IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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**Application No.** 14/801,964

**Filed:** July 17, 2015

**Confirmation No.** 7252

**For:** SOFTWARE DISCOVERY IN AN **FILED VIA EFS**

ENVIRONMENT WITH HETEROGENEOUS **ON** **MAY X, 2016**

MACHINE GROUPS

**Examiner:** Stephen David Berman

**Art Unit:** 2192

**Attorney Reference No.** DE920140014US1

FILED VIA EFS

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**AMENDMENT**

This responds to the Non-final Office action dated March 25, 2016 (“Non-final Office action”). Please amend the referenced application as follows:

**Amendments to the Claims** are reflected in the listing of the claims, which begins on page 2.

**Remarks** begin on page 8.

**Listing of Claims**

1. (Currently amended) A method for identifying installed computer programs, the method comprising:

defining a group comprising computing systems that have similar software program installations[[,]];

performing a first scan procedure by scanning a single selected ~~each~~ computing system of the group using a first software signature catalogue to identify installed programs[[,]];

adding software signatures of identified installed programs to a base installation software catalogue[[,]]; and

performing a second scan procedure ~~by scanning~~ on the remaining members of the group of computing systems using the base installation software catalogue created during the first scan of the single selected computing system of the group, the first scan adding only software signatures to the base installation software catalogue if those software signatures were identified in the first software signature catalogue and present on the single selected computing system, the second scan procedure providing an increased efficiency of scanning the remaining members of the group starting with a reduced size software catalogue comprising the base installation software catalogue which includes at the beginning of the second scan, only software signatures present on the single selected computing system of the group ~~to identify installed software programs~~.

2. (Currently amended) The method according to claim 1, further comprising:

generating a list of computing systems forming a sub-group of the group of computing systems having similar software program installations, wherein those computing systems are put on [[the]] a list whose relative number of identical installed software programs is higher than [[the]] a relative number of installed software programs of the group of computing systems.

3. (Previously presented) The method according to claim 2, wherein the relative number of identical installed programs within the sub-group is selected to be above a threshold.

4. (Currently amended) The method according to claim 2, wherein the ~~members~~ computing systems of the sub-group ~~of computing systems~~ are selected based on a directive external to the computing systems of the group.

5. (Currently amended) The method according to claim 1, wherein a software signature is removed from the base installation software catalogue if [[the]] a related software program is not discovered ~~during the second scan procedure~~ on any of the computing systems of the group.

6. (Currently amended) The method according to claim 1, wherein a software signature of [[the]] a related software program is added to the base installation software catalogue if the related software program is discovered as an installed software program during the second scan procedure on any of the computing systems of the group.

7. (Canceled)

8. (Currently amended) The method according to claim [[7]]1, wherein the single selected computing system on which the first scan procedure is performed is defined by an external setting.

9. (Currently amended) The method according to claim [[7]]1, wherein the single selected computing system on which the first scan procedure is performed is selected based on a predefined schema.

10. (Currently amended) The method according to claim [[7]]1, wherein the single selected computing system on which the first scan procedure is performed is selected based on the workload of the computing systems of the group.

11. (Currently amended) A software discovery system for identifying installed computer programs, the system comprising:

a processor; and

a memory coupled to the processor, wherein the memory comprises instructions which, when executed by the processor, cause the processor to:

define a group comprising computing systems that have similar software program installations[[,]];

perform a first scan procedure by scanning a selected ~~each~~ computing system of the group using a first software signature catalogue to identify installed programs[[,]];

add software signatures of identified installed programs to a base installation software catalogue, wherein the base installation software catalogue having a unique entry for each identified installed program is in size reduced compared to the first software signature catalogue; and

perform a second scan procedure by scanning the group of computing systems other than the selected computing system, using the base installation software catalogue to identify installed software programs.

12. -13. (Canceled)

14. (Currently amended) A computer program product for identifying installed computer programs, comprising a non-transitory computer readable storage medium having a computer readable program stored therein, wherein the computer readable program, when executed on a computing device, causes the computing device to:

define a group comprising computing systems that have similar software program installations[[,]];

perform a first scan procedure by scanning a selected ~~each~~ computing system of the group using a first software signature catalogue to identify installed programs[[,]];

add software signatures of identified installed programs to a base installation software catalogue, wherein the base installation software catalogue having a unique entry for each identified installed program is in size reduced compared to the first software signature catalogue; and

perform a second scan procedure by scanning the group of computing systems other than the selected computing system, using the base installation software catalogue to identify installed software programs.

15. (Currently amended) The computer program product according to claim 14, wherein the computer readable program further causes the computing device to:

generate a list of computing systems forming a sub-group of the group of computing systems having similar software program installations, wherein those computing systems are put on [[the]] a list whose relative number of identical installed software programs is higher than [[the]] a relative number of installed software programs of the group of computing systems.

16. (Currently amended) The computer program product according to claim 14, wherein a software signature is removed from the base installation software catalogue if [[the]] a related software program is not discovered ~~during the second scan procedure~~ on any of the computing systems of the group.

17. (Currently amended) The computer program product according to claim 14, wherein a software signature of [[the]] a related software program is added to the base installation software catalogue if the related software program is discovered as an installed software program during the second scan procedure on any of the computing systems of the group.

18. (Canceled)

19. (Currently amended) The software discovery system according to claim 11, wherein the instructions further cause the processor to:

generate a list of computing systems forming a sub-group of the group of computing systems having similar software program installations, wherein those computing systems are put on the list whose relative number of identical installed software programs is higher than [[the]] a relative number of installed software programs of the group of computing systems.

20. (Currently amended) The software discovery system according to claim 11, wherein a software signature is removed from the base installation software catalogue if [[the]] a related software program is not discovered ~~during the second scan procedure~~ on any of the computing systems of the group.

21. (Currently amended) The software discovery system according to claim 11, wherein a software signature of [[the]] a related software program is added to the base installation software catalogue if the related software program is discovered as an installed software program during the second scan procedure on any of the computing systems of the group.

22. (Canceled)

23. (New) The method according to claim 1, wherein the base installation software catalogue is empty at the beginning of the first scan procedure.

24. (New) The software discovery system according to claim 11, wherein the base installation software catalogue is empty at the beginning of the first scan procedure.

25. (New) The computer program product according to claim 14, wherein the base installation software catalogue is empty at the beginning of the first scan procedure.

26. (New) The method according to claim 10, wherein the selected computing system is a computing system of the group with the lowest workload.

27. (New) The method according to claim 1, further comprising:

in the second scan procedure, performing a third scan procedure on the single selected computing system of the group using the first software signature catalogue; and

extending the base installation software catalogue by an identifier of the additional software program discovered during the third scan procedure.

**Remarks**

The Applicants respectfully request reconsideration in view of the foregoing amendments and following remarks. Upon entry of the present amendments, claims 1-6, 8-11, 14-17, and 19-21 are pending, of which claims 1, 11 and 14 are independent claims. Claims 7, 18, and 22 have been canceled. Claims 23-27 have been added.

With the present amendment, the Applicants have amended claims 1, 2, 4-6, 8-11, 14-17, and 19-21. The application as filed supports the amendments to claims 1, 2, 4-6, 8-11, 14-17, and 19-21 at, for example, ¶¶ 37, 40-45.

***Claim objections***

Claims 2, 5, 6 and 15-17 and 19-21 are objected to because of typographical errors mentioned by the Examiner in the Non-final Office action, pages 3-4. Claims 2, 5, 6, 15-17 and 19-21 have been amended, as suggested by the Examiner, to correct the informalities contained therein. Hence, withdrawal of the objections to claims 2, 5, 6 and 15-17 and 19-21 is respectfully requested.

***Claim Rejections - 35 U.S.C. §*** ***112(b)***

Claim 4 is rejected under 35 U.S.C. § 112(b) as indefinite. Non-final Office action, at page 5. Claim 4 has been amended to read “wherein the computing systems of the sub-group are selected based on a directive external to the computing systems of the group.” The application as filed supports the amendments to claim 4 at ¶ 36. Applicants believe that the amendments address the Examiner’s concerns and respectfully request that the 35 U.S.C.§ 112(b) rejection of claim 4 be withdrawn.

***Claim Rejections - 35 U.S.C. § 101***

The Non-final Office action rejects claims 1-11 and 14-22 under 35 U.S.C. § 101 as allegedly being directed to a judicial exception without significantly more. Non-final Office action, pages 5-9. Further, the Non-final Office action further rejects claims 14-18 under 35 U.S.C. § 101 as allegedly directed toward non-statutory subject matter. Non-final Office action, page 10. The Applicants respectfully traverse these rejections.

The Non-final Office action rejects claims 1-11 and 14-22 under 35 U.S.C. § 101 as allegedly being directed to judicial exception without significantly more. The Applicants respectfully traverse this rejection.

The independent claims, as presently amended, recite methods, systems and computer program products, respectively, that improve a particular technical field. The conventional software inventory scans have the following drawbacks.

As explained in the Specification at ¶ 2:

Software inventory scans are typically based on information from a software catalogue, which is a collection of discovery signatures for all possible software programs. Such software discovery catalogues can be very extensive due to the number of different software products on the market, not only current but also historical, as well as many different signature types which may be used to discover the same or different product releases.

As explained in the Specification at ¶ 4:

Another negative effect of such full software scans is that the amount of data returned to a software asset management server may be quite large; in order to aggregate that data many software asset management server resources are additionally required. Moreover, additional network traffic is generated.

Further as explained in the Specification at ¶ 7, “[t]here continues to be a need to address the problem of large overhead when discovering software based on a software catalogue having software signatures.”

The features of amended independent claim 1 provide a technical improvement to the computer operation to overcome this large overhead by “performing a second scan procedure on the remaining members of the group of computing systems using the base installation software catalogue created during the first scan of the single selected computing system of the group, the first scan adding only software signatures to the base installation software catalogue if those software signatures were identified in the first software signature catalogue and present on the single selected computing system, the second scan procedure providing an increased efficiency of scanning the remaining members of the group starting with a reduced size software catalogue comprising the base installation software catalogue including only software signatures actually present on the single selected computing system of the group.”

The claimed “second scan” is contrary to conventional models of software signature scans which are “typically based on information from a software catalogue, which is a collection of discovery signatures for all possible software programs.” Specification at ¶ 2. Instead, here, the second scan provides a technical improvement to the operation of the computer because of the claimed “scanning the remaining members of the group starting with a reduced size software catalogue comprising the base installation software catalogue including only software signatures actually present on the single selected computing system of the group.”

The Specification also teaches that the scanning procedure functions differently than conventional software inventory scans which use extensive software discovery catalogues, consume many resources and have a large overhead. According to the Specification at ¶¶ 44, 51 and 53, “on one computer of the group of computing systems a full scan procedure is performed,” while “all other computing systems may perform the more lightweight second scan procedure using the base software installation catalogue” which is comparably smaller than the first software catalogue. Moreover, our argument that amended claim 1 is directed to an improvement of an existing technology is bolstered by the Specification at ¶¶ 27, 29, 37 and 51 that the claimed invention achieves other benefits over conventional software discovery processes, such as reduced workload and faster software discovery.

In *Enfish v. Microsoft*, Fed. Cir. No. 2015-1244, May 12, 2016, the court determined that when technical “benefits flow from a design” which are not present in the conventional models (*Enfish,* page 7), and that design results in “an improvement to computer-related technology” (*Enfish,* page 11), and the “plain focus of the claims is on an improvement to computer functionality itself, not on ... other tasks for which a computer is used in its ordinary capacity” (*Enfish,* page 12), then those claims “are not directed to an abstract idea within the meaning of *Alice”* (*Enfish,*  page 12).

Here, there is an “increased efficiency of scanning the remaining members of the group starting with a reduced size software catalogue” not present in conventional models that results in an improvement to the computer’s functioning efficiency. Further, the claims are very specifically directed to the improved functionality itself “performing a second scan procedure on the remaining members of the group of computing systems using the base installation software catalogue created during the first scan ..., the first scan adding only software signatures to the base installation software catalogue ... present on the single selected computing system” and where the second scan only “on the remaining members of the group.” Thus, Applicant’s respectfully assert that amended independent claim 1 is not “an abstract idea within the meaning of *Alice”* (*Enfish*, page 12).

Amended independent claims 11, 14 are patent-eligible for at least similar reasons given for claim 1. Therefore, independent claims 11, 14 and dependent claims 15-17, and 19-21, recite patent-eligible subject matter as well.

Accordingly, Applicants respectfully request that the rejection of claims 1-6, 8-11 and 14-17, and 19-21 under 35 U.S.C. § 101 be withdrawn. The Applicants also note that there are other reasons why the claims satisfy 35 U.S.C. § 101 and reserve the right to make such arguments if needed.

Further, the Non-final Office action rejects claims 14-18 under 35 U.S.C. § 101 as allegedly directed toward non-statutory subject matter. Applicants respectfully traverse this rejection.

Applicant’s representative has amended the claims to include the word “non-transitory,” as suggested by the Examiner. Support for this amendment can be found at ¶¶ 47, 66 and 71 of the present specification.

Accordingly, Applicants respectfully request that the rejection of claims 14-18 under 35 U.S.C. § 101 be withdrawn.

***Claim Rejections - 35 U.S.C. § 103***

In the Non-final Office action, the Examiner rejects claims 1-11, and 19-22 under 35 U.S.C. § 103 as being unpatentable over U.S. Patent Application Publication No. 2012/0054733 to Vidal et al. (“Vidal”) in view of U.S. Patent Application Publication No. 7506038 to Perrone et al. (“Perrone”) and claims 14-18 Under 35 U.S.C. § 103 as being unpatentable over Vidal in view of U.S. Patent Application Publication No. 2007/0220507 to Back et al. (“Back”) and further in view of Perrone. Non-Final Office action, pages 10-33. The Applicants respectfully disagree with the rejections.

Independent Claim 1

Claim 1, as amended, recites:

performing a first scan procedure by scanning a single selected computing system of the group using a first software signature catalogue to identify installed programs; …

performing a second scan procedure on the remaining members of the group of computing systems using the base installation software catalogue created during the first scan of the single selected computing system of the group, the first scan adding only software signatures to the base installation software catalogue if those software signatures were identified in the first software signature catalogue and present on the single selected computing system, the second scan procedure providing an increased efficiency of scanning the remaining members of the group starting with a reduced size software catalogue comprising the base installation software catalogue including only software signatures actually present on the single selected computing system of the group.

Vidal and Perrone, taken separately or in combination, fail to teach or suggest the above-cited language of claim 1.

Vidal describes package servers which can capture and store the package inventories from all machines reporting those inventories, and build an aggregate package population record that lists or records all packages on all machines present in the managed network. Vidal, ¶ 17. The managed network can comprise or contain a set of clients in the managed network which “can comprise or contain similar hardware, software.” Vidal, ¶¶ 28, 33. The aggregate package population record can be used “for generating package profiles in software package repositories,” and can incorporate the inventory of the set of installed packages received from various clients and identify all packages present on all machines within a network under management. Vidal, ¶¶ 27, 30.

Vidal fails to teach “the first scan adding only software signatures to the base installation software catalogue if those software signatures were identified in the first software signature catalogue and present on the single selected computing system,” as recited in claim 1. At most, Vidal describes selecting “any one or more arbitrary subsets of packages found in the aggregate package population record.” *See* Vidal, ¶ 17. This does not involve selecting a “computing system of the group,” as recited in claim 1. Vidal is even further from teaching “adding only software signatures to the base installation software catalogue if those software signatures were identified in the first software signature catalogue and present on the single selected computing system,” as recited in claim 1.

Further, Vidal fails to teach “performing a second scan procedure on the remaining members of the group of computing systems using the base installation software catalogue created during the first scan of the single selected computing system of the group,” as recited in claim 1. At most, Vidal describes updating “the aggregate package population record.” *See* Vidal, ¶ 40. This does not involve “using the base installation software catalogue created during the first scan of the single selected computing system of the group,” as recited in claim 1.

Vidal discloses that an inventory engine of the one or more package servers can update the aggregate package population record. *See* Vidal, ¶ 51. The package servers merely update the aggregate package population record. *See* Vidal, ¶ 40. They do not use the aggregate package population record to perform “a second scan procedure,” as recited in claim 1. The update operations can be initiated based on a predetermined schedule to interrogate the managed network and discover recently added or recently deleted clients. *See* Vidal, ¶¶ 40, 41. This part of Vidal involves interrogating the managed network, not using the aggregate package population record to interrogate the managed network. Hence Vidal fails to teach or suggest “performing a second scan procedure on the remaining members of the group of computing systems using the base installation software catalogue created during the first scan of the single selected computing system of the group, the first scan adding only software signatures to the base installation software catalogue if those software signatures were identified in the first software signature catalogue and present on the single selected computing system, the second scan procedure providing an increased efficiency of scanning the remaining members of the group starting with a reduced size software catalogue comprising the base installation software catalogue including only software signatures actually present on the single selected computing system of the group,” as recited in claim 1.

Perrone describes determining a software configuration in a computer system having a plurality of devices which can communicate with a central server. Perrone, Abstract. Agents, that are assigned to perform a scan, download one or more catalogs of product signatures from the central server. Perrone, Column 4, Lines 47-53. The scan is performed using the downloaded catalog information as a reference to find matching signatures of software products installed on the system. Perrone, Column 8, Lines 59-61. The one or more discovery agents each upload, to the central server, the result of their scan (i.e., the single or multiple sets of installed products which were previously determined). Perrone, Column 9, Lines 15-18.

Perrone fails to teach or suggest “scanning a single selected computing system of the group,” as recited in claim 1. At most, Perrone describes selecting an agent to perform a scan on a machine mounting a shared file system. *See* Perrone, Column 2, Lines 57-64. This does not involve selecting a “computing system,” as recited in claim 1. Hence Perrone fails to teach or suggest “first scan adding only software signatures to the base installation software catalogue if those software signatures were identified in the first software signature catalogue and present on the single selected computing system,” as recited in claim 1. Perrone is even further from teaching or suggesting “performing a second scan procedure on the remaining members of the group of computing systems using the base installation software catalogue created during the first scan of the single selected computing system of the group, the first scan adding only software signatures to the base installation software catalogue if those software signatures were identified in the first software signature catalogue and present on the single selected computing system, the second scan procedure providing an increased efficiency of scanning the remaining members of the group starting with a reduced size software catalogue comprising the base installation software catalogue including only software signatures actually present on the single selected computing system of the group,” as recited in claim 1.

Hence, since neither Vidal nor Perrone disclose the recited language, their combination would also fail to describe such an arrangement. For at least these reasons, the rejection of claim 1 under 35 U.S.C. § 103 should be withdrawn.

Dependent Claims 2-6 and 8-10

Each of claims 2-6 and 8-10 depends from claim 1 and includes the above-cited language of claim 1. For at least this reason, the rejections of claims 2-6 and 8-10 under 35 U.S.C. § 103 should be withdrawn. The Applicants will not belabor the merits of the separate patentability of these dependent claims.

Independent Claim 11

Claim 11, as amended, recites:

perform a first scan procedure by scanning a selected computing system of the group using a first software signature catalogue to identify installed programs; …

perform a second scan procedure by scanning the group of computing

systems other than the selected computing system, using the base installation software catalogue to identify installed software programs.

For reasons similar to those explained above with reference to the above-cited

language of claim 1, Vidal and Perrone also fail to teach “perform a first scan procedure by scanning a selected computing system of the group using a first software signature catalogue to identify installed programs,” and “perform a second scan procedure by scanning the group of computing systems other than the selected computing system, using the base installation software catalogue to identify installed software programs,” as recited in claim 11.

For at least these reasons, the rejection of claim 11 under 35 U.S.C. § 103 should be withdrawn.

Dependent Claims 19-21

Each of claims 19-21 depends from claim 11 and includes the above-cited language of claim 11. For at least this reason, the rejections of claim 19-21 under 35 U.S.C. § 103 should be withdrawn. The Applicants will not belabor the merits of the separate patentability of these dependent claims.

Independent Claim 14

Claim 14, as amended, recites:

perform a first scan procedure by scanning a selected computing system of the group using a first software signature catalogue to identify installed programs; …

perform a second scan procedure by scanning the group of computing

systems other than the selected computing system, using the base installation software catalogue to identify installed software programs.

Vidal, Back and Perrone, taken separately or in combination, fail to teach or

suggest the above cited language of claim 14.

For reasons similar to those explained above with reference to the above-cited

language of claim 1, Vidal and Perrone fail to teach “perform a first scan procedure by scanning a selected computing system of the group using a first software signature catalogue to identify installed programs,” and “perform a second scan procedure by scanning the group of computing systems other than the selected computing system, using the base installation software catalogue to identify installed software programs,” as recited in claim 14.

Back describes a system which manages version information for a group of software components by maintaining a version repository containing version information for all of the components. Back, Abstract. The software component may have a version associated with it, where the version indicates the relative age/release date of the component with respect to other versions of the same component. Back, ¶ 17. There may be a baseline for the program that represents a minimum set of components and minimum version numbers for those components and the baseline may be used to add or remove components for an integrated software program. Back, ¶ 19. If it is determined that the version information for the component is less than the minimum required version for the baseline, it is reported that the current installed version for the component is less than the minimum required version. Back, ¶ 47. Optionally, it is also possible to update the component to the minimum required version by calling an appropriate one of the installation processes. *Id*. The installation processes may write and/or modify data in the version repository to update information about a component installed by the installation processes, update version information about an application installed by the installation processes, or make any other appropriate modification of the data in the version repository. Back, ¶ 26.

Back fails to teach “scanning a selected computing system of the group using a first software signature catalogue,” as recited in claim 1. At most, Back describes selecting “checking for (and possibly updating) out-of-date components in connection with a baseline for an integrated software program.” *See* Back, ¶ 43. This does not involve performing a “first scan” by “scanning a selected computing system,” as recited in claim 14. Hence Back fails to teach or suggest “perform a first scan procedure by scanning a selected computing system of the group using a first software signature catalogue to identify installed programs,” as recited in claim 14. Back is even further from teaching “perform a second scan procedure by scanning the group of computing systems other than the selected computing system, using the base installation software catalogue to identify installed software programs,” as recited in claim 14.

Hence, the combination of Vidal, Back and Perrone fails to teach or suggest “performing a first scan procedure by scanning a selected computing system of the group using a first software signature catalogue to identify installed programs,” and “performing a second scan procedure by scanning the group of computing systems other than the selected computing system, using the base installation software catalogue to identify installed software programs,” as recited in claim 14.

For at least these reasons, the rejection of claim 14 under 35 U.S.C. § 103 should be withdrawn.

Dependent Claims 15-17

Each of claims 15-17 depends from claim 14 and includes the above-cited language of claim 14. For at least this reason, the rejections of claim 15-17 under 35 U.S.C. § 103 should be withdrawn. The Applicants will not belabor the merits of the separate patentability of these dependent claims.

***Conclusion and Request for Interview***

All pending claims should be allowable. Such action is respectfully requested. Should any issues remain, the Applicants invite the Examiner to contact the undersigned attorney to discuss such remaining issues.

Respectfully submitted,

XYZ