(54) Title: COMPUTERIZED SYSTEM AND DATA MANAGEMENT METHOD AND SYSTEM
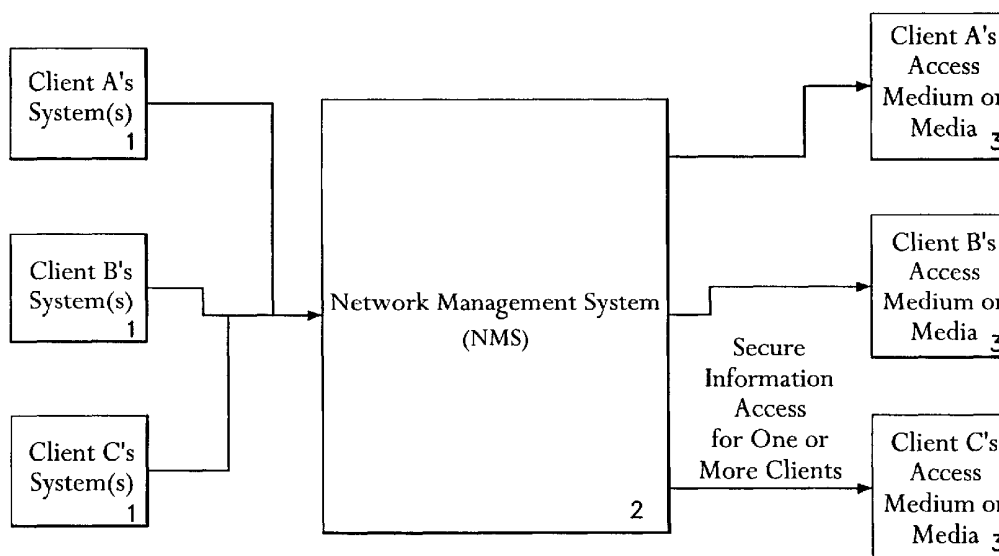
(57) Abstract: A method and apparatus for managing and accessing information related to a computerized system (2) comprising collecting information regarding the status of the computerized system monitoring the information, translating the information into a user-friendly format, posting the user-friendly information on a client accessible Media (3), and providing one or more clients access to the Media. The invention further comprises generating a trouble ticket for problems which arise with the computerized system, posting the trouble ticket for problems which arise with the computerized system, posting the trouble ticket to the Media, updating a repair status in real time or near real time; and recording the ticket and each incremental status of the repair in a database.

COMPUTERIZED SYSTEM AND DATA MANAGEMENT METHOD AND SYSTEM

5

FIELD OF THE INVENTION

This invention relates to computerized systems and, more particularly, to the operation, management, support, maintenance, design and modification of such systems.

10

BACKGROUND OF THE INVENTION

Businesses often contract with third parties to house, operate, manage and/or maintain the business's computerized systems including but not limited to network servers, components and the information and data related to such systems. Once the

15   systems are off-site or otherwise outsourced from the business, the business may experience (whether in reality or perception) a loss of control and/or the ability to monitor and be generally informed about such systems. For example, in the off-site system scenario, an in-house network manager may no longer be able to monitor, in real time, the status of a particular system or portions of such a system, the actions being taken to

20   resolve problems with the system, the data required to determine whether or not the system requires optimization or expansion, or the ability to monitor the third party's performance.

More particularly, many businesses have the need or desire to oversee the operation of their computer systems, but do not have the in-house specialists to manage,

25   support, maintain, design and modify such systems. One of the more efficient ways for a

2

business (the "Client") to operate and support the computer system is to contract with another entity (a "Manager") to house, operate, manage, support, maintain, design and/or modify the Client's computer systems, or parts thereof, including but not limited to hardware, software, operating systems, servers, applications, security measures, firewalls,

5   network components, hubs, routers, switches and network resources. One problem which arises from such outsourcing of services is that the Client invariably gives up at least some ability to monitor the system, evaluate future system needs, identify the nature and extent of problems, when such problems arise, whether and how the problem is being addressed, how the problem is being resolved, when the problem will be corrected and audit

10   performance of the Manager on a real time and historical basis.

Prior art solutions to these problems have included providing Clients with the ability to monitor all of the detailed information regarding the status of the system in a technical format which is unfriendly to the user. Interpretation of such formats typically requires the Client to employ highly skilled, technical personnel. Employment of such

15   highly skilled personnel defeats one of the main purposes for outsourcing system operations and support. Although some prior art solutions do offer some simplification to and/or interpretation of the information provided in highly technical formats, such solutions either provide too little information to be meaningful or not enough simplification or interpretation to avoid the intervention of skilled technical personnel.

20   Moreover, such prior art solutions are not flexible by their nature and, therefore, the Client does not have the ability to customize or have customized the information which is monitored and transmitted to them. Finally, the means by which information is conveyed to the Client is often provided through dedicated full-featured consoles or dashboards with

minimal non-customizable information, rather than through the standard equipment, such as a single monitor or personal computer, which the Client may already have on site.

Therefore there exists a need for a flexible, customizable method and system which provides a Client with a means for real time, or near real time, access to

5   information related to the Client's outsourced computerized systems. More particularly, the need exists for such a method and system which delivers information to the Client concerning its computerized systems, wherein the information may relate to the operation, management, support, maintenance, design and/or modification of such computerized systems and wherein the information is delivered to the Client in a form which is easily

10   understood by the Client's personnel without the need for specialized knowledge, training or equipment.

SUMMARY OF THE INVENTION

The present invention overcomes the limitations of the methods and systems of the prior art and currently available in the industry. More particularly, the

15   present invention provides a flexible, customizable system in which the Client is provided with real time, or near real time, access to information required or desired by the Client concerning its computerized systems, along with allowing the Client to manage the activities of the Manager of the outsourced services without the need for specialized knowledge, training or equipment. The detailed information regarding the monitoring of

20   the Client's computerized systems and/or networks is processed into a more user-friendly format, and only the information necessary or desired by the Client is provided. Minimal or no training is required for the user who will be monitoring the information delivered to the Client. The Client can customize, in the format the Client prefers, which particular

4

information is posted for the Client's access. Further, no specialized equipment, such as

consoles are required at the Client's site, since the critical information may be accessed

through a personal computer via the Internet. Rather than fielding numerous calls to a

help desk, the Manager automatically posts the Client specified information to, for

5   example, a webpage and the Client can view the information on a real time or near real

time basis without calling the Manager (which would be labor-intensive for both the

Client and the Manager).

This invention provides the Client with a window into the Manager's data

center, network controls and information. This window may provide the Client with, for

10   example, current readings of the Client's applications, the hardware that hosts the

applications, Internet Service Provider network connections, and the Client's Operating

System running on the host server. In addition, trouble management data may be

displayed and integrated, so that the Manager can provide the Client with the current state

and status of each system problem. Further, the Manager may monitor the health of the

15   Client's system through the use of existing systems, agents and management tools

(collectively "System Management Tools") such as, for example, Compaq Insight

Manager for critical hardware health functions, BMC software for operating system and

applications statistics, NT Performance Monitor (Perfmon), MS Network Monitor

(Netmon) and network router probe agents for WAN statistics and Internet feeds. Most of

20   the existing System Management Tools require separate consoles for monitoring purposes

and many operate only on specific hardware.

Although other architectures may be utilized, a three-tier architecture is

generally preferred for the current invention. Tier 3 of the three-tier architecture includes

the Client's own Internet webpage as well as the Client's applications servers, including

software agents used to gather detailed information from the system or parts thereof,

including but not limited to hardware, software, operating systems, servers, applications,

security measures, firewalls, network components, hubs, routers, switches and network

5   resources and the like. Tier 2 of the three-tier architecture includes the Manager's data

collection servers used to store consolidated monitoring data and trouble ticket

information associated with each system or part thereof, and one or more secure webpages

that may be accessed by Clients to determine the status of their applications as well as to

post the Client's customized information and trouble tickets concerning the System. Tier 1

10   of the three-tier architecture includes a web browser at the Client's location (e.g. Netscape

Explorer) or accessed via the web by an Internet service provider ("ISP").

In utilizing the present invention a Client may desire to have one or more

of its computer systems or part thereof, such as a local area network ("LAN") or a wide

area network ("WAN"), including but not limited to hardware, software, operating

15   systems, servers, applications, security measures, firewalls, network components, hubs,

routers, switches and network resources (collectively "Systems") operated and managed

by a Manager, which may or may not be a separate entity from the Client. The Client's

System(s) optionally may be located in a facility to which the Client does not have routine

access, such as a location which is off-site from the Client's location. However, the Client

20   may desire to have the ability to monitor the Systems and have access to one or more

types of information including but not limited to redundant systems, applications and

hardware, the Manager's performance, service level agreement ("SLA") status (including

but not limited to how much of the Client's prepaid services have been used or are

available), hardware health, software health, application health, network connections health, operating system's ("OS") health, server health, server interface, security, firewall health, network statistics, trouble ticket status, Client's account status with the Manager and similar information (collectively referred to as "Critical Information"). Critical

5 Information may or may not be customized to the Client's preferences. Additionally, the Client may or may not have a person to monitor this Critical Information who has been trained in reading information in generally available formats. Therefore, in the present invention, the Critical Information is provided to the Client in a format which is immediately useful and understandable by untrained or minimally trained Client

10 personnel. In the instance that the Client should require more information, the Client will have access to such information.

The Manager operates and manages one or more of the Client's Systems according to the Client's specifications from the network control center ("NCC") by monitoring information directly from the System, the System Management Tools and

15 other systems. Information may be displayed on one or more consoles depending on the type and number of Systems being monitored. All or part of the information concerning the Systems directed to the NCC consoles may be gathered by the network management system ("NMS"). The NMS preferably operates 24 hours a day, 7 days a week. A NMS may be dedicated to one or more Client's Systems, but most preferably to one Client

20 System. Essentially, the NCC detects and manages problems which arise with a System, and collects all of the unformatted Critical Information directly from the System(s) or management resource systems, preferably along with other information regarding the operation of the Systems. The NMS collects all or part of the unformatted Critical

Information from the System, preferably from the Management Agents regarding the operation of the System. Based on the information monitored by the NMS and/or the NCC, the Manager will know when to dispatch personnel to repair, rebuild, replace or troubleshoot the System or part thereof, including but not limited to hardware, software,

5   operating systems, servers, applications, security measures, firewalls, network components, hubs, routers, switches and network resources. In addition, the information related to a particular problem, may include but not be limited to a designated problem reference number, identification of the particular problem, the start and end times for correction of the problem, the status of the repair, whether replacement of a particular

10   component is required and the estimated time for correction of the problem, may be recorded in the NMS. The data recorded in the NMS regarding a particular problem is referred herein as "Trouble Ticket."

      The NMS comprises one or more databases which contain one or more of the unformatted Critical Information, the Trouble Tickets, information regarding the

15   Client's bills, and information regarding the security of the Systems (for example, any attempted breaches in security, the status of firewalls, and any known breaches of security). The Critical Information may or may not have the same information as the Trouble Ticket. Critical Information may be processed from its original format into a more user-friendly format understandable by laymen so that an untrained person could

20   read and interpret the Critical Information and appreciate the condition of the System. If more detailed information is required, the Client may be able to access such information through the NMS.

8

Unlike the prior art, in the present invention the Client has the ability to access the Critical Information and Trouble Tickets without having one or more consoles or other specialized equipment dedicated to this purpose. The Client can access this Critical Information and Trouble Tickets via a personal digital assistant, a pager, a

5   telephone, a cellular phone, an intranet connection or an Internet webpage. If a Client desires, the Client can be notified of any Trouble Tickets via pager, email or other device. Most preferably, the Critical Information and Trouble Tickets are posted on a secure Internet webpage, which is preferably password protected, and the Client is connected to the Internet, preferably by a T1 line. By utilizing this invention, the Client can access the

10   Critical Information and Trouble Tickets at any time. Additionally, the Manager's installation and repair personnel have access to the Critical Information and Trouble Tickets, so they can repair and replace the system or parts thereof and update the status of any problem.

Once a Trouble Ticket is generated for the Client, a reference number is

15   associated with the Trouble Ticket ("Reference Number"). If the Client decides that it is necessary to contact the Manager directly, preferably by phone, email, or otherwise, the Manager can track the progress of the Trouble Ticket and underlying problem by using the Reference Number. Alternatively, the Client can phone the Manager via the Internet, utilizing voice over internet protocol ("VoIP") from the Trouble Ticket webpage. Based

20   on the information provided by the VoIP, the Manager will automatically recognize the identity of the Client calling and the Reference Number of the Trouble Ticket. As the Client and Manager speak, the NMS may record with whom the Client spoke, the time of

9

the conversation and other pertinent information and display such information on the Client's NMS webpage.

Additionally, through video interface over an intranet connection or Internet webpage, the Client may be able to see its hardware being housed in the

5   Manager's facility.

Thus, the present invention provides a method for managing and accessing information related to a computerized system having a status, comprising the steps of: (1) collecting information regarding the status of the computerized system; (2) translating the collected information into a user friendly format; (3) transmitting the user-friendly

10   formatted information to a Client accessible Media; and (4) providing one or more Clients with access to the Media.

The present invention further provides an apparatus for managing and accessing information related to a computerized system having a status, comprising: (1) a means for collecting information regarding the status of the computerized system; (2) a

15   means for translating the collected information into a user-friendly format; (3) a means for transmitting the user friendly formatted information to a Client accessible Media; and (4) a means for providing one or more Clients with access to the Media.

The present invention still further provides an apparatus for managing and accessing information related to a computerized system having a status, comprising: (1) a

20   collector of information regarding the status of the computerized system; (2) a translator of the collected information into a user-friendly format; (3) a transmitter for posting the usr-friendly formatted information to a Client accessible Media; and (4) a Client access provider to the Media.

BRIEF DESCRIPTION OF DRAWINGS

The invention will become more readily apparent from the following description of preferred embodiments thereof shown, by way of example only, in the accompanying drawings wherein:

5   Figure 1 is a block diagram depicting an embodiment of the system of the present invention.

Figure 2 is a block diagram depicting another embodiment of the system of the present invention.

Figures 3a-3c is a flowchart depicting yet another embodiment of the

10   system of the present invention which details the steps of the inventive process.

Figures 4a-4b is a flowchart depicting still another embodiment of the system of the present invention, which details the steps of the inventive process.

Figure 5 is a flowchart depicting another embodiment of the system of the present invention.

15   Figures 6a-6b is a flowchart depicting yet another embodiment of the system of the present invention.

Figures 7a-7t depict exemplary computer screens displayed to the Client in one embodiment of the system of the present invention.

DETAILED DESCRIPTION

20   A preferred embodiment of this invention is shown in Figure 1.   A Manager operates and manages a System 1 for a Client. The operation and management of the System 1 includes monitoring the System 1 for any problems (including but not limited to hardware, software, operating systems, servers, applications, security measures,

11

firewalls, network components, hubs, routers, switches and network resources problems), and whether the System 1 is operating adequately (including but not limited to whether hardware, software, operating systems, servers, applications, security measures, firewalls, network components, hubs, routers, switches or network resources should be upgraded,

5   repaired, rebuilt or replaced, and how the System 1 is responding to demands over time). All of the detailed information regarding the System 1 is transmitted to a NMS 2, which is connected to the System 1. The NMS 2 stores this detailed information in one or more databases and processes the detailed information to format Critical Information into a user-friendly format. The Critical Information is defined by the Manager or preferably by

10   the Client. Critical Information is in turn posted to a Client accessible Media 3 (preferably an intranet, or an Internet webpage) which may alternatively, be accessible by one or more Client's hereinafter referred to as the "Media 3"). The Client may access the Media 3 via a web browser or ISP, preferably via T1 lines. Trouble Tickets are also processed by the NMS 2, are stored in a NMS 2 database, and are posted to the Media 3. Most preferably,

15   each Client has access to a webpage for the Critical Information and/or Trouble Tickets via Media 3.

        Another preferred embodiment of this invention is shown in Figure 2. One or more Clients' Systems 1 may be operated and managed by the Manager. A single server may be used for one or more Clients. The operational status of each of the Client's

20   Systems 1 and any potential problems with the Systems 1 are monitored and all of the information is gathered by the NMS 2 for storage in one or more databases. The NMS 2 is connected to the Systems 1. Critical Information, which has been defined by the Manager and/or the Client, is processed by the NMS 2 into a user-friendly format, which is in turn

12

posted to one or more Media 3. Trouble Tickets are also processed by the NMS 2, are stored in one or more NMS 2 database, and are posted to the Media 3. Most preferably, each Client has access to one or more Media 3 such as, for example, one or more webpages on the Internet, which webpages convey Critical Information in a user-friendly

5   format.

Figures 3a-3c show the flowchart of another embodiment of the invention. In step 12, the Manager and Client enter into an agreement under which the Manager will operate, house and monitor their Systems 1. Client Systems 1 is configured for the Client's use and preferably to the Client's specification in step 13. In the interest of

10   maintaining Client Systems 1 in an optimal operating condition, access to Systems 1 is limited to the Manager and specified individuals in step 14. Communication consisting of the detailed information regarding the operation of Systems 1 is sent to the NMS 2 in step 15. The detailed information may contain too much information in order to be useful to the Client, so the detailed information is filtered or otherwise edited to create a file of

15   Critical Information in step 16. In order to be user-friendly, the Critical Information is processed and manipulated by the NMS 2 in step 17. Critical Information is posted on a Secure Internet webpage or other appropriate Media 3, in step 18. At any time, in step 19, the Client may access the Critical Information via the webpage or web accessible device after entering the Client's id and password for authentication or decrypting the webpage or

20   other Media 3, or by calling or emailing the Manager.

Another feature of the present invention, which may be incorporated into other embodiments of the invention, is illustrated in Figures 4a-4b. The NMS 2 continuously receives information on and monitors the status of the Systems 1 and their

13

operations, including but not limited to information on the hardware, software, operating

systems, servers, applications, security measures, firewalls, network components, hubs,

routers, switches and network resources associated with the Systems 1, in step 20. In step

21, the NMS 2 continuously checks whether there are any problems with each System 1

5   and/or its operations including but not limited to hardware, software, operating systems,

servers, applications, security measures, firewalls, network components, hubs, routers,

switches and network resources failures or malfunctions.   If the System 1 and its

operations are performing normally and as required, the Critical Information reflects the

normal status of the System 1 and no Trouble Ticket is issued for this System (or its

10   components) 1, as shown in step 25.

Returning to step 21 of Figure 4a, if the detailed information does not

reflect the normal state of operation, there is a problem and the detailed information and

data related to the problem is stored in one or more databases in NMS 2 as depicted by

step 22. Step 22 also comprises the generation of one or more Trouble Tickets for each

15   problem. Each Trouble Ticket may include a reference number, a description of the

problem, the start and end time, and the status of a repair or replacement. The detailed

information and data related to the problem is processed by NMS 2 into a more user-

friendly format in step 23. In step 24 the formatted information is filtered to reflect only

the Critical Information and the Trouble Ticket, which is posted to one or more Media 3,

20   accessible only to the Client and which Media 3 is preferably a password protected

Internet webpage. The Client may access the Critical Information and/or one or more

Trouble Tickets at any time via Media 3, preferably an Internet webpage, web accessible

device after entering the Client's id and password or phoning the Manager in step (26).

14

Figure 5 displays a flowchart of another embodiment of the invention. In this embodiment, the Manager operates and manages one or more of the Client's Systems 1 (possible components of which are displayed in Figure 5 as 28) by installing or activating management agents ("MA") 29 to collect detailed information from the Systems

5   1 or parts thereof including but not limited to hardware, software, operating systems, servers, applications, security measures, firewalls, network components, hubs, routers, switches and network resources. These MA 29 may include Compaq Insight Manager Agent for critical hardware health functions, BMC software agent for operating system and applications statistics, NT Performance Monitor Agent ("Perfmon"), MS Network

10   Monitor Agent ("Netmon") and network router probe agents for WAN statistics and Internet feeds. Information from the MA 29 collected by the NMS 2. The NMS 2 consolidates the detailed information and Trouble Tickets associated with the Client System 1, and a secure webpage is used by the manager for Client's to access to determine the health of their applications and see the Critical Information and Trouble Tickets. The

15   Client accesses the Manager's webpage via a web browser or other appropriate device 3, preferably at the Client's location, or accessed via webpage or web accessible device after entering the Client's id and password. Additionally, the Client may remotely access the Critical Information and/or Trouble Tickets via email, a personal digital assistant, pager, phone or other appropriate device 3.

20   Figures 6a-6b illustrate, via a flowchart, another embodiment of the invention and exemplifies how a particular problem detected in System 1 may be addressed by the present invention. The NMS 2 continually receives information from the System and monitors the Systems for any problems. If, for example, a hard drive fails at

step 32, the NMS 2 gathers the detailed information regarding the hard drive and its

operation, while a redundant system automatically switches on at step 33. The Manager's

NMS 2 processes the detailed information to obtain the Critical Information and creates a

Trouble Ticket with information regarding the problem at step 34. A reference number

5   ("Reference Number") is assigned to the Trouble Ticket and the Trouble Ticket is posted

on a secure Internet webpage 3, noting that particular hard drive has failed and that the

redundant system component was activated at step 35. The Trouble Ticket generated

reflects that the hard drive needs to be replaced and also how the problem is being

addressed at step 36. At that point, the Manager will begin the process for having the hard

10   drive replaced, and the Trouble Ticket will reflect real time or near real time information

related to the status of the replacement estimated completion time for the replacement 37.

In addition, a historical record of all of the past statuses of the Trouble Ticket may be

stored and reflected in the Internet webpage 3 so that the Client can reference the history

of the problem. Once the hard drive has been replaced, the Trouble Ticket is updated to

15   reflect that the hard drive has been replaced at step 38.

Figures 7a-7t are print outs of computer screens which exemplify the

format of the data which may be provided to the Client via Media 3 in one embodiment of

the invention. Figures 7a, 7e, 7l, and 7r are examples of the Critical Information which

may be displayed on a top-level webpage. The Client can review the top-level webpage.

20   In addition, as depicted by this example, more information may be obtained by clicking on

the relevant topic in the top-level webpage. In this example, Figures 7b-7d show the

performance status, hardware status and security status of various servers, while the status

of each application is reported in Figures 7f-7k. If a Client is interested in one or more

Trouble Tickets, Figures 7m-7q depict examples of webpages which detail the Trouble

Tickets, and the webpages through which Voice over Internet Protocol contact may be

made. Finally, in this example, the Client may access Critical Information regarding

network connections on the webpages depicted in Figures 7s-7t.

5   The present invention may be embodied in other specific forms without

departing from the spirit or essential attributes of the invention. Accordingly, reference

should be made to the appended claims, rather than the foregoing specification, as

indicating the scope of the invention.

What is claimed is:

1.   A method for managing and accessing information related to a computerized system having a status comprising the steps of:

collecting information regarding said status of said computerized system;

5   translating said information into a customizable user-friendly format;

transmitting said customizable user-friendly formatted information to a client accessible Media; and

providing one or more clients with access to said Media.

2.   The method of claim 1 further comprising:

10   customizing a display on said Media.

3.   The method of claim 1 wherein said step for collecting information comprises:

information from one or more of the group consisting of hardware, software, operating systems, servers, applications, security measures, firewalls, and network resources.

15 4.   The method of claim 1 further comprising the step of:

storing said collected information in one or more databases.

5.   The method of claim 1 further comprising the steps of:

storing said formatted information in one or more databases.

6.   The method of claim 1, wherein said formatted information comprises one or more

20 of the group consisting of service level agreement status, video interface, hardware health, application health, operating system health, server interface, security, health monitoring, network statistics, account status and trouble ticket status.

7.   The method of claim 1, wherein said Media comprises one or more of the group consisting of an internet webpage, an intranet webpage, a networked computer, a

25 networked database, and a video feed.

18

8.   The method of claim 1 wherein said client's access to said Media comprises one of the group consisting of an internet browser, an internet service provider, a telephone, a personal digital assistant, a pager, cellular phone and web accessible device.

9.   The method of claim 1 wherein said trouble ticket comprises one or more of the group consisting of a title, a normal value, a deviant value, a start time, an end time, a status of repair, a status of replacement, and an estimated time of completion.

10.   The method of claim 1 further comprising the steps of:

        generating a trouble ticket for each deviation from normal;

        posting the ticket to the Media;

        updating a repair status in almost real time;

        recording the ticket and each status in one or more databases;

        providing help desk information to a client via a voice over internet protocol; and

        automatically logging time and persons involved in a voice over internet protocol conversation.

11.   The method of claim 1 wherein said step for translating further comprises:

        filtering the information for critical information.

12.   The method of claim 1, further comprising the step of:

        monitoring said collected information for one or more deviations from normal.

13.   The method of claim 12 further comprising the steps of:

        generating a trouble ticket for each deviation from normal;

        posting said ticket to said Media;

        updating a repair status in real or nearly real time; and

        recording said ticket and each repair status in one or more databases.

14.   An apparatus for managing and accessing information related to a computerized system having a status comprising:

a means for collecting information regarding said status of said computerized system;

a means for translating said collected information into a customizable user-friendly format;

5   a means for transmitting said customizable user-friendly formatted information to a client accessible Media; and

a means for providing one or more clients with access to said Media.

15.   The apparatus of claim 14 further comprising:

a means for customizing a display on said Media.

10   16.   The apparatus of claim 14 wherein said means for collecting information further comprises:

a means for collecting information from one or more of the group consisting of hardware, software, operating systems, servers, applications, security measures, firewalls, and network resources.

15   17.   The apparatus of claim 14 further comprising:

a means for storing collected information in one or more databases.

18.   The apparatus of claim 14 further comprising:

a means for storing formatted information in one or more databases.

19.   The apparatus of claim 14 wherein said formatted information comprises one or

20   more of the group consisting of service level agreement status, video interface, hardware health, application health, operating system health, server interface, security, health monitoring, network statistics, account status and trouble ticket status.

20.   The apparatus of claim 14 wherein said Media comprises one or more of the group consisting of an internet webpage, an intranet webpage, a networked computer, a

25   networked database, and a video feed.

20

21.   The apparatus of claim 14 wherein said client's access comprises one of the group

consisting of an internet browser, an internet service provider, a telephone, a personal

digital assistant, a pager, cellular phone and web accessible device.

22.   The apparatus of claim 14 wherein said trouble ticket comprises one or more of the

5   group consisting of a title, a normal value, a deviant value, a start time, an end time, a

status of repair, a status of replacement, and an estimated time of completion.

23.   The apparatus of claim 14 further comprising:

        a means for generating a trouble ticket for each deviation from normal;

        a means for posting the ticket to said Media;

10   a means for updating a repair status in almost real time;

        a means for recording the ticket and each status in one or more databases;

        a means for providing help desk information to a client via a voice over internet

protocol; and

        a means for automatically logging time and persons involved in a voice over

15   internet protocol conversation.

24.   The apparatus of claim 14 wherein said means for translating further comprises:

        a means for filtering the information for critical information.

25.   The apparatus of claim 14, further comprising:

        a means for monitoring said collected information for one or more deviations from

20   normal.

26.   The apparatus of claim 25 further comprising:

        a means for generating a trouble ticket for each deviation from normal;

        a means for posting the ticket to said Media;

        a means for updating a repair status in almost real time; and

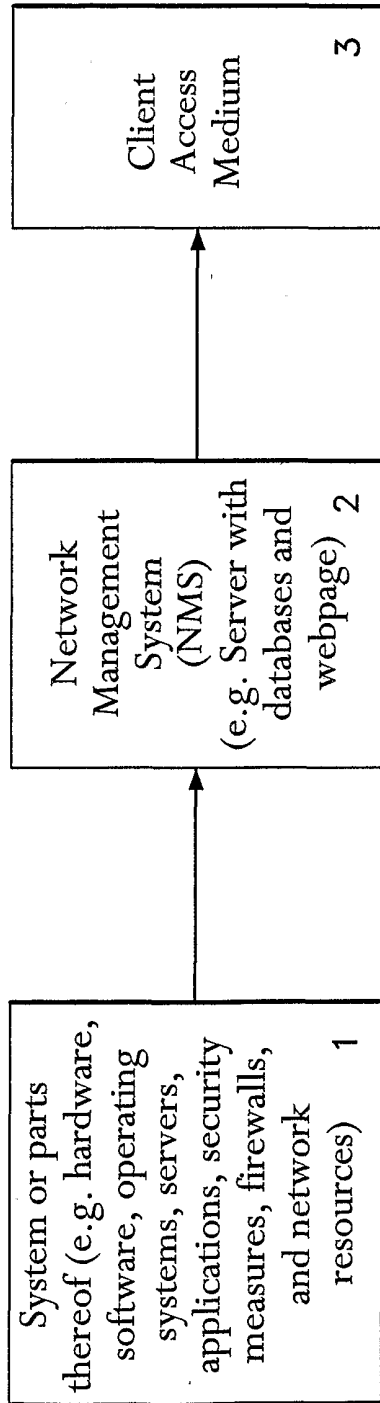25   a means for recording the ticket and each status in one or more databases.
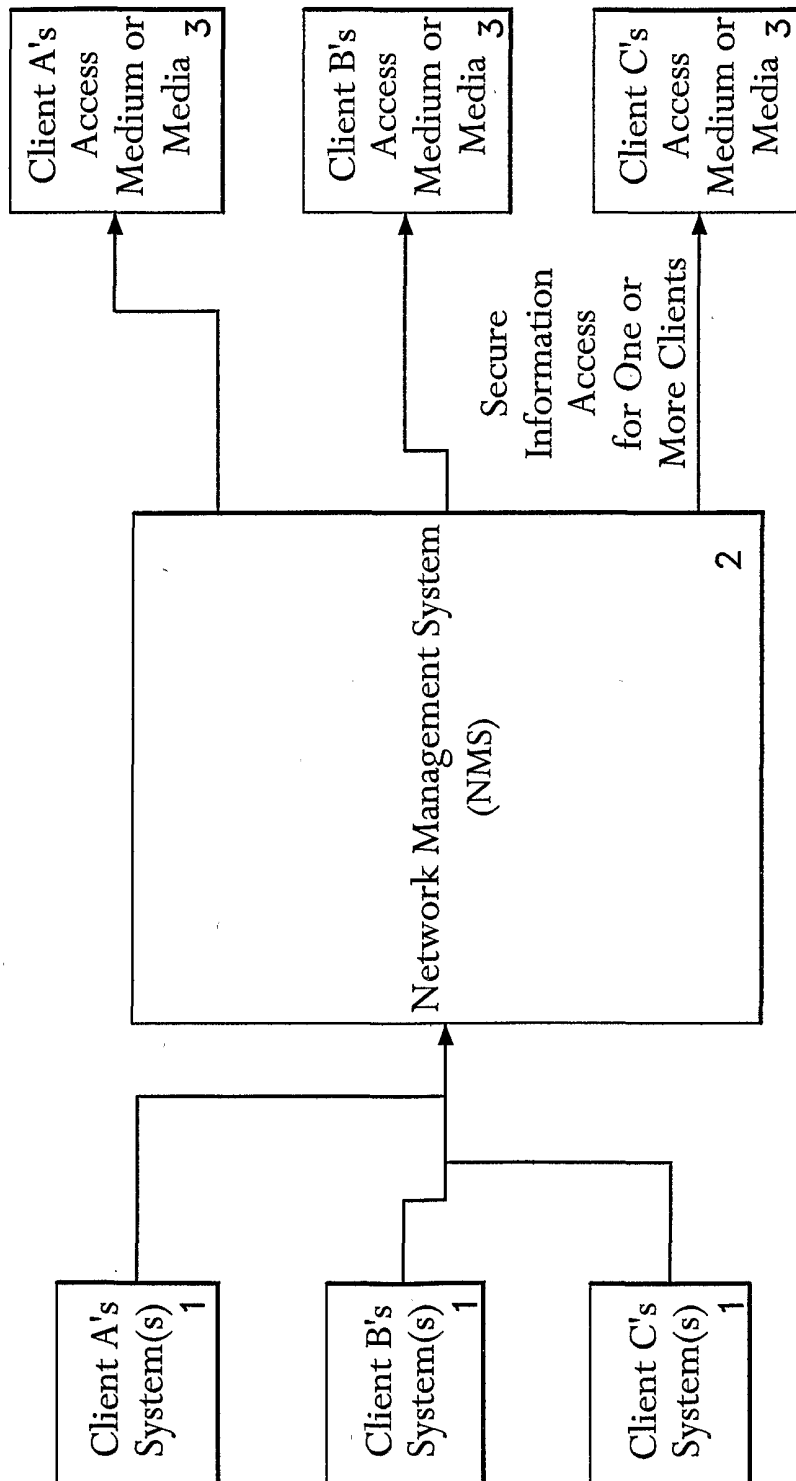
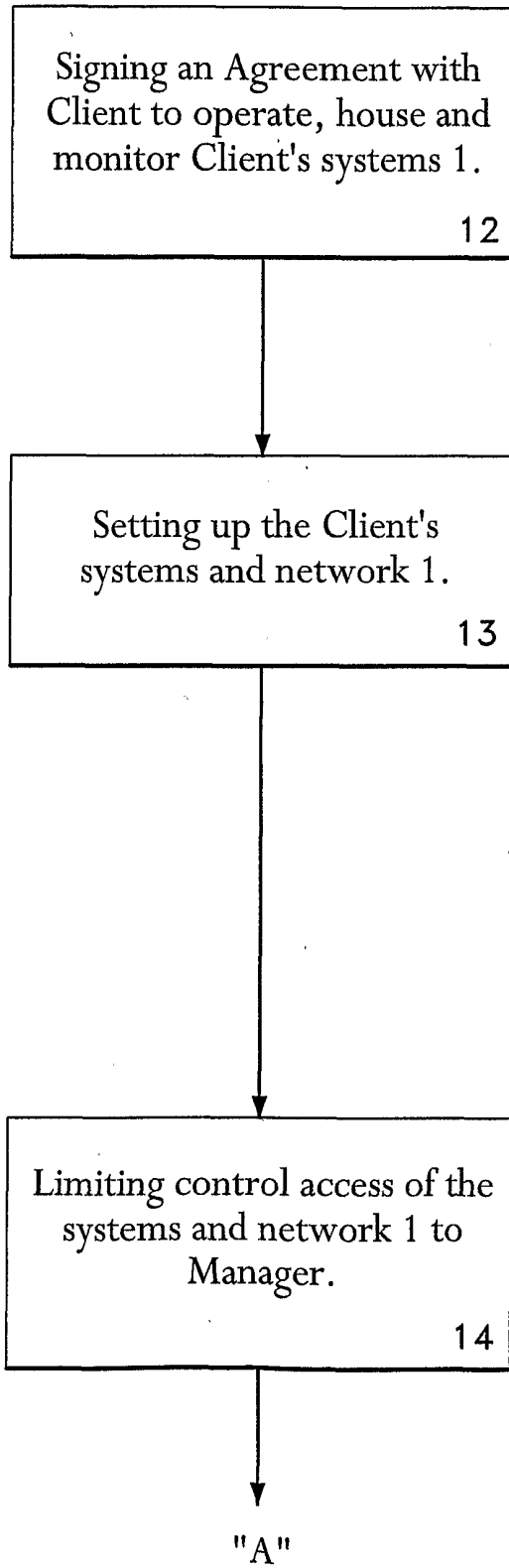27.   An apparatus for managing and accessing information related to a computerized system having a status comprising:

        a collector of information regarding said status of said computerized system;

        a translator of said collected information into a customizable user-friendly format;

5   a transmitter for posting said customizable user-friendly formatted information to a client accessible Media; and

        a client access provider to said Media.

28.   The apparatus of claim 27 further comprising:

        a means for customizing a display on said Media.

10   29.   The apparatus of claim 27 wherein said collector further comprises:

        a collector of information from one or more of the group consisting of hardware, software, operating systems, servers, applications, security measures, firewalls, and network resources.

30.   The apparatus of claim 27 further comprising:

15   one or more databases for storage of collected information.

31.   The apparatus of claim 27 further comprising:

        one or more databases for storage of formatted information.

32.   The apparatus of claim 27 wherein said formatted information comprises one or more of the group consisting of service level agreement status, video interface, hardware

20   health, application health, operating system health, server interface, security, health monitoring, network statistics, account status and trouble ticket status.

33.   The apparatus of claim 27 wherein said Media comprises one or more of the group consisting of an internet webpage, an intranet webpage, a networked computer, a networked database, and a video feed.

22

34.   The apparatus of claim 27 wherein said client's access comprises one of the group

consisting of an internet browser, an internet service provider, a telephone, a personal

digital assistant, a pager, cellular phone and web accessible device.

35.   The apparatus of claim 27 wherein said trouble ticket comprises one or more of the

5   group consisting of a title, a normal value, a deviant value, a start time, an end time, a

status of repair, a status of replacement, and an estimated time of completion.

36.   The apparatus of claim 27 further comprising:

         a generator for a trouble ticket for each deviation from normal;

         a processor for posting the ticket to said Media;

10   a processor for updating a repair status in almost real time;

         a recorder for recording the ticket and each status in one or more databases;

         a provider of help desk information to a client via a voice over internet protocol;

         a time keeper for automatically logging time; and

         a recorder for recording persons involved in a voice over internet protocol

15   conversation

37.   The apparatus of claim 27 wherein said translator further comprises a filter for

filtering the information for critical information.

38.   The apparatus of claim 27, further comprising:

         a monitor of said collected information for one or more deviations from normal.

20   39.   The apparatus of claim 38 further comprising:

         a generator for a trouble ticket for each deviation from normal;

         a processor for posting the ticket to said Media;

         a processor for updating a repair status in almost real time; and

         a recorder for recording the ticket and each status in one or more databases.

1/30

FIG. 1

FIG. 2

3/30

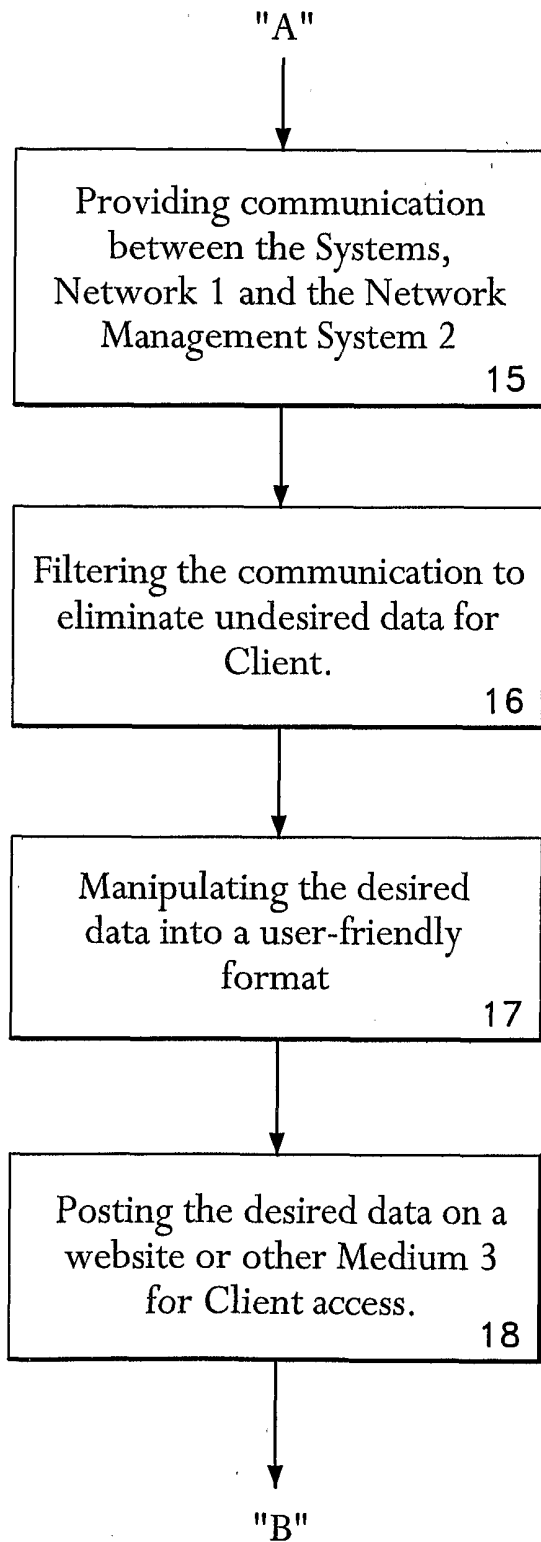Signing an Agreement with
Client to operate, house and
monitor Client's systems 1.

12

Setting up the Client's
systems and network 1.

13

Limiting control access of the
systems and network 1 to
Manager.

14

"A"

FIG. 3a

4/30

"A"

Providing communication
between the Systems,
Network 1 and the Network
Management System 2
15

Filtering the communication to
eliminate undesired data for
Client.
16

Manipulating the desired
data into a user-friendly
format
17

Posting the desired data on a
website or other Medium 3
for Client access.
18

"B"

FIG. 3b

"B"

Client accesses the
website or other
Medium 3

19

FIG. 3c

```
┌─────────────────────────────────┐
│  Network Management System 2    │
│  monitors one or more Systems and/│
│  or networks 1          20      │
└─────────────────────────────────┘
```

```
        Is there a problem with the
        Systems and/or network 1?
                    21
```

Yes   No

```
┌────────────────────┐          ┌────────────────────┐
│  Problem data is   │          │  NMS 2 displays    │
│  interpreted by the│          │  the normal status │
│  NMS 2, stored in  │          │  and data of the   │
│  database and      │          │  Systems and/or    │
│  Trouble Ticket    │          │  network           │
│  generated.        │          │                 25 │
│                 22 │          └────────────────────┘
└────────────────────┘
```

```
┌────────────────────┐
│  Problem data is   │
│  processed in      │
│  NMS 2 into user-  │
│  friendly format.  │
│                 23 │
└────────────────────┘
```

```
          ┌────────────────────┐
          │  Formatted data is │
          │  posted on the     │
          │  website.          │
          │                 24 │
          └────────────────────┘
```

"C"

FIG. 4a

"C"

Client accesses
the webpage,
web-accessible
device (after
entering Client's
id and
password) or
other Medium
3.

26

FIG. 4b

FIG. 5

9/30

A Problem occurs (e.g. Hard
drive fails)
                            32

The NMS 2 collects the
detailed information on the
problem and a redundant
system automatically is used.
                            33

NMS 2 processes the
detailed information to obtain
the Critical Information and
create the Trouble Ticket.
                            34

Reference Number assigned
to the Trouble Ticket, hard
drive failure noted and
redundant system activated.
                            35

"D"

FIG. 6a

"D"

```
┌─────────────────────────────┐
│    Trouble Ticket notes     │
│  reference number and the   │
│  status: Replace hard drive,│
│ and details of how problem is│
│      being addressed        │
│                        36   │
└─────────────────────────────┘
```

```
┌─────────────────────────────┐
│    Trouble Ticket notes     │
│  reference number and the   │
│ status: "Replacing hard drive"│
│                        37   │
└─────────────────────────────┘
```

```
┌─────────────────────────────┐
│    Trouble Ticket notes     │
│  reference number and the   │
│  status: "Hard drive replaced│
│    and problem solved."     │
│                        38   │
└─────────────────────────────┘
```

FIG. 6a

DB Server 01

Web Server Extranet

Web Server Intranet

FIG. 7a

DB_Server_01

Performance Status	Avg	Peak	Hardware Status
☑Processor Utilization	58%	81%	☑Storage
☑Bus Utilization	78%	86%	
☑Memory Utilization	92%	100%	☑Drive Controller
☑Disc I/O			☑Disk
			☑ Physical Drive Health % Space Used
Drive Controller	28%		28%
Total Disk I/O -1021	33%	49%	
☑NIC			☑CPU
Packets / Sec	801	1294	☑Processor
Utilization	47%	73%	☑Utilization

Security Status	#	%	☑NIC
Unsuccessful Login Attempts:	1677	2%	% Utilization 43%
401 Unauthorized Access:	455	12%	Packets Dropped 27
403 Forbidden Access:	4974	45%	☑Power Supplies
Denials of Service:	784		☑voltage
TCP Port Sweep:	98		
UDP Port Sweep:	3258		☑Memory
UDP Port Scan:	58		
Ping Sweep:	Suspected		
Ping Flood:	OK		
Address Spoofing:	Suspected		
Denials of Service:	784		
Connection Kills:	47 per hour		
TCP Port Sweep:	98		
UDP Port Sweep:	3258		
UDP Port Scan:	58		

FIG. 7b

Web_Server_Extranet

Performance Status	Avg	Peak	Hardware Status
☑Processor Utilization	38%	52%	☑Storage
☑Bus Utilization	32%	47%	☑Drive Controller
☑Memory Utilization	27%	39%	☑Disk
☑Disc I/O			☑ Physical Drive Health % Space Used
Drive Controller	28%		94%
Total Disk I/O -872	38%	53%	
☑NIC			☑CPU
Packets / Sec	534	814	☑Processor
Utilization	22%	38%	☑Utilization

Security Status	#	%	☑NIC
Unsuccessful Login Attempts:	17	4%	% Utilization 43%
401 Unauthorized Access:	85	12%	Packets Dropped 27
403 Forbidden Access:	0	0%	☑Power Supplies
Denials of Service:	4		☑ voltage
TCP Port Sweep:	98		
UDP Port Sweep:	58		☑Memory
UDP Port Scan:	51		
Ping Sweep:	Suspected		
Ping Flood:	OK		
Address Spoofing:	Suspected		
Denials of Service:	784		
Connection Kills:	47/ hour		
TCP Port Sweep:	98		
UDP Port Sweep:	32		
UDP Port Scan:	23		

FIG. 7c
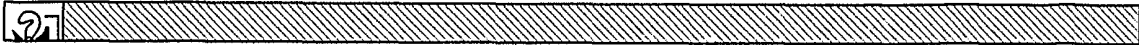
Web_Server_Extranet

Performance Status	Avg	Peak	Hardware Status
⬜Processor Utilization	48%	69%	⬜Storage
⬜Bus Utilization	42%	61%	⬜Drive Controller
⬜Memory Utilization	35%	72%	⬜Disk
⬜Disc I/O			⬜ Physical Drive Health % Space Used
Drive Controller	38%		94%
Total Disk I/O -872	61%	77%	

⬜NIC   ⬜CPU

| Packets / Sec | 414 | 781 | ⬜Processor |
| Utilization | 41% | 73% | ⬜Utilization |

Security Status	#	%	⬜NIC
Unsuccessful Login Attempts:	7	5%	% Utilization 47%
401 Unauthorized Access:	0	0 %	Packets Dropped 27
403 Forbidden Access:	0	0%	⬜Power Supplies
Denials of Service:	4		⬜ voltage
TCP Port Sweep:	98		
UDP Port Sweep:	28		⬜Memory
UDP Port Scan:	14		
Ping Sweep:	OK		
Ping Flood:	OK		
Address Spoofing:	OK		
Denials of Service:	0		
Connection Kills:	11/ hour		
TCP Port Sweep:	38		
UDP Port Sweep:	42		
UDP Port Scan:	27		

FIG. 7d

▦	ASP	web_sever_internet	▣
▦	Job Board	web_sever_internet	▣
▦	Maintenance Apllication	web_sever_extranet	▣
▦	Oracle application	db_server_01	▣
▦	Payroll Main	db_server_01	▣
▦	SAP HR Module	db_server_01	▣

FIG. 7e

16/30

Application Name: ASP

		#	%
Web Server Name:	Extranet	Successful Hits:	3455	98%

Application Name: ASP

			#	%
Web Server Name:	Extranet	Successful Hits:	3455	98%
Site Uptime:	10 hrs 24 min	Cached Hits:	77	2%
Round Trip Time:	14 sec.	404-Pager or File Not Found:	12	1%
Critical Messages in Event Log:	2	405-Incomplete/Umdefined:	25	2%
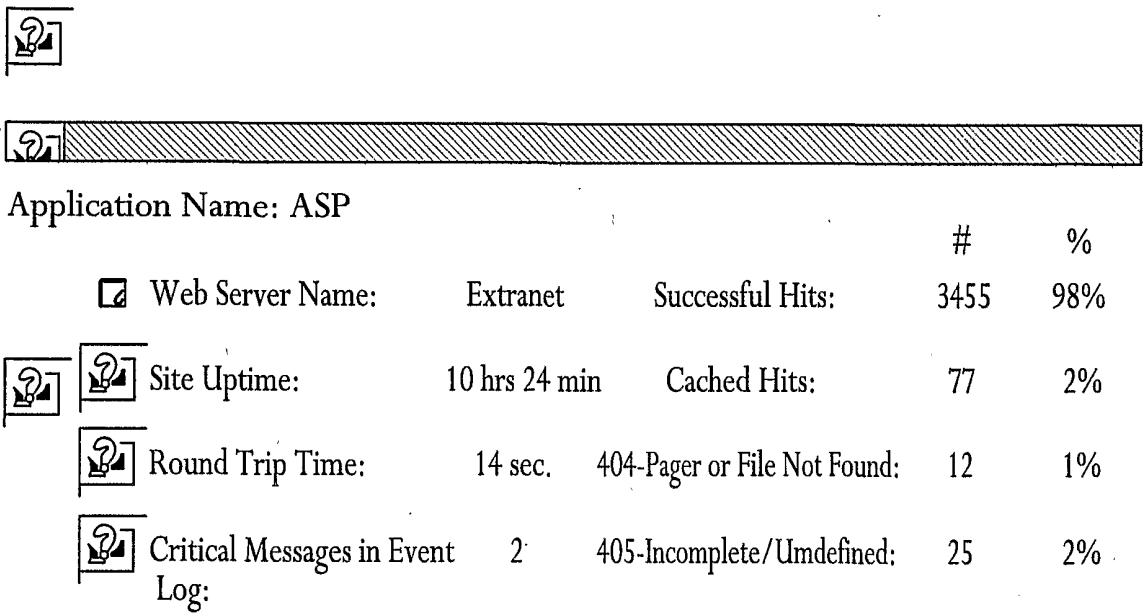
FIG. 7f
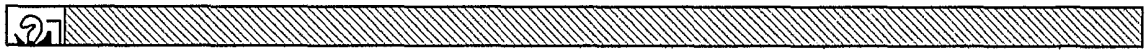
Application Name: Job Board

		#	%
☑ Web Server Name:	Intranet	Successful Hits:	355	48%
Site Uptime:	47 hrs 4 min	Cached Hits:	77	2%
Round Trip Time:	4 sec.	404-Pager or File Not Found:	0	0%
Critical Messages in Event Log:	22	405-Incomplete/Umdefined:	15	3%

FIG. 7g

18/30

Application Name: Maintenance Application

			#	%
Web Server Name:	Extranet	Successful Hits:	3455	98%
Site Uptime:	10 hrs 24 min	Cached Hits:	77	2%
Round Trip Time:	14 sec .	404-Pager or File Not Found:	12	1%
Critical Messages in Event Log:	2	405-Incomplete/Umdefined:	25	2%
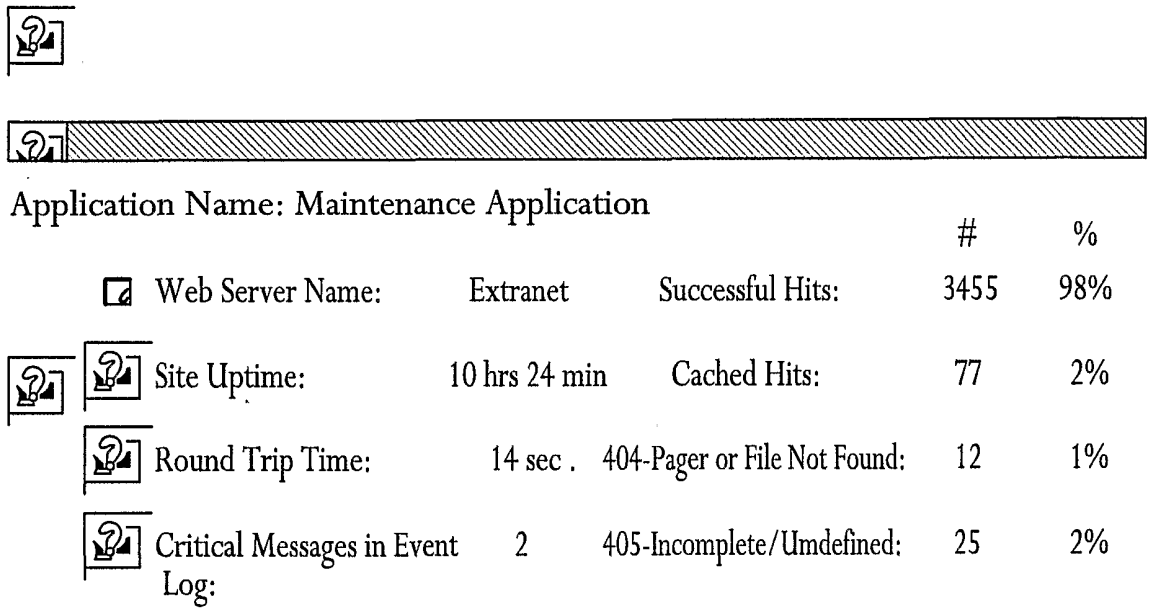
FIG. 7h
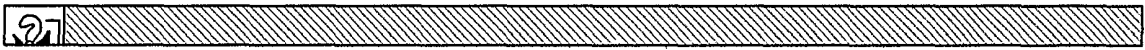
Application Name: Oracle

		#	%
☑ Web Server Name:	Extranet	Successful Hits:	3455	98%
Site Uptime:	10 hrs 24 min	Cached Hits:	77	2%
Round Trip Time:	14 sec .	404-Pager or File Not Found:	12	1%
Critical Messages in Event Log:	2	405-Incomplete/Umdefined:	25	2%

FIG. 7i

Application Name: SAP HR

				#	%
☐ Web Server Name:	Extranet	Successful Hits:		3455	98%
Site Uptime:	10 hrs 24 min	Cached Hits:		77	2%
Round Trip Time:	14 sec .	404-Pager or File Not Found:		12	1%
Critical Messages in Event Log:	2	405-Incomplete/Umdefined:		25	2%

FIG. 7j

21/30

Application Name: SAP HR

				#	%
☑ Web Server Name:	Extranet	Successful Hits:	3455	98%
Site Uptime:	10 hrs 24 min	Cached Hits:	77	2%
Round Trip Time:	14 sec .	404-Pager or File Not Found:	12	1%
Critical Messages in Event Log:	2	405-Incomplete/Umdefined:	25	2%

FIG. 7k

	0043	OPEN	16/00	n/a	Can't access server	TP
	0044	OPEN	05/17/00	n/a	List by name does not work	
	0026	CLOSED	04/04/00	04/05/00	Hard drive failure on server 001	
	0027	CLOSED	04/07/00	04/21/00	Hard drive failure on server 001	
	0029	CLOSED	04/10/00	04/28/00	Hard drive failure on server 001	
	0030	CLOSED	04/11/00	04/20/00	Hard drive failure on server 001	
	0040	CLOSED	04/14/00	04/14/00	Hard drive failure on server 001	
	0052	CLOSED	05/26/00	05/26/00	Need to add user to admin function	

FIG. 71
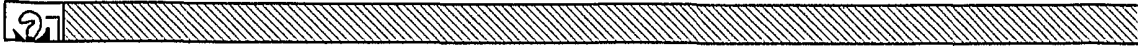
Ticket Number: 0053

Ticket Number: 0053

Company
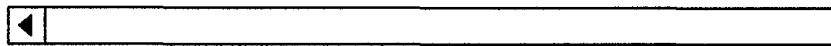Name:　　　HotDotCom

Server:　　Web_Server_Intranet

Application:　Web Page

Ticket
Description:　Can't access server via FTP

Status:　　OPEN

Status Log:　　6/7/00 14:03 (System Alert) Hard drive failure detected on Web_Serv

Date and
Time of　　06/07/00 / 14:03
Entry:

Estimated
Time to　　n/s
Resolution:

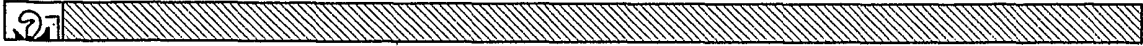Status　　System Alert - Not assigned
Description:

Date and
Time　　06/7/00 / 14:03
Opened:

Date and
Time　　N/A
Closed:

FIG. 7m

Ticket Number: 0052

Company
Name: HotDotCom

Server: Web_Server_Intranet

Application: Employee Index

Ticket
Description: List By Name does not work

Status: OPEN

Status Log: 5/3/00 13:20 (Sherry Moore) Code moved and test on development serv
              5/3/00 11:13 (Sherry Moore) Coding in ASP complete, needs testing
              5/3/00 08:47 (Sherry Moore) After investigation, decision made to r
              5/3/00 08:23 (Sherry Moore) Program calls cold-fusion function whic
              5/3/00 08:20 (System) Ticket Opened and assigned to Sherry Moore
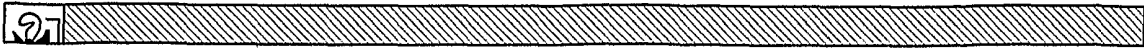
Date and
Time of   05/3/00 / 13:20
Entry:

Estimated
Time to   < 1 hour
Resolution:

Status
Description: Re-write in ASP needs to be posted to server

Date and
Time   05/30/00 / 08:20
Opened:

Date and
Time   N/A
Closed:

FIG. 7m

SUBSTITUTE SHEET (RULE 26)

Ticket Number: 0041

Company
Name: HotDotCom

Server: Web_Server_Intranet

Application: Job Board

Ticket
Description: Need to add user to admin function

Status: Closed

Status Log: 4/27/00 10:57 (Jim Smith) Solution posted to server, ticket closed
             4/27/00 10:42 (Jim Smith) Testing on development server completed
             4/27/00 9:50 (Jim Smith) Programming completed
             4/27/00 8:37 (Jim Smith) Programming scheduled to complete within 4
             4/27/00 8:30 (System) Ticket Opened and assigned to programmer Jim

Date and
Time of   04/27/00 / 10:57
Entry:

Estimated
Time to   N/A
Resolution:

Status
Description: Completed and Closed

Date and
Time   04/27/99 / 8:30
Opened:

Date and
Time   04/27/99 / 11:00
Closed:

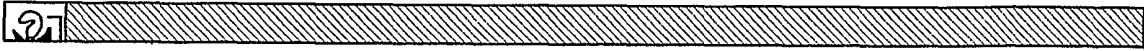# FIG. 7o

Ticket Number: 0043

Company Name: Vertek Corporation
Server: Public_005
Application: Application Name
Ticket Description: Need to add user to admin function
Status: In Progress
Status Log: First phase of user info added. Need additional info from HR
Date and Time of Entry: 04/12/99 / 16:57
Estimated Time to Resolution: 1.5 hours
Status Description: First phase of user info added.
Date and Time Opened: 04/12/99 / 08:30
Date and Time Closed: 11/18/99/11:00

FIG. 7p

Ticket Number: 0040
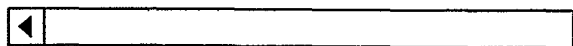
Company
Name: HotDotCom

Server: DB_Server_001

Application: Hardware

Ticket   Hard Drive Failure on Server 001
Description:

Status: Closed

Status Log: 5/3/00 13:20 (Pete DeVarney) Code moved and test on development ser
              4/25/00 00:47 (Pete DeVarney) Drive replaced and operational
              4/24/00 23:38 (Pete DeVarney) Failure to recover hard drive, will r
              4/24/00 23:14 (Pete DeVarney) Hard Drive Failure detected on Server
              4/24/00 23:12 (System) Ticket Opened and assigned to SA

Date and
Time of   04/25/00 / 00:47
Entry:

Estimated
Time to   Completed
Resolution:

Status
Description: Hard drive failure: Replace hard drive

Date and
Time   04/24/00 / 23:12
Opened:

Date and
Time   04/25/00 / 00:47
Closed:

FIG. 7q

SUBSTITUTE SHEET (RULE 26)

FIG. 7r

WAN Connection - Main

Performance Status	Avg	Peak
☑Bandwidth Utilization	58%	81%
☑Network Utilization	78%	86%
☑Frames Per Second	404	1078
☑Bytes Per Second	102	481
☑Frames Dropped		
Number	82	211
Percent	.05	.06

Errors
☑Ping Check
☑CPU Check
☑Disk Check
☑MSG Check - No bad Messages
☑PROCS
☑HTTP Check
☑POP3 Check
☑SMTP Check
☑Routers
    ☑MISrtr
    ☑NIPArtr
  Switches
    ☑Cajun1
    ☑Cajun2
  Security Status
☑Firewall Status
☑Unauthorized Access Attempts - 12
☑Virus Detection - None

FIG. 7s

WAN Connection - Main

Performance Status	Avg	Peak
Bandwidth Utilization	51%	84%
Network Utilization	68 %	77%
Frames Per Second	382	983
Bytes Per Second	81	240
Frames Dropped		
Number	29	47
Percent	.03	.06

Errors
Ping Check
CPU Check
Disk Check
MSG Check - No bad Messages
PROCS
HTTP Check
POP3 Check
SMTP Check
Routers
    MISrtr
    NIPArtr
Switches
    Cajun1
    Cajun2
Security Status
Firewall Status
Unauthorized Access Attempts - 12
Virus Detection - None

FIG. 7t

INTERNATIONAL SEARCH REPORT

A.   CLASSIFICATION OF SUBJECT MATTER

IPC(7)   :G06F 17/30
US CL   :707/1,10,200

According to International Patent Classification (IPC) or to both national classification and IPC

B.   FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 707/1,10,200

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WEST

C.   DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,812,134 A (POOSER et al.) 22 September 1998, abstract, col. 3 line 1 through col. 4 line 53	1-39
Y,P	US 6,195,666 B1 (SCHNECK et al.) 27 February 2001, abstract	1-39
Y	US 5,630,125 A (ZELLWEGER) 13 May 1997, abstract; figure 7, col. 3 line 30 through col. 4 line 4	1-39

☐ Further documents are listed in the continuation of Box C.   ☐ See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance		
"E"	earlier document published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed	"&"	document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
27 JULY 2001	21 AUG 2001

| Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231
Facsimile No.   (703) 305-3230 | Authorized officer
GRETA ROBINSON
Telephone No.   (703) 308-7565 |

Form PCT/ISA/210 (second sheet) (July 1998) ★