BLOCKCHAIN	7/18/2019	16/516138
EMC IP Holding Company LLC	HYPER-SCALE P2P DEDUPLICATED STORAGE	7/18/2019	16/516109

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Owner	Title	Date	App. No.
	SYSTEM USING A DISTRIBUTED LEDGER		
EMC IP Holding Company LLC	HOST DEVICE WITH CONTROLLED CLONING OF INPUT-OUTPUT OPERATIONS	7/19/2019	16/516367
EMC IP Holding Company LLC	OPTIMIZATION TO PERMIT BLOCK BASED INCREMENTAL BACKUP ACROSS SYSTEM REBOOT OR CRASH	7/19/2019	16/516955
EMC IP Holding Company LLC	LINK SELECTION PROTOCOL IN A REPLICATION SETUP	7/19/2019	16/516677
EMC IP Holding Company LLC	BLUEPRINT-DRIVEN ENVIRONMENT TEMPLATE CREATION IN A VIRTUAL INFRASTRUCTURE	7/19/2019	16/516860
EMC IP Holding Company LLC	UNIFIED PROTECTION OF CLUSTER SUITE	7/19/2019	16/516890
EMC IP Holding Company LLC	CONCURRENT TAPE MODIFICATION	7/19/2019	16/516558
EMC IP Holding Company LLC	STORAGE SYSTEM WITH SNAPSHOT GROUP MERGE FUNCTIONALITY	7/19/2019	16/516539
EMC IP Holding Company LLC	DYNAMIC BALANCING OF INPUT/OUTPUT (I0) OPERATIONS FOR A STORAGE SYSTEM	7/19/2019	16/516670
EMC IP Holding Company LLC	LEVERAGING SENTIMENT IN DATA PROTECTION SYSTEMS	7/19/2019	16/516952
EMC IP Holding Company LLC	Global Inline Name Space Verification for Distributed File Systems	7/19/2019	16/517441
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR SCHEDULING TASKS IN A COMPUTING SYSTEM	7/19/2019	16/516298
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR PROCESSING DATA IN A REPLICATION SYSTEM	7/19/2019	16/516295
EMC IP Holding Company LLC	GENERATING COMPRESSED REPRESENTATIONS OF SORTED ARRAYS OF IDENTIFIERS	7/22/2019	16/518562
EMC IP Holding Company LLC	MULTI-DOMAIN MONITORING SERVICES FOR INTELLIGENT	7/22/2019	16/518507
	INFRASTRUCTURE AUTOMATION		

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	FORWARDING METADATA PROXY SERVER FOR ASYNCHRONOUS METADATA OPERATIONS	7/22/2019	16/518873
EMC IP Holding Company LLC	Service Level Compression	7/22/2019	16/517933
EMC IP Holding Company LLC	Efficient file renames in using B-Tree based persistence for file system name space	7/22/2019	16/518221
EMC IP Holding Company LLC	Reducing I0 delays associated with Snapping using host hints	7/23/2019	16/519303
EMC IP Holding Company LLC	Method and Apparatus for Creating Tests for Execution in a Storage Environment	7/23/2019	16/519046
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR ADAPTING SOLID STATE MEMORY WRITE PARAMETERS TO SATISFY PERFORMANCE GOALS BASED ON DEGREE OF READ ERRORS	7/23/2019	16/520263
EMC IP Holding Company LLC	CENTRALIZED RETENTION AND BACKUP DELETIONS	7/23/2019	16/519377
EMC IP Holding Company LLC	TECHNIQUES FOR PROCESSING MANAGEMENT MESSAGES USING MULTIPLE STREAMS	7/23/2019	16/519261
EMC IP Holding Company LLC	POSITIONAL INDEXING FOR A TIERED DATA STORAGE SYSTEM	7/24/2019	16/520667
EMC IP Holding Company LLC	DISTRIBUTED CATALOG SERVICE FOR DATA PROCESSING PLATFORM	7/24/2019	16/521236
EMC IP Holding Company LLC	MIGRATION RESUMPTION USING JOURNALS	7/24/2019	16/520501
EMC IP Holding Company LLC	Generating Security Policies for End-User Devices Using Group Rankings and Partial Policy Determinations	7/24/2019	16/521083
EMC IP Holding Company LLC	PERFORMANCE OPTIMIZATION FOR ACTIVE-ACTIVE LOCKING USING STICKING AFFINITY FOR STORAGE OBJECTS	7/24/2019	16/520510
EMC IP Holding Company LLC	BARRIERLESS SNAPSHOTS	7/24/2019	16/520507

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	AUTOMATIC CONFIGURATION OF MULTIPLE VIRTUAL STORAGE PROCESSORS	7/24/2019	16/521146
EMC IP Holding Company LLC	DATA STORAGE SYSTEM WITH PROCESSOR SCHEDULING USING DISTRIBUTED PEEK-POLLER THREADS	7/24/2019	16/520922
EMC IP Holding Company LLC	FICON Parallel I/O in a Replicated Environment	7/24/2019	16/520727
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR DEVICE OPERATION MONITORING	7/24/2019	16/521586
EMC IP Holding Company LLC	Blinding Techniques for Protection of Private Keys in Message Signing Based on Elliptic Curve Cryptography	7/25/2019	16/521995
EMC IP Holding Company LLC	SECURE STORAGE ACCESS UTILIZING MULTI-PATH LAYER OF HOST DEVICE	7/25/2019	16/522152
EMC IP Holding Company LLC	MAINTAINING MANAGEMENT COMMUNICATIONS ACROSS VIRTUAL STORAGE PROCESSORS	7/25/2019	16/521688
EMC IP Holding Company LLC	ENHANCED QUALITY OF SERVICE (QOS) FOR MULTIPLE SIMULTANEOUS REPLICATION SESSIONS IN A REPLICATION SETUP	7/25/2019	16/521730
EMC IP Holding Company LLC	PROVENANCE-BASED REPLICATION IN A STORAGE SYSTEM	7/25/2019	16/521728
EMC IP Holding Company LLC	A Method to Recover Encrypted Structured files	7/25/2019	16/522441
EMC IP Holding Company LLC	Metadata Management in Data Storage Systems	7/25/2019	16/521746
EMC IP Holding Company LLC	Determining User Retention Values Using Machine Learning and Heuristic Techniques	7/26/2019	16/523309
EMC IP Holding Company LLC	DETECTING AN ABNORMAL EVENT WHILE DATA STORAGE EQUIPMENT IS IN TRANSIT	7/26/2019	16/522974
EMC IP Holding Company LLC	Storage Array Based Virus Detection & Automated Mitigation	7/26/2019	16/522883
EMC IP Holding Company LLC	High-Density Cable Management Bar	7/26/2019	16/523475

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	MIGRATING VIRTUAL TAPES BETWEEN DIFFERENT VIRTUAL TAPE STORAGES WITHOUT HOST INVOLVEMENT	7/26/2019	16/523318
EMC IP Holding Company LLC	WIRELESS DISCOVERY, ROUTING AND ADVERTISEMENT PROTOCOL FOR SECURE REMOTE SERVICES IN A COMMUNICATION ENVIRONMENT	7/26/2019	16/523473
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR POST-PURCHASE DATA USAGE AND LICENSE ENFORCEMENT	7/26/2019	16/523234
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR EFFICIENT RESOURCE USAGE THROUGH INTELLIGENT REPORTING	7/26/2019	16/523033
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR DERIVING METADATA CHARACTERISTICS OF DERIVATIVE ASSETS	7/26/2019	16/523683
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR DATA LICENSE AGREEMENTS AND LICENSEE AUDITABILITY	7/26/2019	16/523231
EMC IP Holding Company LLC	Intelligent Contact Search Using Graph models	7/29/2019	16/524778
EMC IP Holding Company LLC	CRYPTOGRAPHIC KEY MANAGEMENT USING KEY PROXIES AND GENERATIONAL INDEXES	7/29/2019	16/524372
EMC IP Holding Company LLC	METHOD FOR COLLECTING PERFORMANCE DATA IN A COMPUTER SYSTEM	7/29/2019	16/524417
EMC IP Holding Company LLC	OPTIMIZING 1/0 LATENCY BY SOFTWARE STACK LATENCY REDUCTION IN A COOPERATIVE THREAD PROCESSING MODEL	7/29/2019	16/524954
EMC IP Holding Company LLC	VOLUME MIGRATION IN A FEDERATED STORAGE ARRAY WITH NON-VOLATILE MEMORY EXPRESS OVER	7/29/2019	16/524464

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Owner	Title	Date	App. No.
	FABRIC (NVMEOF) HOST ATTACHMENT		
EMC IP Holding Company LLC	Detecting partial deduplication opportunities using entropy of alphabet encoding as a distance function.	7/29/2019	16/525192
EMC IP Holding Company LLC	TxLog Dual Node Flush	7/29/2019	16/525227
EMC IP Holding Company LLC	System to allow dynamic configuration of virtual hardware	7/29/2019	16/525260
EMC IP Holding Company LLC	Leveraging Binary Buddy Storage Allocation For Reduced Lock Contention and Better Performance	7/29/2019	16/525337
EMC IP Holding Company LLC	User data (PLB) and virtual layer (VLB) defragmentation method to achieve by an order of magnitude higher amortization	7/29/2019	16/525149
EMC IP Holding Company LLC	Network-less peer communication for dual-SP VSAs	7/29/2019	16/525293
EMC IP Holding Company LLC	TECHNIQUES FOR DUPLICATING INODE STATE TO PREVENT LOSS OF INODE METADATA	7/29/2019	16/524663
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR COUNTERING CAPACITY SHORTAGES ON STORAGE SYSTEMS	7/29/2019	16/525556
EMC IP Holding Company LLC	Machine Learning-Based Anomaly Detection Using Time Series Decomposition	7/30/2019	16/526103
EMC IP Holding Company LLC	UTILIZING MACHINE LEARNING TO DETECT EVENTS IMPACTING PERFORMANCE OF WORKLOADS RUNNING ON STORAGE SYSTEMS	7/30/2019	16/526265
EMC IP Holding Company LLC	STORAGE RESOURCE CAPACITY PREDICTION UTILIZING A PLURALITY OF	7/30/2019	16/526006
	TIME SERIES FORECASTING MODELS		
EMC IP Holding Company LLC	HASH-BASED ONE-LEVEL MAPPING FOR STORAGE CLUSTERS	7/30/2019	16/526641
EMC IP Holding Company LLC	DYNAMIC MEMORY MANAGER	7/30/2019	16/526647

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	Shredding sensitive material by shredding a forum of secrets	7/30/2019	16/526464
EMC IP Holding Company LLC	Automated restoration of recovery device hosting a recovery operating system and image repository due to software corruption or faulty hardware on a high availability storage appliance.	7/30/2019	16/526634
EMC IP Holding Company LLC	USER STREAM AWARE FILE SYSTEMS WITH USER STREAM DETECTION	7/30/2019	16/526391
EMC IP Holding Company LLC	REDIRECT-ON-WRITE SNAPSHOT MECHANISM WITH DELAYED DATA MOVEMENT	7/30/2019	16/526328
EMC IP Holding Company LLC	SIMPLE AND EFFICIENT TECHNIQUE TO SUPPORT DISK EXTENTS OF DIFFERENT SIZES FOR MAPPED RAID	7/30/2019	16/526547
EMC IP Holding Company LLC	Mitigating Real Node Failure of a Doubly Mapped Redundant Array of Independent Nodes	7/30/2019	16/526182
EMC IP Holding Company LLC	LOGGING USER INTERFACE ACTIVITY WITH CONTROL PLACEMENT AND ACTIVITY INFORMATION	7/30/2019	16/526162
EMC IP Holding Company LLC	TRANSPORTING DATA OUT OF ISOLATED NETWORK ENVIRONMENTS	7/30/2019	16/526117
EMC IP Holding Company LLC	Hybrid Mapped Clusters for Data Storage	7/30/2019	16/526142
EMC IP Holding Company LLC	TECHNIQUES FOR CAPTURING VIRTUAL MACHINE SNAPSHOTS USING DATA STORAGE SYSTEM SNAPSHOTS	7/30/2019	16/525921
EMC IP Holding Company LLC	DEDUPLICATED DATA BLOCK OWNERSHIP DETERMINATION	7/30/2019	16/526181
EMC IP Holding Company LLC	TECHNIQUES FOR OBTAINING METADATA AND USER DATA	7/30/2019	16/525907
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR SORTING AND SCHEDULING WORKFLOWS	7/30/2019	16/526329
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR PROVISIONING SOFTWARE LICENSES	7/30/2019	16/526349

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	Machine Learning-Based Recommendation Engine for Storage System Usage Within an Enterprise	7/31/2019	16/527253
EMC IP Holding Company LLC	BACKUP CLIENT AGENT	7/31/2019	16/528368
EMC IP Holding Company LLC	Classification of Storage Systems and Users Thereof Using Machine Learning Techniques	7/31/2019	16/527269
EMC IP Holding Company LLC	Dynamic Access Controls Using Verifiable Claims	7/31/2019	16/527425
EMC IP Holding Company LLC	Access Controls for Question Delegation Environments	7/31/2019	16/527669
EMC IP Holding Company LLC	Adaptive and Verifiable Bill of Materials	7/31/2019	16/527662
EMC IP Holding Company LLC	PLATFORM FOR THE EXTRACTION OF OPERATIONAL TECHNOLOGY DATA TO DRIVE RISK MANAGEMENT APPLICATIONS	7/31/2019	16/527981
EMC IP Holding Company LLC	BACKUP CLIENT AGENT	7/31/2019	16/528323
EMC IP Holding Company LLC	DYNAMIC ENABLING OF METADATA PREFETCH INTO CACHE	7/31/2019	16/527572
EMC IP Holding Company LLC	FILE LAYER TO BLOCK LAYER COMMUNICATION FOR SELECTIVE DATA REDUCTION	7/31/2019	16/528107
EMC IP Holding Company LLC	FILE LAYER TO BLOCK LAYER COMMUNICATION FOR BLOCK ORGANIZATION IN STORAGE	7/31/2019	16/528091
EMC IP Holding Company LLC	COMPRESSING DATA USING DEDUPLICATION-LIKE METHODS	7/31/2019	16/527508
EMC IP Holding Company LLC	DEDUPLICATION OF LARGE BLOCK AGGREGATES USING	7/31/2019	16/527894
	REPRESENTATIVE BLOCK DIGESTS		
EMC IP Holding Company LLC	Sub-Block Deduplication improvement with search for identical sectors inside the candidate block	7/31/2019	16/528071
EMC IP Holding Company LLC	Improving Space Efficiency by Compressing Multi-Block Aggregates.	7/31/2019	16/527998

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	TxLog Parallel Flush with Bucketized Data	7/31/2019	16/527665
EMC IP Holding Company LLC	Address Space slicing with strong CPU core affinity" method allowing NUMA awareness and near lockless IO processing in Storage Cluster	7/31/2019	16/527500
EMC IP Holding Company LLC	Scalable space efficient hardening of a fixed sized hash table over an unreliable tier	7/31/2019	16/527468
EMC IP Holding Company LLC	Improve SSD write performance for log structured storage systems	7/31/2019	16/527880
EMC IP Holding Company LLC	Advanced environment validation for dual-SP VSAs deployment sub system	7/31/2019	16/527225
EMC IP Holding Company LLC	Agentless Application-Consistent Snapshots of SQL Server Database	7/31/2019	16/527330
EMC IP Holding Company LLC	Optimized Nvme Driver Implementation	7/31/2019	16/527263
EMC IP Holding Company LLC	SETTING CORE ALLOCATIONS	7/31/2019	16/527697
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR INSTANT RECOVERY OF APPLICATION DATA USING VIRTUAL MACHINE BACKUPS	7/31/2019	16/528580
EMC IP Holding Company LLC	Optimizing deduplication inside large files written by SDNAS to Trident arrays	8/1/2019	16/529538
EMC IP Holding Company LLC	Sharing spare storage capacity between Log-structured filesystem and Raid	8/1/2019	16/529386
EMC IP Holding Company LLC	Increasing data reduction with background re-compression for Trident arrays	8/1/2019	16/529510
EMC IP Holding Company LLC	Balancing Localization and Priority of Pages to Flush in a Sequential Log	8/1/2019	16/528836
EMC IP Holding Company LLC	Inline recovery of Trident filesystem data resource allocator	8/1/2019	16/529182
EMC IP Holding Company LLC	Multi-page optimization of asynchronous data replication transfer	8/1/2019	16/528869
EMC IP Holding Company LLC	Multi-node VSA configuration utility	8/1/2019	16/529292
EMC IP Holding Company LLC	Persistent memory in NVMeoF drive enclosures	8/1/2019	16/529361

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	TECHNIQUES FOR DETERMINING COMPRESSION TIERS AND USING COLLECTED COMPRESSION HINTS	8/1/2019	16/528898
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR DATA FABRIC AUTOMATED CONFIGURATION FOR INTERNET OF THINGS DEVICES	8/1/2019	16/529743
EMC IP Holding Company LLC	Anonymous ranking service	8/1/2019	16529418
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR POLICY CLASS BASED DATA MIGRATION	8/1/2019	16/529775
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR RELIABLY FORECASTING STORAGE DISK FAILURE	8/1/2019	16/529499
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR INTELLIGENTLY PROVISIONING RESOURCES IN STORAGE SYSTEMS	8/1/2019	16/529753
EMC IP Holding Company LLC	STORAGE SYSTEM RESOURCE REBUILD BASED ON INPUT-OUTPUT OPERATION INDICATOR	8/2/2019	16/530682
EMC IP Holding Company LLC	DISTRIBUTED APPLICATION PROGRAMMING INTERFACE WHITELISTING	8/2/2019	16/529918
EMC IP Holding Company LLC	ESTABLISHING TRUST ON A DATA STORAGE NETWORK	8/2/2019	16/530172
EMC IP Holding Company LLC	STORAGE SYSTEM WITH SUBMISSION QUEUE SELECTION UTILIZING APPLICATION AND SUBMISSION QUEUE PRIORITY	8/2/2019	16/529900
EMC IP Holding Company LLC	HOST CACHE COHERENCY WHEN MODIFYING DATA	8/2/2019	16/530089
EMC IP Holding Company LLC	DYNAMIC THREE-DIMENSIONAL MAP GENERATION FOR COMPUTING ENVIRONMENT	8/2/2019	16/530034
EMC IP Holding Company LLC	MANAGING WRITE ACCESS TO DATA STORAGE DEVICES FOR SPONTANEOUS DE-STAGING OF CACHE	8/2/2019	16/530065

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	CUCKOO TREE WITH DUPLICATE KEY SUPPORT	8/2/2019	16/530072
EMC IP Holding Company LLC	SPACE ACCOUNTING FOR DATA STORAGE USAGE	8/2/2019	16/530433
EMC IP Holding Company LLC	Mapper Scheduler: Design for priority-orchestration and schedule of different background operations	8/2/2019	16/530839
EMC IP Holding Company LLC	Unified Virtual Machine Granular Replication	8/2/2019	16/530779
EMC IP Holding Company LLC	Distribution of Dependent Builds across Jenkins slaves	8/2/2019	16/530734
EMC IP Holding Company LLC	Method for Extending X-Copy Across Storage Systems.	8/2/2019	16/530817
EMC IP Holding Company LLC	Design for regulating host IOs and internal background operations in a storage system	8/2/2019	16/530761
EMC IP Holding Company LLC	MEMORY-EFFICIENT PROCESSING OF RAID METADATA BITMAPS	8/2/2019	16/530121
EMC IP Holding Company LLC	Volatile Read Cache in a Context Addressable Storage System	8/2/2019	16/529910
EMC IP Holding Company LLC	Technique for encoding deferred reference count increments and decrements	8/2/2019	16/529956
EMC IP Holding Company LLC	Smart Pool Space Reclaim Mechanism	8/2/2019	16/530764
EMC IP Holding Company LLC	Automated Threat Analysis of a System Design	8/2/2019	16/530437
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR MANAGEMENT OF DATA FROM DEPLOYMENTS	8/2/2019	16/530973
EMC IP Holding Company LLC	Inline Deduplication Using Neighboring Segment Loading	8/2/2019	16/529993
EMC IP Holding Company LLC	Inline Deduplication System: Multiple incoming streams detection and subsequent processing	8/2/2019	16/530139
EMC IP Holding Company LLC	MULTI-CORE I/O TRACE ANALYSIS	8/2/2019	16/530134
EMC IP Holding Company LLC	MAINTAINING TRUST ON A DATA STORAGE NETWORK	8/2/2019	16/530198
EMC IP Holding Company LLC	HOST CACHE COHERENCY WHEN READING DATA	8/2/2019	16/530111
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR A SIGNED DOCUMENT VALIDITY SERVICE	8/2/2019	16/530962

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	TECHNIQUES FOR REDUCING SIZE OF LOG RECORDS	8/2/2019	16/530237
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR DATA REGISTRATION AND ACCES S	8/2/2019	16/530947
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR DATA REGISTRATION	8/2/2019	16/530936

Granted U.S. Patents

Owner	Title	Granted Date	Patent Number
EMC IP Holding Company LLC	ACCELERATED GALOIS FIELD CODING FOR STORAGE SYSTEMS	5/14/2019	10291265

RECORDED: 06/23/2022
PATENT
REEL: 060436 FRAME: 0147