

PATENT ASSIGNMENT COVER SHEET

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Stylesheet Version v1.2

EPAS ID: PAT5889199

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	SECURITY AGREEMENT

CONVEYING PARTY DATA

Name	Execution Date
DELL PRODUCTS L.P.	12/30/2019
EMC IP HOLDING COMPANY LLC	12/30/2019
WYSE TECHNOLOGY L.L.C.	12/30/2019
SECUREWORKS CORP.	12/30/2019
EMC CORPORATION	12/30/2019

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: 924

Property Type	Number
Patent Number:	10459815
Patent Number:	10459812
Patent Number:	10459676
Patent Number:	10459985
Patent Number:	10454497
Patent Number:	10452135
Patent Number:	10452109
Patent Number:	10444815
Patent Number:	10447800
Patent Number:	10437270
Patent Number:	10437303
Patent Number:	10437208
Patent Number:	10439976
Patent Number:	10440001
Patent Number:	10429885

PATENT

Property Type	Number
Patent Number:	10430371
Patent Number:	10432007
Patent Number:	10433465
Patent Number:	10429901
Patent Number:	10430366
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Patent Number:	10430251
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Patent Number:	10419239
Patent Number:	10416734
Patent Number:	10419214
Patent Number:	10409940
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Patent Number:	10405461
Patent Number:	10405357
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Patent Number:	10395037
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Patent Number:	10397241
Patent Number:	10395039
Patent Number:	10394310
Patent Number:	10395340

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Patent Number:	10387261
Patent Number:	10390462
Patent Number:	10387050
Patent Number:	10389655
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Patent Number:	D855611
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Patent Number:	10372403
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Patent Number:	10374946
Patent Number:	10462012
Patent Number:	10459917
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Patent Number:	10452464
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Patent Number:	10452643
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Patent Number:	10454751
Patent Number:	10452619

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Patent Number:	10430220
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Patent Number:	10430283
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Patent Number:	10387369
Patent Number:	10379771
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Application Number:	16562187
Application Number:	16562102
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Application Number:	16539252
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Application Number:	16575475
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Application Number:	16572006
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Application Number:	16569686
Application Number:	16569692
Application Number:	16570890
Application Number:	16570757
Application Number:	16570690
Application Number:	16570657
Application Number:	16570974
Application Number:	16570963
Application Number:	16568576
Application Number:	16568636
Application Number:	16569094

Property Type	Number
Application Number:	16569130
Application Number:	16569048
Application Number:	16567538
Application Number:	16567026
Application Number:	16565816
Application Number:	16565925
Application Number:	16564466
Application Number:	16564299
Application Number:	16563406
Application Number:	16563417
Application Number:	16563389
Application Number:	16561221
Application Number:	16561073
Application Number:	16561406
Application Number:	16562265
Application Number:	16562190
Application Number:	16562160
Application Number:	16560928
Application Number:	16560926
Application Number:	16560955
Application Number:	16558887
Application Number:	16558606
Application Number:	16558562
Application Number:	16558098
Application Number:	16558097
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Application Number:	16557952
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Property Type	Number
Application Number:	16552026
Application Number:	16552558
Application Number:	16552658
Application Number:	16552251
Application Number:	16550737
Application Number:	16549533
Application Number:	16548339
Application Number:	16547768
Application Number:	16547179
Application Number:	16547121
Application Number:	16547346
Application Number:	16546863
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Application Number:	16539568
Application Number:	16537896
Application Number:	16536599
Application Number:	16537117
Application Number:	16535638
Application Number:	16534597
Application Number:	16533934
Application Number:	16533372
Application Number:	16531923
Application Number:	16531393
Application Number:	16599266
Application Number:	16528286

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.

Phone: 8007130755
Email: james.murray@wolterskluwer.com, ECarrera@cahill.com
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Address Line 1: 4400 EASTON COMMONS WAY
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:	12/31/2019
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Total Attachments: 55

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PATENT SECURITY AGREEMENT dated as of December 30, 2019 (this "Agreement"), among Dell Products L.P., EMC IP Holding Company LLC, Wyse Technology L.L.C., SecureWorks Corp. and EMC Corporation (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

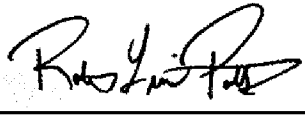
this Agreement by facsimile or other electronic transmission shall be effective as delivery of a manually signed counterpart of this Agreement.

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

[Remainder of this page intentionally left blank]

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

EMC Corporation

By: 

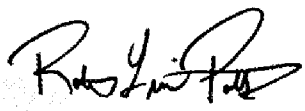
Name: Robert L. Potts

Title: Senior Vice President and Assistant
Secretary

[Signature Page to Patent Security Agreement (Credit)]

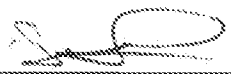
IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement as of the day and year first above written.

Dell Products L.P.
EMC IP Holding Company LLC
Wyse Technology L.L.C.
SecureWorks Corp.

By: 
Name: Robert L. Potts
Title: Senior Vice President and Assistant
Secretary


[Signature Page to Patent Security Agreement (Credit)]

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

By: _____

Name: Judith E. Smith

Title: Authorized Signatory

By: _____

Name: Emerson Almeida

Title: Authorized Signatory

SCHEDULE I**Granted U.S. Patents**

Owner	Title	Granted Date	Patent Number
Dell Products L.P.	Method and System for Predicting Storage Device Failures	10/29/2019	10459815
Dell Products L.P.	Seamless Method for Booting from a Degraded Software RAID Volume on UEFI System	10/29/2019	10459812
Dell Products L.P.	DYNAMIC USER INTERFACE FOR MULTIPLE SHARED DISPLAYS IN AN ELECTRONIC COLLABORATION SETTING	10/29/2019	10459676
Dell Products L.P.	MANAGING BEHAVIOR IN A VIRTUAL COLLABORATION SESSION	10/29/2019	10459985
Dell Products L.P.	Reducing A Size of Multiple Data Sets	10/22/2019	10454497
Dell Products L.P.	Display Device Viewing Angle Compensation System	10/22/2019	10452135
Dell Products L.P.	Distributed Cooling System with Adaptive Cooling Profile and Method Therefor	10/22/2019	10452109
Dell Products L.P.	VARIABLE BATTERY POWER OUTPUT FOR HIGH RESOLUTION DISPLAY PANELS	10/15/2019	10444815
Dell Products L.P.	Network Cache Deduplication Analytics Based Compute Cluster Load Balancer	10/15/2019	10447800
Dell Products L.P.	SYSTEMS AND METHODS FOR REPORTING OF EXCESSIVE VIBRATION CONDITIONS IN A STORAGE RESOURCE	10/8/2019	10437270
Dell Products L.P.	SYSTEMS AND METHODS FOR CHASSIS-LEVEL VIEW OF INFORMATION HANDLING SYSTEM POWER CAPPING	10/8/2019	10437303
Dell Products L.P.	Systems for Flexible and Localized Additive Manufacturing	10/8/2019	10437208
Dell Products L.P.	Workflow to Generate Metadata for New and Updated Products and Augment Short Message System Content	10/8/2019	10439976
Dell Products L.P.	Method to Securely Authenticate Management Server Over Un-Encrypted Remote Console Connection	10/8/2019	10440001
Dell Products L.P.	Leaned Axis Asynchronous drop hinge with integrated support fulcrum	10/1/2019	10429885
Dell Products L.P.	ACCELERATING REDIRECTED USB DEVICES THAT PERFORM BULK TRANSFERS	10/1/2019	10,430,371
Dell Products L.P.	Circuits, Systems And Methods For Balancing Power For System Load Components	10/1/2019	10432007
Dell Products L.P.	CHASSIS EXTERNAL WALL LIQUID COOLING SYSTEM	10/1/2019	10433465

[Schedule I to Patent Security Agreement]

PATENT
REEL: 051449 FRAME: 0760

Owner	Title	Granted Date	Patent Number
Dell Products L.P.	CARGO GEOFENCING USING A VEHICLE GATEWAY	9/3/2019	10402772
Dell Products L.P.	Information Handling System Ceramic Chassis	9/3/2019	10401910
Dell Products L.P.	SYSTEMS AND METHODS FOR FAN PERFORMANCE-BASED SCALING OF THERMAL CONTROL PARAMETERS	9/3/2019	10405461
Dell Products L.P.	METHOD AND APPARATUS FOR SMART VEHICLE GATEWAY MULTI-HOP NETWORKED COMMUNICATION USING CONTEXT AWARE RADIO COMMUNICATION MANAGEMENT	9/3/2019	10405357
Dell Products L.P.	Liquid-Vapor Phase Change Thermal Interface Material	9/3/2019	10399190
Dell Products L.P.	Multidimensional Barcodes For Information Handling System Service Information	9/3/2019	10402781
Dell Products L.P.	MANAGING ALT-MODE INTERFACES OF A USB TYPE-C DEVICE	8/27/2019	10,394,722
Dell Products L.P.	SYSTEM AND METHOD FOR INTEGRATING AND ADAPTING HYBRID ANTENNA APERTURE WITHIN FULLY METALLIC CHASSIS BASED ON CHASSIS OPERATING CONFIGURATION	8/27/2019	10396431
Dell Products L.P.	System and Method for Preserving Data during an Information Handling System Event using Information Handling System Memory	8/27/2019	10395037
Dell Products L.P.	Spanning Tree Protocol, Enabled N-Node Link Aggregation System	8/27/2019	10397099
Dell Products L.P.	System and Method for Device Assembly based on Component Characteristics Stored with the Components	8/27/2019	10394725
Dell Products L.P.	SYSTEMS AND METHODS FOR INTEGRATION OF DIRECTORY SERVICE WITH MANAGEMENT CONTROLLERS	8/27/2019	10397241
Dell Products L.P.	Customer-Owned Trust of Device Firmware	8/27/2019	10395039
Dell Products L.P.	System and Method for Sleeping States Using Non-Volatile Memory Components	8/27/2019	10394310
Dell Products L.P.	SYSTEM AND METHOD OF GENERATING A TEMPERATURE MAP	8/27/2019	10395340
Dell Products L.P.	SYSTEM AND METHOD TO CAPTURE STORED DATA FOLLOWING SYSTEM CRASH	8/20/2019	10387261
Dell Products L.P.	Server Chassis with Independent Orthogonal Airflow Layout	8/20/2019	10390462
Dell Products L.P.	System and Method for Providing Accessibility for Access Controller Storage Media.	8/20/2019	10387050
Dell Products L.P.	EVENT-BASED PACKET MIRRORING	8/20/2019	10389655

[Schedule I to Patent Security Agreement]

PATENT
REEL: 051449 FRAME: 0761

Owner	Title	Granted Date	Patent Number
Dell Products L.P.	Backflow Prevention for Computing Devices	8/20/2019	10390463
Dell Products L.P.	System and Method for Entitling Digital Assets	8/20/2019	10387927
Dell Products L.P.	Methods and Apparatus for Visualization of Contextual Code Execution	8/13/2019	10379849
Dell Products L.P.	Using A Light Source to Temporarily Saturate a Camera Sensor of a Camera Connected to a Computer	8/13/2019	10382660
Dell Products L.P.	SYSTEMS AND METHODS FOR PREVENTING AIRFLOW RECIRCULATION IN AN INFORMATION HANDLING SYSTEM	8/13/2019	10383256
Dell Products L.P.	System and Method for Production Testing of an Application	8/13/2019	10380005
Dell Products L.P.	Fabric Independent PCIe Cluster Manager	8/13/2019	10380041
Dell Products L.P.	Display Device	8/6/2019	D855,611
Dell Products L.P.	All-In-One Information Handling System Stand	8/6/2019	D855,619
Dell Products L.P.	Multi-User Display Collaboration System	8/6/2019	10372403
Dell Products L.P.	System and Method for Normalization of GPU Workloads Based on Real-Time GPU Data	8/6/2019	10373283
Dell Products L.P.	Information Handling System Multiple Port Power Source Management	8/6/2019	10372181
Dell Products L.P.	System and Method for Minimizing Broadcast Communications When Allocating Network Addresses	8/6/2019	10375014
Dell Products L.P.	Centralized Wireless Network Management System	8/6/2019	10374946
EMC IP Holding Company LLC	SEAMLESS DATA MIGRATION TO THE CLOUD	10/29/2019	10462012
EMC IP Holding Company LLC	PLUGGABLE STORAGE SYSTEM FOR DISTRIBUTED FILE SYSTEMS	10/29/2019	10459917
EMC IP Holding Company LLC	DEBUGGING USING DUAL CONTAINER IMAGES	10/29/2019	10459823
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR AUTOMATIC REPLICATION DATA VERIFICATION AND RECOVERY REPLICATION DATA VERIFICATION AND RECOVERY	10/29/2019	10459632
EMC IP Holding Company LLC	REGISTRY MANAGEMENT SYSTEM AND METHOD	10/29/2019	10,459,734
EMC IP Holding Company LLC	RETENTION POLICIES FOR UNSCHEDULED REPLICAS IN BACKUP, SNAPSHOTS, AND REMOTE REPLICATION	10/29/2019	10459883
EMC IP Holding Company LLC	CHANGE RATE ESTIMATION	10/29/2019	10459648

[Schedule I to Patent Security Agreement]

PATENT
REEL: 051449 FRAME: 0762

Owner	Title	Granted Date	Patent Number
EMC IP Holding Company LLC	SERVICE LEVEL BASED PRIORITY SCHEDULER FOR MULTI-TENANCY COMPUTING SYSTEMS	10/29/2019	10462070
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR ENCRYPTION WITH VIEWER IDENTITY-AND CONTENT ADDRESS-BASED IDENTITY PROTECTION	10/29/2019	10462105
EMC IP Holding Company LLC	PROBABILISTIC CLASSIFYING SYSTEM AND METHOD FOR A DISTRIBUTED COMPUTING ENVIRONMENT	10/29/2019	10462026
EMC IP Holding Company LLC	TECHNIQUES FOR IMPROVING STORAGE SPACE EFFICIENCY WITH VARIABLE COMPRESSION SIZE UNIT	10/22/2019	10452616
EMC IP Holding Company LLC	CONTINUOUS METADATA FORMATTING	10/22/2019	10452606
EMC IP Holding Company LLC	METHOD, APPARATUS AND COMPUTER PROGRAM PRODUCT FOR IDENTIFYING EXCESSIVE ACCESS RIGHTS GRANTED TO USERS	10/22/2019	10454939
EMC IP Holding Company LLC	AUTOMATIC HUMAN CONFIGURATION ERROR DETECTION FOR REOCCURRING EVENTS	10/22/2019	10452464
EMC IP Holding Company LLC	CLUSTERING COMPUTER SECURITY ATTACKS BY THREAT ACTOR BASED ON ATTACK FEATURES	10/22/2019	10454967
EMC IP Holding Company LLC	SNAPSHOT CONSCIOUS INTERNAL FILE DATA MODIFICATION FOR NETWORK-ATTACHED STORAGE	10/22/2019	10452641
EMC IP Holding Company LLC	BULK FILE VERIFICATION	10/22/2019	10452643
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR ASYMMETRIC RAID	10/22/2019	10452306
EMC IP Holding Company LLC	CLUSTER FILE SYSTEM WITH A BURST BUFFER APPLIANCE FOR CONTROLLING MOVEMENT OF DATA AMONG STORAGE TIERS	10/22/2019	10454751
EMC IP Holding Company LLC	DECREASING A SITE CACHE CAPACITY IN A DISTRIBUTED FILE SYSTEM	10/22/2019	10452619
EMC IP Holding Company LLC	INTEGRATION OF RESTORE SERVICE WITH DATA PROTECTION SYSTEM	10/15/2019	10445191
EMC IP Holding Company LLC	RECOMMENDING FEATURES FOR CONTENT PLANNING BASED ON ADVERTISER POLLING AND HISTORICAL AUDIENCE MEASUREMENTS	10/15/2019	10448120
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR SCALING OUT STORAGE DEVICES AND SCALED-OUT STORAGE DEVICES	10/15/2019	10444994

[Schedule I to Patent Security Agreement]

PATENT
REEL: 051449 FRAME: 0763

Owner	Title	Granted Date	Patent Number
EMC IP Holding Company LLC	SELF-ORGANIZING DISTRIBUTED TASK COORDINATION FOR AD-HOC COMPUTING ENVIRONMENT	10/15/2019	10448454
EMC IP Holding Company LLC	READING FROM A SITE CACHE IN A DISTRIBUTED FILE SYSTEM	10/15/2019	10445296
EMC IP Holding Company LLC	SNAPSHOT MECHANISM	10/15/2019	10445184
EMC IP Holding Company LLC	METHOD AND SYSTEM TO RECLAIM DISK SPACE BY DELETING SAVE SETS OF A BACKUP	10/15/2019	10445183
EMC IP Holding Company LLC	ASSOCIATING A GUEST APPLICATION WITHIN A VIRTUAL MACHINE TO CREATE DEPENDENCIES IN BACKUP/RESTORE POLICY	10/15/2019	10445186
EMC IP Holding Company LLC	CUSTOMIZED VISUALIZATIONS FOR DATA CENTERS	10/15/2019	10447546
EMC IP Holding Company LLC	IN-PLACE RESUMABLE PARTIAL DECOMPRESSION	10/15/2019	10444991
EMC IP Holding Company LLC	CONVERGED INFRASTRUCTURE	10/15/2019	10447534
EMC IP Holding Company LLC	DISTRIBUTED CONTEXTUAL ANALYTICS	10/15/2019	10445339
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR AUTOMATIC CLEANUP OF DISFAVORED CONTENT	10/15/2019	10445289
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR PROVIDING COMPUTING RESOURCES	10/15/2019	10447799
EMC IP Holding Company LLC	UNIFIED DATAPATH PROCESSING WITH VIRTUALIZED STORAGE PROCESSORS	10/15/2019	10447524
EMC IP Holding Company LLC	A GENERAL FRAMEWORK FOR CROSS-VALIDATION OF MACHINE LEARNING ALGORITHMS USING SQL ON DISTRIBUTED SYSTEMS	10/15/2019	10445657
EMC IP Holding Company LLC	IDENTIFYING INSIDER-THREAT SECURITY INCIDENTS VIA RECURSIVE ANOMALY DETECTION OF USER BEHAVIOR	10/8/2019	10437831
EMC IP Holding Company LLC	OVERWRITING COMPRESSED DATA EXTENTS	10/8/2019	10437474
EMC IP Holding Company LLC	DATA STORAGE SYSTEM MANAGEMENT WITH PROMOTION OF TASK-LEVEL RESOURCE IDENTIFIERS TO HIGHER OBJECTS	10/8/2019	10437633
EMC IP Holding Company LLC	EFFICIENT DEDUPLICATION OF LOGICAL UNITS	10/8/2019	10437502
EMC IP Holding Company LLC	MANAGING STORAGE ARRAY CONFIGURATION	10/8/2019	10437485
EMC IP Holding Company LLC	VIRTUAL-ENTERPRISE CLOUD COMPUTING SYSTEM	10/8/2019	10439954

[Schedule I to Patent Security Agreement]

PATENT
REEL: 051449 FRAME: 0764

Owner	Title	Granted Date	Patent Number
EMC IP Holding Company LLC	ACTIVE-ACTIVE HOST ENVIRONMENT	10/8/2019	10437497
EMC IP Holding Company LLC	SEMI-AUTOMATED CLUSTERED CASE RESOLUTION SYSTEM	10/8/2019	10438695
EMC IP Holding Company LLC	INDEPENDENT AND NESTED HYPERVISORS IN A STORAGE SYSTEM ENVIRONMENT	10/8/2019	10437622
EMC IP Holding Company LLC	EFFICIENT RESOURCE UTILIZATION FOR CROSS-SITE DEDUPLICATION	10/8/2019	10437682
EMC IP Holding Company LLC	RECOVER STORAGE ARRAY USING REMOTE DEDUPLICATION DEVICE	10/8/2019	10437783
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR ENABLING CUSTOMIZED CONTROL TO APPLICATIONS AND USERS USING SMART TAGS	10/8/2019	10439897
EMC IP Holding Company LLC	CACHE BASED RECOVERY OF CORRUPTED OR MISSING DATA	10/1/2019	10430273
EMC IP Holding Company LLC	REDUCING INDEX OPERATIONS IN A CACHE	10/1/2019	10430337
EMC IP Holding Company LLC	MANAGING INLINE DATA COMPRESSION IN STORAGE SYSTEMS	10/1/2019	10430376
EMC IP Holding Company LLC	LIMITED DEDUPLICATION SCOPE FOR DISTRIBUTED FILE SYSTEMS	10/1/2019	10430385
EMC IP Holding Company LLC	PRIORITIZED BACKUP SEGMENTING	10/1/2019	10430295
EMC IP Holding Company LLC	DEADLOCK-FREE LOCKING FOR CONSISTENT AND CONCURRENT SERVER-SIDE FILE OPERATIONS IN FILE SYSTEMS	10/1/2019	10430389
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR SCOPE-SENSITIVE LOADING OF SOFTWARE RESOURCES	10/1/2019	10432549
EMC IP Holding Company LLC	GLOBAL DATA DEDUPLICATION ACROSS MULTIPLE DISTRIBUTED FILE SYSTEMS	10/1/2019	10430384
EMC IP Holding Company LLC	IMAGE RECOVERY FROM VOLUME IMAGE FILES	10/1/2019	10430294
EMC IP Holding Company LLC	STORAGE SYSTEM WITH MACHINE LEARNING BASED SKEW PREDICTION	10/1/2019	10430723
EMC IP Holding Company LLC	BACKUP CLIENT AGENT	10/1/2019	10430293
EMC IP Holding Company LLC	VIRTUAL DEVICES AS PROTOCOL NEUTRAL COMMUNICATIONS MEDIATORS	10/1/2019	10430220
EMC IP Holding Company LLC	SCHEDULING COMPUTATIONAL TASKS AMONG MULTIPLE CLASSES OF STORAGE RESOURCES BASED ON JOB CLASSIFICATION	10/1/2019	10430233
EMC IP Holding Company LLC	EFFICIENTLY ESTIMATING DATA COMPRESSION RATIO OF AD-HOC SET OF FILES IN PROTECTION STORAGE FILESYSTEM WITH STREAM SEGMENTATION AND DATA DEDUPLICATION	10/1/2019	10430383

[Schedule I to Patent Security Agreement]

Owner	Title	Granted Date	Patent Number
EMC IP Holding Company LLC	INTELLIGENT DATA DISSEMINATION	10/1/2019	10430283
EMC IP Holding Company LLC	BLUEPRINT-DRIVEN ENVIRONMENT TEMPLATE CREATION IN A VIRTUAL INFRASTRUCTURE	10/1/2019	10430247
EMC IP Holding Company LLC	FILEKEY ACCESS TO DATA	10/1/2019	10430599
EMC IP Holding Company LLC	AUTOMATIC SELF-CORRECTION IN A CONFIGURATION COMPLIANCE COMPUTING ENVIRONMENT	9/24/2019	10423427
EMC IP Holding Company LLC	TEMPORAL QUERIES ON SECONDARY STORAGE	9/24/2019	10423634
EMC IP Holding Company LLC	METHODS AND APPARATUS FOR DETECTING SUSPICIOUS NETWORK ACTIVITY	9/24/2019	10425432
EMC IP Holding Company LLC	EFFICIENT CACHING AND CONFIGURATION FOR RETRIEVING DATA FROM A STORAGE SYSTEM	9/24/2019	10423583
EMC IP Holding Company LLC	DATA STORAGE SYSTEM EMPLOYING FILE SPACE RECLAIM WITHOUT DATA MOVEMENT	9/24/2019	10423581
EMC IP Holding Company LLC	METHOD TO REPAIR THE LOCALITY OF THE NAMESPACE ON DEDUPLICATION STORAGE FILE SYSTEM	9/24/2019	10423340
EMC IP Holding Company LLC	FAST REBUILD USING LAYERED RAID	9/24/2019	10423506
EMC IP Holding Company LLC	ENRICHING COMPROMISED DATA USING CORPORATE AND SOCIAL NETWORK INFERRED CONTENT	9/24/2019	10425438
EMC IP Holding Company LLC	REPAIRING A SITE CACHE IN A DISTRIBUTED FILE SYSTEM	9/24/2019	10423507
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR RECOVERING STORAGE OBJECT RECORDS IN SOLID STATE MEMORY	9/17/2019	10416904
EMC IP Holding Company LLC	SYSTEMS, METHODS, AND COMPUTER READABLE MEDIA FOR UTILIZING A PLATFORM CONTROLLER DEVICE	9/17/2019	10417007
EMC IP Holding Company LLC	CONFIGURATION SYSTEM AND METHOD FOR INDIVIDUAL HIERARCHALLY MODELED SUB-SYSTEMS OF AN INTEGRATED COMPUTING SYSTEM	9/17/2019	10417013
EMC IP Holding Company LLC	METHODS, SYSTEMS, AND COMPUTER READABLE MEDIUMS FOR TEMPLATE-BASED PROVISIONING OF DISTRIBUTED COMPUTING SYSTEMS	9/17/2019	10419283
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR COMPARING COMPUTING RESOURCE OFFERINGS	9/17/2019	10417593

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PATENT
REEL: 051449 FRAME: 0766

Owner	Title	Granted Date	Patent Number
EMC IP Holding Company LLC	SYSTEM AND METHOD TO RESOLVE LIBRARY PATHS IN A DISTRIBUTED CLUSTER ENVIRONMENT	9/17/2019	10417132
EMC IP Holding Company LLC	AUTOMATED ANALYSIS SYSTEM AND METHOD	9/17/2019	10416982
EMC IP Holding Company LLC	ARCHITECTURE FOR A CONVERGED COMPUTE AND FILE SYSTEM WITHIN NETWORK-ATTACHED STORAGE CLUSTERS	9/17/2019	10419537
EMC IP Holding Company LLC	SECURITY FOR NETWORK COMPUTING ENVIRONMENT USING CENTRALIZED SECURITY SYSTEM	9/17/2019	10419931
EMC IP Holding Company LLC	RESILIENT BACKUPS FOR LARGE HYPER-V CLUSTER SHARED VOLUME ENVIRONMENTS	9/17/2019	10417099
EMC IP Holding Company LLC	SITE CACHE FOR A DISTRIBUTED FILE SYSTEM	9/17/2019	10417194
EMC IP Holding Company LLC	FAST RECOVERY OF BACKUP CLOUD GATEWAY FOLLOWING CRASH WITHOUT GARBAGE COLLECTION	9/17/2019	10417180
EMC IP Holding Company LLC	VIRTUAL MACHINE PROXY SERVER FOR HYPER-V IMAGE BACKUP AND RECOVERY	9/17/2019	10,417,027
EMC IP Holding Company LLC	TRANSMITTING FILESYSTEM CHANGES OVER A NETWORK BACKGROUND OF THE INVENTION	9/17/2019	10417191
EMC IP Holding Company LLC	MULTIPROCESSOR SYSTEM WITH INDEPENDENT DIRECT ACCESS TO BULK SOLID STATE MEMORY RESOURCES	9/10/2019	10410693
EMC IP Holding Company LLC	WRITE TAGGING FOR SELECTIVE AVOIDANCE OF INLINE COMPRESSION	9/10/2019	10409496
EMC IP Holding Company LLC	DATA OPTIMIZATION DECISION CONTROL BASED ON FILE SYSTEM METADATA	9/10/2019	10409495
EMC IP Holding Company LLC	AUTOMATIC COMBINATION OF SUB-PROCESS SIMULATION RESULTS WITH DATASET SELECTION BASED ON FITNESS UNDER SPECIFIC SCENARIOS	9/10/2019	10409931
EMC IP Holding Company LLC	SOFT-SWITCH IN STORAGE SYSTEM	9/10/2019	10409504
EMC IP Holding Company LLC	DATA SERVICES FOR SOFTWARE DEFINED STORAGE SYSTEM	9/10/2019	10409778
EMC IP Holding Company LLC	STATUS MONITORING SYSTEM AND METHOD	9/10/2019	10409703
EMC IP Holding Company LLC	HIERARCHICAL DATA CACHE OPTIMIZATION	9/10/2019	10409729
EMC IP Holding Company LLC	RANSOMWARE DETECTION IN A CONTINUOUS DATA PROTECTION ENVIRONMENT	9/10/2019	10409986

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PATENT
REEL: 051449 FRAME: 0767

Owner	Title	Granted Date	Patent Number
EMC IP Holding Company LLC	MANAGING REGISTRATION AND RESERVATION INFORMATION IN AN ACTIVE-ACTIVE CONFIGURATION	9/10/2019	10409838
EMC IP Holding Company LLC	AUTOMATED HOST DATA PROTECTION CONFIGURATION	9/10/2019	10409629
EMC IP Holding Company LLC	SPACE-EFFICIENT PERSISTENT BLOCK RESERVATION	9/10/2019	10409776
EMC IP Holding Company LLC	LINKING BACKUP FILES BASED ON DATA PARTITIONS	9/10/2019	10409691
EMC IP Holding Company LLC	MANAGING BACKING UP OF FILE SYSTEMS	9/10/2019	10409687
EMC IP Holding Company LLC	DATA ANALYTICS FOR THE INTERNET OF THINGS	9/10/2019	10411959
EMC IP Holding Company LLC	DATA ARCHIVING IN DATA STORAGE SYSTEM ENVIRONMENTS	9/10/2019	10409769
EMC IP Holding Company LLC	APPARATUS AND METHOD FOR SEARCHING INFORMATION	9/10/2019	10409871
EMC IP Holding Company LLC	DATA SERVICES FOR TIERED MEMORY	9/10/2019	10409920
EMC IP Holding Company LLC	PROVIDING AUTOMATIC SELF-SUPPORT RESPONSES	9/10/2019	10410219
EMC IP Holding Company LLC	AUTHENTICATED PATTERN MATCHING AND EXACT PATH QUERIES	9/10/2019	10409845
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR RAID VIRTUAL POOLING	9/10/2019	10409527
EMC IP Holding Company LLC	DATABASE SYSTEM AND METHODS FOR DOMAIN-TAILORED DETECTION OF OUTLIERS, PATTERNS, AND EVENTS IN DATA STREAMS	9/10/2019	10409817
EMC IP Holding Company LLC	DATABASE MIGRATION	9/10/2019	10409787
EMC IP Holding Company LLC	DATA TRANSFER IN A DATA PROTECTION SYSTEM	9/3/2019	10404705
EMC IP Holding Company LLC	TRACING GARBAGE COLLECTOR FOR SEARCH TREES UNDER MULTIVERSION CONCURRENCY CONTROL	9/3/2019	10402316
EMC IP Holding Company LLC	DATA SERVICE PROTECTION FOR CLOUD MANAGEMENT PLATFORMS	9/3/2019	10402090
EMC IP Holding Company LLC	METHOD FOR MERGE SORT BY REPRESENTATION	9/3/2019	10402164
EMC IP Holding Company LLC	USER INTERFACE DEVELOPMENT	9/3/2019	10402049
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR TENANT NETWORK IDENTITY-BASED AUTHENTICATION AND AUTHORIZATION FOR ADMINISTRATIVE ACCESS IN A PROTECTION STORAGE SYSTEMS	9/3/2019	10404702

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PATENT
REEL: 051449 FRAME: 0768

Owner	Title	Granted Date	Patent Number
EMC IP Holding Company LLC	ADAPTIVE ENSEMBLE WORKLOAD PREDICTION MODEL BASED ON MACHINE LEARNING ALGORITHMS	9/3/2019	10402733
EMC IP Holding Company LLC	SYSTEM AND METHOD OF SMART FRAMEWORK FOR TROUBLESHOOTING PERFORMANCE ISSUES	9/3/2019	10402059
EMC IP Holding Company LLC	MANAGING CONVERGED IT INFRASTRUCTURE WITH GENERIC OBJECT INSTANCES	8/27/2019	10394703
EMC IP Holding Company LLC	STATUS MONITORING SYSTEM AND METHOD	8/27/2019	10397087
EMC IP Holding Company LLC	A SCALABLE CLOUD HOSTED METADATA SERVICE	8/27/2019	10397185
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR CHOOSING AN OPTIMAL COMPRESSION ALGORITHM CONSIDERING RESOURCES	8/27/2019	10394453
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR CREATING A SHORT HASH HANDLE HIGHLY CORRELATED WITH A GLOBALLY-UNIQUE HASH SIGNATURE	8/27/2019	10396994
EMC IP Holding Company LLC	CLASSIFICATION AND IDENTIFICATION FROM RAW DATA WITHIN A MEMORY DOMAIN	8/27/2019	10394472
EMC IP Holding Company LLC	HIGH SPEED SNAPSHOTS MECHANISM	8/27/2019	10394658
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR GOVERNED REPLAY FOR COMPLIANCE APPLICATIONS	8/27/2019	10394793
EMC IP Holding Company LLC	INCREMENTAL DATA VALIDATION	8/27/2019	10394646
EMC IP Holding Company LLC	FILE DELETION DETECTION IN KEY VALUE DATABASES FOR VIRTUAL BACKUPS	8/27/2019	10394758
EMC IP Holding Company LLC	CASCADED DISCOVERY OF INFORMATION ENVIRONMENT	8/27/2019	10394849
EMC IP Holding Company LLC	TECHNIQUES FOR RATING SYSTEM HEALTH	8/20/2019	10387287
EMC IP Holding Company LLC	AUTOMATIC COMBINATION OF SUB-PROCESS SIMULATION RESULTS AND HETEROGENEOUS DATA SOURCES	8/20/2019	10387588
EMC IP Holding Company LLC	PRESERVING TEMPORAL LOCALITY WHILE MULTIPLEXING STREAMS IN A STREAM-INFORMED SEGMENT LAYOUT (SISL) SYSTEM	8/20/2019	10387425
EMC IP Holding Company LLC	DATABASE VIEWS FOR GRAPHS USING DYNAMIC SUBGRAPHS	8/20/2019	10387453
EMC IP Holding Company LLC	DATA MANAGEMENT USING AN OPEN STANDARD FILE SYSTEM INTERFACE TO A STORAGE GATEWAY	8/20/2019	10387381

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PATENT
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Owner	Title	Granted Date	Patent Number
EMC IP Holding Company LLC	FEDERATED BACK UP OF AVAILABILITY GROUPS	8/20/2019	10387262
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR SEMANTIC METADATA COMPRESSION IN A TWO-TIER STORAGE SYSTEM USING COPY-ON-WRITE	8/20/2019	10387384
EMC IP Holding Company LLC	INITIATING BACKUPS BASED ON DATA CHANGES	8/20/2019	10387264
EMC IP Holding Company LLC	MANAGING FILE DELETIONS OF FILES AND VERSIONS OF FILES IN STORAGE SYSTEMS	8/20/2019	10387369
EMC IP Holding Company LLC	SYSTEMS AND METHODS FOR POLICY DRIVEN STORAGE IN A HYPER-CONVERGENCE DATA CENTER	8/13/2019	10379771
EMC IP Holding Company LLC	PROCESSING PLATFORM WITH INDEPENDENT DEFINITION AND MUTUAL ENFORCEMENT OF OPERATIONAL AND APPLICATION POLICIES	8/13/2019	10382278
EMC IP Holding Company LLC	STATISTICS MANAGEMENT FOR SCALE-OUT STORAGE	8/13/2019	10379780
EMC IP Holding Company LLC	DE-DUPLICATING BACKUP FILES BASED ON DATA EVOLUTION	8/13/2019	10379962
EMC IP Holding Company LLC	OFFLOADED DELETE OPERATIONS	8/13/2019	10379743
EMC IP Holding Company LLC	AUTHENTICATION SYSTEM WITH SELECTIVE AUTHENTICATION METHOD	8/13/2019	10382418
EMC IP Holding Company LLC	BYPASSING BACKUP OPERATIONS FOR SPECIFIED DATABASE TYPES	8/13/2019	10379960
EMC IP Holding Company LLC	NETWORK SECURITY SYSTEM INCORPORATING ASSESSMENT OF ALTERNATIVE MOBILE APPLICATION MARKET SITES	8/13/2019	10382476
EMC IP Holding Company LLC	FINE-GRAINED SHARED MULTI-TENANT DE-DUPLICATION SYSTEM	8/13/2019	10380098
EMC IP Holding Company LLC	DYNAMICALLY COMPOSED COMPUTE NODES COMPRISING DISAGGREGATED COMPONENTS	8/13/2019	10382279
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR FEDERATED IDENTITY AND AUTHENTICATION SERVICES	8/13/2019	10382202
EMC IP Holding Company LLC	GEOLOCATION FOR CUSTOMER SUPPORT MOBILE APPLICATION	8/13/2019	10380515
EMC IP Holding Company LLC	ACCESSING RIGHTS-MANAGED CONTENT FROM CONTRAINED CONNECTIVITY DEVICES	8/13/2019	10380568
EMC IP Holding Company LLC	PROCESSING PLATFORM WITH METRIC MAPPING FOR INTEROPERABILITY OF MULTIPLE DISTINCT MODELS	8/6/2019	10372691
EMC IP Holding Company LLC	DATA-DRIVEN AUTOMATION MECHANISM FOR ANALYTICS WORKLOAD DISTRIBUTION	8/6/2019	10374968
EMC IP Holding Company LLC	LAYOUT INDEPENDENT CRYPTOGRAPHIC STAMP OF A DISTRIBUTED DATASET	8/6/2019	10374792

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PATENT
REEL: 051449 FRAME: 0770

Owner	Title	Granted Date	Patent Number
EMC IP Holding Company LLC	PROVIDING SECURE ACCESS TO DATA IN MOBILE DEVICES	8/6/2019	10372383
EMC IP Holding Company LLC	COVERY OF NODES	8/6/2019	10372556
EMC IP Holding Company LLC	THE METHOD TO OPTIMIZE REPLICATION OF VERSIONED FILES RESTORED FROM NETWORK OUTAGE	8/6/2019	10372683
EMC IP Holding Company LLC	CLOUD-BASED PLATFORM FOR SEMANTIC INDEXING OF WEB OBJECTS	8/6/2019	10372770
EMC IP Holding Company LLC	PARALLEL FILE RESTORATION FROM A SERIALIZED STORAGE DEVICE USING A NETWORK DATA MANAGEMENT PROTOCOL	8/6/2019	10372553
EMC IP Holding Company LLC	Verification and restore of replicated data using a cloud storing chunks of data and a plurality of hashes	8/6/2019	10372554
EMC IP Holding Company LLC	ANALYSIS SYSTEM AND METHOD FOR INTELLIGENT CUSTOMER SERVICE BASED ON COMMON SEQUENCE PATTERN	8/6/2019	10372523
EMC IP Holding Company LLC	PARALLEL STORAGE SYSTEM WITH BURST BUFFER APPLIANCE FOR STORAGE OF PARTITIONED KEY-VALUE STORE ACROSS A PLURALITY OF STORAGE TIERS	8/6/2019	10,375,164
EMC IP Holding Company LLC	PROVISIONING A COMPUTERIZED DEVICE WITH AN OPERATING SYSTEM	8/6/2019	10372463
EMC IP Holding Company LLC	SYSTEM AND METHOD TO DIAGNOSE APPLICATIONS BY ACCESSING LOG FILES ASSOCIATED WITH DIFFERENT SUBSYSTEMS OF A DATA CENTER VIA A COMMON INTERFACE	8/6/2019	10372595
EMC IP Holding Company LLC	DISTRIBUTED COMPUTING TASK MANAGEMEN SYSTEM AND METHOD	8/6/2019	10375161
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR PROCESSING SEARCH QUERIES USING PERMISSION DEFINITION TOKENS	7/23/2019	10360248
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR IDENTIFYING PROCESS USE ON STORAGE ARRAY RESOURCES	7/23/2019	10360085
EMC IP Holding Company LLC	STATUS MONITORING SYSTEM AND METHOD	7/2/2019	10339025
Wyse Technology L.L.C.	PROVIDING ACCESS TO A SMARTCARD WITHIN A REMOTE SESSION	10/29/2019	10,462,228
Wyse Technology L.L.C.	ENABLING REDIRECTION OF MASS STORAGE DEVICES OF ANY INTERFACE	9/10/2019	10,409,494
Wyse Technology L.L.C.	RENAMING A DIRECTORY THAT RESIDES ON A LAYERED VOLUME	9/10/2019	10,409,775
Wyse Technology L.L.C.	GATEWAY THAT ENABLES A BROWSER-BASED APPLICATION TO COMMUNICATE	8/13/2019	10,382,521

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PATENT
REEL: 051449 FRAME: 0771

Owner	Title	Granted Date	Patent Number
	WITH A SERVER-SIDE APPLICATION USING A NON-BROWSER-COMPATIBLE PROTOCOL		
EMC Corporation	METHOD AND SYSTEM FOR AIR CONTAMINATION ANALYSIS FOR FREE AIR COOLED DATA CENTERS	6/12/2018	9999160

U.S. Patent Applications

Owner	Title	Date	App. No.
Dell Products L.P.	Automatically Limiting Power Consumption by Devices Using Infrared or Radio Communications	11/1/2019	16/671729
Dell Products L.P.	STORAGE SYSTEM CAPACITY EXPANSION USING MIXED-CAPACITY STORAGE DEVICES	11/1/2019	16/671824
Dell Products L.P.	Using Thermal Energy, Kinetic Energy, or Both to Charge a Device	11/1/2019	16/671419
Dell Products L.P.	Automatically Providing Positional Information via Use of Distributed Sensor Arrays	11/1/2019	16/671694
Dell Products L.P.	System For Peering Container Clusters Running on Different Container Orchestration Systems	11/1/2019	16/671361
Dell Products L.P.	Method and Apparatus for Selective Fan Control in an Information Handling System	11/1/2019	16/671887
Dell Products L.P.	System and Method for System Level Power Recovery Sensor	11/1/2019	16/671714
Dell Products L.P.	System and Method for Targeted Efficient Logging of Memory Failures	11/1/2019	16/671851
Dell Products L.P.	MODIFICATION-FREQUENCY-BASED TIERED DATA STORAGE AND GARBAGE COLLECTION SYSTEM	11/1/2019	16/672071
Dell Products L.P.	NETWORK FABRIC STORAGE SYSTEM	11/1/2019	16/672029
Dell Products L.P.	POWER CONVERTER DEVICE HEALTH CHECK SYSTEM	11/1/2019	16/671660
Dell Products L.P.	COMPONENT THROTTLING POWER BACKUP DEVICE CHARGING SYSTEM	11/1/2019	16/671936
Dell Products L.P.	POWER CONSUMPTION/POWER BACKUP DEVICE-BASED RIDE-THROUGH SYSTEM	11/1/2019	16/671789
Dell Products L.P.	Driving video output on Pcie using built-in MGA core and AHB-to-PCI bridge	10/31/2019	16/669740
Dell Products L.P.	MULTI-FACTOR AUTHENTICATION IN VIRTUAL, AUGMENTED, AND MIXED REALITY (xR) APPLICATIONS	10/31/2019	16/669782
Dell Products L.P.	Adaptive Interrupts	10/31/2019	16/670528

Owner	Title	Date	App. No.
Dell Products L.P.	Prescriptive Analytics to assist users complete failed Credit Card transactions proactively in real-time	10/31/2019	16/670518
Dell Products L.P.	Device Manufacturing Cycle Time Reduction Using Machine Learning Techniques	10/31/2019	16/669667
Dell Products L.P.	Method and process for modernizing workspace and hardware lifecycle management in any enterprise productivity ecosystem	10/31/2019	16/670848
Dell Products L.P.	Endpoint Context Driven Dynamic Workspaces	10/31/2019	16/670796
Dell Products L.P.	Continuous Evaluation of Workspace Definition using endpoint context	10/31/2019	16/670734
Dell Products L.P.	Method of calculating the risk score of the environment	10/31/2019	16/671045
Dell Products L.P.	Dynamic micro-classification of data in motion across workspaces	10/31/2019	16/671006
Dell Products L.P.	Dynamic workspace targeting with crowdsourced user context	10/31/2019	16/670658
Dell Products L.P.	Workspace Continuity and Remediation	10/31/2019	16/670516
Dell Products L.P.	Method of adjusting workspace user experience and security based on available local hardware	10/31/2019	16/670969
Dell Products L.P.	Multilevel Authorization of workspaces via Certificates	10/31/2019	16/670910
Dell Products L.P.	STREAMING AND EVENT MANAGEMENT INFRASTRUCTURE PERFORMANCE PREDICTION	10/31/2019	16/670698
Dell Products L.P.	CODE DEVELOPMENT FOR DEPLOYMENT ON A CLOUD PLATFORM	10/31/2019	16/670460
Dell Products L.P.	APPLICATION PROGRAMMING INTERFACE PLATFORM MANAGEMENT USING MACHINE LEARNING	10/31/2019	16/669995
Dell Products L.P.	LIGHT COVER FOR AN INFORMATION HANDLING SYSTEM	10/31/2019	16/670100
Dell Products L.P.	"Cognitive Quality Assurance – Smart Assistant for Dell Server Validation – Determining High Value System Under Test Configurations"	10/31/2019	16/670075
Dell Products L.P.	Information Handling System Multi-Stream Cable Throughput Management	10/31/2019	16/670524
Dell Products L.P.	VXLAN MULTI-TENANT INTER-NETWORKING DEVICE PACKET FORWARDING SYSTEM	10/31/2019	16/666985
Dell Products L.P.	RESILIENT TCP CONNECTION SYSTEM	10/31/2019	16/670540
Dell Products L.P.	DYNAMIC DATA PLACEMENT FOR REPLICATED RAID IN A STORAGE SYSTEM	10/30/2019	16/669069

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PATENT
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Owner	Title	Date	App. No.
Dell Products L.P.	GLOBAL DEADLINE DRIVEN LOCAL SYNCHRONOUS REPLICATION I/O HANDLING AND RECOVER	10/30/2019	16/668661
Dell Products L.P.	Augmenting End-to-End Transaction Visibility Using Artificial Intelligence	10/30/2019	16/668947
Dell Products L.P.	DATA MASKING FRAMEWORK FOR INFORMATION PROCESSING SYSTEM	10/30/2019	16/668869
Dell Products L.P.	SPANNING TREE ENABLED LINK AGGREGATION SYSTEM	10/30/2019	16/669204
Dell Products L.P.	AUTOMATIC ROLLBACK TO TARGET FOR SYNCHRONOUS REPLICATION	10/29/2019	16/667453
Dell Products L.P.	MESSAGE ORIENTED MIDDLEWARE TOPOLOGY EXPLORER	10/29/2019	16/666833
Dell Products L.P.	CODE VULNERABILITY REMEDIATION	10/29/2019	16/667044
Dell Products L.P.	FIBRE CHANNEL NETWORKING DEVICE ZONE MERGING SYSTEM BACKGROUND (Resubmit of 115418)	10/29/2019	16/667404
Dell Products L.P.	LOSSLESS DATA TRAFFIC DEADLOCK MANAGEMENT SYSTEM	10/29/2019	16/667075
Dell Products L.P.	SINGLE CABLE OPTICAL DATA AND POWER TRANSMISSION SYSTEM	10/29/2019	16/667587
Dell Products L.P.	ASYMMETRIC LOGICAL UNIT ACCESS PATH SELECTION SYSTEM BACKGROUND	10/29/2019	16/667490
Dell Products L.P.	NETWORKING AGGREGATION LINK PROVISIONING SYSTEM	10/29/2019	16/666932
Dell Products L.P.	FIBRE CHANNEL OVER ETHERNET (FCOE) PINNING SYSTEM	10/29/2019	16/667352
Dell Products L.P.	RECOVERY FLOW WITH REDUCED ADDRESS LOCK CONTENTION IN A CONTENT ADDRESSABLE STORAGE SYSTEM	10/28/2019	16/665651
Dell Products L.P.	Device Temperature Impact Management Using Machine Learning Techniques	10/28/2019	16/665241
Dell Products L.P.	ARP TABLE MANAGEMENT SYSTEM	10/28/2019	16/666127
Dell Products L.P.	CONTROL PACKET TRANSMISSION SYSTEM	10/28/2019	16/666223
Dell Products L.P.	HOST-BASED READ PERFORMANCE OPTIMIZATION OF A CONTENT ADDRESSABLE STORAGE SYSTEM	10/25/2019	16/663499
Dell Products L.P.	Persistent User Session management based on user presence and system context	10/25/2019	16/664193
Dell Products L.P.	System and Method for Transferring Peripheral Firmware Core Data	10/25/2019	16/663946
Dell Products L.P.	ANYCAST ADDRESS CONFIGURATION FOR EXTENDED LOCAL AREA NETWORKS	10/25/2019	16/664491
Dell Products L.P.	ALUA based network feedback mechanism (Re-submit of 114440)	10/25/2019	16/664493

Owner	Title	Date	App. No.
Dell Products L.P.	DESIGNING MICROSERVICES FOR APPLICATIONS	10/24/2019	16/662908
Dell Products L.P.	SOFTWARE CONTAINER REPLICATION USING GEOGRAPHIC LOCATION AFFINITY IN A DISTRIBUTED COMPUTING ENVIRONMENT	10/24/2019	16/662893
Dell Products L.P.	CUSTOMIZING USER INTERFACE COMPONENTS	10/24/2019	16/662685
Dell Products L.P.	Implementation of Internet of Things-Enabled Connectivity Devices for Processing Operation Information of Devices Lacking Network Connectivity	10/24/2019	16/662585
Dell Products L.P.	Machine Learning-Based Determinations of Lifespan Information for Devices in an Internet of Things Environment	10/24/2019	16/662577
Dell Products L.P.	Organic Light Emitting Diode Display Power Management Based on Usage Scaling	10/24/2019	16/662888
Dell Products L.P.	Organic Light Emitting Diode Display Compensation Tool	10/24/2019	16/662897
Dell Products L.P.	Organic Light Emitting Diode Display Thermal Management	10/24/2019	16/662905
Dell Products L.P.	Metadata driven workflow semantics for management operations	10/24/2019	16/662559
Dell Products L.P.	ISOLATING INFORMATION HANDLING SYSTEM RACKS FROM SHOCK AND VIBRATION IN A MODULAR DATA CENTER	10/23/2019	16/661097
Dell Products L.P.	Using Machine Learning to Determine Whether Network Components are Being Used as Intended	10/23/2019	16/660885
Dell Products L.P.	Method to Automatically Remediate Problems Caused by OS Updates	10/23/2019	16/661515
Dell Products L.P.	Method for System Config & Resource Aware ML Model Switching	10/22/2019	16/659981
Dell Products L.P.	Controlling Battery Utilization Using Discharge Pattern When System is Powered Off	10/22/2019	16/660125
Dell Products L.P.	SYSTEM AND METHOD FOR DISPLAYING AN IMAGE THROUGH A PLATFORM INITIALIZATION PROCESS	10/22/2019	16/660180
Dell Products L.P.	Proactively predicting Supply Chain disruption and fulfilment	10/22/2019	16/659768
Dell Products L.P.	METHOD AND APPARATUS FOR OPTIMIZED ACCESS OF SECURITY CREDENTIALS VIA MOBILE EDGE-COMPUTING SYSTEMS	10/21/2019	16/659455
Dell Products L.P.	Service Projector – A Projected Information Display for Data Center Environments	10/21/2019	16/658609
Dell Products L.P.	USING REAL-TIME ANALYTICS TO MANAGE APPLICATION FEATURES	10/18/2019	16/656934

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PATENT
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Owner	Title	Date	App. No.
Dell Products L.P.	LIGHTING EFFECTS FOR APPLICATION EVENTS	10/18/2019	16/656432
Dell Products L.P.	SYSTEM AND METHOD TO ENABLE VIRTUAL TOUCHPAD WITH HAPTIC FEEDBACK ON DUAL DISPLAY INFORMATION HANDLING SYSTEMS	10/18/2019	16/656733
Dell Products L.P.	System and Method for Improved Handling of Memory Failures	10/18/2019	16/657641
Dell Products L.P.	System and Method for Retraining Memory in an Information Handling System	10/18/2019	16/657298
Dell Products L.P.	MINIMIZING DATA WRITTEN TO DISK AND ENABLING DIRECTORY CHANGE NOTIFICATIONS IN MULTI-VOLUME FILTER ENVIRONMENTS	10/18/2019	16/656,900
Dell Products L.P.	Transferring Power Between a Drone and A Device During Delivery	10/17/2019	16/655292
Dell Products L.P.	Using Sensors to Determine Whether A Shipping Container Has Been Breached	10/17/2019	16/655285
Dell Products L.P.	System and Method of Transferring Diagnostic Data via a Framebuffer	10/17/2019	16/656183
Dell Products L.P.	System and Method for Improving Hard Disk Drive Performance	10/17/2019	16/655894
Dell Products L.P.	AN ADAPTIVE TRANSMITTER PRESET MECHANISM IN PCIe LINK EQUALIZATION PROCEDURE	10/17/2019	16/655748
Dell Products L.P.	SYSTEM AND METHOD FOR STEPWISE ENABLEMENT OF A CACHE MEMORY IN AN INFORMATION HANDLING SYSTEM	10/17/2019	16/655480
Dell Products L.P.	SYSTEM AND METHOD TO MONITOR USAGE OF INFORMATION HANDLING SYSTEM USING BASEBOARD MANAGEMENT CONTROLLER	10/17/2019	16/655525
Dell Products L.P.	DATA REPLICATION SYSTEM	10/17/2019	16/655773
Dell Products L.P.	SERVICE BAND MANAGEMENT SYSTEM	10/17/2019	16/655871
Dell Products L.P.	NETWORKING-BASED FILE SHARE WITNESS SYSTEM	10/17/2019	16/656056
Dell Products L.P.	System and Method of Compensation of a Display	10/16/2019	16/654566
Dell Products L.P.	Thermoplastic Composite Materials for Portable Information Handling System Enclosures	10/16/2019	16/654516
Dell Products L.P.	FLEXIBLE LICENSE SOURCING AT CUSTOMER SITES	10/16/2019	16/654554
Dell Products L.P.	DATA DEDUPLICATION SYSTEM	10/16/2019	16/654995
Dell Products L.P.	EDGE DATA CENTER SECURITY SYSTEM THAT AUTONOMOUSLY DISABLES PHYSICAL COMMUNICATION PORTS ON DETECTION OF POTENTIAL SECURITY THREAT	10/15/2019	16/653924

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Owner	Title	Date	App. No.
Dell Products L.P.	MODULAR DATA CENTER THAT TRANSFERS WORKLOAD TO MITIGATE A DETECTED PHYSICAL THREAT	10/15/2019	16/653941
Dell Products L.P.	Edge Data Center Security in Event of Loss of Connectivity	10/15/2019	16/653932
Dell Products L.P.	MODULAR DATA CENTER POWER DISTRIBUTION SYSTEM	10/15/2019	16/653971
Dell Products L.P.	System of a Distributed Web Application Firewall Cluster	10/15/2019	16/653319
Dell Products L.P.	System and Method for Diagnosing Resistive Shorts in an Information Handling System	10/15/2019	16/653232
Dell Products L.P.	HYPER-CONVERGED INFRASTRUCTURE NETWORKING CONFIGURATION SYSTEM	10/15/2019	16/653606
Dell Products L.P.	Networking-Device-Based Hyper-Covered Infrastructure Edge Controller System	10/15/2019	16/653637
Dell Products L.P.	COMPOSABLE INFRASTRUCTURE UPDATE SYSTEM	10/15/2019	16/653700
Dell Products L.P.	SYSTEM AND METHOD FOR AUTHENTICATING BEFORE WAKING AN INFORMATION HANDLING SYSTEM	10/14/2019	16/600655
Dell Products L.P.	Information Handling System Proximity Sensor with Mechanically Adjusted Field of View	10/11/2019	16/599220
Dell Products L.P.	Information Handling System Infrared Proximity Detection with Ambient Light Management	10/11/2019	16/599224
Dell Products L.P.	Information Handling System Infrared Proximity Detection with Frequency Domain Modulation	10/11/2019	16/599226
Dell Products L.P.	Information Handling System Infrared Proximity Detection with Distance Reduction Detection	10/11/2019	16/599222
Dell Products L.P.	OPTIMAL MULTICAST TRAFFIC CONTROL IN A MIXED TOPOLOGY CONTAINING TRADITIONAL IP NETWORK INTERSPERSED WITH OPENFLOW SWITCH NETWORK	10/11/2019	16/600335
Dell Products L.P.	Loyalty Coin Miner for Customized Blockchain Based Customer Loyalty Program	10/11/2019	16/559464
Dell Products L.P.	System and Method for Using Input Power Line Telemetry in an Information Handling System	10/10/2019	16/598531
Dell Products L.P.	CLUSTER FORMATION OFFLOAD USING REMOTE ACCESS CONTROLLER GROUP MANAGER	10/10/2019	16/598626
Dell Products L.P.	System for Reducing Power Consumption upon Loss of Main Power in an Information Handling System	10/9/2019	16/597390

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Dell Products L.P.	System and Method for Verifying First Time Use of an Information Handling System	10/9/2019	16/597299
Dell Products L.P.	Device-Dependent Peak Power Throttling for Battery-Operated Systems	10/8/2019	16/596052
Dell Products L.P.	System and Method for Optimizing Bulk Data Operations	10/7/2019	16/594652
Dell Products L.P.	Methodology for knowledge capture and advisor solution using multi-variable graph analysis	10/7/2019	16/594915
Dell Products L.P.	Information Handling System Network Communication with Through Link Aggregation	10/3/2019	16/592561
Dell Products L.P.	System Pre-Heater Having Data Storage Drive Form-Factor and Method Therefor	10/2/2019	16/591080
Dell Products L.P.	System and Method of Intelligent Detection of Data Model Fieldname Lineage with Geographical Location Movement Control	10/1/2019	62/909162
Dell Products L.P.	System and Method of Intelligent Translation of Metadata Label Names and Mapping to Natural Language Understanding	10/1/2019	62/909151
Dell Products L.P.	AUGMENTED REALITY EMPLOYEE RECOGNITION	10/1/2019	16/589438
Dell Products L.P.	Automated Email Legal Hold	10/1/2019	16/589397
Dell Products L.P.	IHS (INFORMATION HANDLING SYSTEM) OPERATIONS IN RESPONSE TO LID STATE TRANSITIONS	10/1/2019	16/589959
Dell Products L.P.	IMPROVED RESPONSE TIME FOR MOBILE IHS BAG REMOVAL	10/1/2019	16/589842
Dell Products L.P.	IMPROVED DOCKING RESPONSE TIME	10/1/2019	16/589891
Dell Products L.P.	Information Handling System Including Dynamic Configuration of Piezoelectric Transducers for Multi-functionality	10/1/2019	16/589482
Dell Products L.P.	Using Passively Represented Information to Identify Items within a Multi-Dimensional Space	9/30/2019	16/588268
Dell Products L.P.	Erasure Coding based Placement in SDS	9/30/2019	16/587399
Dell Products L.P.	Efficient Data Placement in non SoFS Daisy Chain SDS	9/30/2019	16/587415
Dell Products L.P.	A System and Method to perform faster update avoiding RMW in a Daisy-Chain SDS	9/30/2019	16/587434
Dell Products L.P.	SYSTEM AND METHOD FOR DISCOVERY AND RETRIEVAL USING AN ENUMERATOR	9/30/2019	16/588045
Dell Products L.P.	SYSTEM AND METHOD FOR UPDATE OF DATA AND META DATA VIA AN ENUMERATOR	9/30/2019	16/588631

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Owner	Title	Date	App. No.
Dell Products L.P.	SYSTEM AND METHOD FOR REMOVAL OF DATA AND METADATA USING AN ENUMERATOR	9/30/2019	16/588684
Dell Products L.P.	SYSTEM AND METHOD FOR MANAGING DATA USING AN ENUMERATOR	9/30/2019	16/588725
Dell Products L.P.	Efficient Replica Placement in SDS	9/30/2019	16/587372
Dell Products L.P.	Efficient Data Placement in SDS	9/30/2019	16/587391
Dell Products L.P.	CABLE RETENTION MECHANISM	9/27/2019	16/585051
Dell Products L.P.	Smart Carbon-Offset Packaging	9/27/2019	16/585473
Dell Products L.P.	SYSTEMS AND METHODS FOR THERMALLY DEFINING DISCHARGE OF A POWER ASSIST UNIT	9/27/2019	16/586444
Dell Products L.P.	SYSTEMS AND METHODS FOR MINIMIZING SYSTEM HARDWARE THROTTLING DUE TO POWER SUPPLY UNIT ENVIRONMENTAL EFFECTIVE CAPACITY	9/27/2019	16/586491
Dell Products L.P.	Encoded Geometry Fabrication Operation	9/27/2019	16/586712
Dell Products L.P.	Three Dimensional Encoded Geometry Fabrication Operation	9/27/2019	16/586725
Dell Products L.P.	RAID STORAGE-DEVICE-ASSISTED DATA UPDATE SYSTEM	9/27/2019	16/586445
Dell Products L.P.	RAID STORAGE-DEVICE-ASSISTED READ-MODIFY-WRITE SYSTEM	9/27/2019	16/586103
Dell Products L.P.	Raid Storage-Device-Assisted Deferred Q Data Determination System	9/27/2019	16/586530
Dell Products L.P.	RAID STORAGE-DEVICE-ASSISTED UNAVAILABLE PRIMARY DATA/Q DATA REBUILD SYSTEM	9/27/2019	16/586152
Dell Products L.P.	DATA-TRANSFER-BASED RAID DATA UPDATE SYSTEM	9/27/2019	16/586311
Dell Products L.P.	RAID STORAGE MULTI-OPERATION COMMAND SYSTEM	9/27/2019	16/585296
Dell Products L.P.	RAID STORAGE-DEVICE-ASSISTED DEFERRED PARITY DATA UPDATE SYSTEM	9/27/2019	16/586451
Dell Products L.P.	RAID STORAGE-DEVICE-ASSISTED PARITY UPDATE DATA STORAGE SYSTEM	9/27/2019	16/586551
Dell Products L.P.	Protocol Independent Multicast Designated Networking Device Election System	9/27/2019	16/585321
Dell Products L.P.	System and Method for Automatic Recovery of Information Handling Systems	9/26/2019	16/584048
Dell Products L.P.	SYSTEM AND METHOD TO SECURELY EXCHANGE SYSTEM DIAGNOSTICS INFORMATION BETWEEN FIRMWARE, OPERATING SYSTEM AND PAYLOAD	9/26/2019	16/584045
Dell Products L.P.	FIRMWARE UPDATE WITH INTEGRATED SMART SEQUENCE AND ACTION ENGINE	9/26/2019	16/584138

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Dell Products L.P.	BLOCKING INDIVIDUAL INTERFACES OF USB COMPOSITE DEVICES	9/26/2019	16/583422
Dell Products L.P.	Adjustable Haptic Scroll Wheel	9/26/2019	16/583554
Dell Products L.P.	Synchronized Dual Shaft Expandable Hinge	9/26/2019	16/583794
Dell Products L.P.	Synchronized Dual Shaft Expandable Hinge	9/26/2019	16/583800
Dell Products L.P.	Synchronized Expandable Dual Axle Hinge and Clutch	9/26/2019	16/583808
Dell Products L.P.	Belt Synchronized Expandable Dual Axle Hinge	9/26/2019	16/583816
Dell Products L.P.	Bi-Stable Synchronized Dual Axle Hinge	9/26/2019	16/583828
Dell Products L.P.	Synchronized Single Axle Hinge	9/26/2019	16/583835
Dell Products L.P.	Synchronized Expandable Hinge Assembly	9/26/2019	16/583843
Dell Products L.P.	INTELLIGENT SERVICE DISTRIBUTOR AND CONTROLLER WITH REAL TIME SERVICE CALIBRATION	9/25/2019	16/582235
Dell Products L.P.	Leak Detection Apparatus for an Information Handling System	9/25/2019	16/583084
Dell Products L.P.	SYSTEM AND METHOD FOR VERSATILE DEVICE MOUNTING IN A DESKTOP INFORMATION HANDLING SYSTEM	9/25/2019	16/581972
Dell Products L.P.	SYSTEM LOCKDOWN AND DATA PROTECTION	9/25/2019	16/582788
Dell Products L.P.	[IMPROVED] TRANSCEIVER COOLING	9/25/2019	16/582852
Dell Products L.P.	System and Method for Determining Application Programming Interface and Object Bindings on Natural Language Processed Inputs	9/25/2019	16/583081
Dell Products L.P.	Supervised Learning Based UEFI Pre-Boot Control	9/24/2019	16/580092
Dell Products L.P.	Eject Pull Mechanism for Information Handling System	9/23/2019	16/578932
Dell Products L.P.	RESOURCE MANAGEMENT FOR SOFTWARE CONTAINERS USING CONTAINER PROFILES	9/20/2019	16/576983
Dell Products L.P.	System and Method for Using Current Slew-Rate Telemetry in an Information Handling System	9/20/2019	16/577550
Dell Products L.P.	"Method To Leverage UPD Absence Detect to Maximize Battery Charging in Mobile IHSS"	9/20/2019	16/577975
Dell Products L.P.	"Method To Contextually Disable Turbo in AC Charge Mode with User Absence When System Usage is in Performance Mode"	9/20/2019	16/578024
Dell Products L.P.	"Method To Optimize DC Mode Battery Runtime Based on Learned Adapter Activity"	9/20/2019	16/578051

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Owner	Title	Date	App. No.
Dell Products L.P.	CONTEXT DATA MANAGEMENT INTERFACE FOR CONTACT CENTER	9/20/2019	16/577163
Dell Products L.P.	Systems and Methods For Programmatically Converting Interface Specification to Generic Plug-In Code	9/20/2019	16/576936
Dell Products L.P.	REMOVING FEATURE FLAG-RELATED CODEBASE FROM APPLICATIONS	9/19/2019	16/575807
Dell Products L.P.	Intelligent Burn Planning	9/19/2019	16/575816
Dell Products L.P.	System and Method for Handling High Priority Management Interrupts	9/18/2019	16/575286
Dell Products L.P.	Display Stand	9/18/2019	29/706151
Dell Products L.P.	System and Method for Topological Redundancy	9/18/2019	16/575289
Dell Products L.P.	Cooling Module with Blower System having Opposite, Blower and Impeller Outlets for Information Handling Systems	9/18/2019	16/575251
Dell Products L.P.	Display Unibody to Improve Optics	9/18/2019	16/574724
Dell Products L.P.	SYSTEMS AND METHODS FOR USING DYNAMIC NOISE GENERATION TO ENHANCE USER ACOUSTIC EXPERIENCE	9/17/2019	16/573763
Dell Products L.P.	ADJUSTING A PROCESSING STATE OF AN INFORMATION HANDLING SYSTEM FROM MULTI-SOCKET MODE TO MULTI-SINGLE SOCKET MODE	9/17/2019	16/572705
Dell Products L.P.	METHOD AND APPARATUS FOR MULTIPLE RADIO ACCESS TECHNOLOGY ANTENNA FRONT END CONTROLLER INTEGRATION	9/16/2019	16/572362
Dell Products L.P.	PROFILED WIRELESS DOCKING SYSTEM	9/16/2019	16/572221
Dell Products L.P.	COMPONENT LIFE CYCLE TEST CATEGORIZATION AND OPTIMIZATION	9/16/2019	16/571376
Dell Products L.P.	System and Method for Dynamically Determining Applicable Updates	9/16/2019	16/571606
Dell Products L.P.	SYSTEM AND METHOD TO SECURELY MAP UEFI RAMDISK USING DMAR TABLE FOR SECURELY LAUNCHING SOS CONTENTS	9/16/2019	16/571802
Dell Products L.P.	SYSTEM AND METHOD FOR DYNAMIC AND EXTENSIBLE MANAGEMENT OF DEVICE NODES	9/13/2019	16/570350
Dell Products L.P.	Backpack	9/13/2019	29/705632
Dell Products L.P.	Fabric with Ornamentation	9/13/2019	29/705630
Dell Products L.P.	DIMM Voltage Regulator Soft Start-Up for Power Fault Detection	9/13/2019	16/569740
Dell Products L.P.	SYSTEMS AND METHODS FOR ISOLATING CAPACITANCE FROM LIQUID CRYSTAL DISPLAY BACKLIGHT CIRCUIT	9/13/2019	16/570786
Dell Products L.P.	Assist Mechanism for Information Handling System	9/13/2019	16/570109

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Owner	Title	Date	App. No.
Dell Products L.P.	System and Method for Determining DIMM Failures using on-DIMM Voltage Regulators	9/12/2019	16/569543
Dell Products L.P.	System and Method for Dynamically Installing Driver Dependencies	9/12/2019	16/568863
Dell Products L.P.	System and Method for Bridging Gaps Between Traditional Resource Management Solutions with Cloud-Based Management Solutions	9/12/2019	16/569013
Dell Products L.P.	DYNAMIC SECURE ACPI POWER RESOURCE ENUMERATION OBJECTS FOR EMBEDDED DEVICES	9/12/2019	16/568736
Dell Products L.P.	FIBRE CHANNEL FORWARDER FAILOVER AND LOAD BALANCING SYSTEM	9/12/2019	16/569483
Dell Products L.P.	SYSTEMS AND METHODS FOR HOSTING MULTIPLE FIRMWARE IMAGES	9/11/2019	16/567897
Dell Products L.P.	Reducing A Size of Multiple Data Sets	9/10/2019	16/566320
Dell Products L.P.	SYSTEMS AND METHODS FOR PROVIDING HEAT-REJECTING MEDIA ON A CABLE ASSEMBLY	9/10/2019	16/566193
Dell Products L.P.	USING A SINGLE PROCESS TO INSTALL A UEFI-SUPPORTED OS OR A NON-UEFI SUPPORTED OS ON A HARDWARE PLATFORM	9/6/2019	16/563304
Dell Products L.P.	System and Method for Sensing Corrosion in an Enclosure of an Information Handling System	9/5/2019	16/562187
Dell Products L.P.	Hybrid Cooling System with Multiple Outlet Blowers	9/5/2019	16/562102
Dell Products L.P.	Method and Apparatus for Ensuring Integrity of Keys in a Secure Enterprise Key Manager Solution	9/4/2019	16/559868
Dell Products L.P.	Method to Reduce Time to Optimal App Performance Based on UPD and Power Source	9/4/2019	16/560209
Dell Products L.P.	Information Handling System	9/3/2019	29/704155
Dell Products L.P.	SYSTEMS AND METHODS FOR PROVIDING PEAK CURRENT ASSISTANCE TO A VOLTAGE REGULATOR USING A SWITCHED CAPACITOR CONVERTER	9/3/2019	16/558966
Dell Products L.P.	AI Predictive Workload Profile Control with Dynamic TJ Averaging and Ramp Rate limit	9/3/2019	16/558988
Dell Products L.P.	Method for Re-Direction of Airflow From Air Handler System(s) Integrated into a Modular Data Center	8/30/2019	16/557801
Dell Products L.P.	Method For Backflow Prevention in the Airflow Plenum of a Modular Data Center	8/30/2019	16/557939

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Owner	Title	Date	App. No.
Dell Products L.P.	Remote Heat Exchanger Arm for Direct Contact Liquid Cooling for Rack Mounted Equipment	8/30/2019	16/557111
Dell Products L.P.	Method for Managing Sleep Mode at a Data Storage Device and System Therefor	8/30/2019	16/556954
Dell Products L.P.	System and Method for Detecting Anomalies by Discovering Sequences in Log Entries	8/30/2019	16/556982
Dell Products L.P.	BLUE-LIGHT ENERGY MITIGATION OF AN INFORMATION HANDLING SYSTEM	8/30/2019	16/556945
Dell Products L.P.	DOUBLE-LAYER COMPUTE SLED AND CAM MOUNTING MECHANISM	8/29/2019	16/556189
Dell Products L.P.	Using Heat to Charge A Stylus of a Computing Device	8/29/2019	16/554690
Dell Products L.P.	MULTICAST TRANSMISSIONS MANAGEMENT	8/29/2019	16/556045
Dell Products L.P.	Electronic Module Carrier for an Information Handling System	8/28/2019	16/554588
Dell Products L.P.	METHOD AND SYSTEM FOR OFFLOADING A CONTINUOUS HEALTH-CHECK AND RECONSTRUCTION OF DATA USING COMPUTE ACCELERATION DEVICES ON PERSISTENT STORAGE DEVICES	8/28/2019	16/553348
Dell Products L.P.	Information Handling System	8/28/2019	29/703556
Dell Products L.P.	Information Handling System Bezel	8/28/2019	29/703554
Dell Products L.P.	METHOD AND SYSTEM FOR PROCESSING DATA USING A STACKABLE AND SCALABLE DATA PROXY (SSDP)	8/28/2019	16/554604
Dell Products L.P.	METHOD AND SYSTEM FOR OFFLOADING A CONTINUOUS HEALTH-CHECK AND RECONSTRUCTION OF DATA IN A DATA CLUSTER	8/28/2019	16/553322
Dell Products L.P.	METHOD AND SYSTEM FOR ANY-POINT IN TIME RECOVERY WITHIN TRADITIONAL STORAGE SYSTEM VIA A CONTINUOUS DATA PROTECTION INTERCEPTOR	8/28/2019	16/553336
Dell Products L.P.	REFLECTING ON-SCREEN VISUALS TO HARDWARE LIGHTING	8/26/2019	16/551157
Dell Products L.P.	METHOD AND APPARATUS FOR FABRICATING AN INFORMATION HANDLING SYSTEM WITH A VIBRATION ACTUATOR SPEAKER SYSTEM ASSEMBLY	8/26/2019	16/551391
Dell Products L.P.	NATURAL LANGUAGE PROCESSING SYSTEM	8/23/2019	16/549944
Dell Products L.P.	Using Passively Represented Information to Identify Items Within a Multi-Dimensional Space	8/23/2019	16/549484
Dell Products L.P.	Secure firmware update for device with low computing power	8/23/2019	16/549113

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Dell Products L.P.	MULTI-DOMAIN SES	8/23/2019	16/549937
Dell Products L.P.	MECHANICAL CLIP LOCK FOR AN INFORMATION HANDLING SYSTEM	8/23/2019	16/549534
Dell Products L.P.	System to Share Input Devices Across Multiple Information Handling Systems and Method Therefor	8/22/2019	16/548655
Dell Products L.P.	A Method and Process to Service Non-UEFI BIOS OS Installs Under a Common Manufacturing Process	8/21/2019	62/889760
Dell Products L.P.	SYSTEM AND METHOD FOR ISOLATED DEVICE ACCESS	8/21/2019	16/547510
Dell Products L.P.	SYSTEM AND METHOD FOR MANAGING ELECTROMAGNETIC INTERFERENCE	8/21/2019	16/547501
Dell Products L.P.	SYSTEM AND METHOD FOR POWER MANAGEMENT FOR AN ISOLATED HOUSING	8/21/2019	16/547491
Dell Products L.P.	DYNAMICALLY SCALE COMPLEXITY OF A USER INTERFACE BASED ON COGNITIVE LOAD	8/20/2019	16/545499
Dell Products L.P.	SPACE EFFICIENT LAYOUT OF PRINTED CIRCUIT BOARD POWER VIAS	8/20/2019	16/545028
Dell Products L.P.	Method for Color Calibrating Multiple Displays and System Therefor	8/20/2019	16/545258
Dell Products L.P.	SYSTEMS AND METHODS FOR OPTIMIZING FAULT TOLERANT REDUNDANCY FOR AN INFORMATION HANDLING SYSTEM WITH MULTIPLE POWER SUPPLY UNITS	8/16/2019	16/543187
Dell Products L.P.	Composite Plastic Display Cover (re-submit:Invention Ref 100536)	8/16/2019	16/542866
Dell Products L.P.	Stylus	8/16/2019	29/702115
Dell Products L.P.	System and Method for Controlling a Power-On Sequence and Power Throttling using Power Brake	8/15/2019	16/542080
Dell Products L.P.	BLIND-MATE ADAPTER FOR SERVERS AND SERVER RACKS	8/15/2019	16/542047
Dell Products L.P.	ROTATIONAL HOOK MECHANISM FOR DROP PREVENTION AND PROTECTION DURING MODULE REMOVAL	8/15/2019	16/541336
Dell Products L.P.	System and Method for the Redirection of Trapped Power via Virtual PSUs in a Shared Infrastructure Environment	8/14/2019	16/540391
Dell Products L.P.	Flexible Information Handling System Display User Interface Peripheral Keyboard Configuration	8/14/2019	16/540613
Dell Products L.P.	System and Method to Provide Heterogeneous Protocols on Network Interface Devices	8/14/2019	16/540475

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Dell Products L.P.	Method and Apparatus for a Modular Digital Chassis Lock Assembly in an Information Handling System	8/14/2019	16/540680
Dell Products L.P.	GPU-BASED ADVANCED MEMORY DIAGNOSTICS OVER DYNAMIC MEMORY REGIONS FOR FASTER AND EFFICIENT DIAGNOSTICS	8/14/2019	16/540369
Dell Products L.P.	DISPLAY SPECULAR REFLECTION MITIGATION	8/14/2019	16/540389
Dell Products L.P.	SEQUENCE AND UPDATE RULES IN FIRMWARE UPDATE SERVICES	8/14/2019	16/540316
Dell Products L.P.	Information Handling System Object Detection at Housing Close Event	8/14/2019	16/540879
Dell Products L.P.	REESTABLISHING SECURE COMMUNICATION WITH A SERVER AFTER THE SERVER'S CERTIFICATE IS RENEWED WITH A CERTIFICATE AUTHORITY UNKNOWN TO THE CLIENT	8/13/2019	16/539372
Dell Products L.P.	Method for controller-gesture interactions	8/13/2019	16/538945
Dell Products L.P.	Securing a server from untrusted client applications	8/13/2019	16/539252
Dell Products L.P.	System and Method for Isolating a Failed Card	8/12/2019	16/538188
Dell Products L.P.	DYNAMIC PRIVACY USING A SYSTEM INTEGRATED LOUVER FILM STRUCTURE	8/12/2019	16/537771
Dell Products L.P.	Learning Based Wireless Performance Adjustment for Mobile Information Handling System	8/12/2019	16/538721
Dell Products L.P.	Method and Apparatus for Wireless Signal Based Location Security System	8/12/2019	16/538793
Dell Products L.P.	Method and Apparatus for Location Aware Optimal Wireless Link Selection System	8/12/2019	16/538769
Dell Products L.P.	ADAPTIVE ANTENNA STEERING BASED ON WIRELESS MAC STATE	8/12/2019	16/538626
Dell Products L.P.	ANTENNA INTEGRATION IN HINGE SHROUD	8/9/2019	16/537230
Dell Products L.P.	System and Method for Qualifying a Power-on Sequence based on Feedback	8/9/2019	16/536749
Dell Products L.P.	System and Method to Change Field-Programmable Gate Array Personality from a Baseboard Management Controller	8/9/2019	16/537097
Dell Products L.P.	System and Method for Power Management of Field-Programmable Gate Arrays and Load Balancing of Personality Bitstreams from a Baseboard Management Controller	8/9/2019	16/537205
Dell Products L.P.	System and Method for Providing Heterogeneous Personality Bitstreams on	8/9/2019	16/537238

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Owner	Title	Date	App. No.
	Field-Programmable Gate Arrays from a Baseboard Management Controller		
Dell Products L.P.	SYSTEM AND METHOD FOR NOTIFYING A USER OF A SENSOR IN A COMPROMISED STATE	8/7/2019	16/534071
Dell Products L.P.	Mouse	8/6/2019	29/700785
Dell Products L.P.	Keyboard	8/6/2019	29/700787
Dell Products L.P.	Headset	8/6/2019	29/700789
Dell Products L.P.	Hidden malicious code (Steganography) detection and purification from PNG files – in the BODY-Infix	8/5/2019	16/531676
Dell Products L.P.	Malicious Code Purification in Graphics Files	8/5/2019	16/531314
Dell Products L.P.	Augmented halo display with convertible cover design	8/5/2019	16/532025
Dell Products L.P.	AUTO-LOCK STRUCTURE FOR RISER	8/5/2019	16/531429
Dell Products L.P.	AUTO-LOCK FUNCTION FOR CHASSIS SECURITY BEZEL	8/5/2019	16/531383
Dell Products L.P.	Flexible Device having Glass with Antiglare Self-Healing Polymer Surface	8/5/2019	16/531447
EMC IP Holding Company LLC	Scalable and Flexible Default IPsec/EDiF Policy Scheme to Auto Generate Secure Channels and Eliminate the Need for Traditional Complex and Time Consuming Configurations	11/1/2019	16/671211
EMC IP Holding Company LLC	EFFICIENT MEMORY USAGE FR SNAPSHOTS BASED ON PAST MEMORY USAGE	11/1/2019	16/671372
EMC IP Holding Company LLC	EFFICIENT MEMORY USAGE FOR SNAPSHOTS	11/1/2019	16/672228
EMC IP Holding Company LLC	SYSTEM AND METHOD OF OBTAINING DATA FROM PRIVATE CLOUD BEHIND ENTERPRISE FIREWALL	11/1/2019	16/672339
EMC IP Holding Company LLC	Transaction Visibility Frameworks Implemented Using Artificial Intelligence	11/1/2019	16/671363
EMC IP Holding Company LLC	METHODS AND SYSTEMS FOR OPTIMIZING STORAGE RESOURCES	11/1/2019	16/672226
EMC IP Holding Company LLC	METHODS AND SYSTEMS FOR MIRRORING AND FAILOVER OF NODES	11/1/2019	16/672299
EMC IP Holding Company LLC	INTELLIGENT TEST CASE MANAGEMENT FOR SYSTEM INTEGRATION TESTING	11/1/2019	16/671734
EMC IP Holding Company LLC	AUTOMATED TESTING OF PUSH NOTIFICATION SERVICE IN CLOUD COMPUTING SYSTEM	11/1/2019	16/671874
EMC IP Holding Company LLC	One Way to Implement Heterogeneous Media Types RAID Uber for Trident	11/1/2019	16/671528

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PATENT
REEL: 051449 FRAME: 0786

Owner	Title	Date	App. No.
EMC IP Holding Company LLC	Virtual Disk Granular Storage Provisioning with Non-Volatile Memory Express over Fabrics (NVMe™ oF)	11/1/2019	16/672088
EMC IP Holding Company LLC	Sequentiality Characterization of Input/Output Workloads	11/1/2019	16/671617
EMC IP Holding Company LLC	Encoding and Evaluating Multisets Using Prime Numbers	11/1/2019	16/671292
EMC IP Holding Company LLC	Adaptive Usage of Storage Resources Using Data Source Models and Data Source Representations	11/1/2019	16/671791
EMC IP Holding Company LLC	ALTERNATIVE ACCESS TO SECONDARY STORAGE	11/1/2019	16/671249
EMC IP Holding Company LLC	OPTIMIZED USE OF PROCESSOR MEMORY FOR I/O OPERATIONS	11/1/2019	16/672245
EMC IP Holding Company LLC	Global Mirror using SRDF/A	11/1/2019	16/672326
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR MANAGING FILE SYSTEM REFERENCES AT SCALE	11/1/2019	16/672284
EMC IP Holding Company LLC	Extension of JBOx – The ability to expose and utilize compute capabilities across infrastructure services (physical, virtual, etc.) by adding digital twin generation to facilitate debugging, serviceability, and more flexible data flows.	11/1/2019	16/671537
EMC IP Holding Company LLC	JBOx - Predictive Aggregation of Computational Resources	11/1/2019	16/671539
EMC IP Holding Company LLC	JBOx Smart Contract – Expose and utilize resources Host: Host, Host:cluster, Cluster:cluster utilizing Smart Contracts	11/1/2019	16/671544
EMC IP Holding Company LLC	Variable Offset Deduplication for block arrays assisted by Power Path	11/1/2019	16/671584
EMC IP Holding Company LLC	METHODS AND SYSTEMS FOR OPTIMIZING PROCESSOR USAGE	11/1/2019	16/672289
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR AUTO CONFIGURATION OF APPLICATION SETTINGS USING DATA SOURCE ADMINISTRATION SCRIPTS	11/1/2019	16/672279
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR RESILIENT DATA PROTECTION	11/1/2019	16/672288
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR VISUAL REPRESENTATION OF BACKUPS	11/1/2019	16/672303
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR OVERPROTECTION MITIGATION	11/1/2019	16/672313
EMC IP Holding Company LLC	METHODS AND SYSTEMS FOR SERVICING DATA REQUESTS IN A MULTI-NODE SYSTEM	11/1/2019	16/672236
EMC IP Holding Company LLC	METHODS AND SYSTEMS FOR UTILIZING A UNIFIED NAMESPACE	11/1/2019	16/672278

Owner	Title	Date	App. No.
EMC IP Holding Company LLC	METHODS AND SYSTEMS FOR ALLOCATING FREE SPACE IN A MEMORY SEMANTIC FILE SYSTEM	11/1/2019	16/672268
EMC IP Holding Company LLC	METHODS AND SYSTEMS FOR LOGGING DATA TRANSACTIONS AND MANAGING HASH TABLES	11/1/2019	16/672397
EMC IP Holding Company LLC	METHODS AND SYSTEMS FOR SERVICING DATA REQUESTS	11/1/2019	16/672213
EMC IP Holding Company LLC	BLOOM FILTER PARTITIONING	10/31/2019	16/670458
EMC IP Holding Company LLC	MULTILAYER MOBILE APP INTERFACE	10/31/2019	16/670525
EMC IP Holding Company LLC	DATA PROTECTION USING CHANGE-BASED MEASUREMENTS IN BLOCK-BASED BACKUP	10/31/2019	16/670320
EMC IP Holding Company LLC	REPLICATION LINK SMOOTHING USING HISTORICAL DATA	10/31/2019	16/669823
EMC IP Holding Company LLC	Proactive Storage System-Based Software Version Analysis Using Machine Learning Techniques	10/31/2019	16/670077
EMC IP Holding Company LLC	Reactive Storage System-Based Software Version Analysis Using Machine Learning Techniques	10/31/2019	16/670019
EMC IP Holding Company LLC	Automatic Indexing of Relevant Domains in a Data Lake for Data Discovery and Integration	10/31/2019	16/669678
EMC IP Holding Company LLC	Data Storage System Employing Dummy Namespaces For Discovery of NVMe Namespace Groups as Protocol Endpoints	10/31/2019	16/669803
EMC IP Holding Company LLC	System and Method for Storage Node Data Synchronization	10/31/2019	16/669693
EMC IP Holding Company LLC	Deduplication aware read cache in a log structured storage array	10/31/2019	16/670,644
EMC IP Holding Company LLC	System and Method for Weight Based Data Protection	10/31/2019	16/670303
EMC IP Holding Company LLC	System and Method for Tier Recovery	10/31/2019	16/670154
EMC IP Holding Company LLC	Efficient File System Check using Delta Log Approach	10/31/2019	16/670879
EMC IP Holding Company LLC	Intelligent Storage Migration service	10/31/2019	16/670928
EMC IP Holding Company LLC	AMORTIZED EXECUTION OF UPDATES TO A HARDENED HASH TABLE	10/31/2019	16/669834
EMC IP Holding Company LLC	Intelligent migration of multiple legacy storage units to a single managed storage unit	10/31/2019	16/670696
EMC IP Holding Company LLC	Achieving guaranteed application performance using a transitional I/O scheduling for SSD storage by interleaving	10/31/2019	16/670,213

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PATENT
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Owner	Title	Date	App. No.
	and splitting read/write I/Os with Required Latency Configurations		
EMC IP Holding Company LLC	SIMILARITY HASH FOR BINARY DATA PAGES	10/31/2019	16/669886
EMC IP Holding Company LLC	TECHNIQUES FOR EFFICIENTLY DETERMINING SIMILARITY HASHES	10/31/2019	16/669860
EMC IP Holding Company LLC	Two-Step Recovery employing Erasure Coding in a Geographically Diverse Data Storage System	10/31/2019	16/670765
EMC IP Holding Company LLC	Consolidation of Protection Sets in a Geographically Diverse Data Storage Environment	10/31/2019	16/670746
EMC IP Holding Company LLC	Optimizing storage array power-down through offload capabilities	10/31/2019	16/670669
EMC IP Holding Company LLC	Heterogeneous Mapped Redundant Array of Independent Nodes for Data Storage	10/31/2019	16/670715
EMC IP Holding Company LLC	System and Method for Contraindicating Firmware and Driver Update	10/31/2019	16/670682
EMC IP Holding Company LLC	System and Method for Fast Rebuild of Metadata Tier	10/31/2019	16/670036
EMC IP Holding Company LLC	METHOD FOR CONNECTING A RELATIONAL DATA STORE'S META DATA WITH HADOOP	10/30/2019	16/669278
EMC IP Holding Company LLC	An optimized distributed dedup system used in the cluster	10/30/2019	16/669240
EMC IP Holding Company LLC	Threshold-Based Override of Data Privacy Using Distributed Ledgers and Key Shares	10/30/2019	16/668783
EMC IP Holding Company LLC	Centralized Transaction Tracking Using Multi-Blockchain Technology	10/30/2019	16/668790
EMC IP Holding Company LLC	Smart Programming Assistant	10/30/2019	16/668922
EMC IP Holding Company LLC	Cognitive Device Management Using Artificial Intelligence	10/30/2019	16/668440
EMC IP Holding Company LLC	Ground Distance Determination Using Sanitized Location Data	10/30/2019	16/668746
EMC IP Holding Company LLC	Quality of Service (QOS) System and Method for Non-Volatile memory Express Devices	10/30/2019	16/668561
EMC IP Holding Company LLC	System and Method for Suspending and Processing Commands on a Configuration Object	10/30/2019	16/668629
EMC IP Holding Company LLC	SELECTIVELY PERFORMING INLINE COMPRESSION BASED ON DATA ENTROPY	10/30/2019	16/669160
EMC IP Holding Company LLC	DATA REDUCTION BY REPLACEMENT OF REPEATING PATTERN WITH SINGLE INSTANCE	10/30/2019	16/669172
EMC IP Holding Company LLC	DEDUPLICATING FULL AND PARTIAL BLOCK MATCHES	10/30/2019	16/668523
EMC IP Holding Company LLC	EXTENDING DEDUPLICATION MATCHES USING DATA COMPARISON	10/30/2019	16/668538

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	DEDUPLICATING UNALIGNED DATA	10/30/2019	16/668506
EMC IP Holding Company LLC	OPPORTUNISTIC PARTIAL DEDUPLICATION	10/30/2019	16/668554
EMC IP Holding Company LLC	MANAGING HASH TABLES IN A STORAGE SYSTEM	10/30/2019	16/669000
EMC IP Holding Company LLC	PARALLEL UPGRADE OF NODES IN A STORAGE SYSTEM	10/30/2019	16/668770
EMC IP Holding Company LLC	DYNAMIC APPLICATION DECOMPOSITION FOR EXECUTION IN A COMPUTING ENVIRONMENT	10/30/2019	16/668676
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR EFFICIENT BACKUP GENERATION	10/30/2019	16/669465
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR SEARCHING BACKUPS	10/30/2019	16/669460
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR MANAGING SENSITIVE DATA	10/30/2019	16/669444
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR INDEXING IMAGE BACKUPS	10/30/2019	16/669433
EMC IP Holding Company LLC	Privacy Preserving Centralized Evaluation of Sensitive User Features for Anomaly Detection	10/30/2019	16/668705
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR A HYBRID WORKFLOW BACKUP OPERATION OF DATA IN A CLOUD-BASED SERVICE WITH THIRD-PARTY APPLICATIONS	10/30/2019	16/668919
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR EFFICIENT USER-LEVEL BASED DELETIONS OF BACKUP DATA	10/30/2019	16/669129
EMC IP Holding Company LLC	METADATA REPRESENTATION FOR ENABLING PARTIAL PAGE DUPLICATION	10/30/2019	16/668342
EMC IP Holding Company LLC	A Blockchain based Method of Decentralized Search Metadata Management in Multicloud	10/30/2019	16/669313
EMC IP Holding Company LLC	A intelligent method to forecast the usage change rate of a storage system	10/30/2019	16/668821
EMC IP Holding Company LLC	Dynamic Allocation of Worker Nodes for Distributed Replication	10/29/2019	16/667147
EMC IP Holding Company LLC	Hardware Trust Boundaries and Graphs in a Data Confidence Fabric	10/29/2019	16/667553
EMC IP Holding Company LLC	DYNAMIC SCORING IN DATA CONFIDENCE FABRICS	10/29/2019	16/667547
EMC IP Holding Company LLC	IMPROVING AUTOMATED STORAGE TIERING BY ACCESS PATTERN DETECTION AND TEMPORAL TREND PREDICTION	10/29/2019	16/666774
EMC IP Holding Company LLC	STORAGE ALLOCATION TECHNIQUES USING LOGICAL REGION I/O ACCESS INFORMATION AND TEMPORAL TREND PREDICTION	10/29/2019	16/666789

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	System and Method for Generating Bitmaps of Metadata Changes	10/29/2019	16/667032
EMC IP Holding Company LLC	PROVIDING BUILD AVOIDANCE WITHOUT REQUIRING LOCAL SOURCE CODE	10/29/2019	16/667014
EMC IP Holding Company LLC	PROVIDING A RAID RESILIENCY SET FROM A PLURALITY OF STORAGE DEVICES	10/29/2019	16/666972
EMC IP Holding Company LLC	CONCURRENT COPY EMULATION	10/29/2019	16/667197
EMC IP Holding Company LLC	SAN advisory based on latency	10/29/2019	16/666558
EMC IP Holding Company LLC	CAPACITY REDUCTION IN A STORAGE SYSTEM	10/29/2019	16/666729
EMC IP Holding Company LLC	METHOD AND SYSTEM CREATING AND USING DATA CONFIDENCE FABRIC PROCESSING PATHS	10/28/2019	16/665696
EMC IP Holding Company LLC	METHOD AND SYSTEM OPTIMIZING THE USE OF SUB-DATA CONFIDENCE FABRICS	10/28/2019	16/665690
EMC IP Holding Company LLC	METHOD AND SYSTEM METHOD AND SYSTEM TRANSACTING DATA USING VERIFIABLE CLAIMS	10/28/2019	16/665626
EMC IP Holding Company LLC	System and Method for Dynamic CPU Multitasking	10/28/2019	16/665466
EMC IP Holding Company LLC	Priority-Based CPU Multitasking System and Method	10/28/2019	16/665391
EMC IP Holding Company LLC	METHOD AND SYSTEM CREATING AND USING SUB-DATA CONFIDENCE FABRICS	10/28/2019	16/665673
EMC IP Holding Company LLC	REKEYING INFORMATION ON STORAGE DEVICES USING A PROACTIVE COPY SERVICE	10/28/2019	16/665334
EMC IP Holding Company LLC	EXPRESSION-BASED FEATURE TOGGLE IN AN APPLICATION PROGRAMMING INTERFACE (API)	10/28/2019	16/665455
EMC IP Holding Company LLC	Efficient Storage System battery backup usage through dynamic power shedding of components	10/28/2019	16/665053
EMC IP Holding Company LLC	Technique for metadata space reduction in large caches for storage array	10/28/2019	16/665328
EMC IP Holding Company LLC	Method for Distributed Counter with Local Cache	10/28/2019	16/665379
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR A CONTENT BASED CLASSIFICATION AND ADAPTIVE DATA ENCRYPTION	10/28/2019	16/665593
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR QUERYING A SECURE DATABASE LOCATED ON AN UNTRUSTED DEVICE	10/28/2019	16/665609

Owner	Title	Date	App. No.
EMC IP Holding Company LLC	Reconstructing Lost Data Objects By Generating Virtual User Files from Available Nodes Within a Cluster	10/25/2019	16/664634
EMC IP Holding Company LLC	Human Trust API in a Data Confidence Fabric	10/25/2019	16/663965
EMC IP Holding Company LLC	Increasing Edge Data Confidence via Trusted Ethical Hacking	10/25/2019	16/663981
EMC IP Holding Company LLC	BATTERY PROTECTION AND INTELLIGENT COOLING FOR COMPUTING DEVICES	10/25/2019	16/664211
EMC IP Holding Company LLC	PREDICTING VULNERABILITIES AFFECTING ASSETS OF AN ENTERPRISE SYSTEM	10/25/2019	16/664355
EMC IP Holding Company LLC	COORDINATED RECLAIMING OF DATA STORAGE SPACE	10/25/2019	16/663507
EMC IP Holding Company LLC	Storage Management System and Method	10/25/2019	16/663590
EMC IP Holding Company LLC	Achieving guaranteed application performance using a transitional I/O Scheduling for SSDs with known Read/Write Latencies	10/25/2019	16/664088
EMC IP Holding Company LLC	STORAGE SYSTEM WITH THROUGHPUT-BASED TIMING OF SYNCHRONOUS REPLICATION RECOVERY	10/25/2019	16/663524
EMC IP Holding Company LLC	CONTINUOUS LEARNING TECHNIQUES WITH MACHINE LEARNING SYSTEMS TO ADAPT TO NEW INPUT DATA SETS	10/25/2019	16/663682
EMC IP Holding Company LLC	Reconstructing Lost Data Objects By Generating Virtual User Files from Available Tiers Within a Node	10/25/2019	16/664252
EMC IP Holding Company LLC	AUTOMATED ROLLBACK FOR DATABASE OBJECTS	10/24/2019	16/662920
EMC IP Holding Company LLC	DIAGNOSING AND REMEDIATING ERRORS USING VISUAL ERROR SIGNATURES	10/24/2019	16/662828
EMC IP Holding Company LLC	Deduplication-aware replication with an unreliable hash	10/24/2019	16/662637
EMC IP Holding Company LLC	Migration from a CAS storage into non-CAS storage system	10/24/2019	16/662772
EMC IP Holding Company LLC	Weak Lock Allowing Force Preemption by High Priority Thread	10/24/2019	16/662875
EMC IP Holding Company LLC	Idempotent MD destage in storage cluster with "Delta Log"-based architecture	10/24/2019	16/662569
EMC IP Holding Company LLC	Optimizing capacity and performance for sparse snapshots by using hierarchical family tree and hash-based overwrite mapping.	10/24/2019	16/662309
EMC IP Holding Company LLC	Method to improve asynchronous replication performance in dual controller storage systems	10/24/2019	16/662335
EMC IP Holding Company LLC	Support Wire Efficient Replication with Self-descriptive Data Buffer	10/24/2019	16/662447

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	Exploiting telemetry data from different system configurations to predict response times	10/24/2019	16/662185
EMC IP Holding Company LLC	System and Method to achieve seamless restore of on-premise backups to office 365	10/24/2019	16/662613
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR USING ARRAY LEVEL TIME BUCKETS TO EFFICIENTLY CALCULATE TOP CONTRIBUTORS USING RELEVANT PERFORMANCE METRIC	10/24/2019	16/662584
EMC IP Holding Company LLC	Efficient Utilization of Storage Resources on Data Recovery Sites Using Machine Learning	10/24/2019	16/662603
EMC IP Holding Company LLC	Systems and Methods for Network Discovery for Zero Configuration Based-Clustered Systems	10/23/2019	16/661161
EMC IP Holding Company LLC	Systems and Methods for Network MTU Management for Clustered and Federated Storage Systems	10/23/2019	16/666135
EMC IP Holding Company LLC	AUTOMATIC ELEVATION OF SYSTEM SECURITY	10/23/2019	16/661191
EMC IP Holding Company LLC	CUSTOMIZING OPTION-SELECTIONS IN APPLICATION BASED ON USAGE PATTERN	10/23/2019	16/661436
EMC IP Holding Company LLC	EVALUATION FOR REBUILDING PERFORMANCE OF REDUNDANT ARRAY OF INDEPENDENT DISKS	10/22/2019	16/659904
EMC IP Holding Company LLC	METHOD AND DEVICE FOR FINGERPRINT BASED STATUS DETECTION IN A DISTRIBUTED PROCESSING SYSTEM	10/22/2019	16/659972
EMC IP Holding Company LLC	Automatic Identification of Workloads Contributing to Behavioral Changes in Storage Systems Using Machine Learning Techniques	10/22/2019	16/659872
EMC IP Holding Company LLC	Automatic Identification of Resources in Contention in Storage Systems Using Machine Learning Techniques	10/22/2019	16/659862
EMC IP Holding Company LLC	Automatic Identification of Workloads Contributing to System Performance Degradation Using Machine Learning Techniques	10/22/2019	16/659856
EMC IP Holding Company LLC	Determining Similarity Between Time Series Using Machine Learning Techniques	10/22/2019	16/659844
EMC IP Holding Company LLC	Managing Global Counters Using Local Delta Counters	10/22/2019	16/659940
EMC IP Holding Company LLC	Trusted Actuation via Data Fabric Metadata	10/22/2019	16/660009
EMC IP Holding Company LLC	BULK FILE VERIFICATION	10/21/2019	16/659181

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	Instance Based Learning Algorithm For Active Data Placement	10/21/2019	16/658842
EMC IP Holding Company LLC	CPU Utilization For Service Level I/O Scheduling	10/21/2019	16/658783
EMC IP Holding Company LLC	MIGRATION FROM AN ASYNCHRONOUS EXECUTION MODEL TO A SYNCHRONOUS MODEL	10/18/2019	16/657050
EMC IP Holding Company LLC	Transitional IO scheduler using media properties to achieve guaranteed read, write and mixed I/O performance in virtual and cloud storage.	10/18/2019	16/657869
EMC IP Holding Company LLC	Storage Array Data Protection using Virtual Machine Data Protection	10/18/2019	16/657518
EMC IP Holding Company LLC	System and Method for Consistency Checks in Cloud Object Stores Using Microservices	10/18/2019	16/657993
EMC IP Holding Company LLC	Achieving Storage System Performance Guarantees by Applying Transactional I/O Scheduling	10/18/2019	16/657785
EMC IP Holding Company LLC	Storage and Data Protection as a Service in a Cloud Native Environment	10/18/2019	16/657842
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR BACKUP GENERATION FOR DEPLOYMENTS	10/18/2019	16/656982
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR STORAGE UNAVAILABILITY TOLERANT BACKUP	10/18/2019	16/656945
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR PERSISTENT STORAGE FAILURE PREDICTION	10/18/2019	16/656875
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR UNSCHEDULED BACKUP GENERATION	10/18/2019	16/656834
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR DELETING SNAPSHOTS	10/18/2019	16/656770
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT FOR READING DATA	10/18/2019	16/656832
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR DATA WRITING	10/18/2019	16/656806
EMC IP Holding Company LLC	ADAPTIVE INGEST THROTTLING IN LAYERED STORAGE SYSTEMS	10/17/2019	16/656158
EMC IP Holding Company LLC	MONITORING PERFORMANCE OF A STORAGE SYSTEM USING PAIRED NEURAL NETWORKS	10/17/2019	16/656193
EMC IP Holding Company LLC	GENERATING AND STORING MONOTONICALLY-INCREASING GENERATION IDENTIFIERS	10/17/2019	16/655690
EMC IP Holding Company LLC	DIRECT INPUT OUTPUT PATH TO COMPRESSED DATA	10/17/2019	16/656222
EMC IP Holding Company LLC	DEEP DATA-COMPRESSSION	10/17/2019	16/656046

[Schedule I to Patent Security Agreement]

Owner	Title	Date	App. No.
EMC IP Holding Company LLC	PLACEMENT OF METADATA ON DATA STORAGE DRIVES IN A FIRST STORAGE ENCLOSURE OF A DATA STORAGE SYSTEM	10/17/2019	16/655650
EMC IP Holding Company LLC	SNAPSHOT MANAGEMENT BASED ON DATA CHURN DELTA	10/17/2019	16/656332
EMC IP Holding Company LLC	VIRTUAL HOST UPGRADE USING A SECURED DISK IMAGE	10/17/2019	16/656096
EMC IP Holding Company LLC	Physical to Virtual Journal Cascading	10/17/2019	16/655376
EMC IP Holding Company LLC	System and Method for Generating App-consistent Backups Utilizing Crash-consistent Methods and not Requiring an Agent	10/17/2019	16/656012
EMC IP Holding Company LLC	Mechanism to increase data security in the cloud by leveraging multiple cloud vendors	10/17/2019	16/655491
EMC IP Holding Company LLC	Direct-Learning Agent of Disk Access Patterns for Dynamic Optimization of Cache Policy Parameters	10/17/2019	16/655599
EMC IP Holding Company LLC	METHOD AND DEVICE FOR REBUILDING DATA IN STORAGE ARRAY GROUP	10/17/2019	16/655386
EMC IP Holding Company LLC	METHOD, APPARATUS FOR MANAGING THE REDUNDANT ARRAY OF INDEPENDENT DISKS (RAID) AND RELATED COMPUTER READABLE MEDIUM	10/17/2019	16/655401
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT FOR SAMPLE SELECTION	10/17/2019	16/655404
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR REBUILDING DATA	10/17/2019	16/655382
EMC IP Holding Company LLC	NETWORK DATA MANAGEMENT PROTOCOL REDIRECTOR	10/16/2019	16/654488
EMC IP Holding Company LLC	HOST-BASED ACCELERATION OF A CONTENT ADDRESSABLE STORAGE SYSTEM	10/16/2019	16/654826
EMC IP Holding Company LLC	MIRRORING DATA ONTO DISPARATE TYPES OF NON-VOLATILE DATA STORAGE	10/16/2019	16/654766
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR THREAD SCHEDULING	10/16/2019	16/654270
EMC IP Holding Company LLC	STORAGE SYSTEM WITH EFFICIENT RELEASE OF ADDRESS LOCK WAITERS DURING SYNCHRONOUS REPLICATION	10/16/2019	16/654225
EMC IP Holding Company LLC	STORAGE SYSTEM WITH EFFICIENT RELEASE OF FAILED COMPONENT RESOURCES DURING SYNCHRONOUS REPLICATION	10/16/2019	16/654189
EMC IP Holding Company LLC	Anomaly-Based Retention Policies for Snapshot-Based Data Protection Systems	10/16/2019	16/654635
EMC IP Holding Company LLC	Elastic Cloud service with data driven cost reduction for VM's in the cloud	10/16/2019	16/654625

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	Storage-efficient DR for Edge Devices	10/16/2019	16/654422
EMC IP Holding Company LLC	MANAGING DATA BLOCK COMPRESSION IN A STORAGE SYSTEM	10/16/2019	16/654287
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT FOR MANAGING REDUNDANT ARRAYS OF INDEPENDENT DISKS	10/16/2019	16/654702
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT FOR SNAPSHOT REPLICATION	10/16/2019	16/654283
EMC IP Holding Company LLC	METHOD, APPARATUS, AND COMPUTER PROGRAM PRODUCT FOR MANAGING STORAGE SYSTEM	10/16/2019	16/654819
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR SCALING OUT STORAGE DEVICES AND SCALED-OUT STORAGE DEVICES	10/15/2019	16/653451
EMC IP Holding Company LLC	PERFORMANCE IMPROVEMENT FOR AN ACTIVE-ACTIVE DISTRIBUTED NON-ALUA SYSTEM WITH ADDRESS OWNERSHIPS	10/15/2019	16/653328
EMC IP Holding Company LLC	Method to handle fair power bandwidth optimized backup clients when backup target is equipped with QAT	10/15/2019	16/653205
EMC IP Holding Company LLC	Dynamic adaptive compression algorithm selection at system and stream levels to achieve logical space improvement	10/15/2019	16/653196
EMC IP Holding Company LLC	Method to improve mixed workload (ingest, restore, cleaning, replication) performance in backup appliance	10/15/2019	16/653185
EMC IP Holding Company LLC	Pipelined method to improve backup and restore performance and provide guaranteed application performance	10/15/2019	16/653109
EMC IP Holding Company LLC	Method to guaranteed increase the logical space to make cost effective native backup appliance	10/15/2019	16/653102
EMC IP Holding Company LLC	A Novel Approach for Optimizing Performance & Support Compatibility of Data Compression with Hardware Accelerator	10/15/2019	16/653352
EMC IP Holding Company LLC	Automatically configuring service endpoints for disaster recovery of virtual machines to the cloud	10/15/2019	16/601752
EMC IP Holding Company LLC	CLOUD DISASTER RECOVERY	10/15/2019	16/653029
EMC IP Holding Company LLC	INLINE AND POST-PROCESS DATA DEDUPLICATION FOR A FILE SYSTEM	10/15/2019	16/653862
EMC IP Holding Company LLC	MULTI-POLICY INTERLEAVED SNAPSHOT LINEAGE	10/15/2019	16/653418

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	CONNECTIVITY-AWARE WITNESS FOR ACTIVE-ACTIVE STORAGE	10/15/2019	16/601690
EMC IP Holding Company LLC	DYNAMIC APPLICATION CONSISTENT DATA RESTORATION	10/15/2019	16653560
EMC IP Holding Company LLC	System and method for efficient backup system aware direct data migration between clouds storages	10/15/2019	16/653675
EMC IP Holding Company LLC	DETERMINING CAPACITY IN A GLOBAL DEDUPLICATION SYSTEM	10/15/2019	16/653519
EMC IP Holding Company LLC	EFFICIENT PRE-FETCHING ON A STORAGE SYSTEM	10/14/2019	16/601422
EMC IP Holding Company LLC	LIFETIME ADAPTIVE EFFICIENT PRE-FETCHING ON A STORAGE SYSTEM	10/14/2019	16/601446
EMC IP Holding Company LLC	HOST DEVICE WITH MULTI-PATH LAYER PROVIDING DYNAMIC CONTROL OF ONE OR MORE PATH SELECTION ALGORITHMS	10/11/2019	16/599235
EMC IP Holding Company LLC	Approach to improve decompression performance by scatter gather compression units and also updating checksum mechanism	10/11/2019	16/600391
EMC IP Holding Company LLC	Method for gracefully handle QAT hardware or CPU software failures by dynamically switching between QAT hardware and CPU software for data compression and decompression	10/11/2019	16/600398
EMC IP Holding Company LLC	Utilizing volume mount propagation and Job controller for backup and restore of Kubernetes Pod Persistent Volumes	10/11/2019	16/599752
EMC IP Holding Company LLC	Smart Filesystem Indexing with Any Point in Time Replication	10/11/2019	16/599531
EMC IP Holding Company LLC	GLOBALLY OPTIMIZED PARTIAL DEDUPLICATION OF STORAGE OBJECTS	10/11/2019	16/599501
EMC IP Holding Company LLC	PERFORMANCE OPTIMIZATION IN A STORAGE SYSTEM ENVIRONMENT	10/11/2019	16/599490
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR MANAGING STORAGE SYSTEM	10/11/2019	16/600310
EMC IP Holding Company LLC	USING STORAGE CLASS MEMORY AS A PERSISTENT OPERATING SYSTEM FILE/BLOCK CACHE	10/10/2019	16/597969
EMC IP Holding Company LLC	USING STORAGE CLASS MEMORY AS A PERSISTENT OPERATING SYSTEM FILE/BLOCK CACHE	10/10/2019	16/597951
EMC IP Holding Company LLC	MAPPING STORAGE EXTENTS INTO RESILIENCY GROUPS	10/10/2019	16/598585
EMC IP Holding Company LLC	Systems and methods for automatic backup scheduling based on backup history	10/10/2019	16/598658
EMC IP Holding Company LLC	PARTIAL RESTORE FROM TAPE BACKUP	10/9/2019	16/597753

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PATENT
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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR OPTIMIZING DATA REPLICATION FOR LARGE SCALE ARCHIVES	10/9/2019	16/597036
EMC IP Holding Company LLC	EXECUTION PATH DETERMINATION IN A DISTRIBUTED ENVIRONMENT	10/9/2019	16/597764
EMC IP Holding Company LLC	TRANSIENT SOFTWARE ERROR HANDLING IN A DISTRIBUTED SYSTEM	10/9/2019	16/597112
EMC IP Holding Company LLC	Peer-Based Policy Definitions	10/9/2019	16/597288
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER READABLE STORAGE MEDIUM OF STORAGE MANAGEMENT	10/9/2019	16/597560
EMC IP Holding Company LLC	Management network organization approach for clustered and federated storage systems	10/8/2019	16/595946
EMC IP Holding Company LLC	Applying human-machine intelligence to optimize the operational efficiency and success of data backup	10/8/2019	16/596353
EMC IP Holding Company LLC	ENCRYPTION DETECTION	10/8/2019	16/595964
EMC IP Holding Company LLC	TECHNIQUES FOR USING A STEALTH STORAGE DEVICE FOR SECURE INFORMATION STORAGE	10/8/2019	16/595826
EMC IP Holding Company LLC	LOAD BALANCING IN A DATA STORAGE SERVICE VIA DATA STRUCTURE REDISTRIBUTION	10/7/2019	16/594338
EMC IP Holding Company LLC	PATH FAILURE INFORMATION SHARING BETWEEN HOST DEVICES CONNECTED TO A STORAGE SYSTEM	10/4/2019	16/593001
EMC IP Holding Company LLC	DATA ACCESS METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT	10/4/2019	16/592837
EMC IP Holding Company LLC	THREE-DIMENSIONAL MAP GENERATION WITH METADATA OVERLAY FOR VISUALIZING PROJECTED WORKFLOW IMPACT IN COMPUTING ENVIRONMENT	10/3/2019	16/592436
EMC IP Holding Company LLC	EFFICIENT ESTABLISHMENT ON RDMA PEER-TO-PEER CONNECTIONS	10/3/2019	16/592231
EMC IP Holding Company LLC	SOCKETS FOR SHARED LINK APPLICATIONS	10/3/2019	16/592328
EMC IP Holding Company LLC	2-PHASE SYNC REPLICATION RECOVERY TO OPTIMIZE RECOVERY POINT OBJECTIVE (RPO)	10/3/2019	16/592271
EMC IP Holding Company LLC	Technique for Inline Tiering of Write-data	10/3/2019	16/592588
EMC IP Holding Company LLC	METHOD FOR MANAGING MULTIPLE DISKS, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT	10/3/2019	16/591890
EMC IP Holding Company LLC	Managing Mapped Raid Extents in Data Storage Systems	10/2/2019	16/590443

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	Methods and Systems for Efficient Garbage Collection for a Node Using Self-Contained Namespace Configuration	10/2/2019	16/590589
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR STAR REPLICATION USING MULTIPLE REPLICATION TECHNOLOGIES	10/1/2019	16/589486
EMC IP Holding Company LLC	Workspace Recommendations Based on Prior User Ratings and Similar Selections	10/1/2019	16/589349
EMC IP Holding Company LLC	Local Cache Size Control in a Storage Array	10/1/2019	16/589225
EMC IP Holding Company LLC	Traffic Class Management of NVMe (Non Volatile Memory Express) Traffic	10/1/2019	16/589216
EMC IP Holding Company LLC	FILEKEY ACCESS TO DATA	9/30/2019	16/588016
EMC IP Holding Company LLC	GLOBAL DATA DEDUPLICATION ACROSS MULTIPLE DISTRIBUTED FILE SYSTEMS	9/30/2019	16/588009
EMC IP Holding Company LLC	SERVICE LEVEL BASED PRIORITY SCHEDULER FOR MULTI-TENANCY COMPUTING SYSTEMS	9/30/2019	16/588025
EMC IP Holding Company LLC	LIMITED DEDUPLICATION SCOPE FOR DISTRIBUTED FILE SYSTEMS	9/30/2019	16/587997
EMC IP Holding Company LLC	HOST DEVICE WITH MULTI-PATH LAYER CONFIGURED FOR IO CONTROL USING DETECTED STORAGE PORT RESOURCE AVAILABILITY	9/30/2019	16/587536
EMC IP Holding Company LLC	PERFORMING INPUT-OUTPUT MULTI-PATHING FROM USER SPACE	9/30/2019	16/587533
EMC IP Holding Company LLC	MIGRATION OF WEB APPLICATIONS BETWEEN DIFFERENT WEB APPLICATION FRAMEWORKS	9/30/2019	16/588168
EMC IP Holding Company LLC	Automatic Detection of Disruptive Orders for a Supply Chain	9/30/2019	16/587368
EMC IP Holding Company LLC	Non disruptive in-memory certificate management	9/30/2019	16/587750
EMC IP Holding Company LLC	Data Record Anomaly Reconciliation Using Machine Learning Models	9/30/2019	16/587367
EMC IP Holding Company LLC	CACHE ALLOCATION FOR CONTROLLER BOARDS BASED ON PRIOR INPUT-OUTPUT OPERATIONS	9/30/2019	16/587286
EMC IP Holding Company LLC	Customer Service Ticket Prioritization Using Multiple Time-Based Machine Learning Models	9/30/2019	16/587364
EMC IP Holding Company LLC	Data Driven Estimation of Order Delivery Date	9/30/2019	16/587359
EMC IP Holding Company LLC	Serverless Application Center for Multi-Cloud Deployment of Serverless Applications	9/30/2019	16/587716
EMC IP Holding Company LLC	MAINTAINING TEMPORAL ASSOCIATIONS FOR EVENT DATA IN AN EVENT DATABASE	9/30/2019	16/587635

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PATENT
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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	Method and Apparatus for Determining Storage System Compliance with Snapshot Policies	9/30/2019	16/587147
EMC IP Holding Company LLC	HOST DEVICE WITH MULTI-PATH LAYER CONFIGURED FOR DETECTING TARGET FAILURE STATUS AND UPDATING PATH AVAILABILITY	9/30/2019	16/587907
EMC IP Holding Company LLC	Using Distributed Segment Processing among the nodes in a deduplication cluster to achieve load balancing and reduce inter-node network traffic while maintaining high overall dedupe in the cluster	9/30/2019	16/588782
EMC IP Holding Company LLC	De-duplicating clustered global file system over multiple tiers of storage	9/30/2019	16/588852
EMC IP Holding Company LLC	PATCH RECONCILIATION OF STORAGE NODES WITHIN A STORAGE CLUSTER	9/30/2019	16/588983
EMC IP Holding Company LLC	METHOD, APPARATUS, AND COMPUTER READABLE MEDIUM FOR I/O CONTROL	9/30/2019	16/587970
EMC IP Holding Company LLC	METHODS, APPARATUSES AND COMPUTER PROGRAM PRODUCTS FOR PROCESSING AND MANAGING STORAGE UNIT ACCESS	9/30/2019	16/587932
EMC IP Holding Company LLC	Method and Apparatus for Replicating a Concurrently Accessed Shared Filesystem Between Storage Clusters	9/27/2019	16/585100
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER READABLE STORAGE MEDIUM FOR MANAGING REDUNDANT ARRAY OF INDEPENDENT DISKS	9/27/2019	16/585696
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE, AND PROGRAM PRODUCT FOR SCHEDULING REQUESTS FOR RECLAIMING STORAGE SPACE	9/27/2019	16/585578
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR CACHE MANAGEMENT	9/27/2019	16/585607
EMC IP Holding Company LLC	METHODS, APPARATUSES AND COMPUTER PROGRAM PRODUCTS FOR SUPPORTING AND PERFORMING DATA REPLICATION OF VIRTUAL MACHINE	9/27/2019	16/586231
EMC IP Holding Company LLC	Mapped Redundant Array of Independent Data Storage Regions	9/26/2019	16/584800
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR DATA PROCESSING	9/25/2019	16/582476
EMC IP Holding Company LLC	METHOD, DEVICE AND PROGRAM PRODUCT FOR MANAGING DATA OF STORAGE DEVICE	9/25/2019	16/582615
EMC IP Holding Company LLC	METHODS, DEVICES AND COMPUTER READABLE MEDIUM FOR MANAGING A	9/25/2019	16/582267

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PATENT
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Owner	Title	Date	App. No.
	REDUNDANT ARRAY OF INDEPENDENT DISKS		
EMC IP Holding Company LLC	METHOD, DEVICE AND PROGRAM FOR MANAGING DATA OF RAID	9/25/2019	16/582637
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER READABLE STORAGE MEDIUM OF STORAGE MANAGEMENT	9/25/2019	16/582630
EMC IP Holding Company LLC	DISTRIBUTED SHARED MEMORY PAGING	9/24/2019	16/579980
EMC IP Holding Company LLC	REDUCING INDEX OPERATIONS IN A CACHE	9/24/2019	16/580362
EMC IP Holding Company LLC	HOST DEVICE WITH STORAGE CACHE AWARE PROCESSING OF INPUT-OUTPUT OPERATIONS IN MULTI-PATH LAYER	9/24/2019	16/580526
EMC IP Holding Company LLC	METHOD, APPARATUS AND COMPUTER PROGRAM PRODUCT FOR MANAGING DATA ACCESS	9/24/2019	16/579988
EMC IP Holding Company LLC	PROACTIVE COPY IN A STORAGE ENVIRONMENT	9/24/2019	16/579993
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER READABLE STORAGE MEDIUM FOR MANAGING REDUNDANT ARRAY OF INDEPENDENT DISKS	9/24/2019	16/579991
EMC IP Holding Company LLC	METHOD AND DEVICE FOR MANAGING REDUNDANT ARRAY OF INDEPENDENT DISKS AND COMPUTER PROGRAM PRODUCT	9/24/2019	16/579990
EMC IP Holding Company LLC	METHOD, APPARATUS, AND COMPUTER PROGRAM PRODUCT FOR MANAGING STORAGE SPACE	9/24/2019	16/579981
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER READABLE STORAGE MEDIUM FOR MANAGING STORAGE SYSTEM	9/24/2019	16/579987
EMC IP Holding Company LLC	Dynamic Response Time Monitor and Automatic Load Balance for VMware Data Protection. Follow-up of 115293.	9/23/2019	16/579497
EMC IP Holding Company LLC	METHOD, APPARATUS AND COMPUTER STORAGE MEDIUM FOR DATA SYNCHRONIZATION	9/20/2019	16/576959
EMC IP Holding Company LLC	METHOD, APPARATUS AND COMPUTER PROGRAM PRODUCT FOR STORING DATA	9/20/2019	16/576980
EMC IP Holding Company LLC	INTELLIGENT DATA DISSEMINATION	9/19/2019	16/575846
EMC IP Holding Company LLC	CREATING REPLICAS AT USER-DEFINED POINTS IN TIME	9/19/2019	16/576063
EMC IP Holding Company LLC	DYNAMIC MULTITASKING FOR DISTRIBUTED STORAGE SYSTEMS	9/19/2019	16/576135

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	METHODS, APPARATUSES AND COMPUTER PROGRAM PRODUCTS FOR REALLOCATING RESOURCE IN A DISK SYSTEM	9/19/2019	16/575475
EMC IP Holding Company LLC	METHOD, DEVICE, AND PROGRAM PRODUCT FOR REDUCING DELAY IN I/O PROCESSING DUE TO MIRRORING OF CACHE DATA	9/19/2019	16/575466
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT FOR DATA STORAGE	9/19/2019	16/575479
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR MANAGING DATA PLACEMENT	9/18/2019	16/574799
EMC IP Holding Company LLC	METHOD, APPARATUS AND COMPUTER PROGRAM PRODUCT FOR MANAGING STORAGE DEVICE	9/18/2019	16/574851
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR PATH SELECTION OF STORAGE SYSTEMS	9/17/2019	16/573518
EMC IP Holding Company LLC	CACHE BASED RECOVERY OF CORRUPTED OR MISSING DATA	9/17/2019	16/573210
EMC IP Holding Company LLC	PLUGGABLE STORAGE SYSTEM FOR DISTRIBUTED FILE SYSTEMS	9/17/2019	16/573925
EMC IP Holding Company LLC	METHOD, ELECTRONIC DEVICE AND COMPUTER PROGRAM PRODUCT FOR STORAGE	9/17/2019	16/572934
EMC IP Holding Company LLC	METHOD, APPARATUS, AND COMPUTER PROGRAM FOR PROVIDING CACHE SERVICE	9/17/2019	16/572929
EMC IP Holding Company LLC	METHOD AND APPARATUS FOR CACHING DATA	9/16/2019	16/572188
EMC IP Holding Company LLC	METHOD AND DEVICE FOR DATA REPLICATION	9/16/2019	16/572165
EMC IP Holding Company LLC	METHOD AND DEVICE FOR SELECTING RAID LEVEL FOR MAPPED RAID	9/16/2019	16/571753
EMC IP Holding Company LLC	AUTOMATIC FEATURE EXTRACTION FROM UNSTRUCTURED LOG DATA UTILIZING TERM FREQUENCY SCORES	9/16/2019	16/572006
EMC IP Holding Company LLC	FILENAME-BASED MALWARE PRE-SCANNING	9/13/2019	16/570909
EMC IP Holding Company LLC	STORAGE ARRAY WITH N-WAY ACTIVE-ACTIVE BACKEND	9/13/2019	16/569704
EMC IP Holding Company LLC	MANAGING SINGLE PATH COMMUNICATION BETWEEN A HOST AND A STORAGE SYSTEM	9/13/2019	16/569686
EMC IP Holding Company LLC	MANAGING CONTAINERS ON A DATA STORAGE SYSTEM	9/13/2019	16/569692
EMC IP Holding Company LLC	FILENAME-BASED MALWARE PRE-SCANNING	9/13/2019	16/570890
EMC IP Holding Company LLC	GATHERING DATA OF A DISTRIBUTED SYSTEM BASED ON DEFINED SAMPLING	9/13/2019	16/570757

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Owner	Title	Date	App. No.
	INTERVALS THAT HAVE BEEN RESPECTIVELY INITIATED BY SUCH SYSTEM TO MINIMIZE CONTENTION OF SYSTEM RESOURCES		
EMC IP Holding Company LLC	Bulk Scaling Out of a Geographically Diverse Storage System	9/13/2019	16/570690
EMC IP Holding Company LLC	REBALANCING IN A GEOGRAPHICALLY DIVERSE STORAGE SYSTEM EMPLOYING ERASURE CODING	9/13/2019	16/570657
EMC IP Holding Company LLC	DATA SERVICE FAILOVER IN SHARED STORAGE CLUSTERS	9/13/2019	16/570974
EMC IP Holding Company LLC	CLUSTER CONTROLLER SELECTION FOR SHARED STORAGE CLUSTERS	9/13/2019	16/570963
EMC IP Holding Company LLC	TECHNIQUES PERFORMED IN CONNECTION WITH AN INSUFFICIENT RESOURCE LEVEL WHEN PROCESSING WRITE DATA	9/12/2019	16/568576
EMC IP Holding Company LLC	SNAPSHOT COMPLIANCE TECHNIQUES	9/12/2019	16/568636
EMC IP Holding Company LLC	METHOD, APPARATUS AND COMPUTER PROGRAM PRODUCT FOR STORING DATA	9/12/2019	16/569094
EMC IP Holding Company LLC	METHOD, APPARATUS AND COMPUTER PROGRAM PRODUCT FOR MANAGING I/O OPERATION	9/12/2019	16/569130
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR STORAGE MANAGEMENT	9/12/2019	16/569048
EMC IP Holding Company LLC	CLOUD BASED STORAGE MIGRATION	9/11/2019	16/567538
EMC IP Holding Company LLC	DISTRIBUTED FAILOVER OF A BACK-END STORAGE DIRECTOR	9/11/2019	16/567026
EMC IP Holding Company LLC	STORAGE UTILIZING A DISTRIBUTED CACHE CHAIN AND A CHECKPOINT DRIVE IN RESPONSE TO A DATA DRIVE CORRUPTION	9/10/2019	16/565816
EMC IP Holding Company LLC	METHOD AND DEVICE FOR STORING DATA	9/10/2019	16/565925
EMC IP Holding Company LLC	TECHNIQUES FOR IMPROVING STORAGE SPACE EFFICIENCY WITH VARIABLE COMPRESSION SIZE UNIT	9/9/2019	16/564466
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR UPDATING SOFTWARE	9/9/2019	16/564299
EMC IP Holding Company LLC	Method for Hybrid Storage Live Mount DELLEMC Data Protection	9/6/2019	16/563406
EMC IP Holding Company LLC	Method for Minimal Downtime Rolling Recovery DELLEMC Data Protection	9/6/2019	16/563417
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR AUTO LIVE-MOUNTING DATABASE GOLDEN COPIES	9/6/2019	16/563389
EMC IP Holding Company LLC	BLOCKCHAIN-AS-A-SERVICE INTEGRATED HYBRID OBJECT STORAGE SYSTEM IN MULTI-CLOUD COMPUTING ENVIRONMENT	9/5/2019	16/561221

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	REDUCING FAILOVER TIME BETWEEN DATA NODES	9/5/2019	16/561073
EMC IP Holding Company LLC	TECHNIQUES FOR PROVIDING INTERSITE HIGH AVAILABILITY OF DATA NODES IN A VIRTUAL CLUSTER	9/5/2019	16/561406
EMC IP Holding Company LLC	New IO fencing technique based on the storage array access control list (ACL).	9/5/2019	16/562265
EMC IP Holding Company LLC	Live mount Leveraging Application Incremental Merge DELLEMC Data Protection	9/5/2019	16/562190
EMC IP Holding Company LLC	METHOD AND SYSTEM FOR FULL RESTORE POINT CREATION USING INCREMENTAL BACKUPS	9/5/2019	16/562160
EMC IP Holding Company LLC	SYSTEM AND METHOD FOR A MACHINE LEARNING BASED SMART RESTORE MECHANISM	9/4/2019	16/560928
EMC IP Holding Company LLC	SYSTEM AND METHOD TO ACHIEVE VIRTUAL MACHINE BACKUP LOAD BALANCING USING MACHINE LEARNING	9/4/2019	16/560926
EMC IP Holding Company LLC	METHOD, APPARATUS AND COMPUTER PROGRAM PRODUCT FOR MANAGING METADATA OF STORAGE OBJECT	9/4/2019	16/560955
EMC IP Holding Company LLC	System for Voice-Based Alerting of Person Wearing an Obstructive Listening Device	9/3/2019	16/558887
EMC IP Holding Company LLC	Filesystem Operation Bookmarking for Any Point in Time Replication	9/3/2019	16/558606
EMC IP Holding Company LLC	STORAGE BOOST	9/3/2019	16/558562
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR RESTORING DATA	8/31/2019	16/558098
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR DATA BACKUP AND RESTORATION	8/31/2019	16/558097
EMC IP Holding Company LLC	USER INTERFACE DEVELOPMENT	8/30/2019	16/557319
EMC IP Holding Company LLC	DATA TRANSFER IN A DATA PROTECTION SYSTEM	8/30/2019	16/557333
EMC IP Holding Company LLC	Improved Indexing Splitter for Any PiT Replication Invention Disclosure	8/30/2019	16/557791
EMC IP Holding Company LLC	Smart File Level Restore with RP4VM	8/30/2019	16/557766
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR STORAGE MANAGEMENT	8/30/2019	16/557949
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR CREATING INDEX FOR STREAM STORAGE	8/30/2019	16/557952

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	Early-Convergence Detection for Online Resource Allocation Policies for Iterative Workloads	8/29/2019	16/554910
EMC IP Holding Company LLC	Multi-Cloud Operations Center for Function-Based Applications	8/29/2019	16/554903
EMC IP Holding Company LLC	Multiple overlapping hashes at variable offset in a hardware offload	8/29/2019	16/554802
EMC IP Holding Company LLC	SYSTEM COMPRISING NON-VOLATILE MEMORY DEVICE AND ONE OR MORE PERSISTENT MEMORY DEVICES IN RESPECTIVE FAULT DOMAINS	8/29/2019	16/555516
EMC IP Holding Company LLC	Model-Based Initialization of Workloads for Resource Allocation Adaptation	8/29/2019	16/554897
EMC IP Holding Company LLC	METHOD, DEVICE, AND COMPUTER PROGRAM PRODUCT FOR PARALLEL DATA TRANSMISSION	8/29/2019	16/555226
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR DATA MIGRATION	8/29/2019	16/555916
EMC IP Holding Company LLC	STORAGE SYSTEM WITH DETECTION AND CORRECTION OF REFERENCE COUNT BASED LEAKS IN PHYSICAL CAPACITY	8/27/2019	16/552026
EMC IP Holding Company LLC	A method to efficiently store permanent data on non volatile memory.	8/27/2019	16/552558
EMC IP Holding Company LLC	GENERATING SHARED AUTHENTICATION KEYS USING NETWORK CONNECTION CHARACTERISTICS	8/27/2019	16/552658
EMC IP Holding Company LLC	DATA DISTRIBUTION FOR FAST RECOVERY IN CLUSTER-BASED STORAGE SYSTEMS	8/27/2019	16/552251
EMC IP Holding Company LLC	A SCALABLE CLOUD HOSTED METADATA SERVICE	8/26/2019	16/550737
EMC IP Holding Company LLC	STORAGE SYSTEM WITH SNAPSHOT GROUP SPLIT FUNCTIONALITY	8/23/2019	16/549533
EMC IP Holding Company LLC	CASCADED DISCOVERY OF INFORMATION ENVIRONMENT	8/22/2019	16/548339
EMC IP Holding Company LLC	LEVERAGING NAS PROTOCOL FOR EFFICIENT FILE TRANSFER	8/22/2019	16/547768
EMC IP Holding Company LLC	AUTOMATIC SELF-CORRECTION IN A CONFIGURATION COMPLIANCE COMPUTING ENVIRONMENT	8/21/2019	16/547179
EMC IP Holding Company LLC	CONFIGURATION SYSTEM AND METHOD FOR INDIVIDUAL HIERARCHALLY MODELED SUB-SYSTEMS OF AN INTEGRATED COMPUTING SYSTEM	8/21/2019	16/547121
EMC IP Holding Company LLC	UTILIZING DATA SOURCE IDENTIFIERS TO OBTAIN DEDUPLICATION EFFICIENCY WITHIN A CLUSTERED STORAGE ENVIRONMENT	8/21/2019	16/547346

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Owner	Title	Date	App. No.
EMC IP Holding Company LLC	REDUCING DATABASE FRAGMENTATION	8/21/2019	16/546863
EMC IP Holding Company LLC	GRANULAR DATA SOURCE IDENTIFICATION FOR OBTAINING DEPLICATION STORAGE EFFICIENCY WITHIN A CLUSTERED ENVIRONMENT	8/21/2019	16/547234
EMC IP Holding Company LLC	DEADLOCK-FREE LOCKING FOR CONSISTENT AND CONCURRENT SERVER-SIDE FILE OPERATIONS IN FILE SYSTEMS	8/19/2019	16/543946
EMC IP Holding Company LLC	IMAGE RECOVERY FROM VOLUME IMAGE FILES	8/19/2019	16/543848
EMC IP Holding Company LLC	SNAPSHOT CONSCIOUS INTERNAL FILE DATA MODIFICATION FOR NETWORK-ATTACHED STORAGE	8/19/2019	16/544785
EMC IP Holding Company LLC	Method and Apparatus for Predicting Errors in To-Be-Developed Software Updates	8/19/2019	16/543712
EMC IP Holding Company LLC	PRIORITIZED BACKUP SEGMENTING	8/16/2019	16/543135
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR PROCESSING MACHINE LEARNING MODEL	8/16/2019	16/542757
EMC IP Holding Company LLC	Application Input-Output Workload Prioritization	8/14/2019	16/540776
EMC IP Holding Company LLC	A METHOD, A DEVICE, AND A COMPUTER PROGRAM PRODUCT FOR DETERMINING A RESOURCE REQUIRED FOR EXECUTING A CODE SEGMENT	8/14/2019	16/540385
EMC IP Holding Company LLC	COMBINING EXPLICIT AND IMPLICIT FEEDBACK IN SELF-LEARNING FRAUD DETECTION SYSTEMS	8/13/2019	16/539394
EMC IP Holding Company LLC	GEOGRAPHIC ZONE DATA RECOVERY IN GEOGRAPHICALLY DISTRIBUTED DATA STORAGE ENVIRONMENT	8/13/2019	16/538984
EMC IP Holding Company LLC	METHOD, NETWORK ADAPTER AND COMPUTER PROGRAM PRODUCT FOR PROCESSING DATA	8/13/2019	16/539568
EMC IP Holding Company LLC	TECHNIQUES FOR RENDERING A TABLE SPANNING MULTIPLE PAGES	8/12/2019	16/537896
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR DATA ANALYSIS	8/9/2019	16/536599
EMC IP Holding Company LLC	METHOD, DEVICE AND COMPUTER PROGRAM PRODUCT FOR PATH OPTIMIZATION	8/9/2019	16/537117
EMC IP Holding Company LLC	REAL-TIME UPDATING OF PREDICTIVE ANALYTICS ENGINE	8/8/2019	16/535638
EMC IP Holding Company LLC	UTILIZATION OF NETWORKING PROTOCOL FOR SEAMLESS INTEGRATION OF COMPUTE	8/7/2019	16/534597

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Owner	Title	Date	App. No.
	NODES WITH SOFTWARE-DEFINED STORAGE NODES		
EMC IP Holding Company LLC	RELOCATION TARGET SELECTION	8/7/2019	16/533934
EMC IP Holding Company LLC	METADATA RECONCILIATION	8/6/2019	16/533372
EMC IP Holding Company LLC	METHOD AND DEVICE FOR DETERMINING CAUSES OF PERFORMANCE DEGRADATION FOR STORAGE SYSTEMS	8/5/2019	16/531923
EMC IP Holding Company LLC	APPLICATION PROGRAMMING INTERFACE SECURITY VALIDATION FOR SYSTEM INTEGRATION TESTING	8/5/2019	16/531393
SecureWorks Corp.	Systems and Methods For Distributed Extended Common Vulnerabilities and Exposures Data Management	10/11/2019	16/599266
EMC IP Holding Company LLC	MANAGING STORAGE ARRAY CONFIGURATION	7/31/2019	16/528286

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