INVALIDITY CLAIM CHART
Invalidity of U.S. Patent No. 9,482,632 in view of Hira

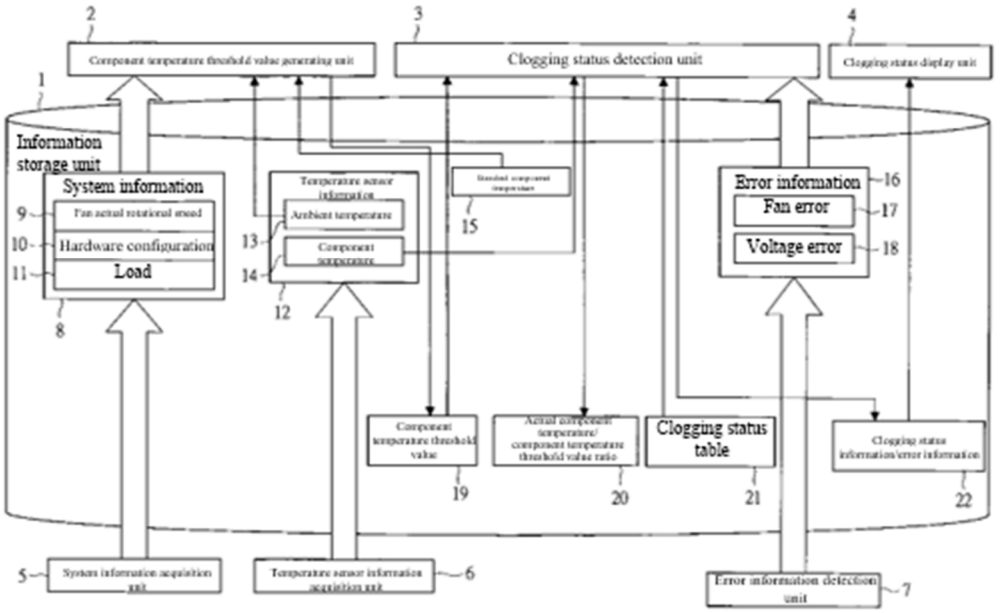
JP2009-277053 (“Hira”) was filed on May 15, 2008, claims priority to May 15, 2008, and was published on November 26, 2009. Hira therefore qualifies as prior art to the ’632 patent under, at least, 35 U.S.C. § 102(a) and/or (b). Hira anticipates and/or renders obvious (in combination with the knowledge of a person of ordinary skill in the art) the Asserted Claims of the ’632 patent, at least as Dell understands Cloud Byte’s application of the Asserted Claims in an effort to show infringement.

To the extent Cloud Byte argues that any element below is not disclosed by Hira, a person of ordinary skill in the art would have found it obvious to combine the teachings of Hira with the background knowledge of a person of ordinary skill in the art and/or the additional references, and exemplary teachings, set forth in Dell’s Invalidity Contentions and accompanying charts and/or in Appendix B.

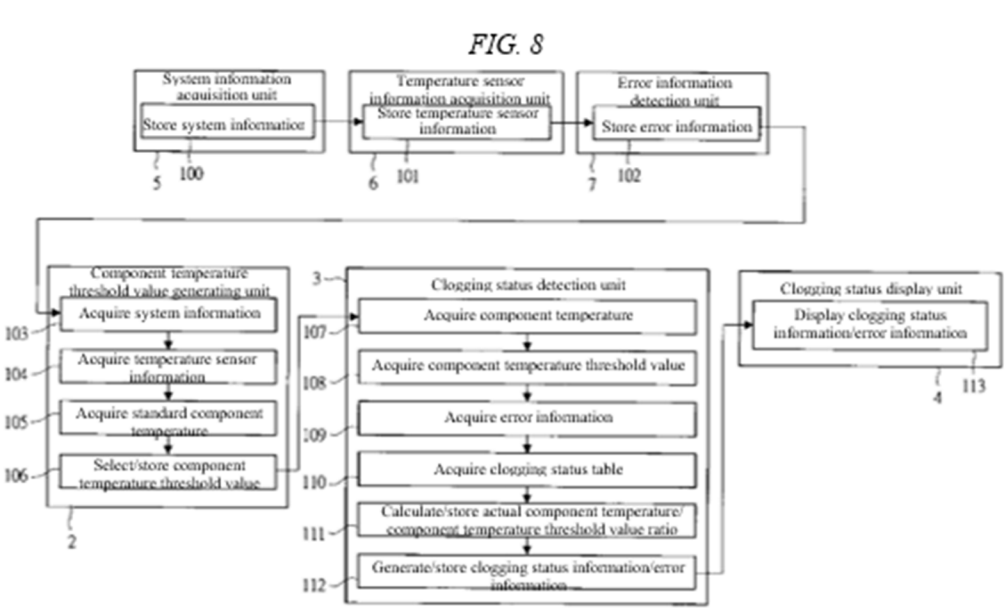
The chart below provides representative examples of where each element of each claim is found within Hira. Citations are meant to be exemplary, not exhaustive, and Dell reserves the right to identify and discuss additional portions of the reference in support of its contentions and/or to rebut arguments made by Cloud Byte. Citations to figures, drawings, tables, and the like include reference to any accompanying or related text. All internal cross references are meant to incorporate the cross-referenced material as if fully set forth therein. Where Dell states that Hira “discloses” a limitation, that disclosure may be express, implicit, and/or inherent.

It is Dell’s position that Cloud Byte’s Infringement Contentions have not established that any accused product or service infringes any valid claim. Thus, Dell’s statements below should not be treated as an admission, implication, or suggestion that Dell agrees with Cloud Byte regarding either the scope, construction, or interpretation of any of the Asserted Claims or the infringement theories advanced by Cloud Byte in its Infringement Contentions, including whether any Asserted Claim satisfies 35 U.S.C. §§ 101 or 112. Nothing in this chart is intended to suggest that Dell agrees with Cloud Byte’s application of any claim element, suggest a proposed construction at this stage of the case, or suggest that construction is needed, as the parties are not required to exchange terms for construction or propose claim constructions until a later date.

Cloud Byte has yet to identify any limitation of the Asserted Claims that it contends is not anticipated and/or rendered obvious by Hira. Dell therefore expressly reserves the right to respond to any such contention, including by identifying additional obviousness combinations, if Cloud Byte makes any such contention. This chart is subject to all reservations, objections, and disclaimers in Dell’s Invalidity Contentions and any amendment, supplement, or modification thereof, which are incorporated herein by reference in their entirety.

Asserted Claims	Hira
[1.pre] 1. An abnormality detection device for detecting an abnormality in Information and Communication Technology (ICT) equipment having a cooling fan, the abnormality detection device comprising:	Dell takes no position in these Invalidity Contentions on whether the entirety of the preamble of this claim limitation. To the extent it is a limitation, Hira discloses, expressly and/or inherently, an abnormality detection device for detecting an abnormality in Information and Communication Technology (ICT) equipment having a cooling fan, the abnormality detection device. *See, e.g.*: Hira at Fig. 1 and accompanying text: [FIG. 1] *FIG. 1* 

Asserted Claims	Hira
	Hira at Fig. 2 and accompanying text: [FIG. 2] *FIG. 2* (a) Hardware configuration CPU Manufacturer: Company ○X, Model name: ○X, Frequency: **GHz Memory Manufacturer: Company △○, Type: △○ DIMM, Capacity: **GB HDD Manufacturer: Company △○, Type: △○ DIMM, Capacity: **GB Expansion slot Slot 1 type: SCSI board, Manufacturer: Company △X, Model name: △X Slot 2 type: LAN board, Manufacturer: Company ○△, Model name: ○△ Slot 3 type: RAID board, Manufacturer: Company ○◎, Model name: ○◎ Slot 4 type: SCSI board, Manufacturer: Company △▲, Model name: △△ Expansion drive Bay 1 type: CD-ROM, Manufacturer: Company △×, Model name: △× Bay 2 type: DAT, Manufacturer: Company ○△, Model name: ○△ Bay 3 type: FDD, Manufacturer: Company ○◎, Model name: ○◎ 10 (b) 9 Fan actual rotational speed Fan 1 rotational speed: **% Fan 2 rotational speed: **% Fan 3 rotational speed: **% (c) 11 Load CPU load: **% Memory load: **% HDD load: **% Drive load: **%

Asserted Claims	Hira
	Hira at Fig. 8 and accompanying text:  [FIG. 8] Hira at [0001]: The present invention relates to a dust filter clogging status detection method and dust filter clogging status detection device for detecting clogging status of dust filters inside information processing devices such as PCs and server systems, and particularly relates to technology for detecting clogging status on the basis of system information of the information processing device. Hira at [0002]: Conventionally, in PC and server systems, in conjunction with system performance improvements, heat generation tends to increase, and the air flow needed to cool devices also tends to increase. Furthermore, with the proliferation of PC and server systems,

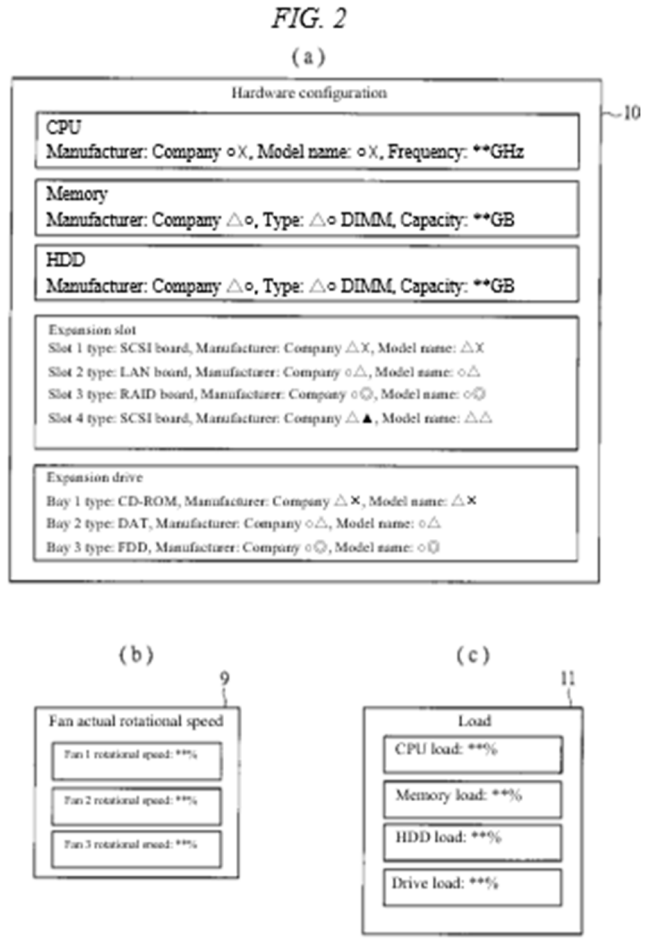
Asserted Claims	Hira
	installation locations have become more diverse, leading to widespread adoption of dust filters that prevent dust penetration through ventilation ports. Hira at [0004]: However, the technique in patent document 1 involves detecting clogging based on fan rotational speed/temperature difference before vs. after the filter. However, when considering application to PC/server systems, differences in internal temperature change due to load and configuration differences of the CPU/memory/HDD, etc. are not taken into consideration, and when considering application to PC/server systems where loads and configurations differ depending on time and user, there is the problem that setting temperature threshold values is difficult. Hira at [0005]: Therefore, is an object of the present invention to provide a dust filter clogging status detection method and dust filter clogging status detection device that make it possible to detect dust filter clogging status more accurately by using system load/configuration information. Hira at [0006]: The above and other objects and novel features of the present invention should become apparent from the description in the present specification and the appended drawings.. Hira at [0007]: A summary of the representative aspects of the invention disclosed in the present application may be briefly presented as follows. Hira at [0008]: Namely, the summary of the representative aspects comprises a component temperature threshold value generating unit which, on the basis of standard component temperature information for multiple components making up an information processing device, system information for the information processing device, and information indicating the internal

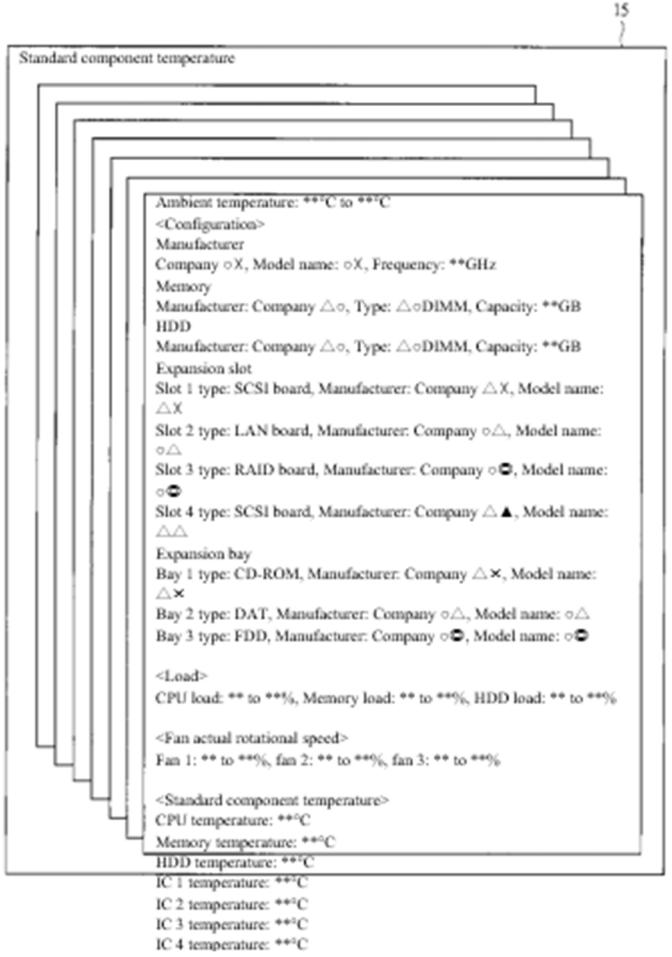
Asserted Claims	Hira
	status of the information processing device, generates component temperature threshold values for the multiple components making up the information processing device; and a clogging status detection unit which detects the clogging status of the dust filter on the basis of the component temperature threshold values and component temperatures inside the information processing device. Hira at [0012]: The configuration of a dust filter clogging status detection device according to one embodiment of the present invention will be described using FIG. 1. FIG. 1 is a configuration diagram illustrating the configuration of a dust filter clogging status detection device according to one embodiment of the present invention. Hira at [0013]: In FIG. 1, the dust filter clogging status detection device comprises: an information storage unit 1 which stores standard component temperature information for multiple components making up the information processing device corresponding to combinations of system information of information processing devices such as PC/server systems and information indicating the internal status of the information processing device; a component temperature threshold value generating unit 2 which generates component temperature threshold values for multiple components making up the information processing device on the basis of standard component temperature information for multiple components making up the information processing device, system information of the information processing device, and information indicating the internal status of the information processing device; a clogging status detection unit 3 which detects the clogging status of the dust filter on the basis of component temperature threshold values and component temperatures inside the information processing device; a clogging status display unit 4; a system information acquisition unit 5; a temperature sensor information acquisition unit 6; and an error information detection unit 7. Hira at [0014]:

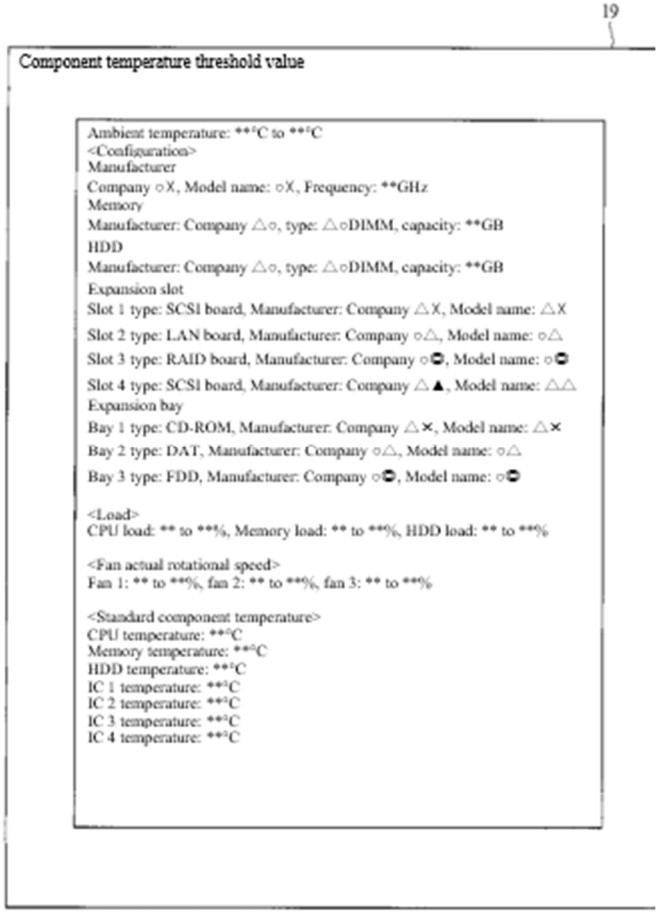
Asserted Claims	Hira
	Furthermore, the dust filter clogging status detection device is configured as part of an information processing device such as a PC/server system, and the information processing device has information processing functions such as CPU/HDD/memory, with the information storage unit 1 of the dust filter clogging status detection device comprising an HDD, etc., and the component temperature threshold value generating unit 2, clogging status detection unit 3, system information acquisition unit 5, temperature sensor information acquisition unit 6, and error information detection unit 7 being processed through processing by an information processing unit comprising a CPU, etc. Hira at [0015]: The information storage unit 1 stores system information 8 (actual fan rotational speed 9, hardware configuration 10, load 11), temperature sensor information 12 (ambient temperature 13, component temperature 14), standard component temperature 15, error information 16 (fan error 17, voltage error 18), component temperature threshold values 19, actual component temperature/component temperature threshold value ratio 20, clogging status table 21, and clogging status information/error information 22. Hira at [0018]: Fan error 17 is information recorded when fan rotational speed becomes an abnormal rotational speed due to fan malfunction, etc. Voltage error 18 is information stored when voltage generated inside the information processing device becomes an abnormal voltage. Hira at [0020]: The clogging status table 21 is a table showing clogging status and message information for each average value of actual component temperature/component temperature threshold value ratios. Clogging status information/error information 22 is clogging status information/error information of the information processing device. Hira at [0024]: Standard component temperature 15, as shown in FIG. 3, is multiple items of information prepared during the design/development phase and stored in the information storage unit 1, being information consisting of all combinations of ambient temperature, configuration,

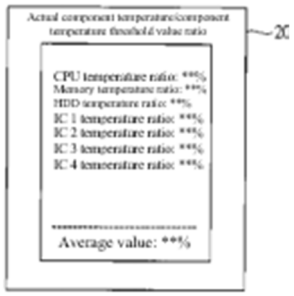
Asserted Claims	Hira
	load, and fan rotational speed. Using this standard component temperature 15, a standard component temperature for detecting dust filter clogging status can be acquired based on the configuration of the information processing device and various internal information of the information processing device. Hira at [0031]: Then, component temperature threshold value generating unit 2 acquires system information 8 from the information storage unit 1 (step 103), acquires temperature sensor information 12 (step 104), acquires standard component temperature 15 (step 105), selects standard component temperature 15 matching the system information 8 of the current information processing device and temperature sensor information 12 from standard component temperature 15, copies this as component temperature threshold value 19, and stores it in the information storage unit 1 (step 106). Hira at [0036]: As described above, in the present embodiment, the component temperature threshold value generating unit 2 calculates component temperature threshold values 19 from ambient temperature 13, actual fan rotational speed 9, hardware configuration 10, and load 11, and the clogging status detection unit 3 calculates clogging status from component temperature 14, component temperature threshold value 19, and error information 16 and displays the clogging status on the clogging status display unit 4, making it possible to calculate the clogging status more accurately based on the hardware configuration of the information processing device and current internal information of the information processing device. Hira at [0038]: For example, in the present embodiment, component temperature threshold values 19 are created by selecting a standard component temperature 15 matching system information 8

Asserted Claims	Hira
	and temperature sensor information 12 from standard component temperatures 15 consisting of multiple combinations, but the standard component temperature information could alternatively be converted to a database of standard component temperatures corresponding to hardware configuration, load, and actual fan rotational speed, and component temperature threshold values 19 could be calculated by searching this database based on current information processing device information. Hira at [0039]: The present invention is widely applicable to information processing devices which have an internal dust filter and detect the clogging status of that filter.
[1.a] a hardware processor comprising:	Hira discloses, expressly and/or inherently, a hardware processor. *See, e.g.*: Hira at Fig. 2 and accompanying text:

Asserted Claims	Hira
	[FIG. 2]  Hira at Fig. 3 and accompanying text:

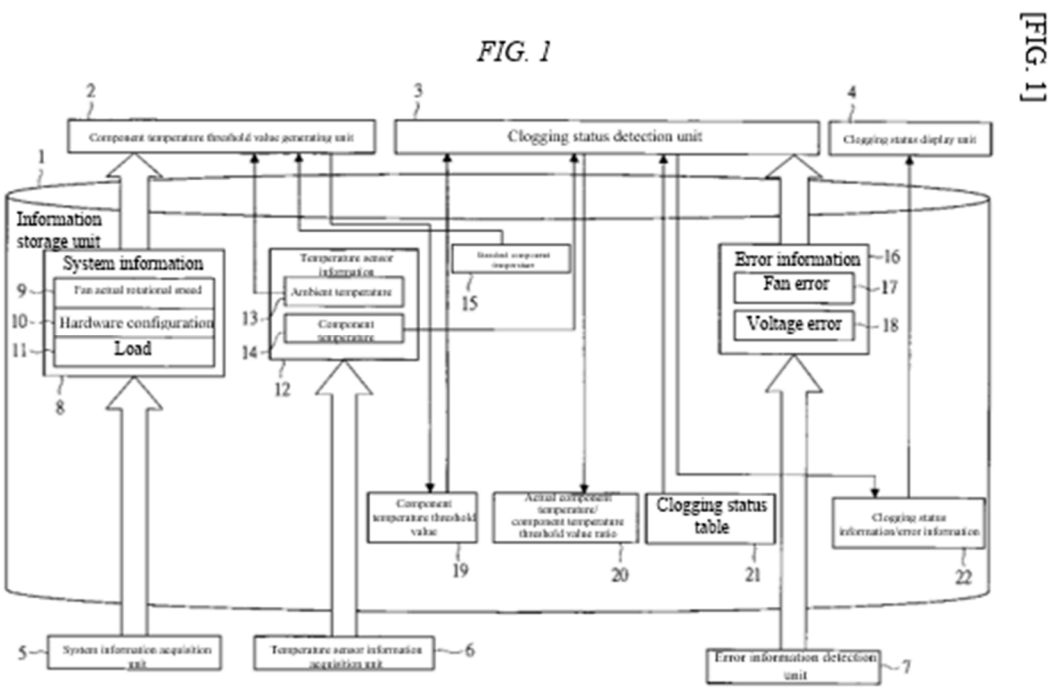
Asserted Claims	Hira
	FIG. 3  Hira at Fig. 4 and accompanying text:

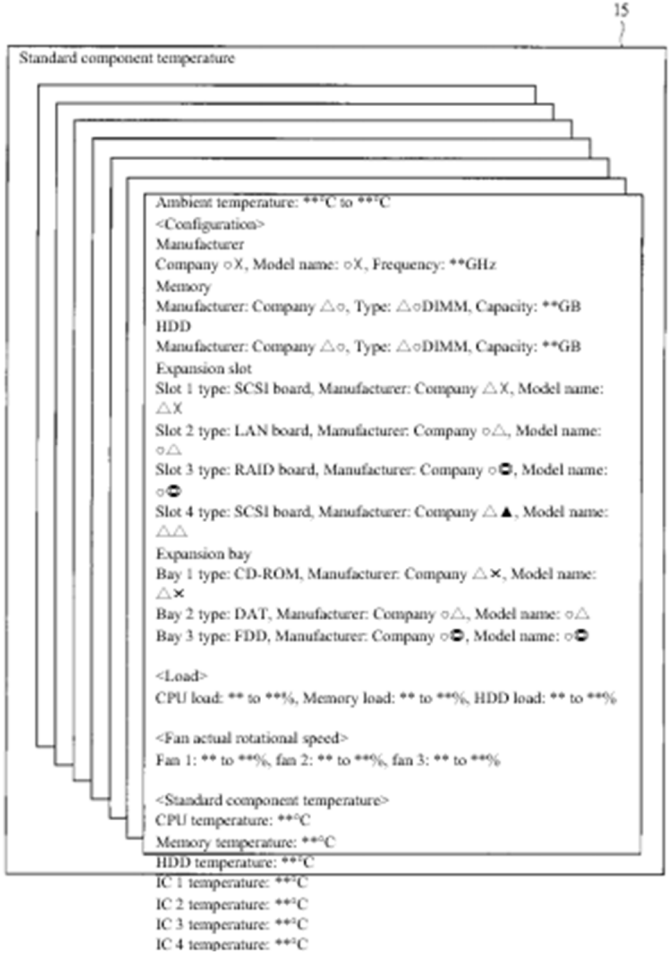
Asserted Claims	Hira
	FIG. 4  Hira at Fig. 5 and accompanying text:

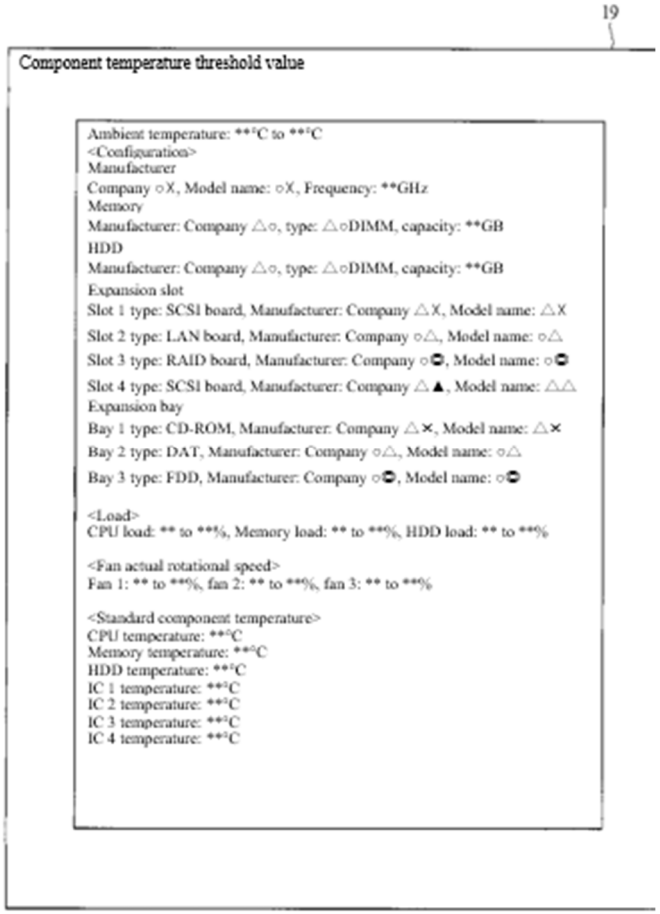
Asserted Claims	Hira
	FIG. 5  Hira at [0004]: However, the technique in patent document 1 involves detecting clogging based on fan rotational speed/temperature difference before vs. after the filter. However, when considering application to PC/server systems, differences in internal temperature change due to load and configuration differences of the CPU/memory/HDD, etc. are not taken into consideration, and when considering application to PC/server systems where loads and configurations differ depending on time and user, there is the problem that setting temperature threshold values is difficult. Hira at [0014]: Furthermore, the dust filter clogging status detection device is configured as part of an information processing device such as a PC/server system, and the information processing device has information processing functions such as CPU/HDD/memory, with the information storage unit 1 of the dust filter clogging status detection device comprising an HDD, etc., and the component temperature threshold value generating unit 2, clogging status detection unit 3, system information acquisition unit 5, temperature sensor information acquisition unit 6, and error information detection unit 7 being processed through processing by an information processing unit comprising a CPU, etc.

Asserted Claims	Hira
	Hira at [0016]: The actual fan rotational speed 9 is the actual rotational speed of each fan installed in the system. The hardware configuration 10 is system configuration information for CPU/memory/HDD/expansion boards/expansion drives. Load 11 is load information for CPU/memory/HDD/expansion drives. Hira at [0017]: Ambient temperature 13 is temperature information for the ambient environment of the system. Component temperature 14 is temperature information for main components such as CPU, memory/HDD/ICs, etc.. Standard component temperature 15 is information on standard component temperatures for each ambient temperature 13, hardware configuration 10, load 11, and actual fan rotational speed 9. Hira at [0019]: Component temperature threshold value 19 is temperature threshold value information for CPU/memory/HDD/other ICs, etc. The actual component temperature/component temperature threshold value ratio 20 is the ratio of actual component temperature to component temperature threshold value. Hira at [0023]: As shown in FIG. 2, system information 8 consists of actual fan rotational speed 9, hardware configuration 10, and load 11 information, with hardware configuration 10 consisting of information on CPU, memory, HDD, expansion slots, expansion drives, etc. Actual fan rotational speed 9 is the ratio of actual rotational speed to maximum rotational speed for each fan installed in the system. Load 11 represents the ratio of actual load to maximum load for each of CPU, memory, HDD, and drive. Hira at [0026]:

Asserted Claims	Hira
	The actual component temperature/component temperature threshold value ratio 20, as shown in FIG. 5, represents the ratio of actual component temperature to component temperature threshold value for CPU, memory HDD, and IC 1 to IC 4, and is composed of CPU temperature ratio, memory temperature ratio, HDD temperature ratio, IC 1 to 4 temperature ratio, and average value.
[1.b] an estimating unit configured to estimate an upper limit of possible temperatures in a predetermined position of ICT equipment when a quantity of intake air into the ICT equipment is appropriate, based on a result of detection by an operational status detecting unit that detects an operational status of the ICT equipment and a result of detection by an intake-air temperature sensor that detects an intake air temperature of intake air of the ICT equipment, wherein the operational status of the ICT equipment and the intake air temperature of the ICT equipment determines a rotation speed of the cooling fan; and	Hira discloses, expressly and/or inherently, an estimating unit configured to estimate an upper limit of possible temperatures in a predetermined position of ICT equipment when a quantity of intake air into the ICT equipment is appropriate, based on a result of detection by an operational status detecting unit that detects an operational status of the ICT equipment and a result of detection by an intake-air temperature sensor that detects an intake air temperature of intake air of the ICT equipment, wherein the operational status of the ICT equipment and the intake air temperature of the ICT equipment determines a rotation speed of the cooling fan. *See, e.g.*: Hira at Fig. 1 and accompanying text:

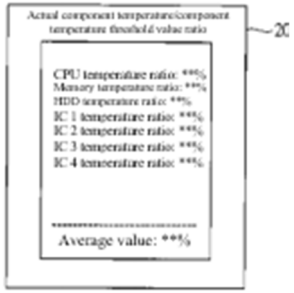
Asserted Claims	Hira
	 Hira at Fig. 3 and accompanying text:

Asserted Claims	Hira
	FIG. 3  Hira at Fig. 4 and accompanying text:

Asserted Claims	Hira
	FIG. 4  Hira at Fig. 5 and accompanying text:

Asserted Claims	Hira

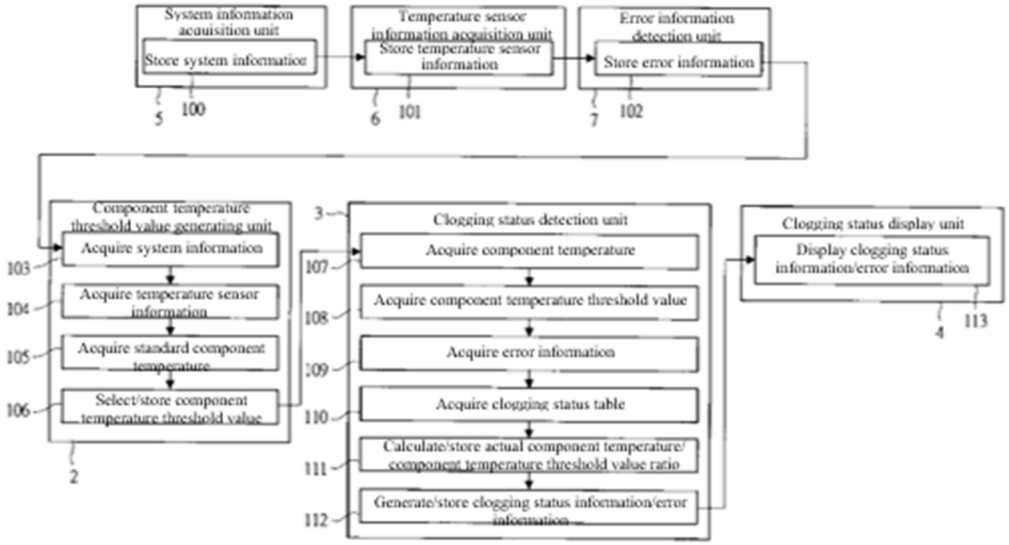
FIG. 5



Hira at Fig. 8 and accompanying text:

[FIG. 8]

FIG. 8



Asserted Claims	Hira
	Hira at [0008]: Namely, the summary of the representative aspects comprises a component temperature threshold value generating unit which, on the basis of standard component temperature information for multiple components making up an information processing device, system information for the information processing device, and information indicating the internal status of the information processing device, generates component temperature threshold values for the multiple components making up the information processing device; and a clogging status detection unit which detects the clogging status of the dust filter on the basis of the component temperature threshold values and component temperatures inside the information processing device. Hira at [0013]: In FIG. 1, the dust filter clogging status detection device comprises: an information storage unit 1 which stores standard component temperature information for multiple components making up the information processing device corresponding to combinations of system information of information processing devices such as PC/server systems and information indicating the internal status of the information processing device; a component temperature threshold value generating unit 2 which generates component temperature threshold values for multiple components making up the information processing device on the basis of standard component temperature information for multiple components making up the information processing device, system information of the information processing device, and information indicating the internal status of the information processing device; a clogging status detection unit 3 which detects the clogging status of the dust filter on the basis of component temperature threshold values and component temperatures inside the information processing device; a clogging status display unit 4; a system information acquisition unit 5; a temperature sensor information acquisition unit 6; and an error information detection unit 7. Hira at [0014]: Furthermore, the dust filter clogging status detection device is configured as part of an information processing device such as a PC/server system, and the information processing

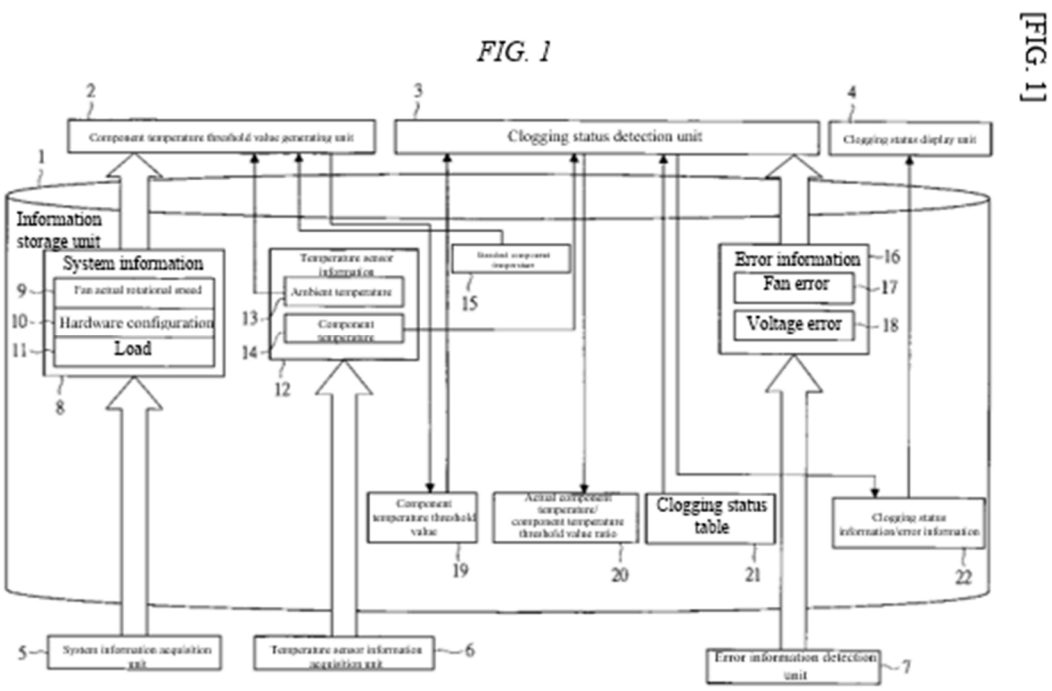
Asserted Claims	Hira
	device has information processing functions such as CPU/HDD/memory, with the information storage unit 1 of the dust filter clogging status detection device comprising an HDD, etc., and the component temperature threshold value generating unit 2, clogging status detection unit 3, system information acquisition unit 5, temperature sensor information acquisition unit 6, and error information detection unit 7 being processed through processing by an information processing unit comprising a CPU, etc. Hira at [0015]: The information storage unit 1 stores system information 8 (actual fan rotational speed 9, hardware configuration 10, load 11), temperature sensor information 12 (ambient temperature 13, component temperature 14), standard component temperature 15, error information 16 (fan error 17, voltage error 18), component temperature threshold values 19, actual component temperature/component temperature threshold value ratio 20, clogging status table 21, and clogging status information/error information 22. Hira at [0017]: Ambient temperature 13 is temperature information for the ambient environment of the system. Component temperature 14 is temperature information for main components such as CPU, memory/HDD/ICs, etc.. Standard component temperature 15 is information on standard component temperatures for each ambient temperature 13, hardware configuration 10, load 11, and actual fan rotational speed 9. Hira at [0019]: Component temperature threshold value 19 is temperature threshold value information for CPU/memory/HDD/other ICs, etc. The actual component temperature/component temperature threshold value ratio 20 is the ratio of actual component temperature to component temperature threshold value. Hira at [0020]: The clogging status table 21 is a table showing clogging status and message information for each average value of actual component temperature/component temperature threshold

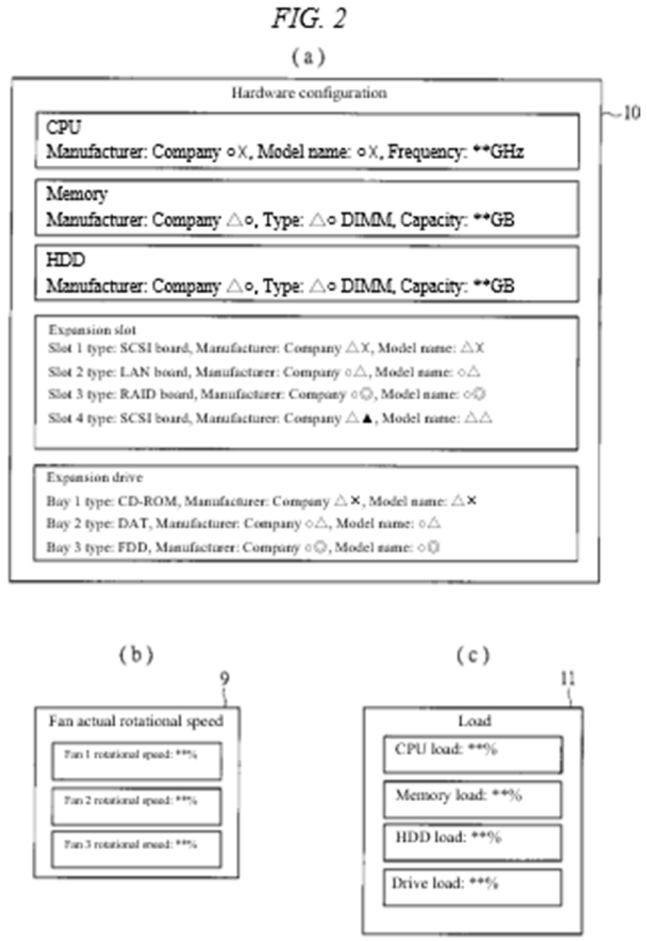
Asserted Claims	Hira
	value ratios. Clogging status information/error information 22 is clogging status information/error information of the information processing device. Hira at [0022]: FIG. 3 shows an example of standard component temperatures used in the dust filter clogging status detection device according to one embodiment of the present invention; FIG. 4 shows an example of component temperature threshold values used in the dust filter clogging status detection device according to one embodiment of the present invention; FIG. 5 shows an example of actual component temperature/component temperature threshold value ratios used in the dust filter clogging status detection device according to one embodiment of the present invention; FIG. 6 shows an example of a clogging status table used in the dust filter clogging status detection device according to one embodiment of the present invention; and FIG. 7 shows an example of clogging status/error information used in the dust filter clogging status detection device according to one embodiment of the present invention. Hira at [0024]: Standard component temperature 15, as shown in FIG. 3, is multiple items of information prepared during the design/development phase and stored in the information storage unit 1, being information consisting of all combinations of ambient temperature, configuration, load, and fan rotational speed. Using this standard component temperature 15, a standard component temperature for detecting dust filter clogging status can be acquired based on the configuration of the information processing device and various internal information of the information processing device. Hira at [0025]: The component temperature threshold value 19, as shown in FIG. 4, is obtained by extracting component temperatures applicable to the current system status from standard component temperature 15, and is composed of ambient temperature, configuration, load, actual fan rotational speed, and standard component temperature. The standard component

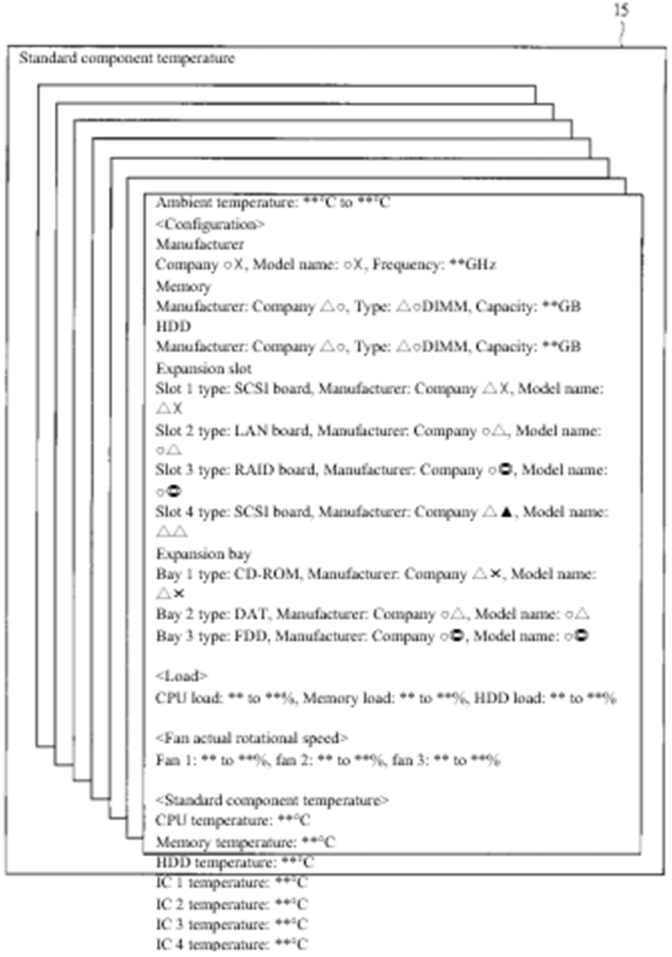
Asserted Claims	Hira
	temperature information within the component temperature threshold value 19 becomes the component temperature threshold value used when detecting dust filter clogging status. Hira at [0026]: The actual component temperature/component temperature threshold value ratio 20, as shown in FIG. 5, represents the ratio of actual component temperature to component temperature threshold value for CPU, memory HDD, and IC 1 to IC 4, and is composed of CPU temperature ratio, memory temperature ratio, HDD temperature ratio, IC 1 to 4 temperature ratio, and average value. Hira at [0027]: The clogging status table 21, as shown in FIG. 6, is prepared in advance during the design/development phase and stored in the information storage unit 1, and is composed of clogging status and messages for each average value of actual component temperature/temperature threshold values. Hira at [0030]: First, system information acquisition unit 5 acquires system information from the operating system, etc. and stores system information 8 in the information storage unit 1 (step 100), temperature sensor information acquisition unit 6 acquires temperature sensor information from temperature sensors, etc. and stores temperature sensor information 12 in the information storage unit 1 (step 101), and error information detection unit 7 acquires error information and stores error information 16 in the information storage unit 1 (step 102). Hira at [0031]: Then, component temperature threshold value generating unit 2 acquires system information 8 from the information storage unit 1 (step 103), acquires temperature sensor information 12 (step 104), acquires standard component temperature 15 (step 105), selects standard component temperature 15 matching the system information 8 of the current information processing device and temperature sensor information 12 from standard

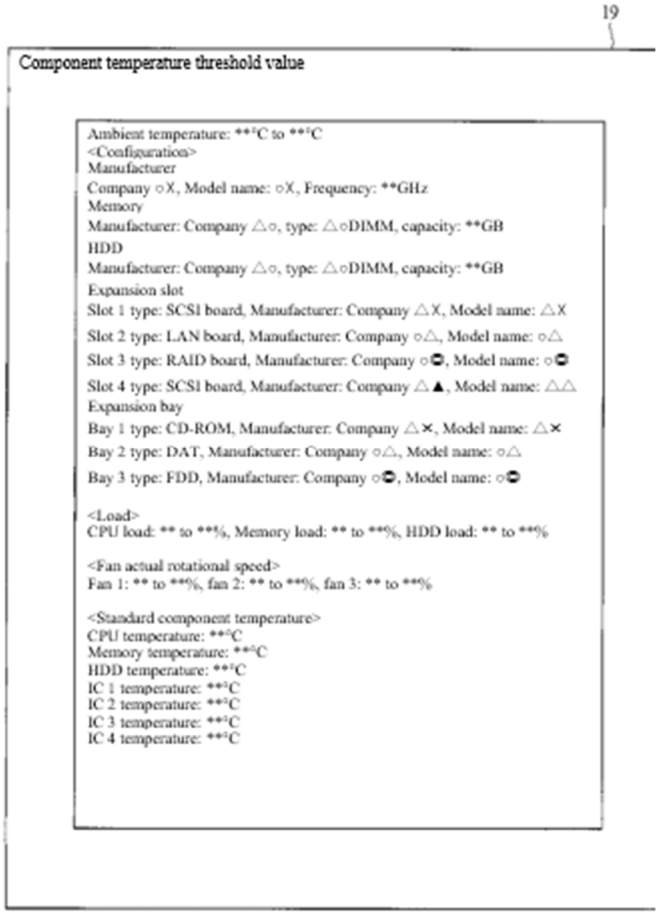
Asserted Claims	Hira
	component temperature 15, copies this as component temperature threshold value 19, and stores it in the information storage unit 1 (step 106). Hira at [0032]: Then, clogging status detection unit 3 acquires component temperature 14 (step 107), acquires component temperature threshold value 19 (step 108), acquires error information (step 109), and acquires clogging status table 21 from the information storage unit 1 (step 110). Hira at [0033]: The actual component temperature/component temperature threshold value ratio 20 is then calculated based on the component temperature 14 and component temperature threshold value 19, and stored in the information storage unit 1 (step 111). Hira at [0034]: Then, clogging status information/error information 22 is generated from error information 16, clogging status table 21, and the average value of actual component temperature/component temperature threshold value ratios 20, and is stored in the information storage unit 1 (step 112). Hira at [0036]: As described above, in the present embodiment, the component temperature threshold value generating unit 2 calculates component temperature threshold values 19 from ambient temperature 13, actual fan rotational speed 9, hardware configuration 10, and load 11, and the clogging status detection unit 3 calculates clogging status from component temperature 14, component temperature threshold value 19, and error information 16 and displays the clogging status on the clogging status display unit 4, making it possible to calculate the clogging status more accurately based on the hardware configuration of the information processing device and current internal information of the information processing device.

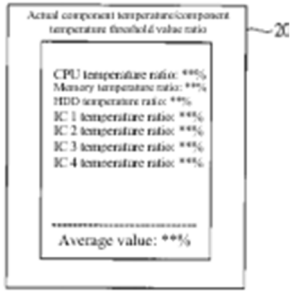
Asserted Claims	Hira
	Hira at [0041]: 1...information storage unit; 2...component temperature threshold value generating unit; 3...clogging status detection unit; 4...clogging status display unit; 5...system information acquisition unit; 6...temperature sensor information acquisition unit; 7...error information detection unit; 8...system information; 9...actual fan rotational speed; 10...hardware configuration; 11...load; 12...temperature sensor information; 13...ambient temperature; 14...component temperature; 15...standard component temperature; 16...error information; 17...fan error; 18...voltage error; 19...component temperature threshold value; 20...actual component temperature/component temperature threshold value ratio; 21...clogging status table; 22...clogging status information/error information.
[1.c] a determining unit configured to determine that an abnormality is occurring when a result of detection by a temperature sensor that detects a detected equipment temperature in the predetermined position is beyond the upper limit estimated by the estimating unit.	Hira discloses, expressly and/or inherently, a determining unit configured to determine that an abnormality is occurring when a result of detection by a temperature sensor that detects a detected equipment temperature in the predetermined position is beyond the upper limit estimated by the estimating unit. *See, e.g.*: Hira at Fig. 1 and accompanying text:

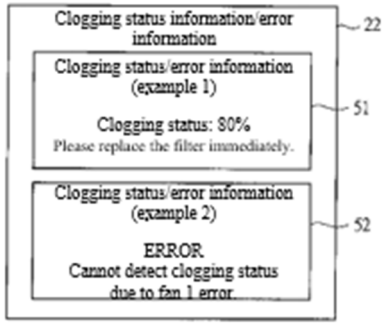
Asserted Claims	Hira
	 Hira at Fig. 2 and accompanying text:

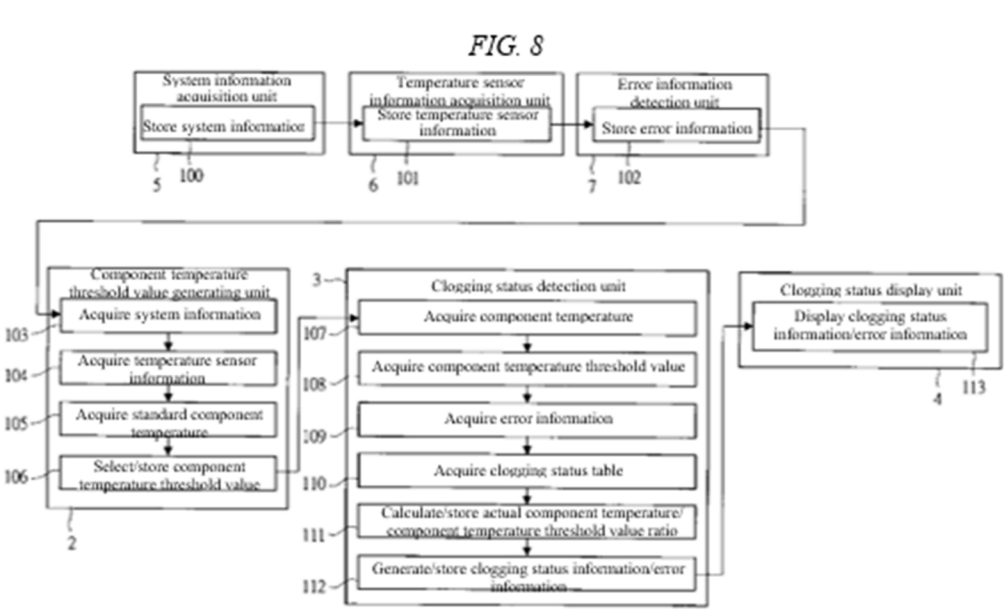
Asserted Claims	Hira
	[FIG. 2]  Hira at Fig. 3 and accompanying text:

Asserted Claims	Hira
	FIG. 3  Hira at Fig. 4 and accompanying text:

Asserted Claims	Hira
	FIG. 4  Hira at Fig. 5 and accompanying text:

Asserted Claims	Hira
	FIG. 5  Hira at Fig. 6 and accompanying text: FIG. 6 Clogging status table Actual temperature/temperature threshold value average value / Clogging status / Message **～**% / ～30% / No problems. **～**% / 30～70% / Please prepare to replace the filter. **～**% / 70～100% / Please replace the filter immediately. 21 Hira at Fig. 7 and accompanying text:

Asserted Claims	Hira
	FIG. 7  Hira at Fig. 8 and accompanying text:

Asserted Claims	Hira
	 [FIG. 8] Hira at [0001]: The present invention relates to a dust filter clogging status detection method and dust filter clogging status detection device for detecting clogging status of dust filters inside information processing devices such as PCs and server systems, and particularly relates to technology for detecting clogging status on the basis of system information of the information processing device. Hira at [0003]: Techniques for detecting clogging of such dust filters include, for example, the technique described in Japanese Unexamined Patent Application Publication 2006-198582 (patent document 1).

Asserted Claims	Hira
	Hira at [0004]: However, the technique in patent document 1 involves detecting clogging based on fan rotational speed/temperature difference before vs. after the filter. However, when considering application to PC/server systems, differences in internal temperature change due to load and configuration differences of the CPU/memory/HDD, etc. are not taken into consideration, and when considering application to PC/server systems where loads and configurations differ depending on time and user, there is the problem that setting temperature threshold values is difficult. Hira at [0005]: Therefore, is an object of the present invention to provide a dust filter clogging status detection method and dust filter clogging status detection device that make it possible to detect dust filter clogging status more accurately by using system load/configuration information. Hira at [0008]: Namely, the summary of the representative aspects comprises a component temperature threshold value generating unit which, on the basis of standard component temperature information for multiple components making up an information processing device, system information for the information processing device, and information indicating the internal status of the information processing device, generates component temperature threshold values for the multiple components making up the information processing device; and a clogging status detection unit which detects the clogging status of the dust filter on the basis of the component temperature threshold values and component temperatures inside the information processing device. Hira at [0010]: Namely, the effect provided by the representative aspects is that dust filter clogging status can be more accurately detected using system load/configuration information.

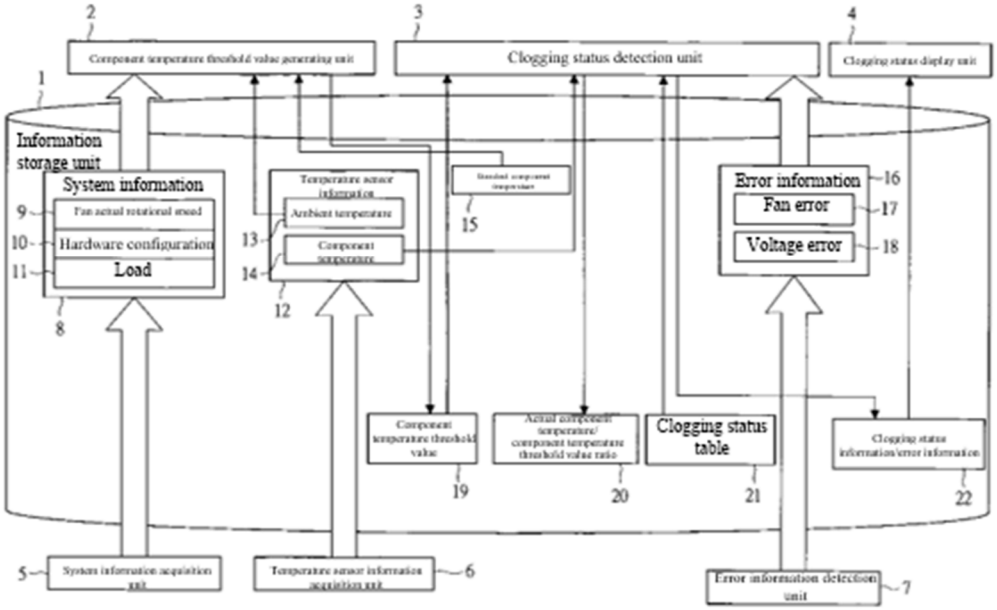
Asserted Claims	Hira
	Hira at [0018]: Fan error 17 is information recorded when fan rotational speed becomes an abnormal rotational speed due to fan malfunction, etc. Voltage error 18 is information stored when voltage generated inside the information processing device becomes an abnormal voltage. Hira at [0021]: Next, the various information used in the dust filter clogging status detection device according to one embodiment of the present invention will be described using FIG. 2 to FIG. 7. FIG. 2 shows an example of system information used in the dust filter clogging status detection device according to one embodiment of the present invention, with FIG. 2 (a) showing hardware configuration, FIG. 2 (b) showing actual fan rotational speed, and FIG. 2 (c) showing load information. Hira at [0022]: FIG. 3 shows an example of standard component temperatures used in the dust filter clogging status detection device according to one embodiment of the present invention; FIG. 4 shows an example of component temperature threshold values used in the dust filter clogging status detection device according to one embodiment of the present invention; FIG. 5 shows an example of actual component temperature/component temperature threshold value ratios used in the dust filter clogging status detection device according to one embodiment of the present invention; FIG. 6 shows an example of a clogging status table used in the dust filter clogging status detection device according to one embodiment of the present invention; and FIG. 7 shows an example of clogging status/error information used in the dust filter clogging status detection device according to one embodiment of the present invention. Hira at [0024]: Standard component temperature 15, as shown in FIG. 3, is multiple items of information prepared during the design/development phase and stored in the information storage unit 1, being information consisting of all combinations of ambient temperature, configuration,

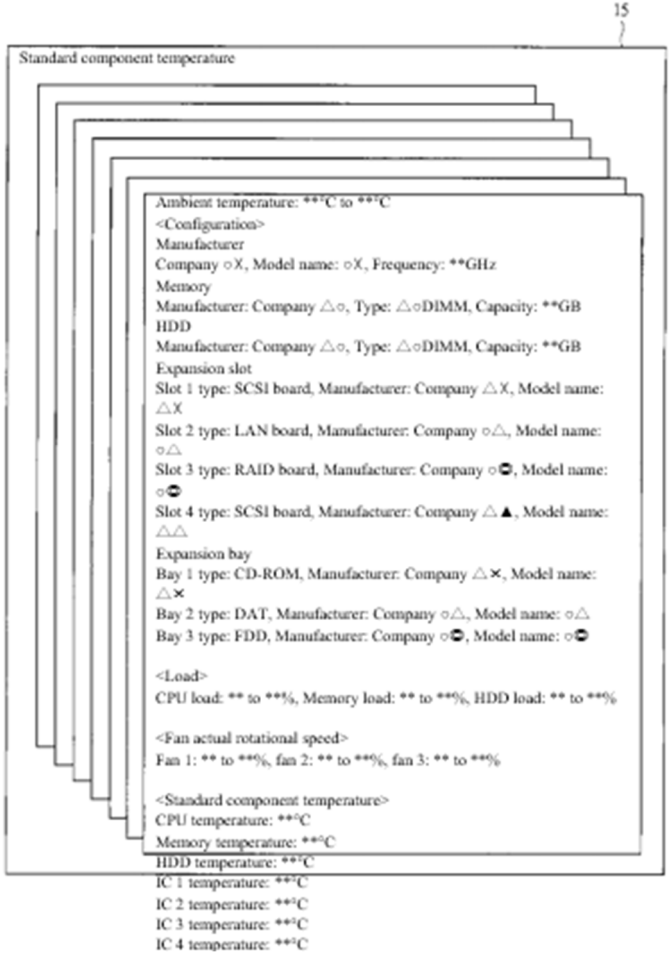
Asserted Claims	Hira
	load, and fan rotational speed. Using this standard component temperature 15, a standard component temperature for detecting dust filter clogging status can be acquired based on the configuration of the information processing device and various internal information of the information processing device. Hira at [0025]: The component temperature threshold value 19, as shown in FIG. 4, is obtained by extracting component temperatures applicable to the current system status from standard component temperature 15, and is composed of ambient temperature, configuration, load, actual fan rotational speed, and standard component temperature. The standard component temperature information within the component temperature threshold value 19 becomes the component temperature threshold value used when detecting dust filter clogging status. Hira at [0027]: The clogging status table 21, as shown in FIG. 6, is prepared in advance during the design/development phase and stored in the information storage unit 1, and is composed of clogging status and messages for each average value of actual component temperature/temperature threshold values. Hira at [0028]: Clogging status information/error information 22, as shown in FIG. 7, is composed of clogging status and messages as in clogging status/error information (example 1) 51. When error information exists, it is composed of error information and content indicating that clogging cannot be detected, as in clogging status/error information (Example 2) 52. Hira at [0029]: Next, the dust filter clogging status detection operation of the dust filter clogging status detection device according to one embodiment of the present invention will be described using FIG. 8. FIG. 8 is a flowchart showing the dust filter clogging status detection operation of the dust filter clogging status detection device according to one embodiment of the present invention.

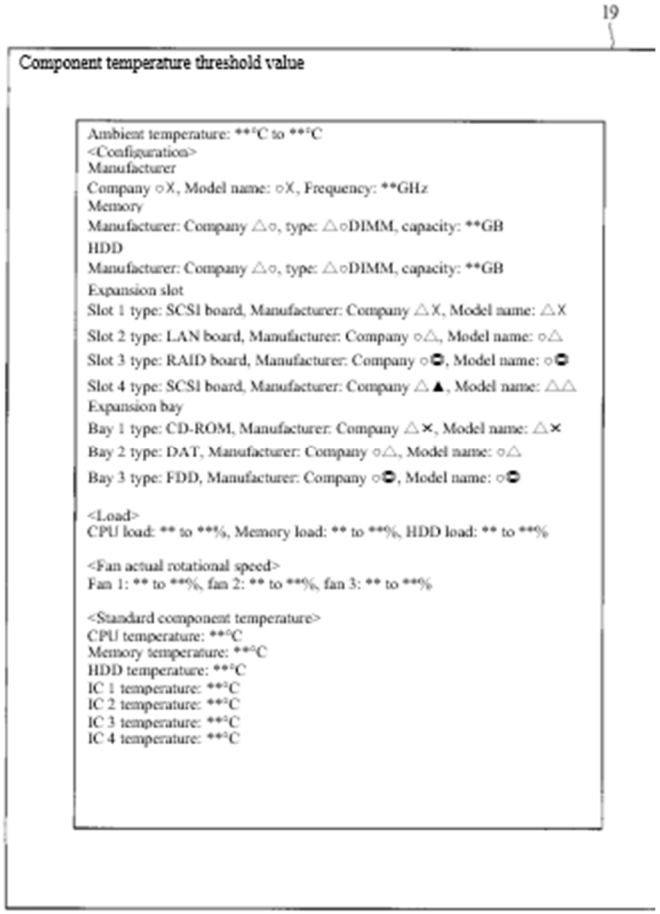
Asserted Claims	Hira
	Hira at [0030]: First, system information acquisition unit 5 acquires system information from the operating system, etc. and stores system information 8 in the information storage unit 1 (step 100), temperature sensor information acquisition unit 6 acquires temperature sensor information from temperature sensors, etc. and stores temperature sensor information 12 in the information storage unit 1 (step 101), and error information detection unit 7 acquires error information and stores error information 16 in the information storage unit 1 (step 102). Hira at [0031]: Then, component temperature threshold value generating unit 2 acquires system information 8 from the information storage unit 1 (step 103), acquires temperature sensor information 12 (step 104), acquires standard component temperature 15 (step 105), selects standard component temperature 15 matching the system information 8 of the current information processing device and temperature sensor information 12 from standard component temperature 15, copies this as component temperature threshold value 19, and stores it in the information storage unit 1 (step 106). Hira at [0032]: Then, clogging status detection unit 3 acquires component temperature 14 (step 107), acquires component temperature threshold value 19 (step 108), acquires error information (step 109), and acquires clogging status table 21 from the information storage unit 1 (step 110). Hira at [0033]: The actual component temperature/component temperature threshold value ratio 20 is then calculated based on the component temperature 14 and component temperature threshold value 19, and stored in the information storage unit 1 (step 111). Hira at [0034]: Then, clogging status information/error information 22 is generated from error information 16, clogging status table 21, and the average value of actual component

Asserted Claims	Hira
	temperature/component temperature threshold value ratios 20, and is stored in the information storage unit 1 (step 112). Hira at [0035]: Then, the clogging status display unit 4 acquires clogging status information/error information 22 from the information storage unit 1 and displays this information (step 113). Hira at [0036]: As described above, in the present embodiment, the component temperature threshold value generating unit 2 calculates component temperature threshold values 19 from ambient temperature 13, actual fan rotational speed 9, hardware configuration 10, and load 11, and the clogging status detection unit 3 calculates clogging status from component temperature 14, component temperature threshold value 19, and error information 16 and displays the clogging status on the clogging status display unit 4, making it possible to calculate the clogging status more accurately based on the hardware configuration of the information processing device and current internal information of the information processing device. Hira at [0039]: The present invention is widely applicable to information processing devices which have an internal dust filter and detect the clogging status of that filter. Hira at [0040]: [FIG. 1] is a configuration diagram illustrating the configuration of a dust filter clogging status detection device according to one embodiment of the present invention. [FIG. 2] shows an example of system information used in the dust filter clogging status detection device according to one embodiment of the present invention. [FIG. 3] shows an example of standard component temperatures used in the dust filter clogging status detection device according to one embodiment of the present invention.

Asserted Claims	Hira
	[FIG. 4] shows an example of component temperature threshold values used in the dust filter clogging status detection device according to one embodiment of the present invention. [FIG. 5] shows an example of actual component temperature/component temperature threshold value ratios used in the dust filter clogging status detection device according to one embodiment of the present invention. [FIG. 6] shows an example of a clogging status table used in the dust filter clogging status detection device according to one embodiment of the present invention. [FIG. 7] shows an example of clogging status information/error information used in the dust filter clogging status detection device according to one embodiment of the present invention. [FIG. 8] is a flowchart showing the dust filter clogging status detection operation of the dust filter clogging status detection device according to one embodiment of the present invention. Hira at [0041]: 1...information storage unit; 2...component temperature threshold value generating unit; 3...clogging status detection unit; 4...clogging status display unit; 5...system information acquisition unit; 6...temperature sensor information acquisition unit; 7...error information detection unit; 8...system information; 9...actual fan rotational speed; 10...hardware configuration; 11...load; 12...temperature sensor information; 13...ambient temperature; 14...component temperature; 15...standard component temperature; 16...error information; 17...fan error; 18...voltage error; 19...component temperature threshold value; 20...actual component temperature/component temperature threshold value ratio; 21...clogging status table; 22...clogging status information/error information.
[3.a] 3. The abnormality detection device according to claim 1, comprising a temperature range storing part in which the upper limit of the possible temperatures in the	Hira discloses, expressly and/or inherently, the abnormality detection device according to claim 1, comprising a temperature range storing part in which the upper limit of the possible temperatures in the predetermined position is recorded in association with each combination of a first utilization rate and a temperature of intake air, and the upper limit of the possible temperatures in the predetermined position is recorded in association with

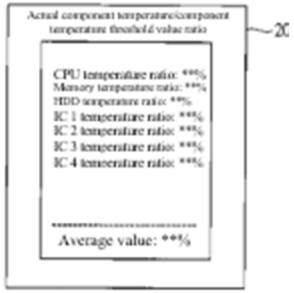
Asserted Claims	Hira
predetermined position is recorded in association with each combination of a first utilization rate and a temperature of intake air, and the upper limit of the possible temperatures in the predetermined position is recorded in association with each combination of a second utilization rate that is larger than the first utilization rate and a temperature of intake air,	each combination of a second utilization rate that is larger than the first utilization rate and a temperature of intake air. *See, e.g.*: Hira at Fig. 1 and accompanying text: [FIG. 1] *FIG. 1*  Hira at Fig. 3 and accompanying text:

Asserted Claims	Hira
	FIG. 3  Hira at Fig. 4 and accompanying text:

Asserted Claims	Hira
	FIG. 4  Hira at Fig. 5 and accompanying text:

Asserted Claims	Hira

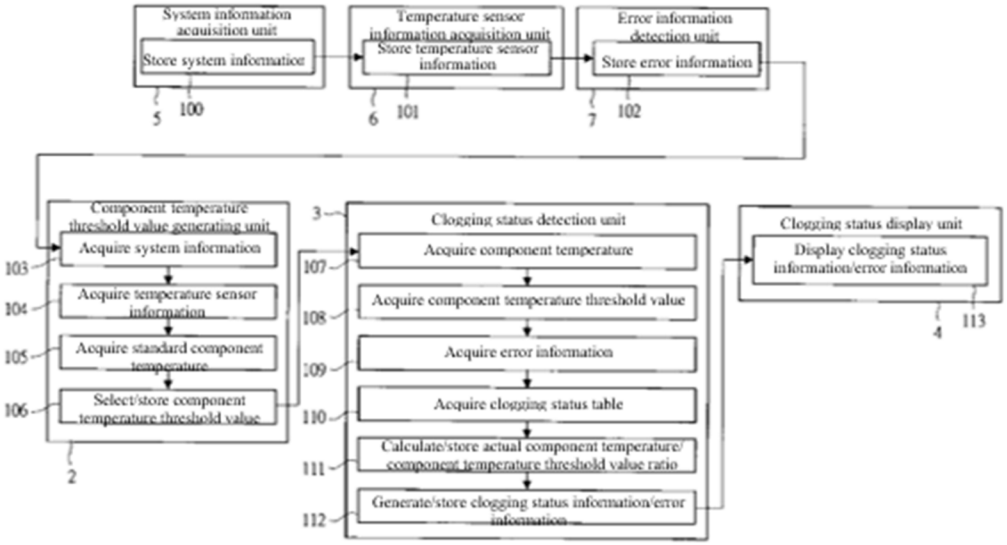
FIG. 5



Hira at Fig. 8 and accompanying text:

[FIG. 8]

FIG. 8



Asserted Claims	Hira
	Hira at [0008]: Namely, the summary of the representative aspects comprises a component temperature threshold value generating unit which, on the basis of standard component temperature information for multiple components making up an information processing device, system information for the information processing device, and information indicating the internal status of the information processing device, generates component temperature threshold values for the multiple components making up the information processing device; and a clogging status detection unit which detects the clogging status of the dust filter on the basis of the component temperature threshold values and component temperatures inside the information processing device. Hira at [0013]: In FIG. 1, the dust filter clogging status detection device comprises: an information storage unit 1 which stores standard component temperature information for multiple components making up the information processing device corresponding to combinations of system information of information processing devices such as PC/server systems and information indicating the internal status of the information processing device; a component temperature threshold value generating unit 2 which generates component temperature threshold values for multiple components making up the information processing device on the basis of standard component temperature information for multiple components making up the information processing device, system information of the information processing device, and information indicating the internal status of the information processing device; a clogging status detection unit 3 which detects the clogging status of the dust filter on the basis of component temperature threshold values and component temperatures inside the information processing device; a clogging status display unit 4; a system information acquisition unit 5; a temperature sensor information acquisition unit 6; and an error information detection unit 7. Hira at [0014]: Furthermore, the dust filter clogging status detection device is configured as part of an information processing device such as a PC/server system, and the information processing

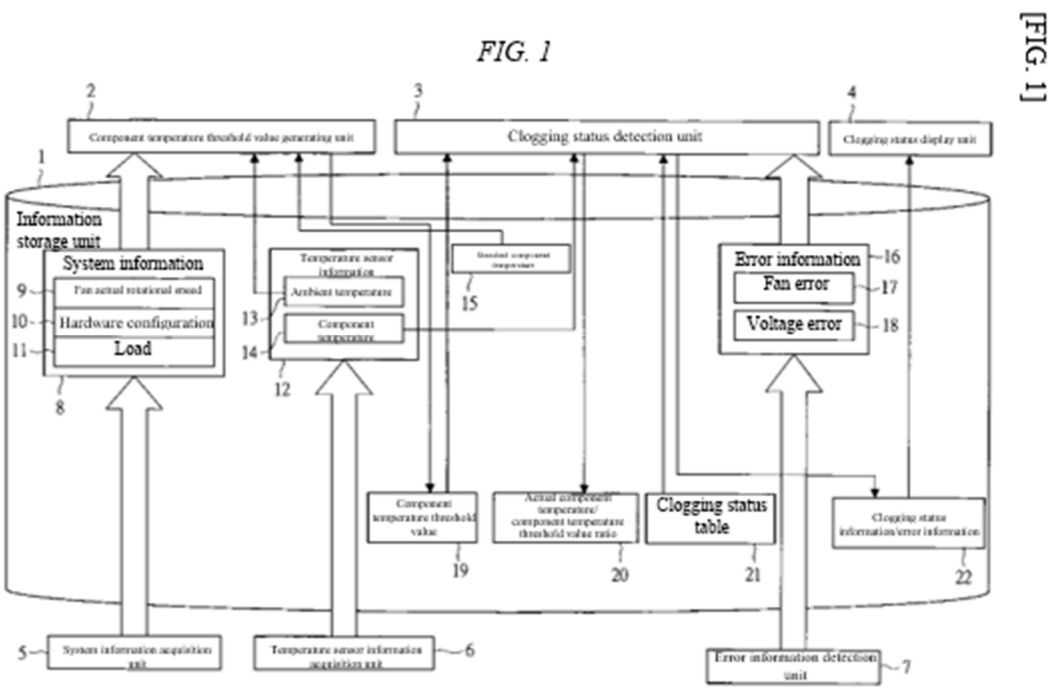
Asserted Claims	Hira
	device has information processing functions such as CPU/HDD/memory, with the information storage unit 1 of the dust filter clogging status detection device comprising an HDD, etc., and the component temperature threshold value generating unit 2, clogging status detection unit 3, system information acquisition unit 5, temperature sensor information acquisition unit 6, and error information detection unit 7 being processed through processing by an information processing unit comprising a CPU, etc. Hira at [0015]: The information storage unit 1 stores system information 8 (actual fan rotational speed 9, hardware configuration 10, load 11), temperature sensor information 12 (ambient temperature 13, component temperature 14), standard component temperature 15, error information 16 (fan error 17, voltage error 18), component temperature threshold values 19, actual component temperature/component temperature threshold value ratio 20, clogging status table 21, and clogging status information/error information 22. Hira at [0017]: Ambient temperature 13 is temperature information for the ambient environment of the system. Component temperature 14 is temperature information for main components such as CPU, memory/HDD/ICs, etc.. Standard component temperature 15 is information on standard component temperatures for each ambient temperature 13, hardware configuration 10, load 11, and actual fan rotational speed 9. Hira at [0019]: Component temperature threshold value 19 is temperature threshold value information for CPU/memory/HDD/other ICs, etc. The actual component temperature/component temperature threshold value ratio 20 is the ratio of actual component temperature to component temperature threshold value. Hira at [0020]: The clogging status table 21 is a table showing clogging status and message information for each average value of actual component temperature/component temperature threshold

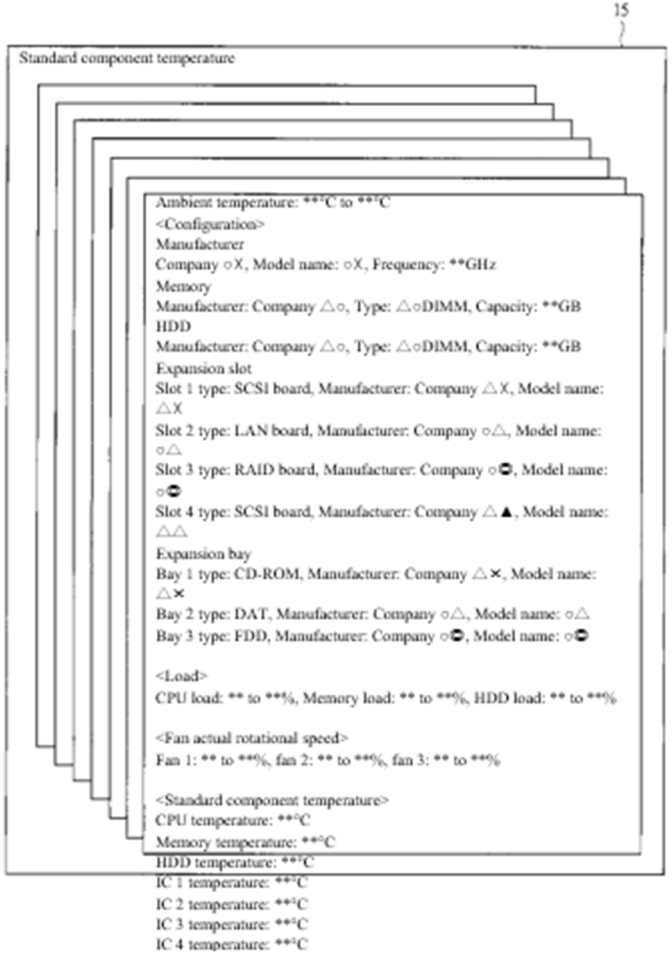
Asserted Claims	Hira
	value ratios. Clogging status information/error information 22 is clogging status information/error information of the information processing device. Hira at [0022]: FIG. 3 shows an example of standard component temperatures used in the dust filter clogging status detection device according to one embodiment of the present invention; FIG. 4 shows an example of component temperature threshold values used in the dust filter clogging status detection device according to one embodiment of the present invention; FIG. 5 shows an example of actual component temperature/component temperature threshold value ratios used in the dust filter clogging status detection device according to one embodiment of the present invention; FIG. 6 shows an example of a clogging status table used in the dust filter clogging status detection device according to one embodiment of the present invention; and FIG. 7 shows an example of clogging status/error information used in the dust filter clogging status detection device according to one embodiment of the present invention. Hira at [0024]: Standard component temperature 15, as shown in FIG. 3, is multiple items of information prepared during the design/development phase and stored in the information storage unit 1, being information consisting of all combinations of ambient temperature, configuration, load, and fan rotational speed. Using this standard component temperature 15, a standard component temperature for detecting dust filter clogging status can be acquired based on the configuration of the information processing device and various internal information of the information processing device. Hira at [0025]: The component temperature threshold value 19, as shown in FIG. 4, is obtained by extracting component temperatures applicable to the current system status from standard component temperature 15, and is composed of ambient temperature, configuration, load, actual fan rotational speed, and standard component temperature. The standard component

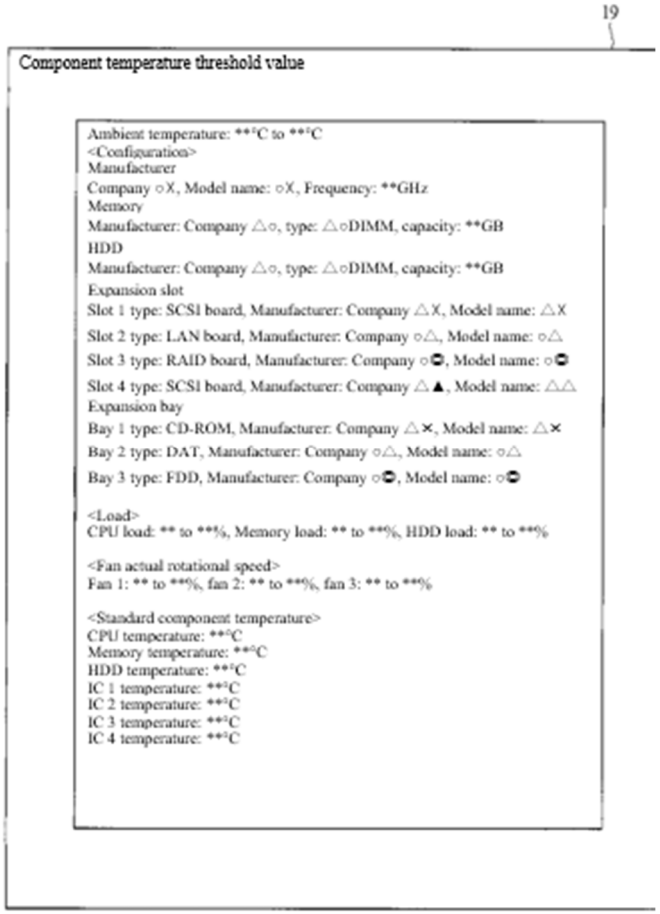
Asserted Claims	Hira
	temperature information within the component temperature threshold value 19 becomes the component temperature threshold value used when detecting dust filter clogging status. Hira at [0026]: The actual component temperature/component temperature threshold value ratio 20, as shown in FIG. 5, represents the ratio of actual component temperature to component temperature threshold value for CPU, memory HDD, and IC 1 to IC 4, and is composed of CPU temperature ratio, memory temperature ratio, HDD temperature ratio, IC 1 to 4 temperature ratio, and average value. Hira at [0027]: The clogging status table 21, as shown in FIG. 6, is prepared in advance during the design/development phase and stored in the information storage unit 1, and is composed of clogging status and messages for each average value of actual component temperature/temperature threshold values. Hira at [0030]: First, system information acquisition unit 5 acquires system information from the operating system, etc. and stores system information 8 in the information storage unit 1 (step 100), temperature sensor information acquisition unit 6 acquires temperature sensor information from temperature sensors, etc. and stores temperature sensor information 12 in the information storage unit 1 (step 101), and error information detection unit 7 acquires error information and stores error information 16 in the information storage unit 1 (step 102). Hira at [0031]: Then, component temperature threshold value generating unit 2 acquires system information 8 from the information storage unit 1 (step 103), acquires temperature sensor information 12 (step 104), acquires standard component temperature 15 (step 105), selects standard component temperature 15 matching the system information 8 of the current information processing device and temperature sensor information 12 from standard

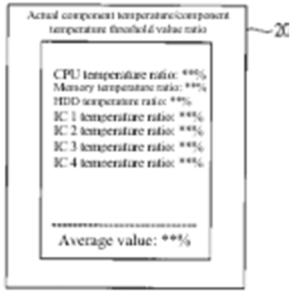
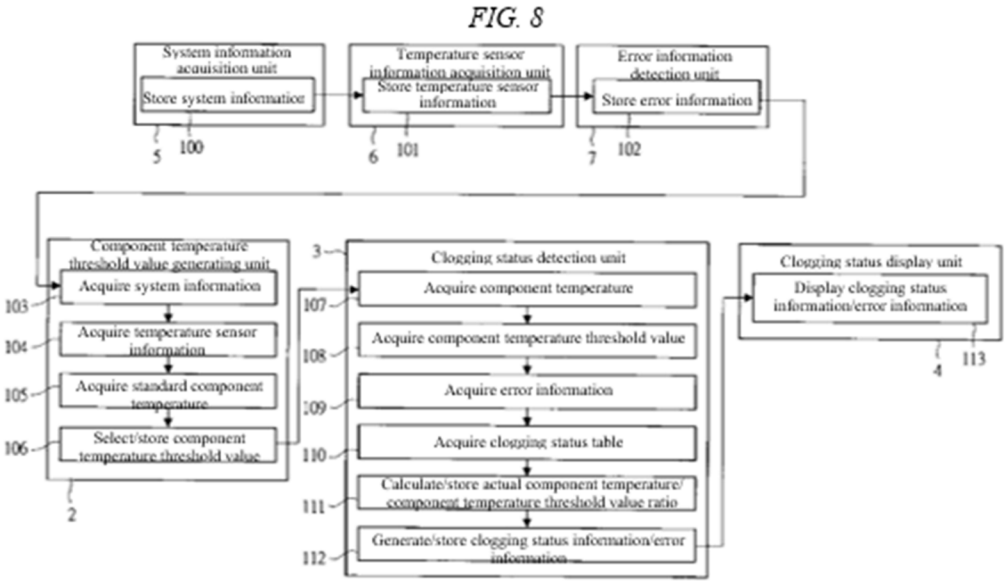
Asserted Claims	Hira
	component temperature 15, copies this as component temperature threshold value 19, and stores it in the information storage unit 1 (step 106). Hira at [0032]: Then, clogging status detection unit 3 acquires component temperature 14 (step 107), acquires component temperature threshold value 19 (step 108), acquires error information (step 109), and acquires clogging status table 21 from the information storage unit 1 (step 110). Hira at [0033]: The actual component temperature/component temperature threshold value ratio 20 is then calculated based on the component temperature 14 and component temperature threshold value 19, and stored in the information storage unit 1 (step 111). Hira at [0034]: Then, clogging status information/error information 22 is generated from error information 16, clogging status table 21, and the average value of actual component temperature/component temperature threshold value ratios 20, and is stored in the information storage unit 1 (step 112). Hira at [0036]: As described above, in the present embodiment, the component temperature threshold value generating unit 2 calculates component temperature threshold values 19 from ambient temperature 13, actual fan rotational speed 9, hardware configuration 10, and load 11, and the clogging status detection unit 3 calculates clogging status from component temperature 14, component temperature threshold value 19, and error information 16 and displays the clogging status on the clogging status display unit 4, making it possible to calculate the clogging status more accurately based on the hardware configuration of the information processing device and current internal information of the information processing device.

Asserted Claims	Hira
	Hira at [0041]: 1...information storage unit; 2...component temperature threshold value generating unit; 3...clogging status detection unit; 4...clogging status display unit; 5...system information acquisition unit; 6...temperature sensor information acquisition unit; 7...error information detection unit; 8...system information; 9...actual fan rotational speed; 10...hardware configuration; 11...load; 12...temperature sensor information; 13...ambient temperature; 14...component temperature; 15...standard component temperature; 16...error information; 17...fan error; 18...voltage error; 19...component temperature threshold value; 20...actual component temperature/component temperature threshold value ratio; 21...clogging status table; 22...clogging status information/error information.
[3.b] wherein the estimating unit is configured to search an upper limit that is recorded in association with a temperature of intake air detected by the intake-air temperature sensor and a utilization rate detected by the operational status detecting unit, from the temperature range storing unit.	Hira discloses, expressly and/or inherently, wherein the estimating unit is configured to search an upper limit that is recorded in association with a temperature of intake air detected by the intake-air temperature sensor and a utilization rate detected by the operational status detecting unit, from the temperature range storing unit. *See, e.g.*: Hira at Fig. 1 and accompanying text:

Asserted Claims	Hira
	 Hira at Fig. 3 and accompanying text:

Asserted Claims	Hira
	FIG. 3  Hira at Fig. 4 and accompanying text:

Asserted Claims	Hira
	FIG. 4  Hira at Fig. 5 and accompanying text:

Asserted Claims	Hira
	FIG. 5  Hira at Fig. 8 and accompanying text:  [FIG. 8]

Asserted Claims	Hira
	Hira at [0008]: Namely, the summary of the representative aspects comprises a component temperature threshold value generating unit which, on the basis of standard component temperature information for multiple components making up an information processing device, system information for the information processing device, and information indicating the internal status of the information processing device, generates component temperature threshold values for the multiple components making up the information processing device; and a clogging status detection unit which detects the clogging status of the dust filter on the basis of the component temperature threshold values and component temperatures inside the information processing device. Hira at [0013]: In FIG. 1, the dust filter clogging status detection device comprises: an information storage unit 1 which stores standard component temperature information for multiple components making up the information processing device corresponding to combinations of system information of information processing devices such as PC/server systems and information indicating the internal status of the information processing device; a component temperature threshold value generating unit 2 which generates component temperature threshold values for multiple components making up the information processing device on the basis of standard component temperature information for multiple components making up the information processing device, system information of the information processing device, and information indicating the internal status of the information processing device; a clogging status detection unit 3 which detects the clogging status of the dust filter on the basis of component temperature threshold values and component temperatures inside the information processing device; a clogging status display unit 4; a system information acquisition unit 5; a temperature sensor information acquisition unit 6; and an error information detection unit 7. Hira at [0014]: Furthermore, the dust filter clogging status detection device is configured as part of an information processing device such as a PC/server system, and the information processing

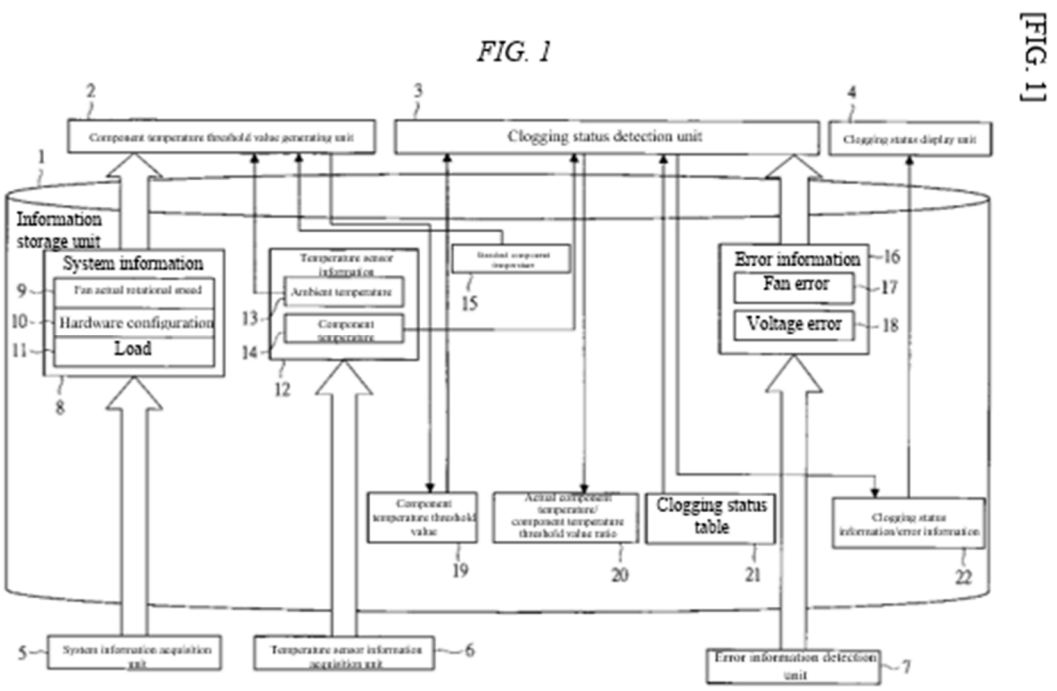
Asserted Claims	Hira
	device has information processing functions such as CPU/HDD/memory, with the information storage unit 1 of the dust filter clogging status detection device comprising an HDD, etc., and the component temperature threshold value generating unit 2, clogging status detection unit 3, system information acquisition unit 5, temperature sensor information acquisition unit 6, and error information detection unit 7 being processed through processing by an information processing unit comprising a CPU, etc. Hira at [0015]: The information storage unit 1 stores system information 8 (actual fan rotational speed 9, hardware configuration 10, load 11), temperature sensor information 12 (ambient temperature 13, component temperature 14), standard component temperature 15, error information 16 (fan error 17, voltage error 18), component temperature threshold values 19, actual component temperature/component temperature threshold value ratio 20, clogging status table 21, and clogging status information/error information 22. Hira at [0017]: Ambient temperature 13 is temperature information for the ambient environment of the system. Component temperature 14 is temperature information for main components such as CPU, memory/HDD/ICs, etc.. Standard component temperature 15 is information on standard component temperatures for each ambient temperature 13, hardware configuration 10, load 11, and actual fan rotational speed 9. Hira at [0019]: Component temperature threshold value 19 is temperature threshold value information for CPU/memory/HDD/other ICs, etc. The actual component temperature/component temperature threshold value ratio 20 is the ratio of actual component temperature to component temperature threshold value. Hira at [0020]: The clogging status table 21 is a table showing clogging status and message information for each average value of actual component temperature/component temperature threshold

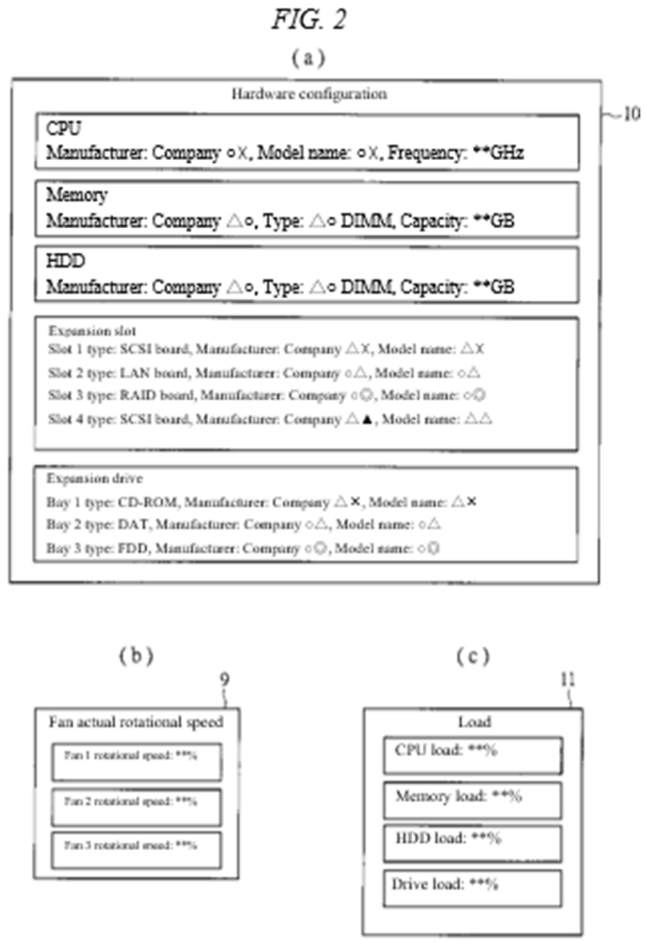
Asserted Claims	Hira
	value ratios. Clogging status information/error information 22 is clogging status information/error information of the information processing device. Hira at [0022]: FIG. 3 shows an example of standard component temperatures used in the dust filter clogging status detection device according to one embodiment of the present invention; FIG. 4 shows an example of component temperature threshold values used in the dust filter clogging status detection device according to one embodiment of the present invention; FIG. 5 shows an example of actual component temperature/component temperature threshold value ratios used in the dust filter clogging status detection device according to one embodiment of the present invention; FIG. 6 shows an example of a clogging status table used in the dust filter clogging status detection device according to one embodiment of the present invention; and FIG. 7 shows an example of clogging status/error information used in the dust filter clogging status detection device according to one embodiment of the present invention. Hira at [0024]: Standard component temperature 15, as shown in FIG. 3, is multiple items of information prepared during the design/development phase and stored in the information storage unit 1, being information consisting of all combinations of ambient temperature, configuration, load, and fan rotational speed. Using this standard component temperature 15, a standard component temperature for detecting dust filter clogging status can be acquired based on the configuration of the information processing device and various internal information of the information processing device. Hira at [0025]: The component temperature threshold value 19, as shown in FIG. 4, is obtained by extracting component temperatures applicable to the current system status from standard component temperature 15, and is composed of ambient temperature, configuration, load, actual fan rotational speed, and standard component temperature. The standard component

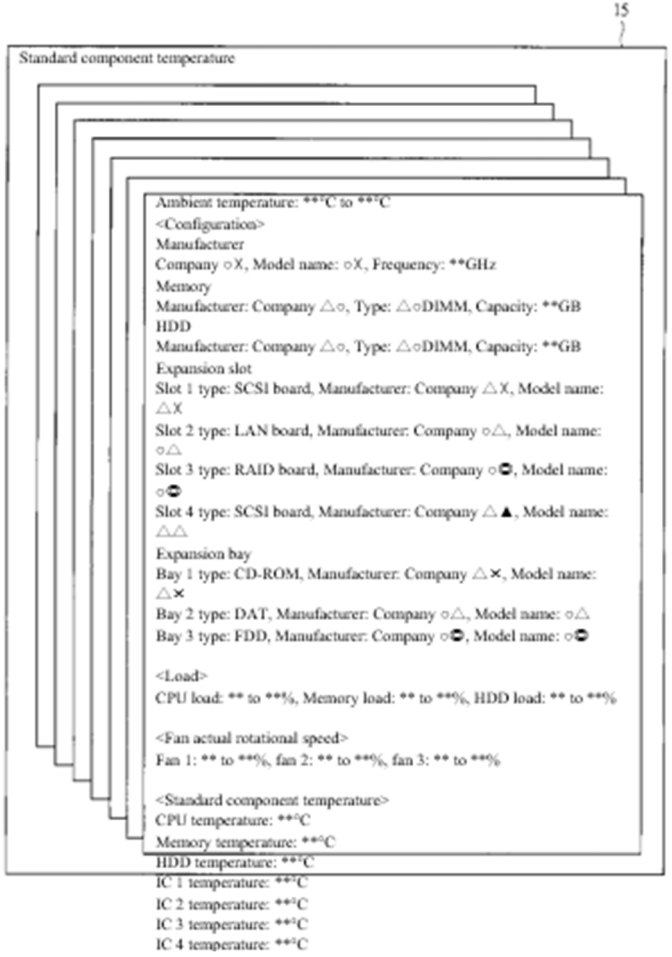
Asserted Claims	Hira
	temperature information within the component temperature threshold value 19 becomes the component temperature threshold value used when detecting dust filter clogging status. Hira at [0026]: The actual component temperature/component temperature threshold value ratio 20, as shown in FIG. 5, represents the ratio of actual component temperature to component temperature threshold value for CPU, memory HDD, and IC 1 to IC 4, and is composed of CPU temperature ratio, memory temperature ratio, HDD temperature ratio, IC 1 to 4 temperature ratio, and average value. Hira at [0027]: The clogging status table 21, as shown in FIG. 6, is prepared in advance during the design/development phase and stored in the information storage unit 1, and is composed of clogging status and messages for each average value of actual component temperature/temperature threshold values. Hira at [0030]: First, system information acquisition unit 5 acquires system information from the operating system, etc. and stores system information 8 in the information storage unit 1 (step 100), temperature sensor information acquisition unit 6 acquires temperature sensor information from temperature sensors, etc. and stores temperature sensor information 12 in the information storage unit 1 (step 101), and error information detection unit 7 acquires error information and stores error information 16 in the information storage unit 1 (step 102). Hira at [0031]: Then, component temperature threshold value generating unit 2 acquires system information 8 from the information storage unit 1 (step 103), acquires temperature sensor information 12 (step 104), acquires standard component temperature 15 (step 105), selects standard component temperature 15 matching the system information 8 of the current information processing device and temperature sensor information 12 from standard

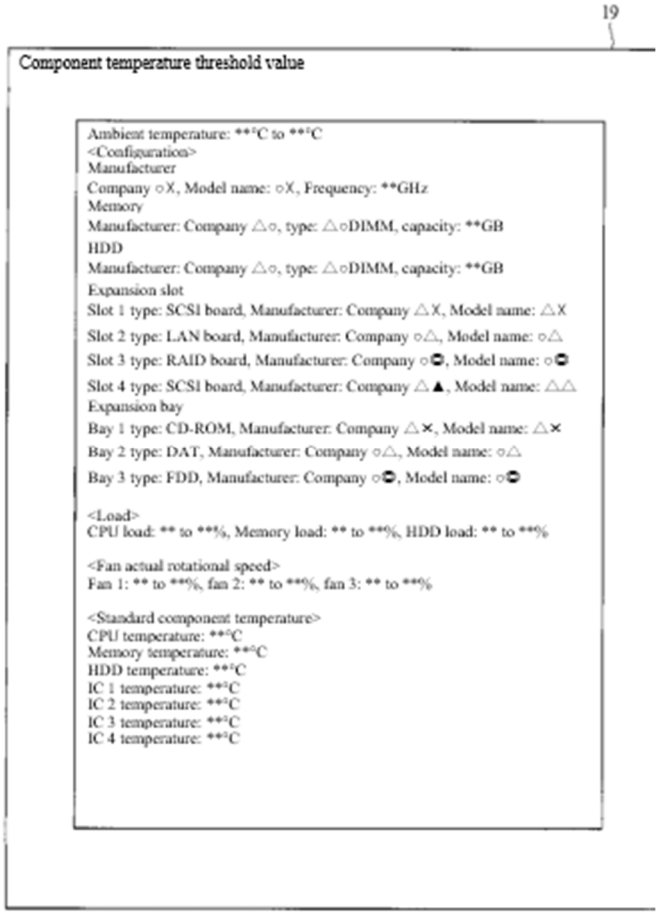
Asserted Claims	Hira
	component temperature 15, copies this as component temperature threshold value 19, and stores it in the information storage unit 1 (step 106). Hira at [0032]: Then, clogging status detection unit 3 acquires component temperature 14 (step 107), acquires component temperature threshold value 19 (step 108), acquires error information (step 109), and acquires clogging status table 21 from the information storage unit 1 (step 110). Hira at [0033]: The actual component temperature/component temperature threshold value ratio 20 is then calculated based on the component temperature 14 and component temperature threshold value 19, and stored in the information storage unit 1 (step 111). Hira at [0034]: Then, clogging status information/error information 22 is generated from error information 16, clogging status table 21, and the average value of actual component temperature/component temperature threshold value ratios 20, and is stored in the information storage unit 1 (step 112). Hira at [0036]: As described above, in the present embodiment, the component temperature threshold value generating unit 2 calculates component temperature threshold values 19 from ambient temperature 13, actual fan rotational speed 9, hardware configuration 10, and load 11, and the clogging status detection unit 3 calculates clogging status from component temperature 14, component temperature threshold value 19, and error information 16 and displays the clogging status on the clogging status display unit 4, making it possible to calculate the clogging status more accurately based on the hardware configuration of the information processing device and current internal information of the information processing device.

Asserted Claims	Hira
	Hira at [0041]: 1...information storage unit; 2...component temperature threshold value generating unit; 3...clogging status detection unit; 4...clogging status display unit; 5...system information acquisition unit; 6...temperature sensor information acquisition unit; 7...error information detection unit; 8...system information; 9...actual fan rotational speed; 10...hardware configuration; 11...load; 12...temperature sensor information; 13...ambient temperature; 14...component temperature; 15...standard component temperature; 16...error information; 17...fan error; 18...voltage error; 19...component temperature threshold value; 20...actual component temperature/component temperature threshold value ratio; 21...clogging status table; 22...clogging status information/error information.
5. The abnormality detection device according to claim 1, wherein the operational status detecting unit is configured to detect a load on a CPU mounted in the ICT equipment as an operational status of the ICT equipment.	Hira discloses, expressly and/or inherently, the abnormality detection device according to claim 1, wherein the operational status detecting unit is configured to detect a load on a CPU mounted in the ICT equipment as an operational status of the ICT equipment. *See, e.g.*: Hira at Fig. 1 and accompanying text:

Asserted Claims	Hira
	 Hira at Fig. 2 and accompanying text:

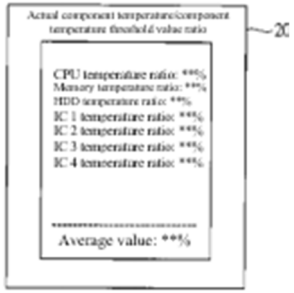
Asserted Claims	Hira
	[FIG. 2]  Hira at Fig. 3 and accompanying text:

Asserted Claims	Hira
	FIG. 3  Hira at Fig. 4 and accompanying text:

Asserted Claims	Hira
	FIG. 4  Hira at Fig. 5 and accompanying text:

Asserted Claims	Hira

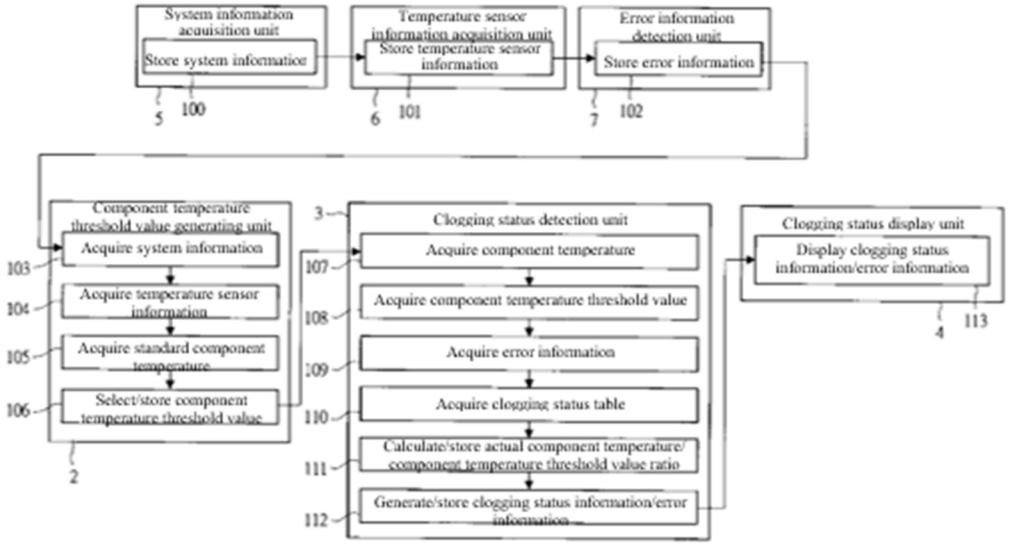
FIG. 5



Hira at Fig. 8 and accompanying text:

[FIG. 8]

FIG. 8

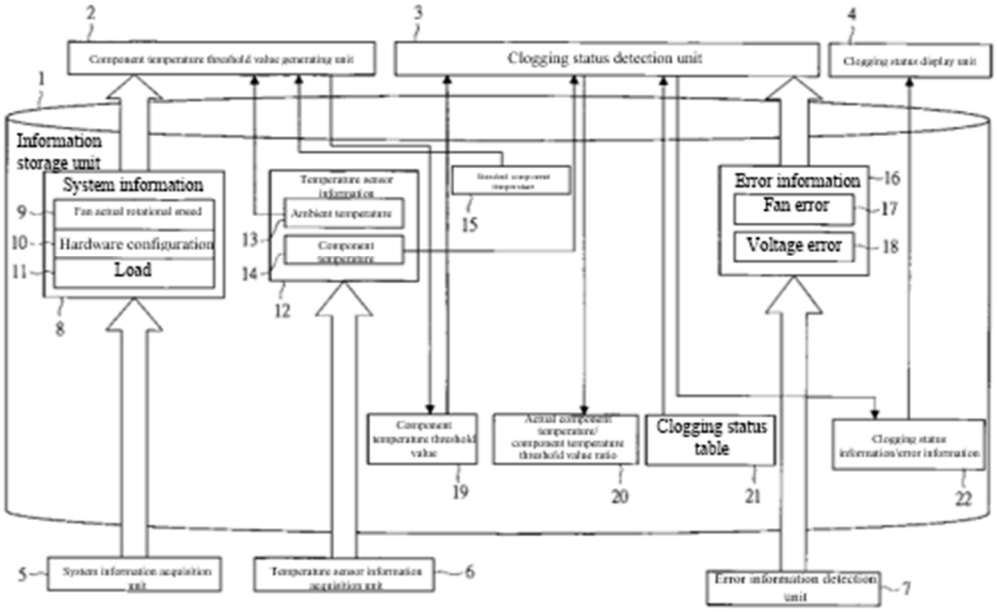


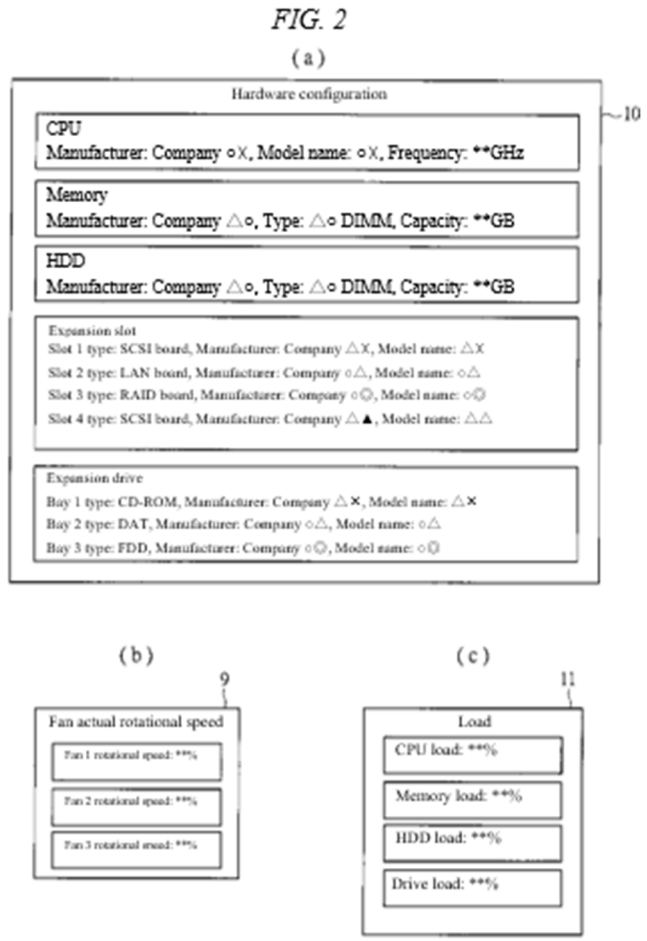
Asserted Claims	Hira
	Hira at [0004]: However, the technique in patent document 1 involves detecting clogging based on fan rotational speed/temperature difference before vs. after the filter. However, when considering application to PC/server systems, differences in internal temperature change due to load and configuration differences of the CPU/memory/HDD, etc. are not taken into consideration, and when considering application to PC/server systems where loads and configurations differ depending on time and user, there is the problem that setting temperature threshold values is difficult. Hira at [0005]: Therefore, is an object of the present invention to provide a dust filter clogging status detection method and dust filter clogging status detection device that make it possible to detect dust filter clogging status more accurately by using system load/configuration information. Hira at [0010]: Namely, the effect provided by the representative aspects is that dust filter clogging status can be more accurately detected using system load/configuration information. Hira at [0014]: Furthermore, the dust filter clogging status detection device is configured as part of an information processing device such as a PC/server system, and the information processing device has information processing functions such as CPU/HDD/memory, with the information storage unit 1 of the dust filter clogging status detection device comprising an HDD, etc., and the component temperature threshold value generating unit 2, clogging status detection unit 3, system information acquisition unit 5, temperature sensor information acquisition unit 6, and error information detection unit 7 being processed through processing by an information processing unit comprising a CPU, etc.

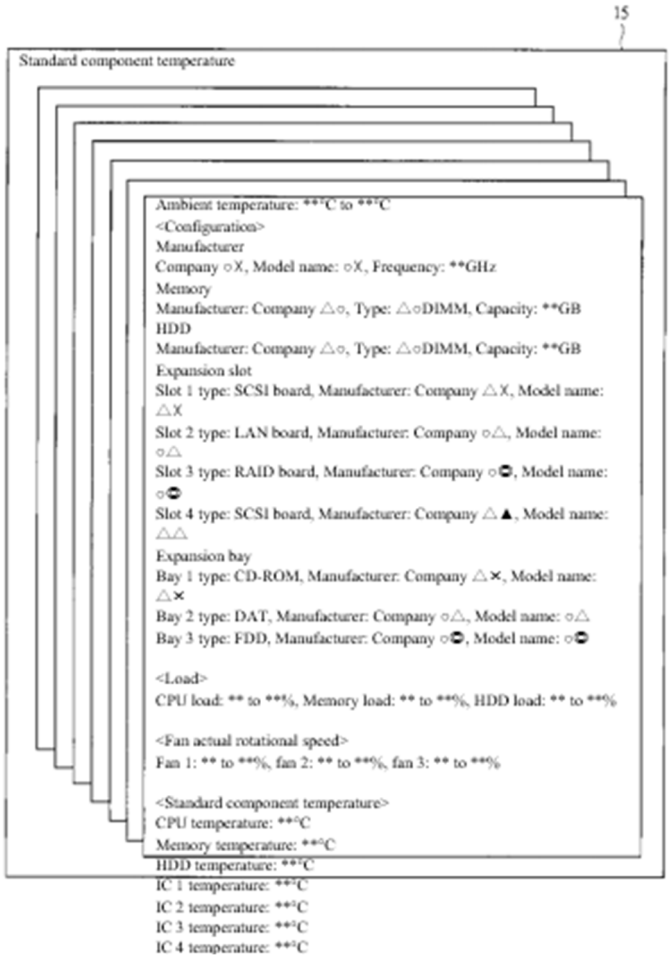
Asserted Claims	Hira
	Hira at [0015]: The information storage unit 1 stores system information 8 (actual fan rotational speed 9, hardware configuration 10, load 11), temperature sensor information 12 (ambient temperature 13, component temperature 14), standard component temperature 15, error information 16 (fan error 17, voltage error 18), component temperature threshold values 19, actual component temperature/component temperature threshold value ratio 20, clogging status table 21, and clogging status information/error information 22. Hira at [0016]: The actual fan rotational speed 9 is the actual rotational speed of each fan installed in the system. The hardware configuration 10 is system configuration information for CPU/memory/HDD/expansion boards/expansion drives. Load 11 is load information for CPU/memory/HDD/expansion drives. Hira at [0017]: Ambient temperature 13 is temperature information for the ambient environment of the system. Component temperature 14 is temperature information for main components such as CPU, memory/HDD/ICs, etc.. Standard component temperature 15 is information on standard component temperatures for each ambient temperature 13, hardware configuration 10, load 11, and actual fan rotational speed 9. Hira at [0019]: Component temperature threshold value 19 is temperature threshold value information for CPU/memory/HDD/other ICs, etc. The actual component temperature/component temperature threshold value ratio 20 is the ratio of actual component temperature to component temperature threshold value. Hira at [0021]:

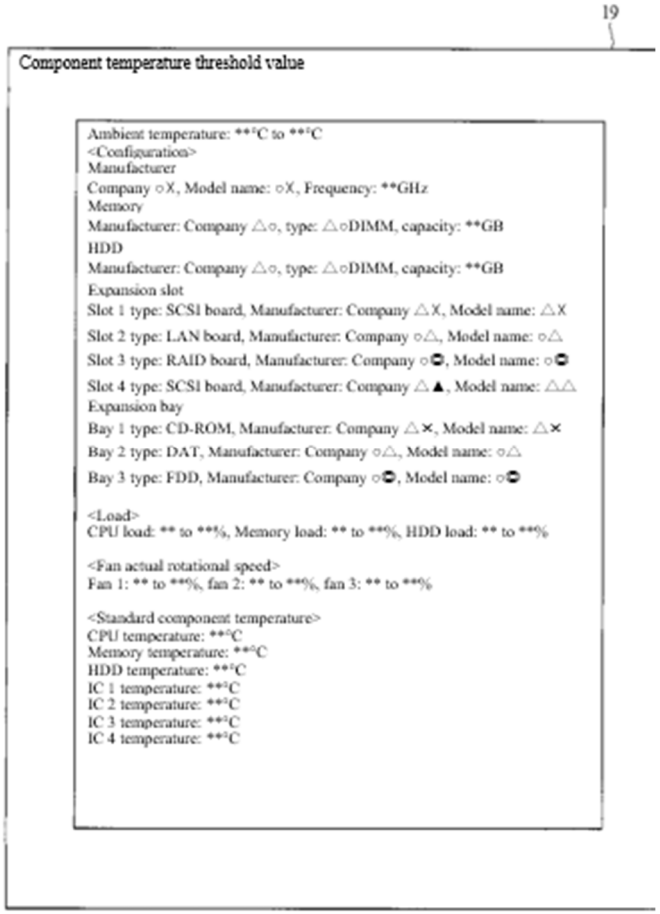
Asserted Claims	Hira
	Next, the various information used in the dust filter clogging status detection device according to one embodiment of the present invention will be described using FIG. 2 to FIG. 7. FIG. 2 shows an example of system information used in the dust filter clogging status detection device according to one embodiment of the present invention, with FIG. 2 (a) showing hardware configuration, FIG. 2 (b) showing actual fan rotational speed, and FIG. 2 (c) showing load information. Hira at [0023]: As shown in FIG. 2, system information 8 consists of actual fan rotational speed 9, hardware configuration 10, and load 11 information, with hardware configuration 10 consisting of information on CPU, memory, HDD, expansion slots, expansion drives, etc. Actual fan rotational speed 9 is the ratio of actual rotational speed to maximum rotational speed for each fan installed in the system. Load 11 represents the ratio of actual load to maximum load for each of CPU, memory, HDD, and drive. Hira at [0024]: Standard component temperature 15, as shown in FIG. 3, is multiple items of information prepared during the design/development phase and stored in the information storage unit 1, being information consisting of all combinations of ambient temperature, configuration, load, and fan rotational speed. Using this standard component temperature 15, a standard component temperature for detecting dust filter clogging status can be acquired based on the configuration of the information processing device and various internal information of the information processing device. Hira at [0025]: The component temperature threshold value 19, as shown in FIG. 4, is obtained by extracting component temperatures applicable to the current system status from standard component temperature 15, and is composed of ambient temperature, configuration, load, actual fan rotational speed, and standard component temperature. The standard component temperature information within the component temperature threshold value 19 becomes the component temperature threshold value used when detecting dust filter clogging status.

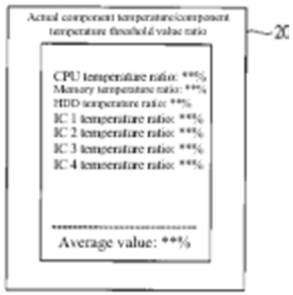
Asserted Claims	Hira
	Hira at [0026]: The actual component temperature/component temperature threshold value ratio 20, as shown in FIG. 5, represents the ratio of actual component temperature to component temperature threshold value for CPU, memory HDD, and IC 1 to IC 4, and is composed of CPU temperature ratio, memory temperature ratio, HDD temperature ratio, IC 1 to 4 temperature ratio, and average value. Hira at [0036]: As described above, in the present embodiment, the component temperature threshold value generating unit 2 calculates component temperature threshold values 19 from ambient temperature 13, actual fan rotational speed 9, hardware configuration 10, and load 11, and the clogging status detection unit 3 calculates clogging status from component temperature 14, component temperature threshold value 19, and error information 16 and displays the clogging status on the clogging status display unit 4, making it possible to calculate the clogging status more accurately based on the hardware configuration of the information processing device and current internal information of the information processing device. Hira at [0038]: For example, in the present embodiment, component temperature threshold values 19 are created by selecting a standard component temperature 15 matching system information 8 and temperature sensor information 12 from standard component temperatures 15 consisting of multiple combinations, but the standard component temperature information could alternatively be converted to a database of standard component temperatures corresponding to hardware configuration, load, and actual fan rotational speed, and component temperature threshold values 19 could be calculated by searching this database based on current information processing device information.

Asserted Claims	Hira
6. The abnormality detection device according to claim 1, wherein the operational status detecting unit is configured to detect power consumption of the ICT equipment as an operational status of the ICT equipment.	Hira discloses, expressly and/or inherently, the abnormality detection device according to claim 1, wherein the operational status detecting unit is configured to detect power consumption of the ICT equipment as an operational status of the ICT equipment. *See, e.g.*: Hira at Fig. 1 and accompanying text: [FIG. 1] *FIG. 1*  Hira at Fig. 2 and accompanying text:

Asserted Claims	Hira
	[FIG. 2] 

Asserted Claims	Hira
	Hira at Fig. 3 and accompanying text: *FIG. 3*  Hira at Fig. 4 and accompanying text:

Asserted Claims	Hira
	FIG. 4  Hira at Fig. 5 and accompanying text:

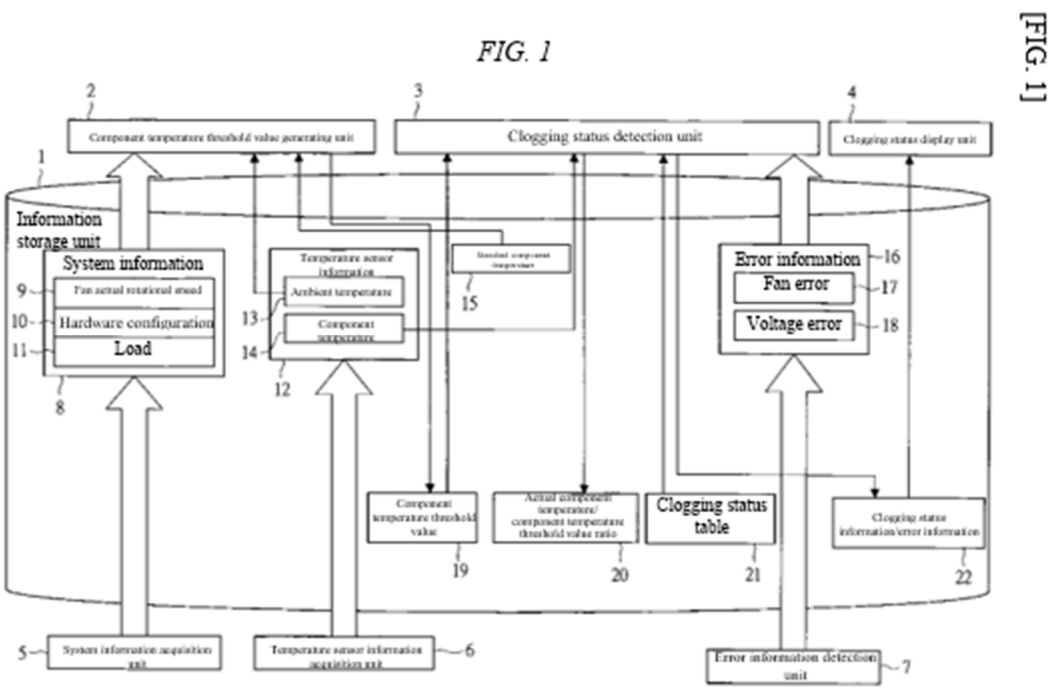
Asserted Claims	Hira
	FIG. 5  Hira at [0004]: However, the technique in patent document 1 involves detecting clogging based on fan rotational speed/temperature difference before vs. after the filter. However, when considering application to PC/server systems, differences in internal temperature change due to load and configuration differences of the CPU/memory/HDD, etc. are not taken into consideration, and when considering application to PC/server systems where loads and configurations differ depending on time and user, there is the problem that setting temperature threshold values is difficult. Hira at [0005]: Therefore, is an object of the present invention to provide a dust filter clogging status detection method and dust filter clogging status detection device that make it possible to detect dust filter clogging status more accurately by using system load/configuration information. Hira at [0010]:

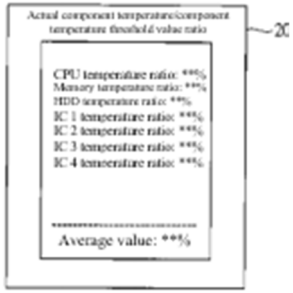
Asserted Claims	Hira
	Namely, the effect provided by the representative aspects is that dust filter clogging status can be more accurately detected using system load/configuration information. Hira at [0014]: Furthermore, the dust filter clogging status detection device is configured as part of an information processing device such as a PC/server system, and the information processing device has information processing functions such as CPU/HDD/memory, with the information storage unit 1 of the dust filter clogging status detection device comprising an HDD, etc., and the component temperature threshold value generating unit 2, clogging status detection unit 3, system information acquisition unit 5, temperature sensor information acquisition unit 6, and error information detection unit 7 being processed through processing by an information processing unit comprising a CPU, etc. Hira at [0015]: The information storage unit 1 stores system information 8 (actual fan rotational speed 9, hardware configuration 10, load 11), temperature sensor information 12 (ambient temperature 13, component temperature 14), standard component temperature 15, error information 16 (fan error 17, voltage error 18), component temperature threshold values 19, actual component temperature/component temperature threshold value ratio 20, clogging status table 21, and clogging status information/error information 22. Hira at [0016]: The actual fan rotational speed 9 is the actual rotational speed of each fan installed in the system. The hardware configuration 10 is system configuration information for CPU/memory/HDD/expansion boards/expansion drives. Load 11 is load information for CPU/memory/HDD/expansion drives. Hira at [0017]:

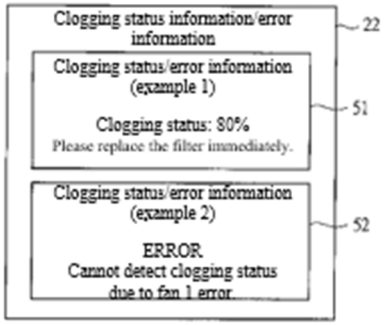
Asserted Claims	Hira
	Ambient temperature 13 is temperature information for the ambient environment of the system. Component temperature 14 is temperature information for main components such as CPU, memory/HDD/ICs, etc.. Standard component temperature 15 is information on standard component temperatures for each ambient temperature 13, hardware configuration 10, load 11, and actual fan rotational speed 9. Hira at [0019]: Component temperature threshold value 19 is temperature threshold value information for CPU/memory/HDD/other ICs, etc. The actual component temperature/component temperature threshold value ratio 20 is the ratio of actual component temperature to component temperature threshold value. Hira at [0021]: Next, the various information used in the dust filter clogging status detection device according to one embodiment of the present invention will be described using FIG. 2 to FIG. 7. FIG. 2 shows an example of system information used in the dust filter clogging status detection device according to one embodiment of the present invention, with FIG. 2 (a) showing hardware configuration, FIG. 2 (b) showing actual fan rotational speed, and FIG. 2 (c) showing load information. Hira at [0023]: As shown in FIG. 2, system information 8 consists of actual fan rotational speed 9, hardware configuration 10, and load 11 information, with hardware configuration 10 consisting of information on CPU, memory, HDD, expansion slots, expansion drives, etc. Actual fan rotational speed 9 is the ratio of actual rotational speed to maximum rotational speed for each fan installed in the system. Load 11 represents the ratio of actual load to maximum load for each of CPU, memory, HDD, and drive. Hira at [0024]:

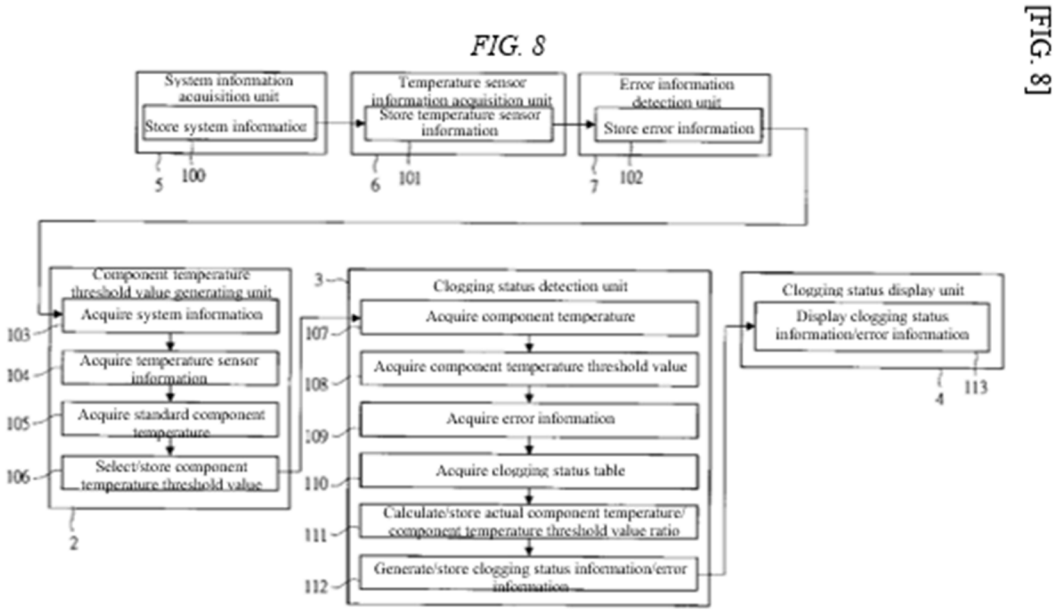
Asserted Claims	Hira
	Standard component temperature 15, as shown in FIG. 3, is multiple items of information prepared during the design/development phase and stored in the information storage unit 1, being information consisting of all combinations of ambient temperature, configuration, load, and fan rotational speed. Using this standard component temperature 15, a standard component temperature for detecting dust filter clogging status can be acquired based on the configuration of the information processing device and various internal information of the information processing device. Hira at [0025]: The component temperature threshold value 19, as shown in FIG. 4, is obtained by extracting component temperatures applicable to the current system status from standard component temperature 15, and is composed of ambient temperature, configuration, load, actual fan rotational speed, and standard component temperature. The standard component temperature information within the component temperature threshold value 19 becomes the component temperature threshold value used when detecting dust filter clogging status. Hira at [0026]: The actual component temperature/component temperature threshold value ratio 20, as shown in FIG. 5, represents the ratio of actual component temperature to component temperature threshold value for CPU, memory HDD, and IC 1 to IC 4, and is composed of CPU temperature ratio, memory temperature ratio, HDD temperature ratio, IC 1 to 4 temperature ratio, and average value. Hira at [0036]: As described above, in the present embodiment, the component temperature threshold value generating unit 2 calculates component temperature threshold values 19 from ambient temperature 13, actual fan rotational speed 9, hardware configuration 10, and load 11, and the clogging status detection unit 3 calculates clogging status from component temperature 14, component temperature threshold value 19, and error information 16 and displays the clogging status on the clogging status display unit 4, making it possible to calculate the clogging status more accurately based on the hardware configuration of the

Asserted Claims	Hira
	information processing device and current internal information of the information processing device. Hira at [0038]: For example, in the present embodiment, component temperature threshold values 19 are created by selecting a standard component temperature 15 matching system information 8 and temperature sensor information 12 from standard component temperatures 15 consisting of multiple combinations, but the standard component temperature information could alternatively be converted to a database of standard component temperatures corresponding to hardware configuration, load, and actual fan rotational speed, and component temperature threshold values 19 could be calculated by searching this database based on current information processing device information.
7. The abnormality detection device according to claim 1, wherein the temperature sensor is configured to detect a temperature of exhaust air.	Hira discloses, expressly and/or inherently, the abnormality detection device according to claim 1, wherein the temperature sensor is configured to detect a temperature of exhaust air. *See* claim 1.b.
[8.pre] 8. An Information and Communication Technology (ICT) equipment including a cooling fan, comprising:	Dell takes no position in these Invalidity Contentions on whether the entirety of the preamble of this claim limitation. Hira discloses, expressly and/or inherently, an Information and Communication Technology (ICT) equipment including a cooling fan. *See* claim 1.pre.
[8.a] an operational status detecting unit configured to detect an operational status of the ICT equipment;	Hira discloses, expressly and/or inherently, an operational status detecting unit configured to detect an operational status of the ICT equipment. *See, e.g.*: Hira at Fig. 1 and accompanying text:

Asserted Claims	Hira
	 Hira at Fig. 5 and accompanying text:

Asserted Claims	Hira
	FIG. 5  Hira at Fig. 6 and accompanying text: FIG. 6 Clogging status table Actual temperature/temperature threshold value average value / Clogging status / Message **～**% / ～30% / No problems. **～**% / 30～70% / Please prepare to replace the filter. **～**% / 70～100% / Please replace the filter immediately. 21 Hira at Fig. 7 and accompanying text:

Asserted Claims	Hira
	FIG. 7  Hira at Fig. 8 and accompanying text:

Asserted Claims	Hira
	 [FIG. 8] Hira at [0001]: The present invention relates to a dust filter clogging status detection method and dust filter clogging status detection device for detecting clogging status of dust filters inside information processing devices such as PCs and server systems, and particularly relates to technology for detecting clogging status on the basis of system information of the information processing device. Hira at [0005]:

Asserted Claims	Hira
	Therefore, is an object of the present invention to provide a dust filter clogging status detection method and dust filter clogging status detection device that make it possible to detect dust filter clogging status more accurately by using system load/configuration information. Hira at [0008]: Namely, the summary of the representative aspects comprises a component temperature threshold value generating unit which, on the basis of standard component temperature information for multiple components making up an information processing device, system information for the information processing device, and information indicating the internal status of the information processing device, generates component temperature threshold values for the multiple components making up the information processing device; and a clogging status detection unit which detects the clogging status of the dust filter on the basis of the component temperature threshold values and component temperatures inside the information processing device. Hira at [0010]: Namely, the effect provided by the representative aspects is that dust filter clogging status can be more accurately detected using system load/configuration information. Hira at [0012]: The configuration of a dust filter clogging status detection device according to one embodiment of the present invention will be described using FIG. 1. FIG. 1 is a configuration diagram illustrating the configuration of a dust filter clogging status detection device according to one embodiment of the present invention. Hira at [0013]: In FIG. 1, the dust filter clogging status detection device comprises: an information storage unit 1 which stores standard component temperature information for multiple components making up the information processing device corresponding to combinations of system

Asserted Claims	Hira
	information of information processing devices such as PC/server systems and information indicating the internal status of the information processing device; a component temperature threshold value generating unit 2 which generates component temperature threshold values for multiple components making up the information processing device on the basis of standard component temperature information for multiple components making up the information processing device, system information of the information processing device, and information indicating the internal status of the information processing device; a clogging status detection unit 3 which detects the clogging status of the dust filter on the basis of component temperature threshold values and component temperatures inside the information processing device; a clogging status display unit 4; a system information acquisition unit 5; a temperature sensor information acquisition unit 6; and an error information detection unit 7. Hira at [0014]: Furthermore, the dust filter clogging status detection device is configured as part of an information processing device such as a PC/server system, and the information processing device has information processing functions such as CPU/HDD/memory, with the information storage unit 1 of the dust filter clogging status detection device comprising an HDD, etc., and the component temperature threshold value generating unit 2, clogging status detection unit 3, system information acquisition unit 5, temperature sensor information acquisition unit 6, and error information detection unit 7 being processed through processing by an information processing unit comprising a CPU, etc. Hira at [0015]: The information storage unit 1 stores system information 8 (actual fan rotational speed 9, hardware configuration 10, load 11), temperature sensor information 12 (ambient temperature 13, component temperature 14), standard component temperature 15, error information 16 (fan error 17, voltage error 18), component temperature threshold values 19, actual component temperature/component temperature threshold value ratio 20, clogging status table 21, and clogging status information/error information 22.

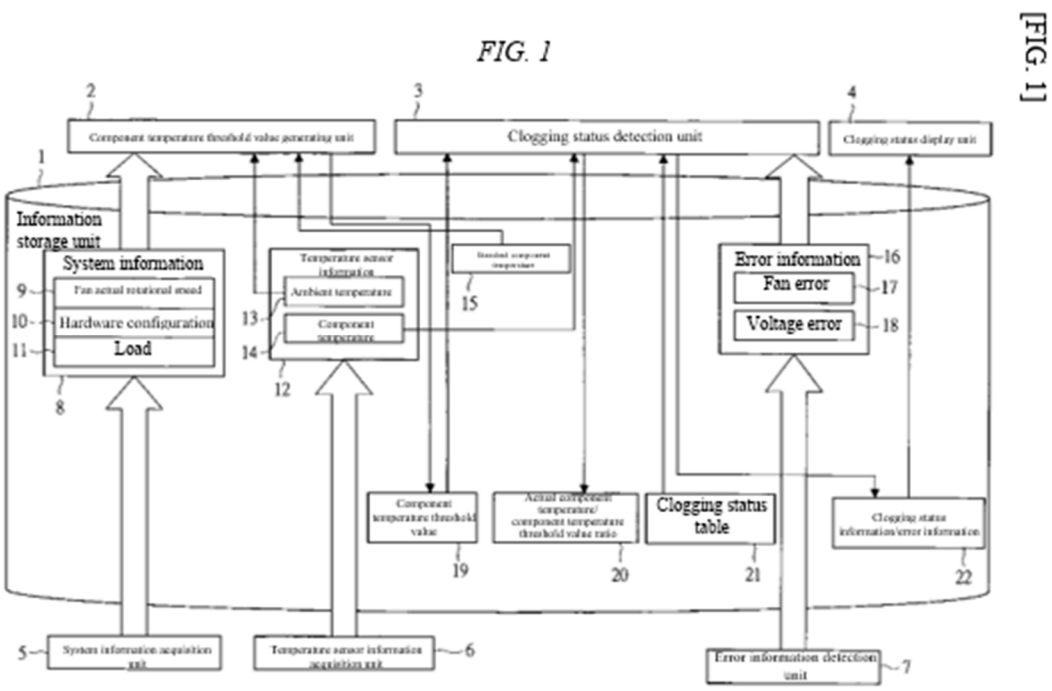
	Hira at [0020]: The clogging status table 21 is a table showing clogging status and message information for each average value of actual component temperature/component temperature threshold value ratios. Clogging status information/error information 22 is clogging status information/error information of the information processing device. Hira at [0021]: Next, the various information used in the dust filter clogging status detection device according to one embodiment of the present invention will be described using FIG. 2 to FIG. 7. FIG. 2 shows an example of system information used in the dust filter clogging status detection device according to one embodiment of the present invention, with FIG. 2 (a) showing hardware configuration, FIG. 2 (b) showing actual fan rotational speed, and FIG. 2 (c) showing load information. Hira at [0022]: FIG. 3 shows an example of standard component temperatures used in the dust filter clogging status detection device according to one embodiment of the present invention; FIG. 4 shows an example of component temperature threshold values used in the dust filter clogging status detection device according to one embodiment of the present invention; FIG. 5 shows an example of actual component temperature/component temperature threshold value ratios used in the dust filter clogging status detection device according to one embodiment of the present invention; FIG. 6 shows an example of a clogging status table used in the dust filter clogging status detection device according to one embodiment of the present invention; and FIG. 7 shows an example of clogging status/error information used in the dust filter clogging status detection device according to one embodiment of the present invention. Hira at [0024]: Standard component temperature 15, as shown in FIG. 3, is multiple items of information prepared during the design/development phase and stored in the information storage unit 1, being information consisting of all combinations of ambient temperature, configuration, load, and fan rotational speed. Using this standard component temperature 15, a standard component temperature for detecting dust filter clogging status can be acquired based on

Asserted Claims	Hira
	the configuration of the information processing device and various internal information of the information processing device. Hira at [0025]: The component temperature threshold value 19, as shown in FIG. 4, is obtained by extracting component temperatures applicable to the current system status from standard component temperature 15, and is composed of ambient temperature, configuration, load, actual fan rotational speed, and standard component temperature. The standard component temperature information within the component temperature threshold value 19 becomes the component temperature threshold value used when detecting dust filter clogging status. Hira at [0026]: The actual component temperature/component temperature threshold value ratio 20, as shown in FIG. 5, represents the ratio of actual component temperature to component temperature threshold value for CPU, memory HDD, and IC 1 to IC 4, and is composed of CPU temperature ratio, memory temperature ratio, HDD temperature ratio, IC 1 to 4 temperature ratio, and average value. Hira at [0027]: The clogging status table 21, as shown in FIG. 6, is prepared in advance during the design/development phase and stored in the information storage unit 1, and is composed of clogging status and messages for each average value of actual component temperature/temperature threshold values. Hira at [0028]: Clogging status information/error information 22, as shown in FIG. 7, is composed of clogging status and messages as in clogging status/error information (example 1) 51. When error information exists, it is composed of error information and content indicating that clogging cannot be detected, as in clogging status/error information (Example 2) 52. Hira at [0029]:

Asserted Claims	Hira
	Next, the dust filter clogging status detection operation of the dust filter clogging status detection device according to one embodiment of the present invention will be described using FIG. 8. FIG. 8 is a flowchart showing the dust filter clogging status detection operation of the dust filter clogging status detection device according to one embodiment of the present invention. Hira at [0032]: Then, clogging status detection unit 3 acquires component temperature 14 (step 107), acquires component temperature threshold value 19 (step 108), acquires error information (step 109), and acquires clogging status table 21 from the information storage unit 1 (step 110). Hira at [0034]: Then, clogging status information/error information 22 is generated from error information 16, clogging status table 21, and the average value of actual component temperature/component temperature threshold value ratios 20, and is stored in the information storage unit 1 (step 112). Hira at [0035]: Then, the clogging status display unit 4 acquires clogging status information/error information 22 from the information storage unit 1 and displays this information (step 113). Hira at [0036]: As described above, in the present embodiment, the component temperature threshold value generating unit 2 calculates component temperature threshold values 19 from ambient temperature 13, actual fan rotational speed 9, hardware configuration 10, and load 11, and the clogging status detection unit 3 calculates clogging status from component temperature 14, component temperature threshold value 19, and error information 16 and displays the clogging status on the clogging status display unit 4, making it possible to calculate the clogging status more accurately based on the hardware configuration of the

Asserted Claims	Hira
	information processing device and current internal information of the information processing device. Hira at [0039]: The present invention is widely applicable to information processing devices which have an internal dust filter and detect the clogging status of that filter. Hira at [0040]: [FIG. 1] is a configuration diagram illustrating the configuration of a dust filter clogging status detection device according to one embodiment of the present invention. [FIG. 2] shows an example of system information used in the dust filter clogging status detection device according to one embodiment of the present invention. [FIG. 3] shows an example of standard component temperatures used in the dust filter clogging status detection device according to one embodiment of the present invention. [FIG. 4] shows an example of component temperature threshold values used in the dust filter clogging status detection device according to one embodiment of the present invention. [FIG. 5] shows an example of actual component temperature/component temperature threshold value ratios used in the dust filter clogging status detection device according to one embodiment of the present invention. [FIG. 6] shows an example of a clogging status table used in the dust filter clogging status detection device according to one embodiment of the present invention. [FIG. 7] shows an example of clogging status information/error information used in the dust filter clogging status detection device according to one embodiment of the present invention. [FIG. 8] is a flowchart showing the dust filter clogging status detection operation of the dust filter clogging status detection device according to one embodiment of the present invention. Hira at [0041]:

Asserted Claims	Hira
	1...information storage unit; 2...component temperature threshold value generating unit; 3...clogging status detection unit; 4...clogging status display unit; 5...system information acquisition unit; 6...temperature sensor information acquisition unit; 7...error information detection unit; 8...system information; 9...actual fan rotational speed; 10...hardware configuration; 11...load; 12...temperature sensor information; 13...ambient temperature; 14...component temperature; 15...standard component temperature; 16...error information; 17...fan error; 18...voltage error; 19...component temperature threshold value; 20...actual component temperature/component temperature threshold value ratio; 21...clogging status table; 22...clogging status information/error information.
[8.b] an intake-air temperature sensor configured to detect an intake air temperature of intake air of the ICT equipment;	Hira discloses, expressly and/or inherently, an intake-air temperature sensor configured to detect an intake air temperature of intake air of the ICT equipment. *See, e.g.*: Hira at Fig. 1 and accompanying text:

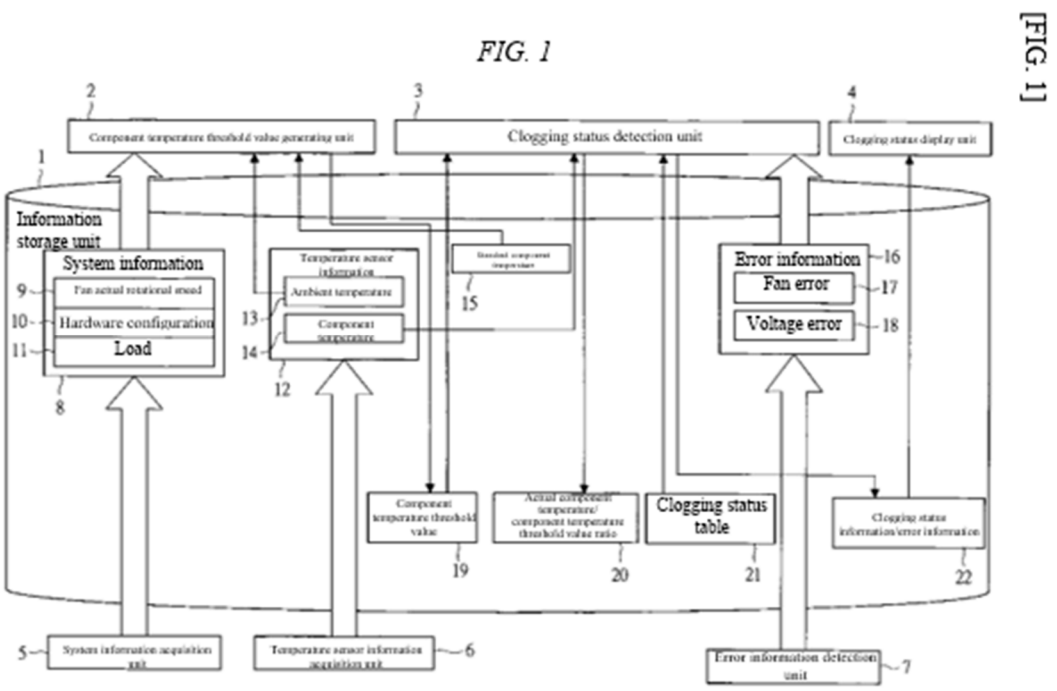
Asserted Claims	Hira
	 Hira at [0013]: In FIG. 1, the dust filter clogging status detection device comprises: an information storage unit 1 which stores standard component temperature information for multiple components making up the information processing device corresponding to combinations of system information of information processing devices such as PC/server systems and information indicating the internal status of the information processing device; a component temperature threshold value generating unit 2 which generates component temperature threshold values for multiple components making up the information processing device on the basis of standard component temperature information for multiple components making up the information processing device, system information of the information processing

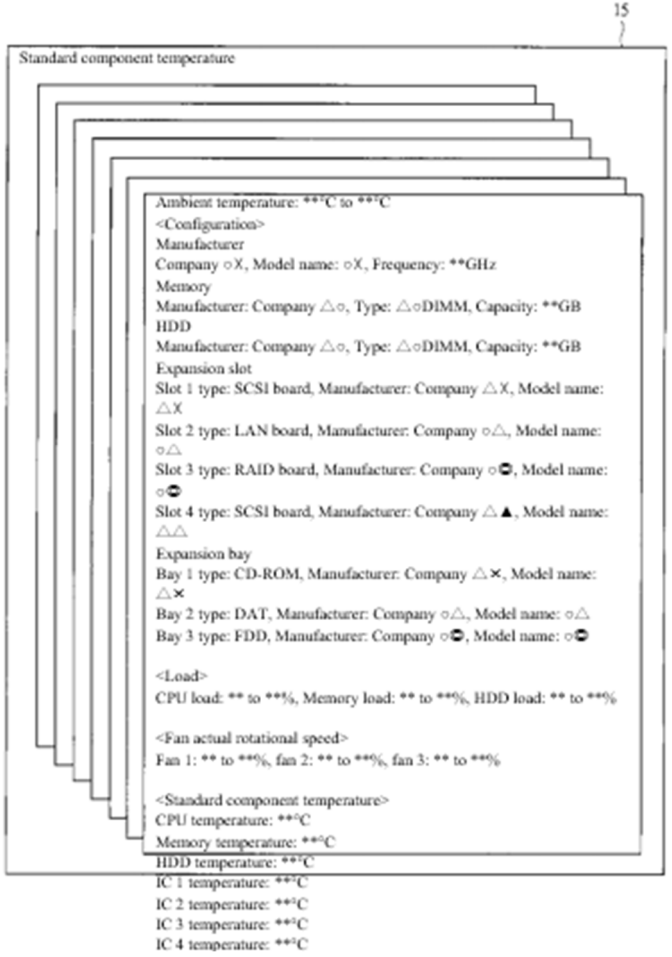
Asserted Claims	Hira
	device, and information indicating the internal status of the information processing device; a clogging status detection unit 3 which detects the clogging status of the dust filter on the basis of component temperature threshold values and component temperatures inside the information processing device; a clogging status display unit 4; a system information acquisition unit 5; a temperature sensor information acquisition unit 6; and an error information detection unit 7. Hira at [0014]: Furthermore, the dust filter clogging status detection device is configured as part of an information processing device such as a PC/server system, and the information processing device has information processing functions such as CPU/HDD/memory, with the information storage unit 1 of the dust filter clogging status detection device comprising an HDD, etc., and the component temperature threshold value generating unit 2, clogging status detection unit 3, system information acquisition unit 5, temperature sensor information acquisition unit 6, and error information detection unit 7 being processed through processing by an information processing unit comprising a CPU, etc. Hira at [0015]: The information storage unit 1 stores system information 8 (actual fan rotational speed 9, hardware configuration 10, load 11), temperature sensor information 12 (ambient temperature 13, component temperature 14), standard component temperature 15, error information 16 (fan error 17, voltage error 18), component temperature threshold values 19, actual component temperature/component temperature threshold value ratio 20, clogging status table 21, and clogging status information/error information 22. Hira at [0017]: Ambient temperature 13 is temperature information for the ambient environment of the system. Component temperature 14 is temperature information for main components such as CPU, memory/HDD/ICs, etc.. Standard component temperature 15 is information on standard component temperatures for each ambient temperature 13, hardware configuration 10, load 11, and actual fan rotational speed 9.

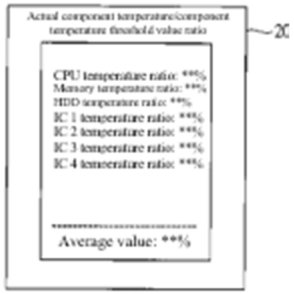
Asserted Claims	Hira
	Hira at [0024]: Standard component temperature 15, as shown in FIG. 3, is multiple items of information prepared during the design/development phase and stored in the information storage unit 1, being information consisting of all combinations of ambient temperature, configuration, load, and fan rotational speed. Using this standard component temperature 15, a standard component temperature for detecting dust filter clogging status can be acquired based on the configuration of the information processing device and various internal information of the information processing device. Hira at [0025]: The component temperature threshold value 19, as shown in FIG. 4, is obtained by extracting component temperatures applicable to the current system status from standard component temperature 15, and is composed of ambient temperature, configuration, load, actual fan rotational speed, and standard component temperature. The standard component temperature information within the component temperature threshold value 19 becomes the component temperature threshold value used when detecting dust filter clogging status. Hira at [0030]: First, system information acquisition unit 5 acquires system information from the operating system, etc. and stores system information 8 in the information storage unit 1 (step 100), temperature sensor information acquisition unit 6 acquires temperature sensor information from temperature sensors, etc. and stores temperature sensor information 12 in the information storage unit 1 (step 101), and error information detection unit 7 acquires error information and stores error information 16 in the information storage unit 1 (step 102). Hira at [0031]: Then, component temperature threshold value generating unit 2 acquires system information 8 from the information storage unit 1 (step 103), acquires temperature sensor information 12 (step 104), acquires standard component temperature 15 (step 105), selects standard component temperature 15 matching the system information 8 of the current

Asserted Claims	Hira
	information processing device and temperature sensor information 12 from standard component temperature 15, copies this as component temperature threshold value 19, and stores it in the information storage unit 1 (step 106). Hira at [0036]: As described above, in the present embodiment, the component temperature threshold value generating unit 2 calculates component temperature threshold values 19 from ambient temperature 13, actual fan rotational speed 9, hardware configuration 10, and load 11, and the clogging status detection unit 3 calculates clogging status from component temperature 14, component temperature threshold value 19, and error information 16 and displays the clogging status on the clogging status display unit 4, making it possible to calculate the clogging status more accurately based on the hardware configuration of the information processing device and current internal information of the information processing device. Hira at [0038]: For example, in the present embodiment, component temperature threshold values 19 are created by selecting a standard component temperature 15 matching system information 8 and temperature sensor information 12 from standard component temperatures 15 consisting of multiple combinations, but the standard component temperature information could alternatively be converted to a database of standard component temperatures corresponding to hardware configuration, load, and actual fan rotational speed, and component temperature threshold values 19 could be calculated by searching this database based on current information processing device information. Hira at [0041]: 1...information storage unit; 2...component temperature threshold value generating unit; 3...clogging status detection unit; 4...clogging status display unit; 5...system information acquisition unit; 6...temperature sensor information acquisition unit; 7...error information detection unit; 8...system information; 9...actual fan rotational speed; 10...hardware configuration; 11...load; 12...temperature sensor information; 13...ambient temperature;

Asserted Claims	Hira
	14...component temperature; 15...standard component temperature; 16...error information; 17...fan error; 18...voltage error; 19...component temperature threshold value; 20...actual component temperature/component temperature threshold value ratio; 21...clogging status table; 22...clogging status information/error information.
[8.c] an equipment temperature sensor configured to detect an equipment temperature in a predetermined position of the ICT equipment;	Hira discloses, expressly and/or inherently, an equipment temperature sensor configured to detect an equipment temperature in a predetermined position of the ICT equipment. *See, e.g.*: Hira at Fig. 1 and accompanying text:

Asserted Claims	Hira
	 Hira at Fig. 3 and accompanying text:

Asserted Claims	Hira
	FIG. 3 

Asserted Claims	Hira
	Hira at Fig. 5 and accompanying text: *FIG. 5*  Hira at [0008]: Namely, the summary of the representative aspects comprises a component temperature threshold value generating unit which, on the basis of standard component temperature information for multiple components making up an information processing device, system information for the information processing device, and information indicating the internal status of the information processing device, generates component temperature threshold values for the multiple components making up the information processing device; and a clogging status detection unit which detects the clogging status of the dust filter on the basis of the component temperature threshold values and component temperatures inside the information processing device. Hira at [0013]: In FIG. 1, the dust filter clogging status detection device comprises: an information storage unit 1 which stores standard component temperature information for multiple components making up the information processing device corresponding to combinations of system information of information processing devices such as PC/server systems and information indicating the internal status of the information processing device; a component temperature threshold value generating unit 2 which generates component temperature

Asserted Claims	Hira
	threshold values for multiple components making up the information processing device on the basis of standard component temperature information for multiple components making up the information processing device, system information of the information processing device, and information indicating the internal status of the information processing device; a clogging status detection unit 3 which detects the clogging status of the dust filter on the basis of component temperature threshold values and component temperatures inside the information processing device; a clogging status display unit 4; a system information acquisition unit 5; a temperature sensor information acquisition unit 6; and an error information detection unit 7. Hira at [0014]: Furthermore, the dust filter clogging status detection device is configured as part of an information processing device such as a PC/server system, and the information processing device has information processing functions such as CPU/HDD/memory, with the information storage unit 1 of the dust filter clogging status detection device comprising an HDD, etc., and the component temperature threshold value generating unit 2, clogging status detection unit 3, system information acquisition unit 5, temperature sensor information acquisition unit 6, and error information detection unit 7 being processed through processing by an information processing unit comprising a CPU, etc. Hira at [0015]: The information storage unit 1 stores system information 8 (actual fan rotational speed 9, hardware configuration 10, load 11), temperature sensor information 12 (ambient temperature 13, component temperature 14), standard component temperature 15, error information 16 (fan error 17, voltage error 18), component temperature threshold values 19, actual component temperature/component temperature threshold value ratio 20, clogging status table 21, and clogging status information/error information 22. Hira at [0017]: Ambient temperature 13 is temperature information for the ambient environment of the system. Component temperature 14 is temperature information for main components such as CPU, memory/HDD/ICs, etc.. Standard component temperature 15 is information on

Asserted Claims	Hira
	standard component temperatures for each ambient temperature 13, hardware configuration 10, load 11, and actual fan rotational speed 9. Hira at [0019]: Component temperature threshold value 19 is temperature threshold value information for CPU/memory/HDD/other ICs, etc. The actual component temperature/component temperature threshold value ratio 20 is the ratio of actual component temperature to component temperature threshold value. Hira at [0020]: The clogging status table 21 is a table showing clogging status and message information for each average value of actual component temperature/component temperature threshold value ratios. Clogging status information/error information 22 is clogging status information/error information of the information processing device. Hira at [0022]: FIG. 3 shows an example of standard component temperatures used in the dust filter clogging status detection device according to one embodiment of the present invention; FIG. 4 shows an example of component temperature threshold values used in the dust filter clogging status detection device according to one embodiment of the present invention; FIG. 5 shows an example of actual component temperature/component temperature threshold value ratios used in the dust filter clogging status detection device according to one embodiment of the present invention; FIG. 6 shows an example of a clogging status table used in the dust filter clogging status detection device according to one embodiment of the present invention; and FIG. 7 shows an example of clogging status/error information used in the dust filter clogging status detection device according to one embodiment of the present invention. Hira at [0024]: Standard component temperature 15, as shown in FIG. 3, is multiple items of information prepared during the design/development phase and stored in the information storage unit 1,

Asserted Claims	Hira
	being information consisting of all combinations of ambient temperature, configuration, load, and fan rotational speed. Using this standard component temperature 15, a standard component temperature for detecting dust filter clogging status can be acquired based on the configuration of the information processing device and various internal information of the information processing device. Hira at [0025]: The component temperature threshold value 19, as shown in FIG. 4, is obtained by extracting component temperatures applicable to the current system status from standard component temperature 15, and is composed of ambient temperature, configuration, load, actual fan rotational speed, and standard component temperature. The standard component temperature information within the component temperature threshold value 19 becomes the component temperature threshold value used when detecting dust filter clogging status. Hira at [0026]: The actual component temperature/component temperature threshold value ratio 20, as shown in FIG. 5, represents the ratio of actual component temperature to component temperature threshold value for CPU, memory HDD, and IC 1 to IC 4, and is composed of CPU temperature ratio, memory temperature ratio, HDD temperature ratio, IC 1 to 4 temperature ratio, and average value. Hira at [0027]: The clogging status table 21, as shown in FIG. 6, is prepared in advance during the design/development phase and stored in the information storage unit 1, and is composed of clogging status and messages for each average value of actual component temperature/temperature threshold values. Hira at [0031]: Then, component temperature threshold value generating unit 2 acquires system information 8 from the information storage unit 1 (step 103), acquires temperature sensor

Asserted Claims	Hira
	information 12 (step 104), acquires standard component temperature 15 (step 105), selects standard component temperature 15 matching the system information 8 of the current information processing device and temperature sensor information 12 from standard component temperature 15, copies this as component temperature threshold value 19, and stores it in the information storage unit 1 (step 106). Hira at [0032]: Then, clogging status detection unit 3 acquires component temperature 14 (step 107), acquires component temperature threshold value 19 (step 108), acquires error information (step 109), and acquires clogging status table 21 from the information storage unit 1 (step 110). Hira at [0033]: The actual component temperature/component temperature threshold value ratio 20 is then calculated based on the component temperature 14 and component temperature threshold value 19, and stored in the information storage unit 1 (step 111). Hira at [0034]: Then, clogging status information/error information 22 is generated from error information 16, clogging status table 21, and the average value of actual component temperature/component temperature threshold value ratios 20, and is stored in the information storage unit 1 (step 112). Hira at [0036]: As described above, in the present embodiment, the component temperature threshold value generating unit 2 calculates component temperature threshold values 19 from ambient temperature 13, actual fan rotational speed 9, hardware configuration 10, and load 11, and the clogging status detection unit 3 calculates clogging status from component temperature 14, component temperature threshold value 19, and error information 16 and displays the clogging status on the clogging status display unit 4, making it possible to calculate the clogging status more accurately based on the hardware configuration of the

Asserted Claims	Hira
	information processing device and current internal information of the information processing device. Hira at [0038]: For example, in the present embodiment, component temperature threshold values 19 are created by selecting a standard component temperature 15 matching system information 8 and temperature sensor information 12 from standard component temperatures 15 consisting of multiple combinations, but the standard component temperature information could alternatively be converted to a database of standard component temperatures corresponding to hardware configuration, load, and actual fan rotational speed, and component temperature threshold values 19 could be calculated by searching this database based on current information processing device information.
[8.d] a hardware processor including:	Hira discloses, expressly and/or inherently, a hardware processor. *See* claim 1.a.
[8.e] an operational status detecting unit configured to detect an operational status of the ICT equipment;	Hira discloses, expressly and/or inherently, an operational status detecting unit configured to detect an operational status of the ICT equipment. *See* claim 8.a.
[8.f] an estimating unit configured to estimate an upper value limit of possible temperatures in a predetermined position of the ICT equipment when a quantity of intake air into the ICT equipment is	Hira discloses, expressly and/or inherently, an estimating unit configured to estimate an upper value limit of possible temperatures in a predetermined position of the ICT equipment when a quantity of intake air into the ICT equipment is appropriate, based on a result of detection by the operational status detecting unit and a result of detection by the intake-air temperature sensor, an operational status of the ICT equipment, and an intake air

Asserted Claims	Hira
appropriate, based on a result of detection by the operational status detecting unit and a result of detection by the intake-air temperature sensor, an operational status of the ICT equipment, and an intake air temperature, wherein the operational status of the ICT equipment and the intake air temperature of the ICT equipment determines a rotation speed of the cooling fan; and	temperature, wherein the operational status of the ICT equipment and the intake air temperature of the ICT equipment determines a rotation speed of the cooling fan. *See* claim 1.b.
[8.g] a determining unit configured to determine that an abnormality is occurring when a result of detection by the detected equipment temperature sensor is beyond the upper limit estimated by the estimating unit.	Hira discloses, expressly and/or inherently, a determining unit configured to determine that an abnormality is occurring when a result of detection by the detected equipment temperature sensor is beyond the upper limit estimated by the estimating unit. *See* claim 1.c.
[9.pre] 9. An abnormality detection method of Information and Communication Technology (ICT) equipment including a cooling fan, the method comprising:	Dell takes no position in these Invalidity Contentions on whether the entirety of the preamble of this claim limitation. Hira discloses, expressly and/or inherently, An abnormality detection method of Information and Communication Technology (ICT) equipment including a cooling fan. *See* claim 1.pre.
[9.a] detecting an operational status and an intake air temperature of the ICT equipment;	Hira discloses, expressly and/or inherently, detecting an operational status and an intake air temperature of the ICT equipment. *See* claim 1.b.
[9.b] by an estimating unit, estimating an upper limit of possible	Hira discloses, expressly and/or inherently, by an estimating unit, estimating an upper limit of possible temperatures in a predetermined position of the ICT equipment when a quantity

Asserted Claims	Hira
temperatures in a predetermined position of the ICT equipment when a quantity of intake air into the ICT equipment is appropriate, based on the detected operational status and the air intake temperature, a result of detection by an operational status detecting unit that detects an operational status of the ICT equipment and a result of detection by an intake-air temperature sensor that detects a temperature of intake air of the ICT equipment;	of intake air into the ICT equipment is appropriate, based on the detected operational status and the air intake temperature, a result of detection by an operational status detecting unit that detects an operational status of the ICT equipment and a result of detection by an intake-air temperature sensor that detects a temperature of intake air of the ICT equipment. *See* claim 1.b.
[9.c] determining a rotation speed of the cooling fan based on the detected operational status and the air intake temperature; and	Hira discloses, expressly and/or inherently, determining a rotation speed of the cooling fan based on the detected operational status and the air intake temperature. *See* claim 1.b.
[9.d] by a determining unit, determining that an abnormality is occurring when a result of detection by a detected equipment temperature sensor that detects a temperature in the predetermined position is beyond the upper limit estimated by the estimating unit.	Hira discloses, expressly and/or inherently, by a determining unit, determining that an abnormality is occurring when a result of detection by a detected equipment temperature sensor that detects a temperature in the predetermined position is beyond the upper limit estimated by the estimating unit. *See* claim 1.c.