TOSHIBA

TOSHIBA POS Terminal

ST-7000, ST-A20, ST-B10, ST-B20, ST-C10, ST-M30

SystemHealth Specification

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TOSHIBA TEC CORPORATION

Revision Record

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SystemHealth Specification

Rev. No.	Date	Pages	Description
---	Mar. 31, 2009	---	Original issue
2	Jan.8, 2010	3, 8	Supports 7SEG LED function
3	Feb 18, 2010	3	Supports ST-A20
		14-24	Addition of GatherSysInf settings and the way of Eventlog confirmation
4	Mar 29, 2010	3	Supports ST-B10
5	May 25, 2012	3, 13,18, 37	Supports ST-C10
6	May 8, 2012	3-4,7,9,13-14,31-37,42,44-45	Supports ST-M30
7	May 30 2012	4,46-48	Update conditions for SystemHealth and SMS setting

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1. Overview

1.1 Introduction

This specification describes a tool, which monitors the hardware state of the system, reports the error to the event log in the event of an error, and allows external systems to monitor the hardware information of the system using SMS or SNMP TRAP notification.

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1.2 Scope

1.2.1 Supported Environment

This tool runs on the following hardware and operating systems:

OS / Hardware	Windows XP Professional SP2	Windows XP Professional SP3	WEPOS1.1	Windows Embedded POSReady 2009	Windows 7 Professional SP1 (32bits)
ST-7000	✓		✓	✓	
ST-A20		✓	✓	✓	
ST-B10		✓	✓	✓	
ST-B20		✓	✓	✓	
ST-C10		✓	✓	✓	✓
ST-M30		✓	✓	✓	✓

OS / Hardware	Windows 7 Professional SP1 (64bits)	POSReady 7 (32bits)	POSReady 7 (64bits)
ST-7000			
ST-A20			
ST-B10			
ST-B20			
ST-C10		✓	
ST-M30	✓	✓	✓

✓ - means the OS is supported on the POS models platform

1.2.2 Applicable Conditions

Condition 1:
In order to provide SNMP TRAP external notification, an external system that can receive SNMP TRAP message must be exists. After client machine installed with the SystemHealth program, the SNMP TRAP required registry already configured. However, this registry only will work if the client machine already install with the “Simple Network Management Protocol” under the window components.

Condition 2:
In order to implement a silent installation on the SMS, the driver-warning message on the PC needs to be set to "Ignore."

Condition 3:
"ECC error counts" and "HDD boot error counts" are stored in the BIOS, and the maximum error count is FF (255). The environment is configured to detect an error only when a change is made in the error counts, thus, a new error cannot be detected when the maximum count is reached.
To avoid this issue, the system’s BIOS needs to Initialize and reset the error log count to 00 when system maintenance is performed.

Condition 4:
Only ST-B20 SystemHealth supports 7SEG LED output function.

Condition 5:
Only ST-C10 SystemHealth supports system and printer battery capacity and temperature reading.

Condition 6:
For the fresh install of SystemHealth, the application will also process all the record under “Application”, Security” and “System” event log. It will take sometime to process all information for SNMP trap and SMS if too much records is found.

Condition 7:
For POSReady2009, user needs to install window component manually in order to run SystemHealth’s SysInfAGT services.
Go to “Control Panel” → “Add or Remove Programs” → “Add/Remove Windows Components”
Select [Management and Monitoring Tools] and clicks “Next>” button for installation.

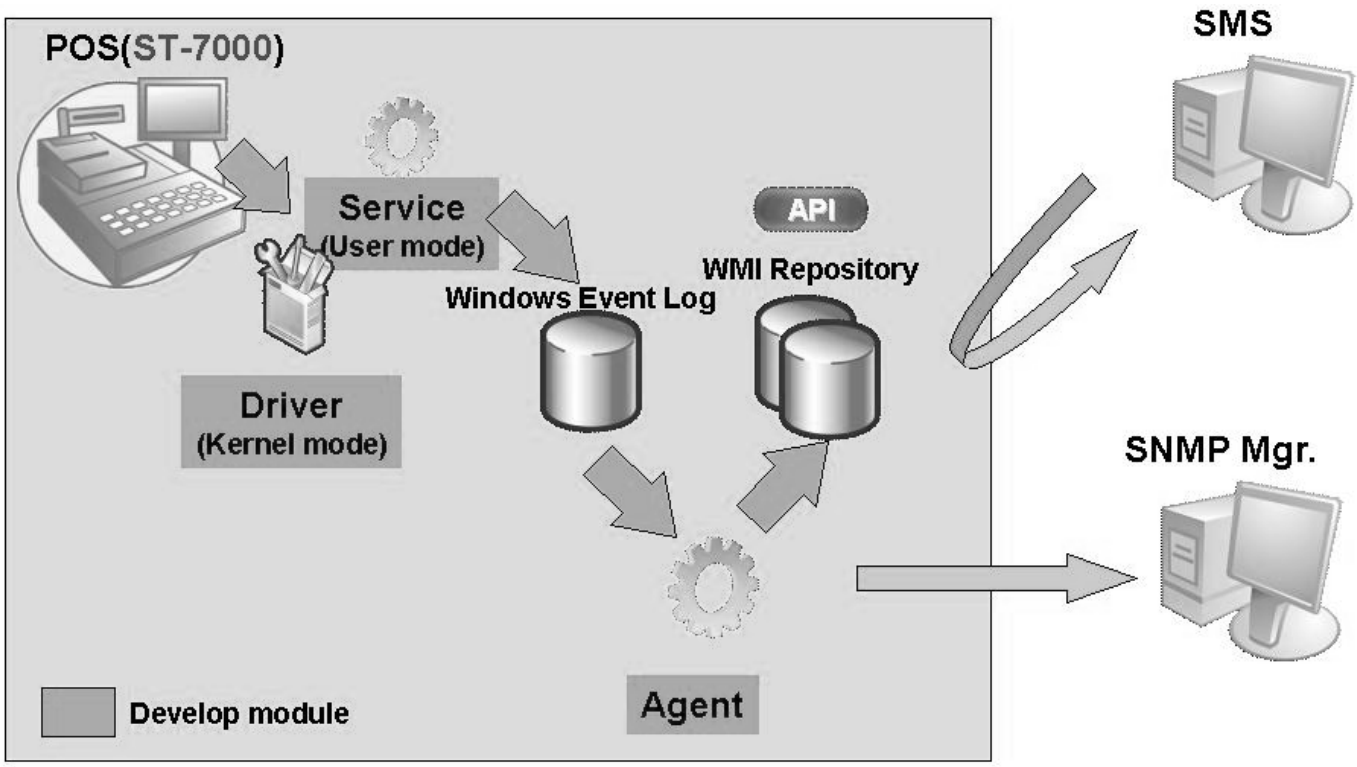
1.3 Configuration

The SystemHealth contains two main services; GatherSysInf and SysInfAgent services.

The GatherSysInf service receives hardware information from the TOSHIBA TEC RTC Driver, TOSHIBA TEC SENSOR driver, and ST-C10 Printer Battery Driver (optional), and outputs that information to the event log.

The SysInfAgent monitors event logs, filters the logs, and provides SNMP TRAP notification and updates WMI information when the SystemHealth outputs the event log.

A threshold data file is retained in the POS machine (e.g. ST-7000 in the diagram below) to determine whether or not the received hardware information is erroneous. The received information is compared to the threshold, and determined to be erroneous when it exceeds or lower than the threshold.



1.4 Function Overview

The SystemHealth includes the following functions:

1. CPU temperature monitoring function
   It is a function to monitor CPU temperature, and report an error when the set threshold is exceeded.
2. CPU fan rotational speed monitoring function
   It is a function to monitor how many times the CPU fan spins, and report an error when the set threshold is exceeded.
3. 5V power voltage monitoring function
   It is a function to monitor the 5V power voltage, and report an error when the set threshold is exceeded.
4. 12V power voltage monitoring function
   It is a function to monitor the 12V power voltage, and report an error when the set threshold is exceeded.
5. CPU fan failure monitoring function
   It is a function to report an error when the CPU fan rotational speed is 0.
6. Cooling fan failure monitoring function
   It is a function to report an error when the PC case fan rotational speed is 0.
7. NIC status monitoring function
   It is a function to monitor the network connection status, and report an error when a network cannot be connected for a certain period of time.
8. BIOS version notification function
   It is a function to report the BIOS version when the service starts.
9. ECC error monitoring function
   It is a function to monitor whether or not an error occurs in the ECC, and when the error occurs, report it.
10. HDD boot error monitoring function
    It is a function to monitor whether or not a boot error occurs in the HDD and, when the error occurs, report it.
11. Serial number notification function
    It is a function to report the serial number of the POS machine when the service starts.
12. Case temperature notification function
    It is a function to monitor case temperature and periodically report the status.
13. Device disconnection from USB monitoring function
    It is a function to monitor whether or not the device is disconnected from the USB, and report an error when disconnected.
14. S.M.A.R.T. information notification function
    It is a function to monitor S.M.A.R.T. information in the HD and report the status at regular time intervals.
15. HDD read or write error monitoring function
    It is a function to monitor whether or not a read or write error occurs in the HDD and, when the error occurs, report it.
16. Abnormal shutdown of Windows monitoring function
    It is a function to report an error when Windows shuts down improperly without a shutdown operation.
17. Battery remaining capacity notification function
    It is a function to monitor all system and printer batteries remaining capacity.

18. Battery temperature notification function
    It is a function to report notification for the battery temperature and generate a warning if found invalid temperature.
19. Power temperature notification function
    It is a function to report notification for the power temperature and generate a warning if found invalid temperature
20. 3.3V power voltage monitoring function
    It is a function to monitor 3.3V power voltage, and report the error when the read voltage exceeds the threshold.
21. VDimm power voltage monitoring function
    It is a function to monitor DIMM power voltage, and report the error when the read voltage exceeds the threshold.
22. CMOS battery power voltage monitoring function
    It is a function to monitor CMOS battery power voltage, and report the error when the read voltage exceeds the threshold.
23. VCore power voltage monitoring function
    It is a function to monitor CORE power voltage, and report the error when the read voltage exceeds the threshold.

2. Functions

Almost all functions allow the output of warning, errors or information to the event log. A "GatherSysInf" event group is created to keep the entire SystemHealth related event log into this group.
(***NOTE**: No event logs is output for the HDD read or write errors and abnormal shutdown of Windows, instead, only SNMP notification is provided when those exception happens.)

All hardware information provided by the SystemHealth can be browse from external systems via two features provided by SystemHealth application. Two features includes; "Sending to external systems via SNMP TRAP" and "Updating the WMI Repository to allow the SMS to periodically get WMI information."

Generally, the system information provided by SystemHealth is divided into two categories, either update to WMI or sends to server using SNMP Trap.

2.1 Event Log Output

The SystemHealth will output all the information through the event log under GatherSysInf group.
The Output event logs and the event ID are defined as below:

Collection Item	Event Log Definition			
	Event ID	Data in the Log	Type	Description
(1) CPU temperature	1	Current temperature	Warning	CPU temperature is excessive.
(2) How many times CPU FAN spins:	2	Current rotational speed	Warning	The CPU fan spins improperly or does not spin.
(3) 5V power voltage status	3	Current voltage	Warning	The 5V power supply is abnormal.
(4) 12V power voltage status	4	Current voltage	Warning	The 12V power supply is abnormal.
(5) CPU fan failure	5	-	Error	The CPU fan is broken.
(6) Cooling fan failure	6	-	Error	The cooling fan is broken.
(7) NIC (Network Interface Card) status	7	ifIndex	Information	The NIC is linked down.
(8) BIOS version	8	BIOS version	Information	It is the BIOS version.
(9) ECC error log	9	2-bit ECC error counts	Error	A 2-bit ECC error occurs.
(10) HDD boot error log	10	HDD boot error counts	Error	A HDD boot error occurs.
(11) POS Serial No.	11	POS Serial No.	Information	It is POS machine system Serial No.
(12) Excessive case temperature	12	Current temperature	Information	Case temperature is excessive.
(13) Memory errors	13	1-bit ECC error counts	Error	A 1-bit ECC error occurs.

(14) Device disconnected from USB	14	Frequency of disconnection from USB (unsigned long)	Information	The device is disconnected from the USB.
(15) SMART (Attribute ID: 01, 05, 09, 196, 197, 198)	15	SMART information	Information	SMART Attribute ID: Information on attributes IDs of 01, 05, 09, 196, 197 and 198 is output.
(16) System Battery 1 capacity	16	Battery capacity	Information	First system battery remaining capacity.
(17) System Battery 2 capacity	17	Battery capacity	Information	Second system battery remaining capacity
(18) Printer Battery 1 capacity	18	Battery capacity	Information	First printer battery remaining capacity
(19) Printer Battery 2 capacity	19	Battery capacity	Information	Second printer battery remaining capacity
(20) Battery Temperature information	20	Current battery temperature	Information	Current battery temperature
(21) Battery Temperature	21	Current battery temperature	Warning	Battery temperature is exceed or lower than threshold
(22) Power Temperature information	22	Current power temperature	Information	Current power temperature
(23) Power Temperature	23	Current power temperature	Warning	Power temperature is exceed or lower than the threshold
(24) 3.3.V power voltage status	24	Current voltage	Warning	The 3.3V power supply is abnormal.
(25) VDimm power voltage status	25	Current voltage	Warning	The VDimm power supply is abnormal.
(26) VCmosBatt power voltage status	26	Current voltage	Warning	The CMOS battery power voltage is abnormal.
(27) VCore power voltage status	27	Current voltage	Warning	The CORE power voltage is abnormal.

2.2 7SEG LED output function

When SystemHealth output certain EventLog, it will also display specific mark on "7SEG LED". The following table shows the combination of the EventLog and 7SEG LED mark. If several errors occur at the same time, SystemHealth will only output the latest error on 7SEG LED. Once SystemHealth outputs a mark, the 7SEG LED will not be turned off until system reboot or system shutdown.

Collection Item	Event Definition			
	Event ID	Data in the Lo	Type	Description
(1)CPU temperature	1	Current temperature	H	CPU temperature is excessive.
(3)5V power voltage status	3	Current voltage	P	The 5V power supply is abnormal.
(4)12V power voltage status	4	Current voltage	P	The 12V power supply is abnormal.
(5)CPU fan failure	5	-	F	The CPU fan is broken.
HDD Read or Write Error	-		d	HDD Read Error or Write Error occurs.

2.3 Function for SNMP TRAP Notification

This section describes a group of functions, which allows sending SNMP TRAP information to the predetermined TRAP notification destination.

2.3.1 CPU temperature monitoring function

This function periodically obtains CPU temperature from the TOSHIBA TEC SENSOR DRIVER and compares it to the threshold within the threshold data file. When the temperature data exceeds the upper or lower limit threshold value, this function determines the temperature to be erroneous and outputs a warning to the event log.
It also sends TRAP information to the TRAP notification destination. The erroneous temperature data is added to the TRAP information.

Registry setting

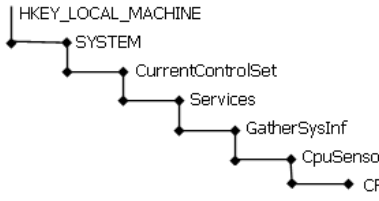
HKEY_LOCAL_MACHINE
SYSTEM
CurrentControlSet
Services
GatherSysInf
CpuSensor

	Type	Description
WATCH_INTERVAL	REG_WORD	Monitoring Interval, Unit Second (1 to 21,600)
CPUTemperature		
WATCH_CPUTemperature	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)
LIMIT_H	REG_WORD	Upper limit threshold value, Unit: ℃
LIMIT_L	REG_WORD	Lower limit threshold value, Unit: ℃

2.3.2 CPU fan rotational speed monitoring function

This function periodically obtains the CPU fan rotational speed from the TOSHIBA TEC SENSOR DRIVER and compares it to the threshold within the threshold data file. When the rotational speed data exceeds the upper or lower limit threshold value, this function determines the rotational speed to be erroneous and outputs a warning to the event log.
It also sends TRAP information to the TRAP notification destination. The erroneous rotational speed data is added to the TRAP information.

Registry setting

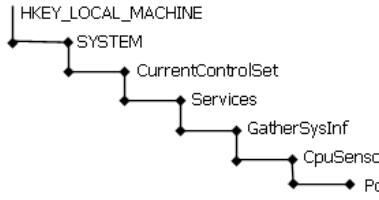


	Type	Description
WATCH_CPUFanSpins	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)
LIMIT_H	REG_WORD	Upper limit rotational speed value, Unit: RPM
LIMIT_L	REG_WORD	Lower limit rotational speed value, Unit: RPM

2.3.3 5V power voltage monitoring function

This function periodically obtains the 5V power voltage from the TOSHIBA TEC SENSOR DRIVER and compares it to the threshold within the threshold data file. When the voltage data exceeds the upper or lower limit threshold value, this function determines the voltage to be erroneous and outputs a warning to the event log.
It also sends TRAP information to the TRAP notification destination. The erroneous voltage data is added to the TRAP information.

Registry setting

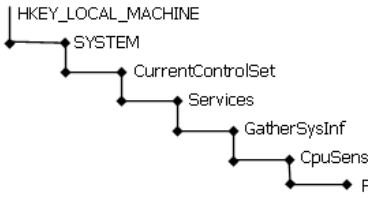


	Type	Description
WATCH_PowerVol5	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)
LIMIT_H	REG_WORD	Upper limit voltage value, Unit: mV
LIMIT_L	REG_WORD	Lower limit voltage value, Unit: mV

2.3.4 12V power voltage monitoring function

This function periodically obtains the 12V power voltage from the TOSHIBA TEC SENSOR DRIVER and compares it to the threshold within the threshold data file. When the voltage data exceeds the upper or lower limit threshold value, this function determines the voltage to be erroneous and outputs a warning to the event log.
It also sends TRAP information to the TRAP notification destination. The erroneous voltage data is added to the TRAP information.

Registry setting

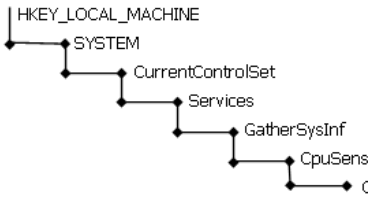


	Type	Description
WATCH_PowerVol12	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)
LIMIT_H	REG_WORD	Upper limit voltage value, Unit: mV
LIMIT_L	REG_WORD	Lower limit voltage value, Unit: mV

2.3.5 CPU fan failure monitoring function

This function periodically obtains the CPU fan rotational speed from the TOSHIBA TEC SENSOR DRIVER. When the rotational speed is 0, this function determines it to be erroneous and outputs an error to the event log.
It also sends TRAP information to the TRAP notification destination.

Registry setting

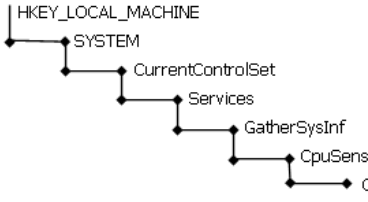


	Type	Description
WATCH_CPUFanFailure	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)

2.3.6 Cooling fan failure monitoring function

This function periodically obtains the cooling fan rotational speed from the TOSHIBA TEC SENSOR DRIVER. When the rotational speed is 0, this function determines it to be erroneous and outputs an error to the event log.
It also sends TRAP information to the TRAP notification destination.

Registry setting



	Type	Description
WATCH_CoolingFanFailure	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)

2.3.7 Power Temperature Status monitoring function

This function periodically obtains the power temperature from the TOSHIBA TEC SENSOR DRIVER and compares it to the threshold within the threshold data file. When the temperature exceeds the upper or lower limit threshold value, this function determines the temperature to be erroneous and outputs a warning to the event log.
It also sends TRAP information to the TRAP notification destination. The erroneous temperature data is added to the TRAP information.

Registry setting

HKEY_LOCAL_MACHINE
SYSTEM
CurrentControlSet
Services
GatherSysInf
CpuSensor
PWRTemper

	Type	Description
WATCH_PWRTemper	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)
LIMIT_H	REG_WORD	Upper limit threshold value, Unit: ℃
LIMIT_L	REG_WORD	Lower limit threshold value, Unit: ℃

2.3.8 3.3V power voltage monitoring function

This function periodically obtains the 3.3V power voltage from the TOSHIBA TEC SENSOR DRIVER and compares it to the threshold within the threshold data file. When the voltage data exceeds the upper or lower limit threshold value, this function determines the voltage to be erroneous and outputs a warning to the event log.
It also sends TRAP information to the TRAP notification destination. The erroneous voltage data is added to the TRAP information.

Registry setting

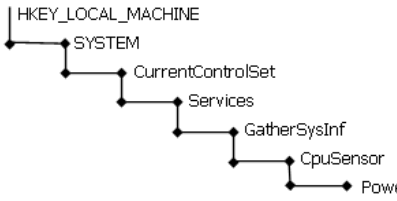
HKEY_LOCAL_MACHINE
SYSTEM
CurrentControlSet
Services
GatherSysInf
CpuSensor
PowerVol33

	Type	Description
WATCH_PowerVol33	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)
LIMIT_H	REG_WORD	Upper limit voltage value, Unit: mV
LIMIT_L	REG_WORD	Lower limit voltage value, Unit: mV

2.3.9 CMOS battery power voltage monitoring function

This function periodically obtains the CMOS battery power voltage from the TOSHIBA TEC SENSOR DRIVER and compares it to the threshold within the threshold data file. When the voltage data exceeds the upper or lower limit threshold value, this function determines the voltage to be erroneous and outputs a warning to the event log.
It also sends TRAP information to the TRAP notification destination. The erroneous voltage data is added to the TRAP information.

Registry setting

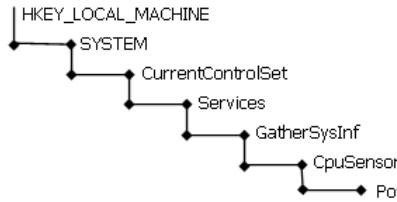


	Type	Description
WATCH_PowerVolBat	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)
LIMIT_H	REG_WORD	Upper limit voltage value, Unit: mV
LIMIT_L	REG_WORD	Lower limit voltage value, Unit: mV

2.3.10 VDIMM power voltage monitoring function

This function periodically obtains the VDimm power voltage from the TOSHIBA TEC SENSOR DRIVER and compares it to the threshold within the threshold data file. When the voltage data exceeds the upper or lower limit threshold value, this function determines the voltage to be erroneous and outputs a warning to the event log.
It also sends TRAP information to the TRAP notification destination. The erroneous voltage data is added to the TRAP information.

Registry setting

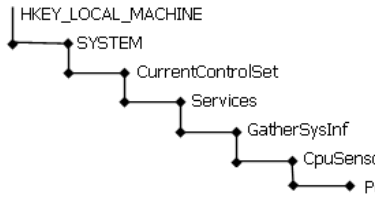


	Type	Description
WATCH_PowerVolDIMM	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)
LIMIT_H	REG_WORD	Upper limit voltage value, Unit: mV
LIMIT_L	REG_WORD	Lower limit voltage value, Unit: mV

2.3.11 VCore power voltage monitoring function

This function periodically obtains the VCore power voltage from the TOSHIBA TEC SENSOR DRIVER and compares it to the threshold within the threshold data file. When the voltage data exceeds the upper or lower limit threshold value, this function determines the voltage to be erroneous and outputs a warning to the event log.
It also sends TRAP information to the TRAP notification destination. The erroneous voltage data is added to the TRAP information.

Registry setting



	Type	Description
WATCH_PowerVolCORE	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)
LIMIT_H	REG_WORD	Upper limit voltage value, Unit: mV
LIMIT_L	REG_WORD	Lower limit voltage value, Unit: mV

2.3.12 NIC status monitoring function

This function obtains the network connection status from the standard MIB. When a network connection fails more frequently than the number of times set in the threshold data file, for a certain period of time, this function outputs information to the event log.
It also sends TRAP information to the TRAP notification destination when the network connection is restored.

Registry setting

HKEY_LOCAL_MACHINE
SYSTEM
CurrentControlSet
Services
GatherSysInf
NICStatus

	Type	Description
WATCH_NICStatus	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)
WATCH_INTERVAL	REG_WORD	Monitoring Interval, Unit Second (1 to 21,600)
LIMIT	REG_WORD	Threshold value of link down counts, Unit: Count
WATCH_Times	REG_WORD	Interval to watch for link down

2.3.13 Battery Temperature Status monitoring function

This function obtains the battery temperature value.
It will send TRAP information to the TRAP notification destination when the battery temperature is abnormal.

Registry setting

HKEY_LOCAL_MACHINE
SYSTEM
CurrentControlSet
Services
GatherSysInf
Battery

	Type	Description
WATCH_INTERVAL	REG_WORD	Monitoring Interval, Unit Second (1 to 21,600)

Registry setting

HKEY_LOCAL_MACHINE
SYSTEM
CurrentControlSet
Services
GatherSysInf
BatteryTemp

	Type	Description
WATCH_BatteryTemp	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)
LIMIT_H	REG_WORD	Upper limit threshold value, Unit: ˚C
LIMIT_L	REG_WORD	Lower limit threshold value, Unit: ˚C

2.3.14 HDD read or write error monitoring

This function monitors the event logs of the system. When a particular event log is output, this function reports the log to external systems via SNMP. The events with the following source names are monitored by this function:

- ATAPI
- disk
- dmio

When an event log, which includes the above as sources, is output, this function determines a read or write error occurs in the HDD, and immediately reports the "source name," "event ID" and "event type" via SNMP.

2.3.15 Abnormal shutdown of Windows monitoring function

When Windows shuts down (the power is turned off without shutdown), an ABEND event log is added to the event logs of the system when Windows is restored.
On the SystemHealth, this function always monitors whether or not this ABEND log event is output on Windows. When a particular event log is output, this function reports the log to external systems via SNMP.
The following two types are the event logs to be monitored:
Event ID: 6008 Source: eventlog Type: Error
Event ID: 1076 Source: USER32 Type: Warning
When these events are output, this function immediately reports the "source name," "event ID" and "event type" via SNMP.

2.4 Function for SMS monitoring

This section describes a group of functions, which allows monitoring via SMS.
This group of functions monitors event logs through the SysInfAgent service, and updates WMI information when a change or error is made in the event logs. When the SMS periodically obtains WMI information, SystemHealth information can be obtained via SMS.

2.4.1 BIOS version notification function

This function obtains the BIOS version from DMI information and outputs information to the event log when the GatherSysInf service starts. It stores the obtained BIOS version to the data in the event log.

2.4.2 ECC error monitoring function

This function periodically obtains ECC error counts from the TOSHIBA TEC RTC DRIVER. It obtains both 1-bit and 2-bit errors. Only when a change is made compared to the previous values, this function outputs an error to the event log. It outputs error counts to the data in the event log.

Registry setting (1-bit error)

	Type	Description
HKEY_LOCAL_MACHINE		
SYSTEM		
CurrentControlSet		
Services		
GatherSysInf		
RtcSensor		
WATCH_INTERVAL	REG_WORD	Monitoring Interval, Unit Second (1 to 21,600)
MemoryErrors		
WATCH_MemoryErrors	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)

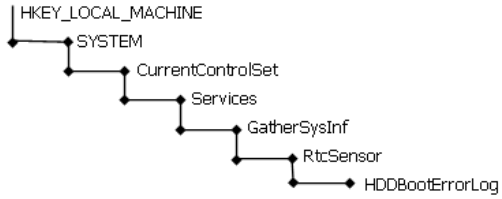
Registry setting (2-bit error)

	Type	Description
HKEY_LOCAL_MACHINE		
SYSTEM		
CurrentControlSet		
Services		
GatherSysInf		
RtcSensor		
ECCErrorLog		
WATCH_ECCErrorLog	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)

2.4.3 HDD boot error monitoring function

This function periodically obtains HDD boot error counts from the TOSHIBA TEC RTC DRIVER. Only when a change is made compared to the previous values, this function outputs an error to the event log. It outputs error counts to the data in the event log.

Registry setting

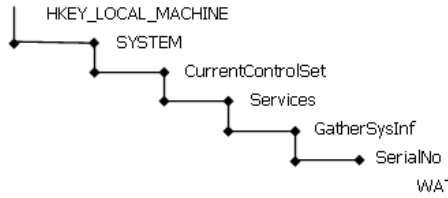


	Type	Description
WATCH_HDDBootErrorLog	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)

2.4.4 POS serial number notification function

This function obtains the serial number from DMI or WMI information and outputs information to the event log when the GatherSysInf service starts. It stores the obtained serial number to the data in the event log.

Registry setting

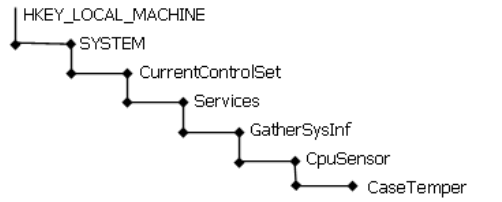


	Type	Description
WATCH_SerialNo	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)

2.4.5 Case temperature notification function

This function periodically obtains case temperature from the TOSHIBA TEC SENSOR DRIVER and outputs information to the event log at time intervals specified in the threshold data file. It outputs current case temperature to the data in the event log.

Registry setting

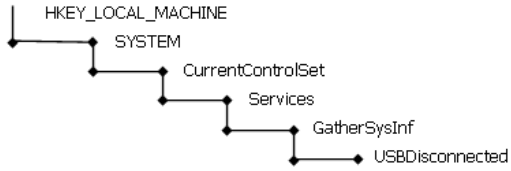


	Type	Description
WATCH_CaseTemper	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)

2.4.6 Device disconnection from USB monitoring function

This function detects whether or not the device is disconnected from the USB in accordance with WMI information.
This function determines the device is disconnected from the USB in DBT_DEVICEREMOVECOMPLETE when a WM_DEVICECHANGE message is received. This function outputs information to the event log when a disconnection is detected. It outputs the total frequency of device disconnection from the USB to the data in the event log.
This function stores the frequency of disconnection as an unsigned long value (0-4294967295). It resets the frequency to 0 when a disconnection occurs at the maximum value (4294967295) and during the first monitoring period.

Registry setting

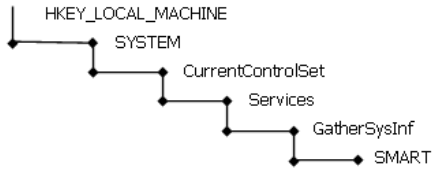


	Type	Description
WATCH_UsbDisconnected	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)

2.4.7 S.M.A.R.T. information notification function

This function periodically checks S.M.A.R.T. information from WMI and outputs information to the event log. It outputs attribute ID information specified to the data in the event log in sequence.
For further information on data output to the event log, refer to "3.4 S.M.A.R.T. Information Collection."
Attribute ID to be monitored: 01, 05, 09, 196, 197 and 198

Registry setting

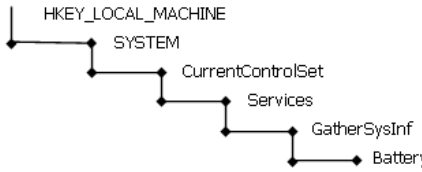


	Type	Description
WATCH_SMART	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)
WATCH_INTERVAL	REG_WORD	Monitoring Interval, Unit Second (1 to 21,600)
WATCH_AttributeIDs	REG_MULTI_SZ	Attribute IDs to be monitored

2.4.8 Battery temperature notification function

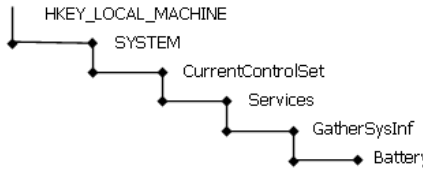
This function periodically obtains battery temperature from the printer battery driver and outputs information to the event log at time intervals specified in the threshold data file. It outputs current battery temperature to the data in the event log.

Registry setting



	Type	Description
WATCH_INTERVAL	REG_WORD	Monitoring Interval, Unit Second (1 to 21,600)

Registry setting

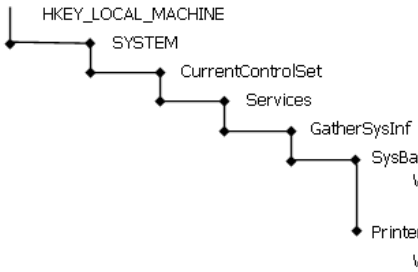


	Type	Description
WATCH_BatteryTemp	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)
LIMIT_H	REG_WORD	Upper limit threshold value, Unit: ˚C
LIMIT_L	REG_WORD	Lower limit threshold value, Unit: ˚C

2.4.9 Battery remaining capacity information notification function

This function periodically checks system and printer battery remaining capacity and outputs information to the event log. It outputs current battery capacity information to the event log data. 0xFFFFFFFF (-1) means the battery currently is not connected to the system.

Registry setting



	Type	Description
WATCH_SysBatteryCapacity	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)
WATCH_PrinterBatteryCapacity	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)

2.4.10 Power temperature notification function

This function periodically obtains power temperature from the TOSHIBA TEC SENSOR DRIVER and outputs information to the event log at time intervals specified in the threshold data file. It outputs current power temperature to the data in the event log.

Registry setting

HKEY_LOCAL_MACHINE
SYSTEM
CurrentControlSet
Services
GatherSysInf
CpuSensor
PWRTemper

	Type	Description
WATCH_PWRTemper	REG_WORD	Wherther or not to monitor (0: No, 1: Yes)
LIMIT_H	REG_WORD	Upper limit threshold value, Unit: ℃
LIMIT_L	REG_WORD	Lower limit threshold value, Unit: ℃

3 Remarks

3.1 GatherSysInf Setting Change

a) To configure the watch value of the GatherSysInf service, edit the “GatherSysInf.ini” file in the “C:¥WINDOWS¥system32” folder. Refer to the following examples, to set each setting.

```
[CPUTemperature]
;0:Disabled 1:Enabled
WATCH=1
;LIMIT_H:Upper threshold  LIMIT_L:Lower threshold
;Measurement unit of values:degrees Centigrade
LIMIT_H=73
LIMIT_L=0
```

Set 0 or 1 to the “WATCH” item. In case of 0, it does not watch the item. In case of 1, it watches the item.

LIMIT_H means upper threshold, and LIMIT_L means lower threshold. If the value is out of the extent , it outputs a eventlog.

```
[NICStatus]
;0:Disabled 1:Enabled
WATCH=1
;Connection testing interval:second
INTERVAL=50
;Times:Notice interval
;LIMIT:threshold value
;Notice by the SNMP when connection test fails over LIMIT times during Times second.
Times=300
LIMIT=5
```

In the “NICStatus” item, there are setting value which are INTERVAL, Times and LIMIT. The GatherSysInf service checks NICStatus at every INTERVAL seconds. If it recognizes the error LIMIT times, it output eventlog. Set each value under the condition which is “Times > INTERVAL * LIMIT”.

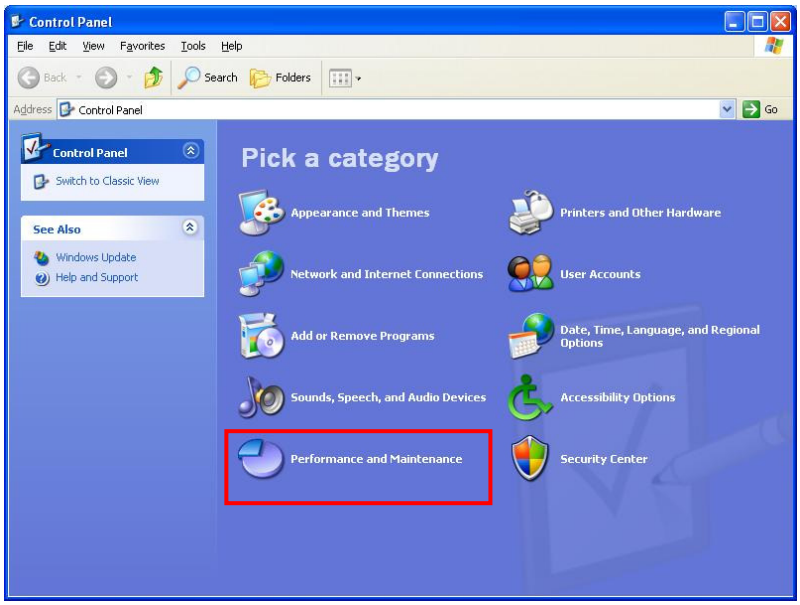
b) If it restarts the GatherSysInf service after editing the "GatherSysInf.ini", the changed settings are reflected.

c) In case of USBDisconnect item, even if it sets WATCH as 0, when the service starts up the service outputs the eventlog.

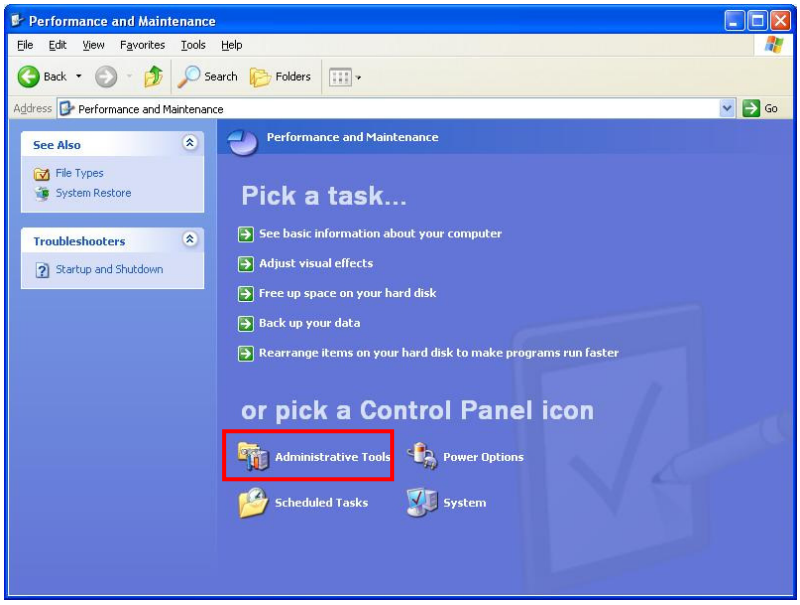
3.2 Eventlog Confirm

To view GatherSysInf Eventlog, user can use the Eventviewer tool. The following steps shows how to launch the windows EventViewer tools.

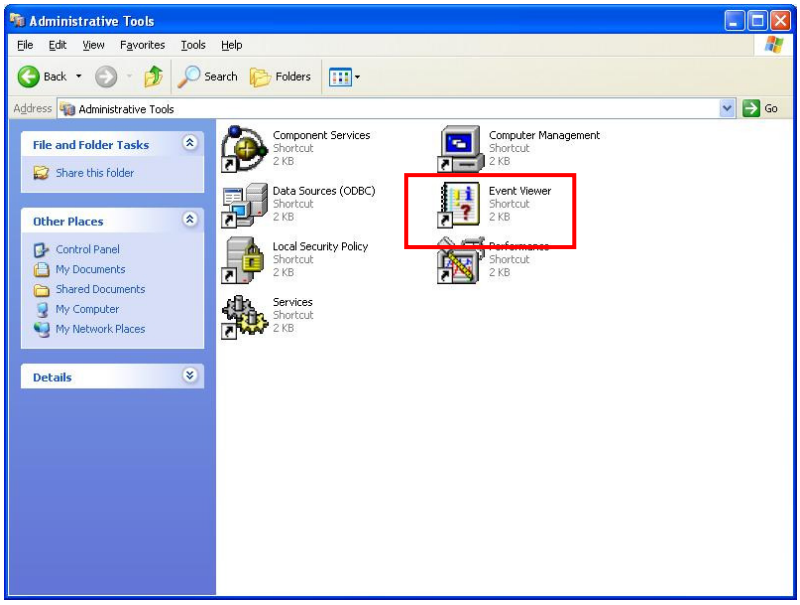
1. Run control panel from start menu. Select “Performance and Maintenance”.



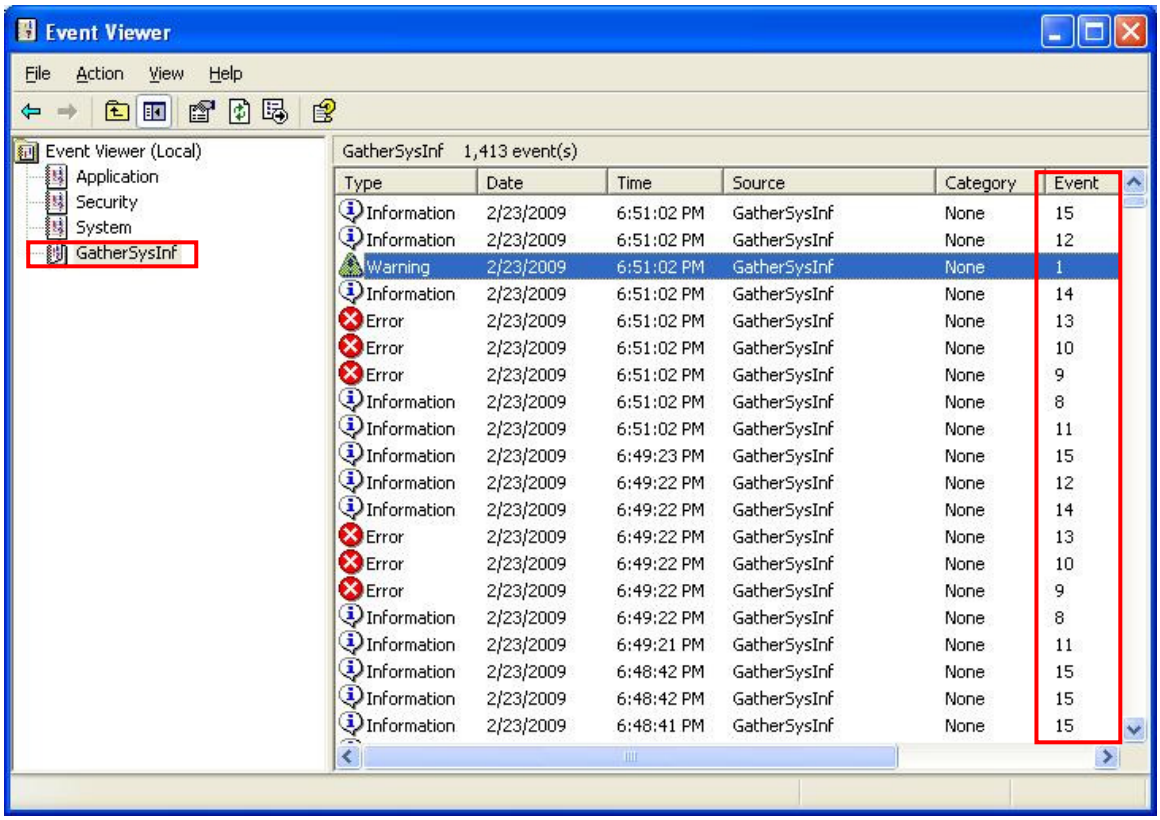
2. Select “Administrator Tools”.



3. Double click the “Event Viewer”.



4. If you select the GarherSysInf, you can confirm SystemHealth Eventlog.
Refer to the “Event” row and double click the item you want to confirm its detail.

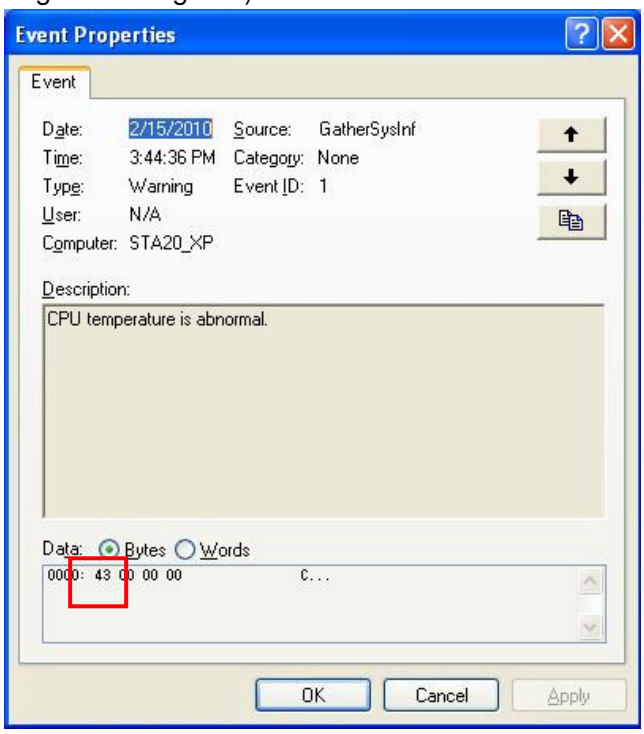


5. Refer to the following to confirm each item.

Event ID:1(CPU temperature)

CPU Temperature is displayed on Data area as Hex value.

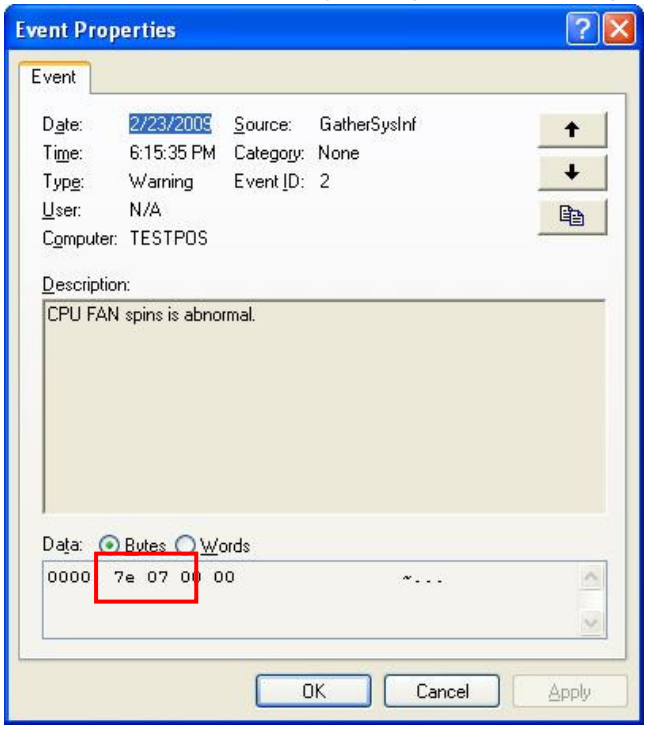
In the case of the following example, CPU Temperature is 67 degrees centigrade (Hex: 43 degrees centigrade).



EventID:2(CPU FAN spins)

CPU FAN spins value is displayed on Data area as Hex value.

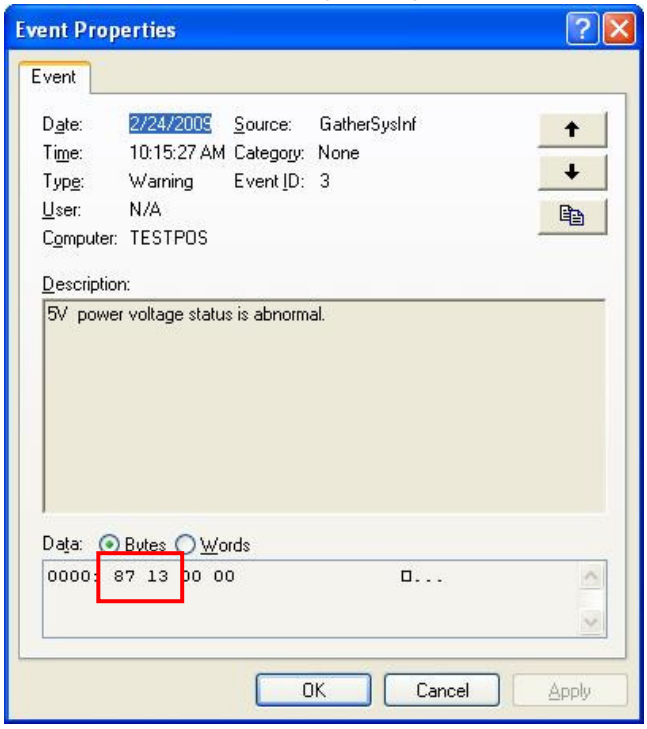
In the case of the following example, CPU FAN spins value is 1918 times (Hex: 77e times).



EventID:3(PowerVol5)

PowerVol5 value is displayed on Data area as Hex value.

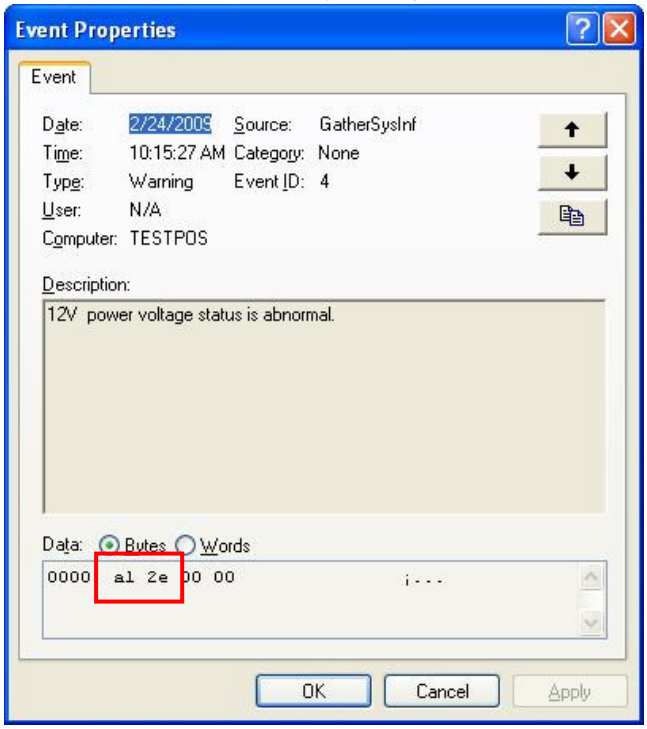
In the case of the following example, PowerVol5 value is 4999mV (Hex: 1387mV).



EventID:4(PowerVol12)

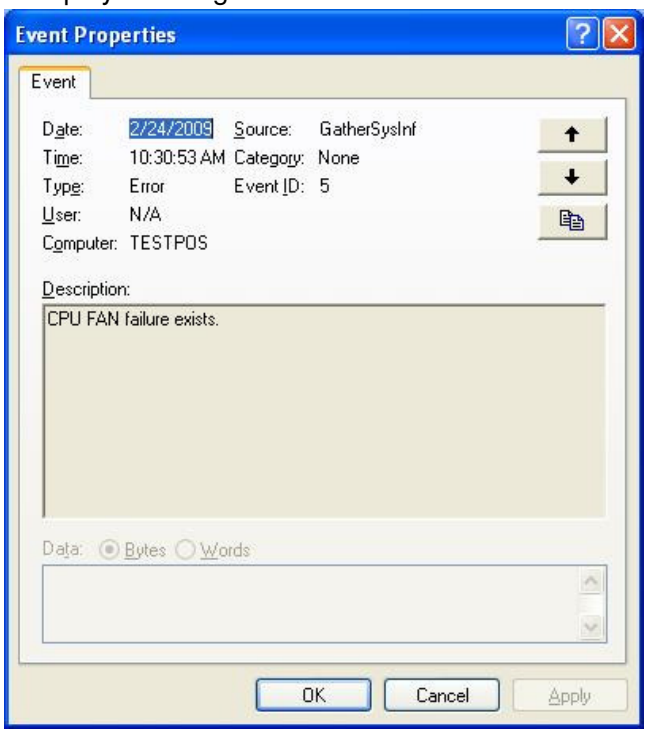
PowerVol12 value is displayed on Data area as Hex value.

In the case of the following example, PowerVol5 value is 11937mV (Hex: 2ea1mV).



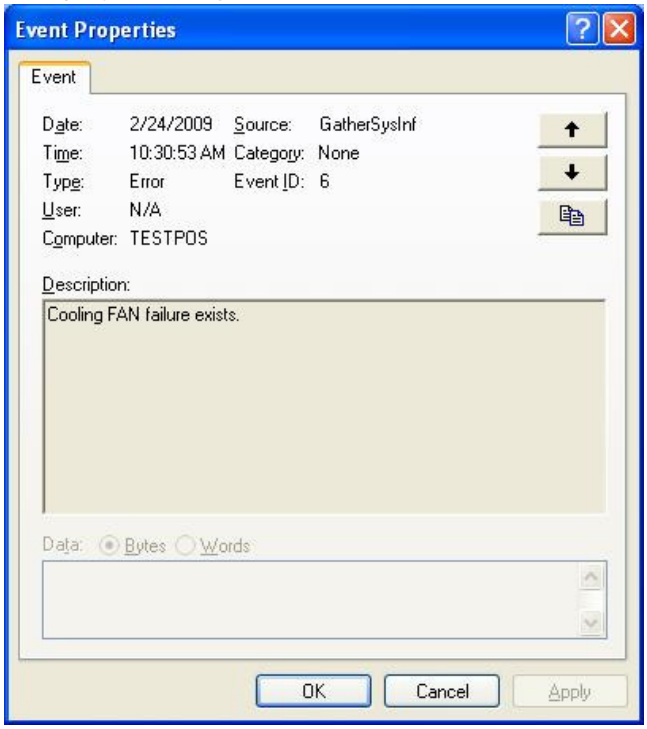
EventID:5(CPU FAN Failure)

This eventlog occurs if the CPU FAN stops.
It displays nothing on Data area.



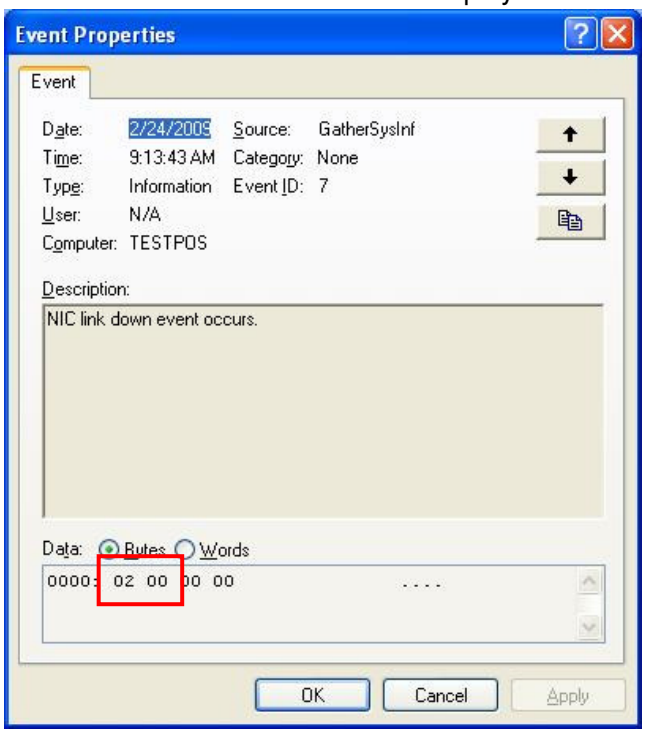
EventID:6(Cooling FAN Failure)

This eventlog occurs if the Cooling FAN stops.
It displays nothing on Data area.



EventID:7(NIC Status)

The number of NIC status error is displayed on Data area as Hex value.

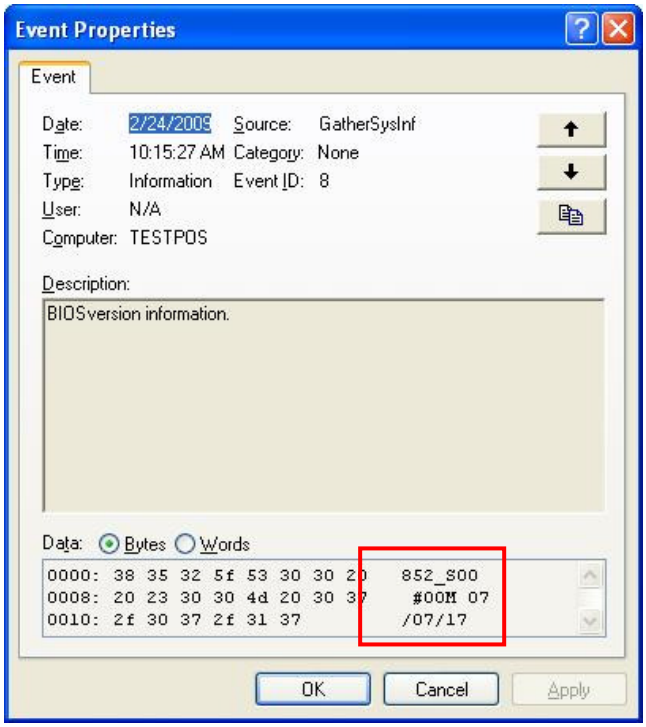


EventID:8(BIOS Version)

BIOS Version is displayed on Data.

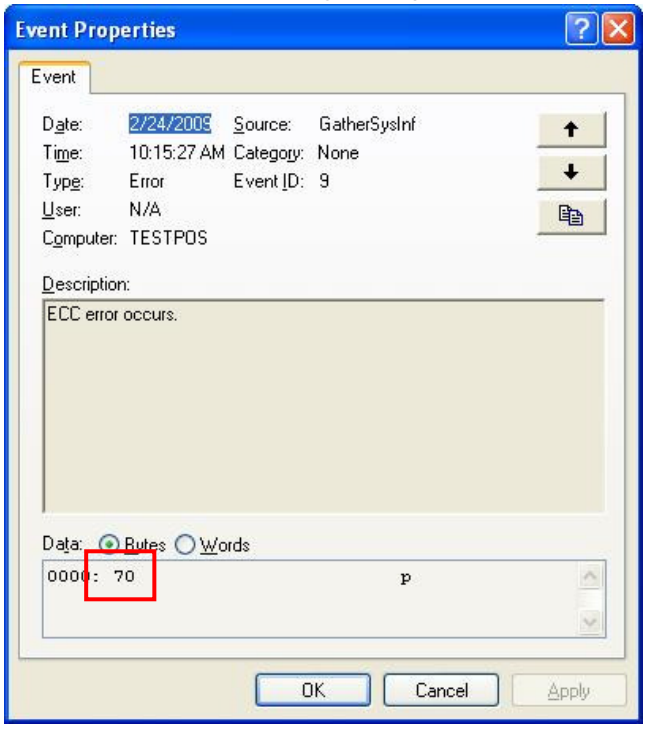
In the case of the following example, BIOS Version is “852_S00 #00M 07/07/17”.

The value changes by Machine Type or BIOS version.



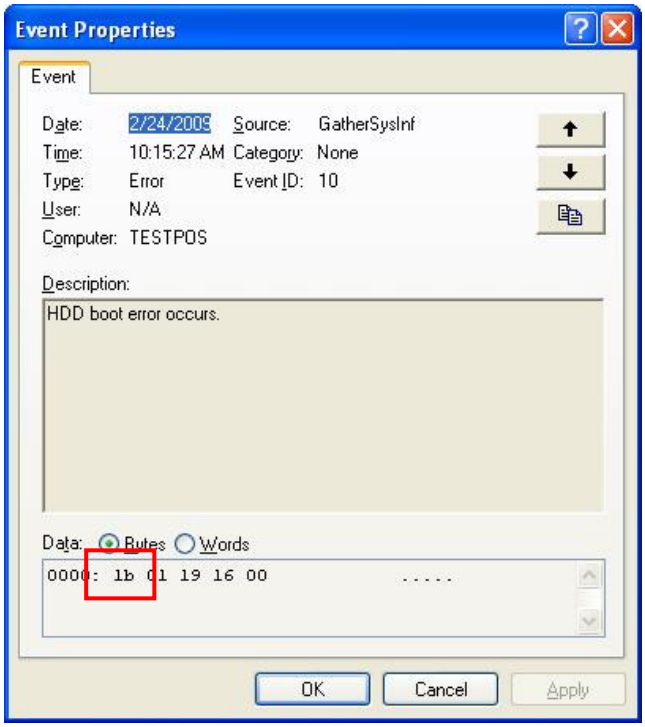
Event ID:9(ECC Error Log)

The number of 2bit ECC Error is displayed on Data area as Hex value.
In the case of the following example, 2bit ECC Error is 112 times (Hex: 70 times).



Event ID:10(ECC Error Log)

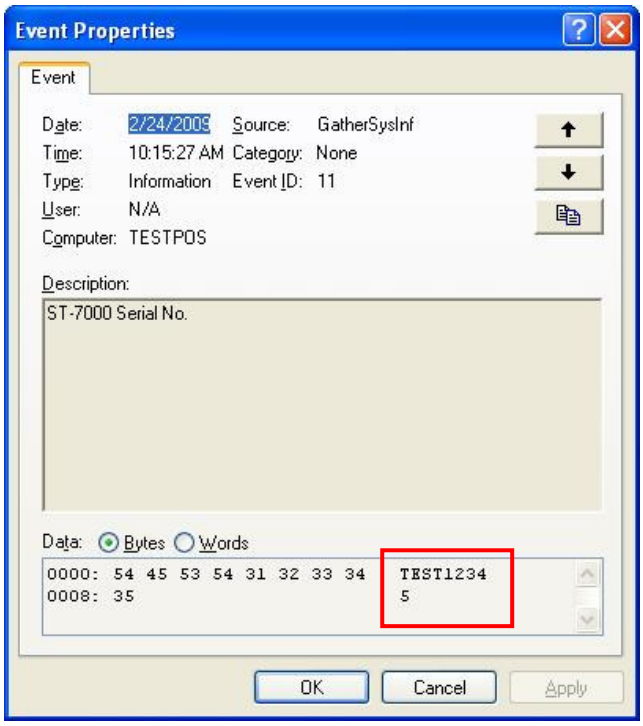
The number of ECC Error Log is displayed on Data area as Hex value.
In the case of the following example, ECC Error Log is 27 times (Hex: 1b times).



EventID:11(Serial No.)

Serial No. is displayed on Data area.

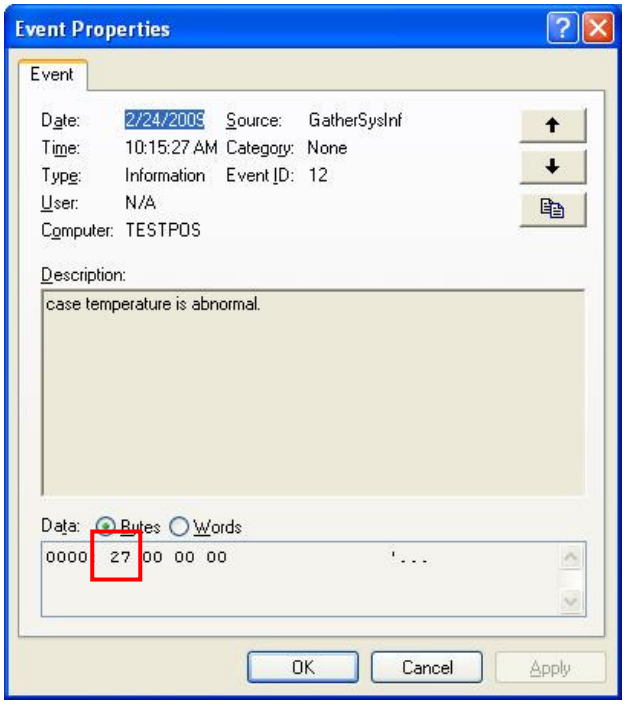
In the case of the following example, Serial No. is “TEST12345”.



Event ID:12(Excessive case temperature)

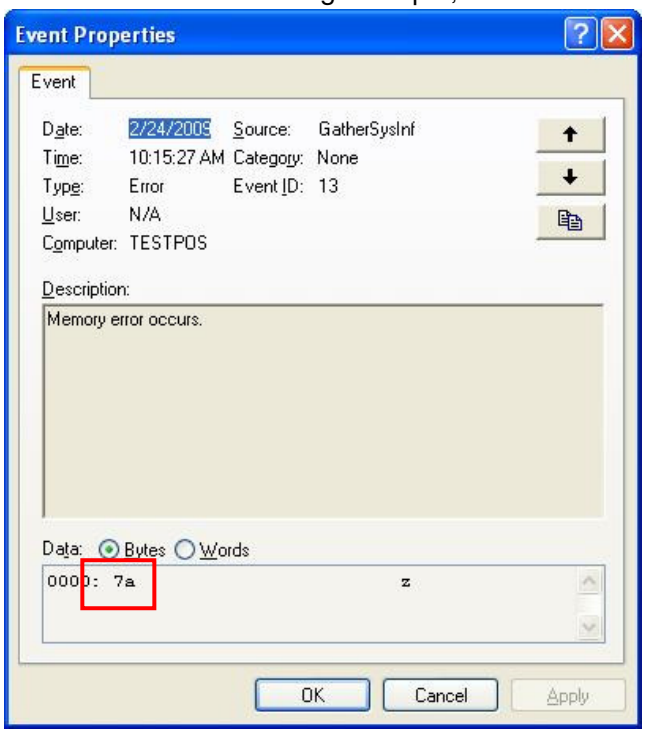
Excessive case temperature is displayed on Data area as Hex value.

In the case of the following example, Excessive case temperature is 39 degrees centigrade (Hex: 27 degrees centigrade).



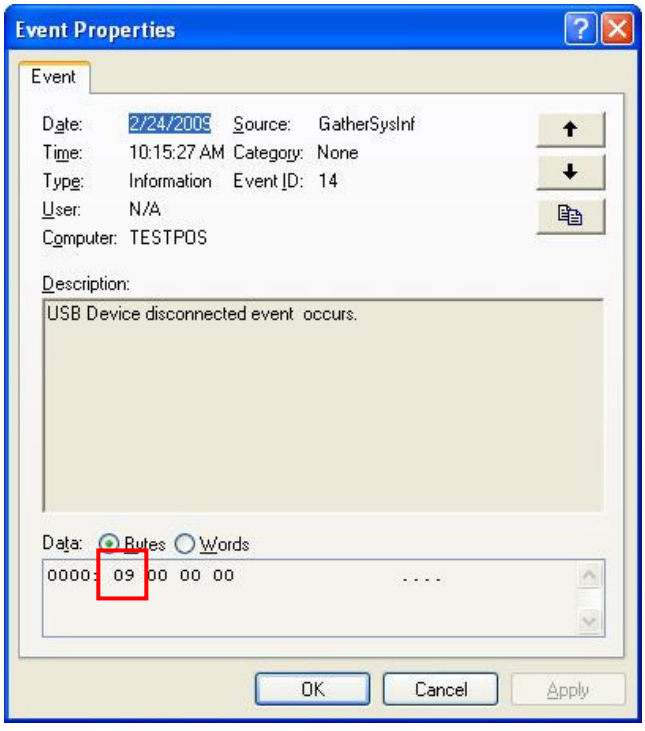
Event ID:13(Memory Errors)

The number of 1bit ECC Error is displayed on Data area as Hex value.
In the case of the following example, 1bit ECC Error is 122 times (Hex: 7a times).



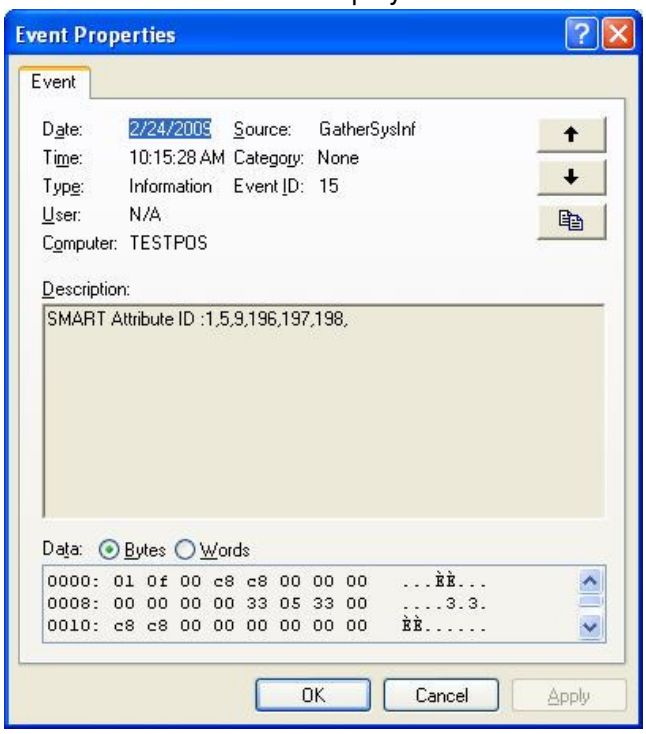
Event ID:14(USB Disconnected)

The number of USB Disconnected times is displayed on Data area as Hex value.
In the case of the following example, USB Disconnected times is 9 times (Hex: 9 times).



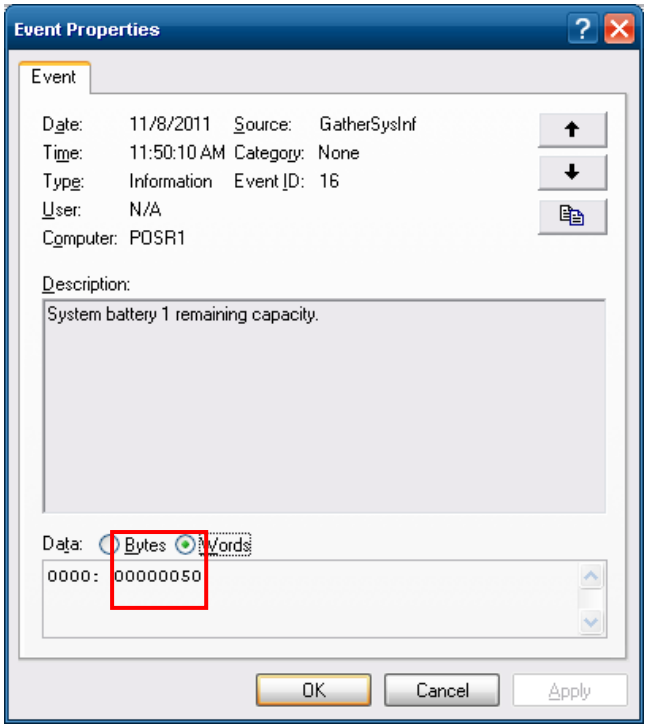
Event ID:15(S.M.A.R.T attribute ID)

S.M.A.R.T information is displayed on Data area.



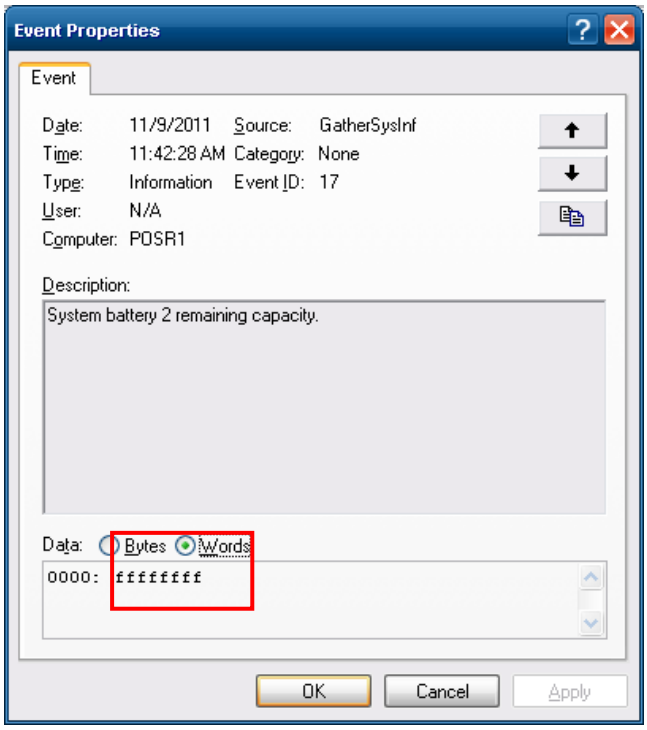
Event ID:16(System battery #1 remaining capacity)

System battery #1 remaining capacity information is displayed on Data area.
In the case of the following example, the remain capacity is 80 mW (Hex: 50 mW).



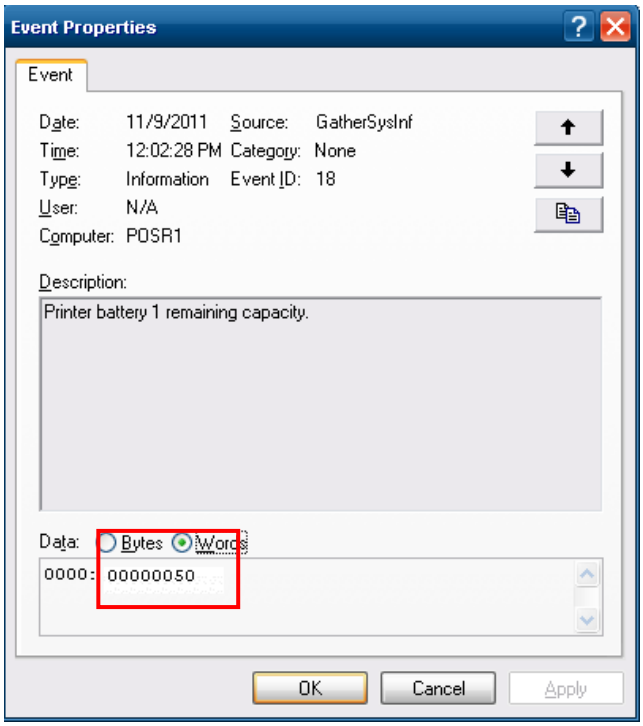
Event ID:17(System battery #2 remaining capacity)

System battery #2 remaining capacity information is displayed on Data area.
In the case of the following example, the value -1 means battery is not connected (Hex: 0xffffffff).



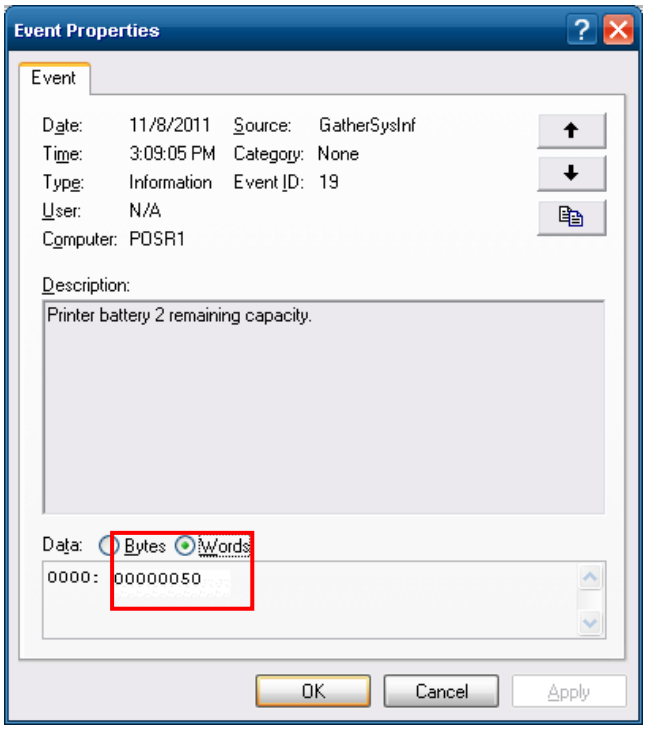
Event ID:18(Printer battery #1 remaining capacity)

Printer battery #1 remaining capacity information is displayed on Data area.
In the case of the following example, the remain capacity is 80 mW (Hex: 50 mW).



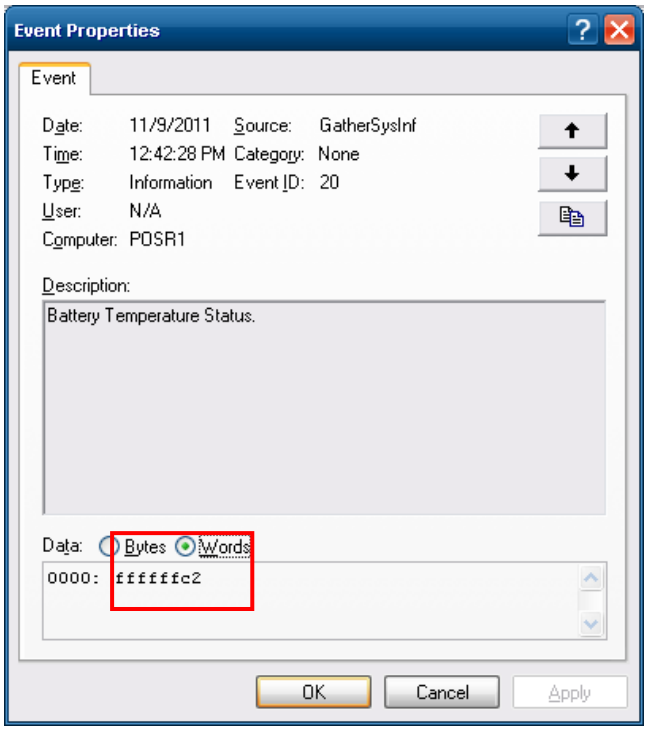
Event ID:19(Printer battery #2 remaining capacity)

Printer battery #2 remaining capacity information is displayed on Data area.
In the case of the following example, the remain capacity is 80 mW (Hex: 50 mW).



Event ID:20(Battery temperature)

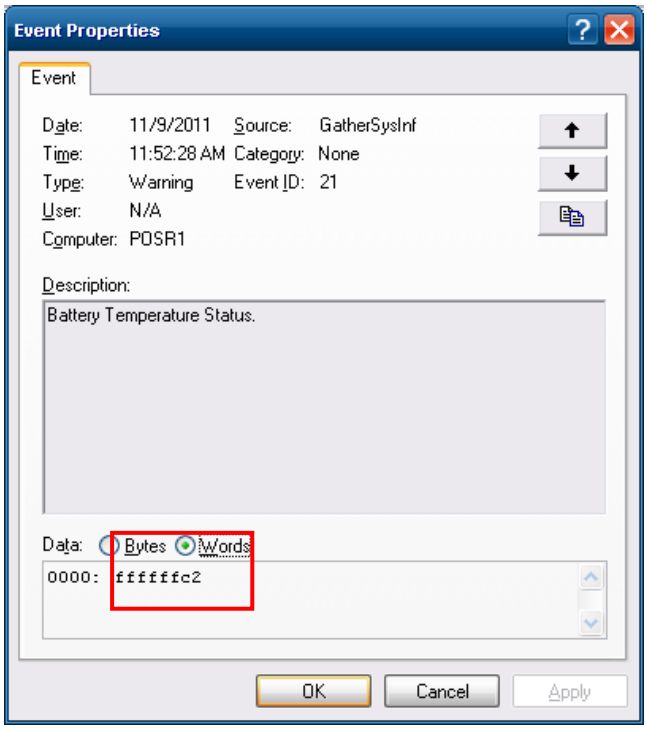
Current battery temperature value is displayed on Data area.
In the case of the following example, the current temperature is -62 ℃ (Hex: 0xffffffc2 ℃).



Event ID:21(Abnormal Battery temperature)

Current battery temperature value is displayed on Data area

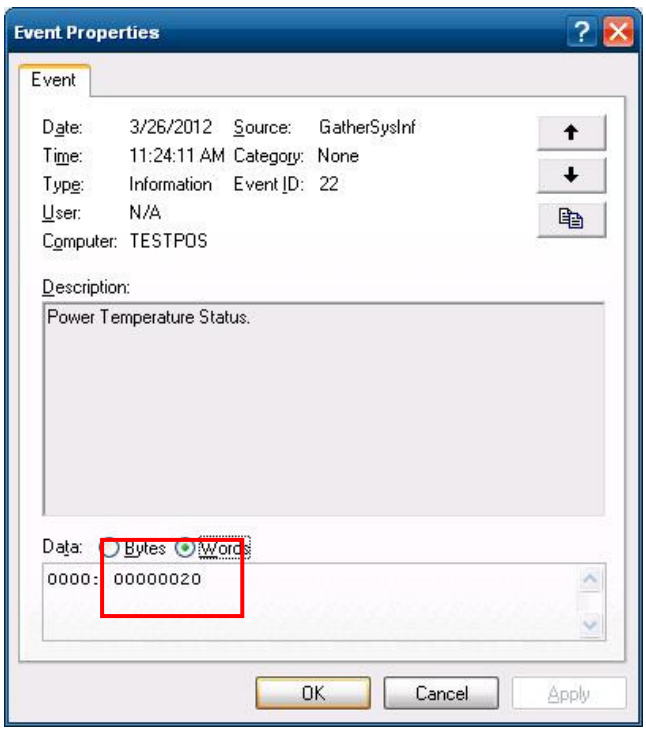
In the case of the following example, the current temperature is -62 ℃ (Hex: 0xffffffc2 ℃).



Event ID:22(Power temperature)

Current power temperature value is displayed on Data area

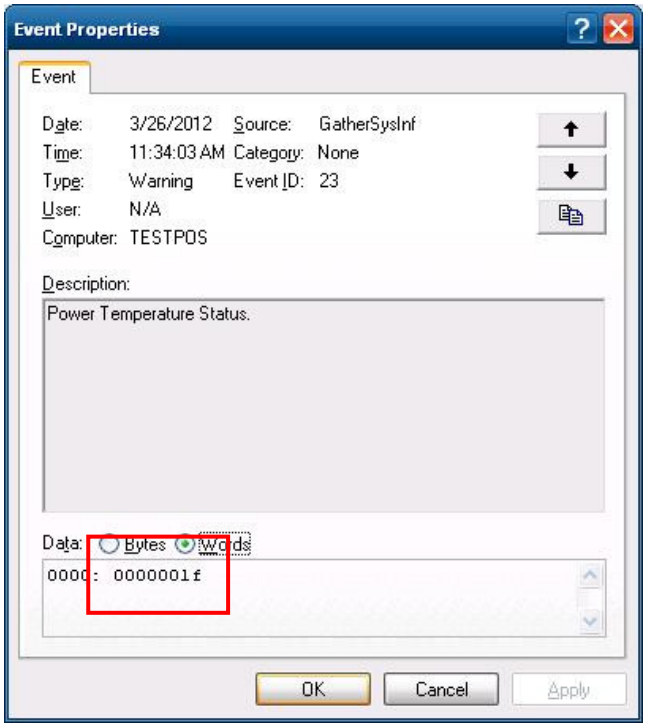
In the case of the following example, the current temperature is 32 ℃ (Hex: 20 ℃).



Event ID:23(Abnormal Power temperature)

Current power temperature value is displayed on Data area

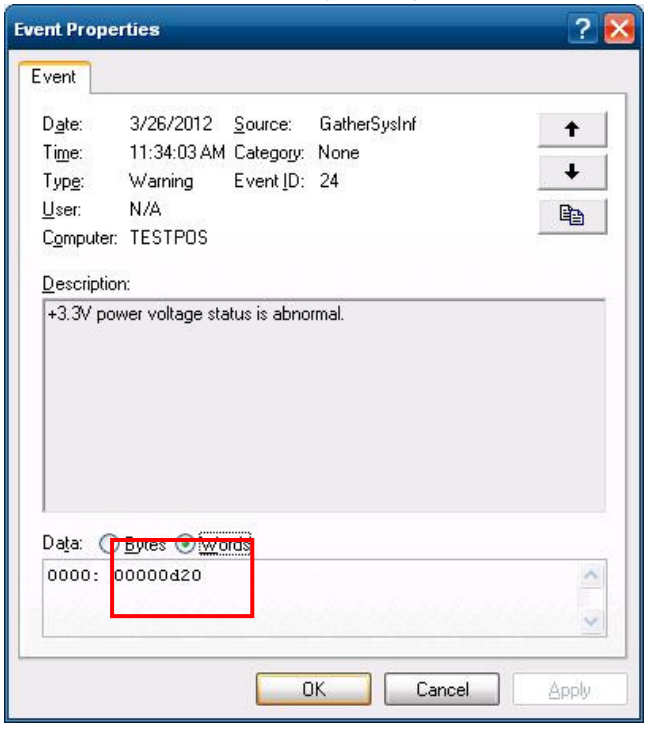
In the case of the following example, the current temperature is 31 ℃ (Hex: 1f ℃).



EventID:24(PowerVol33)

PowerVol33 value is displayed on Data area as Hex value.

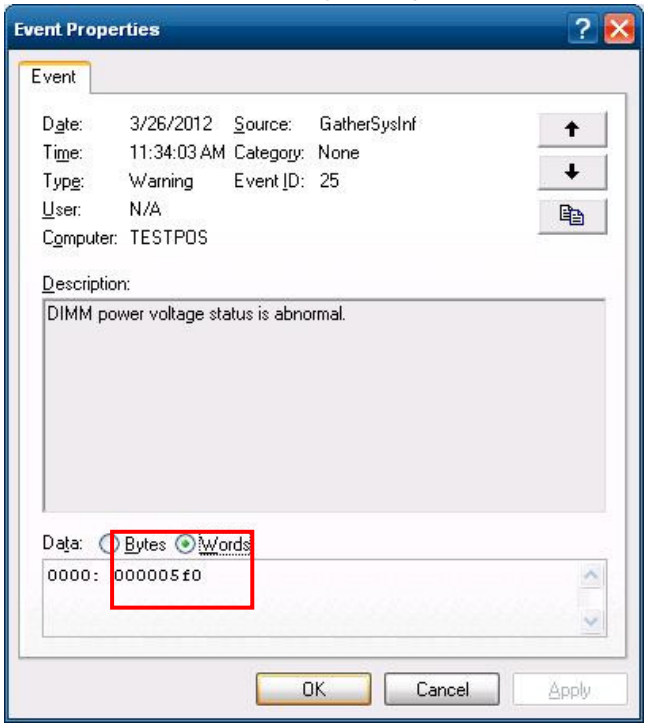
In the case of the following example, PowerVol3.3 value is 3360mV (Hex: d20 mV).



EventID:25(PowerVolDimm)

PowerVolDimm value is displayed on Data area as Hex value.

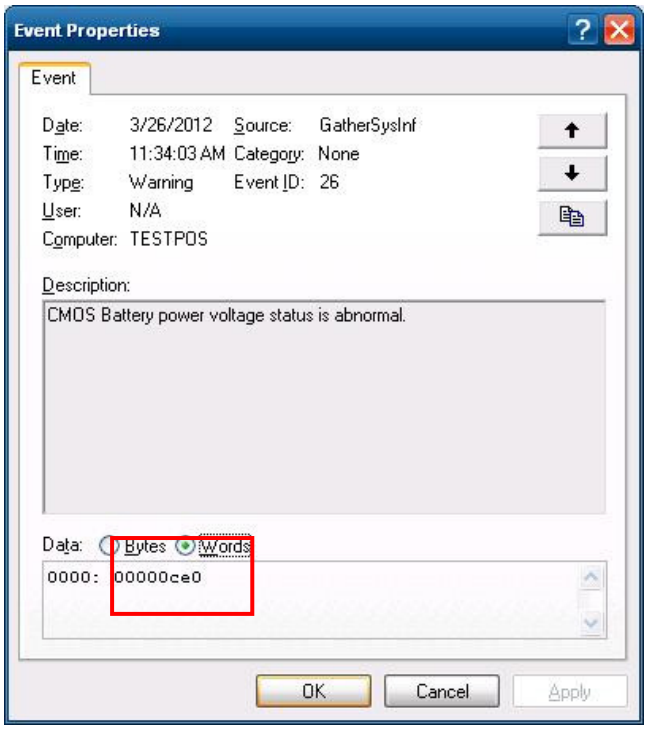
In the case of the following example, PowerVolDimm value is 1520mV (Hex: 5f0 mV).



EventID:26(PowerVolBat)

PowerVolBat value is displayed on Data area as Hex value.

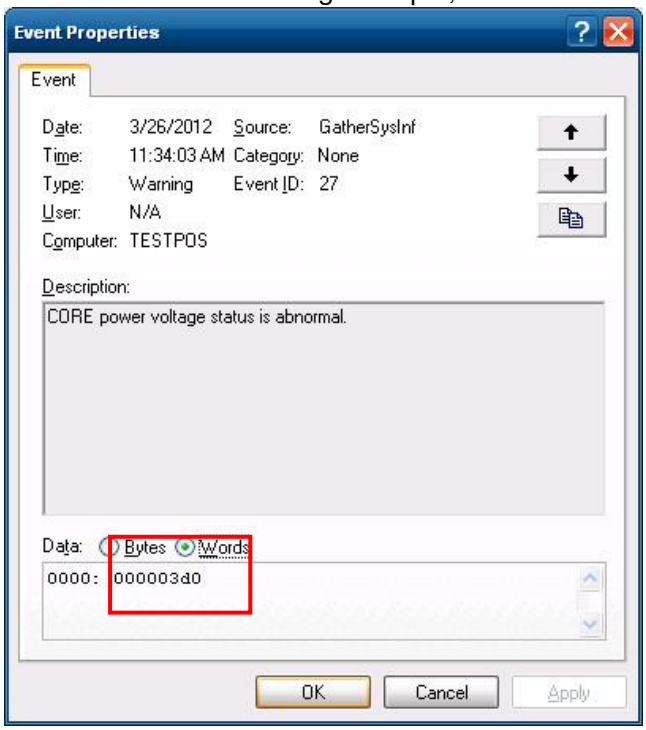
In the case of the following example, PowerVolBat value is 3296mV (Hex: ce0 mV).



EventID:27(PowerVolCore)

PowerVolCore value is displayed on Data area as Hex value.

In the case of the following example, PowerVolCore value is 976mV (Hex: 3d0 mV).



3.3 Event Log Filtering

The SysInfAgent service periodically filters event logs, and sends SNMP TRAP information or updates WMI information when an event log to be monitored is detected.
For event logs, which send SNMP TRAP, TRAP data to be reported varies depending on the log data. The events are divided into two groups, one group, which reports all data, and another group, which reports only necessary data. TRAP data to be reported is listed below:

For further information on TRAP data to be reported, refer to "3.4 SNMP TRAP Notification."

Log data	Transmission type	Transmission data
(1) CPU temperature	SNMP TRAP	CPU temperature
(2) How many times CPU FAN spins:		CPU fan rotational speed
(3) 5V power voltage status		5V power voltage
(4) 12V power voltage status		12V power voltage
(5) CPU fan failure		No
(6) Cooling fan failure		No
(8) NIC (Network Interface Card) status		ifIndex
(7) Hard drive read or write errors		All data in the event log
(9) Abnormal shutdown of Windows		All data in the event log
(10) Abnormal battery temperature		Battery temperature
(11) Abnormal power temperature		Power temperature
(12) 3.3V power voltage status		3.3V power voltage
(13) CMOS battery voltage status		CMOS battery power voltage
(14) VDimm power voltage status		VDimm power voltage
(15) VCore power voltage status		VCore power voltage

3.4 SNMP TRAP Notification

This section represents TRAP data to be reported per item described in "3.1 Event Log Filtering."

Registry Setting

	Type	Description
WX FRAMEWORK		
SYSINFAGT		
EVENTLOG_FILTER_INF		
WRITE_APLLOG	REG_DWORD	Whether or not to output to the application log (0: No, 1: Yes)
WATCH_INTERVAL	REG_DWORD	Monitoring interval, Unit: Second (1 to 21,600 sec)
APLLOG_REC_NO	REG_DWORD	Record No. to read the next application log (from 0)
SECLOG_REC_NO	REG_DWORD	Record No. to read the next security log (from 0)
SYSLOG_REC_NO	REG_DWORD	Record No. to read the next system log (from 0)
SHILOG_REC_NO	REG_DWORD	Record No. to read the next self-defined log (from 0)
MATCH		
FILTER_LIST		
0	REG_SZ	Filter name 1
1	REG_SZ	Filter name 2
:		
Filter name 1 (1 to 127)		
LOG_TYPE	REG_SZ	Log type (Application/Security/System/SysHealth)
EVENT_TYPE	REG_DWORD	Event type
SOURCE_NAME	REG_SZ	Source name (0 to 127)
EVENT_ID	REG_DWORD	Abbreviated event ID
ENTERPRISE_OID	REG_SZ	Enterprise OID during TRAP transmission (0 to 127) (Invalid during SMS)
SPECIFIC_TRAP_ID	REG_DWORD	Fixed TRAP ID during TRAP transmission (Invalid during SMS)
MESSAGE_STRING	REG_SZ	Message (0 to 127)
SENDTYPE	REG_SZ	Transmission type (Elog, Data Trap SMS)
DATAOID	REG_SZ	Data OID during TRAP transmission (Valid during Data Trap only)
OID_LIST		
DATE	REG_SZ	Object identifier representing a date
TIME	REG_SZ	Object identifier representing time
USER	REG_SZ	Object identifier representing a user name
COMPUTER	REG_SZ	Object identifier representing a computer name
SHORT_EVENT_ID	REG_SZ	Object identifier representing an abbreviated event ID
EVENT_ID	REG_SZ	Object identifier representing an event ID
SOURCE	REG_SZ	Object identifier representing a source name
EVENT_TYPE	REG_SZ	Object identifier representing the event type
EVENT_CATEGORY	REG_SZ	Object identifier representing a event category
DESCRIPT	REG_SZ	Object identifier representing a message

* The values in the parentheses indicate configurable values or the number of characters.
When 0xffffffff is specified for the EVENT ID, all event IDs of the specified event source are applied.

(7) For hard drive read or write errors, logs, which are output to the event log, are filtered, and TRAP notification is provided when a log whose source name is "atapi," "disk" or "dmio."
(9) For abnormal shutdown of Windows, logs, which are output to the event log, are filtered, and TRAP notification is provided when a log whose source name is "EventLog" and its notification type is "Error" or a log whose source name is "USER32" and its notification type is "Warning" is output.

Log data	Transmission TRAP data
(1) CPU temperature	Generric = 6 Specific = 1 Enterprise = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8 Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8.1.0 Value = ASN_INTEGER32([current temperature value])
(2) How many times CPU FAN spins:	Generric = 6 Specific = 2 Enterprise = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8 Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8.2.0 Value = ASN_INTEGER32([current rotational speed value])
(3) 5V power voltage status	Generric = 6 Specific = 3 Enterprise = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8 Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8.3.0 Value = ASN_INTEGER32([current voltage value])
(4) 12V power voltage status	Generric = 6 Specific = 4 Enterprise = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8 Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8.4.0 Value = ASN_INTEGER32([current voltage value])
(5) CPU fan failure	Generric = 6 Specific = 5 Enterprise = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8
(6) Cooling fan failure	Generric = 6 Specific = 6 Enterprise = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8
(7) NIC (Network Interface Card) status	Generric = 6 Specific = 1 Enterprise = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.5 Variable = interfaces.ifTable.ifEntry.ifIndex Value = ASN_INTEGER32([ifIndex value])

(8) Hard drive read or write errors	Generric = 6 Specific = 1 Enterprise = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.1 Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.1.0 Value = ASN_INTEGER32([error value]) Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.2.1.0 Value = ASN_OCTETSTRING([date]) Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.2.2.0 Value = ASN_OCTETSTRING([time]) Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.2.3.0 Value = ASN_OCTETSTRING() Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.2.4.0 Value = ASN_OCTETSTRING() Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.2.5.0 Value = ASN_OCTETSTRING([error value]) Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.2.6.0 Value = ASN_OCTETSTRING([error code]) Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.2.7.0 Value = ASN_OCTETSTRING([source]) Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.2.8.0 Value = ASN_OCTETSTRING([notification type]) Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.2.9.0 Value = ASN_OCTETSTRING() Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.2.10.0 Value = ASN_OCTETSTRING()

(9) Abnormal shutdown of Windows	Generric = 6 Specific = 4 Enterprise = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.7 Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.1.0 Value = ASN_INTEGER32([error value]) Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.2.1.0 Value = ASN_OCTETSTRING([date]) Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.2.2.0 Value = ASN_OCTETSTRING([time]) Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.2.3.0 Value = ASN_OCTETSTRING() Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.2.4.0 Value = ASN_OCTETSTRING() Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.2.5.0 Value = ASN_OCTETSTRING([event ID]) Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.2.6.0 Value = ASN_OCTETSTRING([error code]) Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.2.7.0 Value = ASN_OCTETSTRING([source name]) Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.2.8.0 Value = ASN_OCTETSTRING([notification type]) Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.2.9.0 Value = ASN_OCTETSTRING() Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.1.2.10.0 Value = ASN_OCTETSTRING()
(10)Battery temperature	Generric = 6 Specific = 21 Enterprise = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8 Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8.21.0 Value = ASN_INTEGER32([current battery temperature value])
(11) Power temperature	Generric = 6 Specific = 23 Enterprise = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8 Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8.23.0 Value = ASN_INTEGER32([current power temperature value])
(12)+3.3V power voltage status	Generric = 6 Specific = 24 Enterprise = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8 Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8.24.0 Value = ASN_INTEGER32([current voltage value])
(13)VDimm power voltage status	Generric = 6 Specific = 25 Enterprise = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8 Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8.25.0 Value = ASN_INTEGER32([current voltage value])
(14)CMOS battery power voltage status	Generric = 6 Specific = 26 Enterprise = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8 Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8.26.0 Value = ASN_INTEGER32([current voltage value])

(15)VCore power voltage status	Generric = 6 Specific = 27 Enterprise = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8 Variable = .iso.org.dod.internet.private.enterprises.1129.1.3.1.1.1.4.8.27.0 Value = ASN_INTEGER32([current voltage value])

3.5 S.M.A.R.T. Information Collection

The SystemHealth periodically obtains S.M.A.R.T. information in the HD. The IDs to obtain are 01, 05, 09, 196, 197 and 198.
The SystemHealth periodically outputs S.M.A.R.T. Information event logs and stores the information to the data in the log.
The data in the event log outputs [ID number FLAG Value Worst RawValue Threshold] in bytes in sequence, starting at ID:01.
Data values in the event log are output in bytes in the following form:

0000: **01 0f 00 c8 c8 00 00 00**
0008: **00 00 00 00 33** 05 33 00
0010: c8 c8 00 00 00 00 00 00
0018: 00 8c **09 32 00 64 64 4e**
0020: **02 00 00 00 00 00 00** c4
0028: 32 00 c8 c8 00 00 00 00
0030: 00 00 00 00 **c5 12 00 c8**
0038: **c8 00 00 00 00 00 00 00**
0040: **00** c6 10 00 c8 c8 00 00
0048: 00 00 00 00 00 00

Numeric strings represented in bold and standard fonts alternately are all smart information per ID.
An example of information for ID: 01 is provided for description.

01 0f 00 c8 c8 00 00 00 00 00 00 00 33
↑ ↑ ↑ ↑ ↑ ↑
① ② ③ ④ ⑤ ⑥

① 01 … Attribute ID number
② 0f … FLAG
③ c8 … Value
④ c8 … Worst
⑤ 00 00 00 00 00 00 00 … RawValue
⑥ 33 … Threshold

Numeric strings are output per attribute ID to the SMS.

3.6 SMS Setting Change

Changes are required for the SMS (server site) to obtain extended WMI information because the SystemHealth extends WMI information.
The extended WMI information needs to be added to the end of the following SMS file:

C:¥SMS¥inboxes¥clifiles.src¥hinv¥sms_def.mof
(When the HDD implementing the SMS is a C drive)

The additional data is shown below:

```
#pragma namespace ("¥¥¥¥.¥¥root¥¥CIMv2")
class SysInfProv
{
[key]
string KeyName;
[key]
string sBIOSVersion;
[key]
uint16 MemoryErrorCounts;
[key]
uint16 EccErrorCounts;
[key]
uint16 HDDBootErrorCounts;
[key]
string HDDBootErrorTime;
[key]
uint32 HDDBootErrorTemporary;
[key]
string SerialNumber;
[key]
uint32 ExcessiveCaseTemperature;
[key]
uint32 DeviceDisconnectedUSB;
[key]                                   ①
uint32 Battery_Temperature;
[key]
uint32 Battery_SysCapacity1;
[key]
uint32 Battery_SysCapacity2;
[key]
uint32 Battery_PrinterCapacity1;
[key]
uint32 Battery_PrinterCapacity2;
[key]                                   ②
uint32 Power_Temperature;
[key]
string HDD1_SMART1;
[key]
string HDD1_SMART2;
[key]
string HDD1_SMART3;
[key]
string HDD1_SMART4;
```

① Only require if configure the SMS server for ST-C10 and ST-M30 machine monitoring
② Only require if configure the SMS server for ST-M30 machine monitoring

```
[key]
string HDD1_SMART5;
[key]
string HDD1_SMART6;
[key]
string HDD2_SMART1;
[key]
string HDD2_SMART2;
[key]
string HDD2_SMART3;
[key]
string HDD2_SMART4;
[key]
string HDD2_SMART5;
[key]
string HDD2_SMART6;
};
#pragma namespace ("¥¥¥¥.¥¥root¥¥CIMv2¥¥sms")
[SMS_Report(TRUE),
SMS_Group_Name("SystemHealth Information"),
SMS_Class_ID("Microsoft|SystemHealth Information|1.0")]

class SysInfProv:SMS_Class_Template
{
[SMS_Report(TRUE),key]
        string KeyName;
    [SMS_Report(TRUE)]
        string sBIOSVersion;
    [SMS_Report (TRUE)]
        uint16 MemoryErrorCounts;
    [SMS_Report (TRUE)]
        uint16 EccErrorCounts;
    [SMS_Report (TRUE)]
        uint16 HDDBootErrorCounts;
    [SMS_Report (TRUE)]
        string HDDBootErrorTime;
    [SMS_Report (TRUE)]
        uint32 HDDBootErrorTemporary;
    [SMS_Report (TRUE)]
        string SerialNumber;
    [SMS_Report (TRUE)]
        uint32 ExcessiveCaseTemperature;
    [SMS_Report (TRUE)]
        uint32 DeviceDisconnectedUSB;
    [SMS_Report (TRUE)]                                   ③
        uint32 Battery_Temperature;
    [SMS_Report (TRUE)]
        uint32 Battery_SysCapacity1;
    [SMS_Report (TRUE)]
        uint32 Battery_SysCapacity2;
    [SMS_Report (TRUE)]
        uint32 Battery_PrinterCapacity1;
    [SMS_Report (TRUE)]
        uint32 Battery_PrinterCapacity2;
    [SMS_Report (TRUE)]                                   ④
        uint32 Power_Temperature;
```

③ Only require if configure the SMS server for ST-C10 and ST-M30 machine monitoring
④ Only require if configure the SMS server for ST-M30 machine monitoring

```
    [SMS_Report (TRUE)]
        string HDD1_SMART1;
    [SMS_Report (TRUE)]
        string HDD1_SMART2;
    [SMS_Report (TRUE)]
        string HDD1_SMART3;
    [SMS_Report (TRUE)]
        string HDD1_SMART4;
    [SMS_Report (TRUE)]
        string HDD1_SMART5;
    [SMS_Report (TRUE)]
        string HDD1_SMART6;
    [SMS_Report (TRUE)]
        string HDD2_SMART1;
    [SMS_Report (TRUE)]
        string HDD2_SMART2;
    [SMS_Report (TRUE)]
        string HDD2_SMART3;
    [SMS_Report (TRUE)]
        string HDD2_SMART4;
    [SMS_Report (TRUE)]
        string HDD2_SMART5;
    [SMS_Report (TRUE)]
        string HDD2_SMART6;};
```

After this data is added to the end of the sms_def.mof file, the mof file needs to be compiled.
Start a command prompt on the machine on which the SMS is implemented, enter the following command:

mofcomp [file path of sms_def.mof]

Please make sure the data is added correctly for each POS terminal SMS server.