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Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
12/885.132, 09/17/2010, Nils P. Hansson, XRPS920100070US1, 8085

60501 7590 10/26/2016
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EXAMINER

YOON, SAE WON

ART UNIT PAPER NUMBER

2614

NOTIFICATION DATE DELIVERY MODE

10/26/2016

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* NILS P. HANSSON, EDWARD S. SUFFERN, and  
JAMES L. WOOLDRIDGE

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Appeal 2015-004420  
Application 12/885,132  
Technology Center 2600

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Before ST. JOHN COURTENAY III, JOHN A. EVANS, and  
SCOTT E. BAIN, *Administrative Patent Judges*.

BAIN, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants<sup>1</sup> appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 9–20, which constitute all claims pending in the application. Claims 1–8 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

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<sup>1</sup> Appellants identify International Business Machines Corporation (“IBM”) as the real party in interest. Br. 1.

STATEMENT OF THE CASE

The claimed invention relates to optimizing the assignment of virtual graphics processing units (VGPU) among virtual machines, in a computing environment such as a data center. Spec. 1; Abs. Claims 9 and 15 are independent. Claim 9 is illustrative of the invention and the subject matter of this appeal, and reads as follows (with the disputed limitations emphasized):

9. An apparatus for optimizing virtual graphics processing unit utilization, the apparatus comprising a computer processor, a computer memory operatively coupled to the computer processor, the computer memory having disposed within it computer program instructions that when executed by the computer processor cause the apparatus to carry out the steps of:

*assigning a computing intensity level to each virtual machine of a plurality of virtual machines, wherein the computing intensity level for a particular virtual machine is based on a ranking of the number of computing intensive tasks of the particular virtual machine relative to each number of computing intensive tasks of each of the other virtual machines in the plurality of virtual machines;*

*assigning a priority level to each virtual machine of the plurality of virtual machines;*

*determining for each server of a plurality of servers whether the server includes a virtual graphics processing unit (VGPU) that is available to perform compute intensive tasks for the plurality of virtual machines; and*

*assigning one or more VGPU to a virtual machine of the plurality of virtual machines in dependence upon the computing intensity level and the priority level of the virtual machine and the number of VGPU available to perform the compute intensive tasks.*

Br. 12 (Claims Appd'x) (emphases added).

The claims stand rejected as follows:

Claims 9, 12, 15 and 18 stand provisionally rejected on the ground of nonstatutory obviousness-type double patenting over claim 1 of co-pending Application No. 13/523,003.<sup>2</sup> Final Act. 2–8; Ans. 2–7.

Claims 9–13 and 15–19 stand rejected under pre-AIA 35 U.S.C. § 103(a) as unpatentable over Ford et al. (US 2010/0115510 A1; pub. May 6, 2010) (“Ford”), Chiaramonte et al. (US 2007/0079308 A1; pub. Apr. 5, 2007) (“Chiaramonte”), and Blythe (US 2006/0146057 A1; pub. July 6, 2006). Final Act. 9–18.<sup>3</sup>

Claims 14 and 20 stand rejected under pre-AIA 35 U.S.C. § 103(a) as unpatentable over Ford, Chiaramonte, Blythe, and Esfahany et al. (US 2007/0094367 A1; pub. Apr. 26, 2007) (“Esfahany”). Final Act. 18–20.

#### ANALYSIS

We have reviewed the Examiner’s rejections in light of Appellants’ arguments presented in this appeal. Arguments which Appellants could have made but did not make in the Briefs are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(iv). On this record, we are not persuaded the Examiner erred. We adopt as our own the findings and reasons set forth in the rejections from which this appeal is taken and in the Examiner’s Answer, and highlight the following for emphasis.

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<sup>2</sup> *See Ex parte Hansson et al.*, Appeal 2014-005395 (PTAB March 23, 2016) (Affirmed).

<sup>3</sup> The Examiner also objects to claims 9 and 15, but the objections are not before us. *See* 37 C.F.R. §§ 1.113, 1.181.

*Nonstatutory Obviousness-Type Double Patenting Rejection*

Appellants present no arguments contesting the provisional nonstatutory obviousness-type double patenting rejection of claims 9, 12, 15, and 18, and the record before us does not indicate any filing of terminal disclaimer. Accordingly, we *pro forma* sustain this rejection. *See Hyatt v. Dudas*, 551 F.3d 1307, 1314 (Fed. Cir. 2008) (“When the appellant fails to contest a ground of rejection to the Board, . . . the Board may treat any argument with respect to that ground of rejection as waived.”).

*35 U.S.C. § 103(a) Rejection of Claims 9–13 and 15–19*

Appellants argue all claims (except dependent claim 12, discussed further below) as a group, with claim 9 representative of the group. *See* 37 C.F.R. § 41.37(c)(1)(iv). Appellants argue the Examiner erred in two respects in rejecting claim 9. We address each argument in turn.

First, Appellants contend the Examiner erred in finding the prior art (and specifically, Ford) teaches “assigning a computing intensity level to each virtual machine of a plurality of virtual machines,” as recited in claim 9. Br. 6. We disagree. As the Examiner finds, Ans. 24, Ford teaches a plurality of “virtual machines” in which a “VMM” (virtual machine manager) “determine[s]” the “amount of graphical processing workload” for each virtual machine, and “assign[s]” graphical resources based on the workload. Ford ¶ 22; Ans. 24 (citing same); *see also* Final Act. 10 (citing Ford ¶¶ 22, 29). Given the foregoing evidence, we are not persuaded the

Examiner erred in finding Ford teaches or suggests Appellants' claimed assigning of computing intensity.<sup>4</sup>

Second, Appellants contend the Examiner erred in finding Ford teaches ““assigning one or more VGPU’s to a virtual machine . . . in dependence upon . . . the number of VGPU’s available to perform the compute intensive tasks.”” Br. 9–10. We are not persuaded. As the Examiner finds, one of ordinary skill would understand Ford’s description of assigning VGPU’s to virtual machines (and subsequent performance of those VGPU’s) to mean that those VGPU’s are “available” for such assignment and performance. Ans. 28 (citing Ford ¶¶ 26, 29). Thus, we find Ford teaches the assignment of one or more VGPU’s based on, among other things, the number of VGPU’s available (which number could include one VGPU assigned, zero VGPU’s, or any other number). *Id.*

Thus, we are not persuaded the Examiner erred in rejecting claim 9 (as well as claims 10, 11, 13 and 15–19, grouped therewith).

Appellants argue dependent claim 12 separately, contending the Examiner erred in finding Chiaramonte teaches “selecting a virtual machine

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<sup>4</sup> Appellants also cursorily assert that Ford’s assignment of computing intensity is not “based on a ranking of the number of computing intensive tasks of the particular virtual machine relative to each number of computing intensive tasks of each of the other virtual machines,” as further recited in claim 9. Br. 7–8. This “mere recitation of the claim elements and a naked assertion that the corresponding elements were not found in the [cited reference],” however, is insufficient to demonstrate error. *See, e.g., In re Lovin*, 652 F.3d 1349, 1357 (Fed. Cir. 2011). Moreover, we agree with the Examiner’s finding that Ford teaches the disputed element in its discussion of assigning computing intensity to each virtual machine in a manner that “allot[s] more resources to those [virtual machines] requiring more graphical resources,” i.e., based on relative rank. Ford ¶ 22; Ans. 24–25.

with a priority level above a predetermined threshold and compute intensity below a predetermined threshold,” as recited in the claim. Br. 10–11.

Specifically, Appellants contend Chiaramonte only teaches thresholds relating to “hardware resource[s]” and is “entirely unrelated to selecting a *virtual machine* that VGPU’s should be assigned to.” *Id.* at 11 (emphasis added). The Examiner, however, relied not on Chiaramonte alone, but the combination of Chiaramonte with Ford and Blythe. Final Act. 16–17. As discussed above, Ford teaches assigning VGPU’s to virtual machines. *See supra* (citing Ford ¶¶ 26, 29). Modifying Ford with Chiaramonte’s teaching of threshold levels, the Examiner finds, teaches the disputed limitation of claim 12. *Id.*; Ans. 29–31. We agree with the Examiner’s finding.

Appellants’ arguments regarding the deficiencies of Chiaramonte alone are unpersuasive of error. *See, e.g., In re Keller*, 642 F.2d 413, 426 (CCPA 1981) (“[O]ne cannot show non-obviousness by attacking references individually where . . . the rejections are based on combinations of references.”).

For the foregoing reasons, we sustain the rejection of claims 9–13 and 15–19 under pre-AIA 35 U.S.C. § 103(a) as unpatentable over Ford, Chiaramonte, and Blythe.

*35 U.S.C. § 103(a) Rejection of Claims 14 and 20*

Appellants argue claims 14 and 20 are patentable by virtue of their dependence upon independent claims 9 and 15, respectively, and that the Examiner erred in rejecting claims 14 and 20 for the same reasons as claims 9 and 15. Br. 12. Because we sustain the Examiner’s rejection of claims 9 and 15, *see supra*, we also sustain the rejection of claims 14 and 20 under

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Application 12/885,132

pre-AIA 35 U.S.C. § 103(a) as unpatentable over Ford, Chiaramonte,  
Blythe, and Esfahany.

DECISION

We affirm the Examiner's decision to reject claims 9–20.

No time period for taking any subsequent action in connection with  
this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv). *See* 37  
C.F.R. § 41.50(f).

AFFIRMED