

Development of the UPS Management Software “SAN GUARD Lite”

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1. Introduction

With the expansion of “always on” connections to the internet and broadband, and with the rapid expansion of network computing, the uninterruptible power supply (hereafter, UPS) becomes increasingly important to support stable operation of a system.

UPS management software is becoming indispensable to protect the system and to shut down a system normally during a power supply trouble such as power failure.

We have been expanding the features of UPS management software through the “SAN GUARD A” which allows shut-down using UPS contact signal, the “SAN GUARD and ” which has scheduled operation function by doing serial communication with UPS, and the “SAN GUARD ” which consists of a LAN interface card mounted on the UPS and UPS management software installed in a computer and its network support functions.

However, the existing products choose the UPS management software depending on the connecting interface with UPS and the OS of the computer used and there are functional differences between each product as well.

Based on such background, we developed a UPS management software, “SAN GUARD Lite” which aimed at not only the improvement of the functions and easier usage but follows the conventional functions we know today.

This document introduces the outline of the product.

2. System Configuration

“SAN GUARD Lite” was made to be able to work with all system configurations currently supported in the existing “SAN GUARD” products so as to connect with all UPS we currently provide.

Fig.1 and Fig.2 show the examples of the system configuration of this product.

The system configuration example 1 shown in Fig.1 is similar to the connection method used by conventional products, “SAN GUARD and ”. A computer (server) observes the state of UPS by conducting serial communication with UPS. When power failure occurs, the server can direct the client to shut down with via network communication. In this case, a UPS management system can be achieved economically because the system can be constructed only with the UPS management software. However, there are restrictions like when the server that always communicates with UPS is not operational, then it cannot manage or control the system.

In case of the UPS with only contact signal, also the similar server/ client configuration can shut down multiple computers.

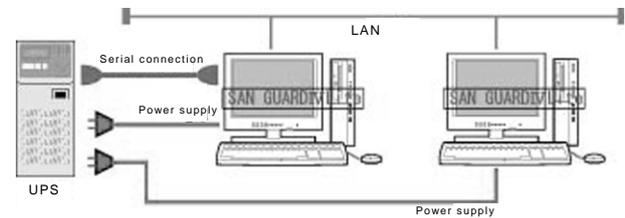


Fig.1 System Configuration Example 1

The system configuration example 2 shown in Fig.2 is same as that of the conventional product, “SAN GUARD ”. LAN interface card, which is installed on UPS, observes the state of UPS and directs each computer to shut down with the network communication when the power failure occurs. In this case, unlike system configuration example 1, a computer that always communicates with UPS is not necessary and there is no systematic restriction because the LAN interface card has management function.

Also, when a UNIX and Linux machine are connected, a shut down can be directed by logging in to the applicable computer with Telnet from LAN interface card. This can be done without using UPS management software when “SAN GUARD Lite” is installed.

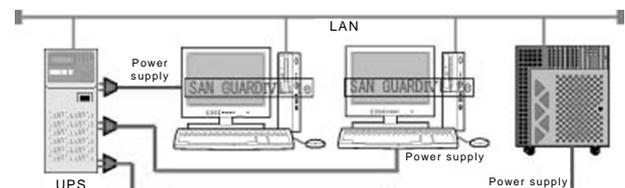


Fig.2 System Configuration Example 2

3. Features

3.1 Various UPS Interfaces Are Supported

In our conventional products, it was necessary to select a suitable UPS management software for interface based on the connection method with UPS.

With “SAN GUARD Lite” it is possible to be used with all of our UPS, most any system configuration, and also various interfaces (contact signal, serial communications, and LAN interface card connection).

3.2 UPS “SANUPS ASE” Supported Multiple Output Systems

We have added the following functions to use in combination with UPS “SANUPS ASE” equipped with two or more output systems.

- Individual control (ON/OFF/reset) according to the output system.
- Setting of output on delay/off delay for each system to orderly on/off of the load.

3.3 Wake On LAN Is Supported

Soft-switch type computer is occasionally not able to be started by power supply only, but wake on LAN supported computer can start, even if it's a soft-switch type computer, by transmitting magic packet to the applicable computer via LAN and power supply.

3.4 The Connection and the Device Registration with UPS Are Easy

“SAN GUARD Lite” has a settings wizard that is much improved from the conventional “SAN GUARD”. The essential setting items like the connect method of UPS and the shutdown condition at power failure can be set easily following the wizard.

3.5 Expansion of Number of Devices to Connected With UPS

Maximum of 50 computers can be shut down with the server/client configuration of “SAN GUARD Lite” compared to 10 computers per UPS that “SAN GUARD” could shut down.

3.6 GUI Is Developed with JAVA

Common operability is offered to any OS of Windows, Linux, or UNIX, via the Java created GUI (Graphical User Interface) of the UPS management software.

Fig.3 shows some screen examples of “SAN GUARD Lite”.

3.7 Multi OS Supported

Our conventional products did not support Linux or Unix OS therefore not allowing the use of one UPS management system across all environments.

We are developing “SAN GUARD Lite” on the assumption that the same UPS management software should support several OS. We have completed the production of the Windows version followed by a Linux version. The development of the Unix version is also aiming for a release soon.

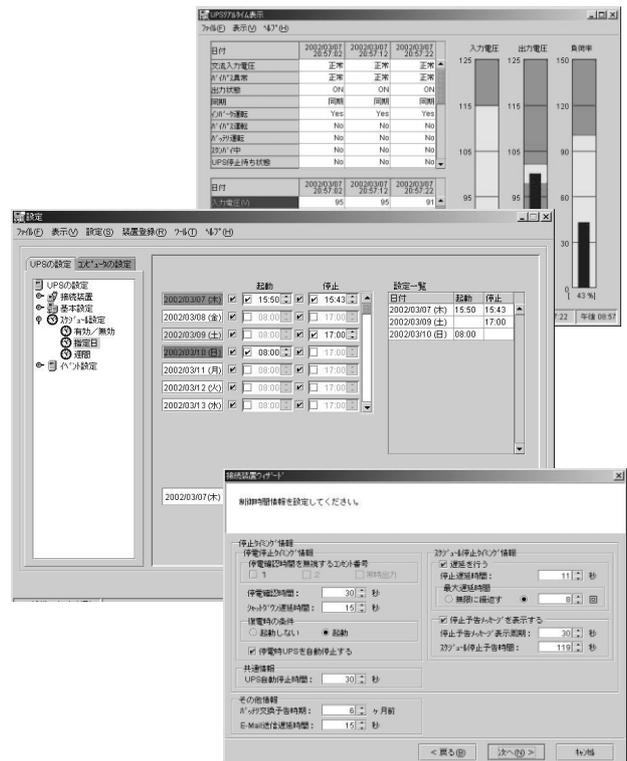


Fig.3 Screen Examples of SAN GUARD Lite

4. Integrated Management Function

The conventional “SAN GUARD” included a function that multiple UPS equipped with LAN interface cards were able to be singularly managed from the network. The priority in “SAN GUARD Lite” is the operability of normal use, and therefore will only support 1 dedicated UPS unit. Therefore, the function to manage multiple UPS is provided in another tool called “SAN GUARD integration management”.

“SAN GUARD integration management” can support the management function of UPS by the serial interface by using “SAN GUARD Lite” in addition to the conventional UPS equipped with LAN interface card. Therefore, more UPS can be managed via the network.

We have also implemented this function in “SAN GUARD Lite”, improving the performance and the operability has well.

5. Function Comparison with the Conventional Product

Table 1 shows the function comparison between the conventional UPS management software product and “SAN GUARD Lite”.

6. Conclusion

We have successfully developed "SAN GUARD Lite" which has both improved functionality and ease of use when compared to our conventional products. When the development of UNIX version is completed, our UPS management software can be unified to "SAN GUARD Lite".

However, the network equipment that is managed by UPS is advancing every day. It is expected that the number of computers a UPS manages will continue to

increase as well as the power usage of computers will be changing as well. Moreover, we should always keep thinking what kind of UPS management system we should provide as we can see the changes of the requirements of UPS, such as an emergence of a server that operates two or more OS with one computer and changes in storage products.

We continue to monitor the UPS needs as the market changes and will keep providing better UPS management system in the future based on "SAN GUARD Lite".

Table 1 Function Comparison between Sanyo Denki UPS Management Software

Function		SAN GUARD A	SAN GUARD	SAN GUARD	SAN GUARD	SAN GUARD Lite LAN I/F Card	SAN GUARD Lite Serial Connection	SAN GUARD Lite Contact Connection
Auto Shut Down								
UPS Auto Shutdown								
Mixing Management		x	x			(Note3)	(Note 3)	(Note 3)
User Command Action								
Status Indication								
History Management								
Schedule	Every Month	x						
	Every Week	x						
	Designated Day	x						
SNMP Support		(OP)	(OP)	(OP)				
Web Browser Support		x	x	x			(Note 4)	(Note 4)
E-Mail Transmission		x	x	x				
Reset (Note 1)		x	x	x				
Plural systems UPS (ASE) Support		x	x	x	x			x
WakeOnLAN		x	x	x				
Contact Signal Support(Note 2)			x	x	x	x	x	
Supported OS	Windows95		x	x	x	x	x	x
	Windows98		x	x				
	WindowsME		x	x				
	WindowsNT3.51	x	x					
	WindowsNT4.0	x	x					
	Windows2000	x	x					
	WindowsXP	x	x	x	x			
	UNIX			x	x	Developing	Developing	Developing
	Linux	x	x	x	x			
	NetWare	x		x	x	x	x	x

Note 1 . Reset function is to stop UPS during designated time and re-start again after that.

Note 2 . Contact signal support is to control shut down using external transmission signal by the contact from UPS.

Note 3 . Use "SAN GUARD Integrated Management".

Note 4 . Web browser support function is planned to be supported in the future.

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