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Please find below and/or attached an Office communication concerning this application or proceeding.

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PatentDocketingUS-PaloAlto@dlapiper.com

1. The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

2. This action is responsive to the application filed on 08/04/2014 has a total of 37 claims pending in the application; there are 3 independent claims and 34 dependent claims, all of which are ready for examination by the examiner.

Title

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The examiner suggests the title **“computer network systems to manage computer network virtualization environments.”**

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 28 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per **claim 28**, the following limitations are recited:

- “an asset manager component ” as recited in claim 28.

- "a provisioning manager component" as recited in claim 28.
- "a performance manager component" as recited in claim 28.
- "an optimizer component" as recited in claim 28.

The limitations noted immediately above are means-plus-function limitations that invoke 35 U.S.C. 112, sixth paragraph. However, the written description fails to disclose the corresponding structure, material, or acts for the claimed function.

Applicant is required to:

- (a) Amend the claim so that the claim limitation will no longer be a means (or step) plus function limitation under 35 U.S.C. 112, sixth paragraph; or
- (b) Amend the written description of the specification such that it expressly recites what structure, material, or acts perform the claimed function without introducing any new matter (35 U.S.C. 132(a)).

If applicant is of the opinion that the written description of the specification already implicitly or inherently discloses the corresponding structure, material, or acts so that one of ordinary skill in the art would recognize what structure, material, or acts perform the claimed function, applicant is required to clarify the record by amending the written description of the specification such that it expressly recites the corresponding structure, material, or acts for performing the claimed function and clearly links or associates the structure, material, or acts to the claimed function, without introducing any new matter (35 U.S.C. 132(a)).

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO internet Web site contains terminal disclaimer forms which may be used. Please visit <http://www.uspto.gov/forms/>. The filing date of the application will determine what form should be used. A web-based eTerminal Disclaimer may be filled

out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to

<http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp>.

6. Claims 1-37 are rejected on the ground of nonstatutory double patenting over claims 1-24 of US. Patent No. US 8,799,431 B2 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, see below table.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

The instant application 14/450765	U.S Patent No 8,799,431 B2
Claim.1 a method for automatic management of a virtualization environment in a computer network, the method comprising: providing a virtualization environment that has network resources, virtual assets and a virtualization layer that manages the virtual assets;	Claim. 1 A method for automatic management of a virtualization environment in a computer network, the method comprising: providing a virtualization environment that has a virtualization layer, network resources and virtual assets, the virtual assets including at least one software instantiations of equipment objects in the virtualization environment, the

<p>providing a controller coupled to the virtualization environment over a network that communicates with the virtualization layer;</p> <p>determining, using the controller that communicates with the virtualization layer, an inventory of network resources and virtual assets available to the virtualization environment;</p> <p>provisioning, by the controller that communicates with the virtualization layer, the virtual assets from among the available inventory, thereby establishing a provisioned virtualization environment;</p> <p>determining, at the controller, a metric for the provisioned virtualization environment;</p> <p>receiving user input that specifies parameters to be considered in producing the reallocation of assets;</p> <p>automatically determining at the controller, for the provisioned virtualization environment under control of the controller, a reallocation of the virtual assets based on the metric and the user input parameters; and</p> <p>initiating, by the controller that communicates with the virtualization layer, the reallocation of the virtual assets in the</p>	<p>virtualization layer managing the virtual assets;</p> <p>providing a controller coupled to the virtualization environment over a network that communicates with the virtualization layer;</p> <p>determining, using the controller that communicates with the virtualization layer, an inventory of network resources and virtual assets available to the virtualization environment;</p> <p>provisioning, by the controller that communicates with the virtualization layer, the virtual assets from among the available inventory, thereby establishing a provisioned virtualization environment;</p> <p>determining, at the controller, real time performance metrics for the provisioned virtualization environment;</p> <p>receiving a Knowledge Block that specifies parameters that send an alert message to an administrator of the network in response to an alert condition and determines one or more reallocation parameters to be considered with the real time performance metrics in producing the reallocation of assets and wherein the Knowledge Block specifies parameters that detect operational degradation of a member of the available inventory which is halted and removed from the available inventory;</p> <p>automatically determining at the controller for the provisioned virtualization environment under control of the controller, a reallocation of the virtual assets in response to the reallocation parameters and real time performance metrics;</p> <p>initiating, by the controller that communicates with the virtualization layer, the reallocation of the virtual assets in the</p>
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provisioned virtualization environment	provisioned virtualization environment.
<p>Claim 20. A method for automatic management of a virtualization environment in a computer network, the method comprising:</p> <p>providing a virtualization environment that has network resources, virtual assets and a virtualization layer that manages the virtual assets;</p> <p>providing a controller coupled to the virtualization environment over a network;</p> <p>performing one or more functions by the controller that communicates with the virtualization layer from the group of functions consisting of</p> <p>identification and management of network resources and virtual assets,</p> <p>provisioning of virtual assets in response to network workflow demands,</p> <p>automatic dynamic deployment of virtual assets across the computer network,</p> <p>performance measurement and reporting of resources and virtual assets, and</p> <p>planning and forecasting of resource</p>	<p>Claim 20. A method for automatic management of a virtualization environment in a computer network, the method comprising:</p> <p>providing a virtualization environment that has a virtualization layer, network resources and virtual assets, the virtual assets including at least one software instantiations of equipment objects in the virtualization environment, the virtualization layer managing the virtual assets;</p> <p>providing a controller coupled to the virtualization environment over a network;</p> <p>performing one or more functions by the controller that communicates with the virtualization layer from the group of functions consisting of</p> <p>(1) identification and management of network resources and virtual assets,</p> <p>(2) provisioning of virtual assets in response to network workflow demands,</p> <p>(3) receiving a Knowledge Block that specifies parameters that send an alert message to an administrator of the network in response to an alert condition and determines one or more reallocation parameters to be considered with a performance measurement in producing the deployment of the assets and wherein the Knowledge Block specifies parameters that detect operational degradation of a member of the virtualization environment which is halted and removed,</p> <p>(4) automatic dynamic deployment of virtual assets across the computer network based on the reallocation parameters,</p> <p>(5) performance measurement and reporting of resources and virtual assets, and</p> <p>(6) planning and forecasting of</p>

<p>demands and virtual asset utilization of the virtualization environment; wherein such functions are carried out without regard to processors, operating systems, virtualization platforms, and application software of the virtualization environment</p>	<p>resource demands and virtual asset utilization of the virtualization environment; wherein such functions are carried out without regard to processors, operating systems, virtualization platforms, and application software of the virtualization environment.</p>
<p>Claim 22. An apparatus that performs automatic management of a virtualization environment in a computer network comprising: a virtualization environment that has network resources, virtual assets and a virtualization layer that manages the virtual assets;</p> <p>a virtual mapping layer that determines an inventory of network resources and virtual assets available to the virtualization environment, wherein the virtual mapping layer determines the inventory without regard to processors, operating systems, virtualization platforms, and application software of the virtualization environment; and</p> <p>a controller that communicates with the virtualization layer and provisions the virtual assets from among the available inventory, thereby establishing a provisioned virtualization environment, determines metric for the provisioned virtualization environment, receives user input that specifies parameters to be considered with the metrics in producing the reallocation of assets, automatically determines for the provisioned</p>	<p>Claim 22. An apparatus that performs automatic management of a virtualization environment in a computer network comprising: a virtualization environment that has a virtualization layer, network resources and virtual assets, the virtual assets including at least one software instantiations of equipment objects in the virtualization environment, the virtualization layer managing the virtual assets; an operating system of the apparatus that supports the virtualization environment in communication with the apparatus over the computer network; and a Virtual Mapping layer that determines an inventory of network resources and virtual assets available to the virtualization environment, wherein the Virtual Mapping layer determines the inventory without regard to processors, operating systems, virtualization platforms, and application software of the virtualization environment; and</p> <p>a controller that communicates with the virtualization layer and provisions the virtual assets from among the available inventory, thereby establishing a provisioned virtualization environment, determines real time performance metrics for the provisioned virtualization environment, receives a Knowledge Block that specifies parameters that send an alert message to an administrator of the network in response to an alert</p>

virtualization environment, a reallocation of the virtual assets in response to the metrics and user input and initiates the reallocation of the virtual assets in the provisioned virtualization environment	condition and determines one or more reallocation parameters to be considered with the real time performance metrics in producing the reallocation of assets and wherein the Knowledge Block specifies parameters that detect operational degradation of a member of the available inventory which is halted and removed from the available inventory, automatically determines for the provisioned virtualization environment, a reallocation of the virtual assets in response to the reallocation parameters and the real time performance metrics and initiates the reallocation of the virtual assets in the provisioned virtualization environment.
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Claims 1-37 in the instant application are presented in a similar manner as presented in **claim 1-24** of the above patent application (independent claims are shown). Although the conflicting claims are not identical, they are not patentably distinct from each other. The differences between the instant application and the patent application are provided in the table above. It would have been obvious to one of ordinary skilled in the art to perform such method.

This is a Non-statutory obviousness type double patenting rejection because the conflicting claims have in fact been patented.

Claim Rejections - 35 USC § 103

7. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to

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be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 6-24, 27-37 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over **Vasilevsky et al. Pub. No (US. 2005/0044301 A1)** in view of **Yan et al. Pub. No. (US 2003/0236882 A1)**.

Regarding **claim 1**, **Vasilevsky** teaches a method for automatic management of a virtualization environment in a computer network, the method comprising:

providing a virtualization environment (**virtualization environment 100 FIG.1 [0058]**) that has network resources (**data center provides resources [0058] FIG.1**), virtual assets (**operating system layer 103 FIG.1**) and a virtualization layer (**virtualization layer 104 FIG.1 [0058]**) that manages the virtual assets (**the virtualization layer managing the execution of the operating system [0017] [0042] FIG.1**);

providing a controller (**Manager 212 FIG.2**) coupled to the virtualization environment over a network that communicates with the virtualization layer (**Manager 212 connected to the virtual computing system 201 over a network that communicates with a management agent executed by one or more virtual servers of system 201 for the purpose of performing configuration changes, monitoring performance, and performing other administrative functions associated with system 201 [0070-71] FIG.2**) ;

determining, using the controller that communicates with the virtualization layer (**Manager 212 connected to the virtual computing system 201 FIG.2**), an inventory

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of network resources and virtual assets available to the virtualization environment
(Manager 212 has the ability for allocating or de-allocating resources both actual and virtual in real time 212 [0072-73]);

provisioning, by the controller that communicates with the virtualization layer
(Manager 212 connected to the virtual computing system 201 FIG.2), the virtual assets from among the available inventory, thereby establishing a provisioned virtualization environment **(An administrator through manger 212 is capable of provisioning resources in real time to support executing virtual servers [0076] [0082] FIG.2);**

determining, at the controller, a metric for the provisioned virtualization environment **(a virtual computing system is provided that allows a network administrator to provision computing resources in real-time ("on-the-fly") without a restart of a virtual computing system [0076-77]);**

receiving user input that specifies parameters to be considered in producing the reallocation of assets **(I/O functions that may be performed by the distributed virtual machine monitor that may include I/O device configuration and discovery, initiation (for both data movement and control), and reallocating of resources from virtual servers [0112-114]);**

determining at the controller, for the provisioned virtualization environment under control of the controller **(Manager 212 connected to the virtual computing system 201 FIG.2)**, a reallocation of the virtual assets based on the metric and the user input parameters **(a management agent 815 is responsible for handling dynamic**

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reconfiguration functions as well as reporting status and logging to other entities and may receive commands from the administrator (e.g., through Manager 212) for adding, deleting, and reallocation of resources from virtual servers in real time [0076] [0150]); and

initiating, by the controller that communicates with the virtualization layer (**Manager 212 connected to the virtual computing system 201 FIG.2**), the reallocation of the virtual assets in the provisioned virtualization environment (**the management agent 815 residing within the virtualization environment is responsible for handling dynamic reconfiguration functions by receiving commands from the administrator (through manager 212) for adding, deleting, and reallocating of resources from virtual servers [0150] [0154]).**

Vasilevsky does not teach,

an automatic determination of a reallocation of the virtual assets.

Yan teaches an automatic determination of a reallocation of the virtual assets (**Yan: a management system includes a set of auto-deployment components that receives requirement update requests from a corresponding virtual operating environment and in response automatically conduct resource allocation and service re-deployment to adjust behavior at runtime [0030] [0062] FIG.6**)

It would have been obvious to a person having ordinary skilled in the art at the time the invention was made to have modified **Vasilevsky** by the teaching of **Yan** to have an automatic determination of a reallocation of the virtual assets in order to

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achieve an efficient virtualization management of network resources (**Yan: [0030] [0062] FIG.6**).

Regarding **claim 2, Vasilevsky** teaches the method of claim 1, wherein determining the metric is real time performance metrics (**a virtual computing system is provided that allows a network administrator to provision computing resources in real-time ("on-the-fly") without a restart of a virtual computing system [0076-77]**).

Regarding **claim 3, Vasilevsky** teaches the method of claim 2, wherein initiating the reallocation of virtual assets further comprises initiating the reallocation of virtual assets in response to load conditions identified by the real time performance metrics (**a management agent 815 is responsible for handling dynamic reconfiguration functions as well as reporting status and logging to other entities and may receive commands from the administrator (e.g., through Manager 212) for adding, deleting, and reallocation of resources from virtual servers in real time [0076] [0150]**).

Regarding **claim 6, Vasilevsky** teaches the method of claim 1, wherein the received user input specifies a priority for one or more of the available inventory (**allocate and/or de-allocate resources from an administrator through an user input [0074] executing the management agent as an overhead process at a**

different priority and at any level of a virtual computing system hierarchy and at any protection or priority level [0087])

Regarding **claim 7, Vasilevsky** teaches the method of claim 1, wherein the user input specifies a time period during which the reallocation is initiated (**Instances of server functions performed as part of the cluster include watchdog timers, page allocation, reallocation, and sharing, I/O virtualization and other services [0098] [0154]).**

Regarding **claim 8, Vasilevsky** teaches the method of claim 1 further comprising providing a user interface through which the user input is received and wherein the user input adjusts scheduling of the reallocation (**a capability is provided to allocate and/or de-allocate resources from an administrator through an interface (e.g., a CLI, or GUI or a programmatic interface' [0074-75]).**

Regarding **claim 9, Vasilevsky** teaches the method of claim 1, wherein initiating the reallocation comprises adding a new application instance to the available inventory (**a management agent receiving commands from the administrator for adding, deleting, and reallocating of resources from virtual servers [0150] [0154])**

Regarding **claim 10, Vasilevsky** teaches the method of claim 1, wherein initiating the reallocation comprises updating the available inventory to include any

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changes made by the reallocation **(Manager 212 may communicate with a management agent executed by one or more virtual servers of system 201 for the purpose of performing configuration changes, monitoring performance, and performing other administrative functions e.g., updates associated with system 201 [0070] [0072])**

Regarding **claim 11**, **Vasilevsky** teaches the method of claim 1, wherein the inventory of available inventory includes one or more application programs **(resources include processing, memory, networking, storage, etc. to a virtual computing system including application programs provide control to an administrator through an GUI interface or to other programs [0074])**

Regarding **claim 12**, **Vasilevsky** teaches the method of claim 11, wherein one of the application programs comprises one of a network load balancer, a router, a firewall and a storage server **(the virtual computing system may be scaled up/scaled down as necessary by the distributed server e.g., a load balancer [0072]).**

Regarding **claim 13**, **Vasilevsky** teaches the method of claim 11, wherein one of the application programs comprises a network server **(resources may be allocated or de-allocated by a distributed server [0072])**

Regarding **claim 14**, **Vasilevsky** teaches the method of claim 1, wherein determining the inventory of available network resources and virtual assets further comprises assigning prioritization to the available inventory (**the management agent may be executed as an overhead process at a different priority and at any level of a virtual computing system hierarchy and at any protection or priority level [0087]**).

Regarding **claim 15**, the modified **Vasilevsky** teaches the method of claim 14. **Vasilevsky** may not teach further comprising forecasting future system needs.

Yan teaches forecasting future system needs (**Yan: a management system includes a set of auto-deployment components that automatically conduct resource allocation and service re-deployment to adjust behavior at runtime and prediction [e.g., forecasting] on distribution of system resource [0030] [0053] FIG.6**)

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified **Vasilevsky** by the teaching of **Yan** to have an automatic determination of a reallocation of the virtual assets and forecasting future system needs in order to achieve an efficient virtualization management of network resources.

Regarding **claim 16**, **Vasilevsky** teaches the method of claim 1, wherein the virtual assets further comprise a second virtual machine which comprises virtual assets,

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and the at least one virtual machine and the second virtual machine each run their own respective operating systems which are a different type of operating system from each other **(the virtual assets comprises first virtual machine and second virtual machine [0033] each of which runs on a single node and manages the resources associated with that node [0033] [0065]).**

Regarding **claim 17, Vasilevsky** teaches the method of claim 1, wherein provisioning virtual assets from among the available inventory further comprises routing an application running on a first virtual machine to run on a second virtual machine **(the virtual assets comprises first virtual machine and second virtual machine [0033] wherein the VMA I/O component routes the request to the proper distributed virtual machine monitor (DVMM) drivers for processing [0128]).**

Regarding **claim 18, Vasilevsky** teaches the method of claim 1 further comprising a Knowledge Block that specifies parameters that identify a last known acceptable virtual machine image that includes one or more applications from the set of available inventory **(the management agent may be responsible for a number of tasks, including alarm propagation and alert messages [0086] [0088])**

Regarding **claim 19, Vasilevsky** teaches the method of claim 18, wherein the Knowledge Block specifies parameters that deploy an instance of an application selected from among the available inventory **(specify an unassigned resource may**

be grouped into a "pool" of unassigned resources and presented to an administrator or program as being available for assignment [0082-83]).

Regarding **claim 20**, **Vasilevsky** teaches a method for automatic management of a virtualization environment in a computer network, the method comprising:

providing a virtualization environment (**virtualization environment 100 FIG.1 [0058]**) that has network resources (**data center provides resources [0058] FIG.1**), virtual assets (**operating system layer 103 FIG.1**) and a virtualization layer (**virtualization layer 104 FIG.1 [0058]**) that manages the virtual assets (**the virtualization layer managing the execution of the operating system [0017] [0042] [0058] FIG.1**);

providing a controller (**Manager 212 FIG.2**) coupled to the virtualization environment over a network (**Manager 212 connected to the virtual computing system 201 over a network that communicates with a management agent executed by one or more virtual servers of system 201 for the purpose of performing configuration changes, monitoring performance, and performing other administrative functions associated with system 201 [0070-71] FIG.2**);;

performing one or more functions by the controller that communicates with the virtualization layer from the group of functions consisting of identification and management of network resources and virtual assets (**Manager 212 has the ability for allocating or de-allocating resources both actual and virtual in real time 212 [0072-73]**),

provisioning of virtual assets in response to network workflow demands **(An administrator through manger 212 is capable of provisioning resources in real time to support executing virtual servers [0076] [0082] FIG.2),**

dynamic deployment of virtual assets across the computer network, performance measurement and reporting of resources and virtual assets **(a management agent 815 residing within the virtualization environment for handling dynamic reconfiguration functions from the administrator for adding, deleting, and reallocating resources from virtual servers [0150] [0154]),** and

wherein such functions are carried out without regard to processors, operating systems, virtualization platforms, and application software of the virtualization environment **(Manager 212 connected to the virtual computing system 201 over a network that communicates with a management agent executed by one or more virtual servers of system 201 for the purpose of performing configuration changes, monitoring performance, and performing other administrative functions associated with system 201 [0070-71] FIG.2).**

Vasilevsky may not specifically teach an automatic determination of a reallocation of the virtual assets, planning and forecasting of resource demands and virtual asset utilization of the virtualization environment.

Yan teaches an automatic determination of a reallocation of the virtual assets **(Yan: a management system includes a set of auto-deployment components that receives requirement update requests from a corresponding virtual operating environment and in response automatically conduct resource allocation and**

service re-deployment to adjust behavior at runtime [0030] [0062] FIG.6), planning and forecasting of resource demands and virtual asset utilization of the virtualization environment (**Yan: a management system includes a set of auto-deployment components that automatically conduct resource allocation and service re-deployment to adjust behavior at runtime and prediction [e.g., forecasting] on distribution of system resource [0030] [0053] FIG.6)**

It would have been obvious to a person having ordinary skilled in the art at the time the invention was made to have modified **Vasilevsky** by the teaching of **Yan** to have an automatic determination of a reallocation of the virtual assets in order to achieve an efficient virtualization management of network resources (**Yan: [0030] [0062] FIG.6)**

Regarding **claim 21**, **Vasilevsky** teaches the method of claim 20, wherein provisioning virtual assets from among the available inventory further comprises creating a new virtual machine on a single physical host (**creating new virtual machine on the single physical host [0082]**).

Regarding **claim 22**, **Vasilevsky** teaches an apparatus that performs automatic management of a virtualization environment in a computer network comprising:

a virtualization environment (**virtualization environment 100 FIG.1 [0058]**) that has network resources (**data center provides resources [0058] FIG.1**), virtual assets (**operating system layer 103 FIG.1**) and a virtualization layer (**virtualization layer 104**

FIG.1 [0058]) that manages the virtual assets (the virtualization layer managing the execution of the operating system [0017] [0042] [0058] FIG.1);

a virtual mapping layer **(an abstraction layer 102 FIG.2)** that determines an inventory of network resources and virtual assets available to the virtualization environment **(an abstraction layer for mapping resources presented by each virtual server to other upper layer 202 programs [0065] [0077])**, wherein the virtual mapping layer determines the inventory without regard to processors, operating systems, virtualization platforms, and application software of the virtualization environment **(The interface may display a representation of an allocation of physical resources and mapping to virtual resources used by a virtual server. For example, the interface may provide an ability to map virtual servers to sets of physical resources, such as a virtual processor that is mapped to a physical processor [0077] [0079]);** and

a controller **(Manager 212 FIG.2)** that communicates with the virtualization layer and provisions the virtual assets from among the available inventory **(Manager 212 connected to the virtual computing system 201 over a network that communicates with a management agent executed by one or more virtual servers of system 201 for the purpose of performing configuration changes, monitoring performance, and performing other administrative functions associated with system 201 [0070-71] FIG.2)**, thereby establishing a provisioned virtualization environment **(An administrator through manger 212 is capable of provisioning resources in real time to support executing virtual servers [0076] [0082] FIG.2),**

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determines metric for the provisioned virtualization environment (**a management agent 815 residing within the virtualization environment for handling dynamic reconfiguration functions from the administrator for adding, deleting, and reallocating of resources from virtual servers [0150] [0154]**), receives user input that specifies parameters to be considered with the metrics in producing the reallocation of assets (**I/O functions that may be performed by the distributed virtual machine monitor that may include I/O device configuration and discovery, initiation (for both data movement and control), and reallocating of resources from virtual servers [0112-114]**), determines for the provisioned virtualization environment (**a management agent 815 residing within the virtualization environment for handling dynamic reconfiguration functions from the administrator for adding, deleting, and reallocating of resources from virtual servers [0150] [0154]**), a reallocation of the virtual assets in response to the metrics (**An administrator through manger 212 is capable of provisioning resources in real time to support executing virtual servers [0076] [0082] FIG.2**) and user input and initiates the reallocation of the virtual assets in the provisioned virtualization environment (**the management agent 815 residing within the virtualization environment is responsible for handling dynamic reconfiguration functions by receiving commands from the administrator (through manager 212) for adding, deleting, and reallocating of resources from virtual servers [0150] [0154]**).

Vasilevsky does not teach,

an automatic determination of a reallocation of the virtual assets.

Yan teaches an automatic determination of a reallocation of the virtual assets **(Yan: a management system includes a set of auto-deployment components that receives requirement update requests from a corresponding virtual operating environment and in response automatically conduct resource allocation and service re-deployment to adjust behavior at runtime [0030] [0062] FIG.6)**

It would have been obvious to a person having ordinary skilled in the art at the time the invention was made to have modified **Vasilevsky** by the teaching of **Yan** to have an automatic determination of a reallocation of the virtual assets in order to achieve an efficient virtualization management of network resources **(Yan: [0030] [0062] FIG.6)**

Regarding **claim 23**, **Vasilevsky** teaches the apparatus of claim 22, wherein the metric is real time performance metrics **(a virtual computing system is provided that allows a network administrator to provision computing resources in real-time ("on-the-fly") without a restart of a virtual computing system [0076-77]).**

Regarding **claim 24**, **Vasilevsky** teaches the apparatus of claim 23, wherein the controller initiates the reallocation of virtual assets in response to load conditions identified by the real time performance metrics **(a management agent 815 is responsible for handling dynamic reconfiguration functions as well as reporting status and logging to other entities and may receive commands from the**

administrator (e.g., through Manager 212) for adding, deleting, and reallocation of resources from virtual servers in real time [0076] [0150]).

Regarding **claim 27**, **Vasilevsky** teaches the apparatus of claim 22, further comprising one or more components that receive the inventory of available resources and assets from the Virtual Mapping layer and perform one or more functions from the group of functions consisting of:

identification and management of network resources and virtual assets (**Manager 212 has the ability for allocating or de-allocating resources both actual and virtual in real time 212 [0072-73]),**

dynamic deployment of virtual assets across the computer network (**a management agent 815 residing within the virtualization environment for handling dynamic reconfiguration functions from the administrator for adding, deleting, and reallocating resources from virtual servers [0150] [0154]),**

performance measurement and reporting of resources and virtual assets (**Manager 212 for the purpose of performing configuration changes, monitoring performance, and performing other administrative functions associated with system 201 [0070-71] FIG.2), and**

wherein such functions are carried out without regard to processors, operating systems, virtualization platforms, and application software of the virtualization environment (**Manager 212 connected to the virtual computing system 201 over a network that communicates with a management agent executed by one or more**

virtual servers of system 201 for the purpose of performing configuration changes, monitoring performance, and performing other administrative functions associated with system 201 [0070-71] FIG.2).

Vasilevsky does not teach,
planning and forecasting of resource demands and asset utilization of the virtualization environment.

Yan teaches planning and forecasting of resource demands and asset utilization of the virtualization environment (**Yan: a management system includes a set of auto-deployment components that automatically conduct resource allocation and service re-deployment to adjust behavior at runtime and prediction [e.g., forecasting] on distribution of system resource [0030] [0053] FIG.6)**

It would have been obvious to a person having ordinary skilled in the art at the time the invention was made to have modified **Vasilevsky** by the teaching of **Yan** to have an automatic determination of a reallocation of the virtual assets and forecasting future system needs in order to achieve an efficient virtualization management of network resources.

Regarding **claim 28**, **Vasilevsky** teaches the apparatus of claim 22, further comprising a component selected from a group of:

an asset manager component that determines an inventory of available network resources and virtual assets (**Manager 212 connected to the virtual computing system 201 specify an unassigned resources may be grouped into a "pool" of**

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unassigned resources and presented to an administrator or program as being available for assignment [0082-83]);

a provisioning manager component that assigns a prioritization to the available inventory and provisions virtual assets from among the available inventory **(the management agent may be executed as an overhead process at a different priority and at any level of a virtual computing system hierarchy and at any protection or priority level [0087]);**

a performance manager component that determines real time performance metrics **(An administrator through manger 212 is capable of provisioning resources in real time to support executing virtual servers [0076] [0082] FIG.2);** and

an optimizer component that automatically produces a reallocation of the virtual assets and initiates the reallocation **(a management agent 815 residing within the virtualization environment for handling dynamic reconfiguration functions from the administrator for adding, deleting, and reallocating of resources from virtual servers [0150] [0154]).**

Regarding **claim 29**, **Vasilevsky** teaches the apparatus of claim 22, wherein the received user input specifies a priority for one or more of the available inventory **(allocate and/or de-allocate resources from an administrator through an user input [0074] executing the management agent as an overhead process at a**

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different priority and at any level of a virtual computing system hierarchy and at any protection or priority level [0087])

Regarding **claim 30**, **Vasilevsky** teaches the apparatus of claim 22, wherein the user input specifies a time period during which the reallocation is initiated **(Instances of server functions performed as part of the cluster include watchdog timers, page allocation, reallocation, and sharing, I/O virtualization and other services [0098] [0154]).**

Regarding **claim 31**, **Vasilevsky** teaches the apparatus of claim 22, wherein the controller initiates the reallocation by adding a new application instance to the available inventory **(a management agent receiving commands from the administrator for adding, deleting, and reallocating of resources from virtual servers [0150] [0154])**

Regarding **claim 32**, **Vasilevsky** teaches the apparatus of claim 22, wherein the controller initiates the reallocation by updating the available inventory to include any changes made by the reallocation **(Manager 212 may communicate with a management agent executed by one or more virtual servers of system 201 for the purpose of performing configuration changes, monitoring performance, and performing other administrative functions e.g., updates associated with system 201 [0070] [0072])**

Regarding **claim 33**, **Vasilevsky** teaches the apparatus of claim 22, wherein the controller determines the inventory of available network resources and virtual assets by assigning prioritization to the available inventory **(the management agent may be executed as an overhead process at a different priority and at any level of a virtual computing system hierarchy and at any protection or priority level [0087])**.

Regarding **claim 34**, the modified **Vasilevsky** teaches the apparatus of claim 33, **Vasilevsky** may not teach wherein the controller forecasts future system needs.

Yan teaches the controller forecasts future system needs **(a management system includes a set of auto-deployment components that automatically conduct resource allocation and service re-deployment to adjust behavior at runtime and prediction [e.g., forecasting] on distribution of system resource [0030] [0053] FIG.6)**

It would have been obvious to a person having ordinary skilled in the art at the time the invention was made to have modified **Vasilevsky** by the teaching of **Yan** to have an automatic determination of a reallocation of the virtual assets and forecasting future system needs in order to achieve an efficient virtualization management of network resources.

Regarding **claim 35**, **Vasilevsky** teaches the apparatus of claim 22, wherein the controller provisions virtual assets from among the available inventory by routing an application running on a first virtual machine to run on a second virtual machine **(the**

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virtual assets comprises first virtual machine and second virtual machine [0033] wherein the VMA I/O component routes the request to the proper distributed virtual machine monitor (DVMM) drivers for processing [0128]).

Regarding **claim 36**, **Vasilevsky** teaches the apparatus of claim 22, wherein the controller further comprises a Knowledge Block that specifies parameters that identify a last known acceptable virtual machine image that includes one or more applications from the set of available inventory **(the management agent may be responsible for a number of tasks, including alarm propagation and alert messages [0086] [0088])**

Regarding **claim 37**, **Vasilevsky** teaches the apparatus of claim 36, wherein the Knowledge Block specifies parameters that deploy an instance of an application selected from among the available inventory **(specify an unassigned resources may be grouped into a "pool" of unassigned resources and presented to an administrator or program as being available for assignment [0082-83]).**

8. **Claims 4-5, 25-26** are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over **Vasilevsky et al.** in view of **Yan et al.** in further view of **Trossman Pub. No. (US 2008/0086731 A1).**

Regarding **claim 4**, the modified **Vasilevsky** teaches the method of claim 1, but does not teach wherein the metric is a time of day metric

Trossman teaches the metric is a time of day metric (**Trossman: The time varying trends mechanism 202 analyzes this information to determine time varying trends in the demand information for a particular resource. The time varying trends are those patterns of demand of the resource that occur at regular intervals, such as every day at a particular time, a particular day of the week [0058]**).

It would have been obvious to a person having ordinary skilled in the art at the time the invention was made to have modified the modified **Vasilevsky** by the teaching of **Trossman** to have the metric as a time of day metric in order to provide dynamic configuration and allocation of resources in a data center (**Trossman: [0002] [0058]**).

Regarding **claim 5**, the modified **Vasilevsky** teaches the method of claim 4, but does not teach wherein initiating the reallocation of virtual assets further comprises initiating the reallocation of virtual assets in response to the time of day metric

Trossman teaches initiating the reallocation of virtual assets in response to the time of day metric (**Trossman: The time varying trends mechanism 202 analyzes this information to determine time varying trends in the demand information for a particular resource. The time varying trends are those patterns of demand of the resource that occur at regular intervals, such as every day at a particular time, a particular day of the week [0058]**)

It would have been obvious to a person having ordinary skilled in the art at the time the invention was made to have modified the modified **Vasilevsky** by the teaching of **Trossman** to have the metric as a time of day metric in order to provide dynamic configuration and allocation of resources in a data center (**Trossman: [0002] [0058]**).

Regarding **claim 25**, the modified **Vasilevsky** teaches the apparatus of claim 22, but does not teach wherein the metric is a time of day metric.

Trossman teaches the metric is a time of day metric (**Trossman: The time varying trends mechanism 202 analyzes this information to determine time varying trends in the demand information for a particular resource. The time varying trends are those patterns of demand of the resource that occur at regular intervals, such as every day at a particular time, a particular day of the week [0058]**)

It would have been obvious to a person having ordinary skilled in the art at the time the invention was made to have modified the modified **Vasilevsky** by the teaching of **Trossman** to have the metric as a time of day metric in order to provide dynamic configuration and allocation of resources in a data center (**Trossman: [0002] [0058]**).

Regarding **claim 26**, the modified **Vasilevsky** teaches the apparatus of claim 25, but does not teach wherein the controller initiates the reallocation of virtual assets in response to the time of day metric.

Trossman teaches initiating the reallocation of virtual assets in response to the time of day metric (**Trossman: The time varying trends mechanism 202 analyzes this information to determine time varying trends in the demand information for a particular resource. The time varying trends are those patterns of demand of the resource that occur at regular intervals, such as every day at a particular time, a particular day of the week [0058]**)

It would have been obvious to a person having ordinary skilled in the art at the time the invention was made to have modified the modified **Vasilevsky** by the teaching of **Trossman** to have the metric as a time of day metric in order to provide dynamic configuration and allocation of resources in a data center (**Trossman: [0002] [0058]**).

Examiner's Note:

9. Examiner has pointed out particular reference contained in the prior arts of record in the body of this action for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and Figures may apply as well. It is respectfully requested from the applicant, in preparing the response, to consider fully the entire references as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

Conclusion

10. When responding to this office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present, in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections See 37 CFR 1.111(c).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Abdelnabi O. Musa whose telephone number is 571-2701901. and email address is abdelnabi.musa@uspto.gov 'preferred'. The examiner can normally be reached on Monday thru Friday: 7:30am to 5:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ferris Derrick W. can be reached on 571-2723123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Abdelnabi O Musa/

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