| Electronic Acknowledgement Receipt | |
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| **EFS ID:** | 41996134 |
| **Application Number:** | 17182511 |
| **International Application Number:** | |
| **Confirmation Number:** | 3895 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Correspondence Address:** | FOLEY & LARDNER LLP<br>-<br>3000 K STREET N.W.<br>SUITE 600<br>WASHINGTON DC 20007-5109<br>US 202-672-5300<br>ipdocketing@foley.com |
| **Filer:** | Paul S. Hunter/Vicki Andrews |
| **Filer Authorized By:** | Paul S. Hunter |
| **Attorney Docket Number:** | 115539-0346 |
| **Receipt Date:** | 23-FEB-2021 |
| **Filing Date:** | |
| **Time Stamp:** | 13:39:20 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

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| Submitted with Payment | no |

## File Listing:



Tessell Exhibit 1002
Tessell v. Nutanix

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Non Patent Literature | A168--POITRAS__STEVEN___The_Nutanix_Bible___9_.pdf | 5980225<br>255559657b145323bab9f9a8c1ea508f2b69fcfb | no | 78 |
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| 2 | Non Patent Literature | A169--RED_HAT__Chapter_4__Configuring_The_Hapr.pdf | 441524<br>b6b358a9637c35d5d0fe66423f1b2ccf2988dca7 | no | 8 |
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| 3 | Non Patent Literature | A170--REED__KATE__Nutanix_Introduces_Database_.pdf | 114499<br>30772c0b58816286c28385eca31ff3058471ed47 | no | 3 |
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| 4 | Non Patent Literature | A171--REED__KATE__Nutanix_Introduces_Database_.pdf | 378478<br>7a9f3eb4811ff3c13a9f2474376cacac76a32998 | no | 6 |
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| 5 | Non Patent Literature | A172--Rocheleau__Jake___30_Best_Free_Calendar_.pdf | 631285<br>25d93ab32b32d81602b1eac54d55478742c9a5db | no | 6 |
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| 6 | Non Patent Literature | A173--SANGLAJI__MARYAM_et_al___Nutanix_Era__Da.pdf | 454453<br>f50de867119e6bc107f388b785564f89f6851422 | no | 7 |
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| 7 | Non Patent Literature | A174--SANGLAJI__MARYAM_et_al___Nutanix_Era__On.pdf | 120748<br>c810c44566381b9c73d2fda92c0046b4f6ff695f | no | 3 |
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| 8 | Non Patent Literature | A176--Sharif__Ashraf___Making_Your_Database_Co.pdf | 483209<br>c0c0675a11b1537d41fc821c0e2ef0c61e74b6cf | no | 8 |
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| 9 | Non Patent Literature | A177--Stack_Exchange_Users___PostgreSQL_High_A.pdf | 232594<br>12e59453ffcaa31b78b1114ab18aba77dcef84ef | no | 5 |
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| 10 | Non Patent Literature | A178--STEPAN___How_to_Set_Up_Multi_Cluster_Loa.pdf | 1318506<br>ce4fbe74ee1fe7bc51e6db073edafeaad39c6f25 | no | 15 |
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| 11 | Non Patent Literature | A179--The_Nutanix_Bible__from_https___nutanixb.pdf | 11717845<br>86aa2ed92e18e18f5791f7bccbd552ecd3f783a6 | no | 215 |
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| 12 | Non Patent Literature | A180--The_Nutanix_Bible__from_https___nutanixb.pdf | 17887935<br>4f1dc1e4c4a90dc1657654b5a44b87ac65f42b4a | no | 314 |
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| 13 | Non Patent Literature | A181--The_Nutanix_Bible__from_https___nutanixb.pdf | 15853836<br>1534267fbeea6e24b85c83eaa1832c0561a1a464 | no | 298 |
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| 14 | Non Patent Literature | A182--The_Nutanix_Bible__from_https___nutanixb.pdf | 17019186<br>334f8ef4eaf6f09fa085ed2f67d372473c02af1c | no | 316 |
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| 15 | Non Patent Literature | A183--<br>The_Nutanix_Bible__from_https___nutanixb.pdf | 10510091<br>96dfb1fccde06036d0cb78495514921b278f02aa | no | 167 |
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| 16 | Non Patent Literature | A184--<br>The_Nutanix_Bible__from_https___nutanixb.pdf | 18828644<br>5aab4b701a6fb12cf4bcdefce5b3c2d16c2f658b | no | 325 |
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| 17 | Non Patent Literature | A185--<br>The_Nutanix_Bible__from_https___nutanixb.pdf | 17481302<br>af38a5b9247361e6416debc86d682db69a347f9b | no | 306 |
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| 18 | Non Patent Literature | A186--<br>The_Nutanix_Bible__from_https___nutanixb.pdf | 13954017<br>270c2949a46e8207040c87117f243777b3816031 | no | 261 |
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| 19 | Non Patent Literature | A187--<br>VMWARE__VMware_vFabric_Data_Director_Adm.pdf | 183389<br>83c35f2ff6135bcd33fed8914243984443a0d221e | no | 5 |
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| 20 | Non Patent Literature | A188--<br>VMWARE___VMware_vFabric_Data_Director_2_.pdf | 712426<br>e2bf94e4cd256eaa89286b7be21129d242cdec5a | no | 15 |
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| 21 | Non Patent Literature | A189--<br>Warren___Internet_Archive_Wayback_Machin.pdf | 153202<br>f981f5a52489067 5f8522842b35b30ee75d042bb | no | 1 |
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| 22 | Non Patent Literature | A175--SANGLAJI__MARYAM_et_al___Nutanix_Era__On.pdf | 2099795<br>d67cecef6f9c5df968e31100be239031b642f9b1 | no | 27 |
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| | | | **Total Files Size (in bytes):** | 136557189 | |

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**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

| Electronic Patent Application Fee Transmittal | |
|---|---|
| **Application Number:** | |
| **Filing Date:** | |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Filer:** | Paul S. Hunter/Vicki Andrews |
| **Attorney Docket Number:** | 115539-0346 |
| Filed as Large Entity | |
| **Filing Fees for Utility under 35 USC 111(a)** | |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| UTILITY APPLICATION FILING | 1011 | 1 | 320 | 320 |
| UTILITY SEARCH FEE | 1111 | 1 | 700 | 700 |
| UTILITY EXAMINATION FEE | 1311 | 1 | 800 | 800 |
| **Pages:** | | | | |
| **Claims:** | | | | |
| CLAIMS IN EXCESS OF 20 | 1202 | 10 | 100 | 1000 |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |

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| **Patent-Appeals-and-Interference:** | | | | |
| **Post-Allowance-and-Post-Issuance:** | | | | |
| **Extension-of-Time:** | | | | |
| **Miscellaneous:** | | | | |
| | | **Total in USD ($)** | | **2820** |

| Electronic Acknowledgement Receipt | |
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| **EFS ID:** | 41993038 |
| **Application Number:** | 17182511 |
| **International Application Number:** | |
| **Confirmation Number:** | 3895 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Customer Number:** | 147491 |
| **Filer:** | Paul S. Hunter/Vicki Andrews |
| **Filer Authorized By:** | Paul S. Hunter |
| **Attorney Docket Number:** | 115539-0346 |
| **Receipt Date:** | 23-FEB-2021 |
| **Filing Date:** | |
| **Time Stamp:** | 13:21:23 |
| **Application Type:** | Utility under 35 USC 111(a) |

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| Submitted with Payment | yes |
| Payment Type | CARD |
| Payment was successfully received in RAM | $2820 |
| RAM confirmation Number | E20212MD22432045 |
| Deposit Account | |
| Authorized User | |
| The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: | |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Transmittal of New Application | 115539-0346-New_App_Transmittal.pdf | 140795<br>6a55866c596ad08cbd61b74364ec346aaa7a5bea | no | 4 |
| **Warnings:** | | | | | |
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| 2 | Application Data Sheet | 115539-0346-ADS.pdf | 1255922<br>38f996b548bb936af3711d2b7defb51282dd7cc0 | no | 9 |
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| 3 | | 115539-0346-PAT-1050-Specification.pdf | 307504<br>d67df7ed943a6859f7e35772c83b6dab301cfc0b | yes | 84 |

**Multipart Description/PDF files in .zip description**

| Document Description | Start | End |
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| Abstract | 84 | 84 |
| Claims | 77 | 83 |
| Specification | 1 | 76 |

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| 4 | Drawings-only black and white line drawings | 115539-0346-Drawings.pdf | 2834469<br>c2e0f85bca01c6a8303be1e514460acfa81b2cd0 | no | 8 |
| **Warnings:** | | | | | |
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| 5 | Oath or Declaration filed | 115539-0346-Ex_Declaration.pdf | 502464<br>efff11678a2c1add4de6f85ad604db293b0b49e8 | no | 3 |

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| 6 | Power of Attorney | 115539-0346-POA_Transmittal.pdf | 890305<br>fbd293ed46ae0ed3e2d5904c682e95c3d0516503 | no | 2 |
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| 7 | Transmittal Letter | 115539-0346-IDS_Transmittal.pdf | 131977<br>b4f6d51bc73ec94993121606dea9288ce3426b76 | no | 2 |
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| 8 | Information Disclosure Statement (IDS) Form (SB08) | 115539-0346-IDS_SB08.pdf | 162150<br>c6dbf0e946cc26920b7e39a06b8a8d73afb0b352 | no | 8 |
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| This is not an USPTO supplied IDS fillable form | | | | | |
| 9 | Foreign Reference | A118--EP_1654683.pdf | 1394613<br>03c259c4e6037e6e3ec6f886458e4ad36e336eb9 | no | 21 |
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| 10 | Foreign Reference | A119--TW_201600970A1.pdf | 7679245<br>a444b7daa76d3425d4b472262df0148dfe600a18 | no | 160 |
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| 11 | Foreign Reference | A120--WO_2016_069029.pdf | 432625<br>b2c33aba2bccf09ccf38c64fd97f76c51f3e5959 | no | 38 |
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| 12 | Non Patent Literature | A121--Aluciani___Provisioning_PostgreSQL_to_be.pdf | 471043<br>dcbcc5c7cb09604b3a24ed311c3b9bacddc795a3 | no | 7 |
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| 13 | Non Patent Literature | A122--AWS___Working_with_Aurora_multi_master_c.pdf | 1536533<br>c78a77f229bdb1c1b110a42f789d3711b11cf30b | no | 27 |
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| 14 | Non Patent Literature | A123--Ay__Neslisah___How_to_Set_Up_a_High_Avai.pdf | 677024<br>3fc6f3eba5060b9ad5ba10b6ea47b717d12d4bf7 | no | 8 |
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| 15 | Non Patent Literature | A124--BRULL__Jim___Oracle_Cloud_Database_vs_On.pdf | 357134<br>192320f0944072f3ff90a1131a09642f04f4e62c | no | 9 |
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| 16 | Non Patent Literature | A125--CANO__IGNACIO__et_al____Curator___Self_M.pdf | 1426670<br>c2f90bd860525cec252b94a285c1973d0e7a35c4 | no | 16 |
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| 17 | Non Patent Literature | A127--CISCO_PUBLIC___Cisco_HyperFlex_All_Flash.pdf | 1536463<br>653a309c63e4c255cac25d4fd2cf3430711862bb | no | 18 |
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| 18 | Non Patent Literature | A128--CISCO_PUBLIC___Cisco_HyperFlex_All_NVMe_.pdf | 2159728<br>e286a1717bf0b7773aff7e3756b461b4e0204187 | no | 26 |
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| 19 | Non Patent Literature | A129--CISCO_PUBLIC___Cisco_HyperFlex_HX_Data_P.pdf | 3454556<br>82202c696d0588fd49ab39e984a1176cdcde6d21 | no | 17 |
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| 20 | Non Patent Literature | A130--DELPHIX__Backup_and_Recovery_Strategies_.pdf | 623221<br>2ee4d9eb8f382cb253026e5ecf6d9f70e5e3a4b5 | no | 14 |
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| 21 | Non Patent Literature | A131--DELPHIX__Database_Provisioning_Overview_.pdf | 132953<br>638d3eadc18b500c97faacb23f954fe774e2531a | no | 6 |
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| 22 | Non Patent Literature | A132--DELPHIX__Quick_Start_Guides___published_.pdf | 5912835<br>87494b8510c875318d196b7f3727094dfa737ba7 | no | 123 |
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| 23 | Non Patent Literature | A133--DELPHIX__Replication___Published_2017__D.pdf | 1997253<br>f83c7771b38183e5e6ef09b84c51edf2cdd13cfb | no | 40 |
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| 24 | Non Patent Literature | A134--DELPHIX___Understanding_SnapSync_and_Log.pdf | 1135943<br>9f85372aa6801fd843e945a7764b747160397141 | no | 10 |
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| 25 | Non Patent Literature | A135--DRAKE__SAM_et_al___Architecture_of_Highl.pdf | 978471<br>0f73bc7aa9b03dee4541360beed5b463ea371ad1 | no | 17 |
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| 26 | Non Patent Literature | A136--DREMIO___Multiple_AWS_Clusters__Dremio__.pdf | 1428635<br>5c06347b6ecfa3be2afcd13a423df0b2e5eeaf4f | no | 15 |
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| 27 | Non Patent Literature | A137--Friedman__Vitaly___Designing_the_Perfect.pdf | 707555<br>0d0c2bac207b702e9df3a08ea21ae37afabda050 | no | 7 |
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| 28 | Non Patent Literature | A138--GEIER__Eric___Using_Static_IP_Addresses_.pdf | 196966<br>c4bfa29876a07bdb81be10a4fd8c68cb227fefe7 | no | 4 |
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| 29 | Non Patent Literature | A139--HAMMERSPACE___Simplify_Database_Deployme.pdf | 196022<br>2be7d9bcaef2fa7dded5b0738b92f4407f1b5e7b | no | 2 |
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| 30 | Non Patent Literature | A140--Hu_et_al___Architecture_of_Highly_Availa.pdf | 978471<br>98ab71196487d8eaa31d262446f10e3c5cc18708 | no | 17 |
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| 31 | Non Patent Literature | A141--KATZ__Jonathan_S___Multi_Kubernetes_Clus.pdf | 492794<br>393b429890857c6917c016af7285e6d5e90438d7 | no | 5 |
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| 32 | Non Patent Literature | A142--Kolasa__Konrad___Date_Picker___Dribbble_.pdf | 39854<br>2ea7aac3dfdd5dbdba66d8646024308a7877007b | no | 2 |
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| 33 | Non Patent Literature | A143--Kubernetes__Configure_Access_to_Multiple.pdf | 498236<br>6ecd49e92ec47620ef0a2c17f15040e797cb378b | no | 7 |
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| 34 | Non Patent Literature | A144--KUBERNETES___Configure_Access_to_Multipl.pdf | 516104<br>1966aa2768089616163dbe629a77b0efe9e0305f | no | 7 |
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| 35 | Non Patent Literature | A145--Kumar__Madan___Managing_High_Availabilit.pdf | 546784<br>efb19a0a666ad2959f0aa576ba8362ad4f58cfb8 | no | 11 |
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| 36 | Non Patent Literature | A146--M__A__METAWAI_et_al___Load_balancing_in_.pdf | 1772463<br>54e698cae12c43c554f551e01a79273273b32508 | no | 13 |
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| 37 | Non Patent Literature | A147--MELLOR__CHRIS__Beam__Flow_and_Era__Not_a.pdf | 283988<br>3df1161ac2c94cbc2a02b980fb6abf62f2ad9f09 | no | 6 |
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| 38 | Non Patent Literature | A148--MELLOR__CHRIS__Delphix_sends_database_vi.pdf | 403174<br>15a135fb8777a334197861c10280ae4d7ad22c8d | no | 6 |
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| 39 | Non Patent Literature | A149--MICROSOFT_DOCS___Always_On_availability_.pdf | 451623<br>476eb12c2ebc984f3d8bde06d044b5c36f8ade86 | no | 7 |
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| 42 | Non Patent Literature | A152--NETAPP_SUPPORT___Cloning_databases_using.pdf | 154542<br>edbe001e4adccaecd4343fa00fbffd02a22c2a1b | no | 8 |
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| 43 | Non Patent Literature | A153--NETAPP_SUPPORT___Types_of_SnapManager_re.pdf | 137257<br>7a4f208de7b90f9401b062ba1ed270ceac2c6df4 | no | 3 |
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| 44 | Non Patent Literature | A154--Nizhegolenko__Alexey___High_Availability.pdf | 734400<br>8f6a5572acf0d21d8c8461f7966d10502825cdb7 | no | 16 |
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| 45 | Non Patent Literature | A155--NUTANIX__Nutanix_announces_Flow__Era_and.pdf | 645160<br>2180635b143bfe3dec33f9abfa6bb7c4e3c99bc8 | no | 4 |
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| 46 | Non Patent Literature | A126--CISCO_PUBLIC__Hyperconvergence_for_Datab.pdf | 442963<br>c31f7c285ea2a1dffa3a756b1813351af7148e2 | no | 3 |
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| 47 | Non Patent Literature | A156--NUTANIX___Nutanix_Hybrid_Cloud_Infrastru.pdf | 706625<br>0b6e731528f17244c987aacafe999fcc4a2c28e8 | no | 8 |
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**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

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| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | Not yet assigned |
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| Date Submitted: February 23, 2021 | | | | **First Named Inventor** | Sagar Sontakke |
| | | | | Art Unit | Not yet assigned |
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| Date Submitted: February 23, 2021 | | | | **First Named Inventor** | Sagar Sontakke |
| | | | | Art Unit | Not yet assigned |
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| Sheet | 3 | of | 8 | Attorney Docket Number | 115539-0346 |

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| | | | | **Filing Date** | Herewith |
| Date Submitted: February 23, 2021 | | | | **First Named Inventor** | Sagar Sontakke |
| | | | | Art Unit | Not yet assigned |
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| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | Not yet assigned |
| | | | | **Filing Date** | Herewith |
| Date Submitted: February 23, 2021 | | | | **First Named Inventor** | Sagar Sontakke |
| | | | | Art Unit | Not yet assigned |
| *(use as many sheets as necessary)* | | | | Examiner Name | Not yet assigned |
| Sheet | 6 | of | 8 | Attorney Docket Number | 115539-0346 |

**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
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| | | | | **Filing Date** | Herewith |
| Date Submitted: February 23, 2021 | | | | **First Named Inventor** | Sagar Sontakke |
| | | | | Art Unit | Not yet assigned |
| *(use as many sheets as necessary)* | | | | Examiner Name | Not yet assigned |
| Sheet | 7 | of | 8 | Attorney Docket Number | 115539-0346 |

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| | | | | **Filing Date** | Herewith |
| Date Submitted: February 23, 2021 | | | | **First Named Inventor** | Sagar Sontakke |
| | | | | Art Unit | Not yet assigned |
| *(use as many sheets as necessary)* | | | | Examiner Name | Not yet assigned |
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*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| First Inventor Name: | Sagar Sontakke |
| Title: | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Application No.: | Not yet assigned |
| Filing Date: | Herewith |
| Examiner: | Not yet assigned |
| Art Unit: | Not yet assigned |
| Confirmation No.: | Not yet assigned |

**INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Applicant submits herewith documents for the Examiner's consideration in accordance with 37 CFR §§1.56, 1.97 and 1.98.

Applicant respectfully requests that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

The submission of any document herewith is not an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicant does not waive

any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document submitted herewith.

## CONCISE EXPLANATION OF RELEVANCE

Foreign Language

An English translation is provided for foreign language document TW-201600970-A1.

## TIMING OF THE DISCLOSURE

The listed documents are being submitted in compliance with 37 CFR §1.97(b), within three (3) months of the filing date of the application.

Although Applicant believes that no fee is required, the Commissioner is hereby authorized to charge any additional fees which may be due to Deposit Account No. 19-0741.

Respectfully submitted,

Date ____February 23, 2021_____ By ____*/Paul S. Hunter/*_____

FOLEY & LARDNER LLP
Customer Number: 147491
Telephone: (858) 847-6733
Facsimile: (858) 792-6773

Paul S. Hunter
Attorney for Applicant
Registration No. 44,787

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82A (07-13)
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NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

| | |
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| Application Number | Not yet assigned |
| Filing Date | Herewith |
| First Named Inventor | Sagar Sontakke |
| Title | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Art Unit | |
| Examiner Name | |
| Attorney Docket Number | 115539-0346 |

**SIGNATURE of Applicant or Patent Practitioner**

| | | | |
|---|---|---|---|
| Signature | /Paul S. Hunter/ | Date (Optional) | 2-23-2021 |
| Name | Paul S. Hunter | Registration Number | 44787 |
| Title (if Applicant is a juristic entity) | Attorney for Applicant | | |
| Applicant Name (if Applicant is a juristic entity) | Nutanix, Inc. | | |

**NOTE:** This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ *Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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# POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

| Application Number | Filing Date |
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☑ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 147491

**OR**

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

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| ☐ Firm or Individual Name | | | | | |
| Address | | | | | |
| City | | State | | Zip | |
| Country | | | | | |
| Telephone | | Email | | | |

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

NUTANIX, INC.

☐ Inventor or Joint Inventor (title not required below)

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☑ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

**SIGNATURE of Applicant for Patent**

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

| | | | |
|---|---|---|---|
| Signature | /James E Parsons/ | Date (Optional) | December 3, 2018 |
| Name | JAMES E PARSONS | | |
| Title | Deputy General Counsel and Head of Worldwide IP, NUTANIX, INC. | | |

**NOTE:** Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

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## ABSTRACT OF THE DISCLOSURE

A system and method includes a plurality of nodes distributed between a first cluster and a second cluster, each of the plurality of nodes storing a copy of a source database and a processor executing computer-readable instructions stored on a memory to designate a first node of the plurality of nodes as a primary node, designate remaining ones of the plurality of nodes as secondary nodes to take over from the primary node upon failure of the primary node, designate a second node of the plurality of nodes as an initial active node, backup the source database from the initial active node, automatically designate, based on a switch over policy, a third node of the plurality of nodes as a next active node upon the initial active node becoming unavailable, and continue backups of the source database from the next active node upon the initial active node becoming unavailable.

CLAIMS

What is claimed is:

1. A system comprising:

a plurality of nodes distributed between a first cluster and a second cluster, each of the plurality of nodes storing a copy of a source database; and

a processor executing computer-readable instructions stored on a memory to:

designate a first node of the plurality of nodes as a primary node;

designate remaining ones of the plurality of nodes as secondary nodes to take over from the primary node upon failure of the primary node;

designate a second node of the plurality of nodes as an initial active node;

backup the source database from the initial active node;

automatically designate, based on a switch over policy, a third node of the plurality of nodes as a next active node upon the initial active node becoming unavailable; and

continue backups of the source database from the next active node upon the initial active node becoming unavailable.

2. The system of claim 1, wherein the switch over policy is a primary-only policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the primary node.

3. The system of claim 1, wherein the switch over policy is a secondary-only policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the secondary nodes.

4. The system of claim 1, wherein the switch over policy is a prefer-secondary policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the secondary nodes, or upon determining that none of the plurality of nodes are the secondary nodes, select the next active node from the plurality of nodes designated as the primary node.

5. The system of claim 1, wherein the switch over policy is a prefer-primary policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the primary node, or upon determining that none of the plurality of nodes is the primary node, select the next active node from the plurality of nodes designated as the secondary nodes.

6. The system of claim 1, wherein the switch over policy is an "any" policy, and wherein the processor further executes the computer-readable instructions to select any available node from the plurality of nodes as the next active node.

7. The system of claim 1, wherein the processor further executes the computer-readable instructions to select the next active node based upon a priority assigned to at least a subset of the plurality of nodes.

8. The system of claim 1, wherein the creation of the backup of the source database comprises capturing at least one snapshot and at least one transactional log from the initial active node or the next active node based upon a protection schedule.

9. The system of claim 1, wherein the second node and the third node are each part of the first cluster.

10. The system of claim 1, wherein the second node is part of the first cluster and the third node is part of the second cluster.

11. A non-transitory computer-readable media comprising computer readable instructions stored thereon that when executed by a processor causes the processor to:

designate a first node of a plurality of nodes as a primary node, wherein the plurality of nodes are distributed between a first cluster and a second cluster, and wherein each of the plurality of nodes stores a copy of a source database;

designate remaining ones of the plurality of nodes as secondary nodes to take over from the primary node upon failure of the primary node;

designate a second node of the plurality of nodes as an initial active node;

backup the source database from the initial active node;

automatically designate, based on a switch over policy, a third node of the plurality of nodes as a next active node upon the initial active node becoming unavailable; and

continue backups of the source database from the next active node upon the initial active node becoming unavailable.

12. The non-transitory computer-readable media of claim 11, wherein the second node and the third node are each part of the first cluster.

13. The non-transitory computer-readable media of claim 11, wherein the second node is part of the first cluster and the third node is part of the second cluster.

14. The non-transitory computer-readable media of claim 11, wherein the switch over policy is a primary-only policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the primary node.

15. The non-transitory computer-readable media of claim 11, wherein the switch over policy is a secondary-only policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the secondary nodes.

16. The non-transitory computer-readable media of claim 11, wherein the switch over policy is a prefer-secondary policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the secondary nodes, or upon determining that none of the plurality of nodes are the secondary nodes, select the next active node from the plurality of nodes designated as the primary node.

17. The non-transitory computer-readable media of claim 11, wherein the switch over policy is a prefer-primary policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the primary

node, or upon determining that none of the plurality of nodes is the primary node, select the next active node from the plurality of nodes designated as the secondary nodes.

18. The non-transitory computer-readable media of claim 11, wherein the switch over policy is an "any" policy, and wherein the processor further executes the computer-readable instructions to select any available node from the plurality of nodes as the next active node.

19. The non-transitory computer-readable media of claim 11, wherein the processor further executes the computer-readable instructions to select the next active node based upon a priority assigned to at least a subset of the plurality of nodes.

20. The non-transitory computer-readable media of claim 11, wherein the creation of the backup of the source database comprises capturing at least one snapshot and at least one transactional log from the initial active node or the next active node based upon a protection schedule.

21. A method comprising:

designating, by a processor executing computer-readable instructions stored on a memory, a first node of a plurality of nodes as a primary node, wherein the plurality of nodes are distributed between a first cluster and a second cluster, and wherein each of the plurality of nodes stores a copy of a source database;

designating, by the processor, remaining ones of the plurality of nodes as secondary nodes to take over from the primary node upon failure of the primary node;

designating, by the processor, a second node of the plurality of nodes as an initial active node;

backing up, by the processor, the source database from the initial active node;

automatically designating, by the processor, based on a switch over policy, a third node of the plurality of nodes as a next active node upon the initial active node becoming unavailable; and

continuing backups, by the processor, of the source database from the next active node upon the initial active node becoming unavailable.

22. The method of claim 21, wherein the second node and the third node are each part of the first cluster.

23. The method of claim 21, wherein the second node is part of the first cluster and the third node is part of the second cluster.

24. The method of claim 21, wherein the switch over policy is a primary-only policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the primary node.

25. The method of claim 21, wherein the switch over policy is a secondary-only policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the secondary nodes.

26. The method of claim 21, wherein the switch over policy is a prefer-secondary policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the secondary nodes, or upon determining that none of the plurality of nodes are the secondary nodes, select the next active node from the plurality of nodes designated as the primary node.

27. The method of claim 21, wherein the switch over policy is a prefer-primary policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the primary node, or upon determining that none of the plurality of nodes is the primary node, select the next active node from the plurality of nodes designated as the secondary nodes.

28. The method of claim 21, wherein the switch over policy is an "any" policy, and wherein the processor further executes the computer-readable instructions to select any available node from the plurality of nodes as the next active node.

29. The method of claim 21, wherein the processor further executes the computer-readable instructions to select the next active node based upon a priority assigned to at least a subset of the plurality of nodes.

30. The method of claim 21, wherein the creation of the backup of the source database comprises capturing at least one snapshot and at least one transactional log from the initial active node or the next active node based upon a protection schedule.

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| First Inventor Name: | Sagar Sontakke |
| Title: | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Application No.: | Unknown |
| Filing Date: | Herewith |
| Examiner: | Unknown |
| Art Unit: | Unknown |

**UTILITY PATENT APPLICATION TRANSMITTAL**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Transmitted herewith for filing under 37 C.F.R. § 1.53(b) is a nonprovisional utility patent application of:

Sagar Sontakke
1740 Technology Drive
Suite 150
San Jose, California 95110

Kamaldeep Khanuja
1740 Technology Drive
Suite 150
San Jose, California 95110

Bakul Banthia
1740 Technology Drive
Suite 150
San Jose, California 95110

Enclosed are:

[ **X** ] Description, Claim(s), and Abstract (84 pages).

[ **X** ] Drawings (8 sheets, Figures 1, 2, 3, 4A, 4B, 5, 6, 7).

[ **X**] Executed Declaration (3 pages).

[ **X** ] Power of Attorney (2 pages).

[ **X** ] Information Disclosure Statement.

[ **X** ] Form PTO/SB/08 with copies of listed reference(s).

[ **X** ] Application Data Sheet (37 CFR 1.76).

The adjustment to the number of sheets for EFS-Web filing follows:

| **Number of Sheets** | | **EFS-Web Adjustment** | **Number of Sheets for EFS-Web** |
|---|---|---|---|
| 92 | x | 75% | 69 |

The filing fee is calculated below at the large entity rate:

| | **Number Filed** | | **Included in Basic Fee** | | **Extra** | | Rate | | Fee Totals |
|---|---|---|---|---|---|---|---|---|---|
| Basic Filing Fee | | | | | | | $320.00 | = | $320.00 |
| Search Fee | | | | | | | $700.00 | | $700.00 |
| Examination Fee | | | | | | | $800.00 | | $800.00 |
| Sequence Listing fee | | | | | | | | | $0.00 |
| Size Fee | 69 | - | 100 | = 0 | | x | $420.00 | | $0.00 |
| Total Claims: | 30 | - | 20 | = 10 | | x | $100.00 | = | $1000.00 |
| Independents: | 3 | - | 3 | = 0 | | x | $480.00 | = | $0.00 |
| If any Multiple Dependent Claim(s) present: | | | | | | + | $860.00 | = | $0.00 |
| Surcharge under 37 CFR 1.16(f) for late filing of Executed Declaration or late payment of Basic Filing Fee/Search Fee/Examination Fee | | | | | | + | $160.00 | = | $0.00 |
| Non-electronic filing fee | | | | | | + | | = | $0.00 |
| Prioritized Examination fee (Track I) under 37 C.F.R. § 1.17 (c) | | | | | | | | | $0.00 |
| Processing Fee (Track I) under 37 C.F.R. § 1.17 (i) | | | | | | | | | $0.00 |
| TOTAL FILING FEE: | | | | | | | | = | $2820.00 |
| Assignment Recordation Fee: | | | | | | + | | = | $0.00 |
| Processing Fee under 37 CFR 1.17(i) for Late Filing of English Translation of Application: | | | | | | + | $140.00 | = | |
| TOTAL FEE | | | | | | | | = | $2820.00 |

The above-identified fees of $2820.00 are being paid by credit card via EFS-Web.

The Commissioner is hereby authorized to charge any fees required to secure a filing date and maintain pendency of this application to Deposit Account No. 19-0741.

Respectfully submitted,

Date February 23, 2021

By */Paul S. Hunter/*

FOLEY & LARDNER LLP
Customer Number: 147491
Telephone: (858) 847-6733
Facsimile: (858) 792-6773

Paul S. Hunter
Attorney for Applicant
Registration No. 44,787

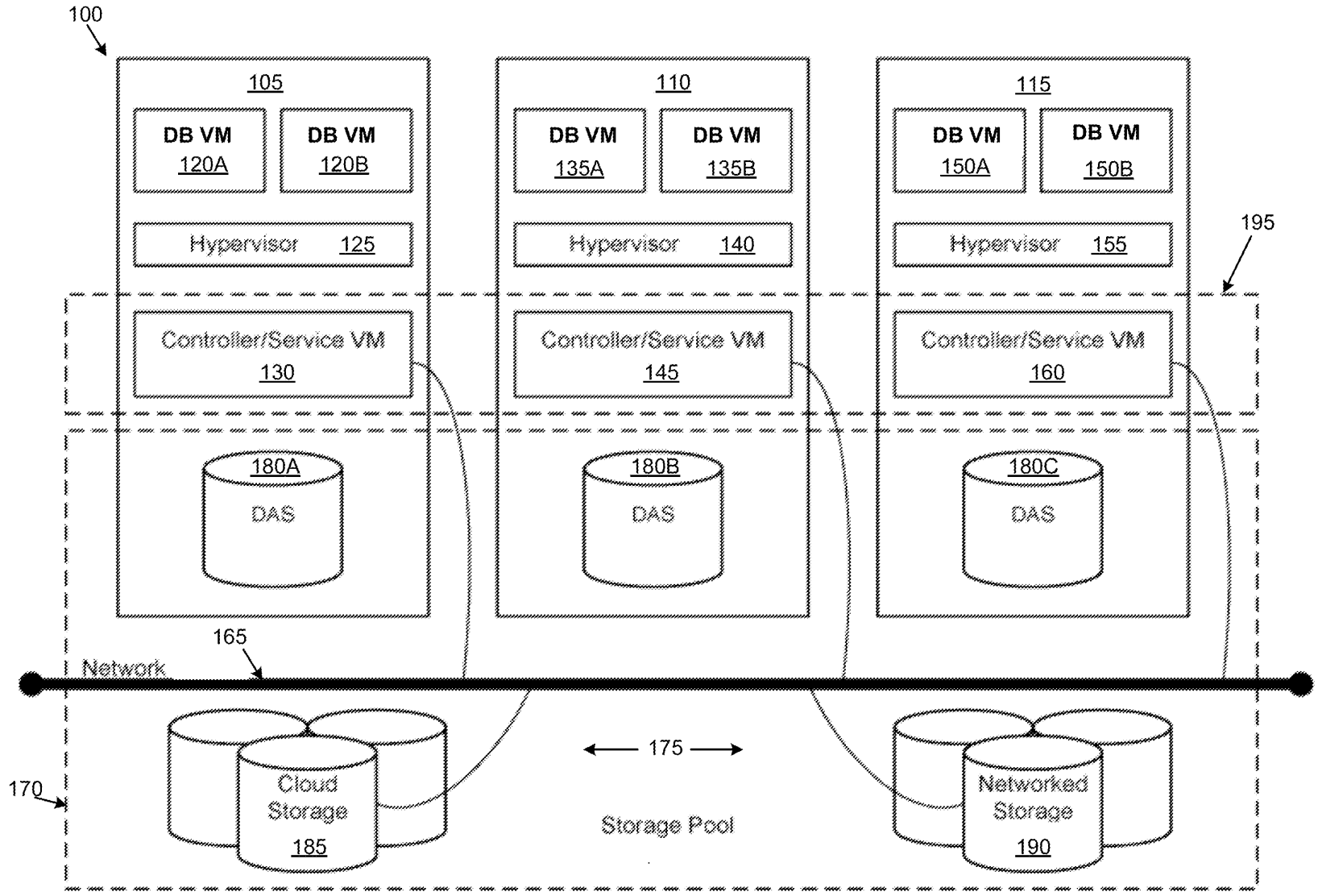

100
105
DB VM
120A
DB VM
120B
Hypervisor 125
Controller/Service VM
130
110
DB VM
135A
DB VM
135B
Hypervisor 140
Controller/Service VM
145
115
DB VM
150A
DB VM
150B
Hypervisor 155
Controller/Service VM
160
195
180A
DAS
180B
DAS
180C
DAS
165
Network
175
170
Cloud
Storage
185
Storage Pool
Networked
Storage
190

**FIG. 1**

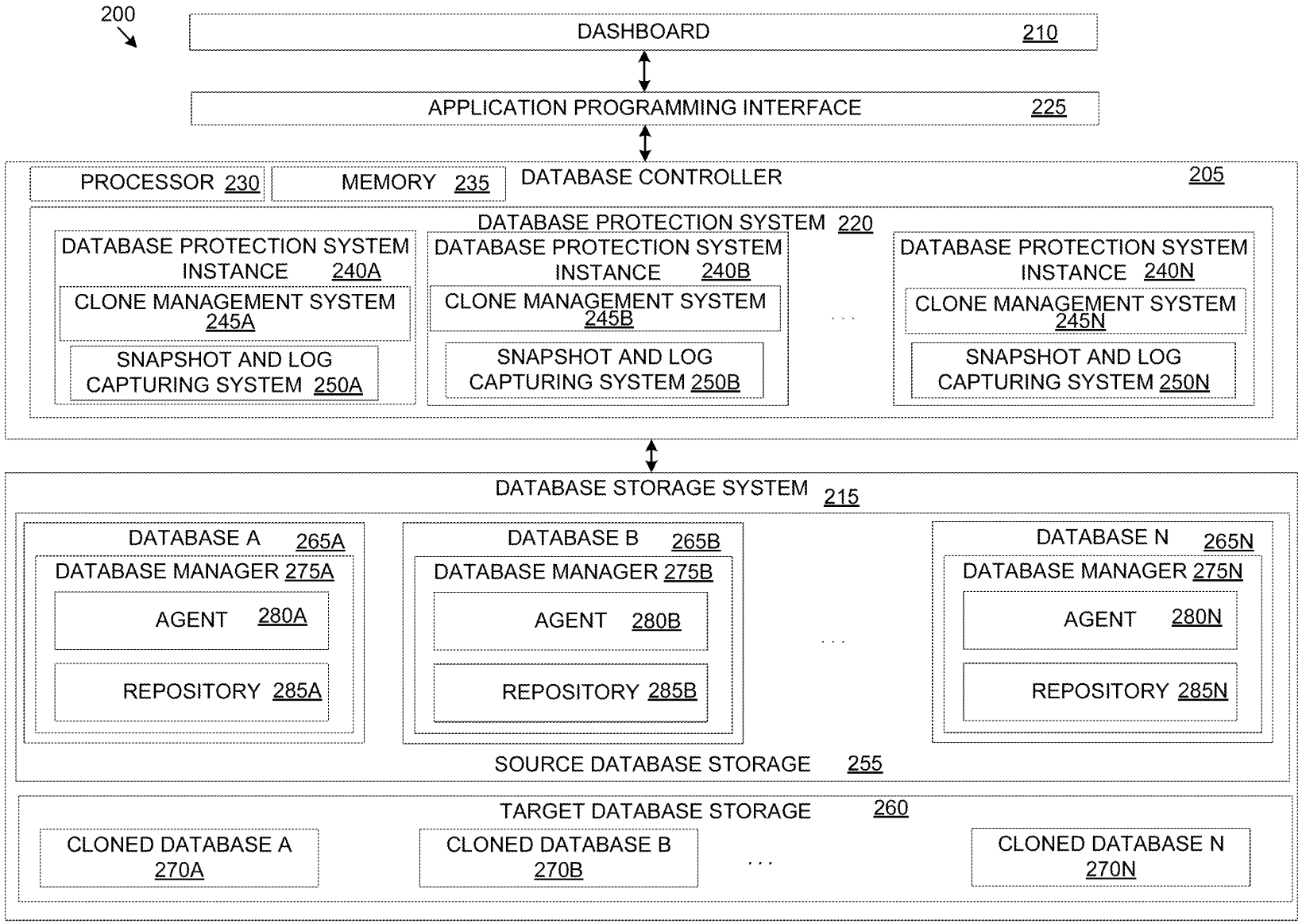

200
DASHBOARD 210
APPLICATION PROGRAMMING INTERFACE 225
PROCESSOR 230
MEMORY 235
DATABASE CONTROLLER 205
DATABASE PROTECTION SYSTEM 220
DATABASE PROTECTION SYSTEM INSTANCE 240A
CLONE MANAGEMENT SYSTEM 245A
SNAPSHOT AND LOG CAPTURING SYSTEM 250A
DATABASE PROTECTION SYSTEM INSTANCE 240B
CLONE MANAGEMENT SYSTEM 245B
SNAPSHOT AND LOG CAPTURING SYSTEM 250B
DATABASE PROTECTION SYSTEM INSTANCE 240N
CLONE MANAGEMENT SYSTEM 245N
SNAPSHOT AND LOG CAPTURING SYSTEM 250N
DATABASE STORAGE SYSTEM 215
DATABASE A 265A
DATABASE MANAGER 275A
AGENT 280A
REPOSITORY 285A
DATABASE B 265B
DATABASE MANAGER 275B
AGENT 280B
REPOSITORY 285B
DATABASE N 265N
DATABASE MANAGER 275N
AGENT 280N
REPOSITORY 285N
SOURCE DATABASE STORAGE 255
TARGET DATABASE STORAGE 260
CLONED DATABASE A 270A
CLONED DATABASE B 270B
CLONED DATABASE N 270N

**FIG. 2**

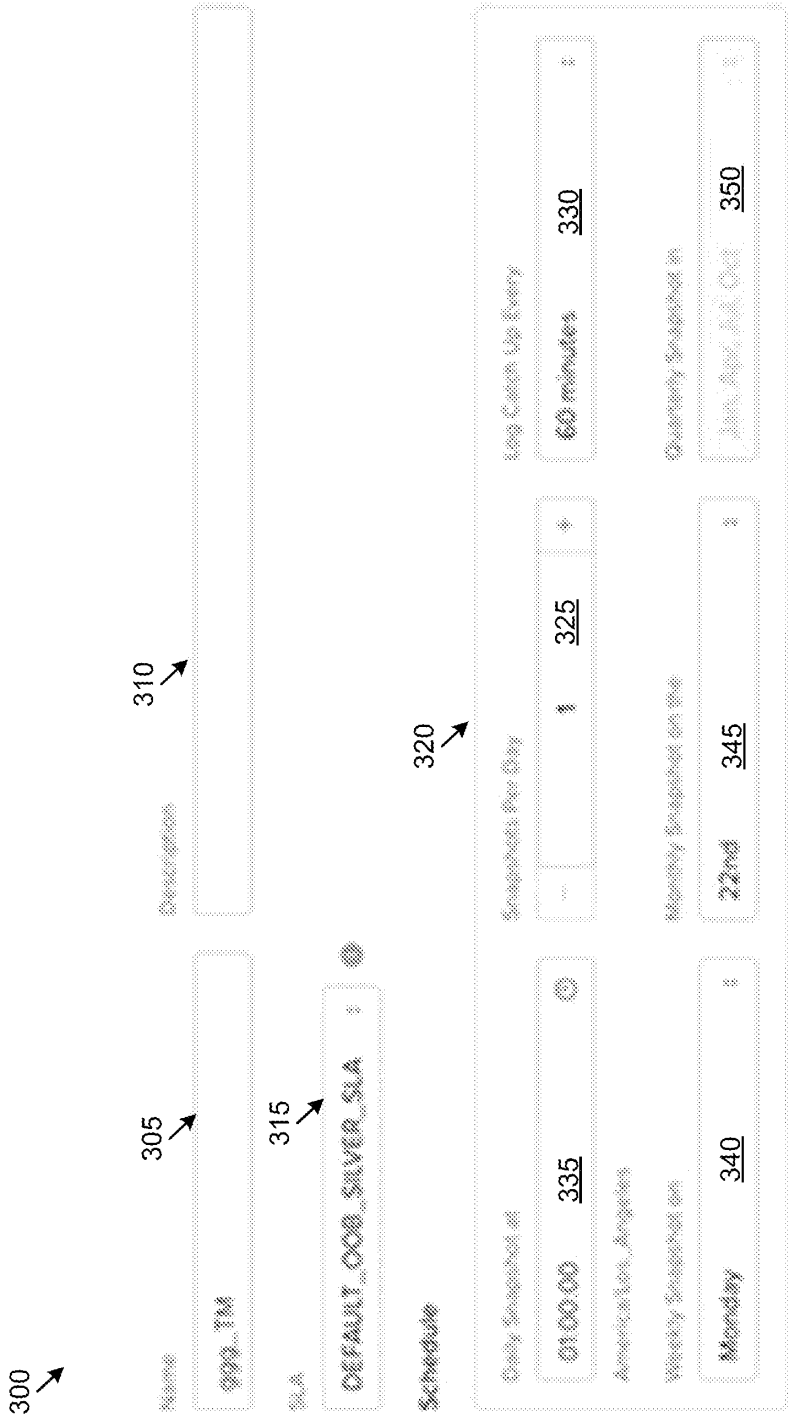

300
Name
305
CCS_TM
SLA
315
DEFAULT_CCS_SAVER_SLA
Schedule
310
Description
320
Every Snapshot at
01:00:00
335
Snapshots Per Day
1
325
Keep Each for Every
60 minutes
330
Annotation Argument
Weekly Snapshot on
Monday
340
Monthly Snapshot on the
22nd
345
Quarterly Snapshot on
Jan, Apr, Jul, Oct
350

FIG. 3

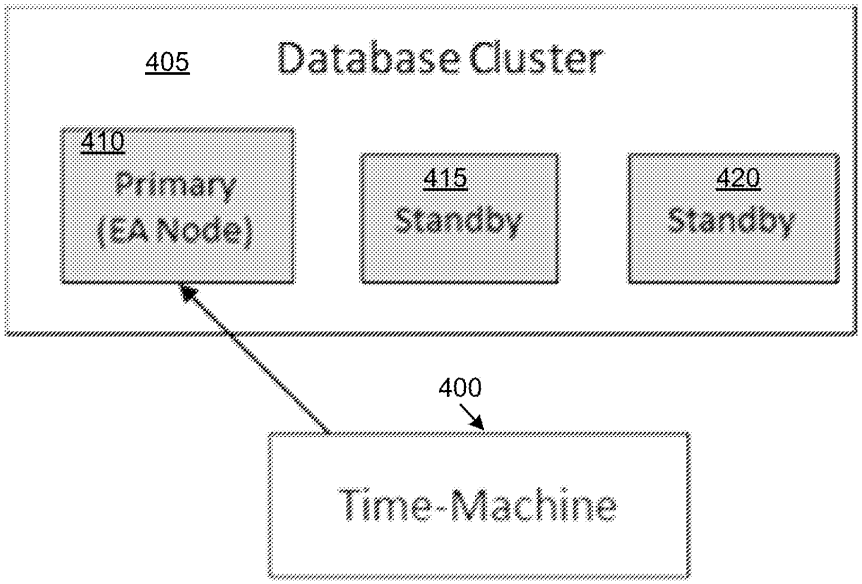

405
Database Cluster
410
Primary
(EA Node)
415
Standby
420
Standby
400
Time-Machine

FIG. 4A

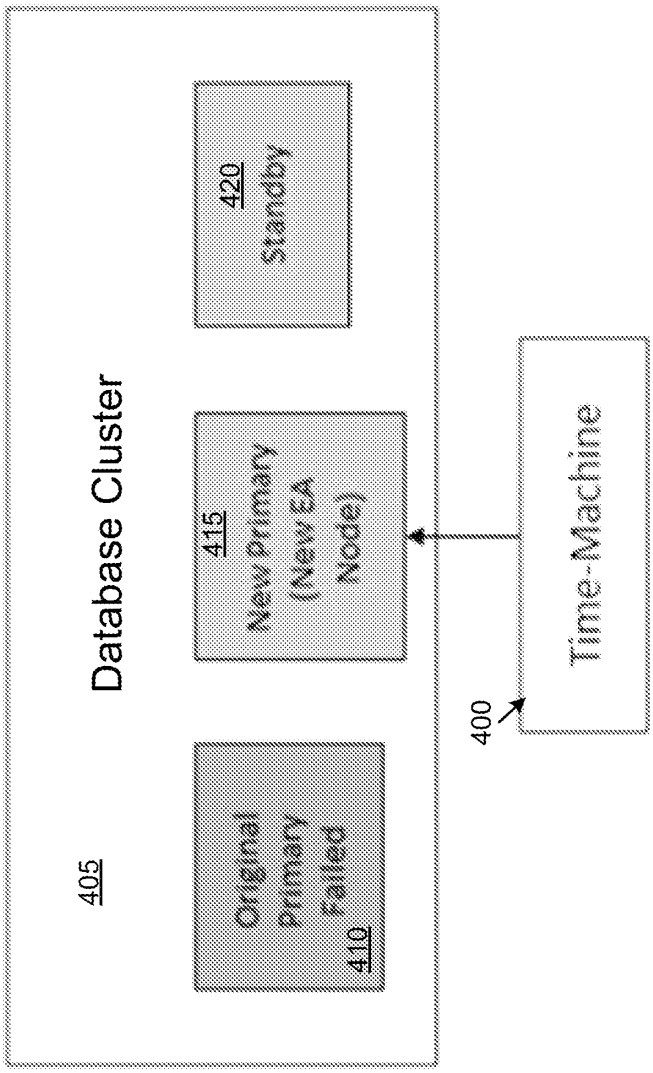

Database Cluster
405
Original primary Failed 410
415 New Primary (New EA Node)
420 Standby
400
Time-Machine

FIG. 4B

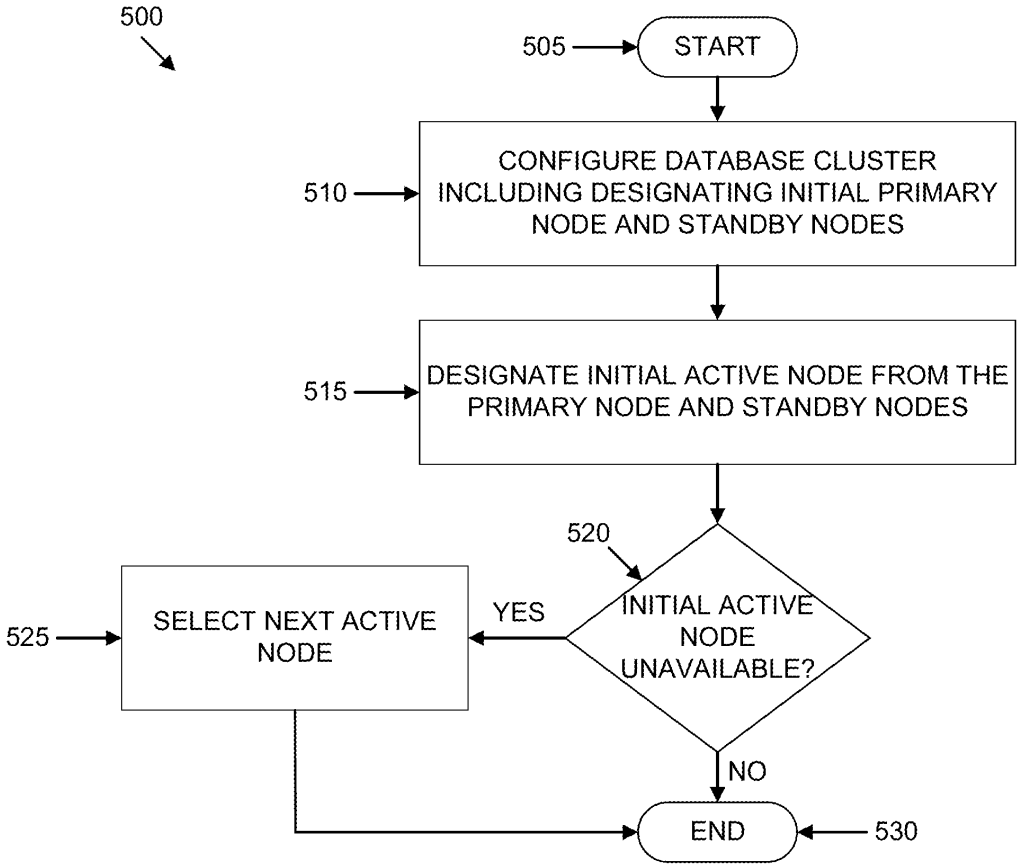

500
505
START
510
CONFIGURE DATABASE CLUSTER INCLUDING DESIGNATING INITIAL PRIMARY NODE AND STANDBY NODES
515
DESIGNATE INITIAL ACTIVE NODE FROM THE PRIMARY NODE AND STANDBY NODES
520
INITIAL ACTIVE NODE UNAVAILABLE?
YES
525
SELECT NEXT ACTIVE NODE
NO
END
530

**FIG. 5**

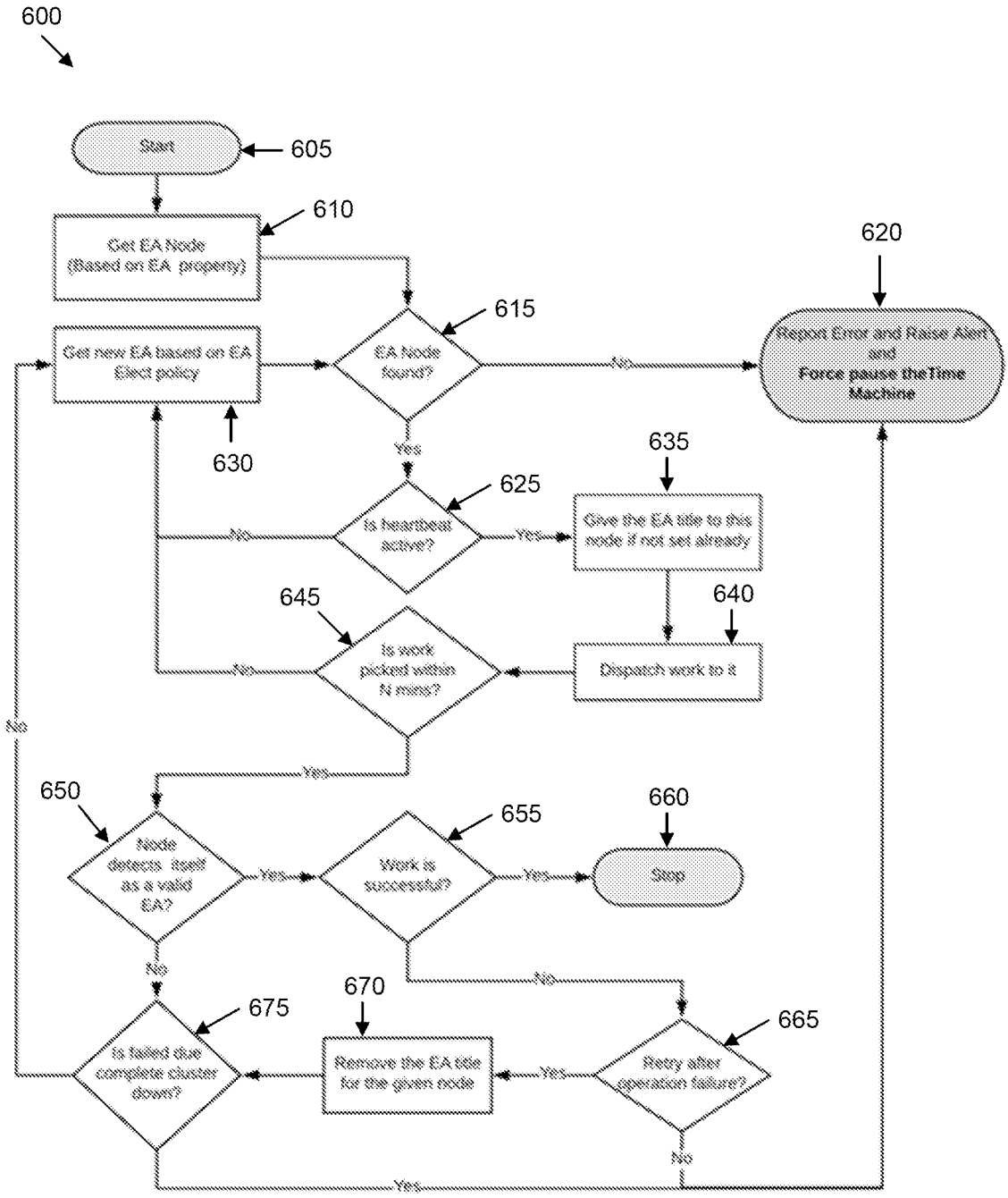

600
Start
605
Get EA Node (Based on EA property)
610
620
Get new EA based on EA Elect policy
EA Node found?
615
Report Error and Raise Alert and Force pause the Time Machine
No
630
Yes
635
Is heartbeat active?
625
Give the EA title to this node if not set already
Yes
No
640
645
Is work picked within N mins?
Dispatch work to it
No
Yes
650
Node detects itself as a valid EA?
655
660
Work is successful?
Yes
Yes
Stop
No
No
670
675
665
Is failed due complete cluster down?
Remove the EA title for the given node
Yes
Retry after operation failure?
No
Yes

**FIG. 6**

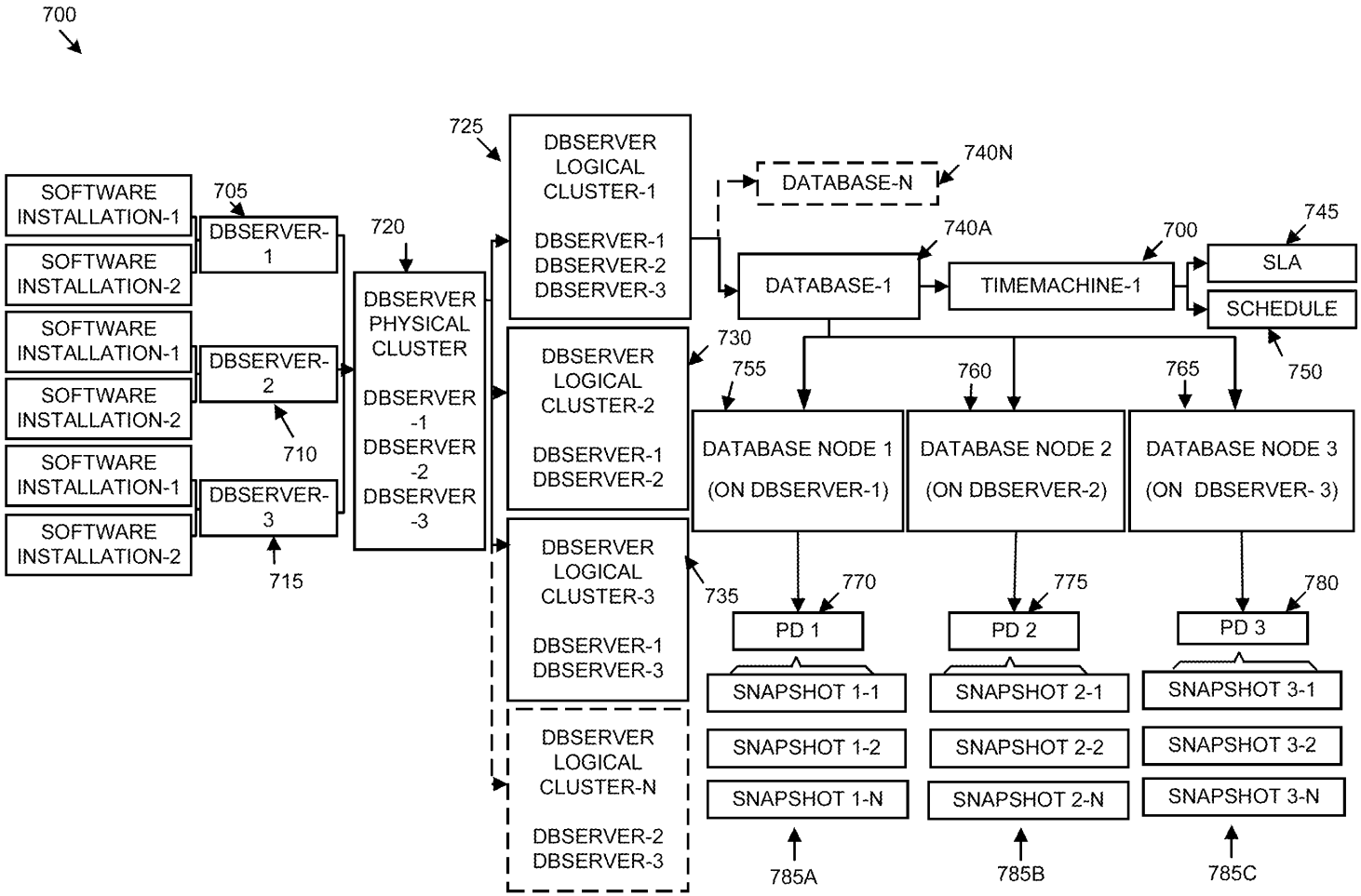

700
725
DBSERVER LOGICAL CLUSTER-1
DBSERVER-1
DBSERVER-2
DBSERVER-3
740N
DATABASE-N
SOFTWARE INSTALLATION-1
SOFTWARE INSTALLATION-2
SOFTWARE INSTALLATION-1
SOFTWARE INSTALLATION-2
SOFTWARE INSTALLATION-1
SOFTWARE INSTALLATION-2
705
DBSERVER-1
DBSERVER-2
DBSERVER-3
720
DBSERVER PHYSICAL CLUSTER
DBSERVER-1
DBSERVER-2
DBSERVER-3
710
715
740A
DATABASE-1
700
TIMEMACHINE-1
745
SLA
SCHEDULE
750
730
DBSERVER LOGICAL CLUSTER-2
DBSERVER-1
DBSERVER-2
755
760
765
DATABASE NODE 1 (ON DBSERVER-1)
DATABASE NODE 2 (ON DBSERVER-2)
DATABASE NODE 3 (ON DBSERVER- 3)
DBSERVER LOGICAL CLUSTER-3
DBSERVER-1
DBSERVER-3
735
770
775
780
PD 1
PD 2
PD 3
SNAPSHOT 1-1
SNAPSHOT 1-2
SNAPSHOT 1-N
SNAPSHOT 2-1
SNAPSHOT 2-2
SNAPSHOT 2-N
SNAPSHOT 3-1
SNAPSHOT 3-2
SNAPSHOT 3-N
DBSERVER LOGICAL CLUSTER-N
DBSERVER-2
DBSERVER-3
785A
785B
785C

FIG. 7

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| Application Data Sheet 37 CFR 1.76 | Attorney Docket Number | 115539-0346 |
|---|---|---|
| | Application Number | |
| Title of Invention | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM | |

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

## Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

## Inventor Information:

**Inventor 1** Remove

**Legal Name**

| Prefix | Given Name | Middle Name | Family Name | Suffix |
|---|---|---|---|---|
| | Sagar | | Sontakke | |

**Residence Information (Select One)** US Residency ● Non US Residency Active US Military Service

| City | Country of Residence | |
|---|---|---|
| Bangalore | | IN |

**Mailing Address of Inventor:**

| | |
|---|---|
| **Address 1** | 1740 Technology Drive |
| **Address 2** | Suite 150 |
| **City** | San Jose |
| **State/Province** | CA |
| **Postal Code** | 95110 |
| **Country** | US |

**Inventor 2** Remove

**Legal Name**

| Prefix | Given Name | Middle Name | Family Name | Suffix |
|---|---|---|---|---|
| | Kamaldeep | | Khanuja | |

**Residence Information (Select One)** ● US Residency ○ Non US Residency Active US Military Service

| City | State/Province | Country of Residence | |
|---|---|---|---|
| Dublin | CA | | US |

**Mailing Address of Inventor:**

| | |
|---|---|
| **Address 1** | 1740 Technology Drive |
| **Address 2** | Suite 150 |
| **City** | San Jose |
| **State/Province** | CA |
| **Postal Code** | 95110 |
| **Country** | US |

**Inventor 3** Remove

**Legal Name**

| Prefix | Given Name | Middle Name | Family Name | Suffix |
|---|---|---|---|---|
| | Bakul | | Banthia | |

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| Application Data Sheet 37 CFR 1.76 | Attorney Docket Number | 115539-0346 |
|---|---|---|
| | Application Number | |
| Title of Invention | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM | |

**Residence Information (Select One)** (•) US Residency ( ) Non US Residency Active US Military Service

| City | San Ramon | State/Province | CA | Country of Residence | US |
|---|---|---|---|---|---|

**Mailing Address of Inventor:**

| Address 1 | 1740 Technology Drive | | |
|---|---|---|---|
| Address 2 | Suite 150 | | |
| City | San Jose | State/Province | CA |
| Postal Code | 95110 | Country | US |

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

## Correspondence Information:

**Enter either Customer Number or complete the Correspondence Information section below.**
**For further information see 37 CFR 1.33(a).**

☐ **An Address is being provided for the correspondence Information of this application.**

| Customer Number | 147491 | | |
|---|---|---|---|
| Email Address | IPDocketing@foley.com | Add Email | Remove Email |

## Application Information:

| Title of the Invention | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM | | |
|---|---|---|---|
| Attorney Docket Number | 115539-0346 | Small Entity Status Claimed | ☐ |
| Application Type | Nonprovisional | | |
| Subject Matter | Utility | | |
| Total Number of Drawing Sheets (if any) | 8 | Suggested Figure for Publication (if any) | |

## Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

| Application number of the previously filed application | Filing date (YYYY-MM-DD) | Intellectual Property Authority or Country |
|---|---|---|
| | | |

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| Application Data Sheet 37 CFR 1.76 | Attorney Docket Number | 115539-0346 |
|---|---|---|
| | Application Number | |
| Title of Invention | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM | |

## Publication Information:

| | |
|---|---|
| ☐ | Request Early Publication (Fee required at time of Request 37 CFR 1.219) |
| ☐ | **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing. |

## Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

| Please Select One: | ● Customer Number | US Patent Practitioner | ○ Limited Recognition (37 CFR 11.9) |
|---|---|---|---|
| Customer Number | 147491 | | |

## Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

| Prior Application Status | Pending | | Remove |
|---|---|---|---|
| Application Number | Continuity Type | Prior Application Number | Filing or 371(c) Date (YYYY-MM-DD) |
| | Claims benefit of provisional | 63/094245 | 2020-10-20 |

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

## Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

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| **Application Data Sheet 37 CFR 1.76** | Attorney Docket Number | 115539-0346 |
|---|---|---|
| | Application Number | |
| Title of Invention | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM | |

Remove

| Application Number | Country[i] | Filing Date (YYYY-MM-DD) | Access Code[i] (if applicable) |
|---|---|---|---|
| | | | |

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

## Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

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|---|---|---|
| | Application Number | |
| Title of Invention | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM | |

## Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

**NOTE**: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

**1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)**

**A. Priority Document Exchange (PDX)** - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

**B. Search Results from U.S. Application to EPO** - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

**2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)**

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

**NOTE:** Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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| Application Data Sheet 37 CFR 1.76 | Attorney Docket Number | 115539-0346 |
|---|---|---|
| | Application Number | |
| Title of Invention | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM | |

## Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

**Applicant 1** Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

| ● Assignee | Legal Representative under 35 U.S.C. 117 | Joint Inventor |
|---|---|---|
| Person to whom the inventor is obligated to assign. | Person who shows sufficient proprietary interest | |

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

| Organization Name | Nutanix, Inc. | | |
|---|---|---|---|
| **Mailing Address Information For Applicant:** | | | |
| **Address 1** | 1740 Technology Drive | | |
| Address 2 | Suite 150 | | |
| **City** | San Jose | **State/Province** | CA |
| **Country** | US | Postal Code | 95110 |
| Phone Number | | Fax Number | |
| Email Address | | | |

Additional Applicant Data may be generated within this form by selecting the Add button. Add

## Assignee Information including Non-Applicant Assignee Information:

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| **Application Data Sheet 37 CFR 1.76** | Attorney Docket Number | 115539-0346 |
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**Assignee 1**

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☒

| Organization Name | Nutanix, Inc. |
|---|---|

**Mailing Address Information For Assignee including Non-Applicant Assignee:**

| **Address 1** | 1740 Technology Drive | | |
|---|---|---|---|
| Address 2 | Suite 150 | | |
| **City** | San Jose | **State/Province** | CA |
| **Country** i | US | Postal Code | 95110 |
| Phone Number | | Fax Number | |
| Email Address | | | |

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

## Signature:

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This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

| **Signature** | /Paul S. Hunter/ | | | Date (YYYY-MM-DD) | 2021-02-23 |
|---|---|---|---|---|---|
| First Name | Paul S. | Last Name | Hunter | Registration Number | 44787 |

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| **Application Data Sheet 37 CFR 1.76** | Attorney Docket Number | 115539-0346 |
|---|---|---|
| | Application Number | |
| Title of Invention | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM | |

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1 The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3 A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent CooperationTreaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

EFS Web 2.2.13

| DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76) | 115539-0346 |
|---|---|

| Title of Invention | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
|---|---|

As the below named inventor, I hereby declare that:

This declaration is directed to:

☒ The attached application, or

☐ United States application or PCT international application number _____ filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

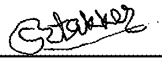
I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than (5) years, or both.

**WARNING**:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Sagar Sontakke Date (Optional): 2/23/2021

Signature: 

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

PTO/AIA/01 (modified)

| DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76) | 115539-0346 |
|---|---|

| Title of Invention | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
|---|---|

As the below named inventor, I hereby declare that:

This declaration is directed to:

☒ The attached application, or

☐ United States application or PCT international application number _____ filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than (5) years, or both.

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LEGAL NAME OF INVENTOR

Inventor: Kamaldeep Khanuja Date (Optional): 2/22/2021

Signature: 

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

4828-3869-4877.1

PTO/AIA/01 (modified)

| DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76) | 115539-0346 |
|---|---|

| Title of Invention | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
|---|---|

As the below named inventor, I hereby declare that:

This declaration is directed to:

☒ The attached application, or

☐ United States application or PCT international application number _____ filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

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Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Bakul Banthia Date (Optional): 2/22/2021

Signature: 

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

4828-3869-4877.1

# SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM

## CROSS-REFERENCE TO RELATED APPLICATIONS

**[0001]** This application is a non-provisional of U.S. Provisional Application Number 63/094,245, filed on October 20, 2020, the entirety of which is incorporated by reference herein

## BACKGROUND

**[0002]** The following description is provided to assist the understanding of the reader. None of the information provided or references cited is admitted to be prior art.

**[0003]** Virtual computing systems are widely used in a variety of applications. Virtual computing systems include one or more host machines running one or more virtual machines and other entities (e.g., containers) concurrently. Modern virtual computing systems allow several operating systems and several software applications to be safely run at the same time, thereby increasing resource utilization and performance efficiency. However, the present day virtual computing systems have limitations due to their configuration and the way they operate.

## SUMMARY

**[0004]** In accordance with some aspects of the present disclosure, a system is disclosed. The system includes system includes a plurality of nodes distributed between a first cluster and a second cluster, each of the plurality of nodes storing a copy of a source database, and a processor executing computer-readable instructions stored on a memory to designate a first node of the plurality of nodes as a primary node, designate remaining ones of the plurality of nodes as secondary nodes to take over from the primary node upon failure of the primary node, designate a second node of the plurality of nodes as an initial active node, backup the source database from

the initial active node, automatically designate, based on a switch over policy, a third node of the plurality of nodes as a next active node upon the initial active node becoming unavailable, and continue backups of the source database from the next active node upon the initial active node becoming unavailable.

**[0005]** In accordance with some other aspects of the present disclosure, a non-transitory computer-readable media having computer readable instructions stored thereon is disclosed. The computer readable instructions when executed by a processor causes the processor to designate a first node of a plurality of nodes as a primary node. The plurality of nodes are distributed between a first cluster and a second cluster, and each of the plurality of nodes stores a copy of a source database. The processor further executes the computer-readable instructions to designate remaining ones of the plurality of nodes as secondary nodes to take over from the primary node upon failure of the primary node, designate a second node of the plurality of nodes as an initial active node, backup the source database from the initial active node, automatically designate, based on a switch over policy, a third node of the plurality of nodes as a next active node upon the initial active node becoming unavailable, and continue backups of the source database from the next active node upon the initial active node becoming unavailable.

**[0006]** In accordance with yet other aspects of the present disclosure, a method is disclosed. The method includes designating, by a processor executing computer-readable instructions stored on a memory, a first node of a plurality of nodes as a primary node. The plurality of nodes are distributed between a first cluster and a second cluster, and each of the plurality of nodes stores a copy of a source database. The method also includes designating, by the processor, remaining ones of the plurality of nodes as secondary nodes to take over from the primary node upon failure of the primary node, designating, by the processor, a second node of the plurality of nodes as an

initial active node, backing up, by the processor, the source database from the initial active node, automatically designating, by the processor, based on a switch over policy, a third node of the plurality of nodes as a next active node upon the initial active node becoming unavailable, and continuing backups, by the processor, of the source database from the next active node upon the initial active node becoming unavailable.

**[0007]** The foregoing summary is illustrative only and is not intended to be in any way limiting. In addition to the illustrative aspects, embodiments, and features described above, further aspects, embodiments, and features will become apparent by reference to the following drawings and the detailed description.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0008]** FIG. 1 is an example block diagram of a cluster of a virtual computing system, in accordance with some embodiments of the present disclosure.

**[0009]** FIG. 2 is an example block diagram of a database management system of the virtual computing system of FIG. 1, in accordance with some embodiments of the present disclosure.

**[0010]** FIG. 3 is an example user interface of a time machine for creating backups of a source database in the database management system of FIG. 2, in accordance with some embodiments of the present disclosure.

**[0011]** FIGS. 4A and 4B are example block diagrams showing a highly available time machine of the database management system of FIG. 2 for automatically capturing backups of the source database, in accordance with some embodiments of the present disclosure.

**[0012]** FIG. 5 is an example flowchart outlining operations for providing a highly available source database, in accordance with some embodiments of the present disclosure.

**[0013]** FIG. 6 is another example flowchart outlining certain operations of FIG. 5 in greater detail, particularly relating to implementing a switch over policy to provide the highly available source database, in accordance with some embodiments of the present disclosure.

**[0014]** FIG. 7 is an example block diagram showing a clustered database protection system of the database management system of FIG. 2 in greater detail, in accordance with some embodiments of the present disclosure.

**[0015]** The foregoing and other features of the present disclosure will become apparent from the following description and appended claims, taken in conjunction with the accompanying drawings. Understanding that these drawings depict only several embodiments in accordance with the disclosure and are therefore, not to be considered limiting of its scope, the disclosure will be described with additional specificity and detail through use of the accompanying drawings.

## DETAILED DESCRIPTION

**[0016]** In the following detailed description, reference is made to the accompanying drawings, which form a part hereof. In the drawings, similar symbols typically identify similar components, unless context dictates otherwise. The illustrative embodiments described in the detailed description, drawings, and claims are not meant to be limiting. Other embodiments may be utilized, and other changes may be made, without departing from the spirit or scope of the subject matter presented here. It will be readily understood that the aspects of the present disclosure, as generally described herein, and illustrated in the figures, can be arranged, substituted, combined, and designed in a wide variety of different configurations, all of which are explicitly contemplated and made part of this disclosure.

**[0017]** The present disclosure is generally directed to a hyperconverged virtual computing system having a plurality of clusters, with each of the plurality of clusters having a plurality of nodes. Each of the plurality of nodes includes one or more virtual machines and other entities managed by an instance of a monitor such as a hypervisor. These and other components may be part of a datacenter, which may be managed by a user (e.g., an administrator or other authorized personnel). A distributed storage system, for providing storage and protection capabilities, is associated with and shared by each of the plurality of clusters in the virtual computing system. The virtual computing system may include a database management system configured for providing database management services. Database management services may involve management of databases stored within the virtual computing system. For example, at least some of the one or more virtual machines within the virtual computing system may be configured as database virtual machines that store one or more databases. These databases may be managed by the database management system. One example database management service provided by the database management system may include copy data management services.

**[0018]** Copy data management services involve protecting a database. Protecting a database means replicating a state of the database to enable creating a fully functional copy of the database, as well as restoring a database from the replicated state of the database. Such a fully functional copy of the database may be considered a clone of the database or a cloned database. The database from which the cloned database is created may be considered an original or source or production database. Since the cloned databases are fully functional copies of the source database, a user may perform operations (e.g., read, write, etc.) on the cloned database that may otherwise be performed on the source database. In some embodiments, a cloned database may be used for purposes other than what the source database is used for. For example, in some embodiments, a cloned database

may be used for reporting, auditing, testing, data analysis, etc., while the production database may be used for performing normal day-to-day operations. In some embodiments, a cloned database may have masked data. In other words, the cloned database may be a point in time copy of the production database and may include data from the production database at that point in time. Not all data of the production database may be made available on the cloned database.

**[0019]** Protecting a database may also include restoring a source or original or production database. In some embodiments, the production database may become corrupted (e.g., bad data). Restoring the production database may involve fixing the corruption by using the replicated state of the production database.

**[0020]** To enable creation of a cloned or restored database, copy data management services provide for periodically capturing snapshots of the source database. In other words, a cloned database may be created from a snapshot captured from the source database. A snapshot stores the state of the source database at the point in time at which the snapshot is captured. The snapshot is thus a point in time image of the source database. The snapshot may include a complete encapsulation of the virtual machine on which the source database is stored, including the configuration data of the virtual machine, the user data stored within the database, and any metadata associated with the virtual machine/source database. Any of a variety of snapshotting techniques may be used. For example, in some embodiments, copy-on-write, redirect-on-write, near-sync, or other snapshotting methods may be used to capture snapshots. From the snapshot, the source database may be recreated as the cloned database to the state at which the snapshot was captured.

**[0021]** However, the number of snapshots that are captured on a given day may be limited. Specifically, because capturing a snapshot requires quiescing (e.g., pausing) the source database

and entering a safe mode in which user operations are halted, it is desirable to take only a few snapshots a day. Thus, choices of state that may be recreated from a snapshot may be limited. If a state is desired that falls between the capture of two snapshots, the user is generally out of luck. Thus, the desire to limit the number of snapshots in a day results in a significant technical problem that results in losing changes made to the source database since the last snapshot capture or between two snapshot captures.

**[0022]** To avoid losing changes in state between two snapshot captures or since the last snapshot capture, the database management system may capture transactional logs. A transactional log may be a text, image, disk, or other type of file that records every transaction or change that occurs on the source database since a last snapshot capture. Thus, by using the snapshots or a combination of snapshots and transactional logs, any state of the source database down to the last second (or even fractions of seconds or other time granularities) may be recreated. Specifically, states of the source database that fall between the capture of two snapshots may be recreated by using a combination of snapshots and transactional logs.

**[0023]** As indicated above, snapshots of a source database may be captured by creating a snapshot of the source database virtual machine (e.g., database server) and a snapshot of the source database itself. Thus, a snapshot may be an image/copy of the location of the storage files associated with the virtual disks of the source database and an image/copy of the location of the configuration files associated with the source database virtual machine. The virtual disk(s) on which the source database is stored may be composed of or divided into one or more memory blocks. The snapshot may capture images or copies of the memory blocks. A copy of the memory blocks may be made by identifying the memory pointer (e.g., location) assigned to each memory block and copying the memory pointer to a repository. During a first snapshot of the memory blocks, the contents of all

the memory blocks may be copied. After the first snapshot is captured, transactional logs may be captured to record all transactions or changes in the memory blocks of the source database after the capture of the first snapshot and before the capture of a second snapshot. Capturing a transactional log may be referred to herein as a log catch up operation.

**[0024]** The frequency of capturing transactional logs may be higher than the frequency of capturing snapshots in a day. For example, in some embodiments, by default, a transactional log may be captured every 30 minutes. In other embodiments, the user may define the frequency of capturing transactional logs. Further, since the source database is not quiesced (paused) for capturing the transactional log, user operations may continue while the transactional logs are being captured. Further, since the transactional logs only capture the changes in the database since the last snapshot capture, the transactional logs do not consume a lot of space. Thus, cloned databases of the source database may be created to a point in time by using a combination of transactional logs and snapshots (e.g., between two snapshot captures), or based upon available snapshots (e.g., at the point of snapshot capture). Capturing snapshots and/or transactional logs are collectively referred to herein as taking "backups." In other words, creating or taking a "backup" of a source database means capturing one or more snapshots and/or one or more transactional logs of the source database. From the "backup" or "backups," one or more cloned databases of the source database may be created.

**[0025]** Further, the frequency with which the snapshots and transactional logs are captured may depend upon the level of protection desired by the user for a particular source database. The database management system may solicit a protection schedule and definition of a Service Level Agreement ("SLA") from the user for each source database. The protection schedule may allow the user to define the frequency of capturing snapshots and transactional logs based upon the SLA.

Upon defining the protection schedule and the SLA, backups of the source database may be automatically created and stored within the virtual computing system without further input from the user. For convenience, the database management system may include built-in defaults of the protections schedule and SLA levels that the user may select from. The user may modify the defaults or define new parameters for the protection schedule and SLA. By virtue of defining a protection schedule and SLA for each source database, the level of protection accorded to each source database may be individually tailored based upon the requirements of the user.

**[0026]** Further, in some cases, the source database may be stored on a single node of a cluster of the virtual computing system. Such a source database may be considered a "single instance" source database. If the node on which the source database is hosted becomes unavailable (e.g., fails), access to the source database may be hindered until the node recovers and becomes available again. Further, if the node on which the source database is hosted becomes unavailable, backups may not be created of that source database until the node becomes available again. To avoid or prevent such single-point failures, in some embodiments, a "highly available" source database may be desirable. High availability of a source database may be obtained by maintaining redundant instances or copies of the source database in the virtual computing system. Such redundant instances or copies of the source database are not considered "cloned" databases. Rather, each redundant instance or copy of a source database is also a source database. From each of these redundant instances or copies, one or more cloned databases may be created.

**[0027]** In some embodiments, the redundant instances or copies of the source database may be stored on separate nodes of the virtual computing system to create a highly available source database. By virtue of storing the redundant instances or copies of the source database on different nodes, if one node becomes unavailable, the source database may be accessed from another node,

thereby ensuring continuity of operation. In some embodiments, a user may define how many redundant instances or copies of the source database are desired. To further ensure continuity of operation, the redundant instances or copies of the source database need to be protected. However, protecting a highly available source database is more complicated than protecting a single instance source database. In some embodiments, to protect a highly available source database, backups may be created from each of the redundant instances or copies of the source database.

**[0028]** However, since each redundant instance or copy of the source database is same or substantially similar, creating such multiple backups of the same source databases may be redundant, consume a lot of system resources, require a lot of space to store, may be costly to implement, and therefore, generally undesirable. To avoid such redundancy, in some embodiments, backups may be created from one copy of the source database. However, if the node from which the backups are being created becomes unavailable, the creation of backups is halted and the source database is left without any protection. Thus, technical problems exist in protecting highly available source databases in an efficient and reliable manner.

**[0029]** Further, in some embodiments, user intervention may be required to enable capturing of backups. For example, in some embodiments, a user may be required to manually designate a node from which the backups are to be captured. When the node from which backups are being created becomes unavailable, the user may be required to again manually designate another node from which to capture the backups. Thus, in some embodiments, the reliability of protection of a highly available source database is contingent upon the diligence of a user in monitoring all copies of the source databases, monitoring the node from which backups are being created, and designating a new node from which to capture backups from. Alternatively, the user may capture backups from all nodes on which a copy of the source database exists to avoid the monitoring and

the designating operations. However, as discussed above, capturing backups from all or multiple nodes is inefficient, wasteful, and undesirable.

**[0030]** Problems with protecting source databases may be compounded if the various nodes on which the copies of the source databases are stored are spread across different clusters of the virtual computing system. Specifically, when the copies of the source database are spread across multiple clusters, the database management system needs a way to keep track of the multiple clusters, which further increases the complexity of the database management system.

**[0031]** The present disclosure provides technical solutions to protecting a highly available source database regardless of whether the copies of the source database are spread across various nodes of a single cluster or multiple clusters. The present disclosure also provides a mechanism to protect a source database in a highly available system by designating one node as an active node. A database controller of the database management system of the present disclosure facilitates capturing backups from the active node. When the active node becomes unavailable, the database controller automatically selects another node as the active node and automatically starts capturing backups from the newly selected active node, thereby requiring no user intervention. The selection of the new active node may be based upon a user defined switch over policy. Thus, the present disclosure provides a technique to effectively, reliably, and conveniently protect a highly available source database.

**[0032]** Referring now to FIG. 1, a cluster 100 of a virtual computing system in a hyperconverged system is shown, in accordance with some embodiments of the present disclosure. The cluster 100 includes a plurality of nodes, such as a first node 105, a second node 110, and a third node 115. Each of the first node 105, the second node 110, and the third node 115 may also be referred to as a "host" or "host machine." The first node 105 includes database virtual machines ("database

VMs") 120A and 120B (collectively referred to herein as "database VMs 120"), a hypervisor 125 configured to create and run the database VMs, and a controller/service VM 130 configured to manage, route, and otherwise handle workflow requests between the various nodes of the cluster 100. Similarly, the second node 110 includes database VMs 135A and 135B (collectively referred to herein as "database VMs 135"), a hypervisor 140, and a controller/service VM 145, and the third node 115 includes database VMs 150A and 150B (collectively referred to herein as "database VMs 150"), a hypervisor 155, and a controller/service VM 160. The controller/service VM 130, the controller/service VM 145, and the controller/service VM 160 are all connected to a network 165 to facilitate communication between the first node 105, the second node 110, and the third node 115. Although not shown, in some embodiments, the hypervisor 125, the hypervisor 140, and the hypervisor 155 may also be connected to the network 165. Further, although not shown, one or more of the first node 105, the second node 110, and the third node 115 may include one or more containers managed by a monitor (e.g., container engine).

**[0033]** The cluster 100 also includes and/or is associated with a storage pool 170 (also referred to herein as storage sub-system). The storage pool 170 may include network-attached storage 175 and direct-attached storage 180A, 180B, and 180C. The network-attached storage 175 is accessible via the network 165 and, in some embodiments, may include cloud storage 185, as well as a networked storage 190. In contrast to the network-attached storage 175, which is accessible via the network 165, the direct-attached storage 180A, 180B, and 180C includes storage components that are provided internally within each of the first node 105, the second node 110, and the third node 115, respectively, such that each of the first, second, and third nodes may access its respective direct-attached storage without having to access the network 165.

**[0034]** It is to be understood that only certain components of the cluster 100 are shown in FIG. 1. Nevertheless, several other components that are needed or desired in the cluster 100 to perform the functions described herein are contemplated and considered within the scope of the present disclosure.

**[0035]** Although three of the plurality of nodes (e.g., the first node 105, the second node 110, and the third node 115) are shown in the cluster 100, in other embodiments, greater than or fewer than three nodes may be provided within the cluster. Likewise, although only two database VMs (e.g., the database VMs 120, the database VMs 135, the database VMs 150) are shown on each of the first node 105, the second node 110, and the third node 115, in other embodiments, the number of the database VMs on each of the first, second, and third nodes may vary to include other numbers of database VMs. Further, the first node 105, the second node 110, and the third node 115 may have the same number of database VMs (e.g., the database VMs 120, the database VMs 135, the database VMs 150) or different number of database VMs.

**[0036]** In some embodiments, each of the first node 105, the second node 110, and the third node 115 may be a hardware device, such as a server. For example, in some embodiments, one or more of the first node 105, the second node 110, and the third node 115 may be an NX-1000 server, NX-3000 server, NX-6000 server, NX-8000 server, etc. provided by Nutanix, Inc. or server computers from Dell, Inc., Lenovo Group Ltd. or Lenovo PC International, Cisco Systems, Inc., etc. In other embodiments, one or more of the first node 105, the second node 110, or the third node 115 may be another type of hardware device, such as a personal computer, an input/output or peripheral unit such as a printer, or any type of device that is suitable for use as a node within the cluster 100. In some embodiments, the cluster 100 may be part of a data center. Further, one or more of the first node 105, the second node 110, and the third node 115 may be organized in a variety of network

topologies. Each of the first node 105, the second node 110, and the third node 115 may also be configured to communicate and share resources with each other via the network 165. For example, in some embodiments, the first node 105, the second node 110, and the third node 115 may communicate and share resources with each other via the controller/service VM 130, the controller/service VM 145, and the controller/service VM 160, and/or the hypervisor 125, the hypervisor 140, and the hypervisor 155.

**[0037]** Also, although not shown, one or more of the first node 105, the second node 110, and the third node 115 may include one or more processing units configured to execute instructions. The instructions may be carried out by a special purpose computer, logic circuits, or hardware circuits of the first node 105, the second node 110, and the third node 115. The processing units may be implemented in hardware, firmware, software, or any combination thereof. The term "execution" is, for example, the process of running an application or the carrying out of the operation called for by an instruction. The instructions may be written using one or more programming language, scripting language, assembly language, etc. The processing units, thus, execute an instruction, meaning that they perform the operations called for by that instruction.

**[0038]** The processing units may be operably coupled to the storage pool 170, as well as with other elements of the first node 105, the second node 110, and the third node 115 to receive, send, and process information, and to control the operations of the underlying first, second, or third node. The processing units may retrieve a set of instructions from the storage pool 170, such as, from a permanent memory device like a read only memory ("ROM") device and copy the instructions in an executable form to a temporary memory device that is generally some form of random access memory ("RAM"). The ROM and RAM may both be part of the storage pool 170, or in some embodiments, may be separately provisioned from the storage pool. In some embodiments, the

processing units may execute instructions without first copying the instructions to the RAM. Further, the processing units may include a single stand-alone processing unit, or a plurality of processing units that use the same or different processing technology.

**[0039]** With respect to the storage pool 170 and particularly with respect to the direct-attached storage 180A, 180B, and 180C, each of the direct-attached storage may include a variety of types of memory devices that are suitable for a virtual computing system. For example, in some embodiments, one or more of the direct-attached storage 180A, 180B, and 180C may include, but is not limited to, any type of RAM, ROM, flash memory, magnetic storage devices (e.g., hard disk, floppy disk, magnetic strips, etc.), optical disks (e.g., compact disk ("CD"), digital versatile disk ("DVD"), etc.), smart cards, solid state devices, etc. Likewise, the network-attached storage 175 may include any of a variety of network accessible storage (e.g., the cloud storage 185, the networked storage 190, etc.) that is suitable for use within the cluster 100 and accessible via the network 165. The storage pool 170, including the network-attached storage 175 and the direct-attached storage 180A, 180B, and 180C, together form a distributed storage system configured to be accessed by each of the first node 105, the second node 110, and the third node 115 via the network 165, the controller/service VM 130, the controller/service VM 145, the controller/service VM 160, and/or the hypervisor 125, the hypervisor 140, and the hypervisor 155. In some embodiments, the various storage components in the storage pool 170 may be configured as virtual disks for access by the database VMs 120, the database VMs 135, and the database VMs 150.

**[0040]** Each of the database VMs 120, the database VMs 135, the database VMs 150 is a software-based implementation of a computing machine. The database VMs 120, the database VMs 135, the database VMs 150 emulate the functionality of a physical computer. Specifically, the hardware resources, such as processing unit, memory, storage, etc., of the underlying computer (e.g., the

first node 105, the second node 110, and the third node 115) are virtualized or transformed by the respective hypervisor 125, the hypervisor 140, and the hypervisor 155, into the underlying support for each of the database VMs 120, the database VMs 135, the database VMs 150 that may run its own operating system and applications on the underlying physical resources just like a real computer. By encapsulating an entire machine, including CPU, memory, operating system, storage devices, and network devices, the database VMs 120, the database VMs 135, the database VMs 150 are compatible with most standard operating systems (e.g. Windows, Linux, etc.), applications, and device drivers. In some embodiments, one or more of the database VMs 120, the database VMs 135, the database VMs 150 maybe configured to host one or more databases. In some embodiments, one or more of the database VMs 120, the database VMs 135, the database VMs 150 may also be configured to host workloads other than or in addition to databases.

**[0041]** Each of the hypervisor 125, the hypervisor 140, and the hypervisor 155 is a virtual machine monitor that allows a single physical server computer (e.g., the first node 105, the second node 110, third node 115) to run multiple instances of the database VMs 120, the database VMs 135, and the database VMs 150 with each VM sharing the resources of that one physical server computer, potentially across multiple environments. For example, each of the hypervisor 125, the hypervisor 140, and the hypervisor 155 may allocate memory and other resources to the underlying VMs (e.g., the database VMs 120, the database VMs 135, the database VMs 150A, and the database VMs 150B) from the storage pool 170 to perform one or more functions.

**[0042]** By running the database VMs 120, the database VMs 135, and the database VMs 150 on each of the first node 105, the second node 110, and the third node 115, respectively, multiple workloads and multiple operating systems may be run on a single piece of underlying hardware computer (e.g., the first node, the second node, and the third node) to increase resource utilization

and manage workflow. When new database VMs are created (e.g., installed) on the first node 105, the second node 110, and the third node 115, each of the new database VMs may be configured to be associated with certain hardware resources, software resources, storage resources, and other resources within the cluster 100 to allow those virtual VMs to operate as intended.

**[0043]** The database VMs 120, the database VMs 135, the database VMs 150, and any newly created instances of the database VMs may be controlled and managed by their respective instance of the controller/service VM 130, the controller/service VM 145, and the controller/service VM 160. The controller/service VM 130, the controller/service VM 145, and the controller/service VM 160 are configured to communicate with each other via the network 165 to form a distributed system 195. Each of the controller/service VM 130, the controller/service VM 145, and the controller/service VM 160 may be considered a local management system configured to manage various tasks and operations within the cluster 100. For example, in some embodiments, the local management system may perform various management related tasks on the database VMs 120, the database VMs 135, and the database VMs 150.

**[0044]** The hypervisor 125, the hypervisor 140, and the hypervisor 155 of the first node 105, the second node 110, and the third node 115, respectively, may be configured to run virtualization software, such as, ESXi from VMWare, AHV from Nutanix, Inc., XenServer from Citrix Systems, Inc., etc. The virtualization software on the hypervisor 125, the hypervisor 140, and the hypervisor 155 may be configured for running the database VMs 120, the database VMs 135, the database VMs 150A, and the database VMs 150B, respectively, and for managing the interactions between those VMs and the underlying hardware of the first node 105, the second node 110, and the third node 115. Each of the controller/service VM 130, the controller/service VM 145, the

controller/service VM 160, the hypervisor 125, the hypervisor 140, and the hypervisor 155 may be configured as suitable for use within the cluster 100.

**[0045]** The network 165 may include any of a variety of wired or wireless network channels that may be suitable for use within the cluster 100. For example, in some embodiments, the network 165 may include wired connections, such as an Ethernet connection, one or more twisted pair wires, coaxial cables, fiber optic cables, etc. In other embodiments, the network 165 may include wireless connections, such as microwaves, infrared waves, radio waves, spread spectrum technologies, satellites, etc. The network 165 may also be configured to communicate with another device using cellular networks, local area networks, wide area networks, the Internet, etc. In some embodiments, the network 165 may include a combination of wired and wireless communications. The network 165 may also include or be associated with network interfaces, switches, routers, network cards, and/or other hardware, software, and/or firmware components that may be needed or considered desirable to have in facilitating intercommunication within the cluster 100.

**[0046]** Referring still to FIG. 1, in some embodiments, one of the first node 105, the second node 110, or the third node 115 may be configured as a leader node. The leader node may be configured to monitor and handle requests from other nodes in the cluster 100. For example, a particular database VM (e.g., the database VMs 120, the database VMs 135, or the database VMs 150) may direct an input/output request to the controller/service VM (e.g., the controller/service VM 130, the controller/service VM 145, or the controller/service VM 160, respectively) on the underlying node (e.g., the first node 105, the second node 110, or the third node 115, respectively). Upon receiving the input/output request, that controller/service VM may direct the input/output request to the controller/service VM (e.g., one of the controller/service VM 130, the controller/service VM 145, or the controller/service VM 160) of the leader node. In some cases, the controller/service

VM that receives the input/output request may itself be on the leader node, in which case, the controller/service VM does not transfer the request, but rather handles the request itself.

**[0047]** The controller/service VM of the leader node may fulfil the input/output request (and/or request another component within/outside the cluster 100 to fulfil that request). Upon fulfilling the input/output request, the controller/service VM of the leader node may send a response back to the controller/service VM of the node from which the request was received, which in turn may pass the response to the database VM that initiated the request. In a similar manner, the leader node may also be configured to receive and handle requests (e.g., user requests) from outside of the cluster 100. If the leader node fails, another leader node may be designated.

**[0048]** Additionally, in some embodiments, although not shown, the cluster 100 may be associated with a central management system that is configured to manage and control the operation of multiple clusters in the virtual computing system. In some embodiments, the central management system may be configured to communicate with the local management systems on each of the controller/service VM 130, the controller/service VM 145, the controller/service VM 160 for controlling the various clusters.

**[0049]** Again, it is to be understood again that only certain components and features of the cluster 100 are shown and described herein. Nevertheless, other components and features that may be needed or desired to perform the functions described herein are contemplated and considered within the scope of the present disclosure. It is also to be understood that the configuration of the various components of the cluster 100 described above is only an example and is not intended to be limiting in any way. Rather, the configuration of those components may vary to perform the functions described herein.

**[0050]** Referring now to FIG. 2, an example block diagram of a database management system 200 is shown, in accordance with some embodiments of the present disclosure. FIG. 2 is discussed in conjunction with FIG. 1. The database management system 200 or portions thereof may be configured as utility software for creating and implementing database management services. The database management system 200 may be configured to facilitate, among other things, protection of the databases associated therewith. The various elements of the database management system 200 described below may be part of a single cluster (e.g., the cluster 100) or may span across multiple clusters of a virtual computing system. When part of a single cluster, the various elements discussed below may be associated with one or more nodes of the single cluster. When part of multiple clusters, in some embodiments, some elements of the database management system 200 may be located on one or more nodes of one cluster, while other elements may be located on one or more nodes of at least one other cluster.

**[0051]** The database management system 200 includes a database controller 205 (e.g., also referred to herein as Era server) that is configured to receive input from and provide output to a user via a dashboard 210. The database controller 205 is also associated with a database storage system 215 that is configured to store one or more databases (e.g., customer databases) under management of the database management system 200. In association with the dashboard 210 and the database storage system 215, the database controller 205 is configured to implement one or more database management services of the database management system 200. For example, the database controller 205 is configured to provide copy data management services, or in other words, services to protect databases provisioned (e.g., created or registered) by the database management system 200. Thus, the database controller 205 may include a database protection system 220 to protect the databases of the database management system 200. In some embodiments, the database

controller 205 may be located on one cluster and may be configured to provide copy data management services to databases stored on the same cluster as the database controller and/or to databases located on other clusters as well.

**[0052]** The database management system 200 may be installed on a database VM (e.g., the database VMs 120, the database VMs 135, the database VMs 150 of FIG. 1). The database management system 200 may be installed via the controller/service VM (e.g., the controller/service VM 130, the controller/service VM 145, the controller/service VM 160) of the node (e.g., the first node 105, the second node 110, and the third node 115) on which the database management system is to be installed. For example, an administrator desiring to install the database management system 200 may download a copy on write image file (e.g., qcow or qcow2 image file) on the controller/service VM to define the content and structure of a disk volume to be associated with the database management system. In some embodiments, instead of a copy on write image file, another type of disk image file, depending upon the type of underlying hypervisor, may be installed. Further, the administrator may create or one or more new database VMs on which the database management system 200 is to reside. As part of creating the database VMs, the administrator may allocate a particular number of virtual central processing units (vCPU) to each of the database VMs, define the number of cores that are desired in each vCPU, designate a specific amount of memory to each of the database VMs, and attach a database storage device (e.g., a virtual disk from the storage pool 170) with each of the database VMs. In some embodiments, at least a portion of the database storage device attached to the database management system 200 may form the database storage system 215. The administrator may also create a new network interface (e.g., associate a virtual local area network (VLAN), assign an Internet Protocol ("IP") address to access the database management system 200, etc.) with each of the database VMs. The

administrator may perform additional and/or other actions to create the database VMs on which the database management system 200 resides upon creation and installation of the disk image file.

**[0053]** In some embodiments, the database VMs on which the database management system 200 resides may all be located on a single node (e.g., one of the first node 105, the second node 110, and the third node 115). In other embodiments, the database VMs on which the database management system 200 resides may be spread across multiple nodes within a single cluster, or possibly amongst multiple clusters. When spread across multiple clusters, each of the associated multiple clusters may be configured to at least indirectly communicate with one another to facilitate operation of the database management system 200. Upon installing the database management system 200, a user (e.g., the administrator or other user authorized to access the database management system) may access the dashboard 210. The dashboard 210, thus, forms the front end of the database management system 200 and the database controller 205 and the database storage system 215 form the backend of the database management system.

**[0054]** The database management system 200 may be accessed via a computing device associated with the cluster 100. In other embodiments, instead of or in addition to being accessible via a particular computing device, the database management system 200 may be hosted on a cloud service and may be accessed via the cloud. In some embodiments, the database management system 200 may additionally or alternatively be configured as a mobile application suitable for access from a mobile computing device (e.g., a mobile phone). In some embodiments, the database management system 200 and particularly the dashboard 210 may be accessed via an Application Programming Interface ("API") 225. To access the dashboard 210 via the API 225, a user may use designated devices such as laptops, desktops, tablets, mobile devices, other handheld or portable devices, and/or other types of computing devices that are configured to access the API.

These devices may be different from the computing device on which the database management system 200 is installed.

**[0055]** In some embodiments and when the dashboard 210 is configured for access via the API 225, the user may access the dashboard via a web browser and upon entering a uniform resource locator ("URL") for the API such as the IP address of the database management system 200 or other web address. Using the API 225 and the dashboard 210, the users may then send instructions to the database controller 205 and receive information back from the database controller. In some embodiments, the API 225 may be a representational state transfer ("REST") type of API. In other embodiments, the API 225 may be any other type of web or other type of API (e.g., ASP.NET) built using any of a variety of technologies, such as Java, .Net, etc., that is capable of accessing the database controller 205 and facilitating communication between the users and the database controller. In some embodiments, the API 225 may be configured to facilitate communication via a hypertext transfer protocol ("HTTP") or hypertext transfer protocol secure ("HTTPS") type request. The API 225 may receive an HTTP/HTTPS request and send an HTTP/HTTPS response back. In other embodiments, the API 225 may be configured to facilitate communication using other or additional types of communication protocols. In other embodiments, the database management system 200 may be configured for access in other ways.

**[0056]** The dashboard 210 provides a user interface that facilitates human-computer interaction between the users and the database controller 205. The dashboard 210 is configured to receive user inputs from the users via a graphical user interface ("GUI") and transmit those user inputs to the database controller 205. The dashboard 210 is also configured to receive outputs/information from the database controller 205 and present those outputs/information to the users via the GUI of the management system. The GUI may present a variety of graphical icons, windows, visual

indicators, menus, visual widgets, and other indicia to facilitate user interaction. In other embodiments, the dashboard 210 may be configured as other types of user interfaces, including for example, text-based user interfaces and other man-machine interfaces. Thus, the dashboard 210 may be configured in a variety of ways.

**[0057]** Further, the dashboard 210 may be configured to receive user inputs in a variety of ways. For example, the dashboard 210 may be configured to receive the user inputs using input technologies including, but not limited to, a keyboard, a stylus and/or touch screen, a mouse, a track ball, a keypad, a microphone, voice recognition, motion recognition, remote controllers, input ports, one or more buttons, dials, joysticks, etc. that allow an external source, such as the user, to enter information into the database management system 200. The dashboard 210 may also be configured to present outputs/information to the users in a variety of ways. For example, the dashboard 210 may be configured to present information to external systems such as users, memory, printers, speakers, etc. Therefore, although not shown, dashboard 210 may be associated with a variety of hardware, software, firmware components, or combinations thereof. Generally speaking, the dashboard 210 may be associated with any type of hardware, software, and/or firmware component that enables the database controller 205 to perform the functions described herein.

**[0058]** Thus, the dashboard receives a user request (e.g., an input) from the user and transmits that user request to the database controller 205. In some embodiments, the user request may be to request a database management service. For example, in some embodiments, the user request may be to request a copy data management service. In response to the user request for a copy data management service, the database controller 205 may activate the database protection system 220. The database protection system 220 is configured to protect databases associated with the database

management system 200. Thus, the database protection system 220 implements a copy data management service of the database management system 200. During provisioning of a database with the database management system 200, an instance of the database protection system 220 is created for the database. In some embodiments, the database protection system 220 is referred to as a "time machine" and provides a mechanism to achieve/facilitate copy data management services. In particular, in some embodiments, the "time machine" takes automated database backups (e.g., snapshots, transactional logs) for creating clones of these databases (e.g., from the backups) for various purposes like testing, staging, etc..

**[0059]** Thus, upon provisioning of a database with the database management system 200, that database may be protected by the associated instance of the database protection system 220 by automatically creating backups of the database, as well for facilitating creation of cloned databases using the backups. Each instance of the database protection system 220 may receive a variety of user defined constraints in accordance with which the associated database is protected. The database protection system 220 is discussed in greater detail below.

**[0060]** The database controller 205, including the database protection system 220, may be configured as, and/or operate in association with, hardware, software, firmware, or a combination thereof. Specifically, the database controller 205 may include a processor 230 configured to execute instructions for implementing the database management services of the database management system 200. In some embodiments, the database protection system 22 may have its own separate instance of the processor 230. The processor 230 may be implemented in hardware, firmware, software, or any combination thereof. "Executing an instruction" means that the processor 230 performs the operations called for by that instruction. The processor 230 may retrieve a set of instructions from a memory for execution. For example, in some embodiments,

the processor 230 may retrieve the instructions from a permanent memory device like a read only memory (ROM) device and copy the instructions in an executable form to a temporary memory device that is generally some form of random access memory (RAM). The ROM and RAM may both be part of the storage pool 170 and/or provisioned separately from the storage pool. In some embodiments, the processor 230 may be configured to execute instructions without first copying those instructions to the RAM. The processor 230 may be a special purpose computer, and include logic circuits, hardware circuits, etc. to carry out the instructions. The processor 230 may include a single stand-alone processing unit, or a plurality of processing units that use the same or different processing technology. The instructions may be written using one or more programming language, scripting language, assembly language, etc.

**[0061]** The database controller 205 also includes a memory 235. The memory 235 may be provisioned from or be associated with the storage pool 170. In some embodiments, the memory 235 may be separate from the storage pool 170. The memory 235 may be any of a variety of volatile and/or non-volatile memories that may be considered suitable for use with the database controller 205. In some embodiments, the memory 235 may be configured to store the instructions that are used by the processor 230. Further, although not shown, in some embodiments, the database protection system 220 may, additionally or alternatively, have its own dedicated memory.

**[0062]** Further, the database controller 205 may be configured to handle a variety of types of database engines. For example, in some embodiments, the database controller 205 may be configured to manage PostgreSQL, Oracle, Microsoft SQL server, and MySQL database engines. In other embodiments, the database controller 205 may be configured to manage other or additional database engines. Each database that is provisioned with the database management system 200 may be of a particular "database engine." The database engine may identify the type of database

management system (e.g., Oracle, PostgreSQL, etc.) of a particular database. By virtue of provisioning a database with a particular database engine, that database is managed in accordance with the rules of that database engine. Thus, the database controller 205 is configured to be operable with and manage databases associated with a variety of database engines.

**[0063]** It is to be understood that only some components of the database controller 205 are shown and discussed herein. In other embodiments, the database controller 205 may also include other components that are considered necessary or desirable in implementing the copy data management services discussed herein.

**[0064]** Referring still to FIG. 2, as discussed above, an instance of the database protection system 220 is created for each database when that database is provisioned within the database management system 200. Thus, the database protection system 220 may include multiple instances of the database protection system – one for each database that is provisioned. For example, the database protection system 220 may include database protection system instances 240A-240N (collectively referred to herein as database protection system instances 240). In other embodiments, each instance of the database protection system (e.g., the database protection system instances 240A-240N) may be configured to protect more than one database. Each of the database protection system instances 240A-240N may respectively include a clone management system 245A-245N (collectively referred to herein as clone management systems 245) and a snapshot/log capturing system 250A-250N (collectively referred to herein as snapshot/log capturing systems 250).

**[0065]** Each of the database protection system instances 240 may be associated with a "source database" stored within a source database storage 255. The source database storage 255 is configured to store the original instances of the databases (also referred to herein as source databases) that are provisioned within the database management system 200. The database storage

system 215 may also include a target database storage 260. The target database storage 260 is configured to store the clones of the source databases (also referred to herein as cloned databases). In some embodiments, the source database storage 255 and the target database storage 260 may be provisioned from the storage pool 170 and may include virtual disk storage that is associated with the database VMs (e.g., the database VMs 120, the database VMs 135, the database VMs 150) on which the database management system 200, the source databases, and the cloned databases reside. For example, in some embodiments, the source database storage 255 may be associated with one or more database VMs (referred to herein as source database VMs or database servers) and the source databases stored within the source database storage may be stored within the virtual disks associated with the source database VMs. Similarly, in some embodiments, the target database storage 260 may be associated with one or more database VMs (referred to herein as target database VMs) and the databases stored within the target database storage may be stored within the virtual disks associated with the target database VMs. In some embodiments, each source database VM may be configured to store one or more source databases and each target database VM may be configured to store one or more target databases. In other embodiments, the source database storage 255 and the target database storage 260 may additionally or alternatively be provisioned from other types of storage associated with the database management system 200.

**[0066]** Further, depending upon the size of a particular database and the size of the virtual disk associated with a particular source database VM, a source database may be stored in its entirety on a single source database VM or may span multiple source database VMs on the same node, different nodes of the same cluster, and/or node(s) of another cluster. Further, as the size of that source database increases, the source database may be moved to another source database VM, may be stored onto multiple source database VMs, and/or additional storage may be provisioned to the

source database VMs to house the increased size of the source database. Similarly, depending upon the size of a cloned database and the size of the virtual disk associated with a particular target database VM, the cloned database may be stored on a single or multiple target database VMs on the same node, different nodes of the same cluster, and/or on different clusters. Further, as the size of the cloned database increases (e.g., by virtue of updating the cloned database to incorporate any changes in the source database), the cloned database may be moved to another target database VM of appropriate size, may be divided amongst multiple target database VMs, and/or additional virtual disk space may be provisioned to the target database VM. Thus, the database storage system 215 is structured with the flexibility to expand and adapt to accommodate databases of various sizes.

**[0067]** Additionally, as indicated above, each of the database protection system instances 240 may be associated with a source database stored within the source database storage 255. For example, the database protection system instance 240A may be associated with a source database 265A stored within the source database storage 255, the database protection system instance 240B may be associated with a source database 265B of the source database storage, the database protection system instance 240N may be associated with a source database 265N, and so on. Thus, the clone management system 245A and the snapshot/log capturing system 250A of the database protection system instance 240A may be configured to protect the source database 265A, the clone management system 245B and the snapshot/log capturing system 250B may be configured to protect the source database 265B, the clone management system 245N and the snapshot/log capturing system 250N may be configured to protect the source database 265N, and so on. By virtue of having the database protection system instances 240 for each of the source databases

265A-265N (collectively referred to herein as the source databases 265), the protection of each of those databases may be customized and tailored to suit the user's needs.

**[0068]** To protect the source databases 265, the database protection system instances 240 may take snapshots and transactional logs to allow creating clones of those source databases. The clones of the source databases 265 (e.g., cloned databases) may be stored within the target database storage 260. For each source database (e.g., the source databases 265) that is stored within the source database storage 255, one or more clones of that source database may be created and stored within the target database storage 260. For example, when a clone of the source database 265A is created, a cloned database 270A is created and stored within the target database storage 260. Similarly, clones of the source databases 265B and 265N may be created as cloned databases 270B and 270N, respectively, and stored within the target database storage 260. The cloned databases 270A-270N are collectively referred to herein as the cloned databases 270. Although each of the source databases 265 in the source database storage 255 has been shown as having a corresponding instance of the cloned databases 270 in the target database storage 260, it is to be understood that in some embodiments, clones of only some of the source databases stored in the source database storage may be made. The source databases 265 that have not been cloned may not have a cloned database within the target database storage 260.

**[0069]** Further, similar to the source databases 265, which reside on a database VM (e.g., the source database VMs or database servers), the cloned databases 270 also reside on a database VM. The database VMs on which the cloned databases 270 reside are referred to herein as target database VM. Each of the cloned databases 270 may reside entirely on one target database VM or may span across multiple target database VMs on a single cluster or multiple clusters. In some

embodiments, the source database VMs and the target database VMs may be created on the same node or different nodes of the same cluster or across multiple clusters.

**[0070]** Thus, the database protection system instances 240, and particularly the clone management systems 245 of the database protection system instances creates the cloned databases 270 from the source databases 265 stored within the source database storage 255, and stores the cloned databases within the target database storage 260. The cloned databases 270 may be of a variety of types. Each of the source databases 265 is created or registered on a source database VM. Thus, each of the cloned databases 270 may include a clone of the source database VM only (e.g., to create the target database VM) and/or may include the clone of the source database VM plus the database that resides on that source database VM. When both the source database VM and the source database 265A are cloned, the cloned database 270A may include a target database VM created on the target database storage 260 with a similar or different configuration as the source database VM and the clone of the source database may be stored on the target database VM. When only the source database VM is cloned, a target database VM may be created for that source database VM and stored on the target database storage 260. The target database VM may be used at a later point to store the clone of the source database that resides on the associated source database VM. Thus, the cloned databases 270 may include the source database VM only, the source database VM plus the source database, or the source database only (which is to be stored on a previously created target database VM).

**[0071]** The cloned databases 270 may be considered operationally same (or substantially similar) to the source databases 265. Each of the cloned databases 270 may be refreshed/updated to incorporate any changes that may have occurred in the source databases 265 since the cloned databases were created. In some embodiments, the operations that are performed on the source

databases 265 may be performed on the cloned databases 270 as well. Thus, in some embodiments, instead of using the source databases 265, the cloned databases 270 may be used for performing operations (e.g., analyzing data). The cloned databases 270 may be created from snapshots and transactional logs captured from the source databases 265. The cloned databases 270 may be created upon receiving a user request. The user may request to clone a particular one of the source databases 265 to a point in time or to a specific snapshot. For example, the user may request a cloned database of a particular one of the source databases 265 as that source database existed at 11:00AM on a particular date. Alternatively, the user may specifically identify a snapshot and request a cloned database of the source databases 265 based on that snapshot. Creating a cloned database (e.g., the cloned databases 270) involves replicating a state of the source databases 265. The "state" of the source databases 265 may include the configuration of the source database, the user data stored within the source database, metadata stored within the source database, and any other information associated with the source database. In other words, a cloned database may be an exact or substantially exact copy of the source database.

**[0072]** Thus, upon receiving a user request to create a cloned database (e.g., the cloned database 270A) from a source database (e.g., the source database 265A), the clone management system (e.g., the clone management system 245A) associated with the source database may retrieve snapshots and transactional logs of the source database from a repository where the snapshots and transactional logs are stored. If the user request is to clone the source database to a point in time, the clone management system (e.g., the clone management system 245A) may retrieve all snapshots and transactional logs captured of the source database at that point in time (or up to that point in time) and create a cloned database (e.g., the cloned database 270A) from those snapshots and transactional logs. The cloned database (e.g., the cloned database 270A) represents the state

of the source database at the requested point in time. If the user request is to clone the source database based on a particular available snapshot, the clone management system (e.g., the clone management system 245A) may retrieve that particular snapshot and create a cloned database (e.g., the cloned database 270A) from that particular snapshot. The cloned database (e.g., the cloned database 270A) represents the state of the source database (e.g., the source database 265A) at the time the requested snapshot was captured. Thus, the clone management systems 245 are configured to create the cloned databases 270. The clone management systems 245 may also be configured to refresh the cloned databases 270, as well as manage/perform any operations performed on the cloned databases.

**[0073]** To be able to create the cloned databases 270, snapshots and transactional logs or backups are needed of the source databases 265. The snapshots and transactional logs may be captured via the snapshot/log capturing systems 250. The snapshot/log capturing systems 250 may be configured with a protection schedule in accordance with an SLA defined by the user when the source databases 265 are provisioned with the database management system 200. The protection schedule defines, among other things, the frequency of capturing snapshots and transactional logs each day. Thus, based upon the protection schedule, the snapshot/log capturing systems 250 may capture snapshots and transactional logs automatically. Specifically, in some embodiments, an instance of a database manager may be associated with each source database that is provisioned within the source database storage 255. For example, the source database 265A may be associated with a database manager 275A, the source database 265B may be associated with a data manager 275B, and the source database 265N may be associated with a database manager 275N. The database managers 275A-275N are collectively referred to herein as database managers 275. In other embodiments, a single instance of the database manager 275 may manage multiple or all

source databases. Although not shown, in some embodiments, the cloned databases 270 may each be associated with a database manager as well.

**[0074]** Although not shown, one or more of the database managers 275 may include a processing unit (e.g., similar to the processor 230), a memory (e.g., similar to the memory 235), and other hardware, software, and/or firmware components that are necessary or considered desirable for performing the functions described herein. The database managers 275 may be configured to capture the snapshots and the transactional logs upon instruction from the snapshot/log capturing systems 250. The database managers 275 may include an agent that captures the snapshots and the transactional logs based on the protection schedule received from the snapshot/log capturing systems 250. Thus, the database manager 275A may include an agent 280A, the database manager 275B may include an agent 280B, and the database manager 275N may include an agent 280N. The agents 280A-280N are collectively referred to herein as agents 280. Each of the agents 280 is an autonomous software program that is configured for performing one or more specific and approved operations. For example, each of the agents 280 may be configured to capture snapshots and transactional logs based upon the protection schedule, and store the captured snapshots and transactional logs in a repository associated therewith. The clone management systems 245 may retrieve the snapshots and transactional logs from the repositories when creating a clone of the source databases 265. For example, the agent 280A may be configured to store the captured snapshots and transactional logs in a repository 285A that is configured for the source database 265A, the agent 280B may be configured to store the captured snapshots and transactional logs in a repository 285B that is configured for the source database 265B, and the agent 280N may be configured to store the captured snapshots and transactional logs in a repository 285N that is

configured for the source database 265N. The repositories 285A-285N are collectively referred to herein as repositories 285.

**[0075]** For example, if the protection schedule specifies capturing 2 snapshot every day and capturing a transactional log every 2 hours for the source database 265A, the agent 280A may capture 2 snapshots of the source database and a transactional log every 2 hours such that in a 24-hour period, the agent captures 2 snapshots and 12 transactional logs. Further, depending upon a protection parameter defined in the protection schedule, the amount of time for which the captured snapshots and transactional logs are stored may vary. For example, if the protection parameter includes a continuous protection parameter that specifies a continuous protection of the source database 265A for 30 days, the agent 280A may be configured to save all snapshots and transactional logs captured in the previous 30 days. Thereafter, the agent 280A may purge (e.g., delete) some of the snapshots and transactional logs based upon the protection parameters defined in the protection schedule. Similarly, if the protection parameter includes a daily protection parameter of 30 days after the duration of the continuous protection parameter expires, the agent 280A may be configured to delete all but one snapshot that were captured before the previous 30 days, as well as delete all the transaction logs captured before the previous 30 days. The snapshot that is saved as the daily snapshot may be the snapshot that is closest to the daily snapshot time specified in the protection schedule. For example, if the time specified in the protection schedule is 11:00 AM for the daily snapshot, the snapshot that is captured at 11:00AM or closest to 11:00 AM is saved and all other snapshots captured on that day may be deleted. Thus, the agent 280A is configured to capture and manage snapshots and transactional logs. The protection parameter and the protection schedule are defined in greater detail below.

**[0076]** Turning now to FIG. 3, an example user interface 300 of a time machine (e.g., the database protection system 220) for configuring a copy data management service is shown, in accordance with some embodiments of the present disclosure. For each source database that is provisioned (e.g., created or registered) in the database management system 200, an instance of a time machine may be created (e.g., at the time of provisioning). To configure an instance of the time machine, the database management system 200 may request inputs from a user via the user interface 300. For example, in some embodiments, the database management system 200 may request a name 305 and description 310 for the time machine, a level of a Service Level Agreement ("SLA") 315, and a protection schedule 320 to define rules based on which backups of the associated database are captured.

**[0077]** The SLA 315 represents an agreement between a service provider (e.g., the owner of the database management system 200) and the user (e.g., the owner of the database) that outlines, among other things, the protection scope of the database. The protection scope defines how frequently backups (e.g., snapshots and transactional logs) are to be captured and for how long those backups are to be retained. Thus, the protection scope defines the database retention policy. In some embodiments, the SLA 315 may define various protection parameters such as continuous, daily, weekly, monthly, quarterly, or yearly protection parameters for determining the protection scope of the database being created/registered. In other embodiments, the SLA 315 may define other or additional protection parameters.

**[0078]** Each database for which an instance of the time machine is created may be protected by capturing snapshots and/or transactional logs. The number of snapshots and transactional logs to be captured on each day may be defined by the user in the protection schedule 320. As used herein, a "day" may be any 24-hour period (e.g., from midnight to noon). In some embodiments, the

protection schedule 320 may define default values to define the frequency of capturing snapshots and transactional logs, which the user may modify. Thus, based upon the frequency of capturing snapshots and transactional logs defined in the protection schedule 320, the user interface 300 of the time machine may be used to define capturing of one or more snapshots and one or more transactional logs each day. Generally speaking, the number of transactional logs that are captured each day may be higher than the number of snapshots that are captured on that day. Since it is impractical and expensive to indefinitely store the captured snapshots and the transactional logs, the protection parameters in the SLA 315 may define the duration for how long those snapshots and transactional logs are stored.

**[0079]** For example, the SLA 315 may define a continuous protection parameter, which defines the duration in days for which all captured snapshots and transactional logs are retained. For example, if the continuous protection parameter is defined as 30 days, all snapshots and transactional logs that are captured within the last 30 days from the associated source database are retained. By retaining all snapshots and the transactional logs, the user may replicate any or substantially any state of the source database (down to a second or even a fraction of a second). The protection schedule 320 may define the frequency of capturing snapshots and transactional logs. For example, the protection schedule 320 may define a "snapshot per day" field 325 which may define the number of snapshots that are to be captured each day (e.g., in a 24 hour window) and a "log catch up" field 330 may define the number of transactional logs that are to be captured each day. For example, the "snapshot per day" field 325 in FIG. 3 defines that a single snapshot is to be captured each day and the "log catch up" field 330 defines that a transactional log is to be captured every hour. It is to be understood that these values are only an example and not intended to be limiting in any way.

**[0080]** The SLA 315 may also define a daily protection parameter, which defines the duration in days for which a daily snapshot is stored. For example, if the daily protection parameter is 90 days, the time machine may be configured to store a daily snapshot for 90 days. The protection schedule 320 may define the time of day in a "daily snapshot" field 335 to identify the snapshot that is designated as the daily snapshot. For example, if the user specifies in the "daily snapshot" field 335 that the snapshot captured at 1:00 PM every day is the daily snapshot and the SLA 315 defines the daily protection parameter for 90 days, the time machine stores a daily snapshot captured at or closest to 1:00 PM and store the daily snapshot for 90 days after the expiration of the continuous protection parameter (e.g., 30 days).

**[0081]** Similarly, the SLA 315 may define weekly, monthly, and quarterly protection parameters. A weekly protection parameter in the SLA 315 may define the duration in weeks for which a weekly snapshot is stored after the expiration of the daily protection parameter. The protection schedule 320 may define the day of the week in a "weekly snapshot on" field 340 to identify which snapshot is designated as the weekly snapshot. For example, if the user defines in the "weekly snapshot on" field 340 that the snapshot captured on Monday is to be designated as the weekly snapshot, and the weekly protection parameter in the SLA 315 specifies a duration of 8 weeks, the time machine may store the snapshot captured every week on Monday for 8 weeks after the expiration of the daily protection parameter (e.g., 90 days) and the continuous protection parameter (e.g., 30 days). If multiple snapshots are captured each day, the protection schedule 320 may also define which snapshot captured on the designated day of the week (e.g., Monday) serves as the weekly snapshot. In some embodiments, the time defined in the protection schedule 320 for capturing a daily snapshot (e.g., in the "daily snapshot on" field 335) may be used. For example, if the protection schedule 320 defines that the snapshot captured at 1:00 PM is the daily snapshot,

and the weekly snapshot is to be captured on Monday, the time machine may store the snapshot captured at or closest to 1:00 PM every Monday as the weekly snapshot. In other embodiments, another time period may be used.

**[0082]** Likewise, a monthly protection parameter in the SLA 315 may define a duration in months for which a monthly snapshot is to be stored after the expiration of the daily, weekly, and continuous protection parameters. The user may specify the date within the protection schedule 320 for identifying which snapshot corresponds to the monthly snapshot. For example, the user may specify in a "monthly snapshot on" field 345 of the protection schedule 320 that the snapshot captured on the 22nd of every month is the monthly snapshot. Thus, for a monthly protection parameter duration of 12 months, the time machine may store a monthly snapshot captured on the 22nd of every month and may store that monthly snapshot for 12 months after the expiration of the continuous, daily, and weekly protection parameters. A quarterly protection parameter in the SLA 315 may define a duration in quarters for which a quarterly snapshot is to be stored and the user may specify in a "quarterly snapshot on" field 350 of the protection schedule 320 which months correspond to the various quarters. For example, the user may specify January, April, July, and October as the quarters. Thus, if the quarterly protection parameter specifies storing the quarterly snapshots for 20 quarters, the time machine may designate a snapshot captured on the first day of January, April, July, and October (e.g., January 1, April 1, July 1, and October 1) as the quarterly snapshot and store the quarterly snapshot for 20 quarters after the expiration of the continuous, daily, weekly, and monthly protection parameters.

**[0083]** Thus, for each protection parameter that is defined in the SLA 315, a corresponding value may be requested from the user in the protection schedule 320 to identify which snapshot corresponds to that protection parameter. It is to be understood that the various protection

parameters and their respective schedules mentioned above are only examples and may vary from one embodiment to another as desired. Further, when the duration specified by a protection parameter expires, any snapshots or transactional logs that are expired (e.g., past their duration) may be deleted. As an example, if a snapshot is to be stored for 30 days, on the 31st day, that snapshot may be deleted. Thus, each snapshot and transactional log is managed based on the SLA 315 and the protection schedule 320 independent from other snapshots and transactional logs.

**[0084]** Additionally, to simplify user selection, in some embodiments, various levels of the SLA 315 may be pre-defined within the database management system 200. Each level of the SLA 315 may have default values of the various protection parameters. For example, in some embodiments, the various levels of the SLA 315 may be GOLD, SILVER, BRONZE and the various protection parameters for these levels may be as follows:

| Name | Continuous | Daily | Weekly | Monthly | Quarterly |
|---|---|---|---|---|---|
| GOLD | 30 Days | 90 Days | 16 Weeks | 12 Months | 75 Quarters |
| SILVER | 14 Days | 60 Days | 12 Weeks | 12 Months | 0 Quarters |
| BRONZE | 7 Days | 30 Days | 8 Weeks | 6 Months | 0 Quarters |

**[0085]** It is to be understood that the nomenclature of the GOLD, SILVER, BRONZE levels of the SLA 315 is only an example and the levels may be given different names in other embodiments. Further, although three levels of the SLA 315 are described herein, in other embodiments, greater or fewer than three SLA levels may be used. Additionally, the values of the protection parameters in each level of the SLA 315 may vary from one embodiment to another. The database management system 200 may present the various pre-defined SLA levels to the user to select from.

In some embodiments, the database management system 200 may allow the user to modify the values of one or more protection parameters in the pre-defined SLA levels. For example, if the user desires to select the GOLD level, but would like continuous protection for 45 days instead of the default value of 30 days shown in the table above, the user may modify the continuous protection parameter of the GOLD level. Thus, the pre-defined SLA levels provide the convenience and flexibility of tailoring the various protection parameters to suit the user's needs. Alternatively, the database management system 200 may allow the user to create a new SLA from scratch.

**[0086]** To create a new SLA, upon receiving input from the user indicating creation of a new SLA, the database management system 200 may present one or more user interfaces to the user requesting certain information. For example, the database management system 200 may request an SLA name, description, and values for the continuous, daily, weekly, monthly, and quarterly protection parameters. The database management system 200 may request other or additional details as well. Upon receiving the various inputs from the user for creating the new SLA, the database management system 200 may create the new SLA and allow the user to select that SLA when creating/setting up the time machine via the user interface 300.

**[0087]** Upon creating/setting up the time machine, the time machine starts automatically creating backups (e.g., snapshots and transactional logs) as soon as the source database is provisioned with the database management system 200.

**[0088]** Referring to FIGS. 4A and 4B, an example block diagram of a highly available time machine 400 is shown, in accordance with some embodiments of the present disclosure. The highly available time machine is also referred to herein as a "clustered time machine." In some embodiments, a source database may be deployed (e.g., provisioned) on a single node of a cluster,

on multiple nodes of a single cluster, or on node(s) of different clusters. A source database that resides on multiple nodes (of the same cluster or different clusters) forms a "database cluster." A database cluster may include multiple copies of the same source database that are located on multiple modes. Thus, in a database cluster, the same source database exists on multiple nodes. When a source database resides on a single node, that source database may be referred to as a single instance database. In other words, no additional copies of the source database exist in a single instance source database. It is to be understood that the copies of the source database in a database cluster are not considered "clones." Rather, each copy of the source database is considered an original database from which backups/clones may be created. By creating copies of a source database on different nodes, that source database may be considered "highly available." The advantage of a highly available database is that if the node on which the source database or a copy of the source database is located goes down, the source database may be accessed from other nodes on which the source database or copies thereof are located. Thus, by virtue of being stored on multiple nodes, a database cluster may be considered highly available.

**[0089]** For a single instance source database, the time machine associated with that source database only needs to capture backups from that source database. However, with a database cluster, to maintain the highly available nature of that database cluster and to ensure that backups of the source database are available even if a node associated with the database cluster goes down, the time machine associated with the source database needs to track all nodes of the database cluster. Specifically, if one of the nodes of the database cluster goes down, the time machine associated with the source database needs to able to continue taking backups of the source database from another node of the database cluster. Thus, the time machine of a source database that is part of a database cluster also needs to be highly available.

**[0090]** To make the time machine highly available in a database cluster, at least one of the nodes associated with the database cluster may be designated as a primary node (also referred to herein as master node or leader node depending upon the database engine) and the remaining nodes may be considered standby nodes (also referred to herein as secondary nodes or replica nodes or slave nodes or follower node depending upon the database engine). For example, in FIG. 4A, the time machine 400 may be highly available and may be configured to create backups of a database cluster 405. The database cluster 405 may include a primary node 410 and standby nodes 415 and 420. Thus, a source database that forms the database cluster 405 has three copies – one copy on each of the primary node 410 and the standby nodes 415 and 420.

**[0091]** Although the database cluster 405 is shown as having two standby nodes, in other embodiments, the database cluster may have greater than or fewer than two standby nodes. Additionally, in some embodiments, it may be preferable to have a single primary node (e.g., the primary node 410), while in other embodiments, the database cluster 405 may have multiple primary nodes. Further, the primary node 410 and the standby nodes 415 and 420 may be part of the same cluster (e.g., the cluster 100) or part of different clusters. In some embodiments, one or more of the primary node 410 and the standby nodes 415 and 420 may be analogous to one of the first node 105, the second node 110, or the third node 115 of FIG. 1. In other embodiments, one or more of the primary node 410 and the standby nodes 415, 420 may be part of the same node and different virtual machines on that node. In such cases, one or more of the primary node 410 and the standby nodes 415, 420 may be analogous to one of the database VMs 120, the database VMs 135, or the database VMs 150. In some embodiments and depending upon the database engine (e.g., Oracle RAC), the database cluster 405 may have nodes that are all treated equally.

In other words, in such database clusters, all nodes may be primary nodes or all nodes may be secondary nodes.

**[0092]** When the primary node 410 fails, one of the standby nodes 415 or 420 may assume the role of the primary node, as shown in FIG. 4B. A node may be considered "primary" based upon a "state" of the node or other designated criteria. In some embodiments, the database controller 205 may select (e.g., elect) a primary node. For example, in some embodiments, the database controller 205 may designate (e.g., based upon selection by a user or other criteria) one of the nodes in the database cluster 405 as the primary node 410 during the provisioning of the source database and/or during converting the source database into a highly available source database. When the designated primary node (e.g., the primary node 410) fails, the database controller 205 automatically selects (e.g., elects) a new primary node based upon the primary node selecting criteria programmed therein. In some embodiments, each node in a database cluster 405 may be configured to assume either primary or standby statuses. Once at least one node in the database cluster 405 is determined to be a primary node (e.g., the primary node 410), the other nodes in the database cluster may be automatically designated as standby nodes (e.g., the standby nodes 415 and 420).

**[0093]** Additionally, in some embodiments, regular operations may be performed on the copy of the source database that is located on the primary node 410. However, when operations (e.g., read, write) are performed on the source database located on the primary node 410, the copies of the source database on the standby nodes 415 and 420 need to be updated to reflect the modifications on the source database on the primary node to maintain continuity of operation from the standby nodes in case the primary node becomes unavailable. To update the standby nodes 415 or 420, synchronous or asynchronous policies may be used. With a synchronous policy, the standby nodes

415 and 420 may be updated simultaneously or substantially simultaneously when an update occurs on the source database on the primary node 410. With an asynchronous policy, changes to the source database on the primary node 410 may be carried over to the standby nodes 415 and 420 in batches at predetermined time intervals.

**[0094]** In some embodiments, when a current primary node (e.g., the primary node 410) fails and the database controller 205 has to designate a new primary node, the database controller may determine which of the standby nodes (e.g., the standby nodes 415, 420) in the database cluster 405 have a synchronous policy. Since nodes having a synchronous policy are more likely to reflect the current state of the failed primary node (e.g., the primary node 410), in some embodiments, the database controller 205 may select the new primary node from the standby nodes (e.g., the standby nodes 415, 420) that have a synchronous policy. In other embodiments, the database controller 205 may use other criteria to select a new primary node. In some embodiments, the user may define an order in which the nodes in the database cluster 405 are to be designated the primary node.

**[0095]** Further, to keep the database cluster 405 highly available, the highly available time machine 400 needs to create backups of the source database associated with the database cluster 405. However, since each of the primary node 410 and the standby nodes 415 and 420 have the same copy of the source database, it may be redundant to create backups from each of those nodes when all of the nodes are operating normally without any failures. Thus, in some embodiments, the highly available time machine 400 may be configured to take backups from either the primary node 410 or the standby nodes 415 or 420. To take backups of the source database, the highly available time machine 400 may be configured (e.g., via the user interface 300) with an SLA (e.g., the SLA 315) and a protection schedule (e.g., the protection schedule 320). Based on the SLA and

the protection schedule, the highly available time machine 400 may then capture snapshots and transactional logs from the copy of the source database that is on the primary node 410 or the standby nodes 415, 420.

**[0096]** In some embodiments, the highly available time machine 400 may be configured to capture backups (e.g., snapshots and transactional logs) from the node that is designated as an Era Active node ( also referred to herein as an EA node or active node). For example, in FIG. 4A, the primary node 410 is shown as being designated the EA node. Thus, the highly available time machine 400 may capture backups from the primary node 410 since that node is designated the EA node. In other embodiments, one of the standby nodes 415 or 420 may be designated as the EA node. A user defined policy may determine which node in the database cluster 405 is designated as the EA node, as discussed further below. When the EA node fails, the highly available time machine 400 automatically switches over to another node in the database cluster 405 to capture backups from. For example, and as shown in FIG. 4B, when the primary node 410 fails, the standby node 415 is designated as the new primary node. The standby node 415 is also designated as the new EA node. Thus, when the primary node 410 fails, the highly available time machine 400 starts capturing backups from the standby node 415 since that node is now the EA node. Thus, when one EA node becomes unavailable, the highly available time machine 400 automatically switches to another EA node to capture backups from. Although in FIGS. 4A and 4B, the primary node (e.g., the primary node 410 or the standby node 415 designated as the new primary node when the original primary node fails) is shown as being as the EA nodes, as discussed below, in some embodiments, the EA node may be selected from a standby node as well.

**[0097]** In some embodiments, in addition to determining which node in the database cluster 405 is the primary node 410 and which nodes are the standby nodes 415 and 420, the database

controller also determines the EA node. The highly available time machine 400 is configured to keep track of which node in the database cluster 405 is the EA node. In some embodiments, the database controller 205 may be configured to designate a node in the database cluster 405 as an EA node based upon a user defined policy. In some embodiments, the highly available time machine 400 may be configured to review the metadata of each of the primary node 410 and the standby nodes 415, 420 to identify the EA node. In other embodiments, the database controller 205 may inform the highly available time machine 400 of the EA node. In yet other embodiments, the highly available time machine 400 may use other mechanisms to identify the EA node. Thus, the highly available time machine 400 may be configured to track the EA node and capture backups from the EA node.

**[0098]** Once a user defines the user defined policy, the highly available time machine 400 continues to capture backups based upon the user policy without the user needing to worry about node failure and backup capture. The user defined policy may define the number and location of nodes in the database cluster 405, the states of the nodes that designate a node as a primary node or a standby node, and a switch over policy to designate EA nodes. The user defined policy is also referred to herein as "Era Active Policy" or "EA policy."

**[0099]** Specifically, in some embodiments, a user may define the EA policy when the source database is being provisioned and/or when the source database is being converted into a highly available source database. In the EA policy, the user may define the number of nodes that are needed in the database cluster 405 depending upon the number of copies of the source database that the user desires to keep the source database highly available. For example, the user may define the database cluster 405 as having three nodes. The user may also define the location of each of those nodes. Further, the user may specify preferences or "roles" for each of those nodes. By

defining the roles of each of the nodes, the user may define "states" or conditions that enable the database controller 205 to designate a node as a primary node or a standby node. In some embodiments, the EA policy may designate an initial primary node. In some embodiments, the EA policy may also provide conditions/criteria to designate a new primary node if the current primary node fails.

**[0100]** Moreover, the EA policy may define a switch over policy such that when one EA node fails, another node in the database cluster 405 may be designated as the EA node to allow the highly available time machine 400 to switch over to capturing backups from the new EA node in the database cluster 405. For example, in some embodiments, the user may define a primary-only EA policy, a secondary-only EA policy, a prefer-primary EA policy, a prefer-secondary EA policy, or "Any" EA policy to determine the switch over policy.

**[0101]** A primary-only EA policy defines that the next eligible EA node is to be selected from a primary node (e.g., the primary node 410) and not a standby node. Thus, a primary node can only be designated as the next eligible EA node with a primary-only EA policy. When the current EA node becomes unavailable, the database controller 205 may designate another primary node as the next EA node. For example, if the currently designated primary node (e.g., the primary node 410) is the current EA node, when that primary node fails, the database controller designates another node (e.g., one of the standby nodes 415 or 420) as the new primary node. The database controller 205 may designate that new primary node as the next EA node and the highly available time machine 400 may automatically switch over to capturing backups from the newly designated primary node. Thus, the highly available time machine 400 may wait for a new node to be designated as the primary node for capturing snapshots and transactional logs. If all the nodes of the database cluster 405 become unavailable and there are no nodes remaining to be designated

the primary node, the highly available time machine 400 may wait until either one of the nodes comes back and is designated the primary node and/or may issue an error notification.

**[0102]** A secondary-only EA policy defines that the next eligible EA node is to be a standby node and not a primary node. When the current EA node fails, the database controller 205 may designate another secondary node in the database cluster as the next EA node. Thus, the highly available time machine 400 captures snapshots and transactional logs only from one of the standby nodes (e.g., the standby nodes 415 or 420) and not from the primary node. For example, say the highly available time machine 400 is capturing backups from the standby node 415 under a secondary-only EA policy. If the primary node 410 becomes unavailable and the standby node 415 is designated as the new primary node, the database controller 205 cannot continue capturing backups from the standby node 415 without being in violation of the secondary-only EA policy. Thus, the database controller 2095 may be required to select a new EA node. If no standby nodes are available to assume the role of the EA node, the highly available time machine 400 waits until either one of the standby nodes comes back online and/or may issue an error notification.

**[0103]** The prefer-primary EA policy and prefer-secondary EA policy allow the highly available time machine 400 more flexibility in determining which node to capture snapshots and transactional logs from. For example, with the prefer-primary EA policy, the user may define that the database controller 205 may pick any of the available nodes as the next EA node. However, if a primary node (e.g., the primary node 410) is available, the database controller 205 is to pick the primary node as the next EA node. Thus, in such cases, if no primary node is available in the database cluster 405 to capture backups from, the database controller 205 may designate a standby node (e.g., the standby nodes 415 or 420) as the next EA node. If all the nodes of the database cluster 405 fail and there are no nodes remaining to be designated as the primary node or a standby

node, the highly available time machine 400 may wait until either one of the nodes comes back and is designated the primary node or the standby node and/or may issue an error notification.

**[0104]** With a prefer-secondary EA policy, the user may define that the database controller 205 may pick any of the available nodes as the next EA node. However, if a standby node (e.g., the standby nodes 415, 420) is available, the database controller 205 is to pick the standby node as the next EA node. Thus, as long as either a primary node or a secondary node is available in the database cluster 405, the highly available time machine 400 may continue to capture snapshots and transactional logs similar to the prefer-primary EA policy.

**[0105]** In sum, with the primary-only EA policy, the highly available time machine 400 may continue to capture snapshots and transactional logs so long as there is a primary node available in the database cluster 405. With the secondary-only EA policy, the highly available time machine 400 may continue to capture snapshots and transactional logs so long as there is a standby node available in the database cluster 405. With the prefer-primary EA policy or the prefer-secondary EA policy, the highly available time machine 400 may continue to capture snapshots and transactional logs so long as there is at least one primary node or at least one standby node available in the database cluster 405 with preference being given to the primary node and the standby node, respectively.

**[0106]** Additionally, in some embodiments, the user may define the "Any" EA policy. With this policy, the database controller 205 may select any node in the database cluster 405 as the next EA node. Thus, with the "Any" EA policy, the highly available time machine 400 may continue to capture snapshots and transactional logs so long as there is at least one node available in the database cluster 405 regardless of the primary or standby designation.

**[0107]** In some embodiments, the "Any" policy may be used for database clusters in which all nodes are treated equally (e.g., for Oracle RAC clusters). When all nodes in the database cluster 405 are treated equally and there is no distinction between a primary node and a secondary node, read write operations may be performed on each node. In some embodiments, such a database cluster may include a shared storage that allows all the nodes to access data from other nodes. Without distinct designations of primary and secondary, in such database clusters, primary-only EA policy, the secondary-only EA policy, the prefer-primary EA policy may not apply. Thus, in database clusters that treat all nodes equally, the "Any" EA policy may be used.

**[0108]** In some embodiments, the user may select a default EA policy or not specify any EA policy in which case the default EA policy may be used. With the default EA policy, the database controller 205 may specify the EA policy to use (e.g., the primary-only EA policy, the secondary-only EA policy, the prefer-primary EA policy, the prefer-secondary EA policy, or the "Any" EA policy) based upon the database engine of the source database. For example, in some embodiments, for a source database having the Oracle database engine, the database controller 205 may specify the "Any" policy as the default EA policy, for a source database having the Postgres database engine, the database controller may specify the primary-only as the default EA policy, for a source database having the SQLServer database engine or the Oracle RAC database engine, the database controller may specify the "Any" EA policy as the default EA policy, and so on. It is to be understood that the default EA policies for the database engines mentioned above are only an example and not intended to be limiting in any way.

**[0109]** Thus, by virtue of defining the switch over policy in the EA policy for the database cluster 405, the EA policy provides a seamless user experience by hiding the underlying complexities of capturing backups from the user in case of failure conditions. When a node in the database cluster

450 from which the highly available time machine 400 is creating backups from goes down, the highly available time machine 400 seamlessly and intelligently switches to capturing backups from another node in the database cluster without any user involvement or input. Based upon the EA policy, so long as there is at least one node available from which the highly available time machine 400 may continue to capture backups from, no errors are issued. Even when no nodes are available to capture backups from, in some embodiments, the highly available time machine 400 may be configured to wait for a designated amount of time in case at least one of the nodes comes back up again. Only after the designated amount of time has passed and no node has come back up for the highly available time machine 400 to capture backups from is when the highly available time machine issues an error notification. Thus, the highly available time machine 400 greatly improves user experience while protecting a highly available source database in a reliable manner.

**[0110]** The switch over policies above may be considered "static" policies. An example of a static switch over EA policy may be as follows:

```
{
"driverDriven": <boolean>,
"staticEaPolicy": {
"any": <boolean>,
"primaryOnly": <boolean>,
"secondaryOnly": <boolean>,
"preferSecondary": <boolean>,
"preferPrimary": <boolean>
}
}
```

**[0111]** It is to be understood that the switch over EA policy above is only an example and not intended to be limiting in any way. In some embodiments, different variable names may be used for the variables "driverDriven," "any," "primaryOnly," "secondaryOnly," "preferSecondary," and "preferPrimary". Further, the policy above is only a portion of the overall EA policy. The example above only describes the switch over policy portion of the overall EA policy. In the EA

policy above, each of the variables, "driverDriven," "any," "primaryOnly," "secondaryOnly," "preferSecondary," and "preferPrimary" may assume Boolean values (e.g., True or False). The "any" variable may correspond to the "Any" EA policy, the "primaryOnly" variable may correspond to the primary-only EA policy, the "secondayrOnly" variable may correspond to the secondary-only EA policy, the "preferSecondary" variable may correspond to the prefer-secondary EA policy and the "preferPrimary" variable may correspond to the prefer-primary EA policy.

**[0112]** In some embodiments, the user may specify a Boolean value of "true" for the EA policy that the user wishes to use for the highly available time machine 400. For example, in some embodiments, the user may define the EA policy as follows;

```
{
"driverDriven": false,
"staticEaPolicy": {
"any": false,
"primaryOnly": false,
"secondaryOnly": true,
"preferSecondary": false,
"preferPrimary": false
}
}
```

**[0113]** Thus, in the example above, since the variable "preferSecondary" is set to "true," the user has selected the prefer-secondary EA policy for the highly available time machine 400.

**[0114]** The "driverDriven" variable determines whether a driver associated with the database controller 205 and the highly available time machine 400 notifies the database controller which node in the database cluster 405 is the primary node 410 and from which node to capture the backups from. For example, if the "driverDriven" variable is "true," the user need not define Boolean values for the "any," "primaryOnly," "secondaryOnly," "preferSecondary," and "preferPrimary" variables above and the driver associated with the database controller 205 informs

the database controller which node is the EA node from which node the highly available time machine 400 needs to capture backups from. If the "driverDriven" variable is "false," the database controller 205 determines the EA node based upon the values specified in the "any," "primaryOnly," "secondaryOnly," "preferSecondary," and "preferPrimary" variables or if all the values are false, then assigns a default EA policy.

**[0115]** In some embodiments, the EA policy may specify additional priority specifications. For example, a user may select a database cluster having nodes A, B, C, D, and E in which node A is the primary node and nodes B, C, D, and E are standby nodes. With a prefer-secondary EA policy, for example, any of the nodes B, C, D, or E may be designated the EA node and the highly available time machine 400 may take backups from any of the nodes B, C, D, and E. In some embodiments, the database controller 205 may randomly designate one of the nodes B, C, D, and E as the EA node. In other embodiments, the EA policy may define a priority or order of the nodes B, C, D, and E in which the database controller 205 is to designate EA nodes. In some embodiments, the priority (e.g., weight) may assume an integer value, for example, an integer value between 0 and 100. In other embodiments, the priority may assume other values and/or formats.

**[0116]** When integer values are used, in some embodiments, higher the integer value of a node, higher is the priority or weight of that node. A higher priority or higher weight means that the database controller 205 designates the higher priority node as the EA node before designating a lower priority node as the EA node. For example, if the nodes B, C, D, and E have priorities defined as 0, 10, 20, and 50 respectively, then node E has the highest priority followed by nodes D, C, and B. Thus, node B has the lowest priority. Thus, the database controller 205 designates the highest priority node E as the EA node. When the node E fails, the database controller 205 designates node D as the EA node, which has the next highest priority. When the node D fails, the

database controller 205 designates node C as the EA node and when the node C fails, the database controller designates node B as the EA node.

**[0117]** Thus, in some embodiments, integer value 0 may specify a lowest priority and an integer value of 100 may specify a highest priority. In other embodiments, integer value 0 may specify a highest priority and an integer value of 100 may specify a lowest priority. In some embodiments, the user may specify the priority (e.g., at the time of creating the EA policy), while in other embodiments, the database controller 205 may assign a default priority based on predetermined and preprogrammed criteria to each node in the database cluster 405. In some embodiments, if the user does not specify a priority, the database controller 205 may assign the same integer value to all the standby nodes (e.g., 0, 100, etc.), in which case the database controller 205 may randomly select the EA node.

**[0118]** In some embodiments, the primary node may also be assigned a priority. For example, if the primary node (e.g., node A in the example above) fails, the priority may decide which node is to be designated as the new primary node. If the original primary node (e.g., node A) comes back up again later, node A may now assume a standby node status. The priority assigned to node A may then be used along with the priorities of the other nodes to determine the next primary node and/or the next EA node.

**[0119]** It is to be understood that although the priority above is explained with respect to a prefer-secondary EA policy, the priorities may be used with any of the EA policies described above such that the priority may be used by the database controller 205 to determine the next EA node. Thus, priorities may be assigned to one or more standby nodes and one or more primary nodes to determine the next EA node.

**[0120]** An example portion of the EA policy showing the priority is shown below:

```
"dynamicEaPolicy": [
  {
   "dbserverId": "dbserver-id-string-1",
   "backupPriority": <integer (0 to 100)>,
  },
  {
   "dbserverId": "dbserver-id-string-2",
   "backupPriority": <integer (0 to 100)>,
  }
 ]
```

**[0121]** In the example above, "dbserver-id-string-1" and "dbserver-id-string-2" identify a particular node (e.g., the primary node 410, the standby nodes 415, 420, etc.) in a database cluster (e.g., the database cluster 405) to which a priority is to be assigned. The variable "backupPriority" defines the priority that is assigned to the node identified by the "dbserver-id-string-1" or "dbserver-id-string-2". The value of the priority is defined by the "<integer (0 to 100)>" in the example above. It is to be understood that the EA policy above is only an example and a portion of the overall EA policy. Further, the names of the variables used above may vary in other embodiments.

**[0122]** In some embodiments, instead of assigning a priority to each of the nodes (e.g., the nodes A, B, C, D, and E in the example above), priorities may be assigned to a subset of the nodes (e.g., the nodes A, B, C, D, and E in the example above). For example, in some embodiments, the user may wish to capture backups only from nodes B and C and never from nodes D and E. Thus, in such cases, the user may define a priority for nodes B and C that is a positive integer value (e.g., a value between 0 and 100). However, for nodes D and E, the user may define a priority having a negative value (e.g., -1). The database controller 205 may be programmed to skip nodes having a negative priority value in determining the next EA node. Thus, when the database controller 205 sees a negative value against the nodes D and E, the database controller may skip those nodes in determining the next EA node and only consider the nodes B and C.

**[0123]** Similarly, in some embodiments, if the database cluster 405 spans across multiple clusters (e.g., clusters X and Y) and the user wishes to only capture backups from a particular one or more clusters (e.g., cluster X), the user may configure the EA policy such that nodes in the cluster(s) from which backups may be captured from have positive integer value priorities and nodes in the cluster(s) from which backups cannot be captured from have negative integer value priorities. Thus, the EA policy may be configured in a variety of ways to suit a user's needs.

**[0124]** Turning now to FIG. 5, an example flowchart outlining a process 500 is shown, in accordance with some embodiments of the present disclosure. The process 500 may include additional or other operations depending upon the embodiment. The process 500 may be performed by the database controller 205, and particularly the highly available time machine 400 of the database controller, to protect a source database. Thus, the process 500 starts at operation 505 with the configuration of a database cluster (e.g., the database cluster 405). In some embodiments, the database cluster 405 may be configured during the provisioning of the source database. In other embodiments, the database cluster 405 may be configured for an existing source database (e.g., after the provisioning of the source database). By configuring the database cluster 405, a user may define (e.g., in the EA policy), the number of nodes in the database cluster, the identity (e.g., location) of the nodes in the database cluster, the initial primary node, any criteria to designate additional primary nodes when the initial primary node fails, the switch over policy, priority of selecting the next EA node, and any/or other details that may be desired or needed.

**[0125]** Upon receiving the EA policy, the database controller 205 may configure the database cluster 405 based upon the EA policy. Additionally, based upon the EA policy, the database controller 205 may designates one node from the database cluster as the primary node (e.g., the primary node 410) and the remaining nodes as the standby nodes (e.g., the standby nodes 415,

420) at operation 510. In some embodiments, the user may not define which node to designate as the initial primary node. In such embodiments, the database controller 205 may select (e.g., elect) a node from the database cluster 405 and designate that node as the initial primary node. In some embodiments, the database controller 205 may be configured with criteria to enable the database controller to select the initial primary node. In some embodiments, the database controller 205 may also be configured with criteria to select (e.g., elect) the next primary node when the initial primary node fails. Thus, when the initial primary node (e.g., the primary node 410) fails, the database controller 205 selects and designates another node (e.g., the standby node 415) from the database cluster 405 as the new primary node. If the initial primary node (e.g., the primary node 410) comes back up after failing, the initial primary node assumes the status of a standby node and the newly designated primary node (e.g., the standby node 415) continues as the primary node.

**[0126]** Therefore, in some embodiments, the database controller 205 manages the database cluster 405 such that the database cluster has at least one primary node and one or more standby nodes. In addition, at operation 515, the database controller 205 designates one of the nodes in the database cluster 405 as the initial EA node (e.g., initial active node). The initial EA node is the node in the database cluster 405 from which the highly available time machine 400 captures snapshots and transactional logs (e.g., backups) from. The highly available time machine 400, thus, tracks the database cluster 405, and particularly, the EA node in the database cluster. In some embodiments, the database controller 205 designates the EA node based upon the EA policy. In other embodiments, and particularly, if no switch over policy is defined in the EA policy for designating EA nodes, the database controller 205 may be configured to select a default switch over policy. Thus, based on the switch over policy, the database controller 205 designates the EA node.

**[0127]** For example, if the switch over policy is the primary-only EA policy or the prefer-primary EA policy, the database controller 205 designates the primary node selected at the operation 510 as the initial EA node. If the switch over policy is the secondary-only EA policy or the prefer-secondary EA policy, the database controller 205 selects one of the standby nodes as the initial EA node. For the secondary-only EA policy or the prefer-secondary EA policy, if the EA policy defines a priority for the standby nodes, the database controller 205 may select the highest priority standby node as the initial EA node. If the switch policy is the "Any" EA policy, the database controller 205 may select any one node from the nodes of the database cluster 405 as the initial EA node. The database controller 205 may consider any priorities assigned to the nodes in designating the EA node such that the highest priority node is the initial EA node. Thus, at the operation 515, the database controller 205 designates one node from the database cluster 405 as the initial EA node.

**[0128]** Upon designating the initial EA node, the highly available time machine 400 captures backups from the initial EA node. At operation 520, the database controller 205 determines if the initial EA node has become unavailable requiring an election of a new EA node. In some embodiments, the initial EA node may become "unavailable" for a variety of reasons. For example, in some embodiments, the initial EA node may not be able to serve as an EA node if communication between the database controller 205 and the initial EA node is hindered. For example, in some embodiments, each node in the database cluster 405 may have installed thereon a daemon program that allows the database controller 205 to communicate with that node. If the daemon of the initial EA node becomes unreachable, the database controller 205 may be unable to communicate with the initial EA node. When the database controller 205 is unable to communicate with the initial EA node, the database controller may deem the initial EA node as "unavailable."

**[0129]** In some embodiments, the database server (e.g., the source database virtual machine) on which the initial EA node resides may go down. For example, in some embodiments, the database server virtual machine may be powered off, deleted, or its settings changed, preventing the virtual machine from communicating with the database controller 205. In such instances, the database controller 205 may be unable to access the copy of the source database on the initial EA node for performing backups. In such cases, the database controller 205 may deem the initial EA node as "unavailable." In some embodiments, the communication channel (e.g., database service) between the database controller 205 and the initial EA node may itself may fail. Such instances may also lead the database controller 205 to consider the initial EA node as "unavailable." In some embodiments, the initial EA node may be able to normally communicate with the database controller 205, however, the current role of the initial EA node may change. For example, in some embodiments, if the switch over policy is the secondary-only EA policy such that Node A is the primary node and standby node B is the initial EA node, and Node A fails leading to Node B being designated as the new primary node, then node B may no longer serve as the EA node. Specifically, since the secondary-only policy defines that the EA node has to be a standby node and Node B is now the primary node, the database controller 205 needs to select the next EA node. In such cases, the database controller 205 may designate the initial EA node as "unavailable." In other embodiments, other or additional conditions may lead the database controller 205 to designate the initial EA node as "unavailable." Thus, the initial EA node may be considered "unavailable" in instances where the database controller 205 is unable to communicate normally with the initial EA node or the role of the initial EA node changes such that the node can no longer serve as an EA node.

**[0130]** Thus, the database controller 205 may need to select the next EA node for a variety of reasons. If, at the operation 520, the database controller 205 determines that a new EA node is needed, then at operation 525, the database controller selects the next EA node based upon the switch over policy and the priorities of the nodes defined in the EA policy. For example, in some embodiments, the database controller 205 may first determine if the "driverDriven" variable is set to "true" or "false." If the "driverDrivern" variable is set to "true," the database controller 205 does not elect the next EA node. Rather, the driver associated with the database controller 205 assigns the next EA node. On the other hand, if the "driverDriven" variable is set to "false," then the database controller 205 selects the next EA node based upon the variables "any," "primaryOnly," "secondaryOnly," "preferSecondary," and "preferPrimary" in the switch over portion of the EA policy.

**[0131]** Upon selecting the next EA active, the highly available time machine 400 may resume capturing backups (e.g., snapshots and transactional logs) from the next EA node. In some embodiments, the highly available time machine 400 may maintain a continuity of capturing backups even during a switch over. For example, say the highly available time machine 400 captured a snapshot at time A from the initial EA node and was scheduled to capture a transactional log from the initial EA node at time B, and the initial EA node becomes unavailable between times A and B. When the next EA node is selected at the operation 525, the highly available time machine 400 may start with the capturing of a transactional log at time B from the next EA node, thereby maintaining a continuity of backups, which in turn may ensure that cloned databases may continue to be created at any desired point in time. The process 500 then ends at operation 530.

**[0132]** On the other hand, if at the operation 520, the database controller 205 determines that the initial EA node is still available, then the database controller does not assign the next EA node and

the highly available time machine 400 continues to capture the backups from the initial EA node. The process 500 ends at the operation 530. In some embodiments, the process 500 may be run continuously or periodically when certain criteria are satisfied. For example, in some embodiments, the database controller 205 may run the process 500 each time a snapshot capturing operation is issued by the highly available time machine 400 to the EA node to capture a backup of the source database from the EA node. In other embodiments, other defined criteria may be used.

**[0133]** Referring now to FIG. 6, another flowchart outlining operations of a process 600 is shown, in accordance with some embodiments of the present disclosure. The process 600 describes the operation 520 of FIG. 5 in greater detail. The process 600 may include additional or other operations depending upon the embodiment. The process 600 may be performed by the database controller 205, and particularly the highly available time machine 400 of the database controller, to implement the switch over policy of the EA nodes. Thus, upon starting at operation 605, the database controller 205 determines if any node in the database cluster (e.g., the database cluster 405) is the initial EA node at operation 610. In some embodiments, the database controller 205 may retrieve metadata (e.g., EA property in FIG. 6) associated with the database cluster (e.g., the database cluster 405). If an EA node is currently designated, the metadata may identify the node of the database cluster that has been designated as the initial EA node. In some embodiments, the database controller 205 may also review the EA policy to determine the criteria for designating EA nodes. In some embodiments, an EA node may not be designated in the database cluster if, for example, none of the nodes satisfy the criteria in the switch over policy portion of the EA policy for designating EA nodes. For example, if the switch over policy is secondary-only and there are no secondary nodes in the database cluster, there may not be an EA node designated in

that database cluster. As another example, if all of the nodes in the database cluster are unavailable, the database cluster may not have any currently designated EA node. There may be other reasons why the database cluster may not have a currently designated EA node. Thus, upon reviewing the metadata retrieved at the operation 610, the database controller 205 determines, at operation 615, if the database cluster has a currently designated EA node (e.g., initial EA node).

**[0134]** If the database controller 205 does not find any initial EA node at the operation 615, the process 600 proceeds to operation 620 where the database controller 205 reports an error and/or possibly raises an alert alerting a user that there is no EA node. Without a designated EA node, the highly available time machine 400 does not know which node to create backups from. Thus, the database controller 205 also pauses the highly available time machine 400 until an EA node is designated in the database cluster. The database controller 205 may take other or additional actions at the operation 620 if no EA node is found at the operation 615. As discussed below, the operation 620 may be reached from other operations of the process 600 as well when a node unavailability scenario (e.g., an EA node is unavailable, all the nodes in the database cluster are unavailable, etc.) is detected.

**[0135]** For example, consider a scenario when an EA node (e.g., the initial EA node) is unavailable. In such cases, the database controller 205 may select a new EA node (e.g., the next EA node) and attempt to run the highly available time machine 400 against the next EA node to capture backups. In some embodiments, the database controller 205 may be unable to select the next EA node (e.g., because all the nodes in the database cluster are down, etc.). In such instances, the database controller 205 may put the highly available time machine 400 in a halted state and raise an alert to the user at the operation 620. Upon receiving the alert, the user may intervene and resolve the problem.

**[0136]** In addition, in some embodiments, the database controller 205 may continue to monitor the database cluster in case one or more nodes of the database cluster become available. For example, in some embodiments, the database controller 205 may send a periodic "discovery" request to one or more nodes in the database cluster to check if any node is available again. Upon finding an available node, the database controller 205 may determine, based upon the switch over policy, if that available node may be designated as the next EA node. If the available node is able to be designated as the next EA node, the database controller 205 may designate that node as the next EA node and the highly available time machine 400 may continue to capture backups from the next EA node. Thus, depending upon the reason why the process 600 lands at the operation 620, the database controller 205 may take corrective action.

**[0137]** On the other hand, if at the operation 615, the database controller 205 does find a currently designated EA node (e.g., the initial EA node), the process 600 proceeds to operation 625. At the operation 625, the database controller 205 determines whether the initial EA node has an active "heartbeat." In other words, the database controller 205 determines whether communications between the initial EA node (e.g., the database server associated with the source database on the initial EA node) and the database controller 205 are occurring normally. As indicated above, in some cases, the initial EA node may become unavailable. For example, in some embodiments, the initial EA node may become unavailable if the database server virtual machine on the initial EA node on which the copy of the source database resides becomes unavailable or the database service (e.g., communication channel) between the database controller 205 and the database server is disrupted, or any other reason that prevents the database controller from normally communicating with the initial EA node.

**[0138]** Upon determining that the initial EA node does not have an active "heartbeat," or in other words, is unable to communicate properly with the database controller 205, the database controller selects a new node from the database cluster to designate as the EA node (e.g., the next EA node) at operation 630. In some embodiments, the database controller 205 may review the EA policy to determine the switch over policy. Based upon the switch over policy, the database controller 205 may select the next EA node. The operation 630 is analogous to the operation 525. On the other hand, if at the operation 625, the database controller 205 does find a "heartbeat" of the initial EA node, then the process 600 proceeds to operation 635 and designates (or confirms) that the initial EA node is the current EA node and that backups may continue to be generated from the initial EA node. The operations 610, 615, 625, and 635 may be considered "pre-discovery" operations in which the database controller 205 is attempting to identify/confirm the currently designated EA node (e.g., the initial EA node).

**[0139]** At operation 640, upon detecting the initial EA node and determining that the initial EA node is still available (e.g., has a heartbeat") and operating as an EA node, the database controller 205 sends work requests to the initial EA node. For example, the database controller 205 may receive a work request from a user to capture a snapshot (e.g., manual create_snapshot request) of the source database. In some embodiments, this manual request may be separate from the backups (e.g., snapshots and transactional logs) that the highly available time machine 400 automatically captures from the initial EA node. In other embodiments, the database controller 205, and particularly, the highly available time machine 400, may send work requests to the initial EA node to automatically capture the snapshots and transactional logs based upon the SLA and protection schedule. Thus, the work requests may be user initiated or time machine initiated. At operation 645, the database controller 205 determines if the initial EA node responds (e.g., picks up) to the

work request within a designated amount of time (e.g., N minutes). By virtue of checking whether the work request is picked up by the initial EA node within the designated amount of time, the database controller 205 confirms that the initial EA node is still available and acting as an EA node when the work request is sent to the initial EA node. If the initial EA node does not respond (e.g., does not acknowledge the work request or does not respond to the work request) within the designated amount of time, the database controller 205 may assume that the initial EA node has become unavailable. The database controller 205 then proceeds to the operation 630 to select the next EA node if the initial EA node does not respond within the designated amount of time. If the initial EA node does respond to the work request at the operation 645 within the designated amount of time, at operation 650, the initial EA node also confirms to the database controller 205 whether the initial EA node is still the designated EA node.

**[0140]** In some embodiments, the initial EA node may be available and pick up the work request of the operation 640. However, the initial EA node may determine upon picking up the work request that the node is no longer an EA node. For example, in some embodiments, after the operation 645, the database controller 205 (or another component of the database management system 200 (e.g., when the driverDriven value of the EA policy is true)) may have selected another EA node. Alternatively, in some embodiments, the status of the initial EA node may have changed since the work request was sent. For example, if the node that receives the work request of the operation 640 is a secondary node and the switch over policy is a secondary-only policy, and if that node's designation changes from secondary to primary (e.g., due to the previous primary node becoming unavailable) after the operation 635, that node can no longer serve as the initial EA node and still be in compliance with the switch over policy. In other embodiments, other events may cause the initial EA node to not be able to serve as an EA node. Thus, the status of the node

designated as the initial EA node at the operation 635 may change by the time that node receives the work request of the operation 640. However, since that node is still available (e.g., has a heartbeat), that node may still pick up the work request. The operation 650 may be considered a "runtime discovery" operation. Thus, at the operation 650, the node that receives the work request of the operation 640 determines whether that node is still an EA node or not and notifies the database controller 205 of its current status.

**[0141]** If, at the operation 650, the initial EA node confirms that the node is still an EA node, the process 600 proceeds to operation 655 where the initial EA node attempts to complete the work request (e.g., capture a snapshot of the source database). Upon successful completion of the work request, the process 600 ends at operation 660. If the work request is not successfully completed at the operation 655, the database controller 205 determines if the work request is to be retried at the initial EA node. If the work request is to be retried at the initial EA node, the process 600 proceeds to operation 670 where the initial EA node retries completing the work request. In some embodiments, the initial EA node may try to complete the work request a designated number of times. If the initial EA node is unable to complete the work request in the designated number of times, the database controller 205 determines that the initial EA node is unable to complete the work request and removes the title of the "EA node" from the initial EA node at the operation 670. If, on the other hand, at the operation 665, the database controller 205 determines that the initial EA node is to not retry the work request, the process 600 proceeds to the operation 620.

**[0142]** In some embodiments, before removing the title of the "EA node" from the initial EA node at the operation 670, the database controller 205 determines, at operation 675, if the initial EA node was unable to complete the work request due to the database cluster being unavailable or for

some other reason. The operation 675 is also reached from the operation 650 when the initial EA node does not detect itself as the initial EA node.

**[0143]** At the operation 675, the database controller 205 determines if the database cluster is unavailable or if another problem is causing the initial EA node to be unresponsive. If the database controller 205 determines that the entire database cluster is down (e.g., unavailable) or there is another problem that is preventing the initial EA node from completing the work request of the operation 640, the process 600 proceeds to the operation 620. Otherwise, the database controller 205 selects the next EA node at the operation 630. Upon selecting the next EA node, the database controller 205 may send the work request of the operation 640 to the next EA node.

**[0144]** In some embodiments, the database controller 205 may not select the next EA node if the initial EA node fails to complete the work request at the operation 665. In other words, the database controller 205 may not remove the title of EA node from the initial EA node at the operation 670. Rather, in some embodiments, the database controller 205 may decide that the issues with the initial EA node are likely temporary and do not need selection of a new EA node. In such cases, the database controller 205 may simply send the work request of the operation 640 to another node to complete while keeping the initial EA node as the current EA node. In some embodiments, the database controller 205 may perform the process 600 for each work request, at periodic intervals, and/or when other predetermined criteria is satisfied.

**[0145]** Referring still to FIG. 6, various scenarios of how the database controller 205 may handle failover cases (e.g., where the initial EA node becomes unavailable) are now described. As indicated above, in some cases, the initial EA node may receive the work request from the database controller 205 at the operations 640 and 645. Upon receiving the work request, the initial EA node may become unavailable. In such cases, if the work request has been picked up by the initial EA

node (e.g., at the operation 645) and then the initial EA node determines at the operation 650 that it is not an EA node anymore, the database controller 205 may have two options for completing the work request based upon the database engine of the source database.

**[0146]** A first choice may include the database controller 205 instructing the highly available time machine 400 to perform a log catch up operation (e.g., capture transactional logs) from the initial EA node (e.g., the node which picked up the work request at the operation 645) and then exit from the work request (e.g., drop the work request) after the log catch up operation is completed at the initial EA node, and then select another EA node (e.g., the next EA node) at the operation 630. The database controller 205 may then resume the dropped work request at the next EA node. A second choice may include exiting from the work request without performing the log catch up operation at the initial EA node, selecting the next EA node at the operation 630, and performing the work request at the next EA node, including performing the log catch up operation at the next EA node. Thus, when the initial EA node becomes unavailable, the highly available time machine 400, based upon the state of the failed-over source database or the database server, may take a new snapshot and perform the log catch up operation on the next EA node or perform a log catch up operation on the next EA node.

**[0147]** Now, consider a case where multiple work requests are pending. For example, in some embodiments, say a work request includes one or more snapshot requests (e.g., create_snapshot requests) and/or one or more log catch up requests (e.g., log_catcup requests). In some embodiments, all of the multiple work requests (e.g., snapshot creation request 1 and snapshot creation request 2) may be sent to the initial EA node (e.g., Node A) at the operation 640. In some embodiments, the snapshot requests are handled serially. In other words, the snapshot creation request 2 is handled after the snapshot creation request 1 is completed. Thus, when Node A (e.g.,

the initial EA node) is working on the snapshot creation request 1, the snapshot creation request 2 remains in the queue of Node A. In some embodiments, before or after Node A starts work on the snapshot creation request 1, the database controller 205 may determine that Node A is no longer the initial EA node (e.g., due to that node being unavailable). If Node A has already started working on snapshot creation request 1 when Node A either becomes unavailable or is no longer the EA node, the database controller 205 may implement one of the two choices described above. Further, the database controller 205 may abandon the snapshot creation request 2 at Node A and reassign the snapshot creation request 2 to the next EA node that is selected. If Node A becomes unavailable or is no longer an EA node even before Node A starts working on the snapshot creation request 1, the database controller 205 may abandon both the snapshot creation request 1 and the snapshot creation request 2. The database controller 205 may reassign these requests to the next EA node when selected.

**[0148]** Thus, the database controller 205 may be configured to maintain a continuity of highly available time machine's point in time recovery capability after an EA switch. Depending upon when the EA switch happens (e.g., when a new EA node is selected), the database controller 205 may intelligently decide whether to capture a snapshot only from the new EA node, capture only transactional logs from the new EA node, or capture both snapshot and transactional logs from the new EA node. In general, if the database controller 205 determines that the new EA node is not up to date with the old EA node (e.g., due to asynchronous replication), the database controller may instruct the highly available time machine to start backup by capturing a snapshot of the new EA node. If the database controller 205 determines that the new EA node is up to date with the old EA node (e.g., due to synchronous replication) and the last captured backup from the old EA node was a snapshot, the highly available time machine may start with capturing transactional logs

from the new EA node, thereby picking up replication at the new EA node where the replication was left off at the old EA node. If the database controller 205 determines that the new EA node is up to date with the old EA node (e.g., due to synchronous replication) and the last captured backup from the old EA node was a transactional log, the highly available time machine may start with capturing either the next transactional log or a snapshot from the new EA node, again picking up replication at the new EA node where the replication was left off at the old EA node.

**[0149]** Additionally, in some embodiments, a single node may be hosting multiple databases. When that node fails, in some embodiments, the database controller 205 may be configured to switch over all databases on that node. Depending upon whether a particular database instance is a primary or as secondary, the switch over may occur in accordance with the switchover policy applicable to that particular database instance.

**[0150]** Referring now to FIG. 7, an example block diagram showing how a highly available time machine 700 manages/tracks multiple nodes of a highly available source database is shown, in accordance with some embodiments of the present disclosure. The highly available time machine 700 is configured to create backups from a highly available source database that has multiple copies stored on multiple databases spread across multiple nodes of a single cluster or multiple clusters. A single instance of the highly available time machine may be used to manage all the nodes on which copies of the source database are located. For example, a database cluster (also referred to herein as a "clustered database") may include three database servers 705, 710, 715. In some embodiments, each of the database servers 705-715 may be a source database virtual machine that resides on a separate node of a single cluster or multiple clusters. Each of the database servers 705-715 may host a copy of a source database. Thus, the source database may include a 3

node database cluster. Although three database servers are shown in FIG. 7, in other embodiments, greater or fewer than three database servers may be present.

**[0151]** A database server physical cluster 720 may be configured to capture the clustering of the source database. In other words, the database server physical cluster 720 may be configured to track the identities and locations of the database servers 705-715. In some embodiments, the database server physical cluster 720 may be configured as hardware, software, firmware, or combination thereof. The database server physical cluster 720 may then create one or more database server logical clusters using various combinations of the database servers 705-715. Thus, the database servers 705-715 may be configured to host multiple source databases. For example, the database server physical cluster 720 may create a first database server logical cluster 725 with the database servers 705-715, a second database server logical cluster 730 with the database servers 705 and 710, a third database server logical cluster 735 with the database servers 705 and 715, and so on.

**[0152]** Each of the database server logical clusters 725-735 may, in turn, host one or more source databases. For example, the first database server logical cluster 725 may host source databases 740A-740N. Thus, copies of each of the source databases 740A-740N may be stored on the database servers 705-715 since the first database server logical cluster 725 includes all of the database servers 705-715. Similarly, although not shown, one or more source databases may be stored on the second database server logical cluster 730, which may be stored on the database servers 705 and 710. Likewise, one or more source databases may be stored on the third database server logical cluster 735, which may be stored on the database servers 705 and 715, and so on.

**[0153]** Each source database may be associated with a time machine. For example, the source database 740A is shown as being associated with the highly available time machine 700. Similarly,

although not shown, each of the other source databases may be associated with an instance of the highly available time machine 700. As discussed above, the highly available time machine 700 may be configured with an SLA 745, similar to the SLA 315, and a protection schedule 750 similar to the protection schedule 320. Since the source database 740A is part of the first database server logical cluster 725 having three database servers (e.g., the database servers 705-715), the source database forms a database cluster of 3 nodes, as shown by nodes 755, 760, and 765. Thus, each of the nodes 755-765 store a copy of the source database 740A.

**[0154]** The highly available time machine 700 tracks all of the nodes 755-765 for creating backups of the source database 740A, as discussed above. In some embodiments, each of the nodes 755-765 may include a protection domain 770-780, respectively, that is associated with the highly available time machine 700. In some embodiments, the nodes 755-765 may share a single protection domain. The protection domains 770-780 may be configured to store the snapshots and transactional logs that are captured from the node associated with the protection domain. For example, the protection domain 770 may store snapshots 785A captured of the source database from the node 755, the protection domain 775 may store snapshots 785B captured of the source database from the node 760, and the protection domain 780 may store snapshots 785C captured of the source database from the node 765. Although not shown, those protection domains may also store the transactional logs captured from their respective nodes.

**[0155]** Thus, the present disclosure provides a mechanism to protect a highly available source database that is adaptive, resilient to failures, highly available, and flexible/configurable, while providing a seamless user experience.

**[0156]** It is to be understood that any examples used herein are simply for purposes of explanation and are not intended to be limiting in any way. It is also to be understood that any

examples used herein are simply for purposes of explanation and are not intended to be limiting in any way. Further, although the present disclosure has been discussed with respect to memory usage, in other embodiments, the teachings of the present disclosure may be applied to adjust other resources, such as power, processing capacity, etc.

**[0157]** The herein described subject matter sometimes illustrates different components contained within, or connected with, different other components. It is to be understood that such depicted architectures are merely exemplary, and that in fact many other architectures can be implemented which achieve the same functionality. In a conceptual sense, any arrangement of components to achieve the same functionality is effectively "associated" such that the desired functionality is achieved. Hence, any two components herein combined to achieve a particular functionality can be seen as "associated with" each other such that the desired functionality is achieved, irrespective of architectures or intermedial components. Likewise, any two components so associated can also be viewed as being "operably connected," or "operably coupled," to each other to achieve the desired functionality, and any two components capable of being so associated can also be viewed as being "operably couplable," to each other to achieve the desired functionality. Specific examples of operably couplable include but are not limited to physically mateable and/or physically interacting components and/or wirelessly interactable and/or wirelessly interacting components and/or logically interacting and/or logically interactable components.

**[0158]** With respect to the use of substantially any plural and/or singular terms herein, those having skill in the art can translate from the plural to the singular and/or from the singular to the plural as is appropriate to the context and/or application. The various singular/plural permutations may be expressly set forth herein for sake of clarity.

**[0159]** It will be understood by those within the art that, in general, terms used herein, and especially in the appended claims (e.g., bodies of the appended claims) are generally intended as "open" terms (e.g., the term "including" should be interpreted as "including but not limited to," the term "having" should be interpreted as "having at least," the term "includes" should be interpreted as "includes but is not limited to," etc.). It will be further understood by those within the art that if a specific number of an introduced claim recitation is intended, such an intent will be explicitly recited in the claim, and in the absence of such recitation no such intent is present. For example, as an aid to understanding, the following appended claims may contain usage of the introductory phrases "at least one" and "one or more" to introduce claim recitations. However, the use of such phrases should not be construed to imply that the introduction of a claim recitation by the indefinite articles "a" or "an" limits any particular claim containing such introduced claim recitation to inventions containing only one such recitation, even when the same claim includes the introductory phrases "one or more" or "at least one" and indefinite articles such as "a" or "an" (e.g., "a" and/or "an" should typically be interpreted to mean "at least one" or "one or more"); the same holds true for the use of definite articles used to introduce claim recitations. In addition, even if a specific number of an introduced claim recitation is explicitly recited, those skilled in the art will recognize that such recitation should typically be interpreted to mean at least the recited number (e.g., the bare recitation of "two recitations," without other modifiers, typically means at least two recitations, or two or more recitations). Furthermore, in those instances where a convention analogous to "at least one of A, B, and C, etc." is used, in general such a construction is intended in the sense one having skill in the art would understand the convention (e.g., "a system having at least one of A, B, and C" would include but not be limited to systems that have A alone, B alone, C alone, A and B together, A and C together, B and C together, and/or A, B, and C together, etc.).

In those instances where a convention analogous to "at least one of A, B, or C, etc." is used, in general such a construction is intended in the sense one having skill in the art would understand the convention (e.g., "a system having at least one of A, B, or C" would include but not be limited to systems that have A alone, B alone, C alone, A and B together, A and C together, B and C together, and/or A, B, and C together, etc.). It will be further understood by those within the art that virtually any disjunctive word and/or phrase presenting two or more alternative terms, whether in the description, claims, or drawings, should be understood to contemplate the possibilities of including one of the terms, either of the terms, or both terms. For example, the phrase "A or B" will be understood to include the possibilities of "A" or "B" or "A and B." Further, unless otherwise noted, the use of the words “approximate,” “about,” “around,” “substantially,” etc., mean plus or minus ten percent.

**[0160]** The foregoing description of illustrative embodiments has been presented for purposes of illustration and of description. It is not intended to be exhaustive or limiting with respect to the precise form disclosed, and modifications and variations are possible in light of the above teachings or may be acquired from practice of the disclosed embodiments. It is intended that the scope of the invention be defined by the claims appended hereto and their equivalents.

DocCode – SCORE

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**CONFIRMATION NO. 3895**

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FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109

**FILING RECEIPT**

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**Inventor(s)**

Sagar Sontakke, Bangalore, INDIA;
Kamaldeep Khanuja, Dublin, CA;
Bakul Banthia, San Ramon, CA;

**Applicant(s)**

Nutanix, Inc., San Jose, CA;

**Assignment For Published Patent Application**

Nutanix, Inc., San Jose, CA

**Power of Attorney:** The patent practitioners associated with Customer Number 147491

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This appln claims benefit of 63/094,245 10/20/2020

**Foreign Applications** for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
*Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.*

**Permission to Access Application via Priority Document Exchange:** Yes

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Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

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The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/182,511**

**Projected Publication Date:** To Be Determined - pending completion of Corrected Papers

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**Early Publication Request:** No

**Title**

SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM

**Preliminary Class**

326

**Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications:** No

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## Title 37, Code of Federal Regulations, 5.11 & 5.15

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The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

**NOT GRANTED**

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

---

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|---|---|---|---|
| 17/182,511 | 02/23/2021 | Sagar Sontakke | 115539-0346 |

**CONFIRMATION NO. 3895**

147491
FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109

**FORMALITIES LETTER**

*OC000000124307041*

Date Mailed: 03/24/2021

## NOTICE TO FILE CORRECTED APPLICATION PAPERS

***Filing Date Granted***

An application number and filing date have been accorded to this application. The application is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given **TWO MONTHS** from the date of this Notice within which to correct the informalities indicated below. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

The required item(s) identified below must be timely submitted to avoid abandonment:

- Replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121(d) are required. The drawings submitted are not acceptable because:
  - The drawings submitted to the Office are not electronically reproducible because portions of figures 3 are missing and/or blurry.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

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Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

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/aabranyos/

## PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 17/182,511

### APPLICATION AS FILED - PART I

| FOR | (Column 1) NUMBER FILED | (Column 2) NUMBER EXTRA | SMALL ENTITY RATE($) | SMALL ENTITY FEE($) | OR | OTHER THAN SMALL ENTITY RATE($) | OTHER THAN SMALL ENTITY FEE($) |
|---|---|---|---|---|---|---|---|
| BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | | | N/A | 320 |
| SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | | | N/A | 700 |
| EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | | | N/A | 800 |
| TOTAL CLAIMS (37 CFR 1.16(i)) | 30 minus 20 = | * 10 | | | OR | x 100 = | 1000 |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | 3 minus 3 = | * | | | | x 480 = | 0.00 |
| APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | | | 0.00 |
| MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | | | 0.00 |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | | | TOTAL | 2820 |

### APPLICATION AS AMENDED - PART II

| | | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE($) | SMALL ENTITY ADDITIONAL FEE($) | OR | OTHER THAN SMALL ENTITY RATE($) | OTHER THAN SMALL ENTITY ADDITIONAL FEE($) |
|---|---|---|---|---|---|---|---|---|---|---|
| AMENDMENT A | Total (37 CFR 1.16(i)) | * | Minus | ** | = | x = | | OR | x = | |
| | Independent (37 CFR 1.16(h)) | * | Minus | *** | = | x = | | OR | x = | |
| | Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

| | | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE($) | SMALL ENTITY ADDITIONAL FEE($) | OR | OTHER THAN SMALL ENTITY RATE($) | OTHER THAN SMALL ENTITY ADDITIONAL FEE($) |
|---|---|---|---|---|---|---|---|---|---|---|
| AMENDMENT B | Total (37 CFR 1.16(i)) | * | Minus | ** | = | x = | | OR | x = | |
| | Independent (37 CFR 1.16(h)) | * | Minus | *** | = | x = | | OR | x = | |
| | Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

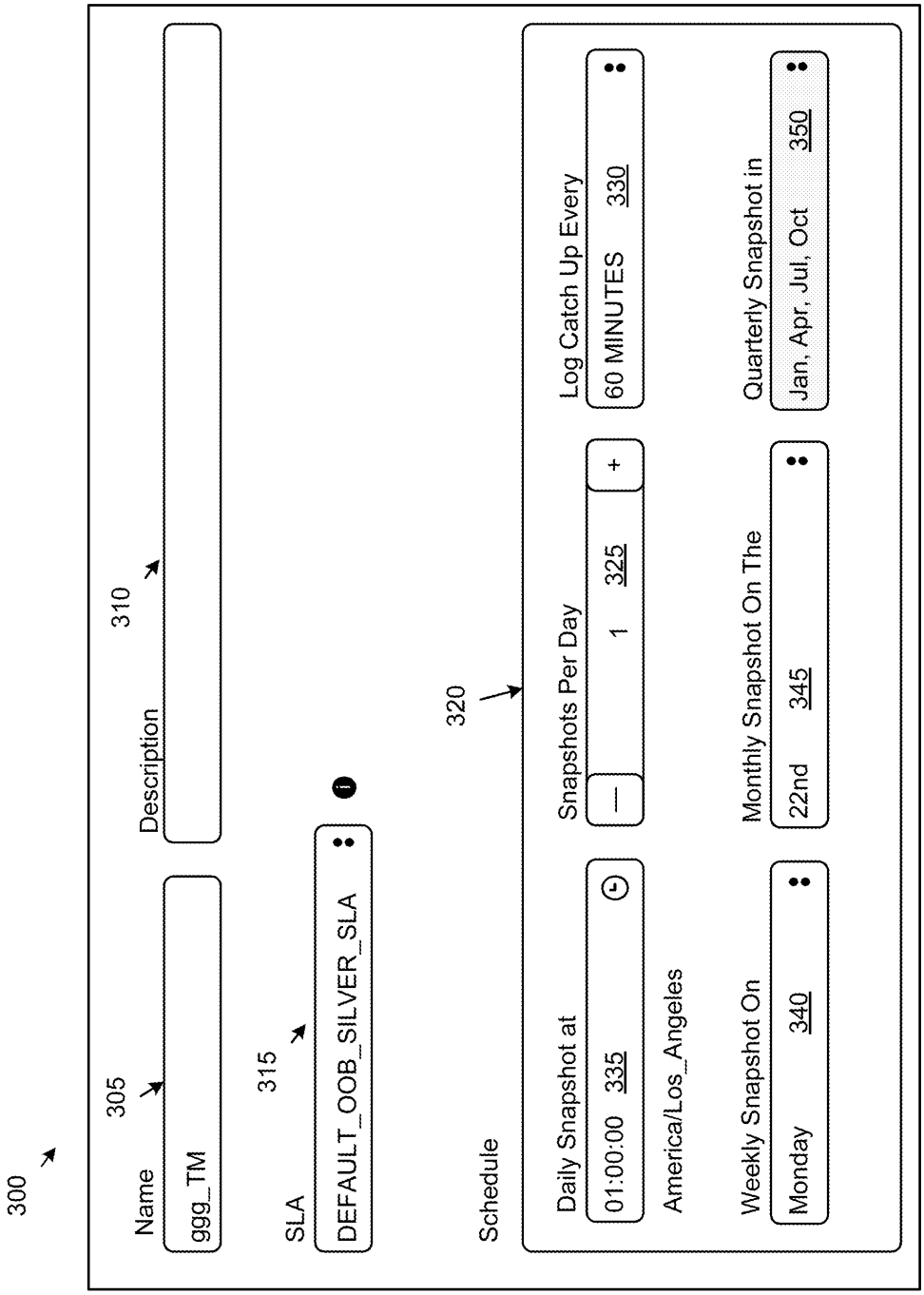

300
305
Name
ggg_TM
310
Description
315
SLA
DEFAULT_OOB_SILVER_SLA
320
Schedule
Daily Snapshot at
01:00:00 335
America/Los_Angeles
Snapshots Per Day
1 325
Log Catch Up Every
60 MINUTES 330
Weekly Snapshot On
Monday 340
Monthly Snapshot On The
22nd 345
Quarterly Snapshot in
Jan, Apr, Jul, Oct 350

FIG. 3

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| First Inventor Name: | Sagar Sontakke |
| Title: | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Application No.: | 17/182,511 |
| Filing Date: | 02/23/2021 |
| Examiner: | Not yet assigned |
| Art Unit: | Not yet assigned |
| Confirmation No.: | 3895 |

**RESPONSE TO NOTICE TO FILE CORRECTED APPLICATION PAPERS**

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

This paper is responsive to the Notice to File Corrected Application Papers mailed March 24, 2021, in the above-identified patent application due May 24, 2021.

Transmitted herewith is replacement figure 3. One sheet of replacement figure 3 is submitted herewith to correct the missing and/or blurry information.

Enclosed are:

[ X ] Return Copy of Notice to File Corrected Application Papers

[ X ] Replacement Drawing of Figure 3 (1 page)

The Commissioner is hereby authorized to charge any additional fees which may be required for this application to Deposit Account No. 19-0741. If any extensions of time are

needed for timely acceptance of papers submitted herewith, applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date: April 2, 2021 By: */Paul S. Hunter/*

FOLEY & LARDNER LLP
11988 El Camino Real, Suite 400
San Diego, California 92130
Telephone: (858) 847-6733
Facsimile: (858) 792-6773

Paul S. Hunter
Attorney for Applicant
Registration No. 44,787

Customer No. 147491

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| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|---|---|---|---|
| 17/182,511 | 02/23/2021 | Sagar Sontakke | 115539-0346 |

**CONFIRMATION NO. 3895**

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WASHINGTON, DC 20007-5109

**FORMALITIES LETTER**

*OC000000124307041*

Date Mailed: 03/24/2021

## NOTICE TO FILE CORRECTED APPLICATION PAPERS

***Filing Date Granted***

An application number and filing date have been accorded to this application. The application is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given **TWO MONTHS** from the date of this Notice within which to correct the informalities indicated below. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

The required item(s) identified below must be timely submitted to avoid abandonment:

- Replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121(d) are required. The drawings submitted are not acceptable because:
  - The drawings submitted to the Office are not electronically reproducible because portions of figures 3 are missing and/or blurry.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

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/aabranyos/

| Electronic Acknowledgement Receipt | |
|---|---|
| **EFS ID:** | 42352954 |
| **Application Number:** | 17182511 |
| **International Application Number:** | |
| **Confirmation Number:** | 3895 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Customer Number:** | 147491 |
| **Filer:** | Paul S. Hunter/Vicki Andrews |
| **Filer Authorized By:** | Paul S. Hunter |
| **Attorney Docket Number:** | 115539-0346 |
| **Receipt Date:** | 02-APR-2021 |
| **Filing Date:** | 23-FEB-2021 |
| **Time Stamp:** | 11:46:12 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| Submitted with Payment | no |
|---|---|

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Applicant Response to Pre-Exam Formalities Notice | 115539-0346-Response_to_Notice_to_File_Corrected_Application_Papers-Drawings.pdf | 266032<br>8b2f813648efda851e7cc060a9ef2e0bd844fa87 | no | 4 |
| **Warnings:** | | | | | |

| Information: | | | | | |
|---|---|---|---|---|---|
| 2 | Drawings-only black and white line drawings | 115539-0346-Fig_3.pdf | 236193<br>ce9b5da9ff9a30385a119249a0575beb56d44d91 | no | 1 |
| Warnings: | | | | | |
| Information: | | | | | |
| | | | Total Files Size (in bytes): | 502225 | |

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**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

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| APPLICATION NUMBER | FILING or 371(c) DATE | GRP ART UNIT | FIL FEE REC'D | ATTY.DOCKET.NO | TOT CLAIMS | IND CLAIMS |
|---|---|---|---|---|---|---|
| 17/182,511 | 02/23/2021 | 2844 | 2820 | 115539-0346 | 30 | 3 |

**CONFIRMATION NO. 3895**

**UPDATED FILING RECEIPT**

147491
FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109

OC000000124628911

Date Mailed: 04/06/2021

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

**Please verify the accuracy of the data presented on this receipt.** If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

**Inventor(s)**

Sagar Sontakke, Bangalore, INDIA;
Kamaldeep Khanuja, Dublin, CA;
Bakul Banthia, San Ramon, CA;

**Applicant(s)**

Nutanix, Inc., San Jose, CA;

**Assignment For Published Patent Application**

Nutanix, Inc., San Jose, CA

**Power of Attorney:** The patent practitioners associated with Customer Number 147491

**Domestic Priority data as claimed by applicant**

This appln claims benefit of 63/094,245 10/20/2020

**Foreign Applications** for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
*Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.*

**Permission to Access Application via Priority Document Exchange:** Yes

**Permission to Access Search Results:** Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

**If Required, Foreign Filing License Granted:** 03/22/2021

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/182,511**

**Projected Publication Date:** 04/21/2022

**Non-Publication Request:** No

**Early Publication Request:** No

**Title**

SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM

**Preliminary Class**

326

**Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications:** No

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Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

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For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

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## Title 35, United States Code, Section 184

## Title 37, Code of Federal Regulations, 5.11 & 5.15

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This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

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technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

## PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 17/182,511

### APPLICATION AS FILED - PART I

| FOR | (Column 1) NUMBER FILED | (Column 2) NUMBER EXTRA | SMALL ENTITY RATE($) | SMALL ENTITY FEE($) | OR | OTHER THAN SMALL ENTITY RATE($) | OTHER THAN SMALL ENTITY FEE($) |
|---|---|---|---|---|---|---|---|
| BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | | | N/A | 320 |
| SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | | | N/A | 700 |
| EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | | | N/A | 800 |
| TOTAL CLAIMS (37 CFR 1.16(i)) | 30 minus 20 = | * 10 | | | OR | x 100 = | 1000 |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | 3 minus 3 = | * | | | | x 480 = | 0.00 |
| APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | | | 0.00 |
| MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | | | 0.00 |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | | | TOTAL | 2820 |

### APPLICATION AS AMENDED - PART II

| | | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE($) | SMALL ENTITY ADDITIONAL FEE($) | OR | OTHER THAN SMALL ENTITY RATE($) | OTHER THAN SMALL ENTITY ADDITIONAL FEE($) |
|---|---|---|---|---|---|---|---|---|---|---|
| AMENDMENT A | Total (37 CFR 1.16(i)) | * | Minus | ** | = | x = | | OR | x = | |
| | Independent (37 CFR 1.16(h)) | * | Minus | *** | = | x = | | OR | x = | |
| | Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

| | | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE($) | SMALL ENTITY ADDITIONAL FEE($) | OR | OTHER THAN SMALL ENTITY RATE($) | OTHER THAN SMALL ENTITY ADDITIONAL FEE($) |
|---|---|---|---|---|---|---|---|---|---|---|
| AMENDMENT B | Total (37 CFR 1.16(i)) | * | Minus | ** | = | x = | | OR | x = | |
| | Independent (37 CFR 1.16(h)) | * | Minus | *** | = | x = | | OR | x = | |
| | Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

| Substitute for form 1449/PTO | | | | ***Complete if Known*** | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: April 20, 2021 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | 2844 |
| | | | | Examiner Name | Not yet assigned |
| Sheet | 1 | of | 1 | Attorney Docket Number | 115539-0346 |

**U.S. PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Document Number<br>Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | B1 | 2007/0183224 | 08-09-2007 | EROFEEV, ANDREI | |
| | B2 | 2007/0185852 | 08-09-2007 | EROFEEV, ANDREI | |
| | B3 | 2007/0185937 | 08-09-2007 | PRAHLAD ET AL. | |
| | B4 | 2009/0037914 | 02-05-2009 | CHAGOLY ET AL. | |
| | B5 | 2009/0132543-A1 | 05-21-2009 | CHATLEY ET AL. | |
| | B6 | 2017/0060699 | 03-02-2017 | HOHL ET AL. | |
| | B7 | 2018/0121494 | 05-03-2018 | ANTONOPOULOS ET AL. | |
| | B8 | 2019/0102411 | 04-04-2019 | HUNG ET AL. | |
| | B9 | 2020/0201526 | 06-25-2020 | KUCHIBHOTLA ET AL. | |
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**UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS**

| Examiner Initials* | Cite No.[1] | U.S. Patent Application Document<br>Serial Number-Kind Code[2] (*if known*) | Filing Date of Cited Document MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | | | | | |

**FOREIGN PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Foreign Patent Document<br>Country Code[3]-Number[4]-Kind Code[5] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Documents | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
|---|---|---|---|---|---|---|
| | | | | | | |
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**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
|---|---|---|---|
| | | | |
| | | | |

| Examiner Signature | | Date Considered | |
|---|---|---|---|

4839-7035-2870.1

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| First Inventor Name: | Sagar Sontakke |
| Title: | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Application No.: | 17/182,511 |
| Filing Date: | 2/23/2021 |
| Examiner: | Not yet assigned |
| Art Unit: | Not yet assigned |
| Confirmation No.: | 3895 |

**SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Applicant submits herewith documents for the Examiner's consideration in accordance with 37 CFR §§1.56, 1.97 and 1.98.

Applicant respectfully requests that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

The submission of any document herewith is not an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicant does not waive

any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document submitted herewith.

**TIMING OF THE DISCLOSURE**

The listed documents are being submitted in compliance with 37 CFR §1.97(b), before the mailing date of the first Office Action on the merits.

Although Applicant believes that no fee is required, the Commissioner is hereby authorized to charge any additional fees which may be due to Deposit Account No. 19-0741.

Respectfully submitted,

Date April 20, 2021

By */Paul S. Hunter/*

FOLEY & LARDNER LLP
Customer Number: 147491
Telephone: (858) 847-6733
Facsimile: (858) 792-6773

Paul S. Hunter
Attorney for Applicant
Registration No. 44,787

| Electronic Acknowledgement Receipt | |
|---|---|
| **EFS ID:** | 42504461 |
| **Application Number:** | 17182511 |
| **International Application Number:** | |
| **Confirmation Number:** | 3895 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Customer Number:** | 147491 |
| **Filer:** | Paul S. Hunter/Vicki Andrews |
| **Filer Authorized By:** | Paul S. Hunter |
| **Attorney Docket Number:** | 115539-0346 |
| **Receipt Date:** | 20-APR-2021 |
| **Filing Date:** | 23-FEB-2021 |
| **Time Stamp:** | 18:11:50 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| Submitted with Payment | no |
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## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Transmittal Letter | 115539-0346-IDS_Transmittal_04_20_2021.pdf | 133675<br>4a5f88edc85003ed24982460b7d16d926c73cbc2 | no | 2 |
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| Information: | | | | | |
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| 2 | Information Disclosure Statement (IDS) Form (SB08) | 115539-0346-IDS_SB08_04_20_2021.pdf | 107731<br>20469e04202e3b4d44d0d19e866af610d8e371f1 | no | 1 |
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| **Information:** | | | | | |
| This is not an USPTO supplied IDS fillable form | | | | | |
| | | | **Total Files Size (in bytes):** | 241406 | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

| Electronic Acknowledgement Receipt | |
|---|---|
| **EFS ID:** | 43766327 |
| **Application Number:** | 17182511 |
| **International Application Number:** | |
| **Confirmation Number:** | 3895 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Customer Number:** | 147491 |
| **Filer:** | Paul S. Hunter/Maria Lopes-Carvalho |
| **Filer Authorized By:** | Paul S. Hunter |
| **Attorney Docket Number:** | 115539-0346 |
| **Receipt Date:** | 14-SEP-2021 |
| **Filing Date:** | 23-FEB-2021 |
| **Time Stamp:** | 20:36:03 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| Submitted with Payment | no |
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## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | | 115539-0346_Preliminary_Amendment_9-14-2021_pdf.pdf | 141390<br>d6e26ba846810c1584e1ff9aa7bd9dce2f39dbb8 | yes | 4 |

| | Multipart Description/PDF files in .zip description | | |
|---|---|---|---|
| | **Document Description** | **Start** | **End** |
| | Preliminary Amendment | 1 | 1 |
| | Specification | 2 | 2 |
| | Applicant Arguments/Remarks Made in an Amendment | 3 | 4 |
| **Warnings:** | | | |
| **Information:** | | | |
| | **Total Files Size (in bytes):** | 141390 | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**
**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**
**National Stage of an International Application under 35 U.S.C. 371**
**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**
**New International Application Filed with the USPTO as a Receiving Office**
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

**Amendments to the Specification:**

Please amend the specification as follows:

Please remove the following on page 1 of the specification after the background:

**BACKGROUND**

**[0002]** ~~The following description is provided to assist the understanding of the reader. None of the information provided or references cited is admitted to be prior art.~~

**REMARKS**

Applicant respectfully requests that the foregoing amendments be made prior to examination of the present application. No new matter is added. Entry of the amendment is respectfully requested.

According the foregoing amendments should be entered because:

(a) The proposed amendment requires no additional search or examination.

(b) The amendment was not presented earlier due to an oversight.

Applicant respectfully submits that only a cursory review of the record is needed to enter the amendments.

**Concluding Remarks**

It is believed that no fees are due in connection with this preliminary amendment. In the event this is not incorrect, the undersigned authorizes the Commissioner to charge Deposit Account No. 19-0741.

Respectfully submitted,

Date September 14, 2021 By */Paul S. Hunter/*

FOLEY & LARDNER LLP
Customer Number: 147491
Telephone: (858) 847-6733
Facsimile: (858) 792-6773

Paul S. Hunter
Attorney for Applicant
Registration No. 44,787

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| First Inventor Name: | Sagar Sontakke |
| Title: | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Application No.: | 17/182,511 |
| Filing Date: | 2/23/2021 |
| Examiner: | Not yet assigned |
| Art Unit: | Not yet assigned |
| Confirmation No.: | 3895 |

**PRELIMINARY AMENDMENT**

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Prior to examination of the present Application, Applicant respectfully requests that the application be amended as follows:

**Amendments to the Specification** begin on page 2 of this document.

**Remarks** begin on page 3 of this document.

Please amend the application as follows:

| Electronic Acknowledgement Receipt | |
|---|---|
| **EFS ID:** | 43991878 |
| **Application Number:** | 17182511 |
| **International Application Number:** | |
| **Confirmation Number:** | 3895 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Customer Number:** | 147491 |
| **Filer:** | Paul S. Hunter/Vicki Andrews |
| **Filer Authorized By:** | Paul S. Hunter |
| **Attorney Docket Number:** | 115539-0346 |
| **Receipt Date:** | 09-OCT-2021 |
| **Filing Date:** | 23-FEB-2021 |
| **Time Stamp:** | 13:51:29 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| Submitted with Payment | no |
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## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Transmittal Letter | 115539-0346-IDS_Transmittal_10_9_2021.pdf | 134358<br>94151c40b94e9e36383ae3426dbc6b7bee5e08d9 | no | 2 |

**Warnings:**

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| 2 | Information Disclosure Statement (IDS) Form (SB08) | 115539-0346-IDS_SB08_10_9_2021.pdf | 138026<br>23e2ec437a3e6f08836a351de4e09049e9c321a6 | no | 4 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| This is not an USPTO supplied IDS fillable form | | | | | |
| 3 | Foreign Reference | A54--WO_2020_072338.pdf | 5944255<br>e4d8f2f90db938468227fc8f835868aa6c77582e | no | 69 |
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| **Information:** | | | | | |
| 4 | Non Patent Literature | A55--Amazon___Amazon_Aurora_User_Guide_for_Au.pdf | 779949<br>626755ce01d30eade991de2f0b2866a9de98c28d | no | 13 |
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| 5 | Non Patent Literature | A56--Anjum__Maaz___Database_Provisioning_in_E.pdf | 9584691<br>7ef620df1b1051d395a6e160123473d6609810b | no | 59 |
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| 6 | Non Patent Literature | A57--ApexSQL___Automated_database_provisionin.pdf | 2480591<br>41a562dd4794a598525847f91e127f5a2b9bd424 | no | 11 |
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| 7 | Non Patent Literature | A58--BALASUBRAMANIAN__Sudhir_____Virtual_Volume.pdf | 329799<br>56c3458b00f3ba049597357c94137ef3649ce99f | no | 6 |
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| 8 | Non Patent Literature | A59--BOLTON__Dean_et_al___Database_as_a_Servi.pdf | 2981626<br>ef967edd8eb5c0cffd0929fa8b1a6c7aa0a4dd1d | no | 34 |
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| 9 | Non Patent Literature | A60--Brummitt__Karis_et_al____Database_provis.pdf | 172231<br>acbe3d4ab58235c00c4b16657e821ef7e4fd34af | no | 3 |
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| **Information:** | | | | | |
| 10 | Non Patent Literature | A61--CORMAC___Virtual_Volumes__VVols__and_Rep.pdf | 405699<br>847fd7cd22267744457e177e357227c6f1d4cd16b | no | 8 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 11 | Non Patent Literature | A62--Delphix___Provisioning_and_Managing_Virt.pdf | 551029<br>dbbd825b8fdb1bb551be27d2868eb495c5817055 | no | 13 |
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| **Information:** | | | | | |
| 12 | Non Patent Literature | A63--FENTON__Tom___How_To_Create_VMware_Virtu.pdf | 811464<br>724275f5bee4cba2c1e288138a9fa34263ebf109 | no | 8 |
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| 13 | Non Patent Literature | A64--FLECHA__Pete___Whats_New_in_Virtual_Volu.pdf | 662384<br>7989af937c0f5035c6d9fc1c8febc44bc8f64fea | no | 8 |
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| 14 | Non Patent Literature | A65--Fritchey__Grant___SQL_Server_Database_Pr.pdf | 388155<br>28eeedf0387608904ad01808066b348f0c8ab72b | no | 6 |
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| 15 | Non Patent Literature | A66--GRACE__Cato___What_s_New_in_SRM_and_vSph.pdf | 802591<br>e2dc52d3a39b1dd27dc856aa2423cdb16001c2dc | no | 6 |
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| 16 | Non Patent Literature | A67--HOSTERMAN__Cody___Introducing_vSphere_Vi.pdf | 1505552<br>41685ab5bd2ebac2c47fd499ff49f1a873bc9576 | no | 20 |
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| 17 | Non Patent Literature | A68--Hosterman__Cody___Introducing_vSphere_Vi.pdf | 2215265<br>65e727ece61ec9b2a8cf361fe8a2c1f9ad03a761 | no | 19 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 18 | Non Patent Literature | A69--HOSTERMAN__Cody___Virtual_Volumes_and_Ar.pdf | 766657<br>566bf0f0dbb82f5cba54503b1039b00be5613c57 | no | 21 |
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| 19 | Non Patent Literature | A70--HOSTERMAN__Cody___What_s_New_in_vSphere_.pdf | 638759<br>b5bc36559fac9dce58be1d2cd60d7afbb8011bb3 | no | 11 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 20 | Non Patent Literature | A71--IBM___Creating_a_database_deployment_on_.pdf | 24910<br>29a72766b8e0d13b1bed34b38c273f83bf547ab8 | no | 1 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 21 | Non Patent Literature | A72--LEE__Brandon___VMware_vSphere_7_vVols_Ne.pdf | 256473<br>06b3954a92aefb55868fd7ee50db902481a3f5d8 | no | 7 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 22 | Non Patent Literature | A73--Meadowcroft__Ben___Virtual_Volumes__Firs.pdf | 550906<br>62a3a936c647d6aadb664686a6e318315e4395cf | no | 5 |
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| **Information:** | | | | | |

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| 23 | Non Patent Literature | A74--Oracle___Part_III__Database_Provisioning.pdf | 52506<br>a771e3931833200 4a0f3f6bcdd0677ff241b5fcd | no | 2 |
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| 24 | Non Patent Literature | A76--PRINCIPLED_TECHNOLOGIES__VMware_vCloud_.pdf | 2812410<br>fb1735a97580206ee7fd964e2f5791a65ae0859d | no | 38 |
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| 25 | Non Patent Literature | A77--Storti__Brian__A_Primer_on_Database_Repl.pdf | 3514213<br>d60b8eabdcaae35eeb6edd3996d556185efa2fc3 | no | 55 |
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| **Information:** | | | | | |
| 26 | Non Patent Literature | A78--Virtualization_Works___VMware_vFabric_Da.pdf | 184136<br>3e8316b4d2756be80cc836464ad28fbb413dc599 | no | 3 |
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| **Information:** | | | | | |
| 27 | Non Patent Literature | A79--VMWARE___Create_a_Workload_Cluster_Templ.pdf | 434701<br>b13beaf98761bf342d0126216616ecfd79f1f0a6 | no | 6 |
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| **Information:** | | | | | |
| 28 | Non Patent Literature | A80--VMWARE___Deploy_a_Virtual_Machine_from_a.pdf | 396575<br>f4a6f8b47bf472400bf2514beda6ed7f15412d3a | no | 6 |
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| **Information:** | | | | | |
| 29 | Non Patent Literature | A81--VMWARE___Getting_Started_with_Database_a.pdf | 252185<br>8f27f6f590a748c9b72772f3c62a4069d973ea83 | no | 8 |
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| 30 | Non Patent Literature | A82--VMWARE___Managing_Virtual_Machines_in_VM.pdf | 200995<br>dc34e518cd880442dceb1a83bb53bc37c6296431 | no | 3 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 31 | Non Patent Literature | A83--VMWARE___Virtual_Volumes_and_Replication.pdf | 180494<br>88ebefbf9d05f7bb44f0888ed414eb02255f0cf9 | no | 3 |
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| **Information:** | | | | | |
| 32 | Non Patent Literature | A84--VMWARE___What_s_New__vSphere_Virtual_Vol.pdf | 3017614<br>73ac56ad5dc94c82d5efc8e030b0408d0f6a1bb1 | no | 25 |
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| **Information:** | | | | | |
| 33 | Non Patent Literature | A85--VMWARE___What_s_New_in_vSphere_7_Core_St.pdf | 5438503<br>d7396ff88e91bc7d9794770d0f03e0033f3bbd4d | no | 27 |
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| **Information:** | | | | | |
| 34 | Non Patent Literature | A86--Wickstrom__Frank___Keeping_personal_data.pdf | 625197<br>fc3996c454afd7d1bb4d1ece251f002f4fa97482 | no | 9 |
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| | | **Total Files Size (in bytes):** | 49234899 | | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: October 9, 2021 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | Not yet assigned |
| | | | | Examiner Name | Not yet assigned |
| Sheet | 1 | of | 4 | Attorney Docket Number | 115539-0346 |

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| Examiner Initials* | Cite No.[1] | Document Number<br>Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
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| Examiner Signature | | Date Considered | |
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| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
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| | | | | **First Named Inventor** | Sagar Sontakke |
| | | | | Art Unit | Not yet assigned |
| *(use as many sheets as necessary)* | | | | Examiner Name | Not yet assigned |
| Sheet | 2 | of | 4 | Attorney Docket Number | 115539-0346 |

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| | | | | **First Named Inventor** | Sagar Sontakke |
| | | | | Art Unit | Not yet assigned |
| *(use as many sheets as necessary)* | | | | Examiner Name | Not yet assigned |
| Sheet | 3 | of | 4 | Attorney Docket Number | 115539-0346 |

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| Examiner Signature | | Date Considered | |
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| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| | | | | **Filing Date** | 2/23/2021 |
| Date Submitted: October 9, 2021 | | | | **First Named Inventor** | Sagar Sontakke |
| | | | | Art Unit | Not yet assigned |
| *(use as many sheets as necessary)* | | | | Examiner Name | Not yet assigned |
| Sheet | 4 | of | 4 | Attorney Docket Number | 115539-0346 |

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|---|---|---|---|
| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
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| Examiner Signature | | Date Considered | |
|---|---|---|---|

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| First Inventor Name: | Sagar Sontakke |
| Title: | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Application No.: | 17/182,511 |
| Filing Date: | 2/23/2021 |
| Examiner: | Not yet assigned |
| Art Unit: | Not yet assigned |
| Confirmation No.: | 3895 |

**SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Applicant submits herewith documents for the Examiner's consideration in accordance with 37 CFR §§1.56, 1.97 and 1.98.

Applicant respectfully requests that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

The submission of any document herewith is not an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicant does not waive

any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document submitted herewith.

**TIMING OF THE DISCLOSURE**

The listed documents are being submitted in compliance with 37 CFR §1.97(b), before the mailing date of the first Office Action on the merits.

Although Applicant believes that no fee is required, the Commissioner is hereby authorized to charge any additional fees which may be due to Deposit Account No. 19-0741.

Respectfully submitted,

Date October 9, 2021

By */Paul S. Hunter/*

FOLEY & LARDNER LLP
Customer Number: 147491
Telephone: (858) 847-6733
Facsimile: (858) 792-6773

Paul S. Hunter
Attorney for Applicant
Registration No. 44,787

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: February 7, 2022 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | Not Yet Assigned |
| | | | | Examiner Name | Not Yet Assigned |
| Sheet | 1 | of | 2 | Attorney Docket Number | 115539-0346 |

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| NON PATENT LITERATURE DOCUMENTS | | | |
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| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
| | B18 | Extended European Search Report re EP21192308.1 DTD 1/24/2022 | |
| | B19 | Extended European Search Report re EP21192379.2 DTD 1/26/2022 | |
| | B20 | Final Office Action on US 17/006595 DTD 10/14/2021 | |
| | B21 | GOOGLE CLOUD, "Architectures for high availability of PostgreSQL clusters on Compute Engine" Google Cloud Architecture Center, (January 21, 2021) from https://cloud.google.com/architecture/architectures-high-availability-postgresql-clusters-compute-engine (accessed 12/14/2021) | |
| | B22 | GUI, Huan et al. "Network A/B Testing: From Sampling to Estimation" Proceedings of the 24th International Conference on World Wide Web (WWW 15), pp. 399-409, May 18, 2015. DOI: 10.1145/2736277.2741081 (Year: 2015). | |
| | B23 | KOHAVI, Ron et al., "Online Controlled Experiments and A/B Testing" Encyclopedia of Machine Learning and Data Mining, Vol. 7, No. 8, pp. 922-929. January 2017. DOI: 10.1007/978-1-4899-7502-7 891-1 (Year: 2017) | |
| | B24 | Microsoft SQL, "Upgrading Always On Availability Group Replica Instances" Microsoft SQL Docs, 1/10/2018, retrieved from https://docs.microsoft.com/en-us/sql/database-engine/availability-groups/windows/upgrading-always-on-availability-group-replica-instances?view=sql-server-ver15 (retrieved 2/15/2021). | |
| | B25 | MICROSOFT, "Database Engine Instances (SQL Server)" October 2, 2020, from https://docs.microsoft.com/en-us/sql/database-engine/configure-windows/database-engine-instances-sql-server?view=sql-server-ver15 (retrieved 1/25/2022). | |
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| | B27 | TARVO, Alexander et al., "CanaryAdvisor: a statistical-based tool for canary testing (demo)" Proceedings of the 2015 International Symposium on Software Testing and Analysis (ISSTA 2015), pp. 418-422, July 13, 2015, DOI: 10.1145/2771783.2784770 (Year: 2015) | |
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| Examiner Signature | | Date Considered | |
|---|---|---|---|

| Electronic Acknowledgement Receipt | |
|---|---|
| **EFS ID:** | 44929480 |
| **Application Number:** | 17182511 |
| **International Application Number:** | |
| **Confirmation Number:** | 3895 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Customer Number:** | 147491 |
| **Filer:** | Paul S. Hunter/Feroza Ayobee |
| **Filer Authorized By:** | Paul S. Hunter |
| **Attorney Docket Number:** | 115539-0346 |
| **Receipt Date:** | 07-FEB-2022 |
| **Filing Date:** | 23-FEB-2021 |
| **Time Stamp:** | 15:01:13 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| Submitted with Payment | no |
|---|---|

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Transmittal Letter | 115539-0346_IDS_Transmittal_B_2022_02_07.pdf | 134443<br>4fd8ca1bb2ff18a148cc3c4dbefb87f2f4aac094 | no | 2 |

**Warnings:**

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| 2 | Information Disclosure Statement (IDS) Form (SB08) | 115539-0346_IDS_SB08_B_2022_02_07.pdf | 117414<br>71e30a0aca3271edf7a7453a67f88a486ae560f3 | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| This is not an USPTO supplied IDS fillable form | | | | | |
| 3 | Foreign Reference | B13--CN_104408071.pdf | 1420845<br>3fe8c09d3e96da90e5a7460fce962efc659d4ab9 | no | 25 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 4 | Foreign Reference | B14--CN_105446828.pdf | 3013320<br>bd6fdbcddee70a47c4168f08bfee32a994751917 | no | 50 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 5 | Foreign Reference | B15--CN_108664660.pdf | 1875232<br>3298e9d5d50c8195c6c0608209a0d1b4c88255f2 | no | 30 |
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| **Information:** | | | | | |
| 6 | Foreign Reference | B16--CN_113010599.pdf | 2496424<br>791f01bd5a1cae7d0d1b401635abda7603c5c52d | no | 37 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 7 | Non Patent Literature | B17--BROOKS__Aaron___19_Best_A_B_Testing_Tool.pdf | 1131050<br>23f3aabbdf873c9a1682fbbaffc5c30511f6dcfc | no | 40 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 8 | Non Patent Literature | B18--Extended_European_Search_Report_re_EP211.pdf | 393560<br>903de13e520bda32d7407b284def4206f33bc29e | no | 10 |
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| **Information:** | | | | | |

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| 9 | Non Patent Literature | B19--Extended_European_Search_Report_re_EP211.pdf | 494650<br>c50c3fc47ef2bd281cf5480da3a2af8fca8325e3 | no | 12 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 10 | Non Patent Literature | B20--Final_Office_Action_on_US_17_006595_DTD_.pdf | 397887<br>940eed16f64e298aa36209acdfa175409c81f01c | no | 12 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 11 | Non Patent Literature | B21--GOOGLE_CLOUD___Architectures_for_high_av.pdf | 1760936<br>11f4a7ebc8ffe5a53efd838f7f8f9f21f42c1af2 | no | 27 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 12 | Non Patent Literature | B22--GUI__Huan_et_al___Network_A_B_Testing__F.pdf | 1001697<br>e2295b2c8918dd5c1aea9d348cb71f9b390c12a6 | no | 11 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 13 | Non Patent Literature | B23--KOHAVI__Ron_et_al____Online_Controlled_E.pdf | 585420<br>ee306853f24590eeaeafa5968cb9b997f15614ac | no | 9 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 14 | Non Patent Literature | B24--Microsoft_SQL___Upgrading_Always_On_Avai.pdf | 879310<br>ed402e90be7bd98c3338db519e9e46011311dff6 | no | 13 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 15 | Non Patent Literature | B25--MICROSOFT___Database_Engine_Instances__S.pdf | 291668<br>3f4c069b5b57b9b9fd7c94981d86af61cc6f691d | no | 5 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |

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| 16 | Non Patent Literature | B26--NYFFENEGGER_et_al____SQL_Server_Instance.pdf | 137090<br>8998d30d649061d14e4a67e77cdeb84445<br>32f80a | no | 5 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 17 | Non Patent Literature | B27--TARVO__Alexander_et_al____CanaryAdvisor_.pdf | 135156<br>47dd704ffd28a3ebb9b21548a9da98e5d47<br>ebc5a | no | 4 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 18 | Non Patent Literature | B28--WARNER__Alex_et_al____Chapter_16___Canar.pdf | 1665852<br>3f8e24ca3891d9d2284547dd93923810b05<br>ff453 | no | 19 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | **Total Files Size (in bytes):** | 17931954 | | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**<u>New Applications Under 35 U.S.C. 111</u>**
**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**
**<u>National Stage of an International Application under 35 U.S.C. 371</u>**
**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**
**<u>New International Application Filed with the USPTO as a Receiving Office</u>**
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| First Inventor Name: | Sagar Sontakke |
| Title: | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Application No.: | 17/182,511 |
| Filing Date: | 2/23/2021 |
| Examiner: | Not yet assigned |
| Art Unit: | Not yet assigned |
| Confirmation No.: | 3895 |

**SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Applicant submits herewith documents for the Examiner's consideration in accordance with 37 CFR §§1.56, 1.97 and 1.98.

Applicant respectfully requests that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

The submission of any document herewith is not an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicant does not waive

any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document submitted herewith.

**TIMING OF THE DISCLOSURE**

The listed documents are being submitted in compliance with 37 CFR §1.97(b), before the mailing date of the first Office Action on the merits.

Although Applicant believes that no fee is required, the Commissioner is hereby authorized to charge any additional fees which may be due to Deposit Account No. 19-0741.

Respectfully submitted,

Date February 7, 2022

By */Paul S. Hunter/*

FOLEY & LARDNER LLP
Customer Number: 147491
Telephone: (858) 847-6733
Facsimile: (858) 792-6773

Paul S. Hunter
Attorney for Applicant
Registration No. 44,787

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| First Inventor Name: | Sagar Sontakke |
| Title: | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Application No.: | 17/182,511 |
| Filing Date: | 2/23/2021 |
| Examiner: | Not Yet Assigned |
| Art Unit: | Not Yet Assigned |
| Confirmation No.: | 3895 |

**SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Applicant submits herewith documents for the Examiner's consideration in accordance with 37 CFR §§1.56, 1.97 and 1.98.

Applicant respectfully requests that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

The submission of any document herewith is not an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicant does not waive

any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document submitted herewith.

**TIMING OF THE DISCLOSURE**

The listed documents are being submitted in compliance with 37 CFR §1.97(b), before the mailing date of the first Office Action on the merits.

Although Applicant believes that no fee is required, the Commissioner is hereby authorized to charge any additional fees which may be due to Deposit Account No. 19-0741.

Respectfully submitted,

Date March 9, 2022

By */Paul S. Hunter/*

FOLEY & LARDNER LLP
Customer Number: 147491
Telephone: (858) 847-6733
Facsimile: (858) 792-6773

Paul S. Hunter
Attorney for Applicant
Registration No. 44,787

| Electronic Acknowledgement Receipt | |
|---|---|
| **EFS ID:** | 45185963 |
| **Application Number:** | 17182511 |
| **International Application Number:** | |
| **Confirmation Number:** | 3895 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Customer Number:** | 147491 |
| **Filer:** | Paul S. Hunter/Feroza Ayobee |
| **Filer Authorized By:** | Paul S. Hunter |
| **Attorney Docket Number:** | 115539-0346 |
| **Receipt Date:** | 09-MAR-2022 |
| **Filing Date:** | 23-FEB-2021 |
| **Time Stamp:** | 17:00:06 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| Submitted with Payment | no |
|---|---|

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Transmittal Letter | 115539-0346_IDS_Transmittal_C_2022_03_09.pdf | 133689<br>a3a2ff8bb90fcea763d357839d344a03b482cc46 | no | 2 |
| **Warnings:** | | | | | |

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|---|---|---|---|---|---|
| **Information:** | | | | | |
| 2 | Information Disclosure Statement (IDS) Form (SB08) | 115539-0346_IDS_SB08_C_2022_03_09.pdf | 117396<br>1ba8197cb6ee762c71678020e6ea7c9a38a36e20 | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| This is not an USPTO supplied IDS fillable form | | | | | |
| 3 | Non Patent Literature | C32--Asanka__Dinesh___Point_in_Time_Recovery_.pdf | 291670<br>9757946566f565aa372fb869b658fe9e743185c0 | no | 7 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 4 | Non Patent Literature | C33--Matijaca__Ante___Dashboard__Dribble__pub.pdf | 372137<br>9f850a01676d70237e1637d73019255b1310ac31 | no | 6 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 5 | Non Patent Literature | C34--Mehta__Siddharth___Analytics_with_Bower_.pdf | 1049077<br>67c3e7c14f058bb6ef98d86cd89139752d6a4371 | no | 9 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 6 | Non Patent Literature | C35--Or__Andrew___Understanding_your_Apache_S.pdf | 430884<br>c8a99fb7c4e5a649b2495035836652 42d321008a | no | 10 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 7 | Non Patent Literature | C36--WebDeveloper_Juice___7_Beatiful_Web_Base.pdf | 420436<br>c656750097fe77ab5280fc2b024a42627b605b77 | no | 4 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | **Total Files Size (in bytes):** | 2815289 | | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: March 9, 2022 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | Not Yet Assigned |
| | | | | Examiner Name | Not Yet Assigned |
| Sheet | 1 | of | 2 | Attorney Docket Number | 115539-0346 |

**U.S. PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Document Number Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | C1 | 5,594,859 | 01-14-1997 | PALMER ET AL. | |
| | C2 | D 508,248 | 08-09-2005 | ORDING, BAS | |
| | C3 | D 521,521 | 05-23-2006 | JEWITT ET AL. | |
| | C4 | D 625,315 | 10-12-2010 | JEWITT ET AL. | |
| | C5 | D 656,948 | 04-03-2012 | KUNDSEN ET AL. | |
| | C6 | D 684,160 | 06-11-2013 | TRUELOVE ET AL. | |
| | C7 | D 684,161 | 06-11-2013 | TRUELOVE ET AL. | |
| | C8 | D 733,745 | 07-07-2015 | HUANG, SONG | |
| | C9 | D 749,117 | 02-09-2016 | HUANG, SONG | |
| | C10 | D 761,288 | 07-12-2016 | CIANFLONE ET AL. | |
| | C11 | D 771,102 | 11-08-2016 | PROTZMAN ET AL. | |
| | C12 | D 777,747 | 01-31-2017 | DERBY ET AL. | |
| | C13 | D 778,296 | 02-07-2017 | BELKIN ET AL. | |
| | C14 | D 781,887 | 03-21-2017 | DZIUBA ET AL. | |
| | C15 | D 794,666 | 08-15-2017 | HAVALDAR ET AL. | |
| | C16 | D 794,667 | 08-15-2017 | HAVALDAR ET AL. | |
| | C17 | D 797,116 | 09-12-2017 | CHAPMAN ET AL. | |
| | C18 | D 802,608 | 11-14-2017 | HICKS ET AL. | |
| | C19 | D 809,530-S | 02-06-2018 | MATHESON ET AL. | |
| | C20 | D 815,652 | 04-17-2018 | PROTZMAN ET AL. | |
| | C21 | D 817,976 | 05-15-2018 | SHILWANT ET AL. | |
| | C22 | D 843,388 | 03-19-2019 | PROTZMAN ET AL. | |
| | C23 | D 911,356 | 02-23-2021 | VARGHESE ET AL. | |
| | C24 | D 926,200 | 07-27-2021 | MURPHY ET AL. | |
| | C25 | D 927,507 | 08-10-2021 | NORMAN, CHRISTOPHER | |
| | C26 | 2014/0282256 | 09-18-2014 | FISH ET AL. | |
| | C27 | 2015/0347987-A1 | 12-03-2015 | ALI, ZAINUL ABEDIN | |
| | C28 | 2018/0253676 | 09-06-2018 | SHETH ET AL. | |
| | C29 | 2019/0018738 | 01-17-2019 | CHEN, HUI-WEN | |

| Examiner Signature | | Date Considered | |
|---|---|---|---|

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: March 9, 2022 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | Not Yet Assigned |
| | | | | Examiner Name | Not Yet Assigned |
| Sheet | 2 | of | 2 | Attorney Docket Number | 115539-0346 |

**U.S. PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Document Number<br>Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | C30 | 2019/0391880 | 12-26-2019 | WANG ET AL. | |
| | C31 | 2020/0110675 | 04-09-2020 | WANG ET AL. | |

**UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS**

| Examiner Initials* | Cite No.[1] | U.S. Patent Application Document<br>Serial Number-Kind Code[2] (*if known*) | Filing Date of Cited Document MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
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**FOREIGN PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Foreign Patent Document<br>Country Code[3]-Number[4]-Kind Code[5] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Documents | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
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**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
|---|---|---|---|
| | C32 | Asanka, Dinesh, "Point in Time Recovery with SQL Server" SQL Shack, published December 19, 2016, retrieved 2/11/2022 from <https://www.sqlshack.com/point-in-time-recovery-with-sql-server/> (Year: 2016) | |
| | C33 | Matijaca, Ante, "Dashboard" Dribble, published December 21, 2015, retrieved 2/11/2022 from <https://dribbble.com/shots/2417233-Dashboard> (Year: 2015) | |
| | C34 | Mehta, Siddharth, "Analytics with Bower BI Desktop Dynamic Line References" MSSQL Tips, published October 2, 2017, retrieved 2/11/2022 from <https://www.mssqltips.com/sqlservertip/5084/analytics-with-power-bi-desktop-dynamic-line-references/? (Year: 2017) | |
| | C35 | Or, Andrew, "Understanding your Apache Spark Application Through Visualization" Data Bricks, published June 22, 2015, retrieved 2/11/2022 from <https://databricks.com/blog/2015/06/22/understanding-your-spark-application-through-visualization.html> (Year: 2015) | |
| | C36 | WebDeveloper Juice, "7 Beatiful Web Based Timeline Using Javascript and CSS," WebDeveloper Juice, published September 28, 2011, retrieved 2/11/2022 from <https://www.webdeveloperjuice.com/2011/09/28/7-beautiful-web-based-timeline-using-javascript-and-css/> (Year: 2011) | |
| | | | |

| Examiner Signature | | Date Considered | |
|---|---|---|---|

4866-6338-6642.1

| Electronic Acknowledgement Receipt | |
|---|---|
| **EFS ID:** | 45320369 |
| **Application Number:** | 17182511 |
| **International Application Number:** | |
| **Confirmation Number:** | 3895 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Customer Number:** | 147491 |
| **Filer:** | Paul S. Hunter/Feroza Ayobee |
| **Filer Authorized By:** | Paul S. Hunter |
| **Attorney Docket Number:** | 115539-0346 |
| **Receipt Date:** | 25-MAR-2022 |
| **Filing Date:** | 23-FEB-2021 |
| **Time Stamp:** | 15:23:35 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| Submitted with Payment | no |
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## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Transmittal Letter | 115539-0346_IDS_Transmittal_D_2022_03_25.pdf | 134410<br>6da67aecada57df0acc30535b53a23700a933e71 | no | 2 |
| **Warnings:** | | | | | |

| Information: | | | | | |
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| 2 | Information Disclosure Statement (IDS) Form (SB08) | 115539-0346_IDS_SB08_D_2022_03_25.pdf | 107314<br>f0b7ac2f7635306d0492e77e636bb3f7acf4f994 | no | 1 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| This is not an USPTO supplied IDS fillable form | | | | | |
| | | | **Total Files Size (in bytes):** | 241724 | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**
**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**
**National Stage of an International Application under 35 U.S.C. 371**
**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**
**New International Application Filed with the USPTO as a Receiving Office**
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

| Substitute for form 1449/PTO | | | | ***Complete if Known*** | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: March 25, 2022 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | Not Yet Assigned |
| | | | | Examiner Name | Not Yet Assigned |
| Sheet | 1 | of | 1 | Attorney Docket Number | 115539-0346 |

**U.S. PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Document Number<br>Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | D1 | 8,291,409 | 10-16-2012 | WINNER ET AL. | |
| | D2 | 9,753,713 | 09-05-2017 | MANI ET AL. | |
| | D3 | 9,960,963 | 05-01-2018 | SELVARAJ ET AL. | |
| | D4 | 11,126,426 | 09-21-2021 | ZHU ET AL. | |
| | D5 | 2017/0115978-A1 | 04-27-2017 | MODI ET AL. | |
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**UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS**

| Examiner Initials* | Cite No.[1] | U.S. Patent Application Document<br>Serial Number-Kind Code[2] (*if known*) | Filing Date of Cited Document MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
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**FOREIGN PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Foreign Patent Document<br>Country Code[3]-Number[4]-Kind Code[5] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Documents | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
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**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
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| Examiner Signature | | Date Considered | |
|---|---|---|---|

4862-0867-6888.1

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| First Inventor Name: | Sagar Sontakke |
| Title: | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Application No.: | 17/182,511 |
| Filing Date: | 2/23/2021 |
| Examiner: | Not Yet Assigned |
| Art Unit: | Not Yet Assigned |
| Confirmation No.: | 3895 |

**SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Applicant submits herewith documents for the Examiner's consideration in accordance with 37 CFR §§1.56, 1.97 and 1.98.

Applicant respectfully requests that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

The submission of any document herewith is not an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicant does not waive

any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document submitted herewith.

**TIMING OF THE DISCLOSURE**

The listed documents are being submitted in compliance with 37 CFR §1.97(b), before the mailing date of the first Office Action on the merits.

Although Applicant believes that no fee is required, the Commissioner is hereby authorized to charge any additional fees which may be due to Deposit Account No. 19-0741.

Respectfully submitted,

Date March 25, 2022

By */Paul S. Hunter/*

FOLEY & LARDNER LLP
Customer Number: 147491
Telephone: (858) 847-6733
Facsimile: (858) 792-6773

Paul S. Hunter
Attorney for Applicant
Registration No. 44,787

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|---|---|---|---|
| 17/182,511 | 02/23/2021 | Sagar Sontakke | 115539-0346 |

**CONFIRMATION NO. 3895**

147491
FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109

**PUBLICATION NOTICE**

*OC00000133321690*

**Title:**SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM

**Publication No.**US-2022-0121534-A1
**Publication Date:**04/21/2022

## NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently https://portal.uspto.gov/pair/PublicPair. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

| Electronic Acknowledgement Receipt | |
|---|---|
| **EFS ID:** | 46128251 |
| **Application Number:** | 17182511 |
| **International Application Number:** | |
| **Confirmation Number:** | 3895 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Customer Number:** | 147491 |
| **Filer:** | Paul S. Hunter/Emily Rogers |
| **Filer Authorized By:** | Paul S. Hunter |
| **Attorney Docket Number:** | 115539-0346 |
| **Receipt Date:** | 06-JUL-2022 |
| **Filing Date:** | 23-FEB-2021 |
| **Time Stamp:** | 16:50:25 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| Submitted with Payment | no |
|---|---|

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Transmittal Letter | 115539-0346_IDS_Tranmittal.pdf | 134032<br>709fa75dc598193dcdc2d56cf48db462d8d96228 | no | 2 |
| **Warnings:** | | | | | |

| Information: | | | | | |
|---|---|---|---|---|---|
| 2 | Information Disclosure Statement (IDS) Form (SB08) | 115539-0346_G_SB08.pdf | 107039<br>54b76b94f28fbe726c8b184d3159f591d5c1138f | no | 1 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| This is not an USPTO supplied IDS fillable form | | | | | |
| | | | **Total Files Size (in bytes):** | 241071 | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

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**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| First Inventor Name: | Sagar Sontakke |
| Title: | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Application No.: | 17/182,511 |
| Filing Date: | 2/23/2021 |
| Examiner: | Not Yet Assigned |
| Art Unit: | Not Yet Assigned |
| Confirmation No.: | 3895 |

**INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Applicant submits herewith documents for the Examiner's consideration in accordance with 37 CFR §§1.56, 1.97 and 1.98.

Applicant respectfully requests that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

The submission of any document herewith is not an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicant does not waive

any rights to take any action, which would be appropriate to antedate or otherwise remove as a competent reference any document submitted herewith.

**TIMING OF THE DISCLOSURE**

The listed documents are being submitted in compliance with 37 CFR §1.97(b), before the mailing date of the first Office Action on the merits.

Although Applicant believes that no fee is required, the Commissioner is hereby authorized to charge any additional fees which may be due to Deposit Account No. 19-0741.

Respectfully submitted,

Date July 6, 2022 By */Paul S. Hunter/*

FOLEY & LARDNER LLP
Customer Number: 147491
Telephone: (858) 847-6733
Facsimile: (858) 792-6773

Paul S. Hunter
Attorney for Applicant
Registration No. 44,787

| Substitute for form 1449/PTO | | | | ***Complete if Known*** | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: July 6, 2022 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | 2113 |
| | | | | Examiner Name | Michael Xu |
| Sheet | 1 | of | 1 | Attorney Docket Number | 115539-0346 |

**U.S. PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Document Number<br>Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | G1 | D 947,216-S | 03-29-2022 | LEININGER, JAY ANTHONY | |
| | G2 | D 947,239-S | 03-29-2022 | RUBIN ET AL. | |
| | G3 | D 947,240-S | 03-29-2022 | RUBIN ET AL. | |
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**UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS**

| Examiner Initials* | Cite No.[1] | U.S. Patent Application Document<br>Serial Number-Kind Code[2] (*if known*) | Filing Date of Cited Document MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
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**FOREIGN PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Foreign Patent Document<br>Country Code[3]-Number[4]-Kind Code[5] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Documents | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
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**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
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4891-8513-6935.1

| Notice of References Cited | Application/Control No. 17/182,511 | Applicant(s)/Patent Under Reexamination Sontakke et al. | |
|---|---|---|---|
| | Examiner MICHAEL XU | Art Unit 2113 | Page 1 of 2 |

**U.S. PATENT DOCUMENTS**

| * | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Name | CPC Classification | US Classification |
|---|---|---|---|---|---|---|
| * | A | US-20170235758-A1 | 08-2017 | Gopalapura Venkatesh; Anil Kumar | G06F16/2365 | 707/625 |
| * | B | US-20200110675-A1 | 04-2020 | Wang; Zhicong | G06F11/2028 | 1/1 |
| * | C | US-10503612-B1 | 12-2019 | Wang; Zhicong | G06F11/2041 | 1/1 |
| * | D | US-20160048408-A1 | 02-2016 | Madhu; Suresh | H04L47/783 | 718/1 |
| * | E | US-20200349018-A1 | 11-2020 | Meadowcroft; Benjamin Travis | G06F11/20 | 1/1 |
| * | F | US-10725866-B1 | 07-2020 | Palaiah; Balamurali | G06F9/45558 | 1/1 |
| * | G | US-20200104377-A1 | 04-2020 | EARNESTY, JR.; James C. | G06F9/4843 | 1/1 |
| * | H | US-20200104376-A1 | 04-2020 | EARNESTY, JR.; James C. | G06F16/285 | 1/1 |
| * | I | US-20200050522-A1 | 02-2020 | COLEMAN; Cashton | G06F11/2041 | 1/1 |
| * | J | US-20190384496-A1 | 12-2019 | ABDUL RASHEED; ABDUL JABBAR | G06F3/067 | 1/1 |
| * | K | US-20190339870-A1 | 11-2019 | Meiri; David | G06F11/1464 | 1/1 |
| * | L | US-20190324865-A1 | 10-2019 | Weissman; Boris | G06F11/1461 | 1/1 |
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**FOREIGN PATENT DOCUMENTS**

| * | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Country | Name | CPC Classification |
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**NON-PATENT DOCUMENTS**

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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

| Notice of References Cited | Application/Control No. 17/182,511 | Applicant(s)/Patent Under Reexamination Sontakke et al. | |
|---|---|---|---|
| | Examiner MICHAEL XU | Art Unit 2113 | Page 2 of 2 |

**U.S. PATENT DOCUMENTS**

| * | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Name | CPC Classification | US Classification |
|---|---|---|---|---|---|---|
| * | A | US-10719407-B1 | 07-2020 | Chockalingam; Elango | G06F11/1461 | 1/1 |
| * | B | US-20190310926-A1 | 10-2019 | Hashimoto; Naoki | G06F11/1471 | 1/1 |
| * | C | US-20070234115-A1 | 10-2007 | Saika; Nobuyuki | G06F11/2028 | 714/13 |
| * | D | US-20110022882-A1 | 01-2011 | Jaehde; Astrid A. | G06F11/2035 | 714/E11.073 |
| * | E | US-20180157561-A1 | 06-2018 | Venkatesh; Anil Kumar Gopalapura | G06F8/63 | 1/1 |
| * | F | US-20170235950-A1 | 08-2017 | Gopalapura Venkatesh; Anil Kumar | H04L67/1097 | 726/24 |
| * | G | US-20140201171-A1 | 07-2014 | Vijayan; Manoj Kumar | G06F16/1748 | 707/692 |
| * | H | US-7389300-B1 | 06-2008 | Shah; Veeral | G06F11/203 | 707/999.102 |
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**FOREIGN PATENT DOCUMENTS**

| * | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Country | Name | CPC Classification |
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**NON-PATENT DOCUMENTS**

| * | | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

## PE2E SEARCH - Search History (Prior Art)

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | British Equivalents | Time Stamp |
|---|---|---|---|---|---|---|---|
| L1 | 335 | ((("NUTANIX") near3 ("INC"))).AS,AANM. | (USPAT) | OR | ON | ON | 2022/06/27 11:18 AM |
| L2 | 129 | ((("NUTANIX") near3 ("INC"))).AS,AANM. AND (backup AND (fail failure error) AND (failover "switch over" "disaster recovery")) | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/06/27 11:21 AM |
| L3 | 2 | ((("NUTANIX") near3 ("INC"))).AS,AANM. AND (backup AND (fail failure error) AND (failover "switch over" "disaster recovery" takeover )).clm. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/06/27 11:22 AM |
| L4 | 2 | ((("NUTANIX") near3 ("INC"))).AS,AANM. AND ((backup "transactional log" "incremental log") AND (fail failure error) AND (failover "switch over" "disaster recovery" takeover )).clm. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/06/27 11:22 AM |
| L5 | 17 | ((("NUTANIX") near3 ("INC"))).AS,AANM. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, | OR | ON | ON | 2022/06/27 11:22 AM |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | AND ((backup "transactional log" "incremental log") AND (fail failure error) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. | AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | | | | |
| L6 | 17 | ((("NUTANIX") near3 ("INC"))).AS,AANM. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/06/27 11:23 AM |
| L7 | 17 | ((("NUTANIX") near3 ("INC"))).AS,AANM. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/06/27 11:23 AM |
| L8 | 39 | ((("SONTAKKE") near3 ("Sagar")) OR (("KHANUJA") near3 ("Kamaldeep")) OR (("BANTHIA") near3 ("Bakul"))).INV. | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT) | OR | ON | ON | 2022/06/27 11:33 AM |
| L9 | 1 | ((("SONTAKKE") near3 ("Sagar")) OR (("KHANUJA") near3 ("Kamaldeep")) OR (("BANTHIA") near3 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT) | OR | ON | ON | 2022/06/27 11:33 AM |

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|---|---|---|---|---|---|---|---|
| | | ("Bakul"))).INV. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. | | | | | |
| L10 | 218 | ("0000002" OR "11126426" OR "20170115978" OR "9753713" OR "9960963" OR "D000001" OR "0000001" OR "20140282256" OR "20150347987" OR "20180253676" OR "20190018738" OR "20200110675" OR "D508248" OR "D521521" OR "D625315" OR "D656948" OR "D684160" OR "D684161" OR "D733745" OR "D749117" OR "D761288" OR "D771102" OR "D777747" OR "D778296" OR "D781887" OR "D794666" OR "D794667" OR "D797116" OR "D802608" OR "D809530" OR "D815652" OR "D817976" OR "D843388" OR "D911356" OR "D926200" OR "D927507" OR "10725866" OR "10817157" OR "11010336" OR "20120123999" OR "20150227435" OR "20190155699" OR "20200034178" OR "20200099692" OR "20200210378" OR "20200210379" OR "20200250046" OR "10013313" OR | (US-PGPUB; USPAT) | OR | ON | ON | 2022/06/27 09:35 PM |

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|---|---|---|---|---|---|---|---|
| | | "10033833" OR<br>"10055300" OR<br>"10108685" OR<br>"10212195" OR<br>"10282201" OR<br>"10339110" OR<br>"10372329" OR<br>"10379963" OR<br>"10445298" OR<br>"10476955" OR<br>"10503612" OR<br>"10613938" OR<br>"10637914" OR<br>"10757036" OR<br>"10776329" OR<br>"10812582" OR<br>"10959098" OR<br>"10999165" OR<br>"11010487" OR<br>"20020104376" OR<br>"20020174098" OR<br>"20150052108" OR<br>"20150143064" OR<br>"20150227602" OR<br>"20150331923" OR<br>"20160321339" OR<br>"20170351716" OR<br>"20180181469" OR<br>"20190102257" OR<br>"20190158605" OR<br>"20190384496" OR<br>"20200104375" OR<br>"20200104376" OR<br>"20200104377" OR<br>"20200285608" OR<br>"20200349018" OR<br>"20200379793" OR<br>"20210117293" OR<br>"8468174" OR<br>"8677085" OR<br>"8849850" OR<br>"9372758" OR<br>"9495435" OR<br>"9600193" OR<br>"9639429" OR<br>"9760396" OR<br>"9778992" OR<br>"9858155" OR<br>"9881168" OR<br>"20070185852" OR<br>"20070185937" OR<br>"20090037914" OR<br>"20090132543" OR<br>"20170060699" OR<br>"20180121494" OR<br>"20190102411" OR<br>"20200201526" OR<br>"10185627" OR | | | | | |

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|---|---|---|---|---|---|---|---|
| | | "10210048" OR<br>"10248657" OR<br>"10346431" OR<br>"10447806" OR<br>"10509798" OR<br>"10599423" OR<br>"10700991" OR<br>"10728255" OR<br>"10785029" OR<br>"20010014867" OR<br>"20020073089" OR<br>"20030147309" OR<br>"20050149757" OR<br>"20070100793" OR<br>"20080126945" OR<br>"20080256311" OR<br>"20090022285" OR<br>"20090028082" OR<br>"20090125858" OR<br>"20110004586" OR<br>"20110071981" OR<br>"20110093435" OR<br>"20120011378" OR<br>"20120271797" OR<br>"20130117441" OR<br>"20130290180" OR<br>"20140189685" OR<br>"20140229698" OR<br>"20150019495" OR<br>"20150121453" OR<br>"20150142610" OR<br>"20150195347" OR<br>"20160041997" OR<br>"20160048408" OR<br>"20160077923" OR<br>"20160078104" OR<br>"20160125059" OR<br>"20160162845" OR<br>"20160197835" OR<br>"20160267105" OR<br>"20160292358" OR<br>"20160335369" OR<br>"20160380809" OR<br>"20170220777" OR<br>"20170264684" OR<br>"20170286518" OR<br>"20170351584" OR<br>"20180025007" OR<br>"20180285201" OR<br>"20180307728" OR<br>"20190065322" OR<br>"20190075031" OR<br>"20190125828" OR<br>"20190129799" OR<br>"20190138631" OR<br>"20190155936" OR<br>"20190230156" OR<br>"20190235904" OR | | | | | |

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|---|---|---|---|---|---|---|---|
| | | "20190324865" OR<br>"20190339870" OR<br>"20190340091" OR<br>"20200034245" OR<br>"20200050522" OR<br>"20200106737" OR<br>"20200137157" OR<br>"7225189" OR<br>"7725671" OR<br>"7814057" OR<br>"7840533" OR<br>"7953764" OR<br>"8117165" OR<br>"8150808" OR<br>"8364648" OR<br>"8429630" OR<br>"8447728" OR<br>"8549518" OR<br>"8601473" OR<br>"8612396" OR<br>"8635421" OR<br>"8762335" OR<br>"8832028" OR<br>"8850130" OR<br>"8863124" OR<br>"8914567" OR<br>"8972347" OR<br>"9009106" OR<br>"9069708" OR<br>"9116737" OR<br>"9244717" OR<br>"9256383" OR<br>"9336060" OR<br>"9336132" OR<br>"9389962" OR<br>"9413810" OR<br>"9436556" OR<br>"9507579" OR<br>"9529551" OR<br>"9652265" OR<br>"9740723" OR<br>"9747287" OR<br>"9772866" OR<br>"D753135" OR<br>"D753140" OR<br>"D763890" OR<br>"D779514" OR<br>"D803231" OR<br>"D807902" OR<br>"D838288" OR<br>"D839913" OR<br>"D862512" OR<br>"D875108" OR<br>"D877753").pn. | | | | | |
| L11 | 19 | ("0000002" OR<br>"11126426" OR<br>"20170115978" OR<br>"9753713" OR | (US-PGPUB; USPAT) | OR | ON | ON | 2022/06/27<br>09:38 PM |

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|---|---|---|---|---|---|---|---|
| | | "9960963" OR<br>"D000001" OR<br>"0000001" OR<br>"20140282256" OR<br>"20150347987" OR<br>"20180253676" OR<br>"20190018738" OR<br>"20200110675" OR<br>"D508248" OR<br>"D521521" OR<br>"D625315" OR<br>"D656948" OR<br>"D684160" OR<br>"D684161" OR<br>"D733745" OR<br>"D749117" OR<br>"D761288" OR<br>"D771102" OR<br>"D777747" OR<br>"D778296" OR<br>"D781887" OR<br>"D794666" OR<br>"D794667" OR<br>"D797116" OR<br>"D802608" OR<br>"D809530" OR<br>"D815652" OR<br>"D817976" OR<br>"D843388" OR<br>"D911356" OR<br>"D926200" OR<br>"D927507" OR<br>"10725866" OR<br>"10817157" OR<br>"11010336" OR<br>"20120123999" OR<br>"20150227435" OR<br>"20190155699" OR<br>"20200034178" OR<br>"20200099692" OR<br>"20200210378" OR<br>"20200210379" OR<br>"20200250046" OR<br>"10013313" OR<br>"10033833" OR<br>"10055300" OR<br>"10108685" OR<br>"10212195" OR<br>"10282201" OR<br>"10339110" OR<br>"10372329" OR<br>"10379963" OR<br>"10445298" OR<br>"10476955" OR<br>"10503612" OR<br>"10613938" OR<br>"10637914" OR<br>"10757036" OR | | | | | |

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|---|---|---|---|---|---|---|---|
| | | "10776329" OR<br>"10812582" OR<br>"10959098" OR<br>"10999165" OR<br>"11010487" OR<br>"20020104376" OR<br>"20020174098" OR<br>"20150052108" OR<br>"20150143064" OR<br>"20150227602" OR<br>"20150331923" OR<br>"20160321339" OR<br>"20170351716" OR<br>"20180181469" OR<br>"20190102257" OR<br>"20190158605" OR<br>"20190384496" OR<br>"20200104375" OR<br>"20200104376" OR<br>"20200104377" OR<br>"20200285608" OR<br>"20200349018" OR<br>"20200379793" OR<br>"20210117293" OR<br>"8468174" OR<br>"8677085" OR<br>"8849850" OR<br>"9372758" OR<br>"9495435" OR<br>"9600193" OR<br>"9639429" OR<br>"9760396" OR<br>"9778992" OR<br>"9858155" OR<br>"9881168" OR<br>"20070185852" OR<br>"20070185937" OR<br>"20090037914" OR<br>"20090132543" OR<br>"20170060699" OR<br>"20180121494" OR<br>"20190102411" OR<br>"20200201526" OR<br>"10185627" OR<br>"10210048" OR<br>"10248657" OR<br>"10346431" OR<br>"10447806" OR<br>"10509798" OR<br>"10599423" OR<br>"10700991" OR<br>"10728255" OR<br>"10785029" OR<br>"20010014867" OR<br>"20020073089" OR<br>"20030147309" OR<br>"20050149757" OR<br>"20070100793" OR | | | | | |

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|---|---|---|---|---|---|---|---|
| | | "20080126945" OR<br>"20080256311" OR<br>"20090022285" OR<br>"20090028082" OR<br>"20090125858" OR<br>"20110004586" OR<br>"20110071981" OR<br>"20110093435" OR<br>"20120011378" OR<br>"20120271797" OR<br>"20130117441" OR<br>"20130290180" OR<br>"20140189685" OR<br>"20140229698" OR<br>"20150019495" OR<br>"20150121453" OR<br>"20150142610" OR<br>"20150195347" OR<br>"20160041997" OR<br>"20160048408" OR<br>"20160077923" OR<br>"20160078104" OR<br>"20160125059" OR<br>"20160162845" OR<br>"20160197835" OR<br>"20160267105" OR<br>"20160292358" OR<br>"20160335369" OR<br>"20160380809" OR<br>"20170220777" OR<br>"20170264684" OR<br>"20170286518" OR<br>"20170351584" OR<br>"20180025007" OR<br>"20180285201" OR<br>"20180307728" OR<br>"20190065322" OR<br>"20190075031" OR<br>"20190125828" OR<br>"20190129799" OR<br>"20190138631" OR<br>"20190155936" OR<br>"20190230156" OR<br>"20190235904" OR<br>"20190324865" OR<br>"20190339870" OR<br>"20190340091" OR<br>"20200034245" OR<br>"20200050522" OR<br>"20200106737" OR<br>"20200137157" OR<br>"7225189" OR<br>"7725671" OR<br>"7814057" OR<br>"7840533" OR<br>"7953764" OR<br>"8117165" OR<br>"8150808" OR | | | | | |

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|---|---|---|---|---|---|---|---|
| | | "8364648" OR "8429630" OR "8447728" OR "8549518" OR "8601473" OR "8612396" OR "8635421" OR "8762335" OR "8832028" OR "8850130" OR "8863124" OR "8914567" OR "8972347" OR "9009106" OR "9069708" OR "9116737" OR "9244717" OR "9256383" OR "9336060" OR "9336132" OR "9389962" OR "9413810" OR "9436556" OR "9507579" OR "9529551" OR "9652265" OR "9740723" OR "9747287" OR "9772866" OR "D753135" OR "D753140" OR "D763890" OR "D779514" OR "D803231" OR "D807902" OR "D838288" OR "D839913" OR "D862512" OR "D875108" OR "D877753").pn. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. | | | | | |
| L12 | 63275 | (G06F11/1464 or G06F11/1451 or G06F11/1461 or G06F11/1471 or G06F11/2025 or G06F2201/84 or G06F2201/80).cpc. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, | OR | ON | ON | 2022/07/07 01:56 PM |

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|---|---|---|---|---|---|---|---|
| | | | MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | | | | |
| L13 | 1304 | (G06F11/1464 OR G06F11/1451 OR G06F11/1461 OR G06F11/1471 OR G06F11/2025 OR G06F2201/84 OR G06F2201/80).cpc. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. AND (((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT) | OR | ON | ON | 2022/07/07 01:58 PM |
| L14 | 1434 | (G06F11/1464 OR G06F11/1451 OR G06F11/1461 OR G06F11/1471 OR G06F11/2025 OR G06F2201/84 OR G06F2201/80).cpc. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. AND (((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/07/07 01:58 PM |
| L15 | 46 | (G06F11/1464 OR G06F11/1451 OR G06F11/1461 OR G06F11/1471 OR G06F11/2025 OR G06F2201/84 OR G06F2201/80).cpc. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable | (US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, | OR | ON | ON | 2022/07/08 03:06 PM |

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|---|---|---|---|---|---|---|---|
| | | unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. AND ("active node") AND (((@ad \| @pd) <="20201020") | TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB) | | | | |
| L16 | 9 | (G06F11/1464 OR G06F11/1451 OR G06F11/1461 OR G06F11/1471 OR G06F11/2025 OR G06F2201/84 OR G06F2201/80).cpc. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. AND ("active node") AND ("third".clm.) AND (((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/07/10 12:39 AM |
| L17 | 660446 | (failover near20 random) (G06F11$).cpc. AND (((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/07/14 09:15 PM |
| L18 | 73 | (failover near20 random) AND (G06F11$).cpc. AND (((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, | OR | ON | ON | 2022/07/14 09:15 PM |

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|---|---|---|---|---|---|---|---|
| | | | TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | | | | |
| L19 | 116 | (failover near20 (random round-robin)) AND (G06F11$).cpc. AND ((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/07/14 09:17 PM |

## PE2E SEARCH - Search History (Interference)

| |
|---|
| There are no Interference searches to show. |

| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 17/182,511 | Sontakke et al. |
| | Examiner | Art Unit |
| | MICHAEL XU | 2113 |

| CPC - Searched* | | |
|---|---|---|
| Symbol | Date | Examiner |
| G06F11/1464 OR G06F11/1451 OR G06F11/1461 OR G06F11/1471 OR G06F11/2025 OR G06F2201/84 OR G06F2201/80 | 07/14/2022 | MX |

| CPC Combination Sets - Searched* | | |
|---|---|---|
| Symbol | Date | Examiner |
| | | |

| US Classification - Searched* | | | |
|---|---|---|---|
| Class | Subclass | Date | Examiner |
| | | | |

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

| Search Notes | | |
|---|---|---|
| Search Notes | Date | Examiner |
| Text search of USPAT, US-PGPUB, EPO, DERWENT, including inventor and assignee search. See search history printout. | | MX |
| NPL search through Google and Google Scholar. See search history printout. | | MX |

| Interference Search | | | |
|---|---|---|---|
| US Class/CPC Symbol | US Subclass/CPC Group | Date | Examiner |
| | | | |

| /M.X./<br>Examiner, Art Unit 2113 | |
|---|---|

PTO/SB/08 (modified)

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | Not yet assigned |
| Date Submitted: February 23, 2021 | | | | **Filing Date** | Herewith |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | Not yet assigned |
| | | | | Examiner Name | Not yet assigned |
| Sheet | 1 | of | 8 | Attorney Docket Number | 115539-0346 |

**U.S. PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Document Number Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
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| | | | | Art Unit | Not yet assigned |
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| Examiner Signature | /MICHAEL XU/ | Date Considered | 07/07/2022 |
|---|---|---|---|

4841-2837-8077.1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.X./

PTO/SB/08 (modified)

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | Not yet assigned |
| | | | | **Filing Date** | Herewith |
| Date Submitted: February 23, 2021 | | | | **First Named Inventor** | Sagar Sontakke |
| | | | | Art Unit | Not yet assigned |
| *(use as many sheets as necessary)* | | | | Examiner Name | Not yet assigned |
| Sheet | 7 | of | 8 | Attorney Docket Number | 115539-0346 |

| NON PATENT LITERATURE DOCUMENTS | | | |
|---|---|---|---|
| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
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| Examiner Signature | /MICHAEL XU/ | Date Considered | 07/07/2022 |
|---|---|---|---|

4841-2837-8077.1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.X./

PTO/SB/08 (modified)

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | Not yet assigned |
| | | | | **Filing Date** | Herewith |
| Date Submitted: February 23, 2021 | | | | **First Named Inventor** | Sagar Sontakke |
| | | | | Art Unit | Not yet assigned |
| *(use as many sheets as necessary)* | | | | Examiner Name | Not yet assigned |
| Sheet | 8 | of | 8 | Attorney Docket Number | 115539-0346 |

**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
|---|---|---|---|
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| Examiner Signature | /MICHAEL XU/ | Date Considered | 07/07/2022 |
|---|---|---|---|

4841-2837-8077.1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.X./

PTO/SB/08 (modified)

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: July 6, 2022 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | 2113 |
| | | | | Examiner Name | Michael Xu |
| Sheet | 1 | of | 1 | Attorney Docket Number | 115539-0346 |

**U.S. PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Document Number Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | G1 | D 947,216-S | 03-29-2022 | LEININGER, JAY ANTHONY | |
| | G2 | D 947,239-S | 03-29-2022 | RUBIN ET AL. | |
| | G3 | D 947,240-S | 03-29-2022 | RUBIN ET AL. | |
| | | | | | |

**UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS**

| Examiner Initials* | Cite No.[1] | U.S. Patent Application Document Serial Number-Kind Code[2] (*if known*) | Filing Date of Cited Document MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
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**FOREIGN PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Documents | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
|---|---|---|---|---|---|---|
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**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
|---|---|---|---|
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| Examiner Signature | /MICHAEL XU/ | Date Considered | 07/07/2022 |
|---|---|---|---|

4891-8513-6935.1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.X./

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 17/182,511 | Sontakke et al. |
| | Examiner | Art Unit |
| | MICHAEL XU | 2113 |

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|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

**CLAIMS**

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 07/14/2022 | | | | | | | | |
| | 1 | ✓ | | | | | | | | |
| | 2 | ✓ | | | | | | | | |
| | 3 | ✓ | | | | | | | | |
| | 4 | ✓ | | | | | | | | |
| | 5 | ✓ | | | | | | | | |
| | 6 | ✓ | | | | | | | | |
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| | 30 | ✓ | | | | | | | | |

# Web Search History

| date, time | web site | search string |
|---|---|---|
| 7/13/2022 4:00:31 PM | Google | prefer failover sites that are further away |
| 7/13/2022 4:00:48 PM | Google Scholar | prefer failover sites that are further away |
| 7/13/2022 4:00:48 PM | Google Patents | Keyword Group 1<br>[prefer failover sites that are further away] |
| 7/13/2022 4:19:59 PM | Google Scholar | prefer remote failover sites |
| 7/14/2022 3:41:33 PM | Google Patents | Keyword Group 1<br>[prefer remote failover sites] |
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| 7/14/2022 9:14:23 PM | Google Scholar | random failover site |
| 7/14/2022 9:14:25 PM | Google Patents | Keyword Group 1<br>[random failover site] |

## Bibliographic Data

Application No: 17/182,511

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☐ No ☐ Met After Allowance

Verified and Acknowledged: /MICHAEL XU/ (Examiner's Signature) ____ (Initials)

Title: SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM

| FILING or 371(c) DATE | CLASS | GROUP ART UNIT | ATTORNEY DOCKET NO. |
|---|---|---|---|
| 02/23/2021 | 714 | 2113 | 115539-0346 |
| RULE | | | |

**APPLICANTS**

Nutanix, Inc., San Jose, CA,

**INVENTORS**

Sagar Sontakke, Bangalore, INDIA

Kamaldeep Khanuja, Dublin, CA, UNITED STATES

Bakul Banthia, San Ramon, CA, UNITED STATES

**CONTINUING DATA**

This application has PRO of 63094245 10/20/2020

**FOREIGN APPLICATIONS**

**IF REQUIRED, FOREIGN LICENSE GRANTED****

03/22/2021

**STATE OR COUNTRY**

INDIA

**ADDRESS**

FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109
UNITED STATES

**FILING FEE RECEIVED**

$2,820

PTO/SB/08 (modified)

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: March 25, 2022 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | Not Yet Assigned |
| | | | | Examiner Name | Not Yet Assigned |
| Sheet | 1 | of | 1 | Attorney Docket Number | 115539-0346 |

**U.S. PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Document Number Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | D1 | 8,291,409 | 10-16-2012 | WINNER ET AL. | |
| | D2 | 9,753,713 | 09-05-2017 | MANI ET AL. | |
| | D3 | 9,960,963 | 05-01-2018 | SELVARAJ ET AL. | |
| | D4 | 11,126,426 | 09-21-2021 | ZHU ET AL. | |
| | D5 | 2017/0115978-A1 | 04-27-2017 | MODI ET AL. | |
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**UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS**

| Examiner Initials* | Cite No.[1] | U.S. Patent Application Document Serial Number-Kind Code[2] (*if known*) | Filing Date of Cited Document MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
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**FOREIGN PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Documents | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
|---|---|---|---|---|---|---|
| | | | | | | |
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**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
|---|---|---|---|
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| Examiner Signature | /MICHAEL XU/ | Date Considered | 07/07/2022 |
|---|---|---|---|

4862-0867-6888.1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.X./

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 17/182,511 | 02/23/2021 | Sagar Sontakke | 115539-0346 | 3895 |

147491 7590 07/21/2022

FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109

| EXAMINER |
|---|
| XU, MICHAEL |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2113 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 07/21/2022 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipdocketing@foley.com

| *Office Action Summary* | **Application No.** 17/182,511 | **Applicant(s)** Sontakke et al. | |
|---|---|---|---|
| | **Examiner** MICHAEL XU | **Art Unit** 2113 | **AIA (FITF) Status** Yes |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☑ Responsive to communication(s) filed on 07/06/2022.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims***

5) ☑ Claim(s) 1-30 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-30 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

**Application Papers**

10)☐ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 04/02/2021,02/23/2021 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

**Certified copies:**

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☑ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date See Continuation Sheet.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

Continuation of Attachment(s) 2) Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date: 07/06/2022,03/25/2022,03/09/2022,02/07/2022,10/09/2021,04/20/2021,02/23/2021

***Notice of Pre-AIA or AIA Status***

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

***Claim Rejections - 35 USC § 102***

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention.

Claim(s) 1,9,11,12,21,22 is/are rejected under 35 U.S.C. 102(a)(1) as being anticipated by US 20190310926 A1 (Hashimoto).

Regarding claim 1, Hashimoto teaches,

**A system comprising: a plurality of nodes distributed between a first cluster and a second cluster, each of the plurality of nodes storing a copy of a source database**(fig 1:2A-1,2B-1,2C-1; par 32 “In the example of FIG. 1, it is assumed that one node 2A-1 operates as a primary server, three nodes 2B-1 to 2B-3 operate as a synchronous standby server, and three nodes 2C-l to 2C-3 operate as an asynchronous standby server.”)**; and**

**a processor executing computer-readable instructions stored on a memory to**(par 131 "The processor 10a deploys and executes the program 10g stored in the storage unit 10c on the memory lOb to implement the functions as the primary server 2A, the synchronous server 2B, the asynchronous server 2C, or the AP server 3 illustrated in FIG. 1."):

**designate a first node of the plurality of nodes as a primary node**(par 34 "The primary server 2A is an example of an active node managing the master data of a DB. The primary server 2A performs a process of updating the DB of the primary server 2A according to a DB updating task.");

**designate remaining ones of the plurality of nodes as secondary nodes to take over from the primary node**(fig 5:S4; par 103 "In the meantime, when it is determined that the WAL state of its own node 2 is the latest ("Yes" in step S3), the node 2 is promoted to a new primary server 2A-2 (see, e.g., FIG. 6) (step S4; see the arrow (3) in FIG. 6).") **upon failure of the primary node**(fig 5:S1; par 98; "As illustrated in FIG. 5, the synchronous server 2B (and the asynchronous server 2C) detects that a failure accompanying server down has occurred in the primary server 2A-1 (see, e.g., FIG. 6) (step Sl; see the arrow (1) in FIG. 6).");

**designate a second node of the plurality of nodes as an initial active node**(fig 5:S4; par 103 "In the meantime, when it is determined that the WAL state of its own node 2 is the latest ("Yes" in step S3), the node 2 is promoted to a new primary server 2A-2 (see, e.g., FIG. 6) (step S4; see the arrow (3) in FIG. 6).");

**backup the source database from the initial active node**(fig 5:S6; par 112 "Then, the switching controller 24 of the primary server 2A-2 promotes the asynchronous server 2C whose

WAL state is close to the latest, to a new synchronous server 2B-4 (see, e.g., FIG. 7) (step S6; see the arrow (5) in FIG. 7) and the process is ended.”);

**automatically designate, based on a switch over policy, a third node of the plurality of nodes as a next active node upon the initial active node becoming unavailable**(fig 5:S1; par 98; “As illustrated in FIG. 5, the synchronous server 2B (and the asynchronous server 2C) detects that a failure accompanying server down has occurred in the primary server 2A-1 (see, e.g., FIG. 6) (step S1; see the arrow (1) in FIG. 6).”)**; and**

**continue backups of the source database from the next active node upon the initial active node becoming unavailable**(par 115 “In addition, the WAL number, which is an example of the priority information 213, may be updated according to the execution of the updating process by the primary server 2A and the synchronizing process by each node 2.”)**.**

Regarding claim 9, Hashimoto teaches,

**The system of claim 1,**

Hashimoto further teaches,

**wherein the second node and the third node are each part of the first cluster.**(fig 1:1,2; par 28 “FIG. 1 is a block diagram illustrating a configuration example of a cluster system 1 according to an embodiment. As illustrated in FIG. 1, the cluster system 1 is an example of a server system, and may include, for example, a plurality of nodes 2 constituting a cluster (seven nodes 2 in the example of FIG. 1), and one or more nodes 3 (one node 3 in the example of FIG. 1).” )

Regarding claims 11 and 12, they are the media comprising instructions to implement the method the system claims 1 and 9 implement and are rejected for the same reasons.

Regarding claims 21 and 22, they are the method the system claims 1 and 9 implement and are rejected for the same reasons.

***Claim Rejections - 35 USC § 103***

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim(s) 2,8,14,20,24,30 is/are rejected under 35 U.S.C. 103 as being unpatentable over US 20190310926 A1 (Hashimoto) in view of US 10503612 B1 (Wang).

Regarding claim 2, Hashimoto teaches,

**The system of claim 1, wherein the switch over policy** prefers the node with the latest backup(fig 5:S4; par 103 “In the meantime, when it is determined that the WAL state of its own

node 2 is the latest ("Yes" in step S3), the node 2 is promoted to a new primary server 2A-2 (see, e.g., FIG. 6) (step S4; see the arrow (3) in FIG. 6).")

However, although Hashimoto teaches preferring switching over with nodes that have replicated closest in time, Hashimoto does not specifically teach a primary-only policy, wherein the processor selects the next active node from the plurality of nodes designated as the primary node.

On the other hand, Wang teaches

A failover and failback system(Wang col 2 ln 1-3 "some embodiments include a system for failover and failback of an application between a primary compute infrastructure and a secondary compute infrastructure.")

Applicant has specifically defined "primary-only policy" to be limited as follows throughout prosecution

"A primary-only EA policy defines that the next eligible EA node is to be selected from a primary node ( e.g., the primary node 410) and not a standby node."(instant application specification par 101)).

**wherein the switch over policy is a primary-only policy.**(Wang fig 10:1020; col 20 ln 54-59 "A secondary DMS cluster 912b generates 1020 secondary snapshots of the virtual machines 924 while the virtual machines 924 are executing the application. In some embodiments, the SLA used to generate the primary snapshots in the primary environment 902a is used in the secondary environment 902b.")

**wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the primary node**(fig 10:1020;

(fig 10:1020; col 20 ln 54-59 “A secondary DMS cluster 912b generates 1020 secondary snapshots of the virtual machines 924 while the virtual machines 924 are executing the application. In some embodiments, the SLA used to generate the primary snapshots in the primary environment 902a is used in the secondary environment 902b.”).

Therefore, it would have been obvious to a person of ordinary skill in the art before the effective filing date of the claimed invention to further modify Hashimoto to incorporate the primary-only switch over policy of Wang. One of ordinary skill in the art would have been motivated to remedy the shortcomings of Hashimoto -- a need for a solution for the issue of how to continue backing up after the failover(Wang col 4 ln 8-18) -- with Wang providing a known method to solve a similar problem. Wang provides “a system for failover and failback of an application between a primary compute infrastructure and a secondary compute infrastructure.”(Wang col 2 ln 1-3)

Regarding claim 8, Hashimoto teaches,

**The system of claim 1,**

Hashimoto further teaches,

**wherein the creation of the backup of the source database comprises capturing at least one transactional log from the initial active node or the next active node based upon a protection schedule.**(par 35 “In addition to the DB updating process, the primary server 2A performs a synchronizing process for the nodes 2 that constitute the cluster. As an example, in the synchronizing process, the primary server 2A may transmit ( e.g., broadcast) update result information related to the updating process (e.g., log of WAL) to the synchronous server 2B and

the asynchronous server 2C." par 36 "The term "WAL" is an abbreviation for Write Ahead Logging, which is a transaction log written prior to writing in the DB. Hereinafter, it is assumed that the synchronizing process is performed using the WAL.")

However, although Hashimoto teaches capturing transactional logs for the purposes of rebuilding a state during failover, Hashimoto does not specifically go into detail about capturing snapshots.

On the other hand, Wang teaches

**wherein the creation of the backup of the source database comprises capturing at least one snapshot and at least one transactional log from the initial active node or the next active node based upon a protection schedule.**(fig 7; col 14 ln 31-45 "FIG. 7 is a flow chart of a process 700 for generating a snapshot of an application, according to one embodiment. The process 700 may include performing additional data fetch jobs for an application when at least one of the data fetch jobs fail to successfully execute. In the additional data fetch jobs, a synchronized snapshot of the application is generated using incremental snapshots for machines associated with previously successfully data fetch jobs, and full snapshots for machines associated with previously failed data fetch." )

Therefore, it would have been obvious to a person of ordinary skill in the art before the effective filing date of the claimed invention to further modify Hashimoto to incorporate the periodic snapshots of Wang. One of ordinary skill in the art would have been motivated to remedy the shortcomings of Hashimoto -- a need for a solution for the issue of how to continue backing up after the failover(Wang col 4 ln 8-18) -- with Wang providing a commonly known method to solve a similar problem. Wang provides "a system for failover and failback of an

application between a primary compute infrastructure and a secondary compute infrastructure."(Wang col 2 ln 1-3).

Regarding claims 14 and 20, they are the media comprising instructions to implement the method the system claims 2 and 8 implement and are rejected for the same reasons.

Regarding claims 24 and 30, they are the method the system claims 2 and 8 implement and are rejected for the same reasons.

Claim(s) 3,4,7,15,16,19,25,26,29 is/are rejected under 35 U.S.C. 103 as being unpatentable over US 20190310926 A1 (Hashimoto) in view of US 20070234115 A1 (Saika).

Regarding claim 3, Hashimoto teaches,

**The system of claim 1, wherein the switch over policy** prefers the node with the latest backup(fig 5:S4; par 103 "In the meantime, when it is determined that the WAL state of its own node 2 is the latest ("Yes" in step S3), the node 2 is promoted to a new primary server 2A-2 (see, e.g., FIG. 6) (step S4; see the arrow (3) in FIG. 6).")

However, although Hashimoto teaches preferring switching over with nodes that have replicated closest in time, Hashimoto does not specifically teach a secondary-only policy, wherein the processor selects the next active node from the plurality of nodes designated as the secondary nodes.

On the other hand, Saika teaches

**The system of claim 1, wherein the switch over policy is a secondary-only policy**(fig 22:S75; par 103 "The file server 160 (360) for which the failover has been completed finds out a possible new takeover destination to reconstruct a cluster. It should be noted that the takeover destination is limited according to the priority of the file server as described below.")**, and**

**wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the secondary nodes**(par 108,109 "High Priority; Failover to the remote site 2 can be carried out." Par 94 "A geographically farther site is set to the destination of a takeover as the priority of the failover increases, and a geographically closer site is set to the destination of the takeover as the priority decreases.")**.**

Therefore, it would have been obvious to a person of ordinary skill in the art before the effective filing date of the claimed invention to further modify Hashimoto to incorporate the a secondary-only policy, wherein the processor selects the next active node from the plurality of nodes designated as the secondary nodes of Saika. One of ordinary skill in the art would have been motivated to remedy the shortcomings of Hashimoto -- a need for a solution for the issue of how to prioritize which node to fail over to when there are multiple backups(Saika par 6,7 "There pose the following problems if there are available multiple options for a destination of a failover such as a node in a remote site in addition to the same node and other node in a local site.") -- with Saika providing a known method to solve a similar problem. Saika provides "According to this invention, there is provided a failover method used for a system, … The method including the steps of: … setting a failover destination of the respective nodes of the primary site to either one of a node of the secondary site and a node of the primary site based

on a correspondence set in advance between a priority and an extent of the failover destination; backing up data from a node of the primary site to a node of a determined failover destination;"(Saika par 12,21,23-24)

Regarding claim 4, Hashimoto teaches,

**The system of claim 1, wherein the switch over policy** prefers the node with the latest backup(fig 5:S4; par 103 "In the meantime, when it is determined that the WAL state of its own node 2 is the latest ("Yes" in step S3), the node 2 is promoted to a new primary server 2A-2 (see, e.g., FIG. 6) (step S4; see the arrow (3) in FIG. 6).")**, and**

However, Hashimoto do not specifically teach a prefer-secondary policy, wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the secondary nodes, or upon determining that none of the plurality of nodes are the secondary nodes, select the next active node from the plurality of nodes designated as the primary node.

On the other hand, Saika teaches

**The system of claim 1, wherein the switch over policy is a prefer-secondary policy**(fig 22:S75; par 103 "The file server 160 (360) for which the failover has been completed finds out a possible new takeover destination to reconstruct a cluster. It should be noted that the takeover destination is limited according to the priority of the file server as described below.")**, and**

**wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the secondary nodes.**(par 108,109 "High Priority; Failover to the remote site 2 can be carried out.")**, or upon determining**

**that none of the plurality of nodes are the secondary nodes, select the next active node from the plurality of nodes designated as the primary node**(par 104-107; "Medium Priority; Failover to other NAS in the local site 1 can be carried out."; Par 94 "A geographically farther site is set to the destination of a takeover as the priority of the failover increases, and a geographically closer site is set to the destination of the takeover as the priority decreases.")**.**

Therefore, it would have been obvious to a person of ordinary skill in the art before the effective filing date of the claimed invention to further modify Hashimoto to incorporate the a secondary-only policy, wherein the processor selects the next active node from the plurality of nodes designated as the secondary nodes of Saika. One of ordinary skill in the art would have been motivated to remedy the shortcomings of Hashimoto -- a need for a solution for the issue of how to prioritize which node to fail over to when there are multiple backups(Saika par 6,7 "There pose the following problems if there are available multiple options for a destination of a failover such as a node in a remote site in addition to the same node and other node in a local site.") -- with Saika providing a known method to solve a similar problem. Saika provides "According to this invention, there is provided a failover method used for a system, … The method including the steps of: … setting a failover destination of the respective nodes of the primary site to either one of a node of the secondary site and a node of the primary site based on a correspondence set in advance between a priority and an extent of the failover destination; backing up data from a node of the primary site to a node of a determined failover destination;"(Saika par 12,21,23-24)

Regarding claim 7, Hashimoto teaches,

**The system of claim 1,**

Hashimoto further teaches,

**wherein the processor further executes the computer-readable instructions to select the next active node based upon** how recent the backup of each node is**.**(fig 6; par 103 "In the meantime, when it is determined that the WAL state of its own node 2 is the latest ("Yes" in step S3), the node 2 is promoted to a new primary server 2A-2 (see, e.g., FIG. 6)(step S4; see the arrow (3)in FIG. 6")

However, Hashimoto do not specifically teach a priority assigned to at least a subset of the plurality of nodes.

On the other hand, Saika teaches

**wherein the processor further executes the computer-readable instructions to select the next active node based upon a priority assigned to at least a subset of the plurality of nodes.**(par 103 "the file server 160 (360) for which the failover has been completed finds out a possible new takeover destination to reconstruct a cluster. It should be noted that the takeover destination is limited according to the priority of the file server as described below." Par 104-109 describes the various priority levels assigned to various node subsets.)

Therefore, it would have been obvious to a person of ordinary skill in the art before the effective filing date of the claimed invention to further modify Hashimoto to incorporate the a secondary-only policy, wherein the processor selects the next active node from the plurality of nodes designated as the secondary nodes of Saika. One of ordinary skill in the art would have been motivated to remedy the shortcomings of Hashimoto -- a need for a solution for the issue of how to prioritize which node to fail over to when there are multiple backups(Saika par 6,7

"There pose the following problems if there are available multiple options for a destination of a failover such as a node in a remote site in addition to the same node and other node in a local site.") -- with Saika providing a known method to solve a similar problem. Saika provides "According to this invention, there is provided a failover method used for a system, … The method including the steps of: … setting a failover destination of the respective nodes of the primary site to either one of a node of the secondary site and a node of the primary site based on a correspondence set in advance between a priority and an extent of the failover destination; backing up data from a node of the primary site to a node of a determined failover destination;"(Saika par 12,21,23-24)

Regarding claims 15,16, and 19, they are the media comprising instructions to implement the method the system claims 3,4, and 7 implement and are rejected for the same reasons.

Regarding claims 25,26, and 29, they are the method the system claims 3,4,and 7 implement and are rejected for the same reasons.

Claim(s) 5,17,27 is/are rejected under 35 U.S.C. 103 as being unpatentable over US 20190310926 A1 (Hashimoto) in view of US 20110022882 A1 (Jaehde).

Regarding claim 5, Hashimoto teaches,

**The system of claim 1,**

Hashimoto further teaches,

**wherein the switch over policy is a prefer-primary policy**(fig 7:2A-2; par 109 "Based on one of the above rules, each node 2 that determines that the latest WAL has been applied to the plural nodes 2 including its own node 2 may determine whether its own node 2 is a target of promotion to the primary server 2A-2.")**, and**

**wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the primary node**(par 105 "When there are plural synchronous servers 2B to which the latest WAL has been applied (i.e., when there are plural switching candidates), one synchronous server 2B of these switching candidates may be promoted to the primary server 2A-2 based on a rule shared in advance between the synchronous servers 2B.")**, or upon determining** a failure in **the plurality of nodes is the primary node, select** a replacement primary **node from the plurality of nodes designated as the secondary nodes**(fig 9; par 112 "Then, the switching controller 24 of the primary server 2A-1 promotes the asynchronous server 2C whose WAL state is close to the latest, to a new synchronous server 2B-4 (see, e.g., FIG. 9) (step S13; see the arrow (3) in FIG. 9) and the process is ended.")**.**

However, Hashimoto do not specifically teach upon determining that none of the plurality of nodes are the secondary nodes, select the next active node from the plurality of nodes designated as the primary node.

On the other hand, Jaehde teaches

**The system of claim 1, wherein the switch over policy is a prefer-secondary policy**(Fig 4:450; par 81 "Based on the health information for the nodes in the local failover scope, the determined scope of the power failure, information regarding an amount of time required for

failover to a remote node in a remote failover scope, and optionally, infrastructure information, the failover scopes of the failover policy are dynamically modified to identify nodes that are within the scope of the power failure, nodes that are not within the scope of the power failure, and relative measures of the nodes with regard to suitability as candidates for failover of application(s) on the faulty node (step 450).”)**, and**

**wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the secondary nodes**(par 78 “Moreover, as mentioned above, whether to failover to a local node or a remote node may be determined, at least partially, based on the amount of time that the faulty node can continue to operate on a backup power Supply provided via the faulty node's UPS.”)**, or upon determining that none of the plurality of nodes are the secondary nodes, select the next active node from the plurality of nodes designated as the primary node**(fig 4:460; par 81 “The selection of the one or more best candidate nodes for failover may be performed in a manner Such as previously described, e.g., selecting a local node, if one exists that is not subject to the power failure, determining if failover to a remote node can be performed based on how long the faulty node can operate on backup battery power and the time to perform a remote failover operation, selecting a local node that is subject to the power failure in the event that the failover operation cannot be performed within the amount of time the faulty node can remain operational on backup battery power, etc.”)**.**

Therefore, it would have been obvious to a person of ordinary skill in the art before the effective filing date of the claimed invention to further modify Hashimoto to incorporate the idea of upon determining that none of the plurality of nodes are the secondary nodes, select

the next active node from the plurality of nodes designated as the primary node of Jaehde. One of ordinary skill in the art would have been motivated to remedy the shortcomings of Hashimoto -- a need for a solution for the issue of how to prioritize failover options when the default option becomes unavailable(Jaehde par 18 “The objective is to dynamically deter mine the most reliable node of the high availability cluster in the event of a failure and drive the failover to that node, even to the extent of overriding any established or default failover policies.”)-- with Jaehde providing a known method to solve a similar problem. Jaehde provides “The illustrative embodiments provide a mechanism for dynamically updating failover polices in a high availability cluster of computing devices so as to increase application availability.”(Jaehde par 18)

Regarding claim 17, it is the media comprising instructions to implement the method the system claim 5 implements and is rejected for the same reasons.

Regarding claim 27, it is the media comprising instructions to implement the method the system claim 5 implements and is rejected for the same reasons.

Claim(s) 6,18,28 is/are rejected under 35 U.S.C. 103 as being unpatentable over US 20190310926 A1 (Hashimoto) in view of US 7389300 B1 (Shah).

Regarding claim 6, Hashimoto teaches,

**The system of claim 1,**

Hashimoto further teaches,

**wherein the switch over policy** can be any **policy, and wherein the processor further executes the computer-readable instructions to select any available node from the plurality of nodes as the next active node.**(par 105 “When there are plural synchronous servers 2B to which the latest WAL has been applied (i.e., when there are plural switching candidates), one synchronous server 2B of these switching candidates may be promoted to the primary server 2A-2 based on a rule shared in advance between the synchronous servers 2B. The rule may include, for example, one of the followings.” Par 105-108 describes various switch over promotion rules, and explains that these rules are only a few examples and that more or different rules can be created as needed.)

However, Hashimoto does not specifically teach wherein the switch over policy is an "any" policy, wherein the processor selects any available node from the plurality of nodes as the next active node.

On the other hand, Shah teaches

A failover system(col 3 ln 38-54 “According to another embodiment, the secondary group may include a plurality of nodes, and the system may include a recovery manager configured to support application failover.”)

**wherein the switch over policy is an "any" policy, and wherein the processor further executes the computer-readable instructions to select any available node from the plurality of nodes as the next active node**(col 14-15 ln 64-5 “In different embodiments, if multiple nodes of primary group 160 are available, any of a variety of techniques may be used to select the particular primary group node to be used for failover---e.g., the node may be selected at

random, or based on current load measurements ( e.g., the least loaded primary group node may be selected), etc.").

Therefore, it would have been obvious to a person of ordinary skill in the art before the effective filing date of the claimed invention to further modify Hashimoto to incorporate the failover policy of Shah. One of ordinary skill in the art would have been motivated to remedy the shortcomings of Hashimoto -- a need for a solution for the issue of how to pick the next server when there are multiple servers(Hashimoto par 105) -- with Shah providing a known method to solve a similar problem. Shah provides "According to another embodiment, the secondary group may include a plurality of nodes, and the system may include a recovery manager configured to support application failover. Upon a detection of a failure ( e.g., a failure of an application at the source node whose state is being replicated, or a failure of the source node itself), the recovery manager may be configured to make a determination whether one or more nodes of the primary group are operational. If such primary group nodes are found, one primary group node may be selected as a target of application fail over, and the primary replica maintained therein may be used to establish application state."(Shah col 3 ln 39-49)

Regarding claim 18, it is the media comprising instructions to implement the method the system claim 6 implements and is rejected for the same reasons.

Regarding claim 28, it is the media comprising instructions to implement the method the system claim 6 implements and is rejected for the same reasons.

Claim(s) 10,13,23 is/are rejected under 35 U.S.C. 103 as being unpatentable over US 20190310926 A1 (Hashimoto) in view of US 20190339870 A1 (Meiri).

Regarding claim 10, Hashimoto teaches,

**The system of claim 1, wherein the second node is part of the first cluster and the third node is** asynchronous and a separate category from the first two nodes(par 33 “In the following description, a node 2 operating as a primary server may sometimes be referred to as a "node 2A" or a "primary server 2A". A node 2 operating as a synchronous standby server may sometimes be referred to as a "node 2B" or a "synchronous server 2B". A node 2 operating as an asynchronous standby server may sometimes be referred to as a "node 2C" or an "asynchronous server 2C". A node 2 may sometimes be referred to as a "server 2" or a "DB server 2".”)

However, Hashimoto do not specifically teach separating the third node into a different cluster.

On the other hand, Meiri teaches

**The system of claim 1, wherein the second node is part of the first cluster**(par 15 “In an embodiment, target site 112 is either co-located with source site 102 or is in close geographic proximity (e.g., within the same building or building complex) with the source site 102. By contrast, target site 112' is remotely located from both the source site 102 and the target site 112. For example, target site 112' may be geographically dispersed across cities, states, or even countries with respect to source site 102 and target site 112'.”) **and the third node is part of the second cluster**(fig 3 “Storage cluster C”; par 27 “In the process of FIG. 3, a storage cluster A

refers to a source site (e.g., site 102 of FIG. 1) or a source device 202 of FIG. 2. Storage cluster B refers to a target site 112 of FIG. 1 or one of target devices 228 of FIG. 2. Storage cluster C refers to target site 112' of FIG. 1 or another one of target devices 228 of FIG. 2.").

Therefore, it would have been obvious to a person of ordinary skill in the art before the effective filing date of the claimed invention to further modify Hashimoto to incorporate the clustering of Meiri. One of ordinary skill in the art would have been motivated to remedy the shortcomings of Hashimoto -- a need for a solution for the issue of how to update remote backups based on local backups(Meiri par 2,19) -- with Meiri providing a known method to solve a similar problem. Meiri provides "a method for performing a data replication process in a storage system. The method includes creating, at a first target site, an empty container in a storage system. The empty container matches a container at a source site in response to initiation of an asynchronous data replication process. The method also includes transmitting, by the first target site, a command to a second target site to create a container at the second target site. The first target site performs the asynchronous data replication process, which includes scanning the data upon receipt from the source site for a first target replication cycle and transmitting the scanned data to the container at the second target site for a second target replication cycle."(Meiri par 5)

Regarding claim 13, it is the media comprising instructions to implement the method the system claim 10 implements and is rejected for the same reasons.

Regarding claim 23, it is the media comprising instructions to implement the method the system claim 10 implements and is rejected for the same reasons.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- US 20170235758 A1 - Gopalapura - general backup policy reference.
- US 20200110675 A1 - Wang - general backup policy reference.
- US 20160048408 A1 - Madhu - general backup policy reference.
- US 20200349018 A1 - Meadowcroft - Real time backup system.
- US 10725866 B1 - Palaiah - active and passive backups, updates passive backups.
- US 20200104377 A1 - Earnesty - selects migration targets based on requirements. Related to priority/ranking of failover nodes
- US 20200104376 A1 - Earnesty - similar, might be better, more focused on target requirements. Related to priority/ranking of failover nodes
- US 20200050522 A1 - Coleman - general backup policy reference, failover into the same cluster. related to claim 9.
- US 20190384496 A1 - Abdul Rasheed - backup sent to cluster, may be implemented across cluster.
- US 20190324865 A1 - Weissman - policy group selection pattern - picks where to store backups. Has two clusters. Related to priority/ranking of failover nodes
- US 20190155699 A1 - Luo - Generic incremental backup system, similar time machine to applicant.
- US 10719407 B1 - Chockalingam - Generic backup system, fault domains.
- US 20180157561 A1 - Venkatesh - round robin failover for disaster recovery
- US 20170235950 A1 - Gopalapura Venkatesh - round robin failover more detail than Venkatesh
- US 20140201171 A1 - Vijayan - round robin failover for backups.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL XU whose telephone number is (571)272-5688. The examiner can normally be reached Monday-Friday 8:00am - 5:00pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is

encouraged to use the USPTO Automated Interview Request (AIR) at

http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bryce Bonzo can be reached on (571) 272-3655. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/M.X./
Examiner, Art Unit 2113
/BRYCE P BONZO/
Supervisory Patent Examiner, Art Unit 2113

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| Substitute for form 1449/PTO | | | | Complete if Known | |
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| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: October 9, 2021 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | Not yet assigned |
| | | | | Examiner Name | Not yet assigned |
| Sheet | 1 | of | 4 | Attorney Docket Number | 115539-0346 |

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| Examiner Signature | /MICHAEL XU/ | Date Considered | 07/07/2022 |
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| *(use as many sheets as necessary)* | | | | Art Unit | Not yet assigned |
| | | | | Examiner Name | Not yet assigned |
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| Date Submitted: October 9, 2021 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | Not yet assigned |
| | | | | Examiner Name | Not yet assigned |
| Sheet | 3 | of | 4 | Attorney Docket Number | 115539-0346 |

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| Date Submitted: October 9, 2021 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| | | | | Art Unit | Not yet assigned |
| *(use as many sheets as necessary)* | | | | Examiner Name | Not yet assigned |
| Sheet | 4 | of | 4 | Attorney Docket Number | 115539-0346 |

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| Date Submitted: April 20, 2021 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | 2844 |
| | | | | Examiner Name | Not yet assigned |
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| Examiner Signature | /MICHAEL XU/ | Date Considered | 07/07/2022 |
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| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | Not Yet Assigned |
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| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
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| | B17 | BROOKS, Aaron, "19 Best A/B Testing Tools in 2021" (published 8/12/2020) Venture Harbour, from https://www.ventureharbour.com/best-a-b-testing-tools/ (accessed 9/14/2021) | |

| Examiner Signature | /MICHAEL XU/ | Date Considered | 07/07/2022 |
|---|---|---|---|

4893-5280-1805.1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.X./

PTO/SB/08 (modified)

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: February 7, 2022 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | Not Yet Assigned |
| | | | | Examiner Name | Not Yet Assigned |
| Sheet | 2 | of | 2 | Attorney Docket Number | 115539-0346 |

| NON PATENT LITERATURE DOCUMENTS | | | |
|---|---|---|---|
| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
| | B18 | Extended European Search Report re EP21192308.1 DTD 1/24/2022 | |
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| Examiner Signature | /MICHAEL XU/ | Date Considered | 07/07/2022 |
|---|---|---|---|

4893-5280-1805.1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.X./

PTO/SB/08 (modified)

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: March 9, 2022 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | Not Yet Assigned |
| | | | | Examiner Name | Not Yet Assigned |
| Sheet | 1 | of | 2 | Attorney Docket Number | 115539-0346 |

**U.S. PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Document Number Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
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| | C2 | D 508,248 | 08-09-2005 | ORDING, BAS | |
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| | C29 | 2019/0018738 | 01-17-2019 | CHEN, HUI-WEN | |

| Examiner Signature | /MICHAEL XU/ | Date Considered | 07/07/2022 |
|---|---|---|---|

4866-6338-6642.1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.X./

PTO/SB/08 (modified)

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: March 9, 2022 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | Not Yet Assigned |
| | | | | Examiner Name | Not Yet Assigned |
| Sheet | 2 | of | 2 | Attorney Docket Number | 115539-0346 |

**U.S. PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Document Number Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
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**UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS**

| Examiner Initials* | Cite No.[1] | U.S. Patent Application Document Serial Number-Kind Code[2] (*if known*) | Filing Date of Cited Document MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
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**FOREIGN PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Documents | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
|---|---|---|---|---|---|---|
| | | | | | | |
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**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
|---|---|---|---|
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| | C36 | WebDeveloper Juice, "7 Beatiful Web Based Timeline Using Javascript and CSS," WebDeveloper Juice, published September 28, 2011, retrieved 2/11/2022 from <https://www.webdeveloperjuice.com/2011/09/28/7-beautiful-web-based-timeline-using-javascript-and-css/> (Year: 2011) | |
| | | | |

| Examiner Signature | /MICHAEL XU/ | Date Considered | 07/07/2022 |
|---|---|---|---|

4866-6338-6642.1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.X./

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WASHINGTON, DC 20007-5109

**Courtesy Reminder for**
**Application Serial No: 17/182,511**

Attorney Docket No: 115539-0346
Customer Number: 147491
Date of Electronic Notification: 07/21/2022

This is a courtesy reminder that new correspondence is available for this application. If you have not done so already, please review the correspondence. The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

An email notification regarding the correspondence was sent to the following email address(es) associated with your customer number:
ipdocketing@foley.com

To view your correspondence online or update your email addresses, please visit us anytime at **https://ppair-my.uspto.gov/pair/PrivatePair.**
If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov or call 1-866-217-9197.

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| First Inventor Name: | Sagar Sontakke |
| Title: | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Application No.: | 17/182,511 |
| Filing Date: | 2/23/2021 |
| Examiner: | XU, MICHAEL |
| Art Unit: | 2113 |
| Confirmation No.: | 3895 |

**INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Applicant submits herewith documents for the Examiner's consideration in accordance with 37 CFR §§1.56, 1.97 and 1.98.

Applicant respectfully requests that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

The submission of any document herewith is not an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicant does not waive

any rights to take any action, which would be appropriate to antedate or otherwise remove as a competent reference any document submitted herewith.

**TIMING OF THE DISCLOSURE**

The listed documents are being submitted in compliance with 37 CFR §1.97(c), before the mailing date of any of a final action under 37 CFR §1.113, a notice of allowance under 37 CFR §1.311, or an action that otherwise closes prosecution in the application.

**FEE**

Fees in the amount of $260.00 to cover the fee associated with an information disclosure statement are being paid by credit card via EFS-Web.

The Commissioner is hereby authorized to charge any additional fees which may be required for this application to Deposit Account Number 19-0741.

Respectfully submitted,

Date September 1, 2022

By */Paul S. Hunter/*

FOLEY & LARDNER LLP
Customer Number: 147491
Telephone: (858) 847-6733
Facsimile: (858) 792-6773

Paul S. Hunter
Attorney for Applicant
Registration No. 44,787

| Electronic Acknowledgement Receipt | |
|---|---|
| **EFS ID:** | 46535563 |
| **Application Number:** | 17182511 |
| **International Application Number:** | |
| **Confirmation Number:** | 3895 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Customer Number:** | 147491 |
| **Filer:** | Paul S. Hunter/Emily Rogers |
| **Filer Authorized By:** | Paul S. Hunter |
| **Attorney Docket Number:** | 115539-0346 |
| **Receipt Date:** | 01-SEP-2022 |
| **Filing Date:** | 23-FEB-2021 |
| **Time Stamp:** | 14:13:28 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | yes |
| Payment Type | CARD |
| Payment was successfully received in RAM | $260 |
| RAM confirmation Number | E202291E14003595 |
| Deposit Account | |
| Authorized User | |
| The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: | |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Transmittal Letter | 115539-0346_H_IDS_Transmittal.pdf | 136099<br>ec33b8f240691db5fb1af1211178eeff1f40585e | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 2 | Information Disclosure Statement (IDS) Form (SB08) | 115539-0346_H_SB08.pdf | 107146<br>33f2f682daad836ae60472ce015d7c69703730a6 | no | 1 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| This is not an USPTO supplied IDS fillable form | | | | | |
| 3 | Fee Worksheet (SB06) | fee-info.pdf | 38282<br>322d3f31cdaa64c8de86973cdea61318debb6107 | no | 2 |
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| **Information:** | | | | | |
| | | **Total Files Size (in bytes):** | 281527 | | |

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**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: September 1, 2022 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | 2113 |
| | | | | Examiner Name | Michael Xu |
| Sheet | 1 | of | 1 | Attorney Docket Number | 115539-0346 |

**U.S. PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Document Number<br>Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | H1 | 2013/0263119-A1 | 10-03-2013 | PISSAY ET AL. | |
| | H2 | 2015/0074054-A1 | 03-12-2015 | ANTONY, JINTO | |
| | H3 | 2017/0374136-A1 | 12-28-2017 | RINGDAHL, KENNETH N. | |
| | | | | | |

**UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS**

| Examiner Initials* | Cite No.[1] | U.S. Patent Application Document<br>Serial Number-Kind Code[2] (*if known*) | Filing Date of Cited Document MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | | | | | |

**FOREIGN PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Foreign Patent Document<br>Country Code[3]-Number[4]-Kind Code[5] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Documents | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
|---|---|---|---|---|---|---|
| | | | | | | |

**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
|---|---|---|---|
| | | | |

| Examiner Signature | | Date Considered | |
|---|---|---|---|

4867-6582-6608.1

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | 17182511 |
| **Filing Date:** | 23-Feb-2021 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Filer:** | Paul S. Hunter/Emily Rogers |
| **Attorney Docket Number:** | 115539-0346 |

Filed as Large Entity

**Filing Fees for Utility under 35 USC 111(a)**

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| **Pages:** | | | | |
| **Claims:** | | | | |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |
| **Post-Allowance-and-Post-Issuance:** | | | | |
| **Extension-of-Time:** | | | | |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Miscellaneous:** | | | | |
| SUBMISSION- INFORMATION DISCLOSURE STMT | 1806 | 1 | 260 | 260 |
| | | **Total in USD ($)** | | **260** |

| Electronic Acknowledgement Receipt | |
|---|---|
| **EFS ID:** | 46642525 |
| **Application Number:** | 17182511 |
| **International Application Number:** | |
| **Confirmation Number:** | 3895 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Customer Number:** | 147491 |
| **Filer:** | Paul S. Hunter/Emily Rogers |
| **Filer Authorized By:** | Paul S. Hunter |
| **Attorney Docket Number:** | 115539-0346 |
| **Receipt Date:** | 19-SEP-2022 |
| **Filing Date:** | 23-FEB-2021 |
| **Time Stamp:** | 17:30:17 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| Submitted with Payment | no |
|---|---|

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Transmittal Letter | 115539-0346_I_IDS_Transmittal.pdf | 137644<br>b7f3ee187b2d9dd5cd93acb00a66dd86bd60abb9 | no | 3 |
| **Warnings:** | | | | | |

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|---|---|---|---|---|---|
| **Information:** | | | | | |
| 2 | Information Disclosure Statement (IDS) Form (SB08) | 115539-0346_I_SB08.pdf | 108398<br>48426b67b8e75d04b69fe426eaa9d5495c4ce0bb | no | 1 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| This is not an USPTO supplied IDS fillable form | | | | | |
| 3 | Patent Term Adjustment Statement under 37 CFR 1.704(d) filed with an IDS | 115539-0346_30_day_statement.pdf | 750080<br>0ca1a12efc888492447769c06b1f869ee2a401523 | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 4 | Non Patent Literature | I9--BackupAssist___https___backupassist_co.pdf | 221829<br>43469e4263520adde6974677afd8c1a2031da23c | no | 5 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | **Total Files Size (in bytes):** | 1217951 | | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| First Inventor Name: | Sagar Sontakke |
| Title: | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Application No.: | 17/182,511 |
| Filing Date: | 2/23/2021 |
| Examiner: | XU, MICHAEL |
| Art Unit: | 2113 |
| Confirmation No.: | 3895 |

**INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Applicant submits herewith documents for the Examiner's consideration in accordance with 37 CFR §§1.56, 1.97 and 1.98.

Applicant respectfully requests that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

The submission of any document herewith is not an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicant does not waive

any rights to take any action, which would be appropriate to antedate or otherwise remove as a competent reference any document submitted herewith.

**TIMING OF THE DISCLOSURE**

The listed documents are being submitted in compliance with 37 CFR §1.97(c), before the mailing date of any of a final action under 37 CFR §1.113, a notice of allowance under 37 CFR §1.311, or an action that otherwise closes prosecution in the application.

**STATEMENT UNDER 37 CFR §1.97(e)**

The undersigned hereby states in accordance with 37 CFR §1.97(e)(2) that no item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the undersigned, after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of the information disclosure statement.

**STATEMENT UNDER 37 CFR §1.704(d)**

The undersigned hereby states in accordance with 37 CFR §1.704(d) that each item of information contained in the information disclosure statement was first cited in any communication from a patent office in a counterpart foreign or international application or from the Office, and that this communication was not received by any individual designated in 37 CFR §1.56(c) more than thirty days prior to the filing of the information disclosure statement; or is a communication that was issued by a patent office in a counterpart foreign or international application or by the Office, and this communication was not received by any individual designated in § 1.56(c) more than thirty days prior to the filing of the information disclosure statement.

Although Applicant believes that no fee is required, the Commissioner is hereby authorized to charge any additional fees which may be due to Deposit Account No. 19-0741.

Respectfully submitted,

Date ____September 19, 2022_____ By ____*/Paul S. Hunter/*_____

FOLEY & LARDNER LLP
Customer Number: 147491
Telephone: (858) 847-6733
Facsimile: (858) 792-6773

Paul S. Hunter
Attorney for Applicant
Registration No. 44,787

Doc Code: PTA.IDS
Document Description: Patent Term Adjustment Statement Under 37 CFR 1.704(d) filed with an IDS

PTO/SB/133 (10-21)

| PATENT TERM ADJUSTMENT STATEMENT UNDER 37 CFR 1.704(d) | | |
|---|---|---|
| | Application Number | 17/182,511 |
| | Filing Date | 2/23/2021 |
| | First Named Inventor | Sagar Sontakke |
| | Art Unit | 2113 |
| | Examiner Name | XU, MICHAEL |
| | Practitioner Docket No. | 115539-0346 |

**APPLICANT HEREBY STATES THE FOLLOWING (please review 37 CFR 1.704(d) before filing this form):**

☑ Each item of information contained in the information disclosure statement was first cited in any communication from a patent office in a counterpart foreign or international application or from the Office, and this communication was not received by any individual designated in 37 CFR 1.56(c) more than thirty days prior to the filing of the information disclosure statement.

**AND/OR**

☐ Each item of information contained in the information disclosure statement is a communication that was issued by a patent office in a counterpart foreign or international application or by the Office, and this communication was not received by any individual designated in 37 CFR 1.56(c) more than thirty days prior to the filing of the information disclosure statement.

**INSTRUCTIONS:**

- **This form will not satisfy the requirement of 37 CFR 1.97(e).** The present statement is filed under 37 CFR 1.704(d) and will not substitute for compliance with any of the requirements of 37 CFR 1.97 and 1.98. For an information disclosure statement to comply with 37 CFR 1.97(c) or (d), the information disclosure statement must be accompanied by a statement under 37 CFR 1.97(e) notwithstanding any statement filed under 37 CFR 1.704(d).
- The present form (PTO/SB/133) should be filed concurrently with the information disclosure statement to derive benefit under 37 CFR 1.704(d).

| | | | |
|---|---|---|---|
| Signature | /Paul S. Hunter/ | Date | 09-15-2022 |
| Typed or Printed Name | Paul S. Hunter | Practitioner Registration Number | 44,787 |

***Note**: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required in accordance with 37 CFR 1.33 and 11.18. Please see 37 CFR 1.4(d) for the form of the signature. If necessary, submit multiple forms for more than one signature, see below*.*

☐ *Total of _____ forms are submitted.

*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

## Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. The United States Patent and Trademark Office (USPTO) collects the information in this record under authority of 35 U.S.C. 2. The USPTO's system of records is used to manage all applicant and owner information including name, citizenship, residence, post office address, and other information with respect to inventors and their legal representatives pertaining to the applicant's/owner's activities in connection with the invention for which a patent is sought or has been granted. The applicable Privacy Act System of Records Notice for the information collected in this form is COMMERCE/PAT-TM-7 Patent Application Files, available in the Federal Register at 78 FR 19243 (March 29, 2013). https://www.govinfo.gov/content/pkg/FR-2013-03-29/pdf/2013-07341.pdf

Routine uses of the information in this record may include disclosure to: 1) law enforcement, in the event that the system of records indicates a violation or potential violation of law; 2) a Federal, state, local, or international agency, in response to its request; 3) a contractor of the USPTO having need for the information in order to perform a contract; 4) the Department of Justice for determination of whether the Freedom of Information Act (FOIA) requires disclosure of the record; 5) a Member of Congress submitting a request involving an individual to whom the record pertains, when the individual has requested the Member's assistance with respect to the subject matter of the record; 6) a court, magistrate, or administrative tribunal, in the course of presenting evidence, including disclosures to opposing counsel in the course of settlement negotiations; 7) the Administrator, General Services Administration (GSA), or their designee, during an inspection of records conducted by GSA under authority of 44 U.S.C. 2904 and 2906, in accordance with the GSA regulations and any other relevant (i.e., GSA or Commerce) directive, where such disclosure shall not be used to make determinations about individuals; 8) another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)); 9) the Office of Personnel Management (OPM) for personnel research purposes; and 9) the Office of Management and Budget (OMB) for legislative coordination and clearance.

If you do not furnish the information requested on this form, the USPTO may not be able to process and/or examine your submission, which may result in termination of proceedings, abandonment of the application, and/or expiration of the patent.

## Additional Uses

Additional USPTO uses of the information in this record may include disclosure to: 1) the International Bureau of the World Intellectual Property Organization, if the record is related to an international application filed under the Patent Cooperation Treaty; 2) the public i) after publication of the application pursuant to 35 U.S.C. 122(b), ii) after issuance of a patent pursuant to 35 U.S.C. 151, iii) if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections, or an issued patent, or iv) without publication of the application or patent under the specific circumstances provided for by 37 CFR 1.14(a)(1)(v)-(vii); and/or 3) the National Archives and Records Administration, for inspection of records.

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: September 19, 2022 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | 2113 |
| | | | | Examiner Name | XU, MICHAEL |
| Sheet | 1 | of | 1 | Attorney Docket Number | 115539-0346 |

**U.S. PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Document Number<br>Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | I1 | 8,250,033-B1 | 08-21-2012 | DE SOUTER ET AL. | |
| | I2 | 9,213,727-B1 | 12-15-2015 | ESPOSITO, JEFFREY DANIEL | |
| | I3 | 2006/0143412-A1 | 06-29-2006 | ARMANGAU, PHILIPPE | |
| | I4 | 2015/0358417-A1 | 12-10-2015 | PATIL ET AL. | |
| | I5 | 2016/0092535-A1 | 03-31-2016 | KUCHIBHOTLA ET AL. | |
| | I6 | 2017/0235758-A1 | 08-17-2017 | GOPALAPURA VENKATESH ET AL. | |
| | I7 | 2021/0064512-A1 | 03-04-2021 | SIROV ET AL. | |
| | I8 | 2021/0200643-A1 | 07-01-2021 | LUO ET AL. | |
| | | | | | |

**UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS**

| Examiner Initials* | Cite No.[1] | U.S. Patent Application Document<br>Serial Number-Kind Code[2] (*if known*) | Filing Date of Cited Document MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
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**FOREIGN PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Foreign Patent Document<br>Country Code[3]-Number[4]-Kind Code[5] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Documents | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
|---|---|---|---|---|---|---|
| | | | | | | |

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| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
|---|---|---|---|
| | I9 | BackupAssist, "https://backupassist.com/support/en/backupassist/manage/calendar.htm", 07/01/2017 (Year: 2017). | |
| | | | |

| Examiner Signature | | Date Considered | |
|---|---|---|---|

4882-1590-3539.1

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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 17/182,511 | 02/23/2021 | Sagar Sontakke | 115539-0346 | 3895 |

147491 7590 10/14/2022

FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109

| EXAMINER | |
|---|---|
| XU, MICHAEL | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2113 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 10/14/2022 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipdocketing@foley.com

| *Applicant-Initiated Interview Summary* | **Application No.** 17/182,511 | **Applicant(s)** Sontakke et al. | | |
|---|---|---|---|---|
| | **Examiner** MICHAEL XU | **Art Unit** 2113 | **AIA (First Inventor to File) Status** Yes | **Page** 1 of 1 |

| **All Participants** (applicant, applicants representative, PTO personnel) | **Title** | **Type** |
|---|---|---|
| MICHAEL XU | Examiner | Telephonic |
| Stefan Lehnardt | Attorney | |

**Date of Interview:** 07 October 2022

**Issues Discussed:**

**Proposed Amendment(s)**

Applicant and examiners discussed the claimed subject matter in relation to the prior art. Discussed Potential amendments to clarify scope of the invention. Discussed different definitions of "backup" and how Hashimoto's synchronous standbys could be interpreted as a backup, and also how applicant's snapshots are also backups, but are not always synchronous, which might differentiate from the Hashimoto reference. Suggested avoiding "transaction log" and sticking with "snapshot", as Hashimoto specifically talks about Write Ahead Logs.
No agreement is reached, as further search and consideration of the amended claims would need to be conducted.

| /MICHAEL XU/<br>Examiner, Art Unit 2113 | /BRYCE P BONZO/<br>Supervisory Patent Examiner, Art Unit 2113 |
|---|---|

**Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04**
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

**Applicant recordation instructions:** The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview.

**Examiner recordation instructions:** Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: October 18, 2022 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | 2113 |
| | | | | Examiner Name | XU, MICHAEL |
| Sheet | 1 | of | 3 | Attorney Docket Number | 115539-0346 |

**U.S. PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Document Number<br>Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | J1 | 11,243,971-B2 | 02-08-2022 | ATLANTIC TECHNICAL ORGANIZATION | |
| | J2 | 11,308,114-B1 | 04-19-2022 | CAZENA, INC. | |
| | | | | | |

**UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS**

| Examiner Initials* | Cite No.[1] | U.S. Patent Application Document<br>Serial Number-Kind Code[2] (*if known*) | Filing Date of Cited Document MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
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**FOREIGN PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Foreign Patent Document<br>Country Code[3]-Number[4]-Kind Code[5] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Documents | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
|---|---|---|---|---|---|---|
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**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
|---|---|---|---|
| | J3 | Geek University, "VM snapshot files," VMware ESXi course, retrieved 9/11/2022 from https://geek-university.com/vm-snapshot-files/ | |
| | J4 | Lctree, "Lctree," Linked Clone Tree Visualizer for vCloud Director, published November 28, 2012, retrieved 9/11/2022 from https://urldefense.com/v3/__https:/nam12.safelinks.protection.outlook.com/?url=https*3A*2F*2Fdownload3.vmware.com*2Fsoftware*2Fvmw-tools*2Flctree*2FREADME.pdf&data=05*7C01*7CSubhasri.Das*40unitedlex.com*7C58a08da4913146691ca308da8f2e769b*7Ccdad814b1a7e450ebe0d55f3fd1a2c1d*7C0*7C0*7C637979726958112264*7CUnknown*7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwi | |
| | J5 | Microsoft, "Use a template to create an Access desktop database," Microsoft Office Support, retrieved 9/29/2022 from https://support.microsoft.com/en-us/office/use-a-template-to-create-an-access-desktop-database-d9354d47-e4ce-4efb-878b-c48f3650fb73 | |
| | J6 | Mulford, Juan, "vSphere 7 - Describe Instant Clone Architecture And Use Cases," Mulcas Cloudy Infrastructures, published December 28, 2021, retrieved 9/11/2022 from https://mulcas.com/vsphere-7-describe-instant-clone-architecture-and-use-cases/ | |
| | J7 | Notion, "Database templates," Notion Help Center, retrieved 9/29/2022 from https://www.notion.so/help/database-templates | |
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| Examiner Signature | | Date Considered | |
|---|---|---|---|

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| | | | | **Filing Date** | 2/23/2021 |
| Date Submitted: October 18, 2022 | | | | **First Named Inventor** | Sagar Sontakke |
| | | | | Art Unit | 2113 |
| *(use as many sheets as necessary)* | | | | Examiner Name | XU, MICHAEL |
| Sheet | 2 | of | 3 | Attorney Docket Number | 115539-0346 |

**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
|---|---|---|---|
| | J9 | Nutanix, "Creating a Playbook," Nutanix Support and Insights, retrieved 9/29/2022 from https://portal.nutanix.com/page/documents/details?targetId=Nutanix-Beam-User-Guide:bea-playbook-create-t.html | |
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| Examiner Signature | | Date Considered | |
|---|---|---|---|

4875-8026-4762.1

| Substitute for form 1449/PTO | | | | Complete if Known | |
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| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
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| | | | | Art Unit | 2113 |
| *(use as many sheets as necessary)* | | | | Examiner Name | XU, MICHAEL |
| Sheet | 3 | of | 3 | Attorney Docket Number | 115539-0346 |

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| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
|---|---|---|---|
| | J22 | VMware, "Setting Up Virtual Desktops in Horizon Console," VMware Horizon 7 7.13, published October 2020, retrieved 9/11/2022 from https://urldefense.com/v3/__https:/nam12.safelinks.protection.outlook.com/?url=https*3A*2F*2Fdocs.vmware.com*2Fen*2FVMware-Horizon-7*2F7.13*2Fvirtual-desktops.pdf&data=05*7C01*7CSubhasri.Das*40unitedlex.com*7C58a08da4913146691ca308da8f2e769b*7Ccdad814b1a7e450ebe0d55f3fd1a2c1d*7C0*7C0*7C637979726957956046*7CUnknown*7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJB | |
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| Examiner Signature | | Date Considered | |
|---|---|---|---|

4875-8026-4762.1

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| First Inventor Name: | Sagar Sontakke |
| Title: | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Application No.: | 17/182,511 |
| Filing Date: | 2/23/2021 |
| Examiner: | XU, MICHAEL |
| Art Unit: | 2113 |
| Confirmation No.: | 3895 |

**INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Applicant submits herewith documents for the Examiner's consideration in accordance with 37 CFR §§1.56, 1.97 and 1.98.

Applicant respectfully requests that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

The submission of any document herewith is not an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicant does not waive

any rights to take any action, which would be appropriate to antedate or otherwise remove as a competent reference any document submitted herewith.

**TIMING OF THE DISCLOSURE**

The listed documents are being submitted in compliance with 37 CFR §1.97(c), before the mailing date of any of a final action under 37 CFR §1.113, a notice of allowance under 37 CFR §1.311, or an action that otherwise closes prosecution in the application.

**FEE**

Fees in the amount of $260.00 to cover the fee associated with an information disclosure statement are being paid by credit card via EFS-Web.

The Commissioner is hereby authorized to charge any additional fees which may be required for this application to Deposit Account Number 19-0741.

Respectfully submitted,

Date October 18, 2022

By */Paul S. Hunter/*

FOLEY & LARDNER LLP
Customer Number: 147491
Telephone: (858) 847-6733
Facsimile: (858) 792-6773

Paul S. Hunter
Attorney for Applicant
Registration No. 44,787

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

# ELECTRONIC PAYMENT RECEIPT

| APPLICATION # | RECEIPT DATE / TIME | ATTORNEY DOCKET # |
|---|---|---|
| 17/182,511 | 10/18/2022 11:53:06 AM ET | 115539-0346 |

## Title of Invention

SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM

## Application Information

| | | | |
|---|---|---|---|
| APPLICATION TYPE | Utility - Nonprovisional Application under 35 USC 111(a) | PATENT # | - |
| CONFIRMATION # | 3895 | FILED BY | Emily Rogers |
| PATENT CENTER # | 61076619 | AUTHORIZED BY | Paul Hunter |
| CUSTOMER # | 147491 | FILING DATE | 02/23/2021 |
| CORRESPONDENCE ADDRESS | - | FIRST NAMED INVENTOR | Sagar Sontakke |

## Payment Information

| PAYMENT METHOD | PAYMENT TRANSACTION ID | PAYMENT AUTHORIZED BY |
|---|---|---|
| CARD / 8164 | E20220HB54213655 | Emily Rogers |

| FEE CODE | DESCRIPTION | ITEM PRICE($) | QUANTITY | ITEM TOTAL($) |
|---|---|---|---|---|
| 1806 | SUBMISSION OF AN INFORMATION DISCLOSURE STATEMENT | 260.00 | 1 | 260.00 |
| | | | TOTAL AMOUNT: | $260.00 |

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**New Applications Under 35 U.S.C. 111**

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

**National Stage of an International Application under 35 U.S.C. 371**

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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PATENT AND TRADEMARK OFFICE

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Alexandria, VA 22313 - 1450
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# ELECTRONIC ACKNOWLEDGEMENT RECEIPT

| APPLICATION # | RECEIPT DATE / TIME | ATTORNEY DOCKET # |
|---|---|---|
| **17/182,511** | **10/18/2022 11:53:06 AM ET** | **115539-0346** |

## Title of Invention

SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM

## Application Information

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|---|---|---|---|
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| PATENT CENTER # | 61076619 | FILING DATE | 02/23/2021 |
| CUSTOMER # | 147491 | FIRST NAMED INVENTOR | Sagar Sontakke |
| CORRESPONDENCE ADDRESS | - | AUTHORIZED BY | Paul Hunter |

## Documents

**TOTAL DOCUMENTS: 31**

| DOCUMENT | PAGES | DESCRIPTION | SIZE (KB) |
|---|---|---|---|
| 115539-0346_Response_Non_Final.pdf | 11 | Amendment/Request for Reconsideration-After Non-Final Rejection | 209 KB |
| 115539-0346_J_IDS_Transmittal.pdf | 2 | Transmittal Letter | 116 KB |
| 115539-0346_J_SB08.pdf | 3 | Information Disclosure Statement (IDS) Form (SB08) | 126 KB |
| Warning: This is not a USPTO supplied IDS fillable form. Data in the form cannot be automatically loaded to other USPTO systems. | | | |
| J3-- | 7 | Non Patent Literature | 577 KB |

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| J5--Microsoft___Use_a_template_to_create_a.pdf | 3 | Non Patent Literature | 399 KB |
| J6--Mulford__Juan___vSphere_7___Describe_I.pdf | 9 | Non Patent Literature | 584 KB |
| J8--Nutanix___Blueprints_Usage___Nutanix_S.pdf | 121 | Non Patent Literature | 7170 KB |
| J7--Notion___Database_templates___Notion_H.pdf | 5 | Non Patent Literature | 599 KB |
| J9--Nutanix___Creating_a_Playbook___Nutani.pdf | 9 | Non Patent Literature | 531 KB |
| J11--Oracle___Creating_Databases_Using_Data.pdf | 24 | Non Patent Literature | 1488 KB |
| J10--Nutanix___Creating_a_ServiceNow_Templa.pdf | 2 | Non Patent Literature | 65 KB |
| J12--Oracle___Creating_Databases_Using_Data.pdf | 23 | Non Patent Literature | 1544 KB |
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| J17--Tessel_for_Oracle___Fully_managed__hig.pdf | 9 | Non Patent Literature | 359 KB |
| J18--VMware_Tanzu___Innovate_and_grow_your_.pdf | 4 | Non Patent Literature | 283 KB |
| J19--VMware___Clone_a_Virtual_Machine___VMw.pdf | 3 | Non Patent Literature | 105 KB |
| J20--VMware___Getting_Started_with_Database.pdf | 10 | Non Patent Literature | 343 KB |
| J22--VMware___Setting_Up_Virtual_Desktops_i.pdf | 271 | Non Patent Literature | 15828 KB |
| J21--VMware___Horizon_7_Administration___VM.pdf | 294 | Non Patent Literature | 16204 KB |
| J23-- | 3 | Non Patent Literature | 123 KB |

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| J25--VMWare___Using_VMware_Workstation_Pro_.pdf | 360 | Non Patent Literature | 19455 KB |
| J26--VMware____VMware_Horizon_7_Instant_Clon.pdf | 20 | Non Patent Literature | 2933 KB |
| J27--VMware____VMware_Horizon_on_VMware_vSAN.pdf | 15 | Non Patent Literature | 2164 KB |
| J28--VMware____VMware_vFabric_Data_DirectorA.pdf | 122 | Non Patent Literature | 4337 KB |
| J29--VMware____VMware_vStorage_Virtual_Machi.pdf | 16 | Non Patent Literature | 1847 KB |
| J30--Zhang__Junchi____vFabric_Data_Director_.pdf | 52 | Non Patent Literature | 3048 KB |

## Digest

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| 115539-0346_J_IDS_Transmittal.pdf | 66B30E711D2C2EA74E11E8527F9FA3CED91A49A595C976E55CE3B18526CDCBF986AA5C4F56F208E8DF40AAB2AA1D0934A97232E054691C4B91368426A33697FE |
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| J6--Mulford__Juan___vSphere_7__Describe_I.pdf | F4C050D66503852BA0DA0ADDB508B498DCED48B32E98ADE12148556B569FF121F2A25442189652AAEA73C236AAC3B203356F349058283C02F1DD0452EE16EFAB |
| J8--Nutanix___Blueprints_Usage__Nutanix_S.pdf | 1E7A5810162988C50040286ED653D69ED054A5BB3D7C60C050DE26D10ED135826F7B30564C23455BD7F1CECDE7EC3322BDD1BF9C8C0A292B7FA1796218D9C6E5 |
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| J9--Nutanix___Creating_a_Playbook___Nutani.pdf | 23586FDA19530CB59E26DDD13CD20C3B8CB8A73E376A4C26C4B9A48A893CD4AF59A4B340BB2D1FEB6E9FCFC20C4C7F078B24FAEB1379BB3519673E6AE6CB6292 |
| J11--Oracle___Creating_Databases_Using_Data.pdf | 31A0EA89663E99DE0FDE142E43C05F69610FE1A7104BCE1D940F9E9A205A3906ACB7BB6E3A28850AC877F249D46456A7F2591F692305E85D35AC2B17A0FCF02A |

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| J10--<br>Nutanix___Creating_a_Service<br>Now_Templa.pdf | 8B8084A776922CE8DF90DDC20CBC334472D0633E0941C0E94<br>50A951134063C3D0CCED8762941A512C10F7E4CE1C7833AAD<br>9F348D3D4E5012B02E2320BC264585 |
| J12--<br>Oracle___Creating_Databases_<br>Using_Data.pdf | C796F05CF2FDF7DF6ACE364E49FDC9F4E0D537873D1340AE<br>3DFF96407BE9F056093F18A1C68EBA0D8A117BA98D91DD453<br>BF0B9B1260907681F8AFEC70C654F14 |
| J13--<br>Oracle___Introduction_to_Bluep<br>rints___.pdf | 5719C950103BBA9DCCE915F28A9D706B7D41294ED03768CE9<br>9FEBDBB2F5CE26D358062A46A9B7273FAD682CE48C86A09E<br>EAF0F66F3F8630D3B881BF13B3DBD01 |
| J14--<br>Oracle___Using_the_DBaaS_S<br>elf_Service_.pdf | E53B01D9935395C3314E840420ED92F64F207CF03133F4A4B6<br>AAA6C3B03BF777732AC53B3D4D2BA56D476888822013D8819<br>0FCB6CE42CD33685A38AE678A63BB |
| J15--<br>Raffic__Mohammed___Creatin<br>g_Linked_Clo.pdf | 4BC6D559C5EF1DCEB4A7AC82F002E837178089B5DCDDBC4<br>D5285C8DA28EA7F5EB551DE960792330C18E64F9D8F0E8AD9<br>DFF1454D2369F558A65E05C314462020 |
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| J17--<br>Tessel_for_Oracle___Fully_ma<br>naged__hig.pdf | 73DFEE31BC97E740F15DF7BD5FCA533AC29E698BAD3DBB48<br>13B73563DD279A09C6641A7F39743490BC17A7F86D36240092<br>45276D1786B3438527FFD7272DB8FE |
| J18--<br>VMware_Tanzu___Innovate_an<br>d_grow_your_.pdf | B3A24BECEB9B2C239F55706A0A144DEA596BA8097580C7E5E<br>16467BF3FC25D9E2FCB81193DE52687724D5943CEC6325E57<br>9B64A4B640A7822EF16D794E333B24 |
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| J22--VMware___Setting_Up_Virtual_Desktops_i.pdf | DF3EAABF2FEF49D5F86C3C507EB794A6C3F493DE5126FF2483B38A97B5A4410287A9731908E077AA726C5376EDAE2CC63512D6E7B0D804B1E0A6D579E352A80A |
| J21--VMware___Horizon_7_Administration___VM.pdf | 47924D34F35A2C58D58B501487D3C84A3F19974BBC7DB160C781299A56C7542FEF6C3504B6559B22D9062D621A13273A32E21485FD7C40EE976AE05A8A4B36F0 |
| J23--VMware___Snapshot_Files___VMware_vSphe.pdf | B9B503E837A443DB68CE20CCB06E906ED6E44D5715AC99102EB8F68ADE7C4EEBD8E5A1A4263D6719AE86B1755A6BC8029DA01DC16C5BF9B8241D99160CA8E2B0 |
| J24--VMware___Understanding_Clones_in__VMwa.pdf | FFA867B90130F23F08DC39F159BE6738CC75BC457858A3499B20729E1FB12F5C056D4911CC6A52230503004F6D52FBBE820F2521FC389185721A27B8037480E0 |
| J25--VMWare___Using_VMware_Workstation_Pro_.pdf | D385DD4D4D09B2B60E096AA292D0853A55C0CF9DB64D3EA6B7E2741DD088305EAAAD4590740CCB32239E7DFCC810B74C1E5B237DB8D90AF00899F62ED9E02A7D |
| J26--VMware___VMware_Horizon_7_Instant_Clon.pdf | AE027C91ECA022B01AE90E86BE253B4731474C8A695683B7376EF1BAC6031C0435393D0EE069FC388A51C4D7DDCC83449388D361B4D3573A344D33B79D03FFE6 |
| J27--VMware___VMware_Horizon_on_VMware_vSAN.pdf | C05F99E1EF92AE74CA38BC1460C419AB963C55676604C6632BCDF97DBB341B53FA9662668B7E680A6E1E6435DF2801AD084722FFD86A9914A8EF6F6A67F30A27 |
| J28--VMware___VMware_vFabric_Data_DirectorA.pdf | F752F0E5C626884D7519FCC1F8C564F6E4EF53015B4CCFDA7DD3C9DF041EB27ED8BA6F7945A624F9DADA54C2DCB842E7A7454C49CD086DFA7DAE4B43915AA95F |
| J29--VMware___VMware_vStorage_Virtual_Machi.pdf | C06F84F180FC06FBC346D9349059A2966D6F91EA9E70E9C8CC8444C2AEC9E78C80B7FA6BDCA16FF3B648F3BC1FC24508F949B1B46604AC1A81623AE061C32991 |
| J30--Zhang__Junchi___vFabric_Data_Director_.pdf | 6813EC43283492BBE2A457F6D644D7C8419341FE68CE24B79FB9D8AE9FC36FAF413EC804E54E86C520972FD490E0147F1E9B901D93A2BE82121433F6B4F58CB |

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**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A system comprising:

a plurality of nodes, wherein a source database is stored on ~~distributed between a first cluster and a second cluster, each of~~ the plurality of nodes ~~storing a copy of a source database~~; and

a processor executing computer-readable instructions stored on a memory to:

designate a primary node from ~~first node of~~ the plurality of nodes ~~as a primary node~~;

designate remaining ones of the plurality of nodes as secondary nodes to take over from the primary node upon failure of the primary node;

designate an initial active node from ~~a second node of~~ the plurality of nodes based on a switch over policy ~~as an initial active node~~;

create a snapshot ~~backup~~ of the source database from the initial active node;

automatically designate, based on [[a]] the switch over policy, ~~a third~~ another node of the plurality of nodes as a next active node upon the initial active node becoming unavailable; and

~~continue~~ create a next snapshot ~~backups~~ of the source database from the next active node upon the initial active node becoming unavailable.

2. (Original) The system of claim 1, wherein the switch over policy is a primary-only policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the primary node.

3. (Original) The system of claim 1, wherein the switch over policy is a secondary-only policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the secondary nodes.

4. (Original) The system of claim 1, wherein the switch over policy is a prefer-secondary policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the secondary nodes, or upon determining that none of the plurality of nodes are the secondary nodes, select the next active node from the plurality of nodes designated as the primary node.

5. (Original) The system of claim 1, wherein the switch over policy is a prefer-primary policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the primary node, or upon determining that none of the plurality of nodes is the primary node, select the next active node from the plurality of nodes designated as the secondary nodes.

6. (Canceled)

7. (Original) The system of claim 1, wherein the processor further executes the computer-readable instructions to select the next active node based upon a priority assigned to at least a subset of the plurality of nodes.

8. (Canceled)

9. (Canceled)

10. (Canceled)

11. (Currently Amended) A non-transitory computer-readable media comprising computer readable instructions stored thereon that when executed by a processor causes the processor to:

designate a primary node from ~~a first node of~~ a plurality of nodes ~~as a primary node~~, ~~wherein the plurality of nodes are distributed between a first cluster and a second cluster, and~~ wherein a source database is stored on ~~each of~~ the plurality of nodes ~~stores a copy of a source database~~;

designate remaining ones of the plurality of nodes as secondary nodes to take over from the primary node upon failure of the primary node;

designate an initial active node from ~~a second node of~~ the plurality of nodes based on a switch over policy ~~as an initial active node~~;

create a snapshot of ~~backup~~ the source database from the initial active node;

automatically designate, based on [[a]] the switch over policy, ~~a third~~ another node of the plurality of nodes as a next active node upon the initial active node becoming unavailable; and

create a next snapshot ~~continue backups~~ of the source database from the next active node upon the initial active node becoming unavailable.

12. (Canceled)

13. (Canceled)

14. (Original) The non-transitory computer-readable media of claim 11, wherein the switch over policy is a primary-only policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the primary node.

15. (Original) The non-transitory computer-readable media of claim 11, wherein the switch over policy is a secondary-only policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the secondary nodes.

16. (Original) The non-transitory computer-readable media of claim 11, wherein the switch over policy is a prefer-secondary policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the secondary nodes, or upon determining that none of the plurality of nodes are the secondary nodes, select the next active node from the plurality of nodes designated as the primary node.

17. (Original) The non-transitory computer-readable media of claim 11, wherein the switch over policy is a prefer-primary policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the

primary node, or upon determining that none of the plurality of nodes is the primary node, select the next active node from the plurality of nodes designated as the secondary nodes.

18. (Canceled)

19. (Original) The non-transitory computer-readable media of claim 11, wherein the processor further executes the computer-readable instructions to select the next active node based upon a priority assigned to at least a subset of the plurality of nodes.

20. (Canceled)

21. (Currently Amended) A method comprising:

designating, by a processor executing computer-readable instructions stored on a memory, a primary node from ~~a first node of~~ a plurality of nodes ~~as a primary node~~, ~~wherein the plurality of nodes are distributed between a first cluster and a second cluster, and~~ wherein a source database is stored on ~~each of~~ the plurality of nodes ~~stores a copy of a source database~~;

designating, by the processor, remaining ones of the plurality of nodes as secondary nodes to take over from the primary node upon failure of the primary node;

designating, by the processor, an initial active node from ~~a second node of~~ the plurality of nodes based on a switch over policy ~~as an initial active node~~;

creating ~~backing up~~, by the processor, a snapshot of the source database from the initial active node;

automatically designating, by the processor, based on [[a]] the switch over policy, ~~a third~~ another node of the plurality of nodes as a next active node upon the initial active node becoming unavailable; and

creating ~~continuing backups~~, by the processor, a next snapshot of the source database from the next active node upon the initial active node becoming unavailable.

22. (Canceled)

23. (Canceled)

24. (Original) The method of claim 21, wherein the switch over policy is a primary-only policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the primary node.

25. (Original) The method of claim 21, wherein the switch over policy is a secondary-only policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the secondary nodes.

26. (Original) The method of claim 21, wherein the switch over policy is a prefer-secondary policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the secondary nodes, or upon determining that none of the plurality of nodes are the secondary nodes, select the next active node from the plurality of nodes designated as the primary node.

27. (Original) The method of claim 21, wherein the switch over policy is a prefer-primary policy, and wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the primary node, or upon determining that none of the plurality of nodes is the primary node, select the next active node from the plurality of nodes designated as the secondary nodes.

28. (Canceled)

29. (Original) The method of claim 21, wherein the processor further executes the computer-readable instructions to select the next active node based upon a priority assigned to at least a subset of the plurality of nodes.

30. (Canceled)

31. (New) The system of claim 1, wherein the plurality of nodes are distributed between a first cluster and a second cluster.

32. (New) The system of claim 1, wherein each of the plurality of nodes stores a copy of the source database.

33. (New) The system of claim 31, wherein each of the first cluster and the second cluster stores a copy of the source database.

34. (New) The system of claim 31, wherein the processor further executes the instructions to create a cloned database from the snapshot.

35. (New) The non-transitory computer-readable media of claim 11, wherein the plurality of nodes are distributed between a first cluster and a second cluster.

36. (New) The non-transitory computer-readable media of claim 11, wherein each of the plurality of nodes stores a copy of the source database.

37. (New) The non-transitory computer-readable media of claim 35, wherein each of the first cluster and the second cluster stores a copy of the source database.

38. (New) The non-transitory computer-readable media of claim 35, wherein the processor further executes the instructions to create a cloned database from the snapshot.

39. (New) The method of claim 21, wherein the plurality of nodes are distributed between a first cluster and a second cluster.

36. (New) The method of claim 21, wherein each of the plurality of nodes stores a copy of the source database.

37. (New) The method of claim 39, wherein each of the first cluster and the second cluster stores a copy of the source database.

38. (New) The method of claim 39, further comprising creating a cloned database from the snapshot.

## REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and the reasons that follow. Claims 1, 11, and 21 have been amended. Claims 6, 8 – 10, 12, 13, 18, 20, 22, 23, 28, and 30 are canceled. Claims 31 – 38 are added. No new subject matter has been added with the amendments to the claims.

After the amendments as set forth above, Claims 1 – 5, 7, 11, 14 – 17, 19, 21, 24 – 27, 29, and 31 – 38 will be pending in the present application.

### I. Examiner Interview Summary

Applicants thank the Examiner for the courtesy extended during the interview conducted on October 7, 2022 with Applicants' representative to discuss the Office Action mailed July 21, 2022. During the interview, the Examiner provided helpful guidance, but no agreement as to the ultimate patentability of the claims was reached.

### II. Claim Rejections – 35 U.S.C. § 102

On page 2, the Office Action rejected Claims 1, 9, 11-12, and 21-22 under 35 U.S.C. §102(a)(1) as allegedly being anticipated by U.S. Patent Application Publication No. 2019/0310926 to Hashimoto ("Hashimoto").

Applicant amends Claims 1, 11, and 21 and cancels Claims 9, 12, and 22. Thus, the rejection of these claims is moot. Applicant respectfully requests withdrawal of the anticipation rejection of these claims.

### III. Claim Rejections – 35 U.S.C. § 103

On page 5 of the Office Action, Claims 2, 8, 14, 20, 24, and 30 were rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Hashimoto in view of U.S. Patent No. 10,503,612 to Wang ("Wang").

On page 9 of the Office Action, Claims 3-4, 7, 15-16, 19, 25-26, and 29 were rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Hashimoto in view of U.S. Patent Application Publication No. 2007/0234115 to Saika ("Saika").

On page 14 of the Office Action, Claims 5, 17, and 27 were rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Hashimoto in view of U.S. Patent Application Publication No. 2011/0022882 to Jaehde ("Jaehde").

On page 17 of the Office Action, Claims 6, 18, and 28 were rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Hashimoto in view of U.S. Patent No. 7,389,300 to Shah ("Shah").

On page 20 of the Office Action, Claims 10, 13, and 23 were rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Hashimoto in view of U.S. Patent Application Publication No. 2019/0339870 to Meiri ("Meiri").

None of these additional references, alone or in combination with Hashimoto, disclose, suggest, or teach the amended claims.

Hashimoto is directed to a system having three tiers of server nodes: primary, synchronous, and asynchronous. When the primary server goes down, a synchronous server is promoted to be a new primary server and an asynchronous server is promoted to be a synchronous server. The Office Action equates the promotion of the asynchronous server to synchronous server to "backup the source database from the initial active node" in the independent claims. However, *changing a node from asynchronous to synchronous* is not the same as backing up the database. **To clarify this distinction, Applicant amends the claims to recite "create a snapshot of the source database from the initial active node."**

Further, there is no disclosure in Hashimoto of any switch over policy. The Office Action ignores this feature in applying Hashimoto to claim 1. Moreover, there is no disclosure in Hashimoto of designating any initial active node. Without disclosing a switch over

policy, **Hashimoto cannot teach, suggest, or disclose "designat[ing] an initial active node … based on a switch over policy."**

Furthermore, Hashimoto does not disclose "a plurality of nodes distributed between a first cluster and a second cluster" as recited in claim 1. The database servers discussed in Hashimoto comprise a **single** cluster. FIG. 1 of Hashimoto is a "block diagram illustrating a configuration example of a cluster system 1 according to an embodiment." Discussions of other figures in Hashimoto refer to "the cluster system 1" of FIG. 1. Hashimoto is altogether silent as to multiple clusters. Thus, Hashimoto does not disclose "**a plurality of nodes distributed between a first cluster and a second cluster**" as in the claims.

For at least these reasons, Applicant requests withdrawal of the rejections.

## IV. Conclusion

It is submitted that each outstanding rejection to the application has been overcome, and that the Application is in condition of allowance. Applicants respectfully request reconsideration and allowance of all pending claims. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance prosecution.

It should also be noted that although arguments have been presented with respect to certain claims herein, the recited subject matter as well as various other subject matter and/or combinations of subject matter may be patentable for other reasons. Further, the failure to address any statement by the Examiner herein should not be interpreted as acquiescence or agreement with such statement. Applicants expressly reserve the right to set forth additional and/or alternative reasons for patentability and/or allowance with the present Application or in any other future proceeding, and to rebut any statement presented by the Examiner in this or other papers during prosecution of the present Application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application, or credit any overpayment, to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date ___October 18, 2022_____ By ___*/Paul S. Hunter/*_____

FOLEY & LARDNER LLP
Customer Number: 147491
Telephone: (858) 847-6733

Paul S. Hunter
Attorney for Applicants
Registration No. 44,787

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| First Inventor Name: | Sagar Sontakke |
| Title: | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Appl. No.: | 17/182,511 |
| Filing Date: | 2/23/2021 |
| Examiner: | Michael Xu |
| Art Unit: | 2113 |
| Confirmation Number: | 3895 |

AMENDMENT AND REPLY UNDER 37 C.F.R. § 1.111

Mail Stop AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

This communication is responsive to the Non-Final Office Action mailed July, 21, 2022, concerning the above-referenced patent application.

**Amendments to the Claims** are reflected in the listing of claims which begins on page 2 of this document.

**Remarks** begin on page 8 of this document.

Please amend the application as follows:

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

| **PATENT APPLICATION FEE DETERMINATION RECORD**<br>Substitute for Form PTO-875 | Application or Docket Number<br>17/182,511 | Filing Date<br>02/23/2021 | ☐ To be Mailed |
|---|---|---|---|

**ENTITY:** ☑ LARGE ☐ SMALL ☐ MICRO

**APPLICATION AS FILED - PART I**

| | (Column 1) | (Column 2) | | | |
|---|---|---|---|---|---|
| FOR | NUMBER FILED | NUMBER EXTRA | | RATE ($) | FEE ($) |
| ☐ BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | | N/A | |
| ☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | | N/A | |
| ☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | | N/A | |
| TOTAL CLAIMS (37 CFR 1.16(i)) | minus 20 = | * | | x $100 = | |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | minus 3 = | * | | x $480 = | |
| ☐ APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | |
| ☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | | TOTAL | |

**APPLICATION AS AMENDED - PART II**

| | | (Column 1) | | (Column 2) | (Column 3) | | | |
|---|---|---|---|---|---|---|---|---|
| AMENDMENT | 10/18/2022 | CLAIMS REMAINING AFTER AMENDMENT | | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA | | RATE ($) | ADDITIONAL FEE ($) |
| | Total (37 CFR 1.16(i)) | * 26 | Minus | ** 30 | = 0 | | x $100 = | 0 |
| | Independent (37 CFR 1.16(h)) | * 3 | Minus | *** 3 | = 0 | | x $480 = | 0 |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | |
| | | | | | | | TOTAL ADD'L FEE | 0 |

| | | (Column 1) | | (Column 2) | (Column 3) | | | |
|---|---|---|---|---|---|---|---|---|
| AMENDMENT | | CLAIMS REMAINING AFTER AMENDMENT | | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA | | RATE ($) | ADDITIONAL FEE ($) |
| | Total (37 CFR 1.16(i)) | * | Minus | ** | = | | x $0 = | |
| | Independent (37 CFR 1.16(h)) | * | Minus | *** | = | | x $0 = | |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | |
| | | | | | | | TOTAL ADD'L FEE | |

| | |
|---|---|
| * If the entry in column 1 is less than the entry in column 2, write "0" in column 3. | LIE |
| ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". | /KIM R WATSON/ |
| *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". | |
| The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1. | |

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

| Electronic Acknowledgement Receipt | |
|---|---|
| **EFS ID:** | 47143732 |
| **Application Number:** | 17182511 |
| **International Application Number:** | |
| **Confirmation Number:** | 3895 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Customer Number:** | 147491 |
| **Filer:** | Paul S. Hunter/Emily Rogers |
| **Filer Authorized By:** | Paul S. Hunter |
| **Attorney Docket Number:** | 115539-0346 |
| **Receipt Date:** | 05-DEC-2022 |
| **Filing Date:** | 23-FEB-2021 |
| **Time Stamp:** | 14:37:12 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | yes |
| Payment Type | CARD |
| Payment was successfully received in RAM | $260 |
| RAM confirmation Number | E2022B5E37481370 |
| Deposit Account | |
| Authorized User | |
| The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: | |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Transmittal Letter | 115539-0346_K_IDS.pdf | 118400<br>684f539a388e2bb6064a67e4f78cd702e254a1b6 | no | 2 |
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| **Information:** | | | | | |
| 2 | Information Disclosure Statement (IDS) Form (SB08) | 115539-0346_K_SB08.pdf | 134492<br>b43db78eb7b4836ded20924540139fe9689098bf | no | 4 |
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| This is not an USPTO supplied IDS fillable form | | | | | |
| 3 | Foreign Reference | FOR_K7--LU_102236B1.pdf | 1709975<br>77f7ea00f0e2bd569d2b5dd95cfe30c8c2f49ba7 | no | 40 |
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| **Information:** | | | | | |
| 4 | Non Patent Literature | NPL_K8--_Amazon_RDS_Now_Supports_Setting_Up_Co.pdf | 168767<br>136593e8b5d3c8c82dd199b6fdb106dd44b85221 | no | 7 |
| **Warnings:** | | | | | |
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| 5 | Non Patent Literature | NPL_K9--_Azure_Arc_extends_the_Azure_control_p.pdf | 280627<br>f377029fc059f1df4c715d1a0eb66a9f10cdff6f | no | 5 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 6 | Non Patent Literature | NPL_K10--_Configure_cross_tenant_access_setting.pdf | 1019742<br>e7c017db5265a77267b61f91df6f8fd39b588bd1 | no | 21 |
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| **Information:** | | | | | |
| 7 | Non Patent Literature | NPL_K11--_Connected_Machine_Agent_Prerequisites.pdf | 62271<br>f8a299d92608a053e495aff3570f0ca0832e471 | no | 1 |
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| 8 | Non Patent Literature | NPL_K12--_Control_Plane___https___docs_controlp.pdf | 199975<br>8a0931bce8a5b28bcfe930edbfc4a6c2bfa98b45 | no | 2 |
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| 9 | Non Patent Literature | NPL_K13--_Exadata_Database_Service_onCloud_Cust.pdf | 268242<br>30e11dc78e83d44ceec030a2d33ca5a33723b714 | no | 7 |
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| 10 | Non Patent Literature | NPL_K14--_Features_and_Capabilities_of_Azure_Ar.pdf | 225992<br>6850c471f4f2421b3c5130924010a2dc8c611613 | no | 7 |
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| 11 | Non Patent Literature | NPL_K15--_Managing_Cloud_Native_Workloads_with_.pdf | 2311481<br>ff9476f6d949dbeb37c1c7e2969be69415334e14 | no | 32 |
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| 12 | Non Patent Literature | NPL_K16--_Oracle_Exadata_Cloud_Customer_X9M___V.pdf | 1665584<br>2699ebddf6d28e4b57dadc6a914fc10da2ff57aa | no | 12 |
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| 13 | Non Patent Literature | NPL_K17--_Overview_of_Azure_Connected_Machine_A.pdf | 246378<br>ef4677a0d01faf254329ef75ac6ed7eb31179011 | no | 3 |
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| 14 | Non Patent Literature | NPL_K18--_Row_Level_Security___September_17__20.pdf | 407764<br>f5be85bf476acaae5e048bbcd04b256c2e45fccc | no | 8 |
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| 15 | Non Patent Literature | NPL_K19--_Use_Azure_Private_Link_to_Securely_Co.pdf | 134350<br>c05357827450e1b51cd697f5044847768f3d397a | no | 2 |
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| 16 | Non Patent Literature | NPL_K20--Alhamazani__et_al___Cross_Layer_Multi_.pdf | 8882134<br>dc2f2666a8ae88cdacdba4cea99580caf8caf46d | no | 13 |
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| 17 | Non Patent Literature | NPL_K21--Amazon_Web_Services___Amazon_RDS_Now_S.pdf | 50617<br>f40215ce727656063f543e6f958b63124fffffb3f | no | 1 |
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| 18 | Non Patent Literature | NPL_K22--Amazon_Web_Services___Amazon_RDS_on_Ou.pdf | 188047<br>b8abcc7b6986f9a5f8f8e2f063715bdb61e3ccac | no | 6 |
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| 19 | Non Patent Literature | NPL_K23--Amazon_Web_Services___Configuring_and_.pdf | 1001262<br>fbcbfe94e7107ce204c6dc0c5a91261d63779b33 | no | 24 |
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| 20 | Non Patent Literature | NPL_K24--Amazon_Web_Services___SaaS_Tenant_Isol.pdf | 3293189<br>8e91d95b72284a51af6d72b3620a32e502769ddb | no | 38 |
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| 21 | Non Patent Literature | NPL_K25--Anthos_Technical_Overview__https___clo.pdf | 368590<br>5eee6b80b88d5338ea8d437fa283dc2eb76c0191 | no | 6 |
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| 22 | Non Patent Literature | NPL_K26--AWS_Database_Blog___Configuring_and_Us.pdf | 1000297<br>82463a8b30a1bd4d92cfd9918b32b55f0ba2fba9 | no | 24 |
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| 23 | Non Patent Literature | NPL_K27--AWS_Prescriptive_Guidance___PostgreSQL.pdf | 75503<br>b9962183de59dd219f8351b54ee0862fc70e1ba4 | no | 2 |
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| 24 | Non Patent Literature | NPL_K28--AWS_Prescriptive_Guidance___Row_Level_.pdf | 93103<br>5b9c3d193624f07d1e9800b3d38ae2f12b7d4aff | no | 3 |
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| 25 | Non Patent Literature | NPL_K29--AWS_Serverless_SaaS_Workshop___Lab4___.pdf | 300047<br>27bb7b356ba63dab55a7f9608b1302ae734297a5 | no | 5 |
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| 26 | Non Patent Literature | NPL_K30--AWS_Serverless_SaaS_Workshop___Lab4___.pdf | 148629<br>838598b78487834dcee0f1553b02e82ed52d41bc | no | 2 |
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| 27 | Non Patent Literature | NPL_K31--Bucur__et_al____Multi_Cloud_Resource_M.pdf | 1273514<br>df342f56da4fdb58e016d836e805c03af4e7fc9c | no | 17 |
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| 28 | Non Patent Literature | NPL_K32--Cunnhingham___Introducing_PlanetScale_.pdf | 1097824<br>806c27fa2942755c2bb0970896f220bc188d9a98 | no | 6 |
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| 29 | Non Patent Literature | NPL_K33--Guevara__Introducing_PlanetScale_Insig.pdf | 1979117<br>e4f2c1a4b5aed76b0a9ccf4dc198755c679e542d | no | 10 |
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| 30 | Non Patent Literature | NPL_K34--MVware___Horizon_Architecture___https_.pdf | 2093045<br>7d0274c0ad92fc2f217fed1185285f605192bdfe | no | 26 |
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| 31 | Non Patent Literature | NPL_K35--Oracle___Exadata_Cloud_Customer_Securi.pdf | 3730572<br>988db8bcc0eb37af54b515b2bc4c0d95dda50cbb | no | 28 |
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| 32 | Non Patent Literature | NPL_K36--Oracle___Oracle_Exadata_Cloud_Customer.pdf | 1665584<br>ec6dd1101bca337c89c097195aa99c84af2a539c | no | 12 |
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| 33 | Non Patent Literature | NPL_K37--Oracle___Oracle_Gen_2_Exadata_Cloud_Cu.pdf | 3746892<br>cb5457267367b5b3360de6af8bd583962b920d6d | no | 28 |
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| 34 | Non Patent Literature | NPL_K38--PlanetScale__Deployment_Options_Docume.pdf | 130077<br>97260e01581d928337967089041217 31b4fe07bc | no | 3 |
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| 35 | Non Patent Literature | NPL_K39--PlanetScale__Query_Insights_Documentat.pdf | 1999189<br>350f96a8a2fffe0dd37f8f372aef5f896bf84654 | no | 8 |
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| 36 | Non Patent Literature | NPL_K40--PlanetScale__The_MySQL_compatible_serv.pdf | 797600<br>a89e7b174deb8e2635844a3d67a69fae1076c5bd | no | 16 |
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| 37 | Non Patent Literature | NPL_K41--STONE___Cross_Tenant_Access___LoanPro_.pdf | 71929<br>684d3db00a8869958670487a4e756fce2aa9ba86 | no | 3 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 38 | Non Patent Literature | NPL_K42--TANG___Multi_tenant_access_control_for.pdf | 4629382<br>97853c0f49000f429feee4e31e8c13478a825e0b | no | 112 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 39 | Non Patent Literature | NPL_K43--VMware_Horizon___Horizon_Control_Plane.pdf | 2827755<br>9322eb6c11dc902c138711a7d3a6018dbae3e247 | no | 16 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 40 | Non Patent Literature | NPL_K44--VMware___Horizon_Cloud_on_Microsoft_Az.pdf | 1385939<br>0937b1b7e22a323c38effd58b678977800a78f6f | no | 19 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 41 | Non Patent Literature | NPL_K45--VMware___Horizon_Cloud_Pods_in_Microso.pdf | 653875<br>e0f182e35ae02e9b3bbc7e781eb6098828fbb7c4 | no | 13 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |

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| 42 | Non Patent Literature | NPL_K46--VMware___Horizon_Control_Plane_Service.pdf | 2827760<br>b14a829cbb3196876a7fe168a5f572c67345fe80 | no | 16 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 43 | Non Patent Literature | NPL_K47--VMware___Horizon_Messaging___https___d.pdf | 28166<br>3bcc302685172d429c2b365e882212ee39b1fd19 | no | 1 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 44 | Non Patent Literature | NPL_K48--VMware___Learn_More_About_Network_Prof.pdf | 2757900<br>bcf7878926bc2eae18e114bc5fa241b83ddd400f | no | 8 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 45 | Non Patent Literature | NPL_K49--VMware___vRealize_Automation_Cloud_and.pdf | 465592<br>68f9ed8f1eb66b369f917a2e5d3f01ee02cda0e2 | no | 4 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 46 | Non Patent Literature | NPL_K50--VMWare__Cloud_Control_Plane_Management.pdf | 109741<br>f7fdf4439ec41d1e1fb8053d8168e8ae285a334a | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 47 | Non Patent Literature | NPL_K51--VMware__Create_Network_Profiles__https.pdf | 53253<br>85a108936e1c0c8baa3fb3699c79630692cd05bf | no | 1 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 48 | Non Patent Literature | NPL_K52--YouTube_Video_screenshots_for__Nutanix.pdf | 5045809<br>91ae00f3c8f59904e45e3f75c62f13100d31ab10 | no | 22 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |

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|---|---|---|---|---|---|
| 49 | Non Patent Literature | NPL_K53--YouTube_Video_screenshots_for_Nutanix_.pdf | 4996506<br>6851896ace9bc03974b818a204091dd4df84c74b | no | 23 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 50 | Non Patent Literature | NPL_K54--YouTube_Video_screenshots_for_Nutanix_.pdf | 1240029<br>5e377c289efa3c4b3fc439c369cd11415bf0a8a5 | no | 10 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 51 | Fee Worksheet (SB06) | fee-info.pdf | 38283<br>869c443e79a17b9b9fe9727b21f946afb499e130 | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | **Total Files Size (in bytes):** | 70000791 | | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**<u>New Applications Under 35 U.S.C. 111</u>**
**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**
**<u>National Stage of an International Application under 35 U.S.C. 371</u>**
**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**
**<u>New International Application Filed with the USPTO as a Receiving Office</u>**
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| First Inventor Name: | Sagar Sontakke |
| Title: | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Application No.: | 17/182,511 |
| Filing Date: | 2/23/2021 |
| Examiner: | XU, MICHAEL |
| Art Unit: | 2113 |
| Confirmation No.: | 3895 |

**INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Applicant submits herewith documents for the Examiner's consideration in accordance with 37 CFR §§1.56, 1.97 and 1.98.

Applicant respectfully requests that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

The submission of any document herewith is not an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicant does not waive

any rights to take any action, which would be appropriate to antedate or otherwise remove as a competent reference any document submitted herewith.

**TIMING OF THE DISCLOSURE**

The listed documents are being submitted in compliance with 37 CFR §1.97(c), before the mailing date of any of a final action under 37 CFR §1.113, a notice of allowance under 37 CFR §1.311, or an action that otherwise closes prosecution in the application.

**FEE**

Fees in the amount of $260.00 to cover the fee associated with an information disclosure statement are being paid by credit card via EFS-Web.

The Commissioner is hereby authorized to charge any additional fees which may be required for this application to Deposit Account Number 19-0741.

Respectfully submitted,

Date Dec. 5, 2022 By */Paul S. Hunter/*

FOLEY & LARDNER LLP
Customer Number: 147491
Telephone: (858) 847-6733
Facsimile: (858) 792-6773

Paul S. Hunter
Attorney for Applicant
Registration No. 44,787

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: December 5, 2022 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | 2113 |
| | | | | Examiner Name | XU, MICHAEL |
| Sheet | 1 | of | 4 | Attorney Docket Number | 115539-0346 |

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| Examiner Initials* | Cite No.[1] | Document Number<br>Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
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| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| | | | | **Filing Date** | 2/23/2021 |
| Date Submitted: December 5, 2022 | | | | **First Named Inventor** | Sagar Sontakke |
| | | | | Art Unit | 2113 |
| *(use as many sheets as necessary)* | | | | Examiner Name | XU, MICHAEL |
| Sheet | 2 | of | 4 | Attorney Docket Number | 115539-0346 |

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|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| | | | | **Filing Date** | 2/23/2021 |
| Date Submitted: December 5, 2022 | | | | **First Named Inventor** | Sagar Sontakke |
| | | | | Art Unit | 2113 |
| *(use as many sheets as necessary)* | | | | Examiner Name | XU, MICHAEL |
| Sheet | 3 | of | 4 | Attorney Docket Number | 115539-0346 |

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| Examiner Signature | | Date Considered | |
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| Substitute for form 1449/PTO | | | | ***Complete if Known*** | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| | | | | **Filing Date** | 2/23/2021 |
| Date Submitted: December 5, 2022 | | | | **First Named Inventor** | Sagar Sontakke |
| | | | | Art Unit | 2113 |
| *(use as many sheets as necessary)* | | | | Examiner Name | XU, MICHAEL |
| Sheet | 4 | of | 4 | Attorney Docket Number | 115539-0346 |

**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
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| Examiner Signature | | Date Considered | |
|---|---|---|---|

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | 17182511 |
| **Filing Date:** | 23-Feb-2021 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Filer:** | Paul S. Hunter/Emily Rogers |
| **Attorney Docket Number:** | 115539-0346 |

Filed as Large Entity

**Filing Fees for Utility under 35 USC 111(a)**

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| **Pages:** | | | | |
| **Claims:** | | | | |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |
| **Post-Allowance-and-Post-Issuance:** | | | | |
| **Extension-of-Time:** | | | | |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Miscellaneous:** | | | | |
| SUBMISSION- INFORMATION DISCLOSURE STMT | 1806 | 1 | 260 | 260 |
| | | **Total in USD ($)** | | **260** |

PTO/SB/08 (modified)

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: September 19, 2022 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | 2113 |
| | | | | Examiner Name | XU, MICHAEL |
| Sheet | 1 | of | 1 | Attorney Docket Number | 115539-0346 |

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| Examiner Initials* | Cite No.[1] | Document Number<br>Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
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**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
|---|---|---|---|
| | I9 | BackupAssist, "https://backupassist.com/support/en/backupassist/manage/calendar.htm", 07/01/2017 (Year: 2017). | |
| | | | |

| Examiner Signature | /MICHAEL XU/ | Date Considered | 11/23/2022 |
|---|---|---|---|

4882-1590-3539.1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.X./

PTO/SB/08 (modified)

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: September 1, 2022 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | 2113 |
| | | | | Examiner Name | Michael Xu |
| Sheet | 1 | of | 1 | Attorney Docket Number | 115539-0346 |

**U.S. PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Document Number Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | H1 | 2013/0263119-A1 | 10-03-2013 | PISSAY ET AL. | |
| | H2 | 2015/0074054-A1 | 03-12-2015 | ANTONY, JINTO | |
| | H3 | 2017/0374136-A1 | 12-28-2017 | RINGDAHL, KENNETH N. | |
| | | | | | |

**UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS**

| Examiner Initials* | Cite No.[1] | U.S. Patent Application Document Serial Number-Kind Code[2] (*if known*) | Filing Date of Cited Document MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
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**FOREIGN PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Documents | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
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| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
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| Examiner Signature | /MICHAEL XU/ | Date Considered | 11/23/2022 |
|---|---|---|---|

4867-6582-6608.1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.X./

| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 17/182,511 | Sontakke et al. |
| | Examiner | Art Unit |
| | MICHAEL XU | 2113 |

| CPC - Searched* | | |
|---|---|---|
| Symbol | Date | Examiner |
| G06F11/1464 OR G06F11/1451 OR G06F11/1461 OR G06F11/1471 OR G06F11/2025 OR G06F2201/84 OR G06F2201/80 | 07/14/2022 | MX |

| CPC Combination Sets - Searched* | | |
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| Symbol | Date | Examiner |
| | | |

| US Classification - Searched* | | | |
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| Class | Subclass | Date | Examiner |
| | | | |

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

| Search Notes | | |
|---|---|---|
| Search Notes | Date | Examiner |
| Text search of USPAT, US-PGPUB, EPO, DERWENT, including inventor and assignee search. See search history printout. | 07/14/2022 | MX |
| NPL search through Google and Google Scholar. See search history printout. | 07/14/2022 | MX |
| Text search of USPAT, US-PGPUB, EPO, DERWENT, including inventor and assignee search. See search history printout. | 11/26/2022 | MX |
| NPL search through Google and Google Scholar. See search history printout. | 11/26/2022 | MX |

| /M.X./<br>Examiner, Art Unit 2113 | |
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| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 17/182,511 | Sontakke et al. |
| | Examiner | Art Unit |
| | MICHAEL XU | 2113 |

| Interference Search | | | |
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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 17/182,511 | 02/23/2021 | Sagar Sontakke | 115539-0346 | 3895 |

147491 7590 12/06/2022

FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109

| EXAMINER |
|---|
| XU, MICHAEL |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2113 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 12/06/2022 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipdocketing@foley.com

PTOL-90A (Rev. 04/07)

| *Office Action Summary* | **Application No.** 17/182,511 | **Applicant(s)** Sontakke et al. | |
|---|---|---|---|
| | **Examiner** MICHAEL XU | **Art Unit** 2113 | **AIA (FITF) Status** Yes |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☑ Responsive to communication(s) filed on 10/18/2022.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☑ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims***

5) ☑ Claim(s) 1-42 is/are pending in the application.

5a) Of the above claim(s) 6,8-10,12-13,18,20,22-23,28 and 30 is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-5,7,11,14-17,19,21,24-27,29 and 31-42 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

**Application Papers**

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

**Certified copies:**

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☑ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date 10/18/2022,09/19/2022,09/01/2022.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

***Notice of Pre-AIA or AIA Status***

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

***Claim Objections***

The numbering of claims is not in accordance with 37 CFR 1.126 which states, when new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Regarding duplicate claims 36,37,38, Examiner suggests renumbering the second occurrence of claims 36,37,38 to 40,41,42. For the purposes of examination, the method claim version(the second occurrence) of claims 36,37,38 will be interpreted as claims 40,41,42.

***Claim Rejections - 35 USC § 103***

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the

claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim(s) 1,2,11,14,21,22,24,31-42 is/are rejected under 35 U.S.C. 103 as being unpatentable over US 20190310926 A1 (Hashimoto) in view of US 10503612 B1 (Wang).

Regarding claim 1, Hashimoto teaches,

**A system comprising: a plurality of nodes, wherein a source database is stored on the plurality of nodes**(fig 1:2A-1,2B-1,2C-1; par 32 “In the example of FIG. 1, it is assumed that one node 2A-1 operates as a primary server, three nodes 2B-1 to 2B-3 operate as a synchronous standby server, and three nodes 2C-l to 2C-3 operate as an asynchronous standby server.”)**; and**

**a processor executing computer-readable instructions stored on a memory to**(par 131 “The processor 10a deploys and executes the program 10g stored in the storage unit 10c on the memory lOb to implement the functions as the primary server 2A, the synchronous server 2B, the asynchronous server 2C, or the AP server 3 illustrated in FIG. 1.”)**:**

**designate a primary node from the plurality of nodes based on a switch over policy** (par 34 “The primary server 2A is an example of an active node managing the master data of a DB. The primary server 2A performs a process of updating the DB of the primary server 2A according to a DB updating task.” par 70,71 “Further, the switching controller 24 may execute the state reconstruction based on the priority order between a node 2 in the "synchronous standby" state and a node 2 in the "asynchronous standby" state.”)**;**

**designate remaining ones of the plurality of nodes as secondary nodes to take over from the primary node**(fig 5:S4; par 103 “In the meantime, when it is determined that the WAL state of its own node 2 is the latest ("Yes" in step S3), the node 2 is promoted to a new primary

server 2A-2 (see, e.g., FIG. 6) (step S4; see the arrow (3) in FIG. 6).") **upon failure of the primary node**(fig 5:S1; par 98; "As illustrated in FIG. 5, the synchronous server 2B (and the asynchronous server 2C) detects that a failure accompanying server down has occurred in the primary server 2A-1 (see, e.g., FIG. 6) (step Sl; see the arrow (1) in FIG. 6).")**;**

**designate an initial active node from the plurality of nodes**(fig 5:S4; par 103 "In the meantime, when it is determined that the WAL state of its own node 2 is the latest ("Yes" in step S3), the node 2 is promoted to a new primary server 2A-2 (see, e.g., FIG. 6) (step S4; see the arrow (3) in FIG. 6).") **based on a switch over policy**(fig 4:"promotion according to priority order"; par 71 "Further, the switching controller 24 may execute the state reconstruction based on the priority order between a node 2 in the "synchronous standby" state and a node 2 in the "asynchronous standby" state.")**;**

backup **the source database from the initial active node**(fig 5:S6; par 112 "Then, the switching controller 24 of the primary server 2A-2 promotes the asynchronous server 2C whose WAL state is close to the latest, to a new synchronous server 2B-4 (see, e.g., FIG. 7) (step S6; see the arrow (5) in FIG. 7) and the process is ended."; par 54 "The user data 211 stored in the DB 21 of the primary server 2A may be handled as master data, and the user data 211 stored in the synchronous server 2B or the asynchronous server 2C may be handled as synchronous backup or asynchronous backup of the master data.")**;**

**automatically designate, based on the switch over policy, another node of the plurality of nodes as a next active node upon the initial active node becoming unavailable**(fig 5:S1; par 98; "As illustrated in FIG. 5, the synchronous server 2B (and the asynchronous server

2C) detects that a failure accompanying server down has occurred in the primary server 2A-1 (see, e.g., FIG. 6) (step S1; see the arrow (1) in FIG. 6).”); **and**

continue backups **of the source database from the next active node upon the initial active node becoming unavailable**(par 115 “In addition, the WAL number, which is an example of the priority information 213, may be updated according to the execution of the updating process by the primary server 2A and the synchronizing process by each node 2.”).

However, although Hashimoto teaches backing up write ahead logs, Hashimoto does not specifically teach creating a snapshot of the source database from the initial active node.

On the other hand, Wang teaches

**A system comprising:**

**a plurality of nodes, wherein a source database is stored on the plurality of nodes**(fig 1:116; col 5 ln 29-33 “The data store 118 contains the backup data from the compute infrastructure 102, for example snapshots of VMs or application files. Both the DMS database 116 and the data store 118 are distributed across the nodes 114, for example using Apache Cassandra.”);

**and a processor executing computer-readable instructions stored on a memory**(fig 11:1182,1184; col 22 ln 51-59) **to:**

**designate a primary node from the plurality of nodes**(fig 9:902a; col 17 ln 7-11 “FIG. 9 is a block diagram illustrating a system for managing failover and failback for an application, according to one embodiment. The system includes a primary environment 902a and a secondary environment 902b.”);

**designate remaining ones of the plurality of nodes as secondary nodes to take over from the primary node upon failure of the primary node**(fig 9:902b; col 17 ln 7-11 "FIG. 9 is a block diagram illustrating a system for managing failover and failback for an application, according to one embodiment. The system includes a primary environment 902a and a secondary environment 902b.")**;**

**designate an initial active** infrastructure **from the plurality of nodes based on a switch over policy**(col 3 ln 32-38 "A data management and storage (DMS) cluster of peer DMS nodes manages fail over and failback of application(s) between a primary compute infrastructure and a secondary compute infrastructure. The primary compute infrastructure may be a production environment and the secondary compute infrastructure may be a remote cloud computing environment used primarily for backup purposes."; col 20 ln 59-63 "For example, the primary DMS cluster 912a may share the SLA for the virtual machines of the application with the secondary DMS cluster 912b. In another example, the secondary snapshots may use a different SLA or other policy.")**;**

**create a snapshot of the source database from the initial active node**(fig 10:1005 col 19 ln 33-35 "A primary DMS cluster 912a generates 1005 primary snapshots of virtual machines 904 executing an application in a primary compute infrastructure 908a.")**;**

**automatically designate, based on the switch over policy, another node of the plurality of nodes as a next active node upon the initial active node becoming unavailable**(fig 10:1020 col 19-20 ln 65 – 6 "The primary snapshots of the virtual machines 904 of the primary compute infrastructure 908b are deployed 1015 as virtual machines 924 of the secondary compute infrastructure 908b to execute the application. For example, a failover may be

initiated where the primary snapshots are deployed in the secondary compute infrastructure 908b responsive to a failure in the primary compute infrastructure 908b, a user input ( e.g., for a test), or some other reason.”)**; and**

**create a next snapshot of the source database from the next active node upon the initial active node becoming unavailable**(col 20 ln 54-59 “A secondary DMS cluster 912b generates 1020 secondary snapshots of the virtual machines 924 while the virtual machines 924 are executing the application. In some embodiments, the SLA used to generate the primary snapshots in the primary environment 902a is used in the secondary environment 902b.”)**.**

Therefore, it would have been obvious to a person of ordinary skill in the art before the effective filing date of the claimed invention to further modify Hashimoto to incorporate the snapshots of Wang. One of ordinary skill in the art would have been motivated to remedy the shortcomings of Hashimoto -- a need for a solution for the issue of how to quickly recover data in cases of failure(Wang col 1 ln 18-19 “One aspect of this is reliable data backup and storage, and fast data recovery in cases of failure.”) -- with Wang providing a known method to solve a similar problem. Wang provides “The primary snapshot may be converted to a form suitable for deployment as virtual machines in the secondary compute infrastructure.”(Wang col 1 ln 52-54) A snapshot reduces the amount of time required to deploy compared to building an environment from a transaction log.

Regarding claim 2, Hashimoto and Wang teaches,

**The system of claim 1, wherein the switch over policy** prefers the node with the latest backup(fig 5:S4; par 103 “In the meantime, when it is determined that the WAL state of its own

node 2 is the latest ("Yes" in step S3), the node 2 is promoted to a new primary server 2A-2 (see, e.g., FIG. 6) (step S4; see the arrow (3) in FIG. 6).")

However, although Hashimoto teaches preferring switching over with nodes that have replicated closest in time, Hashimoto does not specifically teach a primary-only policy, wherein the processor selects the next active node from the plurality of nodes designated as the primary node.

On the other hand, Wang teaches

A failover and failback system(Wang col 2 ln 1-3 "some embodiments include a system for failover and failback of an application between a primary compute infrastructure and a secondary compute infrastructure.")

Applicant has specifically defined "primary-only policy" to be limited as follows throughout prosecution

"A primary-only EA policy defines that the next eligible EA node is to be selected from a primary node ( e.g., the primary node 410) and not a standby node."(instant application specification par 101)).

**wherein the switch over policy is a primary-only policy.**(Wang fig 10:1020; col 20 ln 54-59 "A secondary DMS cluster 912b generates 1020 secondary snapshots of the virtual machines 924 while the virtual machines 924 are executing the application. In some embodiments, the SLA used to generate the primary snapshots in the primary environment 902a is used in the secondary environment 902b.")

**wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the primary node**(fig 10:1020;

(fig 10:1020; col 20 ln 54-59 “A secondary DMS cluster 912b generates 1020 secondary snapshots of the virtual machines 924 while the virtual machines 924 are executing the application. In some embodiments, the SLA used to generate the primary snapshots in the primary environment 902a is used in the secondary environment 902b.”).

Therefore, it would have been obvious to a person of ordinary skill in the art before the effective filing date of the claimed invention to further modify Hashimoto to incorporate the primary-only switch over policy of Wang. One of ordinary skill in the art would have been motivated to remedy the shortcomings of Hashimoto -- a need for a solution for the issue of how to continue backing up after the failover(Wang col 4 ln 8-18) -- with Wang providing a known method to solve a similar problem. Wang provides “a system for failover and failback of an application between a primary compute infrastructure and a secondary compute infrastructure.”(Wang col 2 ln 1-3)

Regarding claim 31, Hashimoto and Wang teaches,

**The system of claim 1,**

Wang further teaches,

**wherein the plurality of nodes are distributed between a first cluster and a second cluster.**(fig 1:112x,112y; col 4 ln 49-60 “In this example, to provide redundancy, two DMS clusters 112x-y are used. From time to time, data stored on DMS cluster 112x is replicated to DMS cluster 112y. If DMS cluster 112x fails, the DMS cluster 112y can be used to provide DMS services to the compute infrastructure 102 with minimal interruption.”)

Regarding claim 32, Hashimoto and Wang teaches,

**The system of claim 1,**

Hashimoto further teaches,

**wherein each of the plurality of nodes stores a copy of the source database** (Par 39 "Upon receiving the log transfer completion response from all the synchronous servers 2B among WAL transmission destination nodes 2, the primary server 2A may determine that the synchronizing process has been completed and may terminate the transaction of the synchronizing process. This may ensure a data synchronization (data identity) between the primary server 2A and the synchronous server 2B.")

Regarding claim 33, Hashimoto and Wang teaches,

**The system of claim 31,**

Wang further teaches,

**wherein each of the first cluster and the second cluster stores a copy of the source database.**(fig 1:112x,112y; col 4 ln 49-60 "In this example, to provide redundancy, two DMS clusters 112x-y are used. From time to time, data stored on DMS cluster 112x is replicated to DMS cluster 112y. If DMS cluster 112x fails, the DMS cluster 112y can be used to provide DMS services to the compute infrastructure 102 with minimal interruption.")

Regarding claim 34, Hashimoto and Wang teaches,

**The system of claim 31,**

Wang further teaches,

**wherein the processor further executes the instructions to create a cloned database from the snapshot.** (fig 10:1020 col 19-20 ln 65 – 6 "The primary snapshots of the virtual machines 904 of the primary compute infrastructure 908b are deployed 1015 as virtual machines 924 of the secondary compute infrastructure 908b to execute the application. For example, a failover may be initiated where the primary snapshots are deployed in the secondary compute infrastructure 908b responsive to a failure in the primary compute infrastructure 908b, a user input ( e.g., for a test), or some other reason.")

Regarding claims 11,14,35-38 they are the media comprising instructions to implement the method the system claims 1,2,31-34 implement and are rejected for the same reasons.

Regarding claims 21,24,39-42 they are the method the system claims 1,2, 31-34 implement and are rejected for the same reasons.

Claim(s) 3,4,7,15,16,19,25,26,29 is/are rejected under 35 U.S.C. 103 as being unpatentable over US 20190310926 A1 (Hashimoto) and US 10503612 B1 (Wang) in view of US 20070234115 A1 (Saika).

Regarding claim 3, Hashimoto and Wang teaches,

**The system of claim 1, wherein the switch over policy** prefers the node with the latest backup(fig 5:S4; par 103 "In the meantime, when it is determined that the WAL state of its own

node 2 is the latest ("Yes" in step S3), the node 2 is promoted to a new primary server 2A-2 (see, e.g., FIG. 6) (step S4; see the arrow (3) in FIG. 6).")

However, although Hashimoto teaches preferring switching over with nodes that have replicated closest in time, Hashimoto and Wang does not specifically teach a secondary-only policy, wherein the processor selects the next active node from the plurality of nodes designated as the secondary nodes.

On the other hand, Saika teaches

**The system of claim 1, wherein the switch over policy is a secondary-only policy**(fig 22:S75; par 103 "The file server 160 (360) for which the failover has been completed finds out a possible new takeover destination to reconstruct a cluster. It should be noted that the takeover destination is limited according to the priority of the file server as described below.")**, and**

**wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the secondary nodes**(par 108,109 "High Priority; Failover to the remote site 2 can be carried out." Par 94 "A geographically farther site is set to the destination of a takeover as the priority of the failover increases, and a geographically closer site is set to the destination of the takeover as the priority decreases.")**.**

Therefore, it would have been obvious to a person of ordinary skill in the art before the effective filing date of the claimed invention to further modify Hashimoto and Wang to incorporate the a secondary-only policy, wherein the processor selects the next active node from the plurality of nodes designated as the secondary nodes of Saika. One of ordinary skill in the art would have been motivated to remedy the shortcomings of Hashimoto and Wang -- a

need for a solution for the issue of how to prioritize which node to fail over to when there are multiple backups(Saika par 6,7 “There pose the following problems if there are available multiple options for a destination of a failover such as a node in a remote site in addition to the same node and other node in a local site.”) -- with Saika providing a known method to solve a similar problem. Saika provides “According to this invention, there is provided a failover method used for a system, … The method including the steps of: … setting a failover destination of the respective nodes of the primary site to either one of a node of the secondary site and a node of the primary site based on a correspondence set in advance between a priority and an extent of the failover destination; backing up data from a node of the primary site to a node of a determined failover destination;”(Saika par 12,21,23-24)

Regarding claim 4, Hashimoto and Wang teaches,

**The system of claim 1, wherein the switch over policy** prefers the node with the latest backup(fig 5:S4; par 103 “In the meantime, when it is determined that the WAL state of its own node 2 is the latest ("Yes" in step S3), the node 2 is promoted to a new primary server 2A-2 (see, e.g., FIG. 6) (step S4; see the arrow (3) in FIG. 6).”)**, and**

However, Hashimoto and Wang do not specifically teach a prefer-secondary policy, wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the secondary nodes, or upon determining that none of the plurality of nodes are the secondary nodes, select the next active node from the plurality of nodes designated as the primary node.

On the other hand, Saika teaches

**The system of claim 1, wherein the switch over policy is a prefer-secondary policy**(fig 22:S75; par 103 "The file server 160 (360) for which the failover has been completed finds out a possible new takeover destination to reconstruct a cluster. It should be noted that the takeover destination is limited according to the priority of the file server as described below.")**, and**

**wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the secondary nodes.**(par 108,109 "High Priority; Failover to the remote site 2 can be carried out.")**, or upon determining that none of the plurality of nodes are the secondary nodes, select the next active node from the plurality of nodes designated as the primary node**(par 104-107; "Medium Priority; Failover to other NAS in the local site 1 can be carried out."; Par 94 "A geographically farther site is set to the destination of a takeover as the priority of the failover increases, and a geographically closer site is set to the destination of the takeover as the priority decreases.")**.**

Therefore, it would have been obvious to a person of ordinary skill in the art before the effective filing date of the claimed invention to further modify Hashimoto and Wang to incorporate the a secondary-only policy, wherein the processor selects the next active node from the plurality of nodes designated as the secondary nodes of Saika. One of ordinary skill in the art would have been motivated to remedy the shortcomings of Hashimoto and Wang -- a need for a solution for the issue of how to prioritize which node to fail over to when there are multiple backups(Saika par 6,7 "There pose the following problems if there are available multiple options for a destination of a failover such as a node in a remote site in addition to the same node and other node in a local site.") -- with Saika providing a known method to solve a similar problem. Saika provides "According to this invention, there is provided a failover

method used for a system, … The method including the steps of: … setting a failover destination of the respective nodes of the primary site to either one of a node of the secondary site and a node of the primary site based on a correspondence set in advance between a priority and an extent of the failover destination; backing up data from a node of the primary site to a node of a determined failover destination;"(Saika par 12,21,23-24)

Regarding claim 7, Hashimoto and Wang teaches,

**The system of claim 1,**

Hashimoto further teaches,

**wherein the processor further executes the computer-readable instructions to select the next active node based upon** how recent the backup of each node is**.**(fig 6; par 103 "In the meantime, when it is determined that the WAL state of its own node 2 is the latest ("Yes" in step S3), the node 2 is promoted to a new primary server 2A-2 (see, e.g., FIG. 6)(step S4; see the arrow (3)in FIG. 6")

However, Hashimoto and Wang do not specifically teach a priority assigned to at least a subset of the plurality of nodes.

On the other hand, Saika teaches

**wherein the processor further executes the computer-readable instructions to select the next active node based upon a priority assigned to at least a subset of the plurality of nodes.**(par 103 "the file server 160 (360) for which the failover has been completed finds out a possible new takeover destination to reconstruct a cluster. It should be noted that the takeover

destination is limited according to the priority of the file server as described below." Par 104-109 describes the various priority levels assigned to various node subsets.)

Therefore, it would have been obvious to a person of ordinary skill in the art before the effective filing date of the claimed invention to further modify Hashimoto and Wang to incorporate the a secondary-only policy, wherein the processor selects the next active node from the plurality of nodes designated as the secondary nodes of Saika. One of ordinary skill in the art would have been motivated to remedy the shortcomings of Hashimoto and Wang -- a need for a solution for the issue of how to prioritize which node to fail over to when there are multiple backups(Saika par 6,7 "There pose the following problems if there are available multiple options for a destination of a failover such as a node in a remote site in addition to the same node and other node in a local site.") -- with Saika providing a known method to solve a similar problem. Saika provides "According to this invention, there is provided a failover method used for a system, … The method including the steps of: … setting a failover destination of the respective nodes of the primary site to either one of a node of the secondary site and a node of the primary site based on a correspondence set in advance between a priority and an extent of the failover destination; backing up data from a node of the primary site to a node of a determined failover destination;"(Saika par 12,21,23-24)

Regarding claims 15,16, and 19, they are the media comprising instructions to implement the method the system claims 3,4, and 7 implement and are rejected for the same reasons.

Regarding claims 25,26, and 29, they are the method the system claims 3,4,and 7 implement and are rejected for the same reasons.

Claim(s) 5,17,27 is/are rejected under 35 U.S.C. 103 as being unpatentable over US 20190310926 A1 (Hashimoto) and US 10503612 B1 (Wang) in view of US 20110022882 A1 (Jaehde).

Regarding claim 5, Hashimoto and Wang teaches,

**The system of claim 1,**

Hashimoto further teaches,

**wherein the switch over policy is a prefer-primary policy**(fig 7:2A-2; par 109 "Based on one of the above rules, each node 2 that determines that the latest WAL has been applied to the plural nodes 2 including its own node 2 may determine whether its own node 2 is a target of promotion to the primary server 2A-2."), **and**

**wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the primary node**(par 105 "When there are plural synchronous servers 2B to which the latest WAL has been applied (i.e., when there are plural switching candidates), one synchronous server 2B of these switching candidates may be promoted to the primary server 2A-2 based on a rule shared in advance between the synchronous servers 2B."), **or upon determining** a failure in **the plurality of nodes is the primary node, select** a replacement primary **node from the plurality of nodes designated as the secondary nodes**(fig 9; par 112 "Then, the switching controller 24 of the

primary server 2A-1 promotes the asynchronous server 2C whose WAL state is close to the latest, to a new synchronous server 2B-4 (see, e.g., FIG. 9) (step S13; see the arrow (3) in FIG. 9) and the process is ended.”).

However, Hashimoto and Wang do not specifically teach upon determining that none of the plurality of nodes are the secondary nodes, select the next active node from the plurality of nodes designated as the primary node.

On the other hand, Jaehde teaches

**The system of claim 1, wherein the switch over policy is a prefer-secondary policy**(Fig 4:450; par 81 “Based on the health information for the nodes in the local failover scope, the determined scope of the power failure, information regarding an amount of time required for failover to a remote node in a remote failover scope, and optionally, infrastructure information, the failover scopes of the failover policy are dynamically modified to identify nodes that are within the scope of the power failure, nodes that are not within the scope of the power failure, and relative measures of the nodes with regard to suitability as candidates for failover of application(s) on the faulty node (step 450).”)**, and**

**wherein the processor further executes the computer-readable instructions to select the next active node from the plurality of nodes designated as the secondary nodes**(par 78 “Moreover, as mentioned above, whether to failover to a local node or a remote node may be determined, at least partially, based on the amount of time that the faulty node can continue to operate on a backup power Supply provided via the faulty node's UPS.”)**, or upon determining that none of the plurality of nodes are the secondary nodes, select the next active node from the plurality of nodes designated as the primary node**(fig 4:460; par 81 “The selection of the

one or more best candidate nodes for failover may be performed in a manner Such as previously described, e.g., selecting a local node, if one exists that is not subject to the power failure, determining if failover to a remote node can be performed based on how long the faulty node can operate on backup battery power and the time to perform a remote failover operation, selecting a local node that is subject to the power failure in the event that the failover operation cannot be performed within the amount of time the faulty node can remain operational on backup battery power, etc.").

Therefore, it would have been obvious to a person of ordinary skill in the art before the effective filing date of the claimed invention to further modify Hashimoto and Wang to incorporate the idea of upon determining that none of the plurality of nodes are the secondary nodes, select the next active node from the plurality of nodes designated as the primary node of Jaehde. One of ordinary skill in the art would have been motivated to remedy the shortcomings of Hashimoto and Wang -- a need for a solution for the issue of how to prioritize failover options when the default option becomes unavailable(Jaehde par 18 "The objective is to dynamically deter mine the most reliable node of the high availability cluster in the event of a failure and drive the failover to that node, even to the extent of overriding any established or default failover policies.")-- with Jaehde providing a known method to solve a similar problem. Jaehde provides "The illustrative embodiments provide a mechanism for dynamically updating failover polices in a high availability cluster of computing devices so as to increase application availability."(Jaehde par 18)

Regarding claim 17, it is the media comprising instructions to implement the method the system claim 5 implements and is rejected for the same reasons.

Regarding claim 27, it is the media comprising instructions to implement the method the system claim 5 implements and is rejected for the same reasons.

***Response to Arguments***

Applicant's arguments, see Remarks pg 8-11, filed 10/18/2022, with respect to the rejection(s) of claim(s) 1,11,21 under 35 USC 102 as being unpatentable over US 20190310926 A1 (Hashimoto) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of as being unpatentable under 35 U.S.C. 103 as being unpatentable over US 20190310926 A1 (Hashimoto) in view of US 10503612 B1 (Wang) .

With respect to the independent claims, the applicant has argued that Hashimoto does not teach limitation "designate an initial active node from the plurality of nodes based on a switch over policy". The examiner respectfully disagrees. Hashimoto teaches, in the cited fig 1:2A-1,2B-1,2C-1; par 32 "In the example of FIG. 1, it is assumed that one node 2A-1 operates as a primary server, three nodes 2B-1 to 2B-3 operate as a synchronous standby server, and three nodes 2C-l to 2C-3 operate as an asynchronous standby server." This teaches the initial active node. The switch over policy is taught in par 70,71 "Further, the switching controller 24 may execute the state reconstruction based on the priority order between a node 2 in the "synchronous standby" state and a node 2 in the "asynchronous standby" state.". The examiner

interprets this as “designate an initial active node from the plurality of nodes based on a switch over policy”.

With respect to the independent claims, the applicant has further argued that Hashimoto, nor any of the additional references, including Wang, does not teach limitation “create a snapshot of the source database from the initial active node”. The examiner respectfully disagrees. Wang teaches, in the cited fig 10:1005 col 19 ln 33-35 “A primary DMS cluster 912a generates 1005 primary snapshots of virtual machines 904 executing an application in a primary compute infrastructure 908a.”. The examiner interprets this as “create a snapshot of the source database from the initial active node”.

With respect to new claim 31, the applicant has further argued that Hashimoto, nor any of the additional references, including Wang, does not teach “a plurality of nodes distributed between a first cluster and a second cluster”. The examiner respectfully disagrees. Wang teaches, in the cited fig 1:112x,112y; col 4 ln 49-60 “In this example, to provide redundancy, two DMS clusters 112x-y are used. From time to time, data stored on DMS cluster 112x is replicated to DMS cluster 112y. If DMS cluster 112x fails, the DMS cluster 112y can be used to provide DMS services to the compute infrastructure 102 with minimal interruption.”. The examiner interprets this as “a plurality of nodes distributed between a first cluster and a second cluster”.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- US 20170235758 A1 - Gopalapura - general backup policy reference.
- US 20200110675 A1 - Wang - general backup policy reference.
- US 20160048408 A1 - Madhu - general backup policy reference.
- US 20200349018 A1 - Meadowcroft - Real time backup system.
- US 10725866 B1 - Palaiah - active and passive backups, updates passive backups.
- US 20200104377 A1 - Earnesty - selects migration targets based on requirements. Related to priority/ranking of failover nodes
- US 20200104376 A1 - Earnesty - similar, might be better, more focused on target requirements. Related to priority/ranking of failover nodes
- US 20200050522 A1 - Coleman - general backup policy reference, failover into the same cluster. related to claim 9.
- US 20190384496 A1 - Abdul Rasheed - backup sent to cluster, may be implemented across cluster.
- US 20190324865 A1 - Weissman - policy group selection pattern - picks where to store backups. Has two clusters. Related to priority/ranking of failover nodes
- US 20190155699 A1 - Luo - Generic incremental backup system, similar time machine to applicant.
- US 10719407 B1 - Chockalingam - Generic backup system, fault domains.
- US 20180157561 A1 - Venkatesh - round robin failover for disaster recovery
- US 20170235950 A1 - Gopalapura Venkatesh - round robin failover more detail than Venkatesh
- US 20140201171 A1 - Vijayan - round robin failover for backups.
- US 7389300 B1 - Shah - picks a failover target at random, related to canceled claim 6.
- US 20190339870 A1 - Meiri - cascading backup – related to secondary only backup from canceled claim 10.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL XU whose telephone number is (571)272-5688. The examiner can normally be reached Monday-Friday 8:00am - 5:00pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bryce Bonzo can be reached on (571) 272-3655. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M.X./
Examiner, Art Unit 2113
/BRYCE P BONZO/
Supervisory Patent Examiner, Art Unit 2113

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 17/182,511 | Sontakke et al. |
| | Examiner | Art Unit |
| | MICHAEL XU | 2113 |

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| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
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**CLAIMS**

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
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| Final | Original | 07/14/2022 | 11/26/2022 | | | | | | | |
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|---|---|---|---|
| | Examiner MICHAEL XU | Art Unit 2113 | Page 1 of 2 |

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| Notice of References Cited | Application/Control No. 17/182,511 | Applicant(s)/Patent Under Reexamination Sontakke et al. | |
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| | Examiner MICHAEL XU | Art Unit 2113 | Page 2 of 2 |

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Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

# Web Search History

| date, time | web site | search string |
|---|---|---|
| 11/25/2022 4:21:46 PM | Google | snapshot database switch over policy |
| 11/25/2022 4:21:55 PM | Google Scholar | snapshot database switch over policy |
| 11/25/2022 4:21:55 PM | Google Patents | Keyword Group 1<br>[snapshot database switch over policy] |
| 11/25/2022 4:22:12 PM | Google | snapshot database switch over policy initial active node |
| 11/25/2022 4:22:17 PM | Google Scholar | snapshot database switch over policy initial active node |
| 11/25/2022 4:22:17 PM | Google Patents | Keyword Group 1<br>[snapshot database switch over policy initial active node] |

## PE2E SEARCH - Search History (Prior Art)

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | British Equivalents | Time Stamp |
|---|---|---|---|---|---|---|---|
| L1 | 335 | ((("NUTANIX") near3 ("INC"))).AS,AANM. | (USPAT) | OR | ON | ON | 2022/06/27 11:18 AM |
| L2 | 129 | ((("NUTANIX") near3 ("INC"))).AS,AANM. AND (backup AND (fail failure error) AND (failover "switch over" "disaster recovery")) | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/06/27 11:21 AM |
| L3 | 2 | ((("NUTANIX") near3 ("INC"))).AS,AANM. AND (backup AND (fail failure error) AND (failover "switch over" "disaster recovery" takeover )).clm. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/06/27 11:22 AM |
| L4 | 2 | ((("NUTANIX") near3 ("INC"))).AS,AANM. AND ((backup "transactional log" "incremental log") AND (fail failure error) AND (failover "switch over" "disaster recovery" takeover )).clm. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/06/27 11:22 AM |
| L5 | 17 | ((("NUTANIX") near3 ("INC"))).AS,AANM. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, | OR | ON | ON | 2022/06/27 11:22 AM |

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|---|---|---|---|---|---|---|---|
| | | AND ((backup "transactional log" "incremental log") AND (fail failure error) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. | AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | | | | |
| L6 | 17 | ((("NUTANIX") near3 ("INC"))).AS,AANM. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/06/27 11:23 AM |
| L7 | 17 | ((("NUTANIX") near3 ("INC"))).AS,AANM. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/06/27 11:23 AM |
| L8 | 39 | ((("SONTAKKE") near3 ("Sagar")) OR (("KHANUJA") near3 ("Kamaldeep")) OR (("BANTHIA") near3 ("Bakul"))).INV. | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT) | OR | ON | ON | 2022/06/27 11:33 AM |
| L9 | 1 | ((("SONTAKKE") near3 ("Sagar")) OR (("KHANUJA") near3 ("Kamaldeep")) OR (("BANTHIA") near3 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT) | OR | ON | ON | 2022/06/27 11:33 AM |

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| | | ("Bakul"))).INV. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. | | | | | |
| L10 | 218 | ("0000002" OR "11126426" OR "20170115978" OR "9753713" OR "9960963" OR "D000001" OR "0000001" OR "20140282256" OR "20150347987" OR "20180253676" OR "20190018738" OR "20200110675" OR "D508248" OR "D521521" OR "D625315" OR "D656948" OR "D684160" OR "D684161" OR "D733745" OR "D749117" OR "D761288" OR "D771102" OR "D777747" OR "D778296" OR "D781887" OR "D794666" OR "D794667" OR "D797116" OR "D802608" OR "D809530" OR "D815652" OR "D817976" OR "D843388" OR "D911356" OR "D926200" OR "D927507" OR "10725866" OR "10817157" OR "11010336" OR "20120123999" OR "20150227435" OR "20190155699" OR "20200034178" OR "20200099692" OR "20200210378" OR "20200210379" OR "20200250046" OR "10013313" OR | (US-PGPUB; USPAT) | OR | ON | ON | 2022/06/27 09:35 PM |

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|---|---|---|---|---|---|---|---|
| | | "10033833" OR<br>"10055300" OR<br>"10108685" OR<br>"10212195" OR<br>"10282201" OR<br>"10339110" OR<br>"10372329" OR<br>"10379963" OR<br>"10445298" OR<br>"10476955" OR<br>"10503612" OR<br>"10613938" OR<br>"10637914" OR<br>"10757036" OR<br>"10776329" OR<br>"10812582" OR<br>"10959098" OR<br>"10999165" OR<br>"11010487" OR<br>"20020104376" OR<br>"20020174098" OR<br>"20150052108" OR<br>"20150143064" OR<br>"20150227602" OR<br>"20150331923" OR<br>"20160321339" OR<br>"20170351716" OR<br>"20180181469" OR<br>"20190102257" OR<br>"20190158605" OR<br>"20190384496" OR<br>"20200104375" OR<br>"20200104376" OR<br>"20200104377" OR<br>"20200285608" OR<br>"20200349018" OR<br>"20200379793" OR<br>"20210117293" OR<br>"8468174" OR<br>"8677085" OR<br>"8849850" OR<br>"9372758" OR<br>"9495435" OR<br>"9600193" OR<br>"9639429" OR<br>"9760396" OR<br>"9778992" OR<br>"9858155" OR<br>"9881168" OR<br>"20070185852" OR<br>"20070185937" OR<br>"20090037914" OR<br>"20090132543" OR<br>"20170060699" OR<br>"20180121494" OR<br>"20190102411" OR<br>"20200201526" OR<br>"10185627" OR | | | | | |

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|---|---|---|---|---|---|---|---|
| | | "10210048" OR<br>"10248657" OR<br>"10346431" OR<br>"10447806" OR<br>"10509798" OR<br>"10599423" OR<br>"10700991" OR<br>"10728255" OR<br>"10785029" OR<br>"20010014867" OR<br>"20020073089" OR<br>"20030147309" OR<br>"20050149757" OR<br>"20070100793" OR<br>"20080126945" OR<br>"20080256311" OR<br>"20090022285" OR<br>"20090028082" OR<br>"20090125858" OR<br>"20110004586" OR<br>"20110071981" OR<br>"20110093435" OR<br>"20120011378" OR<br>"20120271797" OR<br>"20130117441" OR<br>"20130290180" OR<br>"20140189685" OR<br>"20140229698" OR<br>"20150019495" OR<br>"20150121453" OR<br>"20150142610" OR<br>"20150195347" OR<br>"20160041997" OR<br>"20160048408" OR<br>"20160077923" OR<br>"20160078104" OR<br>"20160125059" OR<br>"20160162845" OR<br>"20160197835" OR<br>"20160267105" OR<br>"20160292358" OR<br>"20160335369" OR<br>"20160380809" OR<br>"20170220777" OR<br>"20170264684" OR<br>"20170286518" OR<br>"20170351584" OR<br>"20180025007" OR<br>"20180285201" OR<br>"20180307728" OR<br>"20190065322" OR<br>"20190075031" OR<br>"20190125828" OR<br>"20190129799" OR<br>"20190138631" OR<br>"20190155936" OR<br>"20190230156" OR<br>"20190235904" OR | | | | | |

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|---|---|---|---|---|---|---|---|
| | | "20190324865" OR<br>"20190339870" OR<br>"20190340091" OR<br>"20200034245" OR<br>"20200050522" OR<br>"20200106737" OR<br>"20200137157" OR<br>"7225189" OR<br>"7725671" OR<br>"7814057" OR<br>"7840533" OR<br>"7953764" OR<br>"8117165" OR<br>"8150808" OR<br>"8364648" OR<br>"8429630" OR<br>"8447728" OR<br>"8549518" OR<br>"8601473" OR<br>"8612396" OR<br>"8635421" OR<br>"8762335" OR<br>"8832028" OR<br>"8850130" OR<br>"8863124" OR<br>"8914567" OR<br>"8972347" OR<br>"9009106" OR<br>"9069708" OR<br>"9116737" OR<br>"9244717" OR<br>"9256383" OR<br>"9336060" OR<br>"9336132" OR<br>"9389962" OR<br>"9413810" OR<br>"9436556" OR<br>"9507579" OR<br>"9529551" OR<br>"9652265" OR<br>"9740723" OR<br>"9747287" OR<br>"9772866" OR<br>"D753135" OR<br>"D753140" OR<br>"D763890" OR<br>"D779514" OR<br>"D803231" OR<br>"D807902" OR<br>"D838288" OR<br>"D839913" OR<br>"D862512" OR<br>"D875108" OR<br>"D877753").pn. | | | | | |
| L11 | 19 | ("0000002" OR<br>"11126426" OR<br>"20170115978" OR<br>"9753713" OR | (US-PGPUB; USPAT) | OR | ON | ON | 2022/06/27<br>09:38 PM |

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|---|---|---|---|---|---|---|---|
| | | "9960963" OR<br>"D000001" OR<br>"0000001" OR<br>"20140282256" OR<br>"20150347987" OR<br>"20180253676" OR<br>"20190018738" OR<br>"20200110675" OR<br>"D508248" OR<br>"D521521" OR<br>"D625315" OR<br>"D656948" OR<br>"D684160" OR<br>"D684161" OR<br>"D733745" OR<br>"D749117" OR<br>"D761288" OR<br>"D771102" OR<br>"D777747" OR<br>"D778296" OR<br>"D781887" OR<br>"D794666" OR<br>"D794667" OR<br>"D797116" OR<br>"D802608" OR<br>"D809530" OR<br>"D815652" OR<br>"D817976" OR<br>"D843388" OR<br>"D911356" OR<br>"D926200" OR<br>"D927507" OR<br>"10725866" OR<br>"10817157" OR<br>"11010336" OR<br>"20120123999" OR<br>"20150227435" OR<br>"20190155699" OR<br>"20200034178" OR<br>"20200099692" OR<br>"20200210378" OR<br>"20200210379" OR<br>"20200250046" OR<br>"10013313" OR<br>"10033833" OR<br>"10055300" OR<br>"10108685" OR<br>"10212195" OR<br>"10282201" OR<br>"10339110" OR<br>"10372329" OR<br>"10379963" OR<br>"10445298" OR<br>"10476955" OR<br>"10503612" OR<br>"10613938" OR<br>"10637914" OR<br>"10757036" OR | | | | |

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|---|---|---|---|---|---|---|---|
| | | "10776329" OR<br>"10812582" OR<br>"10959098" OR<br>"10999165" OR<br>"11010487" OR<br>"20020104376" OR<br>"20020174098" OR<br>"20150052108" OR<br>"20150143064" OR<br>"20150227602" OR<br>"20150331923" OR<br>"20160321339" OR<br>"20170351716" OR<br>"20180181469" OR<br>"20190102257" OR<br>"20190158605" OR<br>"20190384496" OR<br>"20200104375" OR<br>"20200104376" OR<br>"20200104377" OR<br>"20200285608" OR<br>"20200349018" OR<br>"20200379793" OR<br>"20210117293" OR<br>"8468174" OR<br>"8677085" OR<br>"8849850" OR<br>"9372758" OR<br>"9495435" OR<br>"9600193" OR<br>"9639429" OR<br>"9760396" OR<br>"9778992" OR<br>"9858155" OR<br>"9881168" OR<br>"20070185852" OR<br>"20070185937" OR<br>"20090037914" OR<br>"20090132543" OR<br>"20170060699" OR<br>"20180121494" OR<br>"20190102411" OR<br>"20200201526" OR<br>"10185627" OR<br>"10210048" OR<br>"10248657" OR<br>"10346431" OR<br>"10447806" OR<br>"10509798" OR<br>"10599423" OR<br>"10700991" OR<br>"10728255" OR<br>"10785029" OR<br>"20010014867" OR<br>"20020073089" OR<br>"20030147309" OR<br>"20050149757" OR<br>"20070100793" OR | | | | | |

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|---|---|---|---|---|---|---|---|
| | | "20080126945" OR<br>"20080256311" OR<br>"20090022285" OR<br>"20090028082" OR<br>"20090125858" OR<br>"20110004586" OR<br>"20110071981" OR<br>"20110093435" OR<br>"20120011378" OR<br>"20120271797" OR<br>"20130117441" OR<br>"20130290180" OR<br>"20140189685" OR<br>"20140229698" OR<br>"20150019495" OR<br>"20150121453" OR<br>"20150142610" OR<br>"20150195347" OR<br>"20160041997" OR<br>"20160048408" OR<br>"20160077923" OR<br>"20160078104" OR<br>"20160125059" OR<br>"20160162845" OR<br>"20160197835" OR<br>"20160267105" OR<br>"20160292358" OR<br>"20160335369" OR<br>"20160380809" OR<br>"20170220777" OR<br>"20170264684" OR<br>"20170286518" OR<br>"20170351584" OR<br>"20180025007" OR<br>"20180285201" OR<br>"20180307728" OR<br>"20190065322" OR<br>"20190075031" OR<br>"20190125828" OR<br>"20190129799" OR<br>"20190138631" OR<br>"20190155936" OR<br>"20190230156" OR<br>"20190235904" OR<br>"20190324865" OR<br>"20190339870" OR<br>"20190340091" OR<br>"20200034245" OR<br>"20200050522" OR<br>"20200106737" OR<br>"20200137157" OR<br>"7225189" OR<br>"7725671" OR<br>"7814057" OR<br>"7840533" OR<br>"7953764" OR<br>"8117165" OR<br>"8150808" OR | | | | | |

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|---|---|---|---|---|---|---|---|
| | | "8364648" OR "8429630" OR "8447728" OR "8549518" OR "8601473" OR "8612396" OR "8635421" OR "8762335" OR "8832028" OR "8850130" OR "8863124" OR "8914567" OR "8972347" OR "9009106" OR "9069708" OR "9116737" OR "9244717" OR "9256383" OR "9336060" OR "9336132" OR "9389962" OR "9413810" OR "9436556" OR "9507579" OR "9529551" OR "9652265" OR "9740723" OR "9747287" OR "9772866" OR "D753135" OR "D753140" OR "D763890" OR "D779514" OR "D803231" OR "D807902" OR "D838288" OR "D839913" OR "D862512" OR "D875108" OR "D877753").pn. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. | | | | | |
| L12 | 63275 | (G06F11/1464 or G06F11/1451 or G06F11/1461 or G06F11/1471 or G06F11/2025 or G06F2201/84 or G06F2201/80).cpc. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, | OR | ON | ON | 2022/07/07 01:56 PM |

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| | | | MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | | | | |
| L13 | 1304 | (G06F11/1464 OR G06F11/1451 OR G06F11/1461 OR G06F11/1471 OR G06F11/2025 OR G06F2201/84 OR G06F2201/80).cpc. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. AND (((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT) | OR | ON | ON | 2022/07/07 01:58 PM |
| L14 | 1434 | (G06F11/1464 OR G06F11/1451 OR G06F11/1461 OR G06F11/1471 OR G06F11/2025 OR G06F2201/84 OR G06F2201/80).cpc. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. AND (((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/07/07 01:58 PM |
| L15 | 46 | (G06F11/1464 OR G06F11/1451 OR G06F11/1461 OR G06F11/1471 OR G06F11/2025 OR G06F2201/84 OR G06F2201/80).cpc. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable | (US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, | OR | ON | ON | 2022/07/08 03:06 PM |

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| | | unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. AND ("active node") AND (((@ad \| @pd) <="20201020") | TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB) | | | | |
| L16 | 9 | (G06F11/1464 OR G06F11/1451 OR G06F11/1461 OR G06F11/1471 OR G06F11/2025 OR G06F2201/84 OR G06F2201/80).cpc. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. AND ("active node") AND ("third".clm.) AND (((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/07/10 12:39 AM |
| L17 | 660446 | (failover near20 random) (G06F11$).cpc. AND (((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/07/14 09:15 PM |
| L18 | 73 | (failover near20 random) AND (G06F11$).cpc. AND (((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, | OR | ON | ON | 2022/07/14 09:15 PM |

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| | | | TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | | | | |
| L19 | 116 | (failover near20 (random round-robin)) AND (G06F11$).cpc. AND ((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/07/14 09:17 PM |
| L20 | 21 | ((("NUTANIX") near3 ("INC"))).AS,AANM. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/11/23 11:05 AM |
| L21 | 1 | ((("SONTAKKE") near3 ("Sagar")) OR (("KHANUJA") near3 ("Kamaldeep")) OR (("BANTHIA") near3 ("Bakul"))).INV. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT) | OR | ON | ON | 2022/11/23 11:05 AM |
| L22 | 74 | ("0000001"\|"11308114").PN. OR ("0000002"\|"0000011"\|"20060143412"\|"20150358417"\|"20160092535"\|"20170235758"\|"20210 | (US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, | OR | ON | ON | 2022/11/23 11:09 AM |

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| | | 064512"\|"20210200643"\|"9213727").PN. OR ("20150074054"\|"20170374136"\|"H000001").PN. | HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB) | | | | |
| L23 | 14 | ("0000001"\|"11308114").PN. OR ("0000002"\|"0000011"\|"20060143412"\|"20150358417"\|"20160092535"\|"20170235758"\|"20210064512"\|"20210200643"\|"9213727").PN. OR ("20150074054"\|"20170374136"\|"H000001").PN. | (US-PGPUB; USPAT) | OR | ON | ON | 2022/11/23 11:09 AM |
| L24 | 119 | (failover near20 (random round-robin)) AND (G06F11$).cpc. AND ((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/11/25 04:21 PM |

## PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

PTO/SB/08 (modified)

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: October 18, 2022 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | 2113 |
| | | | | Examiner Name | XU, MICHAEL |
| Sheet | 1 | of | 3 | Attorney Docket Number | 115539-0346 |

**U.S. PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Document Number<br>Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | J1 | 11,243,971-B2 | 02-08-2022 | ATLANTIC TECHNICAL ORGANIZATION | |
| | J2 | 11,308,114-B1 | 04-19-2022 | CAZENA, INC. | |
| | | | | | |

**UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS**

| Examiner Initials* | Cite No.[1] | U.S. Patent Application Document<br>Serial Number-Kind Code[2] (*if known*) | Filing Date of Cited Document MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | | | | | |

**FOREIGN PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Foreign Patent Document<br>Country Code[3]-Number[4]-Kind Code[5] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Documents | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
|---|---|---|---|---|---|---|
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| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
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| Examiner Signature | | Date Considered | |
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4875-8026-4762.1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.X./

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| | | | | Art Unit | 2113 |
| *(use as many sheets as necessary)* | | | | Examiner Name | XU, MICHAEL |
| Sheet | 2 | of | 3 | Attorney Docket Number | 115539-0346 |

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| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
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| Examiner Signature | | Date Considered | |
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| | | | | Art Unit | 2113 |
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| Sheet | 3 | of | 3 | Attorney Docket Number | 115539-0346 |

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| Examiner Signature | /MICHAEL XU/ | Date Considered | 11/23/2022 |
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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.X./

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | 17182511 |
| **Filing Date:** | 23-Feb-2021 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Filer:** | Paul S. Hunter/Emily Rogers |
| **Attorney Docket Number:** | 115539-0346 |

Filed as Large Entity

**Filing Fees for Utility under 35 USC 111(a)**

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| **Pages:** | | | | |
| **Claims:** | | | | |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |
| **Post-Allowance-and-Post-Issuance:** | | | | |
| **Extension-of-Time:** | | | | |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Miscellaneous:** | | | | |
| SUBMISSION- INFORMATION DISCLOSURE STMT | 1806 | 1 | 260 | 260 |
| | | **Total in USD ($)** | | **260** |

| Electronic Acknowledgement Receipt | |
|---|---|
| **EFS ID:** | 47263817 |
| **Application Number:** | 17182511 |
| **International Application Number:** | |
| **Confirmation Number:** | 3895 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Customer Number:** | 147491 |
| **Filer:** | Paul S. Hunter/Emily Rogers |
| **Filer Authorized By:** | Paul S. Hunter |
| **Attorney Docket Number:** | 115539-0346 |
| **Receipt Date:** | 22-DEC-2022 |
| **Filing Date:** | 23-FEB-2021 |
| **Time Stamp:** | 15:44:43 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | yes |
| Payment Type | CARD |
| Payment was successfully received in RAM | $260 |
| RAM confirmation Number | E2022BLF45243074 |
| Deposit Account | |
| Authorized User | |
| The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: | |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Transmittal Letter | 115539-0346_L_IDS.pdf | 118407<br>b1c8ba678c415f41c49bc67dcd0a4a99b3adff70 | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 2 | Information Disclosure Statement (IDS) Form (SB08) | 115539-0346_L_SB08.pdf | 108602<br>845bb42cd62eddfe689b62559f5d95cafc18918b | no | 1 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| This is not an USPTO supplied IDS fillable form | | | | | |
| 3 | Non Patent Literature | NPL_L12--Final_Office_Action_on_US_17_337197_DT.pdf | 1006931<br>11c1f499541f345b510c7b811a2859da75b2883e | no | 18 |
| **Warnings:** | | | | | |
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| 4 | Non Patent Literature | NPL_L13--Notice_of_Allowance_on_US_17_237599_DT.pdf | 635600<br>12f42fd3f253cfa5251ef6227a50264defad9ebd | no | 7 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 5 | Non Patent Literature | NPL_L14--Oracle_Cloud___Using_Oracle_Autonomous_1.pdf | 24603318<br>9eeedd9ff30866dc6afad17178811c10cac535c6 | no | 369 |
| **Warnings:** | | | | | |
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| 6 | Non Patent Literature | NPL_L14--Oracle_Cloud___Using_Oracle_Autonomous_2.pdf | 24432883<br>321207f9c2376c36628f006ca94ea97c503584e2 | no | 440 |
| **Warnings:** | | | | | |

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|---|---|---|---|---|---|
| **Information:** | | | | | |
| 7 | Non Patent Literature | NPL_L14--Oracle_Cloud___Using_Oracle_Autonomous_3.pdf | 12629283<br>8a0f07e75b4a7a7cee5fc70145e794dd0f6ff109 | no | 270 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 8 | Fee Worksheet (SB06) | fee-info.pdf | 38283<br>e22881de02c5819698326f7b2d10db22bad37e90 | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | | **Total Files Size (in bytes):** | 63573307 | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| First Inventor Name: | Sagar Sontakke |
| Title: | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Application No.: | 17/182,511 |
| Filing Date: | 2/23/2021 |
| Examiner: | XU, MICHAEL |
| Art Unit: | 2113 |
| Confirmation No.: | 3895 |

**INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Applicant submits herewith documents for the Examiner's consideration in accordance with 37 CFR §§1.56, 1.97 and 1.98.

Applicant respectfully requests that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

The submission of any document herewith is not an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicant does not waive

any rights to take any action, which would be appropriate to antedate or otherwise remove as a competent reference any document submitted herewith.

**TIMING OF THE DISCLOSURE**

The listed documents are being submitted in compliance with 37 CFR §1.97(c), before the mailing date of any of a final action under 37 CFR §1.113, a notice of allowance under 37 CFR §1.311, or an action that otherwise closes prosecution in the application.

**FEE**

Fees in the amount of $260.00 to cover the fee associated with an information disclosure statement are being paid by credit card via EFS-Web.

The Commissioner is hereby authorized to charge any additional fees which may be required for this application to Deposit Account Number 19-0741.

Respectfully submitted,

Date Dec. 22, 2022

By */Paul S. Hunter/*

FOLEY & LARDNER LLP
Customer Number: 147491
Telephone: (858) 847-6733
Facsimile: (858) 792-6773

Paul S. Hunter
Attorney for Applicant
Registration No. 44,787

| Substitute for form 1449/PTO | | | | ***Complete if Known*** | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
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| | | | | Art Unit | 2113 |
| *(use as many sheets as necessary)* | | | | Examiner Name | XU, MICHAEL |
| Sheet | 1 | of | 1 | Attorney Docket Number | 115539-0346 |

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| Examiner Initials* | Cite No.[1] | Document Number<br>Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | L1 | 8,448,170-B2 | 05-21-2013 | WIPFEL ET AL. | |
| | L2 | 8,769,537-B1 | 07-01-2014 | RUGGIERO ET AL. | |
| | L3 | 8,924,974-B1 | 12-30-2014 | RUGGIERO ET AL. | |
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| | L6 | 11,386,058-B2 | 07-12-2022 | HUNG ET AL. | |
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| | L8 | 2011/0252420-A1 | 10-13-2011 | TUNG ET AL. | |
| | L9 | 2013/0091285-A1 | 04-11-2013 | DEVARAKONDA ET AL. | |
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| Examiner Initials* | Cite No.[1] | Foreign Patent Document<br>Country Code[3]-Number[4]-Kind Code[5] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Documents | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
|---|---|---|---|---|---|---|
| | | | | | | |

**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
|---|---|---|---|
| | L12 | Final Office Action on US 17/337197 DTD 12/15/2022 | |
| | L13 | Notice of Allowance on US 17/237599 DTD 12/05/2022 | |
| | L14 | Oracle Cloud, "Using Oracle Autonomous Database on Shared Exadata Infrastructure" published December 2022 | |
| | | | |

| Examiner Signature | | Date Considered | |
|---|---|---|---|

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 17/182,511 | 02/23/2021 | Sagar Sontakke | 115539-0346 | 3895 |

147491 7590 01/31/2023

FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109

| EXAMINER | |
|---|---|
| XU, MICHAEL | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2113 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 01/31/2023 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipdocketing@foley.com

PTOL-90A (Rev. 04/07)

| *Applicant-Initiated Interview Summary* | **Application No.** 17/182,511 | **Applicant(s)** Sontakke et al. | | |
|---|---|---|---|---|
| | **Examiner** MICHAEL XU | **Art Unit** 2113 | **AIA (First Inventor to File) Status** Yes | **Page** 1 of 1 |

| **All Participants** (applicant, applicants representative, PTO personnel) | **Title** | **Type** |
|---|---|---|
| MICHAEL XU | Examiner | Telephonic |
| Paul Hunter | Attorney | |

**Date of Interview:** 26 January 2023

**Issues Discussed:**

**35 U.S.C. 103**

Applicant and examiners discussed the claimed subject matter in relation to the prior art. Discussed Potential amendments to clarify scope of the invention. Specifically, the limitation "create a next snapshot of the source database from the next active node upon the initial active node becoming unavailable." was discussed. Also pointed out that Wang fig 10 is about failover, so snapshots are made on the primary before failover and on the secondary after failover until failback occurs. No agreement is reached, as further search and consideration of the amended claims would need to be conducted.

Examiner also suggests including the masked data in the cloned database from par 18 of the specification, as masking data in backup snapshots is not commonly done, and Wang does not seem to mask data in the backup snapshots.

| /MICHAEL XU/<br>Examiner, Art Unit 2113 | /BRYCE P BONZO/<br>Supervisory Patent Examiner, Art Unit 2113 |
|---|---|

**Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04**
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

**Applicant recordation instructions:** The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview.

**Examiner recordation instructions:** Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: February 10, 2023 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | 2113 |
| | | | | Examiner Name | XU, MICHAEL |
| Sheet | 1 | of | 2 | Attorney Docket Number | 115539-0346 |

**U.S. PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Document Number<br>Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | | | | | |

**UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS**

| Examiner Initials* | Cite No.[1] | U.S. Patent Application Document<br>Serial Number-Kind Code[2] (*if known*) | Filing Date of Cited Document MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | | | | | |

**FOREIGN PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Foreign Patent Document<br>Country Code[3]-Number[4]-Kind Code[5] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Documents | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
|---|---|---|---|---|---|---|
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**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
|---|---|---|---|
| | M1 | Arslan, Erman, "Delphix - Notes vol 1, my new toy for the upcoming months," Erman Arslan's Oracle Blog, published August 8, 2016, retrieved on 1/2/2023 from http://ermanarslan.blogspot.com/2016/08/delphix-notes-vol-1-my-new-toy-for.html | |
| | M2 | Delphix Corp., "Delphix Engine User Guide," Delphix, published December, 2017, retrieved 1/2/2023 from https://docs.delphix.com/docs52/files/83053093/83053098/2/1512670775673/Delphix Engine User Guide.pdf | |
| | M3 | Delphix Corp., "Delphix Engine User Guide," Delphix, published November, 2018, retrieved 1/2/2023 from https://docs.delphix.com/docs531/files/98113199/98116076/2/1542301179433/User Guide.pdf | |
| | M4 | Delphix Corp., "Delphix Engine User Guide," Delphix, published October, 2017, retrieved 1/2/2023 from https://docs.delphix.com/docs-old/files/74711255/74715951/5/1509647013871/Delphix Engine User Guide.pdf | |
| | M5 | Delphix Corp., "FAQ: SnapShot and SnapSync (KBA1014)," Delphix, published March, 4 2022, retrieved 1/2/2023 from https://support.delphix.com/Continuous_Data_Engine_(formerly_Virtualization_Engine)/Delphix_Admin/FAQ%3A_SnapShot_and_SnapSync_(KBA1014) | |
| | M6 | Delphix Corp., "Linking to a Database," Database Linking Overview, published December, 2017, retrieved on 1/2/2023 from https://docs.delphix.com/docs52/introduction/database-virtualization-with-delphix/database-linking-overview | |
| | M7 | Delphix Corp., "Understanding Timelines," Understanding Timelines and How to Preserve Data in a Point in Time, published June, 2018, retrieved 1/2/2023 from https://docs.delphix.com/docs526/delphix-self-service/delphix-self-service-data-user-guide/understanding-timelines-and-how-to-preserve-data-in-a-point-in-time | |
| | M8 | Delphix Corp., "What Does the Delphix Engine Do?," Delphix Engine Overview, published December, 2017, retrieved on 1/2/2023 from https://docs.delphix.com/docs52/introduction/database-virtualization-with-delphix/delphix-engine-overview | |

| Examiner Signature | | Date Considered | |
|---|---|---|---|

| Substitute for form 1449/PTO | | | | ***Complete if Known*** | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| | | | | **Filing Date** | 2/23/2021 |
| Date Submitted: February 10, 2023 | | | | **First Named Inventor** | Sagar Sontakke |
| | | | | Art Unit | 2113 |
| *(use as many sheets as necessary)* | | | | Examiner Name | XU, MICHAEL |
| Sheet | 2 | of | 2 | Attorney Docket Number | 115539-0346 |

**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
|---|---|---|---|
| | M9 | Delphix Corp., "What's New Guide for 5.2," Delphix, published December, 2017, retrieved on 1/2/2023 from https://docs.delphix.com/docs52/files/83053093/83056028/2/1513184739765/What%27s New Guide for 5.2.pdf | |
| | M10 | Murugan, Palani, "Delphix Dynamic Data Platform on VMware vSAN," VMware Virtual Blocks Blog, published November 20, 2017, retrieved on 1/2/2023 from https://blogs.vmware.com/virtualblocks/2017/11/20/delphix-vsan/ | |
| | M11 | Rubrik, "Exploring the Depth of Simplicity: Protecting Microsoft SQL Server with Rubrik," Technical White Paper, published March, 2017, retrieved on 1/2/2023 from https://www.rubrik.com/content/dam/rubrik/en/resources/white-paper/Protecting-Microsoft-SQLServer-with-Rubrik.pdf | |
| | M12 | Rubrik, "Hyperconverged Infrastructure with the Simplest Data Protection," published January, 2016, retrieved on 1/2/2023 from https://web.archive.org/web/20210117100439/https://www.rubrik.com/wp-content/uploads/2015/12/Joint-Solution-Brief-Nutanix-and-Rubrik.pdf | |
| | M13 | YouTube Video for Delphix Corp., "How To Create Database Copies with Delphix," YouTube, April 3, 2018, https://www.youtube.com/watch?v=1EjR-k4EJ68 [youtube.com] | |
| | M14 | YouTube Video for Rubrik, "Item-level Recovery with Rubrik SQL Server Live Mount," YouTube, July 12, 2018, https://www.youtube.com/watch?app=desktop&v=Upp4Ume03P0&feature=youtu.be [youtube.com] | |

| Examiner Signature | | Date Considered | |
|---|---|---|---|

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# ELECTRONIC PAYMENT RECEIPT

| APPLICATION # | RECEIPT DATE / TIME | ATTORNEY DOCKET # |
|---|---|---|
| 17/182,511 | 02/10/2023 01:27:52 PM ET | 115539-0346 |

## Title of Invention

SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM

## Application Information

| | | | |
|---|---|---|---|
| APPLICATION TYPE | Utility - Nonprovisional Application under 35 USC 111(a) | PATENT # | - |
| CONFIRMATION # | 3895 | FILED BY | Emily Rogers |
| PATENT CENTER # | 61577061 | AUTHORIZED BY | Paul Hunter |
| CUSTOMER # | 147491 | FILING DATE | 02/23/2021 |
| CORRESPONDENCE ADDRESS | - | FIRST NAMED INVENTOR | Sagar Sontakke |

## Payment Information

| PAYMENT METHOD | PAYMENT TRANSACTION ID | PAYMENT AUTHORIZED BY |
|---|---|---|
| CARD / 8164 | E202320D29129246 | Emily Rogers |

| FEE CODE | DESCRIPTION | ITEM PRICE($) | QUANTITY | ITEM TOTAL($) |
|---|---|---|---|---|
| 1806 | SUBMISSION OF AN INFORMATION DISCLOSURE STATEMENT | 260.00 | 1 | 260.00 |
| | | | TOTAL AMOUNT: | $260.00 |

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

**New Applications Under 35 U.S.C. 111**

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

**National Stage of an International Application under 35 U.S.C. 371**

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Code: A.NE.AFCP
Document Description: After Final Consideration Program Request

PTO/SB/434 (3-22)

## CERTIFICATION AND REQUEST FOR CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0

| Practitioner Docket No.: | Application No.: | Filing Date: |
|---|---|---|
| 115539-0346 | 17/182,511 | 2/23/2021 |
| First Named Inventor: | Title: | |
| Sagar Sontakke | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM | |

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0 (AFCP 2.0) OF THE ACCOMPANYING RESPONSE UNDER 37 CFR 1.116.

1. The above-identified application is (i) an original utility, plant, or design nonprovisional application filed under 35 U.S.C. 111(a) [a continuing application (*e.g.*, a continuation or divisional application) is filed under 35 U.S.C. 111(a) and is eligible under (i)], or (ii) an international application that has entered the national stage in compliance with 35 U.S.C. 371(c).
2. The above-identified application contains an outstanding final rejection.
3. Submitted herewith is a response under 37 CFR 1.116 to the outstanding final rejection. The response includes an amendment to at least one independent claim, and the amendment does not broaden the scope of the independent claim in any aspect.
4. This certification and request for consideration under AFCP 2.0 is the only AFCP 2.0 certification and request filed in response to the outstanding final rejection.
5. Applicant is willing and available to participate in any interview requested by the examiner concerning the present response.
6. This certification and request is being filed electronically using the USPTO's patent electronic filing system.
7. Any fees that would be necessary consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, extension of time fees, are being concurrently filed herewith. [There is no additional fee required to request consideration under AFCP 2.0.]
8. By filing this certification and request, applicant acknowledges the following:
    - Reissue applications and reexamination proceedings are not eligible to participate in AFCP 2.0.
    - The examiner will verify that the AFCP 2.0 submission is compliant, *i.e.*, that the requirements of the program have been met (see items 1 to 7 above). For compliant submissions:
        - The examiner will review the response under 37 CFR 1.116 to determine if additional search and/or consideration (i) is necessitated by the amendment and (ii) could be completed within the time allotted under AFCP 2.0. If additional search and/or consideration is required but cannot be completed within the allotted time, the examiner will process the submission consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, by mailing an advisory action.
        - If the examiner determines that the amendment does not necessitate additional search and/or consideration, or if the examiner determines that additional search and/or consideration is required and could be completed within the allotted time, then the examiner will consider whether the amendment places the application in condition for allowance (after completing the additional search and/or consideration, if required). If the examiner determines that the amendment does not place the application in condition for allowance, then the examiner will contact the applicant and request an interview.
            - The interview will be conducted by the examiner, and if the examiner does not have negotiation authority, a primary examiner and/or supervisory patent examiner will also participate.
            - If the applicant declines the interview, or if the interview cannot be scheduled within ten (10) calendar days from the date that the examiner first contacts the applicant, then the examiner will proceed consistent with current practice concerning responses after final rejection under 37 CFR 1.116.

| Signature | Date | Practitioner Registration No. |
|---|---|---|
| /Paul S. Hunter/ | 02-10-2023 | 44,787 |
| Name (Print/Typed) | Telephone Number | |
| Paul S. Hunter | (858) 847-6733 | |

***Note**: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.*

☐ * Total of _____ forms are submitted.

# Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| First Inventor Name: | Sagar Sontakke |
| Title: | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Application No.: | 17/182,511 |
| Filing Date: | 2/23/2021 |
| Examiner: | XU, MICHAEL |
| Art Unit: | 2113 |
| Confirmation No.: | 3895 |

**INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Applicant submits herewith documents for the Examiner's consideration in accordance with 37 CFR §§1.56, 1.97 and 1.98.

Applicant respectfully requests that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

The submission of any document herewith is not an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicant does not waive

any rights to take any action, which would be appropriate to antedate or otherwise remove as a competent reference any document submitted herewith.

**TIMING OF THE DISCLOSURE**

The listed documents are being submitted in compliance with 37 CFR §1.97(c), before the mailing date of any of a final action under 37 CFR §1.113, a notice of allowance under 37 CFR §1.311, or an action that otherwise closes prosecution in the application.

**FEE**

Fees in the amount of $260.00 to cover the fee associated with an information disclosure statement are being paid by credit card via EFS-Web.

The Commissioner is hereby authorized to charge any additional fees which may be required for this application to Deposit Account Number 19-0741.

Respectfully submitted,

Date February 10, 2023

By */Paul S. Hunter/*

FOLEY & LARDNER LLP
Customer Number: 147491
Telephone: (858) 847-6733
Facsimile: (858) 792-6773

Paul S. Hunter
Attorney for Applicant
Registration No. 44,787

## REMARKS

Applicant requests reconsideration of the present application in view of the foregoing amendments and the reasons that follow. Independent claims 1, 11, and 21 have been amended. Dependent claims 2-5, 7, 14-17, 19, 24-27, 29, 32-34, 36-38, and 40-42 have also been amended to increase clarity and to reflect the amendments to their respective base independent claims. Claims 6, 8-10, 12, 13, 18, 20, 22, 23, 28, and 30 were previously canceled. No new subject matter has been added with the amendments to the claims. Support for the amendments can be found at least in paragraphs [0088]-[0100] of the specification, as originally filed.

After the amendments as set forth above, claims 1 – 5, 7, 11, 14 – 17, 19, 21, 24 – 27, 29, and 31 – 42 remain pending in the present application.

### I. Examiner Interview Summary

Applicant thanks the Examiner for the courtesy extended during the interview conducted on January 26, 2023 with Applicants' representative, Paul Hunter, to discuss the Office Action. During the interview, the Examiner provided helpful guidance, but no agreement as to the ultimate patentability of the claims was reached.

### II. Entry of Amendments

Applicant respectfully requests entry of the amendments despite the finality of the rejection because the amendments place the application in condition for allowance.

### III. Claim Objections

On page 2, the Office Action objected to the numbering of the claims. As suggested by the Examiner, Applicant renumbers the second occurrence of claims 36, 37, 38 to 40, 41, 42.

Accordingly, Applicant requests reconsideration and withdrawal of the objections to the claims.

## IV. Claim Rejections – 35 U.S.C. § 103

On page 3, the Office Action rejected claims 1, 2, 11, 14, 21, 22, 24, and 31- 42 under 35 U.S.C. §103 as allegedly being unpatentable over U.S. Patent Publication No. 2019/0310926 to Hashimoto ("Hashimoto") in view of U.S. Patent No. 10,503,612 to Wang ("Wang").

On page 9, the Office Action rejected claims 3, 4, 7, 15, 16, 19, 25, 26, and 29 under 35 U.S.C. § 103 as allegedly being unpatentable over Hashimoto and Wang in view of U.S. Patent Publication No. 2007/0234115 to Saika ("Saika").

On page 17 of the Office Action, claims 5, 17, and 27 were rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Hashimoto and Wang in view of U.S. Patent Publication No. 2011/0022882 to Jaehde ("Jaehde").

As indicated above, amended independent claim 1 recites:

> 1. (Currently Amended) A system comprising:
> a processor executing computer-readable instructions stored on a memory to:
> select one of a plurality of nodes as a primary node capable of storing a source database, the remaining ones of the plurality of nodes being a secondary node, each of the secondary node capable of storing a copy of the source database, wherein updates made to the source database on the primary node are able to be copied to the copy of the source database on the secondary node, and wherein in response to the primary node becoming unavailable, one of the secondary node is designated to become the primary node based on a first policy;
> designate a first node from the primary node or the secondary node as an initial active node;
> capture one or more snapshots of the source database or the copy of the source database from the first node designated as the initial active node;
> determine that the first node has become unavailable;
> select, in response to the first node becoming unavailable and based on a user defined switch over policy, a second node from the primary node or the secondary node as a next active node, wherein the switch over policy defines a criteria for selecting

> the next active node from the plurality of nodes to capture the one or more snapshots from; and
>
> capture the one or more snapshots of the source database or the copy of the source database from the second node in response to selecting the second node as the next active node.

Independent claims 11 and 21, while of varying scope, recite similar elements. Applicant submits that Hashimoto in combination with Wang fails to teach, suggest, or disclose the combination of elements above. For example, Hashimoto in combination with Wang fails to teach, suggest, or disclose at least "select[ing], in response to the first node becoming unavailable and based on a user defined switch over policy, a second node from the primary node or the secondary node as a next active node, wherein the switch over policy defines a criteria for selecting the next active node from the plurality of nodes to capture the one or more snapshots from," as claimed.

The Office Action acknowledged on page 5 that "**Hashimoto does not specifically teach creating a snapshot of the source database from the initial active node**." (Emphasis added.) Regardless, on page 4, the Office Action alleged that Hashimoto's "priority order" teaches the claimed "switch over policy" that "**select[s] the next active node** from the plurality of nodes **to capture the one or more snapshots** from." Applicant disagrees. Paragraph [0071] from Hashimoto that the Office Action relied upon is reproduced below, with emphasis added:

> Further, the switching controller 24 may execute the state reconstruction based on the priority order between a node 2 in the "synchronous standby" state and a node 2 in the "asynchronous standby" state

First, there is no disclosure in the paragraph above or anywhere else that the "priority order" is a "user defined" policy, as claimed. In fact, paragraph [0085] of Hashimoto explains that the "switching controller 24 **determines the priority order** in a case of promoting an asynchronous server 2C to a synchronous server 2B **according to**, for example, the failover by **an evaluation based on the latency of the WAL transfer in which the synchronous server 2B affects the updating task**" – not based on any "user defined" value. (Emphasis added.)

Second, the "priority order" is used for "promoting an asynchronous server 2C to a synchronous server 2B" (*see* paragraph [0085]) – not for "selecting the next active node from the plurality of nodes to capture the one or more snapshots from," as claimed.

Third, without teaching, suggesting, or disclosing "creating a snapshot" (as the Office Action acknowledged), there is no need in Hashimoto to teach, suggest, or disclose a "switch over policy [that] defines a criteria for selecting the next active node from the plurality of nodes to capture the one or more snapshots from," as claimed.

Thus, the "priority order" of Hashimoto is not analogous to the claimed "switch over policy." Further, Wang fails to cure Hashimoto's deficiencies.

On page 6, the Office Action appears to allege that Wang's SLA is equivalent to the claimed "switch over policy." Applicant disagrees. With respect to SLA, Wang explains in col. 8, lines 43-63:

> The services to be performed are defined in the SLA (service level agreement) column. Here, the different SLAs are identified by text: standard VM is standard service for virtual machines. Each SLA includes a set of DMS policies (e.g., a backup policy, a replication policy, or an archival policy) that define the services for that SLA. For example, "standard VM" might include the following policies:
>
> Backup policy: The following backups must be available on the primary DMS cluster 112 x: every 6 hours for the prior 2 days, every 1 day for the prior 30 days, every 1 month for the prior 12 months.
>
> Replication policy: The backups on the primary DMS cluster for the prior 7 days must also be replicated on the secondary DMS cluster 112 y.
>
> Archive policy: Backups that are more than 30 days old may be moved to the archive system 120.
>
> The underlines indicate quantities that are most likely to vary in defining different levels of service. For example, "high frequency" service may include more frequent backups than standard. For "short life" service, backups are not kept for as long as standard.

Thus, Wang's SLA includes a "backup policy," "replication policy," and an "archive policy," each of which is defined in the paragraphs above. None of the "backup policy," "replication policy," or the "archive policy" are for "selecting the *next* active node from the plurality of nodes to capture the one or more snapshots from," as claimed.

Further, on pages 6-8, the Office Action pointed to Wang's FIG. 10 and step 1020 for allegedly teaching selecting the "next active node." Applicant disagrees. Wang's FIG. 10 is reproduced below:

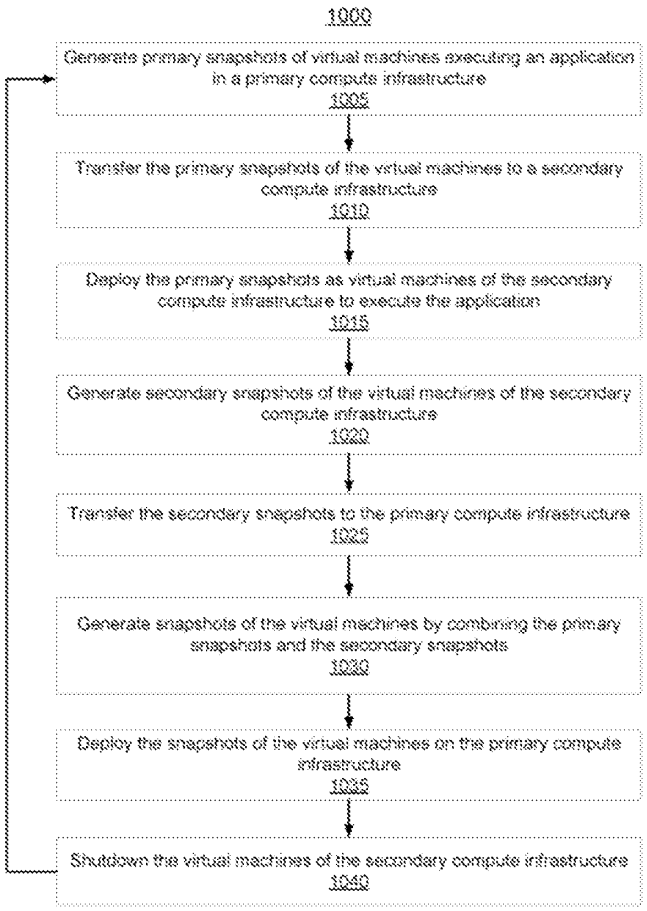



FIG. 10

Col. 19, line 65 - col. 20, line 6 that the Office Action relied upon explain, with emphasis added:

> The primary snapshots of the virtual machines 904 of the primary compute infrastructure 908 b are deployed 1015 as virtual machines 924 of the secondary compute infrastructure 908 b to execute the application. For example, a failover may be initiated where the primary snapshots are deployed in the secondary compute infrastructure 908 b responsive to a failure in the primary compute infrastructure 908 b, a user input (e.g., for a test), or some other reason

Thus, the lines above simply explain that when a "failover [is] initiated," "primary snapshots are deployed in the secondary compute infrastructure." There is no disclosure in the lines above or anywhere else in Wang of any "user defined switch over policy" that "defines a criteria for selecting the next active node from the plurality of nodes to capture the one or more snapshots from." Since Wang describes a single "secondary compute infrastructure," there is no need in Wang of any "switch over policy" for selecting which "secondary compute infrastructure" to select as the "next active node."

Likewise, with respect to step 1020 that the Office Action relied upon, Wang explains in col. 20, lines 54-63, with emphasis added:

> A secondary DMS cluster 912 b generates 1020 secondary snapshots of the virtual machines 924 while the virtual machines 924 are executing the application. In some embodiments, the SLA used to generate the primary snapshots in the primary environment 902 a is used in the secondary environment 902 b. For example, the primary DMS cluster 912 a may share the SLA for the virtual machines of the application with the secondary DMS cluster 912 b. In another example, the secondary snapshots may use a different SLA or other policy

Thus, the lines above simply explain that the "secondary DMS cluster" uses the "SLA used to generate the primary snapshots in the primary environment" or "other policy." As discussed above, the SLA is not the "switch over policy," as claimed. There is nothing in the lines above or anywhere else to suggest a "switch over policy" for "selecting the next active node

from the plurality of nodes to capture the one or more snapshots from," as claimed. Again, because Wang describes a single "secondary compute infrastructure," there is no need in Wang of any "switch over policy," as claimed.

Moreover, neither Saika nor Jaehde cure the deficiencies of Hashimoto and Wang. Thus, Hashimoto in combination with Wang and/or any other cited references fails to teach, suggest, or disclose all of the elements of the independent claims, and the dependent claims depending therefrom.

For at least these reasons, Applicant requests withdrawal of the rejections.

## V. Conclusion

It is submitted that each outstanding rejection to the application has been overcome, and that the Application is in condition of allowance. Applicants respectfully request reconsideration and allowance of all pending claims. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance prosecution.

It should also be noted that although arguments have been presented with respect to certain claims herein, the recited subject matter as well as various other subject matter and/or combinations of subject matter may be patentable for other reasons. Further, the failure to address any statement by the Examiner herein should not be interpreted as acquiescence or agreement with such statement. Applicants expressly reserve the right to set forth additional and/or alternative reasons for patentability and/or allowance with the present Application or in any other future proceeding, and to rebut any statement presented by the Examiner in this or other papers during prosecution of the present Application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application, or credit any overpayment, to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date ___February 10, 2023_____ By ___*/Paul S. Hunter/*_____

FOLEY & LARDNER LLP
Customer Number: 147491
Telephone: (858) 847-6733

Paul S. Hunter
Attorney for Applicants
Registration No. 44,787

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| First Inventor Name: | Sagar Sontakke |
| Title: | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Appl. No.: | 17/182,511 |
| Filing Date: | 2/23/2021 |
| Examiner: | Michael Xu |
| Art Unit: | 2113 |
| Confirmation Number: | 3895 |

AMENDMENT AND REPLY UNDER 37 C.F.R. § 1.116

Mail Stop AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

This communication is responsive to the Final Office Action mailed December 12, 2022, concerning the above-referenced patent application.

**Amendments to the Claims** are reflected in the listing of claims which begins on page 2 of this document.

**Remarks** begin on page 11 of this document.

Please amend the application as follows:

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# ELECTRONIC ACKNOWLEDGEMENT RECEIPT

| APPLICATION # | RECEIPT DATE / TIME | ATTORNEY DOCKET # |
|---|---|---|
| **17/182,511** | **02/10/2023 01:27:52 PM ET** | **115539-0346** |

## Title of Invention

SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM

## Application Information

| | | | |
|---|---|---|---|
| APPLICATION TYPE | Utility - Nonprovisional Application under 35 USC 111(a) | PATENT # | - |
| CONFIRMATION # | 3895 | FILED BY | Emily Rogers |
| PATENT CENTER # | 61577061 | FILING DATE | 02/23/2021 |
| CUSTOMER # | 147491 | FIRST NAMED INVENTOR | Sagar Sontakke |
| CORRESPONDENCE ADDRESS | - | AUTHORIZED BY | Paul Hunter |

## Documents

**TOTAL DOCUMENTS: 35**

| DOCUMENT | PAGES | DESCRIPTION | SIZE (KB) |
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| NPL_M3--Delphix_Corp_____Delphix_Engine_User_Gu_4.pdf | 334 | Non Patent Literature | 24031 KB |
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| NPL_M13--YouTube_Video_for_Delphix_Corp_____How_.pdf | | 11 | Non Patent Literature | 2794 KB |
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| 115539-0346_Response_Final-CLM.pdf | (2-10) | 9 | Claims | 136 KB |
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| 115539-0346_Response_Final-REM.pdf | (12-18) | 7 | Applicant Arguments/Remarks Made in an Amendment | 395 KB |
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| 115539-0346_M_SB08.pdf | 2 | Information Disclosure Statement (IDS) Form (SB08) | 115 KB |

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## Digest

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**New Applications Under 35 U.S.C. 111**

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

**National Stage of an International Application under 35 U.S.C. 371**

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A system comprising:

a processor executing computer-readable instructions stored on a memory to:

~~a plurality of nodes,~~ select one of a plurality of nodes as a primary node capable of storing ~~wherein~~ a source database, the remaining ones of the plurality of nodes being a secondary node, each of the secondary node capable of storing a copy of the source database, wherein updates made to the source database on the primary node are able to be copied to the copy of the source database on the secondary node, and wherein in response to the primary node becoming unavailable, one of the secondary node is designated to become the primary node based on a first policy ~~is stored on the plurality of nodes~~; [[and]]

~~a processor executing computer-readable instructions stored on a memory to:~~

~~designate a primary node from the plurality of nodes;~~

~~designate remaining ones of the plurality of nodes as secondary nodes to take over from the primary node upon failure of the primary node;~~

designate a first node from the primary node or the secondary node as an initial active node ~~from the plurality of nodes based on a switch over policy~~;

~~create~~ capture one or more snapshots ~~a snapshot~~ of the source database or the copy of the source database from the first node designated as the initial active node;

determine that the first node has become unavailable;

~~automatically designate~~ select, in response to the first node becoming unavailable and based on [[the]] a user defined switch over policy, ~~another node of the plurality of nodes~~ a second node from the primary node or the secondary node as a next active node, wherein the switch over policy defines a criteria for selecting the next active node from the plurality of nodes to capture the one or more snapshots from ~~upon the initial active node becoming unavailable~~; and

~~create~~ capture the one or more snapshots ~~a next snapshot~~ of the source database or the copy of the source database from the second node in response to selecting the second node as the next active node ~~upon the initial active node becoming unavailable~~.

2. (Currently Amended) The system of claim 1, wherein the switch over policy defines selection of ~~is a primary-only policy, and wherein the processor further executes the computer-readable instructions to select~~ the next active node from the plurality of nodes that is ~~designated as~~ the primary node.

3. (Currently Amended) The system of claim 1, wherein the switch over policy defines selection of ~~is a secondary-only policy, and wherein the processor further executes the computer-readable instructions to select~~ the next active node from the plurality of nodes that is ~~designated as~~ the secondary [[nodes]] node.

4. (Currently Amended) The system of claim 1, wherein the switch over policy defines selection of ~~is a prefer-secondary policy, and wherein the processor further executes the computer-readable instructions to select~~ the next active node from the plurality of nodes ~~designated as~~ that is the secondary [[nodes]] node, or upon determining that none of the plurality of nodes are the secondary [[nodes]] node, select the next active node from the plurality of nodes ~~designated as~~ that is the primary node.

5. (Currently Amended) The system of claim 1, wherein the switch over policy defines selection of ~~is a prefer-primary policy, and wherein the processor further executes the computer-readable instructions to select~~ the next active node from the plurality of nodes ~~designated as~~ that is the primary node, or upon determining that none of the plurality of nodes is the primary node, select the next active node from the plurality of nodes ~~designated as~~ that is the secondary [[nodes]] node.

6. (Canceled)

7. (Currently Amended) The system of claim 1, wherein the switch over policy defines a priority assigned to at least a subset of the plurality of nodes and wherein the processor further executes the computer-readable instructions to select the next active node based upon [[a]] the priority ~~assigned to at least a subset of the plurality of nodes~~.

8.-10. (Canceled).

11. (Currently Amended) A non-transitory computer-readable media comprising computer readable instructions stored thereon that when executed by a processor causes the processor to:

~~designate a primary node from a plurality of nodes, wherein a source database is stored on the plurality of nodes;~~

~~designate remaining ones of the plurality of nodes as secondary nodes to take over from the primary node upon failure of the primary node;~~

select one of a plurality of nodes as a primary node capable of storing a source database and the remaining ones of the plurality of nodes being a secondary node, each of the secondary node capable of storing a copy of the source database, wherein updates made to the source database on the primary node are able to be copied to the copy of the source database on the secondary node, and wherein in response to the primary node becoming unavailable, one of the secondary node is designated to become the primary node based on a first policy;

designate a first node from the primary node or the secondary node as an initial active node ~~from the plurality of nodes based on a switch over policy~~;

~~create~~ capture one or more snapshots ~~a snapshot~~ of the source database or the copy of the source database from the first node designated as the initial active node;

determine that the first node has become unavailable;

~~automatically designate~~ select, in response to the first node becoming unavailable and based on [[the]] a user defined switch over policy, ~~another node of the plurality of nodes~~ a second node from the primary node or the secondary node as a next active node, wherein the switch over policy defines a criteria for selecting the next active node from the plurality of nodes to capture the one or more snapshots from ~~upon the initial active node becoming unavailable~~; and

~~create~~ capture the one or more snapshots ~~a next snapshot~~ of the source database or the copy of the source database from the second node in response to selecting the second node as the next active node ~~upon the initial active node becoming unavailable~~.

12.-13. (Canceled).

14. (Currently Amended) The non-transitory computer-readable media of claim 11, wherein the switch over policy defines selection of ~~is a primary-only policy, and wherein the processor further executes the computer-readable instructions to select~~ the next active node from the plurality of nodes that is ~~designated as~~ the primary node.

15. (Currently Amended) The non-transitory computer-readable media of claim 11, wherein the switch over policy defines selection of ~~is a secondary-only policy, and wherein the processor further executes the computer-readable instructions to select~~ the next active node from the plurality of nodes that is ~~designated as~~ the secondary [[nodes]] node.

16. (Currently Amended) The non-transitory computer-readable media of claim 11, wherein the switch over policy defines selection of ~~is a prefer-secondary policy, and wherein the processor further executes the computer-readable instructions to select~~ the next active node from the plurality of nodes ~~designated as~~ that is the secondary [[nodes]] node, or upon determining that none of the plurality of nodes are the secondary [[nodes]] node, select the next active node from the plurality of nodes ~~designated as~~ that is the primary node.

17. (Currently Amended) The non-transitory computer-readable media of claim 11, wherein the switch over policy defines selection of ~~is a prefer-primary policy, and wherein the processor further executes the computer-readable instructions to select~~ the next active node from the plurality of nodes ~~designated as~~ that is the primary node, or upon determining that none of the plurality of nodes is the primary node, select the next active node from the plurality of nodes ~~designated as~~ that is the secondary [[nodes]] node.

18. (Canceled)

19. (Currently Amended) The non-transitory computer-readable media of claim 11, wherein the switch over policy defines a priority assigned to at least a subset of the plurality of nodes and wherein the processor further executes the computer-readable instructions to select the next active node based upon [[a]] the priority ~~assigned to at least a subset of the plurality of nodes~~.

20. (Canceled)

21. (Currently Amended) A method comprising:

~~designating, by a processor executing computer-readable instructions stored on a memory, a primary node from a plurality of nodes, wherein a source database is stored on the plurality of nodes;~~

~~designating, by the processor, remaining ones of the plurality of nodes as secondary nodes to take over from the primary node upon failure of the primary node;~~

selecting, by a processor executing computer-readable instructions stored on a memory, one of a plurality of nodes as a primary node capable of storing a source database and the remaining ones of the plurality of nodes being a secondary node, each of the secondary node capable of storing a copy of the source database, wherein updates made to the source database on the primary node are able to be copied to the copy of the source database on the secondary node, and wherein in response to the primary node becoming unavailable, one of the secondary node is designated to become the primary node based on a first policy;

designating, by the processor, a first node from the primary node or the secondary node as an initial active node ~~from the plurality of nodes based on a switch over policy~~;

capturing ~~creating~~, by the processor, one or more snapshots ~~a snapshot~~ of the source database or the copy of the source database from the first node designated as the initial active node;

determining, by the processor, that the first node has become unavailable;

selecting ~~automatically designating~~, by the processor, in response to the first node becoming unavailable and based on [[the]] a user defined switch over policy, ~~another node of the plurality of nodes~~ a second node from the primary node or the secondary node as a next active node, wherein the switch over policy defines a criteria for selecting the next active node from the

plurality of nodes to capture the one or more snapshots from ~~upon the initial active node becoming unavailable~~; and

~~creating~~ capturing, by the processor, ~~a next snapshot~~ one or more snapshots of the source database or the copy of the source database from the second node in response to selecting the second node as the next active node ~~upon the initial active node becoming unavailable~~.

22.-23. (Canceled).

24. (Currently Amended) The method of claim 21, wherein the switch over policy defines selection of ~~is a primary-only policy, and wherein the processor further executes the computer-readable instructions to select~~ the next active node from the plurality of nodes that is ~~designated as~~ the primary node.

25. (Currently Amended) The method of claim 21, wherein the switch over policy defines selection of ~~is a secondary-only policy, and wherein the processor further executes the computer-readable instructions to select~~ the next active node from the plurality of nodes that is ~~designated as~~ the secondary [[nodes]] node.

26. (Currently Amended) The method of claim 21, wherein the switch over policy defines selection of ~~is a prefer-secondary policy, and wherein the processor further executes the computer-readable instructions to select~~ the next active node from the plurality of nodes ~~designated as~~ that is the secondary [[nodes]] node, or upon determining that none of the plurality of nodes are the secondary [[nodes]] node, select the next active node from the plurality of nodes ~~designated as~~ that is the primary node.

27. (Currently Amended) The method of claim 21, wherein the switch over policy defines selection of ~~is a prefer-primary policy, and wherein the processor further executes the computer-readable instructions to select~~ the next active node from the plurality of nodes ~~designated as~~ that is the primary node, or upon determining that none of the plurality of nodes is the primary node, select the next active node from the plurality of nodes ~~designated as~~ that is the secondary [[nodes]] node.

28. (Canceled)

29. (Currently Amended) The method of claim 21, wherein the switch over policy defines a priority assigned to at least a subset of the plurality of nodes and wherein the method further comprises selecting, by the processor, ~~processor further executes the computer-readable instructions to select~~ the next active node based upon [[a]] the priority ~~assigned to at least a subset of the plurality of nodes~~.

30. (Canceled).

31. (Previously Presented) The system of claim 1, wherein the plurality of nodes are distributed between a first cluster and a second cluster.

32. (Currently Amended) The system of claim 1, wherein the switch over policy is defined during provisioning of ~~each of the plurality of nodes stores a copy of~~ the source database.

33. (Currently Amended) The system of claim [[31]] 1, wherein the source database on the primary node and the copy of the source database on the secondary node comprise a database cluster ~~each of the first cluster and the second cluster stores a copy of~~ the source database.

34. (Currently Amended) The system of claim [[31]] 33, wherein the switch over policy is part of a user defined active policy defining a number of nodes in the plurality of nodes based on a number of copies of the source database that are desired, a location of the nodes, and one or more conditions for selecting a new primary node when a current primary node becomes unavailable ~~processor further executes the instructions to create a cloned database from the snapshot~~.

35. (Previously Presented) The non-transitory computer-readable media of claim 11, wherein the plurality of nodes are distributed between a first cluster and a second cluster.

36. (Currently Amended) The non-transitory computer-readable media of claim 11, wherein the switch over policy is defined during provisioning of ~~each of the plurality of nodes stores a copy of~~ the source database.

37. (Currently Amended) The non-transitory computer-readable media of claim [[35]] 11, wherein the source database on the primary node and the copy of the source database on the secondary node comprise a database cluster ~~each of the first cluster and the second cluster stores a copy of the source database~~.

38. (Currently Amended) The non-transitory computer-readable media of claim [[35]] 37, wherein the switch over policy is part of a user defined active policy defining a number of nodes in the plurality of nodes based on a number of copies of the source database that are desired, a location of the nodes, and one or more conditions for selecting a new primary node when a current primary node becomes unavailable ~~processor further executes the instructions to create a cloned database from the snapshot~~.

39. (Previously Presented) The method of claim 21, wherein the plurality of nodes are distributed between a first cluster and a second cluster.

[[36]] 40. (Currently Amended) The method of claim 21, wherein the switch over policy is defined during provisioning of ~~each of the plurality of nodes stores a copy of~~ the source database.

[[37]] 41. (Currently Amended) The method of claim [[39]] 21, wherein the source database on the primary node and the copy of the source database on the secondary node comprise a database cluster ~~each of the first cluster and the second cluster stores a copy of the source database~~.

[[38]] 42. (Currently Amended) The method of claim [[39]] 41, ~~further comprising~~ wherein the switch over policy is part of a user defined active policy defining a number of nodes in the plurality of nodes based on a number of copies of the source database that are desired, a location

of the nodes, and one or more conditions for selecting a new primary node when a current primary node becomes unavailable ~~creating a cloned database from the snapshot~~.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

| **PATENT APPLICATION FEE DETERMINATION RECORD**<br>Substitute for Form PTO-875 | Application or Docket Number<br>17/182,511 | Filing Date<br>02/23/2021 | ☐ To be Mailed |
|---|---|---|---|

**ENTITY:** ☑ LARGE ☐ SMALL ☐ MICRO

**APPLICATION AS FILED - PART I**

| | (Column 1) | (Column 2) | | | |
|---|---|---|---|---|---|
| FOR | NUMBER FILED | NUMBER EXTRA | | RATE ($) | FEE ($) |
| ☐ BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | | N/A | |
| ☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | | N/A | |
| ☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | | N/A | |
| TOTAL CLAIMS (37 CFR 1.16(i)) | minus 20 = | * | | x $100 = | |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | minus 3 = | * | | x $480 = | |
| ☐ APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | |
| ☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | | TOTAL | |

**APPLICATION AS AMENDED - PART II**

| | | (Column 1) | | (Column 2) | (Column 3) | | | |
|---|---|---|---|---|---|---|---|---|
| AMENDMENT | 02/10/2023 | CLAIMS REMAINING AFTER AMENDMENT | | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA | | RATE ($) | ADDITIONAL FEE ($) |
| | Total (37 CFR 1.16(i)) | * 30 | Minus | ** 30 | = 0 | | x $100 = | 0 |
| | Independent (37 CFR 1.16(h)) | * 3 | Minus | *** 3 | = 0 | | x $480 = | 0 |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | |
| | | | | | | | TOTAL ADD'L FEE | 0 |

| | | (Column 1) | | (Column 2) | (Column 3) | | | |
|---|---|---|---|---|---|---|---|---|
| AMENDMENT | | CLAIMS REMAINING AFTER AMENDMENT | | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA | | RATE ($) | ADDITIONAL FEE ($) |
| | Total (37 CFR 1.16(i)) | * | Minus | ** | = | | x $0 = | |
| | Independent (37 CFR 1.16(h)) | * | Minus | *** | = | | x $0 = | |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | |
| | | | | | | | TOTAL ADD'L FEE | |

| | |
|---|---|
| * If the entry in column 1 is less than the entry in column 2, write "0" in column 3. | LIE |
| ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". | /FREDERICK E BRISCOE/ |
| *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". | |
| The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1. | |

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

| AFCP 2.0 Decision | Application No. | Applicant(s) | |
|---|---|---|---|
| | 17/182,511 | Sontakke et al. | |
| | Examiner | Art Unit | AIA (FITF) Status |
| | MICHAEL XU | 2113 | Yes |

This is in response to the After Final Consideration Pilot request filed 10 February 2023.

1. **Improper Request** – The AFCP 2.0 request is improper for the following reason(s) and the after final amendment submitted with the request will be treated under pre-pilot procedure.

   ☐ An AFCP 2.0 request form PTO/SB/434 (or equivalent document) was not submitted.

   ☐ A non-broadening amendment to at least one independent claim was not submitted.

   ☐ The request is not the first proper AFCP 2.0 request submitted in response to the most recent final rejection.

   ☐ Other: _____

2. **Proper Request**

   **A.** After final amendment submitted with the request will not be treated under AFCP 2.0.
   The after final amendment cannot be reviewed and a search conducted within the guidelines of the pilot program.

   ☐ The after final amendment will be treated under pre-pilot procedure.

   **B.** Updated search and/or completed additional consideration.
   The examiner performed an updated search and/or completed additional consideration of the after final amendment within the time authorized for the pilot program. The result(s) of the updated search and/or completed additional consideration are:

   ☐ 1. All of the rejections in the most recent final Office action are overcome and a Notice of Allowance is issued herewith.

   ☐ 2. The after final amendment would not overcome all of the rejections in the most recent final Office action . See attached interview summary for further details.

   ☑ 3. The after final amendment was reviewed, and it raises a new issue(s). See attached interview summary for further details.

   ☐ 4. The after final amendment raises new issues, but would overcome all of the rejections in the most recent final Office action. A decision on determining allowability could not be made within the guidelines of the pilot. See attached interview summary for further details, including any newly discovered prior art.

   ☐ 5. Other: _____

   Examiner Note: Please attach an interview summary when necessary as described above.

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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 17/182,511 | 02/23/2021 | Sagar Sontakke | 115539-0346 | 3895 |

147491 7590 03/01/2023

FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109

| EXAMINER | |
|---|---|
| XU, MICHAEL | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2113 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 03/01/2023 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipdocketing@foley.com

PTOL-90A (Rev. 04/07)

| ***Advisory Action Before the Filing of an Appeal Brief*** | **Application No.** 17/182,511 | **Applicant(s)** Sontakke et al. | |
|---|---|---|---|
| | **Examiner** MICHAEL XU | **Art Unit** 2113 | **AIA (FITF) Status** Yes |

***--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --***

THE REPLY FILED 10 February 2023 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

NO NOTICE OF APPEAL FILED

1. ☑ The reply was filed after a final rejection. No Notice of Appeal has been filed. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114 if this is a utility or plant application. Note that RCEs are not permitted in design applications. The reply must be filed within one of the following time periods:
   a) ☐ The period for reply expires ____ months from the mailing date of the final rejection.
   b) ☑ The period for reply expires on: (1) the mailing date of this Advisory Action; or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
   c) ☐ A prior Advisory Action was mailed more than 3 months after the mailing date of the final rejection in response to a first after-final reply filed within 2 months of the mailing date of the final rejection.The current period for reply expires ____ months from the mailing date of *the prior Advisory Action* or SIX MONTHS from the mailing date of the final rejection, whichever is earlier.

   *Examiner Note*: If box 1 is checked, check either box (a), (b) or (c). ONLY CHECK BOX (b) WHEN THIS ADVISORY ACTION IS THE FIRST RESPONSE TO APPLICANTS FIRST AFTER-FINAL REPLY WHICH WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. ONLY CHECK BOX (c) IN THE LIMITED SITUATION SET FORTH UNDER BOX (c). See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) or (c) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37CFR 41.37(a).

AMENDMENTS

3. ☑ The proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   a) ☑ They raise new issues that would require further consideration and/or search (see NOTE below);
   b) ☐ They raise the issue of new matter (see NOTE below);
   c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: See Continuation Sheet (See 37 CFR 1.116 and 41.33(a)).
4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicant's reply has overcome the following rejection(s): _____
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☐ For purposes of appeal, the proposed amendment(s):(a)☐ will not be entered, or (b)☐ will be entered, and an explanation of how the new or amended claims would be rejected is provided below or appended.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____
9. ☐ The affidavit or other evidence filed after final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
10. ☐ The affidavit or other evidence filed after the date of filing the Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
11. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

12. ☐ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: _____.
13. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____
14. ☑ Other: AFCP form and interview summary are attached..

STATUS OF CLAIMS

15. The status of the claim(s) is (or will be) as follows:
    Claim(s) allowed:_____.
    Claim(s) objected to:_____.
    Claim(s) rejected:1-5,7,11,14-17,19,21,24-27,29 and 31-42.
    Claim(s) withdrawn from consideration:6,8-10,12-13,18,20,22-23,28 and 30.

| /M.X./<br>Examiner, Art Unit 2113 | /BRYCE P BONZO/<br>Supervisory Patent Examiner, Art Unit 2113 |
|---|---|

Continuation of 3. NOTE: The amendments in claims 1 raises new issue that would require further consideration and search.
The limitation “select, in response to the first node becoming unavailable and based on a user defined switch over policy, a second node from the primary node or the secondary node as a next active node, wherein the switch over policy defines a criteria for selecting the next active node from the plurality of nodes to capture the one or more snapshots from” was not previously claimed. This limitation is not quickly and easily searched and requires significant time to determine and to review specification and drawings.

| *Examiner-Initiated Interview Summary* | **Application No.** 17/182,511 | **Applicant(s)** Sontakke et al. | | |
|---|---|---|---|---|
| | **Examiner** MICHAEL XU | **Art Unit** 2113 | **AIA (First Inventor to File) Status** Yes | **Page** 1 of 1 |

| **All Participants** (applicant, applicants representative, PTO personnel) | **Title** | **Type** |
|---|---|---|
| MICHAEL XU | Examiner | Telephonic |
| Paul Hunter | Attorney | |

**Date of Interview:** 22 February 2023

**Issues Discussed:**

**Proposed Amendment(s)**

Applicant and examiner discussed the claimed subject matter in relation to the prior art. The amendments in claims 1 raises new issue that would require further consideration and search.

| /MICHAEL XU/<br>Examiner, Art Unit 2113 | /BRYCE P BONZO/<br>Supervisory Patent Examiner, Art Unit 2113 |
|---|---|

**Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04**
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

**Applicant recordation instructions:** It is not necessary for applicant to provide a separate record of the substance of interview.

**Examiner recordation instructions:** Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

DO NOT ENTER: /M.X./

Atty. Dkt. No. 115539-0346

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| First Inventor Name: | Sagar Sontakke |
| Title: | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Appl. No.: | 17/182,511 |
| Filing Date: | 2/23/2021 |
| Examiner: | Michael Xu |
| Art Unit: | 2113 |
| Confirmation Number: | 3895 |

AMENDMENT AND REPLY UNDER 37 C.F.R. § 1.116

Mail Stop AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

This communication is responsive to the Final Office Action mailed December 12, 2022, concerning the above-referenced patent application.

**Amendments to the Claims** are reflected in the listing of claims which begins on page 2 of this document.

**Remarks** begin on page 11 of this document.

Please amend the application as follows:

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | 17182511 |
| **Filing Date:** | 23-Feb-2021 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Filer:** | Paul S. Hunter/Emily Rogers |
| **Attorney Docket Number:** | 115539-0346 |

Filed as Large Entity

**Filing Fees for Utility under 35 USC 111(a)**

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| **Pages:** | | | | |
| **Claims:** | | | | |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |
| **Post-Allowance-and-Post-Issuance:** | | | | |
| **Extension-of-Time:** | | | | |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Miscellaneous:** | | | | |
| RCE- 1ST REQUEST | 1801 | 1 | 1360 | 1360 |
| | | **Total in USD ($)** | | **1360** |

PTO/SB/30EFS (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

# REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
## (Submitted Only via EFS-Web)

| Application Number | 17/182511 | Filing Date | 2021-02-23 | Docket Number (if applicable) | 115539-0346 | Art Unit | 2113 |
|---|---|---|---|---|---|---|---|
| First Named Inventor | Sagar Sontakke | | | Examiner Name | XU, MICHAEL | | |

**This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.**
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

### SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the orde in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s entered, applicant must request non-entry of such amendment(s).

☒ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☒ Other Amendment After Final Office Action filed February 10, 2023

☐ Enclosed

☐ Amendment/Reply

☐ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☐ Other _____

### MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

### FEES

**The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**

☒ The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 190741

### SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

X Patent Practitioner Signature

Applicant Signature

EFS - Web 2.1.16

PTO/SB/30EFS (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

| Signature of Registered U.S. Patent Practitioner | | | |
|---|---|---|---|
| Signature | /Paul S. Hunter/ | Date (YYYY-MM-DD) | 2023-03-02 |
| Name | Paul S. Hunter | Registration Number | 44787 |

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is t file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Tim will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions fo reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

# Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the informatio solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record ma be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

| Electronic Acknowledgement Receipt | |
|---|---|
| **EFS ID:** | 47621683 |
| **Application Number:** | 17182511 |
| **International Application Number:** | |
| **Confirmation Number:** | 3895 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Customer Number:** | 147491 |
| **Filer:** | Paul S. Hunter/Emily Rogers |
| **Filer Authorized By:** | Paul S. Hunter |
| **Attorney Docket Number:** | 115539-0346 |
| **Receipt Date:** | 02-MAR-2023 |
| **Filing Date:** | 23-FEB-2021 |
| **Time Stamp:** | 19:04:11 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | yes |
| Payment Type | CARD |
| Payment was successfully received in RAM | $1360 |
| RAM confirmation Number | E202332J05138410 |
| Deposit Account | |
| Authorized User | |
| The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: | |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Request for Continued Examination (RCE) | 115539-0346_RCE_1st.pdf | 1667130<br>935f1dbb73a90511447d5e6a26d96a0e968a4338 | no | 3 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 2 | Fee Worksheet (SB06) | fee-info.pdf | 38278<br>567e5d8b639e8a263aab51c5d51d6b163cd911de | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | **Total Files Size (in bytes):** | 1705408 | | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**
**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**
**National Stage of an International Application under 35 U.S.C. 371**
**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**
**New International Application Filed with the USPTO as a Receiving Office**
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

| Issue Classification | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 17/182,511 | Sontakke et al. |
| | **Examiner** | **Art Unit** |
| | MICHAEL XU | 2113 |

| CPC | | | | | | |
|---|---|---|---|---|---|---|
| **Symbol** | | | | | **Type** | **Version** |
| G06F | / | 11 | / | 1464 | F | 2013-01-01 |
| G06F | / | 11 | / | 1461 | I | 2013-01-01 |
| G06F | / | 11 | / | 2025 | I | 2013-01-01 |
| G06F | / | 11 | / | 1471 | I | 2013-01-01 |
| G06F | / | 11 | / | 1451 | I | 2013-01-01 |
| G06F | / | 2201 | / | 84 | A | 2013-01-01 |

| CPC Combination Sets | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Symbol** | | | | | **Type** | **Set** | **Ranking** | **Version** |
| | / | | / | | | | | |

| | | | |
|---|---|---|---|
| /MICHAEL XU/<br>Examiner, Art Unit 2113 | 17 March 2023 | **Total Claims Allowed:** | |
| (Assistant Examiner) | (Date) | 30 | |
| /BRYCE P BONZO/<br>Supervisory Patent Examiner, Art Unit 2113 | 20 March 2023 | O.G. Print Claim(s) | O.G. Print Figure |
| (Primary Examiner) | (Date) | 1 | 6 |

U.S. Patent and Trademark Office — Part of Paper No.: 20230317

| Issue Classification | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 17/182,511 | Sontakke et al. |
| | **Examiner** | **Art Unit** |
| | MICHAEL XU | 2113 |

| INTERNATIONAL CLASSIFICATION | | | | | |
|---|---|---|---|---|---|
| **CLAIMED** | | | | | |
| G06F | / | 11 | / | 14 | |

| NON-CLAIMED | | | | | |
|---|---|---|---|---|---|
| | / | | / | | |

| US ORIGINAL CLASSIFICATION | |
|---|---|
| **CLASS** | **SUBCLASS** |
| 714 | 4.11 |

| CROSS REFERENCES(S) | | | | | | |
|---|---|---|---|---|---|---|
| **CLASS** | **SUBCLASS (ONE SUBCLASS PER BLOCK)** | | | | | |
| 714 | 4.11 | | | | | |

| /MICHAEL XU/<br>Examiner, Art Unit 2113 | 17 March 2023 | **Total Claims Allowed:** | |
|---|---|---|---|
| (Assistant Examiner) | (Date) | 30 | |
| /BRYCE P BONZO/<br>Supervisory Patent Examiner, Art Unit 2113 | 20 March 2023 | O.G. Print Claim(s) | O.G. Print Figure |
| (Primary Examiner) | (Date) | 1 | 6 |

U.S. Patent and Trademark Office — Part of Paper No.: 20230317

| Issue Classification | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 17/182,511 | Sontakke et al. |
| | **Examiner** | **Art Unit** |
| | MICHAEL XU | 2113 |

☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

**CLAIMS**

| Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | | 10 | 12 | 19 | | 28 | 25 | 37 | | | | | | |
| 2 | 2 | 7 | 11 | | 20 | 18 | 29 | 26 | 38 | | | | | | |
| 3 | 3 | | 12 | 13 | 21 | | 30 | 27 | 39 | | | | | | |
| 4 | 4 | | 13 | | 22 | 19 | 31 | 28 | 40 | | | | | | |
| 5 | 5 | 8 | 14 | | 23 | 20 | 32 | 29 | 41 | | | | | | |
| | 6 | 9 | 15 | 14 | 24 | 21 | 33 | 30 | 42 | | | | | | |
| 6 | 7 | 10 | 16 | 15 | 25 | 22 | 34 | | | | | | | | |
| | 8 | 11 | 17 | 16 | 26 | 23 | 35 | | | | | | | | |
| | 9 | | 18 | 17 | 27 | 24 | 36 | | | | | | | | |

| | | | |
|---|---|---|---|
| /MICHAEL XU/<br>Examiner, Art Unit 2113 | 17 March 2023 | **Total Claims Allowed:** | |
| (Assistant Examiner) | (Date) | 30 | |
| /BRYCE P BONZO/<br>Supervisory Patent Examiner, Art Unit 2113 | 20 March 2023 | O.G. Print Claim(s) | O.G. Print Figure |
| (Primary Examiner) | (Date) | 1 | 6 |

U.S. Patent and Trademark Office — Part of Paper No.: 20230317

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

# NOTICE OF ALLOWANCE AND FEE(S) DUE

147491 7590 03/23/2023
FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109

| EXAMINER | |
|---|---|
| XU, MICHAEL | |
| ART UNIT | PAPER NUMBER |
| 2113 | |

DATE MAILED: 03/23/2023

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 17/182,511 | 02/23/2021 | Sagar Sontakke | 115539-0346 | 3895 |

TITLE OF INVENTION: SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM

| APPLN. TYPE | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE |
|---|---|---|---|---|---|---|
| nonprovisional | UNDISCOUNTED | $1200 | $0.00 | $0.00 | $1200 | 06/23/2023 |

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

**HOW TO REPLY TO THIS NOTICE:**

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 40% the amount of undiscounted fees, and micro entity fees are 20% the amount of undiscounted fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.**

## PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

147491 7590 03/23/2023
FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

**Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

| (Typed or printed name) |
|---|
| (Signature) |
| (Date) |

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 17/182,511 | 02/23/2021 | Sagar Sontakke | 115539-0346 | 3895 |

TITLE OF INVENTION: SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM

| APPLN. TYPE | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE |
|---|---|---|---|---|---|---|
| nonprovisional | UNDISCOUNTED | $1200 | $0.00 | $0.00 | $1200 | 06/23/2023 |

| EXAMINER | ART UNIT | CLASS-SUBCLASS |
|---|---|---|
| XU, MICHAEL | 2113 | 714-004110 |

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1_____
2_____
3_____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. Fees submitted: ❑Issue Fee ❑Publication Fee (if required) ❑Advance Order - # of Copies _____

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

❑ Applicant asserting small entity status. See 37 CFR 1.27

❑ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 17/182,511 | 02/23/2021 | Sagar Sontakke | 115539-0346 | 3895 |

147491 7590 03/23/2023

FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109

| EXAMINER | |
|---|---|
| XU, MICHAEL | |
| ART UNIT | PAPER NUMBER |
| 2113 | |

DATE MAILED: 03/23/2023

**Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)**
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.



PTOL-85 (Rev. 02/11)

## OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

## Privacy Act Statement

**The Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

| Notice of Allowability | Application No. 17/182,511 | Applicant(s) Sontakke et al. | |
|---|---|---|---|
| | Examiner MICHAEL XU | Art Unit 2113 | AIA (FITF) Status Yes |

***-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--***

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to 3/02/2023.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 1-5,7,11,14-17,19,21,24-27,29 and 31-42 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   **Certified copies:**

   a) ☐ All b) ☐ Some* c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   **Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☑ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 2/10/2023,12/22/2022,12/05/2022.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☑ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

| /M.X./<br>Examiner, Art Unit 2113 | /BRYCE P BONZO/<br>Supervisory Patent Examiner, Art Unit 2113 |
|---|---|

***Notice of Pre-AIA or AIA Status***

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

***Allowable Subject Matter***

Claims 1-5,7,11,14-17,19,21,24-27,29,31-42 allowed. The newly renumbered claims are 1 through 30.

The following is an examiner's statement of reasons for allowance: The prior art does not teach or fairly suggest: wherein updates made to the source database on the primary node are able to be copied to the copy of the source database on the secondary node, and wherein in response to the primary node becoming unavailable, one of the secondary node is designated to become the primary node based on a first policy; designate a first node from the primary node or the secondary node as an initial active node; capture one or more snapshots of the source database or the copy of the source database from the first node designated as the initial active node; determine that the first node has become unavailable; select, in response to the first node becoming unavailable and based on a user defined switch over policy, a second node from the primary node or the secondary node as a next active node, wherein the switch over policy defines a criteria for selecting the next active node from the plurality of nodes to capture the one or more snapshots from; and capture the one or more snapshots of the source database or the copy of the source database from the second node in response to selecting the second node as the next active node.; outlined in claims 1,11,21. A reasonable combination of systems that designate a secondary node as an initial active node while the primary node is still functional, in combination with a user defined switch over policy, and capturing snapshots from

the source database or the copy of the source database from the second node was not found in the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL XU whose telephone number is (571)272-5688. The examiner can normally be reached Monday-Friday 8:00am - 5:00pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bryce Bonzo can be reached on (571) 272-3655. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for

information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M.X./
Examiner, Art Unit 2113
/BRYCE P BONZO/
Supervisory Patent Examiner, Art Unit 2113

PTO/SB/08 (modified)

| Substitute for form 1449/PTO | | | | ***Complete if Known*** | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: December 22, 2022 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | 2113 |
| | | | | Examiner Name | XU, MICHAEL |
| Sheet | 1 | of | 1 | Attorney Docket Number | 115539-0346 |

**U.S. PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Document Number<br>Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | L1 | 8,448,170-B2 | 05-21-2013 | WIPFEL ET AL. | |
| | L2 | 8,769,537-B1 | 07-01-2014 | RUGGIERO ET AL. | |
| | L3 | 8,924,974-B1 | 12-30-2014 | RUGGIERO ET AL. | |
| | L4 | 10,146,848-B2 | 12-04-2018 | NARAYANAN ET AL. | |
| | L5 | 10,606,578-B2 | 03-31-2020 | KRUGLIKOV ET AL. | |
| | L6 | 11,386,058-B2 | 07-12-2022 | HUNG ET AL. | |
| | L7 | 2010/0023564-A1 | 01-28-2010 | YERNENI ET AL. | |
| | L8 | 2011/0252420-A1 | 10-13-2011 | TUNG ET AL. | |
| | L9 | 2013/0091285-A1 | 04-11-2013 | DEVARAKONDA ET AL. | |
| | L10 | 2021/0144060-A1 | 05-13-2021 | CENCINI ET AL. | |
| | L11 | 2021/0406717-A1 | 12-30-2021 | TAUHEED ET AL. | |
| | | | | | |

**UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS**

| Examiner Initials* | Cite No.[1] | U.S. Patent Application Document<br>Serial Number-Kind Code[2] (*if known*) | Filing Date of Cited Document MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | | | | | |

**FOREIGN PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Foreign Patent Document<br>Country Code[3]-Number[4]-Kind Code[5] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Documents | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
|---|---|---|---|---|---|---|
| | | | | | | |

**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
|---|---|---|---|
| | L12 | Final Office Action on US 17/337197 DTD 12/15/2022 | |
| | L13 | Notice of Allowance on US 17/237599 DTD 12/05/2022 | |
| | L14 | Oracle Cloud, "Using Oracle Autonomous Database on Shared Exadata Infrastructure" published December 2022 | |
| | | | |

| Examiner Signature | /MICHAEL XU/ | Date Considered | 03/16/2023 |
|---|---|---|---|

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.X./

## Bibliographic Data

Application No: 17/182,511

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☑ No ☐ Met After Allowance

Verified and Acknowledged: /MICHAEL XU/ Examiner's Signature | Initials

Title: SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM

| FILING or 371(c) DATE | CLASS | GROUP ART UNIT | ATTORNEY DOCKET NO. |
|---|---|---|---|
| 02/23/2021 | 714 | 2113 | 115539-0346 |
| RULE | | | |

**APPLICANTS**

Nutanix, Inc., San Jose, CA,

**INVENTORS**

Sagar Sontakke, Bangalore, INDIA

Kamaldeep Khanuja, Dublin, CA, UNITED STATES

Bakul Banthia, San Ramon, CA, UNITED STATES

**CONTINUING DATA**

This application has PRO of 63094245 10/20/2020

**FOREIGN APPLICATIONS**

**IF REQUIRED, FOREIGN LICENSE GRANTED****

03/22/2021

**STATE OR COUNTRY**

INDIA

**ADDRESS**

FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109
UNITED STATES

**FILING FEE RECEIVED**

$2,820

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 17/182,511 | Sontakke et al. |
| | Examiner | Art Unit |
| | MICHAEL XU | 2113 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

**CLAIMS**

☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 07/14/2022 | 11/26/2022 | 03/17/2023 | | | | | | |
| 1 | 1 | ✓ | ✓ | = | | | | | | |
| 2 | 2 | ✓ | ✓ | = | | | | | | |
| 3 | 3 | ✓ | ✓ | = | | | | | | |
| 4 | 4 | ✓ | ✓ | = | | | | | | |
| 5 | 5 | ✓ | ✓ | = | | | | | | |
| | 6 | ✓ | - | - | | | | | | |
| 6 | 7 | ✓ | ✓ | = | | | | | | |
| | 8 | ✓ | - | - | | | | | | |
| | 9 | ✓ | - | - | | | | | | |
| | 10 | ✓ | - | - | | | | | | |
| 7 | 11 | ✓ | ✓ | = | | | | | | |
| | 12 | ✓ | - | - | | | | | | |
| | 13 | ✓ | - | - | | | | | | |
| 8 | 14 | ✓ | ✓ | = | | | | | | |
| 9 | 15 | ✓ | ✓ | = | | | | | | |
| 10 | 16 | ✓ | ✓ | = | | | | | | |
| 11 | 17 | ✓ | ✓ | = | | | | | | |
| | 18 | ✓ | - | - | | | | | | |
| 12 | 19 | ✓ | ✓ | = | | | | | | |
| | 20 | ✓ | - | - | | | | | | |
| 13 | 21 | ✓ | ✓ | = | | | | | | |
| | 22 | ✓ | - | - | | | | | | |
| | 23 | ✓ | - | - | | | | | | |
| 14 | 24 | ✓ | ✓ | = | | | | | | |
| 15 | 25 | ✓ | ✓ | = | | | | | | |
| 16 | 26 | ✓ | ✓ | = | | | | | | |
| 17 | 27 | ✓ | ✓ | = | | | | | | |
| | 28 | ✓ | - | - | | | | | | |
| 18 | 29 | ✓ | ✓ | = | | | | | | |
| | 30 | ✓ | - | - | | | | | | |
| 19 | 31 | | ✓ | = | | | | | | |
| 20 | 32 | | ✓ | = | | | | | | |
| 21 | 33 | | ✓ | = | | | | | | |
| 22 | 34 | | ✓ | = | | | | | | |
| 23 | 35 | | ✓ | = | | | | | | |
| 24 | 36 | | ✓ | = | | | | | | |
| 25 | 37 | | ✓ | = | | | | | | |
| 26 | 38 | | ✓ | = | | | | | | |
| 27 | 39 | | ✓ | = | | | | | | |
| 28 | 40 | | ✓ | = | | | | | | |
| 29 | 41 | | ✓ | = | | | | | | |
| 30 | 42 | | ✓ | = | | | | | | |

# Web Search History

| date, time | web site | search string |
|---|---|---|
| 3/16/2023 11:13:38 PM | Google | backup system where the active initial node does not have to be on the primary server |
| 3/16/2023 11:13:46 PM | Google Scholar | (backup system where the active initial node does not have to be on the primary server) |
| 3/16/2023 11:13:46 PM | Google Patents | Search Term 1<br>(backup system where the active initial node does not have to be on the primary server) |
| 3/16/2023 11:24:22 PM | Google Scholar | (taking backups mirror site instead of primary site) |
| 3/16/2023 11:24:22 PM | Google Patents | Search Term 1<br>(taking backups mirror site instead of primary site) |
| 3/16/2023 11:25:42 PM | Google | taking backups from mirror site instead of primary site |
| 3/16/2023 11:26:29 PM | Google | synchronization |
| 3/17/2023 11:14:13 AM | Google | user defined failover policy |
| 3/17/2023 11:14:21 AM | Google Scholar | (user defined failover policy) |
| 3/17/2023 11:14:21 AM | Google Patents | Search Term 1<br>(user defined failover policy) |

PTO/SB/08 (modified)

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: February 10, 2023 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | 2113 |
| | | | | Examiner Name | XU, MICHAEL |
| Sheet | 1 | of | 2 | Attorney Docket Number | 115539-0346 |

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|---|---|---|---|---|---|
| | | | | | |

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| Examiner Initials* | Cite No.[1] | Foreign Patent Document<br>Country Code[3]-Number[4]-Kind Code[5] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Documents | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
|---|---|---|---|---|---|---|
| | | | | | | |

**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
|---|---|---|---|
| | M1 | Arslan, Erman, "Delphix - Notes vol 1, my new toy for the upcoming months," Erman Arslan's Oracle Blog, published August 8, 2016, retrieved on 1/2/2023 from http://ermanarslan.blogspot.com/2016/08/delphix-notes-vol-1-my-new-toy-for.html | |
| | M2 | Delphix Corp., "Delphix Engine User Guide," Delphix, published December, 2017, retrieved 1/2/2023 from https://docs.delphix.com/docs52/files/83053093/83053098/2/1512670775673/Delphix Engine User Guide.pdf | |
| | M3 | Delphix Corp., "Delphix Engine User Guide," Delphix, published November, 2018, retrieved 1/2/2023 from https://docs.delphix.com/docs531/files/98113199/98116076/2/1542301179433/User Guide.pdf | |
| | M4 | Delphix Corp., "Delphix Engine User Guide," Delphix, published October, 2017, retrieved 1/2/2023 from https://docs.delphix.com/docs-old/files/74711255/74715951/5/1509647013871/Delphix Engine User Guide.pdf | |
| | M5 | Delphix Corp., "FAQ: SnapShot and SnapSync (KBA1014)," Delphix, published March, 4 2022, retrieved 1/2/2023 from https://support.delphix.com/Continuous_Data_Engine_(formerly_Virtualization_Engine)/Delphix_Admin/FAQ%3A_SnapShot_and_SnapSync_(KBA1014) | |
| | M6 | Delphix Corp., "Linking to a Database," Database Linking Overview, published December, 2017, retrieved on 1/2/2023 from https://docs.delphix.com/docs52/introduction/database-virtualization-with-delphix/database-linking-overview | |
| | M7 | Delphix Corp., "Understanding Timelines," Understanding Timelines and How to Preserve Data in a Point in Time, published June, 2018, retrieved 1/2/2023 from https://docs.delphix.com/docs526/delphix-self-service/delphix-self-service-data-user-guide/understanding-timelines-and-how-to-preserve-data-in-a-point-in-time | |
| | M8 | Delphix Corp., "What Does the Delphix Engine Do?," Delphix Engine Overview, published December, 2017, retrieved on 1/2/2023 from https://docs.delphix.com/docs52/introduction/database-virtualization-with-delphix/delphix-engine-overview | |

| Examiner Signature | /MICHAEL XU/ | Date Considered | 03/16/2023 |
|---|---|---|---|

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.X./

PTO/SB/08 (modified)

| Substitute for form 1449/PTO | | | | Complete if Known | |
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| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | 2113 |
| | | | | Examiner Name | XU, MICHAEL |
| Sheet | 2 | of | 2 | Attorney Docket Number | 115539-0346 |

**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
|---|---|---|---|
| | M9 | Delphix Corp., "What's New Guide for 5.2," Delphix, published December, 2017, retrieved on 1/2/2023 from https://docs.delphix.com/docs52/files/83053093/83056028/2/1513184739765/What%27s New Guide for 5.2.pdf | |
| | M10 | Murugan, Palani, "Delphix Dynamic Data Platform on VMware vSAN," VMware Virtual Blocks Blog, published November 20, 2017, retrieved on 1/2/2023 from https://blogs.vmware.com/virtualblocks/2017/11/20/delphix-vsan/ | |
| | M11 | Rubrik, "Exploring the Depth of Simplicity: Protecting Microsoft SQL Server with Rubrik," Technical White Paper, published March, 2017, retrieved on 1/2/2023 from https://www.rubrik.com/content/dam/rubrik/en/resources/white-paper/Protecting-Microsoft-SQLServer-with-Rubrik.pdf | |
| | M12 | Rubrik, "Hyperconverged Infrastructure with the Simplest Data Protection," published January, 2016, retrieved on 1/2/2023 from https://web.archive.org/web/20210117100439/https://www.rubrik.com/wp-content/uploads/2015/12/Joint-Solution-Brief-Nutanix-and-Rubrik.pdf | |
| | M13 | YouTube Video for Delphix Corp., "How To Create Database Copies with Delphix," YouTube, April 3, 2018, https://www.youtube.com/watch?v=1EjR-k4EJ68 [youtube.com] | |
| | M14 | YouTube Video for Rubrik, "Item-level Recovery with Rubrik SQL Server Live Mount," YouTube, July 12, 2018, https://www.youtube.com/watch?app=desktop&v=Upp4Ume03P0&feature=youtu.be [youtube.com] | |

| Examiner Signature | /MICHAEL XU/ | Date Considered | 03/16/2023 |
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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.X./

| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 17/182,511 | Sontakke et al. |
| | Examiner | Art Unit |
| | MICHAEL XU | 2113 |

| CPC - Searched* | | |
|---|---|---|
| Symbol | Date | Examiner |
| G06F11/1464 OR G06F11/1451 OR G06F11/1461 OR G06F11/1471 OR G06F11/2025 OR G06F2201/84 OR G06F2201/80 | 07/14/2022 | MX |

| CPC Combination Sets - Searched* | | |
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| Symbol | Date | Examiner |
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| US Classification - Searched* | | | |
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| Class | Subclass | Date | Examiner |
| | | | |

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

| Search Notes | | |
|---|---|---|
| Search Notes | Date | Examiner |
| Text search of USPAT, US-PGPUB, EPO, DERWENT, including inventor and assignee search. See search history printout. | 07/14/2022 | MX |
| NPL search through Google and Google Scholar. See search history printout. | 07/14/2022 | MX |
| Text search of USPAT, US-PGPUB, EPO, DERWENT, including inventor and assignee search. See search history printout. | 11/26/2022 | MX |
| NPL search through Google and Google Scholar. See search history printout. | 11/26/2022 | MX |
| Text search of USPAT, US-PGPUB, EPO, DERWENT, including inventor and assignee search. See search history printout. | 03/17/2023 | MX |
| NPL search through Google and Google Scholar. See search history printout. | 03/17/2023 | MX |

| /M.X./<br>Examiner, Art Unit 2113 | |
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| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 17/182,511 | Sontakke et al. |
| | Examiner | Art Unit |
| | MICHAEL XU | 2113 |

| Interference Search | | | |
|---|---|---|---|
| **US Class/CPC Symbol** | **US Subclass/CPC Group** | **Date** | **Examiner** |
| G06F | G06F11/1464 OR G06F11/1451 OR G06F11/1461 OR G06F11/1471 OR G06F11/2025 OR G06F2201/84 OR G06F2201/80 | 03/17/2023 | MX |

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| /M.X./<br>Examiner, Art Unit 2113 | |

## PE2E SEARCH - Search History (Prior Art)

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | British Equivalents | Time Stamp |
|---|---|---|---|---|---|---|---|
| L1 | 335 | ((("NUTANIX") near3 ("INC"))).AS,AANM. | (USPAT) | OR | ON | ON | 2022/06/27 11:18 AM |
| L2 | 129 | ((("NUTANIX") near3 ("INC"))).AS,AANM. AND (backup AND (fail failure error) AND (failover "switch over" "disaster recovery")) | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/06/27 11:21 AM |
| L3 | 2 | ((("NUTANIX") near3 ("INC"))).AS,AANM. AND (backup AND (fail failure error) AND (failover "switch over" "disaster recovery" takeover )).clm. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/06/27 11:22 AM |
| L4 | 2 | ((("NUTANIX") near3 ("INC"))).AS,AANM. AND ((backup "transactional log" "incremental log") AND (fail failure error) AND (failover "switch over" "disaster recovery" takeover )).clm. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/06/27 11:22 AM |
| L5 | 17 | ((("NUTANIX") near3 ("INC"))).AS,AANM. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, | OR | ON | ON | 2022/06/27 11:22 AM |

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|---|---|---|---|---|---|---|---|
| | | AND ((backup "transactional log" "incremental log") AND (fail failure error) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. | AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | | | | |
| L6 | 17 | ((("NUTANIX") near3 ("INC"))).AS,AANM. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/06/27 11:23 AM |
| L7 | 17 | ((("NUTANIX") near3 ("INC"))).AS,AANM. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/06/27 11:23 AM |
| L8 | 39 | ((("SONTAKKE") near3 ("Sagar")) OR (("KHANUJA") near3 ("Kamaldeep")) OR (("BANTHIA") near3 ("Bakul"))).INV. | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT) | OR | ON | ON | 2022/06/27 11:33 AM |
| L9 | 1 | ((("SONTAKKE") near3 ("Sagar")) OR (("KHANUJA") near3 ("Kamaldeep")) OR (("BANTHIA") near3 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT) | OR | ON | ON | 2022/06/27 11:33 AM |

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|---|---|---|---|---|---|---|---|
| | | ("Bakul"))).INV. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. | | | | | |
| L10 | 218 | ("0000002" OR "11126426" OR "20170115978" OR "9753713" OR "9960963" OR "D000001" OR "0000001" OR "20140282256" OR "20150347987" OR "20180253676" OR "20190018738" OR "20200110675" OR "D508248" OR "D521521" OR "D625315" OR "D656948" OR "D684160" OR "D684161" OR "D733745" OR "D749117" OR "D761288" OR "D771102" OR "D777747" OR "D778296" OR "D781887" OR "D794666" OR "D794667" OR "D797116" OR "D802608" OR "D809530" OR "D815652" OR "D817976" OR "D843388" OR "D911356" OR "D926200" OR "D927507" OR "10725866" OR "10817157" OR "11010336" OR "20120123999" OR "20150227435" OR "20190155699" OR "20200034178" OR "20200099692" OR "20200210378" OR "20200210379" OR "20200250046" OR "10013313" OR | (US-PGPUB; USPAT) | OR | ON | ON | 2022/06/27 09:35 PM |

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|---|---|---|---|---|---|---|---|
| | | "10033833" OR<br>"10055300" OR<br>"10108685" OR<br>"10212195" OR<br>"10282201" OR<br>"10339110" OR<br>"10372329" OR<br>"10379963" OR<br>"10445298" OR<br>"10476955" OR<br>"10503612" OR<br>"10613938" OR<br>"10637914" OR<br>"10757036" OR<br>"10776329" OR<br>"10812582" OR<br>"10959098" OR<br>"10999165" OR<br>"11010487" OR<br>"20020104376" OR<br>"20020174098" OR<br>"20150052108" OR<br>"20150143064" OR<br>"20150227602" OR<br>"20150331923" OR<br>"20160321339" OR<br>"20170351716" OR<br>"20180181469" OR<br>"20190102257" OR<br>"20190158605" OR<br>"20190384496" OR<br>"20200104375" OR<br>"20200104376" OR<br>"20200104377" OR<br>"20200285608" OR<br>"20200349018" OR<br>"20200379793" OR<br>"20210117293" OR<br>"8468174" OR<br>"8677085" OR<br>"8849850" OR<br>"9372758" OR<br>"9495435" OR<br>"9600193" OR<br>"9639429" OR<br>"9760396" OR<br>"9778992" OR<br>"9858155" OR<br>"9881168" OR<br>"20070185852" OR<br>"20070185937" OR<br>"20090037914" OR<br>"20090132543" OR<br>"20170060699" OR<br>"20180121494" OR<br>"20190102411" OR<br>"20200201526" OR<br>"10185627" OR | | | | | |

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| | | "10210048" OR<br>"10248657" OR<br>"10346431" OR<br>"10447806" OR<br>"10509798" OR<br>"10599423" OR<br>"10700991" OR<br>"10728255" OR<br>"10785029" OR<br>"20010014867" OR<br>"20020073089" OR<br>"20030147309" OR<br>"20050149757" OR<br>"20070100793" OR<br>"20080126945" OR<br>"20080256311" OR<br>"20090022285" OR<br>"20090028082" OR<br>"20090125858" OR<br>"20110004586" OR<br>"20110071981" OR<br>"20110093435" OR<br>"20120011378" OR<br>"20120271797" OR<br>"20130117441" OR<br>"20130290180" OR<br>"20140189685" OR<br>"20140229698" OR<br>"20150019495" OR<br>"20150121453" OR<br>"20150142610" OR<br>"20150195347" OR<br>"20160041997" OR<br>"20160048408" OR<br>"20160077923" OR<br>"20160078104" OR<br>"20160125059" OR<br>"20160162845" OR<br>"20160197835" OR<br>"20160267105" OR<br>"20160292358" OR<br>"20160335369" OR<br>"20160380809" OR<br>"20170220777" OR<br>"20170264684" OR<br>"20170286518" OR<br>"20170351584" OR<br>"20180025007" OR<br>"20180285201" OR<br>"20180307728" OR<br>"20190065322" OR<br>"20190075031" OR<br>"20190125828" OR<br>"20190129799" OR<br>"20190138631" OR<br>"20190155936" OR<br>"20190230156" OR<br>"20190235904" OR | | | | | |

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|---|---|---|---|---|---|---|---|
| | | "20190324865" OR<br>"20190339870" OR<br>"20190340091" OR<br>"20200034245" OR<br>"20200050522" OR<br>"20200106737" OR<br>"20200137157" OR<br>"7225189" OR<br>"7725671" OR<br>"7814057" OR<br>"7840533" OR<br>"7953764" OR<br>"8117165" OR<br>"8150808" OR<br>"8364648" OR<br>"8429630" OR<br>"8447728" OR<br>"8549518" OR<br>"8601473" OR<br>"8612396" OR<br>"8635421" OR<br>"8762335" OR<br>"8832028" OR<br>"8850130" OR<br>"8863124" OR<br>"8914567" OR<br>"8972347" OR<br>"9009106" OR<br>"9069708" OR<br>"9116737" OR<br>"9244717" OR<br>"9256383" OR<br>"9336060" OR<br>"9336132" OR<br>"9389962" OR<br>"9413810" OR<br>"9436556" OR<br>"9507579" OR<br>"9529551" OR<br>"9652265" OR<br>"9740723" OR<br>"9747287" OR<br>"9772866" OR<br>"D753135" OR<br>"D753140" OR<br>"D763890" OR<br>"D779514" OR<br>"D803231" OR<br>"D807902" OR<br>"D838288" OR<br>"D839913" OR<br>"D862512" OR<br>"D875108" OR<br>"D877753").pn. | | | | | |
| L11 | 19 | ("0000002" OR<br>"11126426" OR<br>"20170115978" OR<br>"9753713" OR | (US-PGPUB; USPAT) | OR | ON | ON | 2022/06/27<br>09:38 PM |

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|---|---|---|---|---|---|---|---|
| | | "9960963" OR<br>"D000001" OR<br>"0000001" OR<br>"20140282256" OR<br>"20150347987" OR<br>"20180253676" OR<br>"20190018738" OR<br>"20200110675" OR<br>"D508248" OR<br>"D521521" OR<br>"D625315" OR<br>"D656948" OR<br>"D684160" OR<br>"D684161" OR<br>"D733745" OR<br>"D749117" OR<br>"D761288" OR<br>"D771102" OR<br>"D777747" OR<br>"D778296" OR<br>"D781887" OR<br>"D794666" OR<br>"D794667" OR<br>"D797116" OR<br>"D802608" OR<br>"D809530" OR<br>"D815652" OR<br>"D817976" OR<br>"D843388" OR<br>"D911356" OR<br>"D926200" OR<br>"D927507" OR<br>"10725866" OR<br>"10817157" OR<br>"11010336" OR<br>"20120123999" OR<br>"20150227435" OR<br>"20190155699" OR<br>"20200034178" OR<br>"20200099692" OR<br>"20200210378" OR<br>"20200210379" OR<br>"20200250046" OR<br>"10013313" OR<br>"10033833" OR<br>"10055300" OR<br>"10108685" OR<br>"10212195" OR<br>"10282201" OR<br>"10339110" OR<br>"10372329" OR<br>"10379963" OR<br>"10445298" OR<br>"10476955" OR<br>"10503612" OR<br>"10613938" OR<br>"10637914" OR<br>"10757036" OR | | | | |

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| | | "10776329" OR<br>"10812582" OR<br>"10959098" OR<br>"10999165" OR<br>"11010487" OR<br>"20020104376" OR<br>"20020174098" OR<br>"20150052108" OR<br>"20150143064" OR<br>"20150227602" OR<br>"20150331923" OR<br>"20160321339" OR<br>"20170351716" OR<br>"20180181469" OR<br>"20190102257" OR<br>"20190158605" OR<br>"20190384496" OR<br>"20200104375" OR<br>"20200104376" OR<br>"20200104377" OR<br>"20200285608" OR<br>"20200349018" OR<br>"20200379793" OR<br>"20210117293" OR<br>"8468174" OR<br>"8677085" OR<br>"8849850" OR<br>"9372758" OR<br>"9495435" OR<br>"9600193" OR<br>"9639429" OR<br>"9760396" OR<br>"9778992" OR<br>"9858155" OR<br>"9881168" OR<br>"20070185852" OR<br>"20070185937" OR<br>"20090037914" OR<br>"20090132543" OR<br>"20170060699" OR<br>"20180121494" OR<br>"20190102411" OR<br>"20200201526" OR<br>"10185627" OR<br>"10210048" OR<br>"10248657" OR<br>"10346431" OR<br>"10447806" OR<br>"10509798" OR<br>"10599423" OR<br>"10700991" OR<br>"10728255" OR<br>"10785029" OR<br>"20010014867" OR<br>"20020073089" OR<br>"20030147309" OR<br>"20050149757" OR<br>"20070100793" OR | | | | | |

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| | | "20080126945" OR<br>"20080256311" OR<br>"20090022285" OR<br>"20090028082" OR<br>"20090125858" OR<br>"20110004586" OR<br>"20110071981" OR<br>"20110093435" OR<br>"20120011378" OR<br>"20120271797" OR<br>"20130117441" OR<br>"20130290180" OR<br>"20140189685" OR<br>"20140229698" OR<br>"20150019495" OR<br>"20150121453" OR<br>"20150142610" OR<br>"20150195347" OR<br>"20160041997" OR<br>"20160048408" OR<br>"20160077923" OR<br>"20160078104" OR<br>"20160125059" OR<br>"20160162845" OR<br>"20160197835" OR<br>"20160267105" OR<br>"20160292358" OR<br>"20160335369" OR<br>"20160380809" OR<br>"20170220777" OR<br>"20170264684" OR<br>"20170286518" OR<br>"20170351584" OR<br>"20180025007" OR<br>"20180285201" OR<br>"20180307728" OR<br>"20190065322" OR<br>"20190075031" OR<br>"20190125828" OR<br>"20190129799" OR<br>"20190138631" OR<br>"20190155936" OR<br>"20190230156" OR<br>"20190235904" OR<br>"20190324865" OR<br>"20190339870" OR<br>"20190340091" OR<br>"20200034245" OR<br>"20200050522" OR<br>"20200106737" OR<br>"20200137157" OR<br>"7225189" OR<br>"7725671" OR<br>"7814057" OR<br>"7840533" OR<br>"7953764" OR<br>"8117165" OR<br>"8150808" OR | | | | | |

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|---|---|---|---|---|---|---|---|
| | | "8364648" OR "8429630" OR "8447728" OR "8549518" OR "8601473" OR "8612396" OR "8635421" OR "8762335" OR "8832028" OR "8850130" OR "8863124" OR "8914567" OR "8972347" OR "9009106" OR "9069708" OR "9116737" OR "9244717" OR "9256383" OR "9336060" OR "9336132" OR "9389962" OR "9413810" OR "9436556" OR "9507579" OR "9529551" OR "9652265" OR "9740723" OR "9747287" OR "9772866" OR "D753135" OR "D753140" OR "D763890" OR "D779514" OR "D803231" OR "D807902" OR "D838288" OR "D839913" OR "D862512" OR "D875108" OR "D877753").pn. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. | | | | | |
| L12 | 63275 | (G06F11/1464 or G06F11/1451 or G06F11/1461 or G06F11/1471 or G06F11/2025 or G06F2201/84 or G06F2201/80).cpc. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, | OR | ON | ON | 2022/07/07 01:56 PM |

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|---|---|---|---|---|---|---|---|
| | | | MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | | | | |
| L13 | 1304 | (G06F11/1464 OR G06F11/1451 OR G06F11/1461 OR G06F11/1471 OR G06F11/2025 OR G06F2201/84 OR G06F2201/80).cpc. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. AND (((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT) | OR | ON | ON | 2022/07/07 01:58 PM |
| L14 | 1434 | (G06F11/1464 OR G06F11/1451 OR G06F11/1461 OR G06F11/1471 OR G06F11/2025 OR G06F2201/84 OR G06F2201/80).cpc. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. AND (((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/07/07 01:58 PM |
| L15 | 46 | (G06F11/1464 OR G06F11/1451 OR G06F11/1461 OR G06F11/1471 OR G06F11/2025 OR G06F2201/84 OR G06F2201/80).cpc. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable | (US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, | OR | ON | ON | 2022/07/08 03:06 PM |

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| | | unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. AND ("active node") AND (((@ad \| @pd) <="20201020") | TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB) | | | | |
| L16 | 9 | (G06F11/1464 OR G06F11/1451 OR G06F11/1461 OR G06F11/1471 OR G06F11/2025 OR G06F2201/84 OR G06F2201/80).cpc. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. AND ("active node") AND ("third".clm.) AND (((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/07/10 12:39 AM |
| L17 | 660446 | (failover near20 random) (G06F11$).cpc. AND (((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/07/14 09:15 PM |
| L18 | 73 | (failover near20 random) AND (G06F11$).cpc. AND (((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, | OR | ON | ON | 2022/07/14 09:15 PM |

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| | | | TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | | | | |
| L19 | 116 | (failover near20 (random round-robin)) AND (G06F11$).cpc. AND ((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/07/14 09:17 PM |
| L20 | 21 | ((("NUTANIX") near3 ("INC"))).AS,AANM. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/11/23 11:05 AM |
| L21 | 1 | ((("SONTAKKE") near3 ("Sagar")) OR (("KHANUJA") near3 ("Kamaldeep")) OR (("BANTHIA") near3 ("Bakul"))).INV. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT) | OR | ON | ON | 2022/11/23 11:05 AM |
| L22 | 74 | ("0000001"\|"11308114").PN. OR ("0000002"\|"0000011"\|"20060143412"\|"20150358417"\|"20160092535"\|"20170235758"\|"20210 | (US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, | OR | ON | ON | 2022/11/23 11:09 AM |

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|---|---|---|---|---|---|---|---|
| | | 064512"\|"20210200643"\|"9213727").PN. OR ("20150074054"\|"20170374136"\|"H000001").PN. | HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB) | | | | |
| L23 | 14 | ("0000001"\|"11308114").PN. OR ("0000002"\|"0000011"\|"20060143412"\|"20150358417"\|"20160092535"\|"20170235758"\|"20210064512"\|"20210200643"\|"9213727").PN. OR ("20150074054"\|"20170374136"\|"H000001").PN. | (US-PGPUB; USPAT) | OR | ON | ON | 2022/11/23 11:09 AM |
| L24 | 119 | (failover near20 (random round-robin)) AND (G06F11$).cpc. AND ((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2022/11/25 04:21 PM |
| L25 | 249 | ("0000002" OR "10146848" OR "10606578" OR "11386058" OR "20100023564" OR "20110252420" OR "20130091285" OR "20210144060" OR "20210406717" OR "8448170" OR "8769537" OR "8924974" OR "10778750" OR "10938924" OR "10951496" OR "20150301814" OR "20160337473" OR "20190089597" OR "0000001" OR "11308114" OR | (US-PGPUB; USPAT) | OR | ON | ON | 2023/03/15 05:00 PM |

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|---|---|---|---|---|---|---|---|
| | | "0000011" OR<br>"20060143412" OR<br>"20150358417" OR<br>"20160092535" OR<br>"20170235758" OR<br>"20210064512" OR<br>"20210200643" OR<br>"9213727" OR<br>"20150074054" OR<br>"20170374136" OR<br>"H000001" OR<br>"D947239" OR<br>"D947240" OR<br>"11126426" OR<br>"20170115978" OR<br>"9753713" OR<br>"9960963" OR<br>"D000001" OR<br>"20140282256" OR<br>"20150347987" OR<br>"20180253676" OR<br>"20190018738" OR<br>"20200110675" OR<br>"D508248" OR<br>"D521521" OR<br>"D625315" OR<br>"D656948" OR<br>"D684160" OR<br>"D684161" OR<br>"D733745" OR<br>"D749117" OR<br>"D761288" OR<br>"D771102" OR<br>"D777747" OR<br>"D778296" OR<br>"D781887" OR<br>"D794666" OR<br>"D794667" OR<br>"D797116" OR<br>"D802608" OR<br>"D809530" OR<br>"D815652" OR<br>"D817976" OR<br>"D843388" OR<br>"D911356" OR<br>"D926200" OR<br>"D927507" OR<br>"10725866" OR<br>"10817157" OR<br>"11010336" OR<br>"20120123999" OR<br>"20150227435" OR<br>"20190155699" OR<br>"20200034178" OR<br>"20200099692" OR<br>"20200210378" OR<br>"20200210379" OR<br>"20200250046" OR | | | | | |

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|---|---|---|---|---|---|---|---|
| | | "10013313" OR<br>"10033833" OR<br>"10055300" OR<br>"10108685" OR<br>"10212195" OR<br>"10282201" OR<br>"10339110" OR<br>"10372329" OR<br>"10379963" OR<br>"10445298" OR<br>"10476955" OR<br>"10503612" OR<br>"10613938" OR<br>"10637914" OR<br>"10757036" OR<br>"10776329" OR<br>"10812582" OR<br>"10959098" OR<br>"10999165" OR<br>"11010487" OR<br>"20020104376" OR<br>"20020174098" OR<br>"20150052108" OR<br>"20150143064" OR<br>"20150227602" OR<br>"20150331923" OR<br>"20160321339" OR<br>"20170351716" OR<br>"20180181469" OR<br>"20190102257" OR<br>"20190158605" OR<br>"20190384496" OR<br>"20200104375" OR<br>"20200104376" OR<br>"20200104377" OR<br>"20200285608" OR<br>"20200349018" OR<br>"20200379793" OR<br>"20210117293" OR<br>"8468174" OR<br>"8677085" OR<br>"8849850" OR<br>"9372758" OR<br>"9495435" OR<br>"9600193" OR<br>"9639429" OR<br>"9760396" OR<br>"9778992" OR<br>"9858155" OR<br>"9881168" OR<br>"20070185852" OR<br>"20070185937" OR<br>"20090037914" OR<br>"20090132543" OR<br>"20170060699" OR<br>"20180121494" OR<br>"20190102411" OR<br>"20200201526" OR | | | | | |

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|---|---|---|---|---|---|---|---|
| | | "10185627" OR<br>"10210048" OR<br>"10248657" OR<br>"10346431" OR<br>"10447806" OR<br>"10509798" OR<br>"10599423" OR<br>"10700991" OR<br>"10728255" OR<br>"10785029" OR<br>"20010014867" OR<br>"20020073089" OR<br>"20030147309" OR<br>"20050149757" OR<br>"20070100793" OR<br>"20080126945" OR<br>"20080256311" OR<br>"20090022285" OR<br>"20090028082" OR<br>"20090125858" OR<br>"20110004586" OR<br>"20110071981" OR<br>"20110093435" OR<br>"20120011378" OR<br>"20120271797" OR<br>"20130117441" OR<br>"20130290180" OR<br>"20140189685" OR<br>"20140229698" OR<br>"20150019495" OR<br>"20150121453" OR<br>"20150142610" OR<br>"20150195347" OR<br>"20160041997" OR<br>"20160048408" OR<br>"20160077923" OR<br>"20160078104" OR<br>"20160125059" OR<br>"20160162845" OR<br>"20160197835" OR<br>"20160267105" OR<br>"20160292358" OR<br>"20160335369" OR<br>"20160380809" OR<br>"20170220777" OR<br>"20170264684" OR<br>"20170286518" OR<br>"20170351584" OR<br>"20180025007" OR<br>"20180285201" OR<br>"20180307728" OR<br>"20190065322" OR<br>"20190075031" OR<br>"20190125828" OR<br>"20190129799" OR<br>"20190138631" OR<br>"20190155936" OR<br>"20190230156" OR | | | | | |

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|---|---|---|---|---|---|---|---|
| | | "20190235904" OR<br>"20190324865" OR<br>"20190339870" OR<br>"20190340091" OR<br>"20200034245" OR<br>"20200050522" OR<br>"20200106737" OR<br>"20200137157" OR<br>"7225189" OR<br>"7725671" OR<br>"7814057" OR<br>"7840533" OR<br>"7953764" OR<br>"8117165" OR<br>"8150808" OR<br>"8364648" OR<br>"8429630" OR<br>"8447728" OR<br>"8549518" OR<br>"8601473" OR<br>"8612396" OR<br>"8635421" OR<br>"8762335" OR<br>"8832028" OR<br>"8850130" OR<br>"8863124" OR<br>"8914567" OR<br>"8972347" OR<br>"9009106" OR<br>"9069708" OR<br>"9116737" OR<br>"9244717" OR<br>"9256383" OR<br>"9336060" OR<br>"9336132" OR<br>"9389962" OR<br>"9413810" OR<br>"9436556" OR<br>"9507579" OR<br>"9529551" OR<br>"9652265" OR<br>"9740723" OR<br>"9747287" OR<br>"9772866" OR<br>"D753135" OR<br>"D753140" OR<br>"D763890" OR<br>"D779514" OR<br>"D803231" OR<br>"D807902" OR<br>"D838288" OR<br>"D839913" OR<br>"D862512" OR<br>"D875108" OR<br>"D877753").pn. | | | | | |
| L26 | 17 | ("10146848"\|"10606578"\|"11386058"\|"20100023564"\|"20110252420"\|" | (US-PGPUB; USPAT) | OR | ON | ON | 2023/03/15 05:02 PM |

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|---|---|---|---|---|---|---|---|
| | | 20130091285"\|"20210144060"\|"20210406717"\|"8448170"\|"8769537"\|"8924974").PN. OR ("10778750"\|"10938924"\|"10951496"\|"20150301814"\|"20160337473"\|"20190089597").PN. | | | | | |
| L27 | 27 | ((("NUTANIX") near3 ("INC"))).AS,AANM. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2023/03/16 10:59 PM |
| L28 | 4 | ((("NUTANIX") near3 ("INC"))).AS,AANM. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover ) AND ((first initial) near10 (node))).ti,ab,bsum,clm. | (US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2023/03/16 11:00 PM |
| L29 | 4 | ((("NUTANIX") near3 ("INC"))).AS,AANM. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover ) AND ((first initial) near10 (node source container))).ti,ab,bsum,clm. | (US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2023/03/16 11:00 PM |
| L30 | 6 | ((("NUTANIX") near3 | (US-PGPUB; USPAT; | OR | ON | ON | 2023/03/16 |

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|---|---|---|---|---|---|---|---|
| | | ("INC"))).AS,AANM. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover ) AND ((first initial) near10 (node source container VM))).ti,ab,bsum,clm. | USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB) | | | | 11:00 PM |
| L31 | 1 | ((("SONTAKKE") near3 ("Sagar")) OR (("KHANUJA") near3 ("Kamaldeep")) OR (("BANTHIA") near3 ("Bakul"))).INV. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover ) AND ((first initial) near10 (node source container VM))).ti,ab,bsum,clm. | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT) | OR | ON | ON | 2023/03/16 11:01 PM |
| L32 | 43 | ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover ) AND ((first initial) near10 (active) near10 (node source container VM))).ti,ab,bsum,clm. | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT) | OR | ON | ON | 2023/03/16 11:03 PM |
| L33 | 8 | (G06F11/1464 OR G06F11/1451 OR G06F11/1461 OR G06F11/1471 OR G06F11/2025 OR G06F2201/84 OR G06F2201/80).cpc. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND | (US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, | OR | ON | ON | 2023/03/16 11:03 PM |

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|---|---|---|---|---|---|---|---|
| | | (failover "switch over" "disaster recovery" takeover )).ti,ab,bsum,clm. AND ("active node") AND ("third".clm.) AND (((@ad \| @pd) <="20201020") | WO); FPRS; EPO; JPO; DERWENT; IBM_TDB) | | | | |
| L34 | 11 | (G06F11/1464 OR G06F11/1451 OR G06F11/1461 OR G06F11/1471 OR G06F11/2025 OR G06F2201/84 OR G06F2201/80).cpc. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover ) AND ((first initial) near10 (active) near10 (node source container VM))).ti,ab,bsum,clm. | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT) | OR | ON | ON | 2023/03/16 11:04 PM |
| L35 | 7 | (G06F11/1464 OR G06F11/1451 OR G06F11/1461 OR G06F11/1471 OR G06F11/2025 OR G06F2201/84 OR G06F2201/80).cpc. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover ) AND ((first initial) near10 (active) near10 (node source container VM)) AND (primary)).ti,ab,bsum,clm. | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT) | OR | ON | ON | 2023/03/16 11:05 PM |
| L36 | 0 | (G06F114).cpc. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT) | OR | ON | ON | 2023/03/16 11:05 PM |

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| | | takeover ) AND ((first initial) near10 (active) near10 (node source container VM)) AND (primary)).ti,ab,bsum,clm. | | | | | |
| L37 | 9 | (G06F11$).cpc. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" "disaster recovery" takeover ) AND ((first initial) near10 (active) near10 (node source container VM)) AND (primary)).ti,ab,bsum,clm. | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT) | OR | ON | ON | 2023/03/16 11:05 PM |
| L38 | 4148 | (snapshot) AND (mirror mirroring synchronization) AND (primary near5 (site node cluster)) AND ((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT) | OR | ON | ON | 2023/03/16 11:27 PM |
| L39 | 511 | (snapshot).ti,ab,bsum,clm. AND (mirror mirroring synchronization).ti,ab,bsum,clm. AND (primary near5 (site node cluster)) AND ((@ad \| @pd) <="20201020") | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT) | OR | ON | ON | 2023/03/16 11:27 PM |
| L40 | 1 | ("20220121534").pn. | (US-PGPUB; USPAT) | OR | ON | ON | 2023/03/17 11:08 AM |

## PE2E SEARCH - Search History (Interference)

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | British Equivalents | Time Stamp |
|---|---|---|---|---|---|---|---|
| N1 | 6 | (G06F11/1464 OR G06F11/1451 OR G06F11/1461 OR G06F11/1471 OR G06F11/2025 OR G06F2201/84 OR G06F2201/80).cpc. AND ((backup "transactional log" "incremental log" checkpoint) AND (fail failure error unavailable unresponsive) AND (failover "switch over" | (US-PGPUB; USPAT) | OR | ON | ON | 2023/03/17 10:00 AM |

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|---|---|---|---|---|---|---|---|
| | | "disaster recovery" takeover ) AND ((first initial) near10 (active) near10 (node source container VM)) AND (primary)).ti,ab,bsum,clm. | | | | | |
| N2 | 4 | (select AND node AND primary AND secondary AND source AND database AND policy AND user AND initial AND active ).clm. | (US-PGPUB; USPAT) | OR | ON | ON | 2023/03/17 10:02 AM |

PTO/SB/08 (modified)

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: December 5, 2022 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | 2113 |
| | | | | Examiner Name | XU, MICHAEL |
| Sheet | 1 | of | 4 | Attorney Docket Number | 115539-0346 |

**U.S. PATENT DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Document Number<br>Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | K1 | 10,778,750-B2 | 09-15-2020 | KENNETH RINGDAHL | |
| | K2 | 10,938,924-B1 | 03-02-2021 | JENSEN ET AL. | |
| | K3 | 10,951,496-B2 | 03-16-2021 | BAKER ET AL. | |
| | K4 | 2015/0301814-A1 | 10-22-2015 | CHEN ET AL. | |
| | K5 | 2016/0337473-A1 | 11-17-2016 | RAVINDRA RAO | |
| | K6 | 2019/0089597-A1 | 03-21-2019 | PATHAK ET AL. | |
| | | | | | |

**UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS**

| Examiner Initials* | Cite No.[1] | U.S. Patent Application Document<br>Serial Number-Kind Code[2] (*if known*) | Filing Date of Cited Document MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | | | | | |

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| Examiner Initials* | Cite No.[1] | Foreign Patent Document<br>Country Code[3]-Number[4]-Kind Code[5] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Documents | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
|---|---|---|---|---|---|---|
| | K7 | LU-102236-B1 | 11-27-2020 | LIN | | |
| | | | | | | |

**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
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| Examiner Signature | /MICHAEL XU/ | Date Considered | 03/16/2023 |
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PTO/SB/08 (modified)

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | 17/182,511 |
| Date Submitted: December 5, 2022 | | | | **Filing Date** | 2/23/2021 |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | 2113 |
| | | | | Examiner Name | XU, MICHAEL |
| Sheet | 2 | of | 4 | Attorney Docket Number | 115539-0346 |

**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[6] |
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| Examiner Signature | /MICHAEL XU/ | Date Considered | 03/16/2023 |
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| | | | | Examiner Name | XU, MICHAEL |
| Sheet | 3 | of | 4 | Attorney Docket Number | 115539-0346 |

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| Examiner Signature | /MICHAEL XU/ | Date Considered | 03/16/2023 |
|---|---|---|---|

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.X./

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| Date Submitted: December 5, 2022 | | | | **First Named Inventor** | Sagar Sontakke |
| | | | | Art Unit | 2113 |
| *(use as many sheets as necessary)* | | | | Examiner Name | XU, MICHAEL |
| Sheet | 4 | of | 4 | Attorney Docket Number | 115539-0346 |

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| Examiner Signature | /MICHAEL XU/ | Date Considered | 03/16/2023 |
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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.X./

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | 17182511 |
| **Filing Date:** | 23-Feb-2021 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Filer:** | Paul S. Hunter/Emily Rogers |
| **Attorney Docket Number:** | 115539-0346 |

Filed as Large Entity

**Filing Fees for Utility under 35 USC 111(a)**

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| **Pages:** | | | | |
| **Claims:** | | | | |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |
| **Post-Allowance-and-Post-Issuance:** | | | | |
| UTILITY APPL ISSUE FEE | 1501 | 1 | 1200 | 1200 |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Extension-of-Time:** | | | | |
| **Miscellaneous:** | | | | |
| | | | **Total in USD ($)** | **1200** |

## PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

147491 7590 03/23/2023
FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

| |
|---|
| (Typed or printed name) |
| (Signature) |
| (Date) |

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 17/182,511 | 02/23/2021 | Sagar Sontakke | 115539-0346 | 3895 |

TITLE OF INVENTION: SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM

| APPLN. TYPE | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE |
|---|---|---|---|---|---|---|
| nonprovisional | UNDISCOUNTED | $1200 | $0.00 | $0.00 | $1200 | 06/23/2023 |

| EXAMINER | ART UNIT | CLASS-SUBCLASS |
|---|---|---|
| XU, MICHAEL | 2113 | 714-004110 |

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Foley & Lardner LLP
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Nutanix, Inc.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): San Jose, CA

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ☒ Corporation or other private group entity ❑ Government

4a. Fees submitted: ☒ Issue Fee ❑ Publication Fee (if required) ❑ Advance Order - # of Copies _____

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

☒ Electronic Payment via EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 19-0741

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

❑ Applicant asserting small entity status. See 37 CFR 1.27

❑ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Paul S. Hunter/ Date March 24, 2023

Typed or printed name Paul S. Hunter Registration No. 44,787

| Electronic Acknowledgement Receipt | |
|---|---|
| **EFS ID:** | 47738004 |
| **Application Number:** | 17182511 |
| **International Application Number:** | |
| **Confirmation Number:** | 3895 |
| **Title of Invention:** | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| **First Named Inventor/Applicant Name:** | Sagar Sontakke |
| **Customer Number:** | 147491 |
| **Filer:** | Paul S. Hunter/Emily Rogers |
| **Filer Authorized By:** | Paul S. Hunter |
| **Attorney Docket Number:** | 115539-0346 |
| **Receipt Date:** | 24-MAR-2023 |
| **Filing Date:** | 23-FEB-2021 |
| **Time Stamp:** | 11:20:48 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | yes |
| Payment Type | CARD |
| Payment was successfully received in RAM | $1200 |
| RAM confirmation Number | E20233NB21356305 |
| Deposit Account | |
| Authorized User | |
| The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: | |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Transmittal Letter | 115539-0346_Issue_Fee_Transmittal.pdf | 115816<br>fc6222e3af73cc83ed272f060967d63059da3a3a | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 2 | Issue Fee Payment (PTO-85B) | 115539-0346_Issue_Fee_85b.pdf | 176736<br>9ee7a9ad49f4a9dd752dd8414a459ca3f9a3374c | no | 1 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 3 | Fee Worksheet (SB06) | fee-info.pdf | 38171<br>ca21fbe462d76ba54d0b7238d6fd9761bbc79b37 | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | **Total Files Size (in bytes):** | 330723 | | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

| | |
|---|---|
| First Inventor Name: | Sagar Sontakke |
| Title: | SYSTEM AND METHOD FOR BACKING UP HIGHLY AVAILABLE SOURCE DATABASES IN A HYPERCONVERGED SYSTEM |
| Appl. No.: | 17/182,511 |
| Filing Date: | 2/23/2021 |
| Examiner: | XU, MICHAEL |
| Art Unit: | 2113 |
| Confirmation Number: | 3895 |

**ISSUE FEE TRANSMITTAL**

Mail Stop Issue Fee
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Enclosed herewith please find Issue Fee Transmittal Form PTOL-85(B).

Fees in the amount of $1,200.00 for payment of the Issue Fee are being paid by credit card via EFS-Web.

The Commissioner is hereby authorized to charge any additional fees which may be required for this application to Deposit Account No. 19-0741.

**COMMENTS ON STATEMENT OF REASONS FOR ALLOWANCE**

While Applicant agrees that the allowed claims include a combination of subject matter that is patentable over the cited references, Applicant does not necessarily agree with or acquiesce in the reasoning of the Examiner. Moreover, Applicant notes that various other subject matter and/or combinations of subject matter may be patentable for other reasons than

those given by the Examiner. Applicant expressly reserves the right to set forth additional and/or alternative reasons for patentability and/or allowance in connection with the present Application or any future proceeding. These comments on Statement of Reasons for Allowance under 37 C.F.R. § 1.104 are intended to be responsive to the Notice of Allowance dated March 23, 2023.

Respectfully submitted,

Date March 24, 2023

By */Paul S. Hunter/*

FOLEY & LARDNER LLP
Customer Number: 147491
Telephone: (858) 847-6733
Facsimile: (858) 792-6773

Paul S. Hunter
Attorney for Applicant
Registration No. 44,787

PTO/SB/08 (modified)

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
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| *(use as many sheets as necessary)* | | | | **First Named Inventor** | Sagar Sontakke |
| | | | | Art Unit | 2113 |
| | | | | Examiner Name | XU, MICHAEL |
| Sheet | 1 | of | 3 | Attorney Docket Number | 115539-0346 |

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| Examiner Initials* | Cite No.[1] | Document Number Number-Kind Code[2] (*if known*) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| Change(s) applied | J1 | 11,243,971-B2 | 02-08-2022 | ~~ATLANTIC TECHNICAL ORGANIZATION~~ | Geigel |
| to document, | J2 | 11,308,114-B1 | 04-19-2022 | ~~GAZENA, INC.~~ | Moghe |
| /C.C.B./ 3/28/2023 | | | | | |

**UNPUBLISHED U.S. PATENT APPLICATION DOCUMENTS**

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| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | Not yet assigned |
| Date Submitted: February 23, 2021 | | | | **Filing Date** | Herewith |
| | | | | **First Named Inventor** | Sagar Sontakke |
| *(use as many sheets as necessary)* | | | | Art Unit | Not yet assigned |
| | | | | Examiner Name | Not yet assigned |
| Sheet | 1 | of | 8 | Attorney Docket Number | 115539-0346 |

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| Examiner Signature | /MICHAEL XU/ | Date Considered | 07/07/2022 |
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FOLEY & LARDNER LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109

# ISSUE NOTIFICATION

The projected patent number and issue date are specified above. The patent will issue electronically. The electronically issued patent is the official patent grant pursuant to 35 U.S.C. § 153. The patent may be accessed on or after the issue date through Patent Center at https://patentcenter.uspto.gov/. The patent will be available in both the public and the private sides of Patent Center. Further assistance in electronically accessing the patent, or about Patent Center, is available by calling the Patent Electronic Business Center at 1-888-217-9197.

The USPTO is implementing electronic patent issuance with a transition period, during which period the USPTO will mail a ceremonial paper copy of the electronic patent grant to the correspondence address of record. Additional copies of the patent (i.e., certified and presentation copies) may be ordered for a fee from the USPTO's Certified Copy Center at https://certifiedcopycenter.uspto.gov/index.html. The Certified Copy Center may be reached at (800)972-6382.

**Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)**
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 41 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PAIR WEB site http://pair.uspto.gov for additional inventors):

Sagar Sontakke, Bangalore, INDIA;
Kamaldeep Khanuja, Dublin, CA;
Bakul Banthia, San Ramon, CA;

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Nutanix, Inc., San Jose, CA;

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FOLEY & LARDNER LLP
3000 K STREET N.W. SUITE 600
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## EGRANT NOTIFICATION

Your electronic patent grant (eGrant) is now available, which can be accessed via Patent Center at https://patentcenter.uspto.gov

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