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- (81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM,

[Continued on nextpage]

(54) **Title:** FIBRE CHANNEL STORAGE ARRAY METHODS FOR PORT MANAGEMENT

(57) **Abstract:** Methods and systems for processing failover operations in a storage array configured for Fibre Channel communication are provided. One example method includes executing a primary process in user space of a controller of the storage array. The primary process is configured to process request commands from one or more initiators and has access to a volume manager for serving data input/output (I/O) requests.

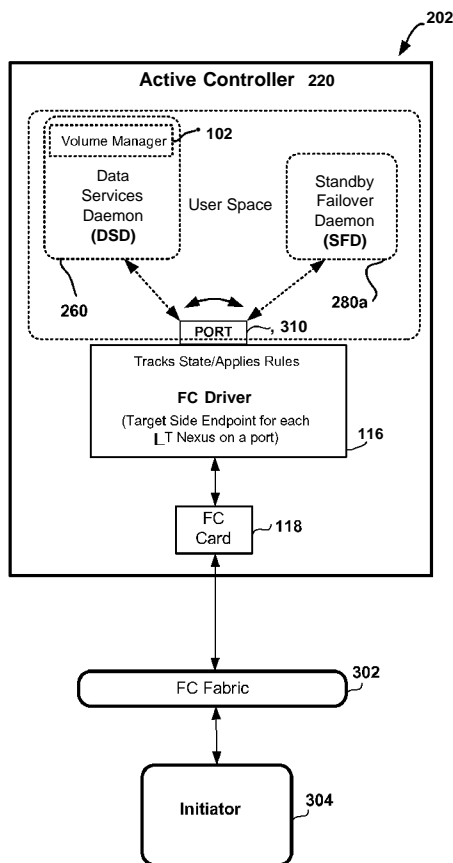
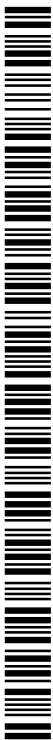


Fig. 3



PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

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B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC(8) - G06F 3/00, G06F 3/06, G06F 11/00, G06F 12/00, G06F 12/08, G06F 13/28, G06F 13/38, G06F 15/16, H04L 29/08 (2015.01) USPC - 709/203, 711/1 14, 711/171, 711/E12.001 , 714/6.12 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched CPC - G06F 3/0605, G06F 3/0607, G06F 3/061 1, G06F 3/0617, G06F 3/0626, G06F 3/0632, G06F 3/064, G06F 3/0658, G06F 3/0659, G06F 3/0661 , G06F 3/067, G06F 3/0673, G06F 3/0689, G06F 11/201 , G06F 11/2089, G06F 13/4234 (2015.10) (keyword delimited) Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Orbit, Google Patents, Google Scholar, Google. Search terms used: storage array, controller, operate Fibre Channel protocol, memory, processor, execute driver, user space processes, primary process		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2008/0133942 A1 (OGASAWARA et al) 05 June 2008 (05.06.2008), entire document	1-25
A	US 7467191 B1 (WANG et al) 16 December 2008 (16.12.2008), entire document	1-25
A	US 2005/0259632 A1 (MALPANI et al) 24 November 2005 (24.11.2005), entire document	1-25
A	US 2013/0066837 A1 (COLRAIN et al) 14 March 2013 (14.03.2013), entire document	1-25
A	US 2005/0033916 A1 (DELLACONA) 10 February 2005 (10.02.2005), entire document	1-25
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
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Date of the actual completion of the international search 18 October 2015		Date of mailing of the international search report 27 NOV 2015
Name and mailing address of the ISA/ Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300		Authorized officer Blaine Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774