



- (51) **International Patent Classification:**
G06F 1/20 (2006.01) **H05K 7/20** (2006.01)
- (21) **International Application Number:**
PCT/US2010/029348
- (22) **International Filing Date:**
31 March 2010 (31.03.2010)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
12/427,666 21 April 2009 (21.04.2009) US
- (71) **Applicant (for all designated States except US):** **YAHOO! INC.** [US/US]; 701 First Avenue, Sunnyvale, CA 94089 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** **NOTEBOOM, Scott** [US/US]; 6047 Montalvo Drive, San Jose, CA 95123 (US). **ROBISON, Albert, Dell** [US/US]; 2905 Hewenthatta, Placerville, CA 95667 (US).
- (74) **Agent:** **SPOLYAR, Mark, James;** Baker Botts, LLP, 2001 Ross Avenue, Suite 600, Dallas, TX 75201 (US).
- (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, 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, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, 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.

- (84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

[Continued on next page]

(54) **Title:** COLD ROW ENCAPSULATION FOR SERVER FARM COOLING SYSTEM

(57) **Abstract:** Apparatuses, methods, and systems directed to efficient cooling of data centers. Some embodiments of the invention allow encapsulation of cold rows through an enclosure and allow server fans to draw cold air from the cold row encapsulation structure to cool servers installed on the server racks. In other particular embodiments, the systems disclosed can be used to mix outside cool air into the cold row encapsulation structure to cool the servers. In some embodiments, the present invention involves utilizing a raised sub-floor design of a data center room.

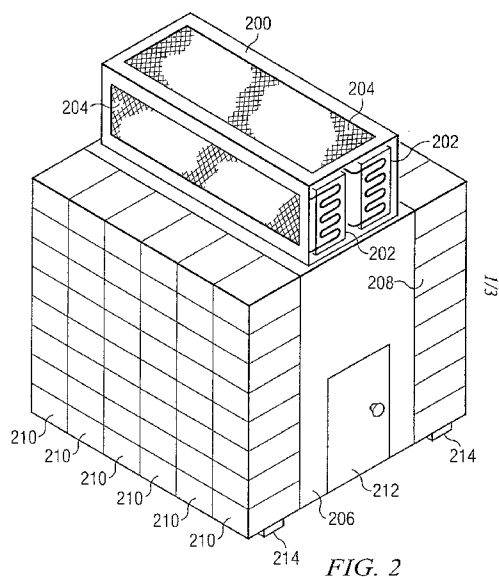


FIG. 2



Published:

— *without international search report and to be republished
upon receipt of that report (Rule 48.2(g))*