

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT6125805

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	SECURITY AGREEMENT

CONVEYING PARTY DATA

Name	Execution Date
DELL PRODUCTS L.P.	05/28/2020
EMC IP HOLDING COMPANY LLC	05/28/2020

RECEIVING PARTY DATA

Name:	CREDIT SUISSE AG, CAYMAN ISLANDS BRANCH
Street Address:	7033 LOUIS STEPHENS DRIVE
Internal Address:	PO BOX 110047
City:	RESEARCH TRIANGLE PARK
State/Country:	NORTH CAROLINA
Postal Code:	27709

PROPERTY NUMBERS Total: 699

Property Type	Number
Application Number:	16779853
Application Number:	16780390
Application Number:	16780558
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PATENT

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Application Number:	16173240
Application Number:	16173131
Application Number:	16171798
Application Number:	16172521
Application Number:	16172474

CORRESPONDENCE DATA

Fax Number: (800)914-4240

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.

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Address Line 2: SUITE 125
Address Line 4: COLUMBUS, OHIO 43219

NAME OF SUBMITTER:	ELAINE CARRERA
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SIGNATURE:	/Elaine Carrera/
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DATE SIGNED:	05/28/2020
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Total Attachments: 55

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PATENT SECURITY AGREEMENT dated as of May 28, 2020 (this "Agreement"), among Dell Products L.P. and EMC IP Holding Company LLC (the "Grantors") and Credit Suisse AG, Cayman Islands Branch, as Collateral Agent (in such capacity, the "Collateral Agent").

Reference is made to (a) the Credit Agreement dated as of September 7, 2016 (as amended, supplemented or otherwise modified from time to time, the "Credit Agreement"), among DENALI INTERMEDIATE INC., a Delaware corporation ("Holdings"), DELL INC., a Delaware corporation (the "Company"), DELL INTERNATIONAL L.L.C., a Delaware limited liability company ("Dell International" and a "Borrower"), NEW DELL INTERNATIONAL LLC, UNIVERSAL ACQUISITION CO., a Delaware corporation (a "Borrower" and together with Dell International, the "Borrowers"), which on the Effective Date shall be merged with and into EMC Corporation, a Massachusetts corporation (the "Target"), with EMC Corporation surviving such merger, the Lenders party thereto, JPMorgan Chase Bank, N.A., as Term Loan A/Revolver Administrative Agent and Credit Suisse AG, Cayman Islands Branch, as Term Loan B Administrative Agent and Collateral Agent and (b) the Collateral Agreement dated as of September 7, 2016 (as amended, supplemented or otherwise modified from time to time, the "Collateral Agreement"), among the Company, the Borrowers, the other grantors from time to time party thereto and the Collateral Agent. The Lenders have agreed to extend credit to the Borrowers subject to the terms and conditions set forth in the Credit Agreement. The obligations of the Lenders to extend such credit are conditioned upon, among other things, the execution and delivery of this Agreement. The Grantors (other than the Borrowers) are Affiliates of the Borrowers, will derive substantial benefits from the extension of credit to the Borrowers pursuant to the Credit Agreement and are willing to execute and deliver this Agreement in order to induce the Lenders to extend such credit. Accordingly, the parties hereto agree as follows:

SECTION 1. Terms. Capitalized terms used in this Agreement and not otherwise defined herein have the meanings specified in the Collateral Agreement or the Credit Agreement, as applicable. The rules of construction specified in Section 1.01(b) of the Collateral Agreement also apply to this Agreement.

SECTION 2. Grant of Security Interest. As security for the payment or performance, as the case may be, in full of the Secured Obligations, the Grantors hereby grant to the Collateral Agent, its successors and assigns, for the benefit of the Secured Parties, a security interest (the "Security Interest") in all of each Grantors' right, title and interest in, to and under any Patents now owned or at any time hereafter acquired by such Grantor, including those listed on Schedule I (the "Patent Collateral").

SECTION 3. Collateral Agreement. The Security Interest granted to the Collateral Agent herein is granted in furtherance, and not in limitation, of the security interests granted to the Collateral Agent pursuant to the Collateral Agreement. The Grantors hereby acknowledge and affirm that the rights and remedies of the Collateral Agent with respect to the Patent Collateral are more fully set forth in the Collateral Agreement, the terms and provisions of which are hereby incorporated herein by reference as if fully set forth herein. In the event of any conflict between the terms of this Agreement and the Collateral Agreement, the terms of the Collateral Agreement shall govern.

SECTION 4. Counterparts. This Agreement may be executed in counterparts (and by different parties hereto on different counterparts), each of which shall constitute an original but all of which when taken together shall constitute a single contract. Delivery of an executed signature page to

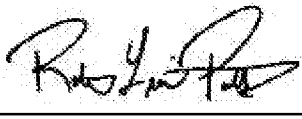
this Agreement by facsimile or other electronic transmission shall be effective as delivery of a manually signed counterpart of this Agreement.

SECTION 5. GOVERNING LAW. THIS AGREEMENT SHALL BE CONSTRUED IN ACCORDANCE WITH AND GOVERNED BY THE LAW OF THE STATE OF NEW YORK.

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IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement as of the day and year first above written.

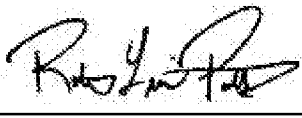
Dell Products L.P.

By: 

Name: Robert L. Potts

Title: Senior Vice President & Assistant Secretary

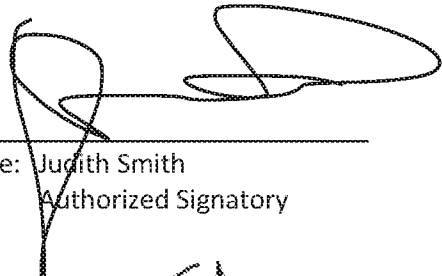
EMC IP Holding Company LLC


By: 

Name: Robert L. Potts

Title: Senior Vice President & Assistant Secretary

CREDIT SUISSE AG, CAYMAN ISLANDS BRANCH,
as Collateral Agent,

By: 
Name: Judith Smith
Title: Authorized Signatory

By: 
Name: Emerson Almeida
Title: Authorized Signatory

SCHEDULE I

Owner	Title	Date	Application No.
Dell Products L.P.	ADAPTABLE MULTIPLE CARD SIZES OF RISER CAGE STRUCTURE	2/3/2020	16/779853
Dell Products L.P.	Unified Digital Messaging Platform	2/3/2020	16/780390
Dell Products L.P.	Method and Apparatus for Improving Data Management in an Information Handling System	2/3/2020	16/780558
Dell Products L.P.	System and Method for Runtime Synchronization and Authentication of Pre-Boot Device Drivers for a Rescue Operating System	2/3/2020	16/780627
Dell Products L.P.	SYSTEMS AND METHODS FOR INTEGRITY VERIFICATION OF SECONDARY FIRMWARE WHILE MINIMIZING BOOT TIME	2/3/2020	16/779911
Dell Products L.P.	System and Method for Dynamically Orchestrating Application Program Interface Trust	2/3/2020	16/780804
Dell Products L.P.	Modular Fixture for Display Device	2/3/2020	16/780826
Dell Products L.P.	AI based Sales Tech Stack - Prospecting	2/3/2020	16/780276
Dell Products L.P.	AUTOMATIC CREATION OF BEST KNOWN CONFIGURATIONS	2/3/2020	16/780166
Dell Products L.P.	UPDATING STORAGE DRIVE FIRMWARE	2/3/2020	16/780197
Dell Products L.P.	RECOVERING THE LAST SUCCESSFUL DEVICE UPDATE ON A COMPUTING SYSTEM	2/3/2020	16/780230
Dell Products L.P.	DYNAMIC MEMORY LAYOUTS FOR FIRMWARE UPDATES BASED ON OEM MEMORY SUBSYSTEM	2/3/2020	16/780287
Dell Products L.P.	BIOS BOOT AND UPDATE FAILOVER PROCESS	2/3/2020	16/780372

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0931

Owner	Title	Date	Application No.
Dell Products L.P.	CONNECTING SECURELY TO A WIRELESS DISPLAY FROM BIOS	2/3/2020	16/780321
Dell Products L.P.	SELECTIVELY UPDATING A BIOS IMAGE	2/3/2020	16/780346
Dell Products L.P.	REDIRECTION OF USB DEVICES FROM HARDWARE ISOLATED VIRTUAL DESKTOP INFRASTRUCTURE CLIENTS	2/3/2020	16/780137
Dell Products L.P.	EFFICIENTLY AUTHENTICATING AN APPLICATION DURING I/O REQUEST HANDLING	2/3/2020	16/780108
Dell Products L.P.	SUPPORTING UNIVERSAL WINDOWS PLATFORM AND WIN32 APPLICATIONS IN KIOSK MODE	2/3/2020	16/780077
Dell Products L.P.	ADAPTIVE MEMORY OPTIMIZATION FOR THIN CLIENTS	2/3/2020	16/780055
Dell Products L.P.	SYSTEMS AND METHODS FOR PRE-BOOT BIOS HEALING OF PLATFORM ISSUES FROM OPERATING SYSTEM STOP ERROR CODE CRASHES	2/3/2020	16/779879
Dell Products L.P.	System and Method to Run Basic Input/Output System Code from a Non-Volatile Memory Express Device Boot Partition	2/3/2020	16/780464
Dell Products L.P.	Flexible Mounting Configurations of HDDs and SSDs	2/3/2020	16/780109
Dell Products L.P.	SYSTEMS AND METHODS FOR AUTOMATIC BOOT TO AUTHENTICATED EXTERNAL DEVICE	2/3/2020	16/779864
Dell Products L.P.	System and Method for Securing Compromised Information Handling Systems	2/3/2020	16/780383
Dell Products L.P.	System and Method for Auto update of BIOS language packs	2/3/2020	16/780053
Dell Products L.P.	VOLTAGE REGULATOR CONFIGURATION SYSTEM	2/4/2020	16/781687
Dell Products L.P.	Power Supply with Management Interface and Method Therefor	2/5/2020	16/782851

Owner	Title	Date	Application No.
Dell Products L.P.	Universal Elastic Joint for Portable Computer	2/5/2020	16/782542
Dell Products L.P.	System and Method for Improved Peer-to-Peer Software Distribution	2/5/2020	16/782801
Dell Products L.P.	System and Method for Preventing Well Behaving Clients from Causing Account Lockouts in a Group	2/6/2020	16/783387
Dell Products L.P.	VENDOR SOFTWARE ACTIVATION USING DISTRIBUTED LEDGER	2/6/2020	16/783679
Dell Products L.P.	ENHANCED PCIE AUTO-BIFURCATION	2/6/2020	16/783562
Dell Products L.P.	DO-CORE-001 Method To Adapt Runtime Prioritization For Component Plugins for Dell Optimizer	2/6/2020	16/783846
Dell Products L.P.	Portable Information Handling System	2/7/2020	29/723513
Dell Products L.P.	Portable Information Handling System	2/7/2020	29/723514
Dell Products L.P.	Keyboard	2/7/2020	29/723516
Dell Products L.P.	Speakerphone	2/7/2020	29/723515
Dell Products L.P.	System and Method to Increase a Hold Up Time of a Power Supply Unit	2/10/2020	16/786689
Dell Products L.P.	Time Keeping System and Method Therefor	2/11/2020	16/787591
Dell Products L.P.	System with Retrofit Enhancement of an Ultra Dense Thermally Challenged Server	2/11/2020	16/787652
Dell Products L.P.	CABLE CHAIN FOR USE IN CABLE MANAGEMENT	2/11/2020	16/787609
Dell Products L.P.	Method of achieving wider voltage profile range on PD TYPE-C adapter with LLC topology	2/12/2020	16/789054

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0933

Owner	Title	Date	Application No.
Dell Products L.P.	SYSTEM AND METHOD FOR ACCOMMODATING MULTIPLE TYPES OF DEVICES IN A HALF-HEIGHT BAY	2/12/2020	16/788433
Dell Products L.P.	Pre-situational awareness of space and HMD calibration	2/13/2020	16/790023
Dell Products L.P.	System and Method for UEFI Advanced Graphics Utilizing a Graphics Processing Unit	2/13/2020	16/790186
Dell Products L.P.	System and Method for Improving Detection and Capture of a Host System Catastrophic Failure	2/13/2020	16/790021
Dell Products L.P.	ACCELERATED SYSTEM BOOT	2/13/2020	16/790267
Dell Products L.P.	UNAVAILABLE MEMORY DEVICE INITIALIZATION SYSTEM	2/13/2020	16/789994
Dell Products L.P.	Data Analytics Model Selection through Champion Challenger Mechanism	2/14/2020	16/791485
Dell Products L.P.	Narrow border plastic cover with optimal opto-mechanical properties	2/14/2020	16/791242
Dell Products L.P.	PALLETIZING CONTAINERS FOR CHARGING ELECTRONIC DEVICES CONTAINED THEREIN	2/14/2020	16/791467
Dell Products L.P.	SYSTEMS AND METHODS FOR MINIMIZING BOOT TIME AND MINIMIZING UNAUTHORIZED ACCESS AND ATTACK SURFACE IN BASIC INPUT/OUTPUT SYSTEM	2/14/2020	16/791843
Dell Products L.P.	INITIALIZATION DATA MEMORY SPACE ALLOCATION SYSTEM	2/14/2020	16/790863
Dell Products L.P.	Method and Apparatus for Providing a Seamless and Secure Access to Management and Monitoring Systems	2/18/2020	16/793439
Dell Products L.P.	System and method for Dynamically Configuring Storage Mapping	2/18/2020	16/793396
Dell Products L.P.	SYSTEMS AND METHODS FOR BINDING SECONDARY OPERATING SYSTEM TO PLATFORM BASIC INPUT/OUTPUT SYSTEM	2/18/2020	16/793361

Owner	Title	Date	Application No.
Dell Products L.P.	Information Handling System Bezel	2/18/2020	29/724642
Dell Products L.P.	Information Handling System Having Improved Host Memory Buffer for Input/output Requestts	2/19/2020	16/794404
Dell Products L.P.	SYSTEMS AND METHODS FOR DISAGGREGATED UPDATES TO SECONDARY OPERATING SYSTEM USING NETWORK-RETRIEVED SECURE FILE SYSTEM LAYOUT	2/20/2020	16/795926
Dell Products L.P.	Wireless Docking Device and Method Therefor	2/20/2020	16/795887
Dell Products L.P.	GUIDED PROBLEM RESOLUTION USING MACHINE LEARNING	2/20/2020	16/796454
Dell Products L.P.	Framework to Design Completely Automated Reverse Turing Tests	2/21/2020	62/979500
Dell Products L.P.	EVENT-BASED DISPLAY INFORMATION PROTECTION SYSTEM	2/21/2020	16/797916
Dell Products L.P.	System and Method for Determining Physical Orientation of a Memory Module Using On-Board Thermal Sensors	2/21/2020	16/797329
Dell Products L.P.	System and Method for Optimizing System Power and Performance with High Power Memory Modules	2/21/2020	16/797219
Dell Products L.P.	MODULAR FORM FACTOR OF A PRINTED CIRCUIT BOARD FOR AN INFORMATION HANDLING SYSTEM	2/21/2020	16/797256
Dell Products L.P.	Information Handling System	2/24/2020	29/725239
Dell Products L.P.	Information Handling System Bezel	2/24/2020	29/725238
Dell Products L.P.	System and Method to Reduce Host Interrupts for Non-Critical Errors	2/24/2020	16/798744
Dell Products L.P.	RING CONTROL DATA EXCHANGE SYSTEM	2/24/2020	16/799426

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0935

Owner	Title	Date	Application No.
Dell Products L.P.	Information Handling System	2/25/2020	29/725398
Dell Products L.P.	System and Method to Create an Air Flow Map and Detect Air Recirculation in an Information Handling System	2/25/2020	16/800431
Dell Products L.P.	TPM-based Device ID for Authenticating System Configuration Changes After Manufacturing	2/25/2020	16/800751
Dell Products L.P.	An Integrated Airflow Guiding Structure	2/25/2020	16/800704
Dell Products L.P.	System and Method for Determining Available Post-Package Repair Resources	2/26/2020	16/801547
Dell Products L.P.	Information Handling System Touch Device False Touch Detection and Mitigation	2/27/2020	16/803757
Dell Products L.P.	System and Method for Overcoming In-Band Interrupt Starvation With Dynamic Address Remapping	2/27/2020	16/803075
Dell Products L.P.	System and Method for Handling In-Band Interrupts on Inactive 13C Channels	2/27/2020	16/802961
Dell Products L.P.	Advanced Full Charge Capacity Estimation	2/27/2020	16/803103
Dell Products L.P.	Automated Capacity Management Using Artificial Intelligence Techniques	2/27/2020	16/802846
Dell Products L.P.	Automated Device Power Conservation Using Machine Learning Techniques	2/27/2020	16/802840
Dell Products L.P.	SYSTEM AND METHOD FOR UTILIZING A TABLET KICKSTAND TO POWER UP AN INFORMATION HANDLING SYSTEM	2/27/2020	16/802861
Dell Products L.P.	CONTEXT AND DEVICE STATE DRIVEN AUTHORIZATION FOR DEVICES	2/28/2020	16/804436
Dell Products L.P.	System and Method for Variable Input Output Voltage on Different Channels for Increasing Power Efficiency	2/28/2020	16/804784

Owner	Title	Date	Application No.
Dell Products L.P.	Methods to analyze impact on data center from the configuration changes(planned or unplanned) performed in one or more components	2/28/2020	16/804921
Dell Products L.P.	Method to Correct Corruption in UEFI BIOS Boot Block Code	3/2/2020	16/806627
Dell Products L.P.	SYSTEM AND METHOD OF DETERMINING IF AN INFORMATION HANDLING SYSTEM PRODUCES ONE OR MORE AUDIO GLITCHES	3/2/2020	16/806139
Dell Products L.P.	NETWORK PORT CONNECTOR EJECTION SYSTEM	3/2/2020	16/806171
Dell Products L.P.	CONTENT DESIGN STRUCTURE ADAPTATION TECHNIQUES FOR LOCALIZATION OF CONTENT PRESENTATION	3/3/2020	16/807862
Dell Products L.P.	IMAGE ANALYSIS-BASED ADAPTATION TECHNIQUES FOR LOCALIZATION OF CONTENT PRESENTATION	3/3/2020	16/807899
Dell Products L.P.	CONTENT ADAPTATION TECHNIQUES FOR LOCALIZATION OF CONTENT PRESENTATION	3/3/2020	16/807838
Dell Products L.P.	System and Method for Enhancing Receiver Equalization	3/3/2020	16/807641
Dell Products L.P.	Data compliance in a composable infrastructure	3/4/2020	16/808757
Dell Products L.P.	Security Compliance Composable Infrastructure Orchestrator	3/4/2020	16/808764
Dell Products L.P.	Performance based Orchestrated remediation	3/4/2020	16/808779
Dell Products L.P.	Dynamic redeployment of a solution using a composable infrastructure	3/4/2020	16/808789
Dell Products L.P.	Quick Rebuild of an HCI node in a Composable Infrastructure	3/4/2020	16/808794
Dell Products L.P.	Infrastructure access control in a Composable/Modular infrastructure	3/4/2020	16/808805

Owner	Title	Date	Application No.
Dell Products L.P.	SYSTEM FOR MULTIPLE AIRFLOWS IN A CHASSIS OF A PORTABLE INFORMATION HANDLING SYSTEM	3/4/2020	16/808941
Dell Products L.P.	AGGREGATED NETWORKING DEVICE POLICY BASED ROUTING SYSTEM	3/5/2020	16/809853
Dell Products L.P.	An innovative hot-pluggable OCP3.0 Top Ejector carrier for high density, high inlet temperature for next generation storage	3/6/2020	16/811917
Dell Products L.P.	SAN ACCESS SYSTEM	3/6/2020	16/810946
Dell Products L.P.	METHOD AND SYSTEM FOR MANAGING A SPARE PERSISTENT STORAGE DEVICE AND A SPARE NODE IN A MULTI-NODE DATA CLUSTER	3/6/2020	16/810955
Dell Products L.P.	METHOD AND SYSTEM FOR PERFORMING A DETERMINISTIC COPY OPERATION FOR A SPARE PERSISTENT STORAGE DEVICE IN A RAID	3/6/2020	16/810947
Dell Products L.P.	METHOD AND SYSTEM FOR PERFORMING A PROACTIVE COPY OPERATION FOR A SPARE PERSISTENT STORAGE DEVICE IN A RAID	3/6/2020	16/810941
Dell Products L.P.	METHOD AND SYSTEM FOR PERFORMING DATA DEDUPLICATION IN A DATA PIPELINE	3/6/2020	16/810936
Dell Products L.P.	METHOD AND SYSTEM FOR PERFORMING DATA DEDUPLICATION AND COMPRESSION IN A DATA CLUSTER	3/6/2020	16/810932
Dell Products L.P.	METHOD AND SYSTEM FOR MANAGING A SPARE FAULT DOMAIN IN A MULTI-FAULT DOMAIN DATA CLUSTER	3/6/2020	16/810923
Dell Products L.P.	CONFIGURABLE METHOD TO ASSOCIATE DRIVE SLOT TO BUS NUMBER	3/6/2020	16/812024
Dell Products L.P.	INTELLIGENT DEVICE UPDATING	3/6/2020	16/811996
Dell Products L.P.	BLOWER SYSTEM WITH DUAL OPPOSITE OUTLETS AND FAN DIAMETER APPROACHING TO BLOWER HOUSING DIMENSION FOR INFORMATION HANDLING SYSTEMS	3/9/2020	16/813464

Owner	Title	Date	Application No.
Dell Products L.P.	LOOK-ASIDE RAID CONTROLLER STORAGE- DEVICE-ASSISTED DATA UPDATE SYSTEM	3/9/2020	16/813145
Dell Products L.P.	Violation detection and isolation of end devices in soft zoning environment	3/10/2020	16/814089
Dell Products L.P.	System and Method for Secure Access to a Distributed Virtual Firmware Network Drive	3/10/2020	16/814128
Dell Products L.P.	A Cognitive method to analyze and predict the safe window for DUP creation	3/10/2020	16/813941
Dell Products L.P.	Expediate firmware update of staged payload by dynamically provisioning of SCM	3/10/2020	16/813888
Dell Products L.P.	Configurable Boot Paths	3/10/2020	16/814749
Dell Products L.P.	DYNAMICALLY DETERMINED BIOS PROFILES	3/10/2020	16/814600
Dell Products L.P.	Restrictive User Privileges	3/10/2020	16/814733
Dell Products L.P.	Custom Chip To Support a CPU That Lacks A DisplayPort Input	3/11/2020	16/815050
Dell Products L.P.	Security for Virtual Extensible Local Area Networks	3/11/2020	16/815637
Dell Products L.P.	System and Method for Power Plane Noise Reduction in a Memory Subsystem of an Information Handling System	3/11/2020	16/815191
Dell Products L.P.	SYSTEMS AND METHODS FOR COMMUNICATION NETWORK PRIORITIZATION BASED ON VELOCITY OF AN INFORMATION HANDLING SYSTEM	3/11/2020	16/816224
Dell Products L.P.	Method for Reducing Execution Jitter in Multi- Core Processors Within an Information Handling System	3/12/2020	16/817238
Dell Products L.P.	Information Handling System Threat Management	3/12/2020	16/816462

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0939

Owner	Title	Date	Application No.
Dell Products L.P.	System and Method for Automatically Updating an Information Handling System upon System Crash	3/12/2020	16/816756
Dell Products L.P.	Malware detection using a machine learning model	3/12/2020	16/817274
Dell Products L.P.	System and Method of Adjusting Mouse Sensitivity	3/12/2020	16/816332
Dell Products L.P.	KEYBOARD DOCK VERIFICATION	3/13/2020	16/818,654
Dell Products L.P.	Systems and Methods for Auto-detection and Auto-configuration of uplinks and server interfaces for storage solutions	3/13/2020	16/819037
Dell Products L.P.	Improving multicast network performance by optimizing BSM in BSR	3/16/2020	16/820391
Dell Products L.P.	Systems and Methods to Identify a Certificate Authority Within an Offline Manufacturing Facility	3/16/2020	16/819814
Dell Products L.P.	Discovery Controller Registration of Non-Volatile Memory Express (NVME) Elements in an NVME-Over-Fabrics (NVME-OF) System	3/16/2020	16/820547
Dell Products L.P.	System and Method for Refreshing Data for Integrity Protection at a Thermal Excursion Event	3/17/2020	16/821206
Dell Products L.P.	DEMOGRAPHICALLY CONGRUOUS REVIEWS	3/17/2020	16/821109
Dell Products L.P.	Proximity based data and workload placement	3/17/2020	16/821935
Dell Products L.P.	Workload-aware storage replication	3/17/2020	16/821931
Dell Products L.P.	METHOD AND SYSTEM FOR COLLABORATIVE WORKLOAD PLACEMENT AND OPTIMIZATION	3/17/2020	16/821924
Dell Products L.P.	DATA MIRRORING SYSTEM	3/18/2020	16/823072

Owner	Title	Date	Application No.
Dell Products L.P.	System and Method for Information Handling System Boot Status and Error Data Capture and Analysis	3/19/2020	16/824388
Dell Products L.P.	System and Method to Configure, Manage, and Monitor Stacking of Ethernet Devices in a Software Defined Network	3/19/2020	16/824315
Dell Products L.P.	Out-Of-Band Management Systems and Methods for Integrated Serial Console and Ethernet Access.	3/19/2020	16/824303
Dell Products L.P.	Context-aware intelligent maintenance window identification	3/19/2020	16/824337
Dell Products L.P.	USE OF SIILICON PHOTONICS (SiP) FOR COMPUTER NETWORK INTERFACES	3/19/2020	16/823566
Dell Products L.P.	USB Recepticle Configuration and System Therefor	3/20/2020	16/825150
Dell Products L.P.	SYSTEMS AND METHODS TO SYNCHRONIZE DISPLAY SETTINGS AMONG MULTIPLE DISPLAY DEVICES	3/20/2020	16/825481
Dell Products L.P.	SYSTEM AND METHOD FOR DYNAMIC ADJUSTMENT OF SSD CRITICAL TEMPERATURE THRESHOLD BASED ON MEMORY SIZE	3/20/2020	16/824807
Dell Products L.P.	MONITORING INFORMATION PROCESSING SYSTEMS UTILIZING CO-CLUSTERING OF STRINGS IN DIFFERENT SETS OF DATA RECORDS	3/23/2020	16/826562
Dell Products L.P.	FAN ASSEMBLY WITH NON-ROTATING CENTER SUPPORT	3/23/2020	16/827268
Dell Products L.P.	Framework to Design Completely Automated Reverse Turing Tests	3/24/2020	16/828520
Dell Products L.P.	COMBINATION INFORMATION HANDLING RESOURCE CARRIER AND AIRFLOW BLANK	3/24/2020	16/828648
Dell Products L.P.	Autonomous Intelligent system for feature enhancement and improvement prioritization	3/24/2020	16/827236
Dell Products L.P.	Method and Apparatus for Adjusting Pixel Contrast to Enable Privacy Display Legibility	3/25/2020	16/829752

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0941

Owner	Title	Date	Application No.
Dell Products L.P.	DISTRIBUTED RAID STORAGE-DEVICE ASSISTED DATA REBUILD SYSTEM	3/25/2020	16/829124
Dell Products L.P.	SYSTEM AND METHOD OF OPERATING BATTERIES	3/26/2020	16/830665
Dell Products L.P.	Planar Speaker with Damping to Reduce Noise	3/27/2020	16/832491
Dell Products L.P.	Air Shroud with an Automatically Adjustable Air Baffle for an Information Handling System	3/27/2020	16/832409
Dell Products L.P.	Flexible Air Baffle Supporting Different Config. with Optimized Air Flow	3/27/2020	16/832710
Dell Products L.P.	Automatic Self-Recovering Inventory and Location Data Population and Sending Notification using Mesh network.	3/27/2020	16/832993
Dell Products L.P.	FIRMWARE ACTIVATION IN A RAID STORAGE ENVIRONMENT	3/27/2020	16/832462
Dell Products L.P.	RAID STORAGE MULTI-STEP COMMAND SYSTEM	3/27/2020	16/832348
Dell Products L.P.	RAID PROXY STORAGE-DEVICE-ASSISTED DATA UPDATE SYSTEM	3/27/2020	16/832752
Dell Products L.P.	Dynamic & Contextual On-Screen Keyboard	3/29/2020	16/833634
Dell Products L.P.	System and Method for Thermal Management in an Information Handling System	3/30/2020	16/834253
Dell Products L.P.	Internet of Things Hub for Enabling Mobility Within a Manufacturing Environment	3/30/2020	16/834784
Dell Products L.P.	Information Handling System Having Regional Cooling	3/31/2020	16/836018
Dell Products L.P.	System and Method for Restricting Interaction with an Information Handling System	3/31/2020	16/836032
Dell Products L.P.	System and Method for Handling In-Band Interrupts with Multiple 13C Masters	3/31/2020	16/836620

Owner	Title	Date	Application No.
Dell Products L.P.	NUMA-AWARE STORAGE SYSTEM	3/31/2020	16/836341
Dell Products L.P.	Scheduling Server Maintenance using Machine Learning	3/31/2020	16/836624
Dell Products L.P.	Fan Control Algorithm for Maximizing Temperature-Dependent Turbo Performance	4/2/2020	16/838635
Dell Products L.P.	RAID DATA STORAGE DEVICE DIRECT COMMUNICATION SYSTEM	4/2/2020	16/838224
Dell Products L.P.	RAID DATA STORAGE DEVICE MULTI-STEP COMMAND COORDINATION SYSTEM	4/2/2020	16/838919
Dell Products L.P.	RAID PARITY DATA GENERATION OFFLOAD SYSTEM	4/2/2020	16/838764
Dell Products L.P.	Information Handling System Having a Pressure Plate for a Solid State Battery	4/3/2020	16/839734
Dell Products L.P.	Collective environment Monitoring and Making Recommendations	4/3/2020	16/840098
Dell Products L.P.	SYSTEM AND METHOD FOR MANAGING DEPLOYMENTS	4/3/2020	16/840194
Dell Products L.P.	SCALABLE RAID STORAGE CONTROLLER DEVICE SYSTEM	4/3/2020	16/839956
Dell Products L.P.	AUTONOMOUS RAID DATA STORAGE DEVICE LOCKING SYSTEM	4/3/2020	16/839799
Dell Products L.P.	AUTONOMOUS RAID DATA STORAGE SYSTEM	4/3/2020	16/839428
Dell Products L.P.	Two Step Board Assembly Method Incorporating Low Temperature Solder for BGA Package Warpage	4/3/2020	16/839798
Dell Products L.P.	SYSTEM AND METHOD OF DETERMINING AUTHENTICATION OF COMPONENTS OF INFORMATION HANDLING SYSTEMS	4/6/2020	16/841212
Dell Products L.P.	SYSTEMS AND METHODS FOR COMMUNICATION NETWORK PRIORITIZATION BASED ON EXISTING NETWORK LOCATION	4/6/2020	16/841426

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0943

Owner	Title	Date	Application No.
	IDENTIFICATION OF AN INFORMATION HANDLING SYSTEM		
Dell Products L.P.	METHOD AND APPARATUS FOR OPERATING A THIN CLIENT ACROSS A 5G INFRASTRUCTURE	4/6/2020	16/841627
Dell Products L.P.	System and method for Increasing Power Delivery to Information Handling Systems	4/7/2020	16/842248
Dell Products L.P.	One finger mouse	4/9/2020	16/844465
Dell Products L.P.	Mouse as wheel input device	4/9/2020	16/844424
Dell Products L.P.	Information Handling System Dynamic Foot for Adaptive Thermal Management	4/9/2020	16/844143
Dell Products L.P.	Information Handling System Capacitive Sensing Gauge and Indicator	4/9/2020	16/844148
Dell Products L.P.	A HIGH PERFORMANCE CARBON FIBER LAMINATE ENCLOSURE PART FOR AN INFORMATION HANDLING SYSTEM	4/10/2020	16/845920
Dell Products L.P.	Methods to guide user with haptic mouse	4/10/2020	16/846038
Dell Products L.P.	SYSTEM AND METHOD FOR SYSTEM LEVEL COOLING OF AN ARRAY OF MEMORY MODULES	4/10/2020	16/846026
Dell Products L.P.	SYSTEMS AND METHODS FOR DAMPING TEMPERATURE PEAKS WITH MOISTURE-SORBING HEATSINKS	4/13/2020	16/846753
Dell Products L.P.	System and Method of Providing Updates	4/14/2020	16/848183
Dell Products L.P.	Method to Improve PCB Trace Conductivity and System Therefor	4/14/2020	16/847791
Dell Products L.P.	System and Method for I/O Aware Processor Configuration	4/15/2020	16/849678
Dell Products L.P.	COMMUNICATION UPGRADE MODULE FOR COMMUNICATION WITH AN INFORMATION HANDLING SYSTEM AIR MOVER	4/16/2020	16/850925

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0944

Owner	Title	Date	Application No.
Dell Products L.P.	Navigational Dynamic Lighting	4/16/2020	16/850180
Dell Products L.P.	SYSTEM AND METHOD OF UTILIZING REMOTE INFORMATION HANDLING SYSTEMS TO SECURELY STORE FILES	4/16/2020	16/850766
Dell Products L.P.	SYSTEMS AND METHODS FOR ACOUSTIC LIMITS OF THERMAL CONTROL SYSTEM IN AN INFORMATION HANDLING SYSTEM	4/17/2020	16/852118
Dell Products L.P.	SYSTEM AND METHOD FOR AUTOMATION OF BASELINE FAN SPEEDS (ABFS)	4/17/2020	16/851289
Dell Products L.P.	System and Method for Configuring an Information Handling System	4/20/2020	16/853114
Dell Products L.P.	Range of Motion Control in XR Applications on Information Handling Systems	4/20/2020	16/853333
Dell Products L.P.	SYSTEMS AND METHODS FOR COMMUNICATING EXTERNALLY FROM A SEALED VOLUME	4/20/2020	16/853177
Dell Products L.P.	SYSTEMS AND METHODS FOR PREVENTING FRAUDULENT EXCHANGES OF INFORMATION HANDLING SYSTEM COMPONENTS	4/20/2020	16/853109
Dell Products L.P.	Information Handling System Memory Module Expander	4/21/2020	16/853926
Dell Products L.P.	DATA CONTEXTUAL MIGRATION IN AN INFORMATION HANDLING SYSTEM	4/22/2020	16/855632
Dell Products L.P.	CAPACITIVE SWITCH FOR CONTROLLING A CAMERA MODULE FOR AN INFORMATION HANDLING SYSTEM	4/22/2020	16/855323
Dell Products L.P.	Enterprise System Augmented Reality Detection	4/22/2020	16/854977
Dell Products L.P.	Dynamic Image Recognition and Training using Data Center Resources and Data	4/22/2020	16/854973
Dell Products L.P.	SYSTEM AND METHOD OF UTILIZING FANS WITH INFORMATION HANDLING SYSTEMS	4/22/2020	16/855436

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0945

Owner	Title	Date	Application No.
Dell Products L.P.	Automated File Naming and File Organization Using Machine Learning	4/22/2020	16/855428
Dell Products L.P.	Human resources Performance Evaluation Using Enhanced Artificial Neuron Network and Sigmoid Logistics	4/22/2020	16/855628
Dell Products L.P.	SYSTEM AND METHOD OF UTILIZING LLC CONVERTERS	4/23/2020	16/856546
Dell Products L.P.	Mobile Aware Intermodal Assistant	4/23/2020	16/856732
Dell Products L.P.	SYSTEM AND METHOD OF AUTHENTICATING FIRMWARE	4/24/2020	16/857518
Dell Products L.P.	SYSTEMS AND METHODS FOR ACCESS CONTROL OF BIOS PROTOCOL NOTIFICATION	4/24/2020	16/857567
Dell Products L.P.	SYSTEMS AND METHODS FOR EXECUTING AND VERIFYING SYSTEM FIRMWARE UPDATE BEFORE COMMITTING FIRMWARE UPDATE TO MOTHERBOARD	4/24/2020	16/857526
Dell Products L.P.	SYSTEMS AND METHODS FOR COMPENSATING FOR BATTERY CHARGING PATH RESISTIVE LOSSES	4/24/2020	16/857484
Dell Products L.P.	POWER MANAGEMENT OF VOLTAGE REGULATORS IN AN INFORMATION HANDLING SYSTEM	4/24/2020	16/858118
Dell Products L.P.	POP-UP CAMERA WITH AUTOMATIC POSITION CONTROL FOR AN INFORMATION HANDLING SYSTEM	4/24/2020	16/858047
Dell Products L.P.	SYSTEM AND METHOD OF MIGRATING ONE OR MORE STORAGE CLASS MEMORIES FROM A FIRST INFORMATION HANDLING SYSTEM TO A SECOND INFORMATION HANDLING SYSTEM	4/24/2020	16/857950
Dell Products L.P.	Information Handling System Housing Lock	4/24/2020	16/857351
Dell Products L.P.	ELECTRICALLY FUNCTIONAL STRUCTURE INTEGRATION IN ULTRATHIN FOLDABLE DEVICE	4/27/2020	16/859210

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0946

Owner	Title	Date	Application No.
Dell Products L.P.	Deep OS detection telemetry	4/27/2020	16/859031
Dell Products L.P.	Auto Detection of Battery Swollen with proximity sensors	4/27/2020	16/859015
Dell Products L.P.	System to Enable Display Detect and Method Therefor	4/28/2020	16/861021
Dell Products L.P.	A Design for horizontally opening front HDD drive bay to hot-plug drive devices into the middle drive bay in rack server	4/28/2020	16/860807
Dell Products L.P.	A Tool-less Method of Achieving Air Sealing System Fan for High Thermal Performance	4/28/2020	16/860453
Dell Products L.P.	PCIe LINK MANAGEMENT WITHOUT SIDEBAND SIGNALS	4/29/2020	16/861707
Dell Products L.P.	COMBINED FINGERPRINT READER/POWER BUTTON SYSTEM	4/29/2020	16/862021
Dell Products L.P.	SYSTEM AND METHOD OF PROVIDING POWER FROM ONE PORTION OF AN INFORMATION HANDLING SYSTEM TO ANOTHER PORTION OF THE INFORMATION HANDLING SYSTEM	4/29/2020	16/862062
Dell Products L.P.	Information Handling System Thin Display with Minimal Bezel	4/29/2020	16/861386
Dell Products L.P.	Method to determine visual quality of a game	4/29/2020	16/862328
Dell Products L.P.	Method to optimize perceived application load delays	4/29/2020	16/862199
Dell Products L.P.	INSTALL TIME CREATION OF FORWARD ERROR CORRECTION DATA AND INTEGRITY CHECKSUMS	4/30/2020	16/863332
Dell Products L.P.	SINGLE-ROOT INPUT/OUTPUT VIRTUALIZATION-BASED STORAGE SOLUTION FOR SOFTWARE DEFINED STORAGE	4/30/2020	16/862986
Dell Products L.P.	System and Method for Cryptographically Coupling a Media Controller to a Baseboard Management Controller	4/30/2020	16/863550

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0947

Owner	Title	Date	Application No.
Dell Products L.P.	One Time Programmable Security for a Storage Device	4/30/2020	16/863668
Dell Products L.P.	Method for enabling a modular thermal solution to integrate an M.2 card for leverage and expandability.	4/30/2020	16/862832
Dell Products L.P.	Self-learning, context-sensitive troubleshooting	4/30/2020	16/863665
Dell Products L.P.	HOT-INSERTED DEVICES	4/30/2020	16/863599
Dell Products L.P.	SYSTEM AND METHOD OF MANAGING DATA CONNECTIONS TO A COMMUNICATION NETWORK USING TIERED DEVICES AND TELEMETRY DATA	4/30/2020	16/862562
Dell Products L.P.	SYSTEMS AND METHODS FOR AIR MOVER SPEED OPTIMIZATION BASED ON INFORMATION OF AIR MOVER SPEED VERSUS AIR MOVER POWER CURVE	5/1/2020	16/864711
Dell Products L.P.	SYSTEMS AND METHODS FOR SYSTEM POWER CAPPING BASED ON COMPONENT TEMPERATURE MARGINS	5/1/2020	16/864633
Dell Products L.P.	METHOD AND APPARATUS FOR PREDICTING HARD DRIVE FAILURE	5/1/2020	16/864766
Dell Products L.P.	Customer Service Ticket Processing Using Cluster-Based Data Driven Guidebooks	5/1/2020	16/864396
Dell Products L.P.	Portable Information Handling System Having a Bendable Integrated Display	5/1/2020	16/864246
Dell Products L.P.	Information Handling System Hands Free Voice and Text Chat	5/1/2020	16/864654
Dell Products L.P.	Information Handling System Gaming Controls	5/1/2020	16/864671
Dell Products L.P.	Information Handling System Wheel Input Device	5/1/2020	16/864662
Dell Products L.P.	System For Migrating tasks Between Edge Devices of an IOT System	5/1/2020	16/864186

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0948

Owner	Title	Date	Application No.
Dell Products L.P.	Information Handling System Display Adaptive Magnetic Sound Bar Attachment	5/1/2020	16/864586
Dell Products L.P.	System For Allocating Task Processing Between an IOT Device and an Edge Device	5/1/2020	16/864181
Dell Products L.P.	SYSTEMS AND METHODS FOR DETECTING BATTERY REMOVAL WHILE AN INFORMATION HANDLING SYSTEM IS IN AN OFF STATE	5/1/2020	16/864933
EMC IP Holding Company LLC	COLLABORATION SERVICE TO SUPPORT CROSS-PROCESS COORDINATION BETWEEN ACTIVE INSTANCES OF A MICROSERVICE	2/2/2020	16/779632
EMC IP Holding Company LLC	HOST CACHE-SLOT AWARE IO MANAGEMENT	2/3/2020	16/779727
EMC IP Holding Company LLC	ACCELERATED DATA HANDLING IN CLOUD DATA STORAGE SYSTEM	2/3/2020	16/780009
EMC IP Holding Company LLC	STORAGE SYSTEM WITH WRITE-VIA-HASH FUNCTIONALITY FOR SYNCHRONOUS REPLICATION OF LOGICAL STORAGE VOLUMES	2/3/2020	16/779828
EMC IP Holding Company LLC	STORAGE SYSTEM WITH CONTINUOUS DATA VERIFICATION FOR SYNCHRONOUS REPLICATION OF LOGICAL STORAGE VOLUMES	2/3/2020	16/779839
EMC IP Holding Company LLC	STORAGE SYSTEM WITH REDUCED READ LATENCY	2/3/2020	16/780103
EMC IP Holding Company LLC	CHANGING PAGE SIZE IN AN ADDRESS -BASED DATA STORAGE SYSTEM	2/3/2020	16/779749
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR MANAGING DATA ACCESS	2/3/2020	16/780315
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR A DYNAMIC DATA STREAM PRIORITIZATION USING CONTENT BASED CLASSIFICATION	2/3/2020	16/779718
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR AN OFFLINE MIGRATION OF ON-PREMISE ENVIRONMENT TO A CLOUD-BASED SERVICE	2/3/2020	16/779711
EMC IP Holding Company LLC	SYSTEM AND METHOD VIRTUAL APPLIANCE CREATION	2/3/2020	16/780435

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR INTELLIGENT ASSET CLASSIFICATION	2/3/2020	16/780394
EMC IP Holding Company LLC	Online change of page size in a Content Aware Storage logical layer	2/3/2020	16/779778
EMC IP Holding Company LLC	ROUTING TO OBTAIN USER DATA IN A GEOGRAPHICALLY DISTRIBUTED DATA STORAGE ENVIRONMENT	2/4/2020	16/781316
EMC IP Holding Company LLC	DATA STORAGE MIGRATION IN REPLICATED ENVIRONMENT	2/4/2020	16/781296
EMC IP Holding Company LLC	Reliably maintaining strict consistency in cluster wide state of opened files in a distributed file system exposing a global namespace	2/5/2020	16/782426
EMC IP Holding Company LLC	System and Method for Adaptive Oracle Incrementally Updated Backups with Dynamic Datafile Detection	2/5/2020	16/782104
EMC IP Holding Company LLC	System and Method for generating immutable backups with configurable window	2/5/2020	16/782103
EMC IP Holding Company LLC	Method for Self-Contained Oracle Incrementally Updated Backup Images and Seamless Live Mount	2/5/2020	16/782099
EMC IP Holding Company LLC	Method for parallel data transmission and cooperating backups	2/5/2020	16/782097
EMC IP Holding Company LLC	System and Method for Checkpoint based Restartable OIM Backups	2/5/2020	16/782100
EMC IP Holding Company LLC	System and Method for Restartable L0 Oracle Image based Backups	2/5/2020	16/782101
EMC IP Holding Company LLC	HEAT SINK FOR PLUG-IN CARD, PLUG-IN CARD INCLUDING HEAT SINK, AND ASSOCIATED MANUFACTURING METHOD	2/6/2020	16/783257
EMC IP Holding Company LLC	IO METADATA MANAGEMENT FOR DIRECTLY CONNECTED HOST	2/6/2020	16/783855
EMC IP Holding Company LLC	True Zero RTO: eliminating OS and App Load Times	2/6/2020	16/784078

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	Improved Automatic IO stream timing determination in Live VM Images	2/6/2020	16/784074
EMC IP Holding Company LLC	EFFICIENT ERASURE CODING OF MID-SIZE DATA OBJECTS	2/7/2020	16/784516
EMC IP Holding Company LLC	Using any-PiT backups for retroactive backup compliance and hardening	2/7/2020	16/785288
EMC IP Holding Company LLC	USING BUSINESS CONTINUITY AND DISASTER RECOVERY FOR ANY POINT IN TIME BACKUP	2/7/2020	16/785230
EMC IP Holding Company LLC	System and Method for Autonomous and Dynamic Resource Allocation in Storage Systems	2/7/2020	16/784721
EMC IP Holding Company LLC	EDGE CASE HANDLING IN SYSTEM WITH DYNAMIC FLOW CONTROL	2/10/2020	16/786560
EMC IP Holding Company LLC	METHOD AND DEVICE FOR OPTIMIZATION OF DATA CACHING	2/10/2020	16/785885
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER READABLE STORAGE MEDIUM FOR MANAGING STORAGE	2/10/2020	16/786210
EMC IP Holding Company LLC	TEST CASE GENERATOR AND USER INTERFACE	2/10/2020	16/786396
EMC IP Holding Company LLC	FLOW CONTROL OF INPUT/OUTPUT (IO) IN A SYNCHRONOUS REPLICATION SESSION	2/10/2020	16/786422
EMC IP Holding Company LLC	DATA GOVERNANCE OPERATIONS IN HIGHLY DISTRIBUTED DATA PLATFORMS	2/10/2020	16/785770
EMC IP Holding Company LLC	A mechanism to handle REST API requests on an application server under stress	2/10/2020	16/785759
EMC IP Holding Company LLC	HYBRID NVRAM LOGGING IN FILESYSTEM NAMESPACE	2/11/2020	16/787987
EMC IP Holding Company LLC	Method and Apparatus for Assigning an Allocated Workload in a Data Center Having Multiple Storage Systems	2/11/2020	16/787075
EMC IP Holding Company LLC	PROXY BASED BACKUP AND RESTORE OF HYPER-V CLUSTER SHARED VOLUMES (CSV)	2/12/2020	16/789170

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	PROXY BASED BACKUP AND RESTORE OF HYPER-V CLUSTER SHARED VOLUMES (CSV)	2/12/2020	16/789160
EMC IP Holding Company LLC	SENSITIVITY MATRIX FOR SYSTEM LOAD INDICATION AND OVERLOAD PREVENTION	2/12/2020	16/788461
EMC IP Holding Company LLC	SCHEDULING ARTIFICIAL INTELLIGENCE MODEL PARTITIONS BASED ON REVERSED COMPUTATION GRAPH	2/12/2020	16/789006
EMC IP Holding Company LLC	MEDIA HICCUP MANAGEMENT IN A STORAGE SYSTEM	2/13/2020	16/790172
EMC IP Holding Company LLC	RECOVER TIME IMPROVEMENT MECHANISM AFTER DEVICE PATH FAILURE IN A STORAGE SYSTEM	2/13/2020	16/790257
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR AVOIDING REDUNDANT DATA RECOVERY	2/13/2020	16/790305
EMC IP Holding Company LLC	INTEGRITY-PRESERVING COLD MIGRATION OF VIRTUAL MACHINES	2/13/2020	16/789784
EMC IP Holding Company LLC	A backup agent scaling method by evaluation of prior backup jobs.	2/13/2020	16/790513
EMC IP Holding Company LLC	Uninterrupted block-based restores using a read-ahead buffer	2/13/2020	16/789744
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR MANAGING STORAGE SYSTEM	2/13/2020	16/790380
EMC IP Holding Company LLC	SHARED MEMORY USAGE TRACKING ACROSS MULTIPLE PROCESSES	2/14/2020	16/791336
EMC IP Holding Company LLC	Intelligent Deduplication in storage system based on application IO tagging	2/14/2020	16/790789
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT FOR GENERATING NETWORK TOPOLOGY	2/14/2020	16/791583
EMC IP Holding Company LLC	An intelligent solution to move data between heretical backup systems	2/17/2020	16/792843
EMC IP Holding Company LLC	An artificial intelligence method to schedule backups of large-scale backup systems	2/17/2020	16/792829

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	An intelligent solution to improve performance of garbage collection in backup system	2/17/2020	16/792773
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR SUPPLYING POWER TO A PROCESSOR	2/18/2020	16/793180
EMC IP Holding Company LLC	PREDICTIVE EVENT SEARCHING UTILIZING A MACHINE LEARNING MODEL TRAINED USING DYNAMICALLY-GENERATED EVENT TAGS	2/18/2020	16/793611
EMC IP Holding Company LLC	STORAGE SYSTEM WITH EFFICIENT DATA AND PARITY DISTRIBUTION ACROSS MIXED-CAPACITY STORAGE DEVICES	2/18/2020	16/793163
EMC IP Holding Company LLC	NON-DISRUPTIVE TRANSFORMATION OF A LOGICAL STORAGE DEVICE FROM A FIRST ACCESS PROTOCOL TO A SECOND ACCESS PROTOCOL	2/18/2020	16/793262
EMC IP Holding Company LLC	Approach and model to classify escalations based on Deep Learning for Data Protection Product	2/18/2020	16/793642
EMC IP Holding Company LLC	Caching of Machine Learning Training Parameters	2/19/2020	16/794740
EMC IP Holding Company LLC	STREAM RETENTION IN A DATA STORAGE SYSTEM	2/19/2020	16/795104
EMC IP Holding Company LLC	Algorithm to Prioritize VMs for Protection at a VMDK level	2/19/2020	16/794891
EMC IP Holding Company LLC	STORAGE BASED FILE FTP	2/19/2020	16/794529
EMC IP Holding Company LLC	Intelligent Data Protection Policy Recommendation	2/19/2020	16/794514
EMC IP Holding Company LLC	An efficiency garbage collection method	2/19/2020	16/795301
EMC IP Holding Company LLC	A method for optimizing backup job scheduling in data protection products to ensure service level agreement.	2/19/2020	16/794720
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT FOR DETECTING ABNORMAL NETWORK REQUEST	2/19/2020	16/794505

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0953

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR MANAGING BACKUP TASK	2/19/2020	16/794484
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR BACKING UP DATA	2/19/2020	16/794471
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR MANAGING REDUNDANT ARRAYS OF INDEPENDENT DRIVES	2/19/2020	16/794455
EMC IP Holding Company LLC	Efficient Rolling Transactions	2/20/2020	16/796450
EMC IP Holding Company LLC	METHODS, DEVICES AND COMPUTER PROGRAM PRODUCTS FOR STORING AND ACCESSING DATA	2/20/2020	16/795766
EMC IP Holding Company LLC	MANAGING A PERIPHERAL COMPONENT INTERFACE EXPRESS DEVICE HOTPLUG	2/21/2020	16/798239
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR MANAGING STORAGE DEVICE	2/21/2020	16/798217
EMC IP Holding Company LLC	STORAGE SYSTEM WITH EFFICIENT SNAPSHOT PAIR CREATION DURING SYNCHRONOUS REPLICATION OF LOGICAL STORAGE VOLUMES	2/21/2020	16/797063
EMC IP Holding Company LLC	HOST DEVICE WITH EFFICIENT AUTOMATED SEAMLESS MIGRATION OF LOGICAL STORAGE DEVICES ACROSS MULTIPLE ACCESS PROTOCOLS	2/21/2020	16/797671
EMC IP Holding Company LLC	Cluster Member Transfer for RAID System Expansion	2/21/2020	16/797018
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR JOB PROCESSING	2/21/2020	16/797794
EMC IP Holding Company LLC	An intelligent method to manage simultaneous session number when creating backup	2/21/2020	16/798227
EMC IP Holding Company LLC	Prioritizing Patching of Vulnerable Components	2/24/2020	16/798705
EMC IP Holding Company LLC	An intelligent solution to reduce unnecessary data re-writing during backup job	2/24/2020	16/799581

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	An intelligent method to predict job duration based on backup knowledge and variable slide window modeling	2/24/2020	16/799425
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT FOR EXPANDING MEMORY OF GPU	2/24/2020	16/799104
EMC IP Holding Company LLC	DISK ARRAY ENCLOSURE CONFIGURED TO DETERMINE METADATA PAGE LOCATION BASED ON METADATA IDENTIFIER	2/25/2020	16/800200
EMC IP Holding Company LLC	DISK ARRAY ENCLOSURE WITH METADATA JOURNAL	2/25/2020	16/800224
EMC IP Holding Company LLC	DISK ARRAY ENCLOSURE CONFIGURED FOR METADATA AND DATA STORAGE PROCESSING	2/25/2020	16/800253
EMC IP Holding Company LLC	TECHNIQUES FOR CONVERTING JOBS INTO SCRIPTS	2/25/2020	16/800258
EMC IP Holding Company LLC	Filtering Security Controls	2/25/2020	16/800581
EMC IP Holding Company LLC	System and method to achieve an auto-tiering of data using relativized discrepancy	2/25/2020	16/800934
EMC IP Holding Company LLC	ENHANCED AUTHENTICATION METHOD FOR HADOOP JOB CONTAINERS	2/26/2020	16/802382
EMC IP Holding Company LLC	UTILIZING MACHINE LEARNING TO PREDICT SUCCESS OF TROUBLESHOOTING ACTIONS FOR REPAIRING ASSETS	2/26/2020	16/802028
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR PRIORITIZING BACKUP GENERATION	2/26/2020	16/802063
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR BACKUP STORAGE SELECTION	2/26/2020	16/802087
EMC IP Holding Company LLC	STORAGE DEVICE PROTOCOL DUAL PERSONALITY	2/26/2020	16/801714
EMC IP Holding Company LLC	VM Protection with True Zero RTO	2/26/2020	16/802120
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR JOB PROCESSING	2/26/2020	16/801473

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0955

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	An intelligent method to report client progress dynamically based on workload	2/26/2020	16/802502
EMC IP Holding Company LLC	A method to manage the number of parallel processes to avoid system crash while maximizing computing resource usage of backup system	2/26/2020	16/802430
EMC IP Holding Company LLC	METHOD, DEVICE AND PROGRAM PRODUCT FOR AVOIDING A FAULT EVENT OF A DISK ARRAY	2/26/2020	16/801997
EMC IP Holding Company LLC	Merkle Super Tree for Synchronizing Data Buckets of Unlimited Size in Object Storage Systems	2/27/2020	16/803918
EMC IP Holding Company LLC	Merkle Tree Forest for Synchronizing Data Buckets of Unlimited Size in Object Storage Systems	2/27/2020	16/803902
EMC IP Holding Company LLC	MANAGING REMOTE REPLICATION IN STORAGE SYSTEMS	2/27/2020	16/802839
EMC IP Holding Company LLC	DEFRAGMENTATION TECHNIQUES	2/27/2020	16/803083
EMC IP Holding Company LLC	EXTENDING SNAPSHOT RETENTION	2/27/2020	16/803370
EMC IP Holding Company LLC	Geographically Diverse Data Storage System Employing a Replication Tree	2/27/2020	16/803923
EMC IP Holding Company LLC	Multistep Recovery Employing Erasure Coding in a Geographically Diverse Data Storage System	2/27/2020	16/803920
EMC IP Holding Company LLC	Log-Based Storage Space Management for Geographically Diverse Storage	2/27/2020	16/803913
EMC IP Holding Company LLC	EFFICIENT RESOURCE SHARING	2/27/2020	16/803295
EMC IP Holding Company LLC	PROTECTION OF SECRET CLIENT DATA IN A MULTIPLE CLIENT DATA DEDUPLICATION ENVIRONMENT	2/27/2020	16/803152
EMC IP Holding Company LLC	Container Cloning and Branching	2/27/2020	16/802880

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0956

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	ANY POINT IN TIME BACKUPS AND TIER ONE STORAGE REPLICATION	2/27/2020	16/802854
EMC IP Holding Company LLC	Rescue Package for Uncontrollable Splitters	2/27/2020	16/802795
EMC IP Holding Company LLC	ACHIEVING NEAR-ZERO ADDED LATENCY FOR ANY POINT IN TIME OS KERNEL-BASED APPLICATION REPLICATION	2/27/2020	16/803630
EMC IP Holding Company LLC	ACHIEVING NEAR-ZERO ADDED LATENCY FOR MODERN ANY POINT IN TIME VM REPLICATION	2/27/2020	16/803626
EMC IP Holding Company LLC	Extracting Drive Letters for Partitions in an offline Virtual Disk	2/27/2020	16/803878
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR A CLOUD BACKUP SERVICE LEVERAGING PEER-TO-PEER DATA RECOVERY	2/27/2020	16/802709
EMC IP Holding Company LLC	System and a Method for generating Live VM Images with an Extended Recovery Range	2/28/2020	16/804903
EMC IP Holding Company LLC	APPLICATION PLUGIN FRAMEWORK FOR BIG-DATA CLUSTERS	2/28/2020	16/804466
EMC IP Holding Company LLC	System and method for file level prioritization during multi-object restores	2/28/2020	16/805100
EMC IP Holding Company LLC	METHODS AND SYSTEMS FOR PERFORMING DATA BACKUPS	2/28/2020	16/805272
EMC IP Holding Company LLC	AUTOMATED TARGETLESS SNAPSHOTS	2/28/2020	16/805405
EMC IP Holding Company LLC	Intelligent Checkpoint Page Server for Containers	2/28/2020	16/804233
EMC IP Holding Company LLC	Trust Establishment by Escalation	2/28/2020	16/804892
EMC IP Holding Company LLC	System and a Method for generating Live VM Images with an Extended Recovery Range	2/28/2020	16/804855
EMC IP Holding Company LLC	Garbage Collection assisted deduplication in a log structured File system	2/28/2020	16/805434

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0957

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	Global Snapshots Backups of a Distributed Name Space	2/28/2020	16/804595
EMC IP Holding Company LLC	An efficient method of powering on VM while restoring	2/28/2020	16/804085
EMC IP Holding Company LLC	METHODS AND SYSTEMS FOR DETERMINING BACKUP SCHEDULES	2/28/2020	16/805149
EMC IP Holding Company LLC	METHOD, DEVICE, AND PRODUCT FOR MANAGING APPLICATION NODES IN A DISTRIBUTED APPLICATION SYSTEM	2/28/2020	16/804175
EMC IP Holding Company LLC	System and method for file level prioritization during backups	2/28/2020	16/805050
EMC IP Holding Company LLC	METHODS, DEVICES, AND COMPUTER PROGRAM PRODUCTS FOR MODEL ADAPTATION	2/28/2020	16/805065
EMC IP Holding Company LLC	A FILE TYPE CLASSIFICATION-BASED BACKUP/RESTORE SOLUTION	2/28/2020	16/804302
EMC IP Holding Company LLC	DATA BACKUP METHOD, A DATA BACKUP DEVICE, AND A COMPUTER PROGRAM PRODUCT	2/28/2020	16/804188
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR MANAGING ADDRESS MAPPING IN STORAGE SYSTEM	2/28/2020	16/805533
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT FOR STORING AND ACCESSING DATA	3/2/2020	16/806550
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR STORAGE MANAGEMENT	3/2/2020	16/806721
EMC IP Holding Company LLC	MANAGEMENT OF SHARED RESOURCES IN A SOFTWARE-DEFINED STORAGE ENVIRONMENT	3/3/2020	16/807709
EMC IP Holding Company LLC	FILE BACKUP BASED ON FILE TYPE	3/3/2020	16/807191
EMC IP Holding Company LLC	A smart way to identify replica to recover	3/3/2020	16/807190

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0958

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	METHOD FOR MODEL ADAPTATION, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT	3/3/2020	16/807499
EMC IP Holding Company LLC	ON-DEMAND REMOTE SNAPSHOT CREATION FOR A SYNCHRONOUS REPLICATION SESSION IN AUTOMATIC RECOVERY	3/4/2020	16/808943
EMC IP Holding Company LLC	Microservice Data Item Storage and Retrieval Using Generation-Based Cache	3/5/2020	16/810169
EMC IP Holding Company LLC	STORAGE SYSTEM PORT MAINTENANCE INFORMATION SHARING WITH HOST DEVICE	3/5/2020	16/810025
EMC IP Holding Company LLC	MANAGING DATA REDUCTION IN STORAGE SYSTEMS USING MACHINE LEARNING	3/6/2020	16/811173
EMC IP Holding Company LLC	DATA PROCESSING AND ANALYSIS	3/6/2020	16/810987
EMC IP Holding Company LLC	MANAGING STORAGE SYSTEM PERFORMANCE	3/6/2020	16/811184
EMC IP Holding Company LLC	IMPROVING PERFORMANCE OF REPLICATION SYSTEM WITH SMALL NUMBER OF IP LINKS AVAILABLE	3/6/2020	16/811000
EMC IP Holding Company LLC	SNAPSHOT TRANSMISSION FROM STORAGE ARRAY TO CLOUD USING MULTI-PATH INPUT-OUTPUT	3/6/2020	16/811751
EMC IP Holding Company LLC	METHOD OF STORAGE ALLOCATION, ELECTRONIC DEVICE, STORAGE SYSTEM AND COMPUTER PROGRAM PRODUCT	3/6/2020	16/811530
EMC IP Holding Company LLC	LOCKING STRUCTURES IN FLASH MEMORY	3/9/2020	16/813265
EMC IP Holding Company LLC	CIRCUIT BOARD ASSEMBLY	3/9/2020	16/812814
EMC IP Holding Company LLC	CACHE MANAGEMENT SYSTEM AND METHOD	3/9/2020	16/813114
EMC IP Holding Company LLC	Intelligent system to prioritize the server for envisage requests	3/9/2020	16/812897

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	BANDWIDTH EFFICIENT ACCESS TO PERSISTENT STORAGE IN A DISTRIBUTED STORAGE SYSTEM	3/9/2020	16/813012
EMC IP Holding Company LLC	Cascading PID controller for Metadata Page Eviction	3/10/2020	16/813886
EMC IP Holding Company LLC	Algorithms for Deduplication Test Pattern and Deduplication Ratio Generation	3/10/2020	16/814038
EMC IP Holding Company LLC	System and Method to achieve effective streaming of block data to target device	3/10/2020	16/814671
EMC IP Holding Company LLC	Storage of Generic Time Series Data Using Dynamic Schema	3/10/2020	16/813911
EMC IP Holding Company LLC	PAUSING AND RESUMING COPYING OF SNAPSHOTS FROM A LOCAL SNAPSHOT LINEAGE TO AT LEAST ONE CLOUD SNAPSHOT LINEAGE	3/10/2020	16/814505
EMC IP Holding Company LLC	METADATA UPDATE JOURNAL DESTAGING WITH PRELOAD PHASE FOR EFFICIENT METADATA RECOVERY IN A DISTRIBUTED STORAGE SYSTEM	3/10/2020	16/813960
EMC IP Holding Company LLC	METHOD AND DEVICE FOR REBUILDING RAID	3/10/2020	16/814003
EMC IP Holding Company LLC	IO OPERATION CLONING USING CHANGE INFORMATION SHARING WITH A STORAGE SYSTEM	3/10/2020	16/814543
EMC IP Holding Company LLC	RECOVERING SNAPSHOTS FROM A CLOUD SNAPSHOT LINEAGE ON CLOUD STORAGE TO A STORAGE SYSTEM	3/10/2020	16/814492
EMC IP Holding Company LLC	MOVING SNAPSHOTS FROM A LOCAL SNAPSHOT LINEAGE ON A STORAGE SYSTEM TO A CLOUD SNAPSHOT LINEAGE ON CLOUD STORAGE	3/10/2020	16/814480
EMC IP Holding Company LLC	RECOVERING A STORAGE VOLUME ASSOCIATED WITH A SNAPSHOT LINEAGE FROM CLOUD STORAGE	3/10/2020	16/814471
EMC IP Holding Company LLC	GENERATING CONFIGURATION DATA ENABLING REMOTE ACCESS TO PORTIONS OF	3/10/2020	16/814459

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0960

Owner	Title	Date	Application No.
	A SNAPSHOT LINEAGE COPIED TO CLOUD STORAGE		
EMC IP Holding Company LLC	TRACKING STORAGE CAPACITY USAGE BY SNAPSHOT LINEAGES USING METADATA IN A MULTI-LEVEL TREE STRUCTURE	3/10/2020	16/814446
EMC IP Holding Company LLC	MANAGING SNAPSHOTS STORED LOCALLY IN A STORAGE SYSTEM AND IN CLOUD STORAGE UTILIZING POLICY-BASED SNAPSHOT LINEAGES	3/10/2020	16/814431
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR DEADLINE INHERITANCE FOR RESOURCE SYNCHRONIZATION	3/11/2020	16/815265
EMC IP Holding Company LLC	PROVIDING COORDINATION BETWEEN MAPPER CIRCUITRY AND REDUNDANT ARRAY OF INDEPENDENT DISKS (RAID) CIRCUITRY TO MANAGE RAID STORAGE SPACE	3/11/2020	16/815348
EMC IP Holding Company LLC	CACHE HIT RATIO SIMULATION USING A PARTIAL DATA SET	3/12/2020	16/816540
EMC IP Holding Company LLC	STORAGE SYSTEM WITH NETWORK-WIDE CONFIGURABLE DEVICE NAMES	3/12/2020	16/816355
EMC IP Holding Company LLC	MONITORING TARGET OBJECT BY MULTIPLE CAMERAS	3/12/2020	16/816754
EMC IP Holding Company LLC	LOGICAL PATHS FOR UNIFIED FILE AND BLOCK DATA STORAGE	3/12/2020	16/816428
EMC IP Holding Company LLC	A New Approach to Share Logger PD Tiers by Both Nodes to Generate Merge Friendly Sequential IO Pattern on MTC Drives	3/12/2020	16/817207
EMC IP Holding Company LLC	SYSTEM MONITORING WITH METRICS CORRELATION FOR DATA CENTER	3/13/2020	16/818475
EMC IP Holding Company LLC	METHOD, APPARATUS AND ARTICLE OF MANUFACTURE FOR CATEGORIZING COMPUTERIZED MESSAGES INTO CATEGORIES	3/13/2020	16/817934
EMC IP Holding Company LLC	SYSTEM AND METHOD OF HANDLING JOURNAL SPACE IN A STORAGE CLUSTER WITH MULTIPLE DELTA LOG INSTANCES	3/13/2020	16/818008

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	VOLUME MIGRATION USING CROSS-APPLIANCE ASYMMETRIC NAMESPACE ACCESS GROUP	3/13/2020	16/817726
EMC IP Holding Company LLC	TECHNIQUES FOR DETERMINING AND USING CACHING SCORES FOR CACHED DATA	3/13/2020	16/818139
EMC IP Holding Company LLC	TECHNIQUES FOR DATA DEDUPLICATION	3/13/2020	16/818098
EMC IP Holding Company LLC	TECHNIQUES FOR DATA MIGRATION	3/13/2020	16/818173
EMC IP Holding Company LLC	Deep Log Analyzer	3/13/2020	16/817799
EMC IP Holding Company LLC	MULTI-LEVEL BUCKET AGGREGATION FOR JOURNAL DESTAGING IN A DISTRIBUTED STORAGE SYSTEM	3/16/2020	16/819447
EMC IP Holding Company LLC	INDEXING STORED DATA OBJECTS USING PROBABILISTIC FILTERS	3/16/2020	16/819493
EMC IP Holding Company LLC	VALIDATING STORAGE VIRTUALIZATION METADATA SUPPORTING REDIRECTION	3/16/2020	16/819841
EMC IP Holding Company LLC	Hickup-less failback and Journal recovery in an active-active storage system	3/16/2020	16/819336
EMC IP Holding Company LLC	MANAGING OPERATION OF A DATA STORAGE SYSTEM WITH RESERVATION OF METADATA SPACE	3/16/2020	16/819595
EMC IP Holding Company LLC	MANAGING STORAGE SPACE FOR METADATA CONSISTENCY CHECKING	3/16/2020	16/819722
EMC IP Holding Company LLC	Regression Testing Using Automation Technologies	3/16/2020	16/819293
EMC IP Holding Company LLC	METHOD FOR ENCRYPTION AND DECRYPTION, PROGRAMMABLE SWITCH AND COMPUTER PROGRAM PRODUCT	3/16/2020	16/820122
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR MANAGING DATA STORAGE	3/16/2020	16/819715

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0962

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	METHOD, APPARATUS AND COMPUTER PROGRAM PRODUCT FOR MANAGING DISK ARRAY	3/16/2020	16/819979
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PRODUCT FOR MANAGING STORAGE SYSTEM	3/16/2020	16/819785
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER READABLE STORAGE MEDIUM FOR STORAGE MANAGEMENT	3/17/2020	16/821410
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR SPLITTING DISK SET	3/17/2020	16/821392
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR RAID TYPE CONVERSION	3/17/2020	16/821398
EMC IP Holding Company LLC	METHOD, APPARATUS AND COMPUTER PROGRAM PRODUCT FOR MANAGING METADATA	3/17/2020	16/821404
EMC IP Holding Company LLC	EFFICIENT COMPUTATION OF PARITY DATA IN STORAGE SYSTEM IMPLEMENTING DATA STRIPING	3/18/2020	16/822493
EMC IP Holding Company LLC	Independent Snapshot based backup copies for Applications	3/18/2020	16/822397
EMC IP Holding Company LLC	ACCESS PATH MANAGEMENT BASED ON PATH CONDITION	3/18/2020	16/822208
EMC IP Holding Company LLC	ASSIGNMENT OF LONGEVITY RANKING VALUES OF STORAGE VOLUME SNAPSHOTS BASED ON SNAPSHOT POLICIES	3/18/2020	16/822848
EMC IP Holding Company LLC	STORAGE SYSTEM IMPLEMENTING SNAPSHOT LONGEVITY RANKING FOR EFFICIENT MANAGEMENT OF SNAPSHOTS	3/18/2020	16/822818
EMC IP Holding Company LLC	Agent Service Redesign	3/19/2020	62/991821
EMC IP Holding Company LLC	Resource-Aware discovery in ADM	3/19/2020	16/823536
EMC IP Holding Company LLC	MANAGING INCOMPRESSIBLE DATA IN A COMPRESSION-ENABLED LOG-STRUCTURED ARRAY STORAGE SYSTEM	3/19/2020	16/823813

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0963

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER-READABLE STORAGE MEDIUM FOR TESTING BIOS	3/19/2020	16/823921
EMC IP Holding Company LLC	TASK SCHEDULING METHOD, ELECTRONIC DEVICE, AND COMPUTER STORAGE MEDIUM	3/19/2020	16/823445
EMC IP Holding Company LLC	DATA ACCESS METHOD, APPARATUS AND COMPUTER PROGRAM PRODUCT	3/19/2020	16/824032
EMC IP Holding Company LLC	ADAPTIVE CHANGE OF REDUNDANCY LEVEL OF RAID	3/19/2020	16/824016
EMC IP Holding Company LLC	DISTRIBUTED CLIENT SIDE DEDUPLICATION INDEX CACHE	3/20/2020	16/825188
EMC IP Holding Company LLC	SYSTEMS AND METHODS FOR PERFORMING DATA PROTECTION OPERATIONS WITH A PROXY REGISTER	3/20/2020	16/825205
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR SECURE DATA REPLICATION DATA INTEGRITY VERIFICATION	3/20/2020	16/825322
EMC IP Holding Company LLC	Generic data driven application protection:	3/20/2020	16/824979
EMC IP Holding Company LLC	APPLICATION DISCOVERY USING ACCESS PATTERN HISTORY	3/20/2020	16/825268
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR MANAGING STORAGE SYSTEM	3/20/2020	16/825690
EMC IP Holding Company LLC	RESUMING COPYING OF SNAPSHOTS FROM A STORAGE SYSTEM TO CLOUD STORAGE	3/20/2020	16/824988
EMC IP Holding Company LLC	METHOD, DEVICE, AND PROGRAM PRODUCT FOR DETERMINING MODEL COMPRESSION RATE	3/20/2020	16/824834
EMC IP Holding Company LLC	METHOD FOR SOLVING PROBLEM, COMPUTING SYSTEM AND PROGRAM PRODUCT	3/20/2020	16/825389
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER-READABLE STORAGE MEDIUM FOR MANAGING STORAGE SYSTEM	3/20/2020	16/825055
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR STORAGE MANAGEMENT	3/20/2020	16/825065

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0964

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	STORAGE MANAGEMENT METHOD, ELECTRONIC DEVICE, AND COMPUTER PROGRAM PRODUCT	3/20/2020	16/825073
EMC IP Holding Company LLC	EFFICIENT PACKING OF COMPRESSED DATA IN STORAGE SYSTEM IMPLEMENTING DATA STRIPING	3/23/2020	16/826511
EMC IP Holding Company LLC	SCRATCHPAD JOURNALING MECHANISM FOR PERFORMANCE OPTIMIZATION	3/23/2020	16/826856
EMC IP Holding Company LLC	INFORMATION PROCESSING METHOD, ELECTRONIC DEVICE AND COMPUTER STORAGE MEDIUM	3/23/2020	16/827082
EMC IP Holding Company LLC	Machine Learning based resource availability prediction	3/25/2020	16/830058
EMC IP Holding Company LLC	non-disruptive and efficient migration of data across cloud providers	3/25/2020	16/830020
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR EVENT ORDERING	3/25/2020	16/830143
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR MANAGING STORAGE BLOCKS	3/25/2020	16/829910
EMC IP Holding Company LLC	METHODS, APPARATUSES AND COMPUTER PROGRAM PRODUCTS FOR MANAGING METADATA OF STORAGE OBJECT	3/25/2020	16/829870
EMC IP Holding Company LLC	Server Snapshot Enabled Aware Discovery of Client Resources	3/26/2020	16/830782
EMC IP Holding Company LLC	Highly Efficient Native Application Data Protection For Office 365	3/26/2020	16/831691
EMC IP Holding Company LLC	Discover Assets Dynamically on Host and Find Backup Configuration	3/26/2020	16/830874
EMC IP Holding Company LLC	Creating Vendor Neutral Data Protection Operations for Application Resources	3/26/2020	16/830988
EMC IP Holding Company LLC	Replicated State Cluster with Standby Node State Assessment During Leadership Transition	3/26/2020	16/830473

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0965

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	Storage Volume Migration Scheduling Based on Storage Volume Priorities and Specified Constraints	3/26/2020	16/830946
EMC IP Holding Company LLC	Storage Block Balancing Using Volume Part Migration	3/26/2020	16/830469
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR STORAGE DEVICE MANAGEMENT	3/26/2020	16/830386
EMC IP Holding Company LLC	LEVERAGING MULTI-CHANNEL SSD FOR APPLICATION-OPTIMIZED WORKLOAD AND RAID OPTIMIZATION	3/26/2020	16/830376
EMC IP Holding Company LLC	Snapshot capability aware discovery for Application assets	3/26/2020	16/830701
EMC IP Holding Company LLC	File System Embedded Merkle Trees	3/26/2020	16/830706
EMC IP Holding Company LLC	Efficient transfer to and from a deduplicated cloud storage system	3/26/2020	16/831554
EMC IP Holding Company LLC	Highly Efficient Native E-Mail Message Data Protection for Office 365	3/26/2020	16/831674
EMC IP Holding Company LLC	Estimating Replication Completion Time Using Machines Learning Techniques	3/26/2020	16/830527
EMC IP Holding Company LLC	Dual Relationship-Based Hash Structure for Non-Volatile Memory Technology	3/26/2020	16/830418
EMC IP Holding Company LLC	A Highly Flexible Way to Upgrade Multi-Subsystem Products	3/26/2020	16/831178
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR IDENTIFYING NETWORK ADDRESSES ASSIGNED TO COMPUTING DEVICES	3/26/2020	16/831281
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR MANAGING INDEX TABLES	3/26/2020	16/831376
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR MANAGING INDEX OF STORAGE SYSTEM	3/26/2020	16/831324
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR INFORMATION PROCESSING	3/26/2020	16/831296

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0966

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	METHOD FOR MANAGING STORAGE DEVICES, ELECTRONIC DEVICE AND COMPUTER-READABLE MEDIUM	3/26/2020	16/831334
EMC IP Holding Company LLC	METHOD FOR MANAGING STORAGE DEVICES, ELECTRONIC DEVICE AND COMPUTER-READABLE MEDIUM	3/26/2020	16/831340
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR MANAGING DATA	3/26/2020	16/831328
EMC IP Holding Company LLC	NMMEDI RecoverPoint backups array agnostic removing dependency of VPLEX hardware	3/27/2020	16/832298
EMC IP Holding Company LLC	A SAND TIMER ALGORITHM FOR TRACKING IN-FLIGHT DATA STORAGE REQUESTS FOR DATA REPLICATION	3/27/2020	16/832202
EMC IP Holding Company LLC	ADAPTIVE TESTING BASED ON REAL-TIME ANALYSIS	3/27/2020	16/832714
EMC IP Holding Company LLC	MANAGING STORAGE DEVICE ERRORS DURING PROCESSING OF INFLIGHT INPUT/OUTPUT REQUESTS	3/27/2020	16/832763
EMC IP Holding Company LLC	Data Labeling Awareness for Backup Systems	3/27/2020	16/832642
EMC IP Holding Company LLC	Mechanism for reversible data masking for cloud-based (SaaS) IT Reporting and Analytics systems	3/27/2020	16/832905
EMC IP Holding Company LLC	CONGESTION AWARE MULTIPATHING BASED ON NETWORK CONGESTION NOTIFICATIONS	3/27/2020	16/832124
EMC IP Holding Company LLC	Masking Personal Information in Audio Recordings	3/27/2020	16/832976
EMC IP Holding Company LLC	Dynamic resource allocation based on fingerprint extraction of workload telemetry data	3/27/2020	16/832031
EMC IP Holding Company LLC	Message Management Using Machine Learning Techniques	3/27/2020	16/832052
EMC IP Holding Company LLC	Automatically Predicting Device Failure Using Machine Learning Techniques	3/27/2020	16/832035

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0967

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT OF LOAD BALANCING	3/27/2020	16/833391
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT FOR MANAGING FILE SYSTEM	3/27/2020	16/833287
EMC IP Holding Company LLC	Fast Recovery in RecoverPoint using Direct Storage Access	3/30/2020	16/834022
EMC IP Holding Company LLC	SCANNER SOFTWARE MODULE FOR HIGH SYSTEM UTILIZATION	3/30/2020	16/834217
EMC IP Holding Company LLC	Write-Once Meta-Data Pattern to detect write loss/inconsistencies of optimized-write-once operations	3/30/2020	16/833768
EMC IP Holding Company LLC	MANAGING LEAST RECENTLY USED CACHE USING REDUCED MEMORY FOOTPRINT SEQUENCE CONTAINER	3/30/2020	16/834363
EMC IP Holding Company LLC	DNS Multipathing Distributed Applications	3/30/2020	16/834257
EMC IP Holding Company LLC	Disk Access Event Control for Mapped Nodes Supported by a Real Cluster Storage System	3/30/2020	16/834649
EMC IP Holding Company LLC	Increasing Device Data Confidence and Operation Via Temporal and Spatial Analytics	3/30/2020	16/834486
EMC IP Holding Company LLC	Smart Software Recommendation Using an Application Network	3/30/2020	16/833997
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT FOR STORING FILES	3/30/2020	16/834687
EMC IP Holding Company LLC	RESOURCE ALLOCATION USING RESTORE CREDITS	3/31/2020	16/836350
EMC IP Holding Company LLC	GENERATING A DATA STREAM WITH CONFIGURABLE COMPRESSION	3/31/2020	16/836004
EMC IP Holding Company LLC	MANAGEMENT OF VOLUME SNAPSHOTS IN A DATA STORAGE SYSTEM	3/31/2020	16/836824

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0968

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	AUTOMATED MANAGEMENT SERVER DISCOVERY	3/31/2020	16/835424
EMC IP Holding Company LLC	PREDICTION OF MAINTENANCE WINDOW OF A STORAGE SYSTEM	3/31/2020	16/835426
EMC IP Holding Company LLC	HOST DEVICE PROVIDING AUTOMATED PREDICTION OF CHANGE INTERVALS TO REDUCE ADVERSE IMPACTS ON APPLICATIONS	3/31/2020	16/836147
EMC IP Holding Company LLC	Increasing DCF Confidence for Analytic Value	3/31/2020	16/835927
EMC IP Holding Company LLC	Human Trust Overlays for Automated Data Confidence Fabrics	3/31/2020	16/835889
EMC IP Holding Company LLC	N-tier Workload and Data Placement and Orchestration	3/31/2020	16/836093
EMC IP Holding Company LLC	Remote Approval and Execution of Restricted Operations	3/31/2020	16/835475
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR STORAGE MANAGEMENT	3/31/2020	16/836176
EMC IP Holding Company LLC	METHOD, APPARATUS AND COMPUTER PROGRAM PRODUCT FOR MANAGING BACKUP SYSTEM	3/31/2020	16/835539
EMC IP Holding Company LLC	METHOD, DEVICE, AND PRODUCT FOR MANAGING SCRUBBING OPERATION IN STORAGE SYSTEM	3/31/2020	16/836715
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR MANAGING APPLICATION SYSTEM	3/31/2020	16/835755
EMC IP Holding Company LLC	APPARATUS FOR HOUSING STORAGE PROCESSOR, AND STORAGE SERVER	3/31/2020	16/836372
EMC IP Holding Company LLC	METHOD FOR MANAGING STORAGE DEVICES, ELECTRONIC DEVICE AND COMPUTER-READABLE MEDIUM	3/31/2020	16/836362
EMC IP Holding Company LLC	HANDLING OF OFFLINE STORAGE DISK	3/31/2020	16/835749

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0969

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	STORAGE DRIVE CARRIER AND CHASSIS	3/31/2020	16/835743
EMC IP Holding Company LLC	Dynamic Storage Array Policy creation and Feature based Scheduling control to improve Host QOS metrics	4/2/2020	16/838079
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR MANAGING NODES IN A NETWORK	4/2/2020	16/838191
EMC IP Holding Company LLC	A smart algorithm to optimize the DP client's cache size with DP client specific parameters in the Data Protection system	4/2/2020	16/838667
EMC IP Holding Company LLC	Virtual file system interfaces for Hash Based Backup Storage	4/2/2020	16/838484
EMC IP Holding Company LLC	OFFLOADING DEVICE MAINTENANCE TO AN EXTERNAL PROCESSOR IN LOW-LATENCY, NON-VOLATILE MEMORY	4/3/2020	16/839873
EMC IP Holding Company LLC	SECURE MANAGEMENT OF USER INFORMATION USING TOKENIZATION AND TOKEN STATES	4/3/2020	16/839491
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT	4/3/2020	16/839348
EMC IP Holding Company LLC	Nanoservices - a programming design pattern for managing the state of fine grained object instances	4/6/2020	16/840872
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT FOR DATA MANAGEMENT	4/6/2020	16/841054
EMC IP Holding Company LLC	USING A RAW MIRROR TO INITIALIZE A STORAGE SYSTEM	4/7/2020	16/842242
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR ALLOCATING CENTRAL PROCESSING UNIT (CPU) CORES FOR SYSTEM OPERATIONS	4/7/2020	16/842757
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR IMPLEMENTING FILE SYSTEM	4/8/2020	16/843016

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0970

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER READABLE MEDIUM FOR DATA DEDUPLICATION	4/8/2020	16/843004
EMC IP Holding Company LLC	RECOVERY OF LAST ALLOCATED LOGICAL BLOCK ADDRESS	4/9/2020	16/844076
EMC IP Holding Company LLC	DETERMINING SYNTAX PARSE TREES FOR EXTRACTING NESTED HIERARCHICAL STRUCTURES FROM TEXT DATA	4/9/2020	16/844046
EMC IP Holding Company LLC	EXTRACTION OF A NESTED HIERARCHICAL STRUCTURE FROM TEXT DATA IN AN UNSTRUCTURED VERSION OF A DOCUMENT	4/9/2020	16/844030
EMC IP Holding Company LLC	HOST DEVICE WITH AUTOMATED CONNECTIVITY PROVISIONING	4/9/2020	16/844017
EMC IP Holding Company LLC	Efficient resilience in a meta data paging array for inflight user data	4/10/2020	16/845130
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR PROCESSING COMPUTING JOB	4/10/2020	16/845692
EMC IP Holding Company LLC	TASK PROCESSING METHOD, ELECTRONIC DEVICE, AND COMPUTER PROGRAM PRODUCT	4/10/2020	16/845682
EMC IP Holding Company LLC	METHOD, A DEVICE, AND A COMPUTER PROGRAM PRODUCT FOR PROCESSING DATA	4/10/2020	16/845263
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR STORAGE MANAGEMENT	4/10/2020	16/845244
EMC IP Holding Company LLC	REDUCING THE AMOUNT OF DATA STORED IN A SEQUENCE OF DATA BLOCKS BY COMBINING DEDUPLICATION AND COMPRESSION	4/13/2020	16/846909
EMC IP Holding Company LLC	METHOD AND DEVICE FOR STORAGE MANAGEMENT	4/13/2020	16/846673
EMC IP Holding Company LLC	System and Method for Variable Sparing in RAID Groups Based on Drive Failure Probability	4/13/2020	16/847096
EMC IP Holding Company LLC	Artificial Intelligence Techniques for Prediction of Data Protection Operation Duration	4/13/2020	16/846818

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0971

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	LOCAL CACHED DATA COHERENCY IN HOST DEVICES USING REMOTE DIRECT MEMORY ACCESS	4/13/2020	16/846485
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR MANAGING SNAPSHOT IN APPLICATION ENVIRONMENT	4/13/2020	16/846842
EMC IP Holding Company LLC	METHODS, ELECTRONIC DEVICES, STORAGE SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR ERROR DETECTION	4/13/2020	16/846820
EMC IP Holding Company LLC	CHASSIS AND METHOD FOR MANUFACTURING THE SAME	4/13/2020	16/846797
EMC IP Holding Company LLC	AUTOMATED TRANSFORMATION FROM COMMAND MODE TO TRANSPORT MODE	4/14/2020	16/847766
EMC IP Holding Company LLC	Dynamic Bandwidth Allocation of Storage System Ports	4/15/2020	16/849082
EMC IP Holding Company LLC	Artificial Intelligence Techniques for Predicting Quality Scores for Product Orders	4/15/2020	16/849199
EMC IP Holding Company LLC	IPV6 ALIAS	4/16/2020	16/850544
EMC IP Holding Company LLC	MANAGING OBJECTS IN DATA STORAGE EQUIPMENT	4/16/2020	16/850553
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE, AND COMPUTER PROGRAM PRODUCT FOR DATA PROCESSING	4/16/2020	16/850479
EMC IP Holding Company LLC	Autonomous Data Protection	4/20/2020	16/852785
EMC IP Holding Company LLC	STORAGE SYSTEM CONFIGURED TO GUARANTEE SUFFICIENT CAPACITY FOR A DISTRIBUTED RAID REBUILD PROCESS	4/20/2020	16/852632
EMC IP Holding Company LLC	TOP COVER ARRANGEMENT FOR A STORAGE AND THE CORRESPONDING STORAGE	4/21/2020	16/853,961
EMC IP Holding Company LLC	IMPROVE AVAILABILITY OF A STORAGE SYSTEM	4/22/2020	16/855142

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	Method and Apparatus for Identifying a Device Missing from a Consistency Group	4/22/2020	16/855315
EMC IP Holding Company LLC	Verifying A Software or Firmware Update Using A Container Before Deploying To A Client	4/23/2020	16/856145
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR MANAGING STORAGE SYSTEM	4/24/2020	16/857691
EMC IP Holding Company LLC	INPUT-OUTPUT PATH SELECTION USING SWITCH TOPOLOGY INFORMATION	4/24/2020	16/857381
EMC IP Holding Company LLC	CONFIDENT PEAK-AWARE RESPONSE TIME ESTIMATION BY EXPLOITING TELEMETRY DATA FROM DIFFERENT SYSTEM CONFIGURATIONS	4/27/2020	16/859823
EMC IP Holding Company LLC	FRAMEWORK FOR MEASURING TELEMETRY DATA VARIABILITY FOR CONFIDENCE EVALUATION OF A MACHINE LEARNING ESTIMATOR	4/27/2020	16/859788
EMC IP Holding Company LLC	LOCALITY-AWARE COMPRESSOR-DECOMPRESSOR FOR KEEPING PREDICTION MODELS UP-TO-DATE IN RESOURCE CONSTRAINED NETWORKS	4/27/2020	16/859746
EMC IP Holding Company LLC	An efficient communication method between slices on the same storage controller reduces latency and increase parallelism	4/27/2020	16/859183
EMC IP Holding Company LLC	AUTOMATIC MANAGEMENT OF FILE SYSTEM CAPACITY USING PREDICTIVE ANALYTICS FOR A STORAGE SYSTEM	4/28/2020	16/860749
EMC IP Holding Company LLC	DOCUMENT RECOMMENDATION	4/28/2020	16/860396
EMC IP Holding Company LLC	A METHOD AND DEVICE FOR CREATING AN INDEX	4/28/2020	16/860813
EMC IP Holding Company LLC	DYNAMIC DASHBOARD OF USER INTERFACE DISPLAYING PRIMARY OBJECT AND RELATED OBJECTS	4/28/2020	16/860574
EMC IP Holding Company LLC	REBALANCING INTERNET PROTOCOL (IP) ADDRESSES USING DISTRIBUTED IP MANAGEMENT	4/29/2020	16/861695

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0973

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER READABLE MEDIUM OF STORAGE MANAGEMENT	4/29/2020	16/861337
EMC IP Holding Company LLC	LOCKLESS METADATA BINARY TREE ACCESS	4/29/2020	16/861986
EMC IP Holding Company LLC	System and Method for Prioritizing Replication Copy Activity	4/29/2020	16/861747
EMC IP Holding Company LLC	ITERATIVE INTEGER PROGRAMMING WITH LOAD BALANCE FOR CYCLIC WORKLOADS	4/29/2020	16/862561
EMC IP Holding Company LLC	Temporal data management method for anomalous state detection in data centers	4/29/2020	16/861982
EMC IP Holding Company LLC	Automated Optimal Resource Selection for Dell EMC Software Defined Storage Deployment	4/29/2020	16/861371
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR BACKUPING DATA	4/29/2020	16/862478
EMC IP Holding Company LLC	Policy-based approach for generating deployment blueprints for Dell EMC software-defined storage	4/30/2020	16/862786
EMC IP Holding Company LLC	GENERATING RECOMMENDATIONS FOR INITIATING RECOVERY OF A FAULT DOMAIN REPRESENTING LOGICAL ADDRESS SPACE OF A STORAGE SYSTEM	4/30/2020	16/862740
EMC IP Holding Company LLC	MAPPING VIRTUAL BLOCK ADDRESSES TO PORTIONS OF A LOGICAL ADDRESS SPACE THAT POINT TO THE VIRTUAL BLOCK ADDRESSES	4/30/2020	16/862735
EMC IP Holding Company LLC	FINDING STORAGE OBJECTS OF A SNAPSHOT GROUP POINTING TO A LOGICAL PAGE IN A LOGICAL ADDRESS SPACE OF A STORAGE SYSTEM	4/30/2020	16/862733
EMC IP Holding Company LLC	Cache Retention for Inline Deduplication Based on Number of Physical Blocks with Common Fingerprints Among Multiple Cache Entries	4/30/2020	16/863433
EMC IP Holding Company LLC	System and Method for Storage System Node Fencing	4/30/2020	16/863127

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0974

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR MANAGING BUFFER DEVICE IN STORAGE SYSTEM	4/30/2020	16/862963
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT FOR PROCESSING DATA	4/30/2020	16/864097
EMC IP Holding Company LLC	An intelligent solution to assemble the parity group for RAIN enabled multi-nodes system	4/30/2020	16/863461
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR MANAGING APPLICATION SYSTEM	4/30/2020	16/863496
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR MANAGING ACCESS REQUEST IN STORAGE SYSTEM	4/30/2020	16/863552
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR ERROR MANAGEMENT	4/30/2020	16/863628
EMC IP Holding Company LLC	A QoS method for QAT resource used in Dedup systems	4/30/2020	16/863167
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR BACKUPING DATA	4/30/2020	16/863042
EMC IP Holding Company LLC	An adaptive QAT compression method used for data protection	4/30/2020	16/862984
EMC IP Holding Company LLC	TIERING WITH PLUGGABLE STORAGE SYSTEM FOR PARALLEL QUERY ENGINES	5/1/2020	16/865164
EMC IP Holding Company LLC	POLICY-BASED MOBILE ACCESS TO SHARED NETWORK RESOURCES	5/1/2020	16/865140
EMC IP Holding Company LLC	TOKEN-BASED OFFLOAD DATA TRANSFER WITH SYNCHRONOUS REPLICATION	5/1/2020	16/864272
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR PERSISTENT ATOMIC OBJECTS WITH SUB-BLOCK GRANULARITY	5/1/2020	16/864768
EMC IP Holding Company LLC	System and Method of Sharing Network Devices in a Hyper Converged Environment	5/1/2020	16/864651

Owner	Title	Date	Application No.
EMC IP Holding Company LLC	FLUSHING DIRTY PAGES FROM PAGE BUFFERS INDICATED BY NON-SEQUENTIAL PAGE DESCRIPTORS	5/1/2020	16/864764
EMC IP Holding Company LLC	Embedded container-based control plane for clustered environment	5/1/2020	16/864640
EMC IP Holding Company LLC	STREAM BROWSER FOR DATA STREAMS	5/1/2020	16/864905
EMC IP Holding Company LLC	RETENTION MANAGEMENT FOR DATA STREAMS	5/1/2020	16/864892
EMC IP Holding Company LLC	A precomputed similarity index of files in data protection systems with neural network	5/1/2020	15929437
EMC IP Holding Company LLC	Conditional Construction Container	5/1/2020	15/929438
EMC IP Holding Company LLC	USING STORAGE SYSTEM MEMORY AS HOST MEMORY	5/1/2020	16/864824
EMC IP Holding Company LLC	Artificial Intelligence-Based Storage Monitoring	5/1/2020	16/864808
EMC IP Holding Company LLC	AI/ML based proactive system to improve sales productivity by categorizing and determining relevant news	5/1/2020	16/864190
EMC IP Holding Company LLC	Rolling Data Stream Transactions	5/1/2020	16/864850
EMC IP Holding Company LLC	Password Resetting System and Method	11/2/2018 Published 5/7/2020	16/178904
Dell Products L.P.	Intelligent Reporting Platform	11/2/2018 Published 5/7/2020	16/178832
Dell Products L.P.	Physical Layer Transceiver Ability Configuration System	11/2/2018 Published 5/7/2020	16/179527
Dell Products L.P.	Activity-Light-Based Parameter Reporting System	11/2/2018 Published 5/7/2020	16/179397
Dell Products L.P.	Systems And Methods For Providing Continuous Memory Redundancy, Availability, And Serviceability Using Dynamic Address Space Mirroring	11/2/2018 Published 5/7/2020	16/178823

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0976

Owner	Title	Date	Application No.
Dell Products L.P.	Hyper-Converged Infrastructure (Hci) Log System	11/2/2018 Published 5/7/2020	16/179499
Dell Products L.P.	Message Queue Architectures Framework Converter	11/2/2018 Issued 3/3/2020	16/179386 Patent No. 10579449
Dell Products L.P.	System And Method To Create A Highly Available Quorum For Clustered Solutions	11/1/2018 Published 5/7/2020	16/177922
Dell Products L.P.	Software Update System	11/1/2018 Published 5/7/2020	16/178355
Dell Products L.P.	Blockchain-Based Software Compliance System	11/1/2018 Published 5/7/2020	16/178030
Dell Products L.P.	Blockchain-Based Secure Customized Catalog System	11/1/2018 Published 5/7/2020	16/178229
Dell Products L.P.	System and Method of Utilizing Different Memory Media with a Device	11/1/2018 Issued 4/14/2020	16/177657 Patent No. 10621118
Dell Products L.P.	Adaptive Power Management For Non-Chiral Auxiliary Wireless Power Modules	11/1/2018 Published 5/7/2020	16/177699
Dell Products L.P.	Method Of Storage Allocation, Electronic Device, Storage System And Computer Program Product	11/1/2018 Issued 4/21/2020	16/177736 Patent No. 10628071
Dell Products L.P.	Detecting Cashback And Other Related Reimbursement Frauds Using Blockchain Technology	10/31/2018 Published 4/30/2020	16/176307
EMC IP Holding Company	Global Expert Reviews Method	10/31/2018 Published 4/30/2020	16/175943
Dell Products L.P.	Forecasting A Quality Of A Software Release Using Machine Learning	10/31/2018 Published 4/30/2020	16/176929
Dell Products L.P.	Customer Based Real-Time Autonomous Dynamic Product Creation And Recommendation System Using AI	10/31/2018 Published 4/30/2020	16/175998
Dell Products L.P.	Remote Access Controller Support System	10/31/2018 Published 4/30/2020	16/176713
Dell Products L.P.	Remote Access Controller Support Registration System	10/31/2018 Published 4/30/2020	16/176754
Dell Products L.P.	Simultaneous Localization And Mapping (Slam) Compensation For Gesture Recognition	10/31/2018 Published 4/30/2020	16/177081

[Schedule I to Patent Security Agreement]

Owner	Title	Date	Application No.
	In Virtual, Augmented, And Mixed Reality (XR) Applications		
Dell Products L.P.	Method and Apparatus to Control Power Assist Unit	10/31/2018 Published 4/30/2020	16/175830
Dell Products L.P.	Method and Apparatus for Providing Peak Optimized Power Supply Unit	10/31/2018 Published 4/30/2020	16/175831
Dell Products L.P.	Method and Apparatus to Distribute Current Indicator to Multiple End-Points	10/31/2018 Published 4/30/2020	16/175832
Dell Products L.P.	Security Profiling of System Firmware and Applications from an OOB Appliance at a Differentiated Trust Boundary	10/31/2018 Published 4/30/2020	16/176096
Dell Products L.P.	Touch Input Correction For Multi-Form Factor Information Handling System (IHS)	10/31/2018 Issued 3/17/2020	16/176151 Patent No. 10592051
Dell Products L.P.	Interposer Systems For Information Handling Systems	10/31/2018 Published 4/30/2020	16/176426
EMC IP Holding Company LLC	Integrator For A Storage Device, Corresponding Storage Device And Method Of Manufacturing The Same	10/26/2018 Issued 4/28/2020	16/171958 Patent No. 10635320
EMC IP Holding Company LLC	Fixing Device For Double Sided Heat Sink And Associated Heat Dissipating System	10/26/2018 Issued 2/25/2020	16/172081 Patent No. 10571207
Dell Products, L.P.	Enabling Software Sensor Power Operation Requests Via Baseboard Management Controller (BMC)	10/25/2018 Published 4/30/2020	16/171329
Dell Products, L.P.	Prediction Of Power Shutdown And Outage Incidents	10/25/2018 Published 4/30/2020	16/171332
Dell Products, L.P.	System and Method of Managing an Intelligent Peripheral	10/25/2018 Published 4/30/2020	16/171352
Dell Products, L.P.	Method and Apparatus for Redundant Array of Independent Drives Parity Quality of Service Improvements	10/25/2018 Published 4/30/2020	16/171350
Dell Products, L.P.	System And Method For Managing, Resetting And Diagnosing Failures Of A Device Management Bus	10/25/2018 Published 4/30/2020	16/171113
Dell Products, L.P.	System And Method To Recover Fpga Firmware Over A Sideband Interface	10/25/2018 Published 4/30/2020	16/171168
Dell Products, L.P.	System And Method To Secure Fpga Card Debug Ports	10/25/2018 Published 4/30/2020	16/171215

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0978

Owner	Title	Date	Application No.
Dell Products, L.P.	System And Method For Chassis-Based Virtual Storage Drive Configuration	10/25/2018 Published 4/30/2020	16/170290
Dell Products, L.P.	System And Method For Recovery Of Sideband Interfaces For Controllers	10/25/2018 Published 4/30/2020	16/170357
Dell Products, L.P.	Software Filtering Of Redundant Sideband Device Management Bus Communications	10/25/2018 Issued 3/31/2020	16/170413 Patent No. 10606784
Dell Products, L.P.	Information Handling System Battery Charge Management In A Dynamic Discharge Environment	10/25/2018 Published 4/30/2020	16/170430
Dell Products, L.P.	Method And System To Determine Power Values Of A Battery	10/25/2018 Published 4/30/2020	16/171091
Dell Products, L.P.	Device Management Messaging Protocol Proxy	10/24/2018 Published 4/30/2020	16/169727
Dell Products, L.P.	Predictive Simultaneous Localization And Mapping System Using Prior User Session Positional Information	10/23/2018 Published 4/23/2020	16/168165
Dell Products, L.P.	System And Method For Machine Learning Applied To In-Band To Out-Of-Band Communications Management	10/31/2018 Published 4/30/2020	16/176998
Dell Products, L.P.	System And Method Of Providing Information To A Device	10/31/2018 Published 4/30/2020	16/176378
EMC IP Holding Company LLC	Change Governance Using Blockchain	10/30/2018 Published 4/30/2020	16/175200
Dell Products, L.P.	Method and Apparatus to Provide Platform Power Peak Limiting based on Charge of Power Assist Unit	10/30/2018 Published 4/30/2020	16/175813
Dell Products, L.P.	Method and Apparatus for Providing High Bandwidth Capacitor Circuit in Power Assist Unit	10/30/2018 Published 4/30/2020	16/175824
Dell Products, L.P.	Apparatus and Method for Providing Smooth Power-On Operation with Power Assist Unit	10/30/2018 Published 4/30/2020	16/175827
Dell Products, L.P.	Method and Apparatus for Extending Power Hold-Up with Power Assist Unit	10/30/2018 Published 4/30/2020	16/175828
Dell Products, L.P.	Method And System For Head Mounted Display Infrared Emitter Brightness Optimization Based On Image Saturation	10/30/2018 Published 4/30/2020	16/175516
Dell Products, L.P.	Dual Inline Memory Provisioning And Reliability, Availability, And Serviceability	10/30/2018 Published 4/30/2020	16/175555

[Schedule I to Patent Security Agreement]

PATENT
REEL: 052771 FRAME: 0979

Owner	Title	Date	Application No.
	Enablement Based On Post Package Repair History		
Dell Products, L.P.	Circuit With Sensor To Monitor And Track A Container	10/29/2018 Published 4/30/2020	16/173045
EMC IP Holding Company LLC	Automated Design Testing Through Deep Learning	10/29/2018 Published 4/30/2020	16/172991
Dell Products, L.P.	Multi-Form Factor Information Handling System (Ihs) With Automatically Reconfigurable Palm Rejection	10/29/2018 Published 4/30/2020	16/173240
EMC IP Holding Company LLC	Method, Device And Computer Program Product For Flushing Metadata In Multi-Core System	10/29/2018 Issued 3/31/2020	16/173131 Patent No. 10606757
Dell Products, L.P.	System And Method To Identify Critical FPGA Card Sensors	10/26/2018 Published 4/30/2020	16/171798
Dell Products, L.P.	Microburst Visibility System	10/26/2018 Published 4/30/2020	16/172521
Dell Products, L.P.	Connector Cooling And Status Indicator System	10/26/2018 Published 4/30/2020	16/172474

[Schedule I to Patent Security Agreement]