System Protect Software

User Manual

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1 Introduction

The SPS (System Protect Software) is one utility which communicates with NMC (Network Monitoring Card). SPS provides logs events, notify users of events and protect system to shutdown gracefully. With the SPS, it can save application's data and documents before system shut down as well.

SPS has two major components: "SPS Service" and "SPS Interface", SPS Service runs in the background as a system service; and SPS Interface is a user interface application that allows the user to tailor the configuration parameters.

1.1 Supported platforms

Supported platforms (validated):

Windows
Windows XP Home Edition
Windows XP Professional
Windows 2000
Windows Server 2003 x32,x64
Windows Server 2008 x32,x64
Windows Server 2012 x64
Windows Vista x32, x64
Windows 7 x32, x64
Windows 8 x32, x64
Windows 10 x64
Hyper-V Server 2008/2012
LINUX
Red Hat Enterprise Server 5.x for i386,AMD64
Red Hat Enterprise Server 6.x for i386,AMD64
Red Hat Enterprise Server 7.x AMD64
SUSE Enterprise Server 10.x for i386,AMD64
SUSE Enterprise Server 11.x for i386,AMD64
SUSE Enterprise Server 12.x for AMD64 (CUI)
Ubuntu 8.x for i386,AMD64
Ubuntu 9.x for i386,AMD64
Ubuntu 10.x for i386,AMD64
Ubuntu 11.x for i386,AMD64
Ubuntu 12.x for i386,AMD64
Ubuntu 13.x for i386,AMD64

Ubuntu 14.x for i386,AMD64
MACOS
Mac OS 10.5 for PPC
MAC OS 10.6/10.7/10.8/10.9/10.10/10.11 for Intel
VMware Server
VMware ESXi 4.0/4.1/5.0/5.1/5.5/6.0(Paid Version)
VMware ESX 4.0/4.1
Citrix XenServer
Citrix XenServer 6.2
Citrix XenServer 6.5
Unix
Solaris 10/11 for Intel
Solaris 10 for Sparc
FreeBSD 7.X, 8.X, 9.X
HP UX 11.31

1.2 Quickly setup for SPS on Windows

- Download and unzip the SPS installation package, Double click the "setup" program, install the SPS
- The SPS service will be started automatically when the system boots
- Double click the SPS icon in the taskbar, open the SPS interface, Input the NMC IP address to add the device
- Select the alarm events from Events list. The alarm events are selected as default: Ac Fail, Battery Low, Schedule Shutdown, Battery Capacity below Limit, Battery Backup Time below Limit
- To check the setting, simulate the system shutdown by SPS according to section 8.5

1.3 Quickly setup for SPS on Linux (Mac OS) with GUI

- Download and unzip the SPS installation package, Enter the command to install the SPS: ./SPS.install
- Go to the installation path "/opt/sps", Enter the command to start the SPS manually: ./SPSService
 - The SPS service will be started automatically when the system boots
- Enter the command to open the SPS interface in the Linux: ./SPS Input the NMC IP address to add the device
- Enter the command to open the SPS interface in the MacOS: **open SPS.app** Input the NMC IP address to add the device
- Select the alarm events from Events list. The alarm events are selected as default: Ac Fail, Battery Low, Schedule Shutdown, Battery Capacity below Limit, Battery Backup Time below Limit

• To check the setting, simulate the system shutdown by SPS according to section 8.5

1.4 Quickly setup for SPS on Linux (Unix) with CUI

- Download and unzip the SPS installation package, Enter the command to install the SPS: ./SPS.install
- Go to the installation path "/opt/sps", Enter the command to start the SPS service: ./SPSService
 The SPS service will be restarted automatically when the system boots
- Enter the command: ./SPS -i, input the password, the default password is "admin", edit the configuration, find the below line, Input the NMC IP address to add the device:
 <Remote name="NMC IP" serv="2993" model=""/>
- The alarm events are selected as default: Ac Fail, Battery Low, Schedule Shutdown, Battery Capacity below Limit, Battery Backup Time below Limit
- Restart the SPS Service by the command: ./SPS -r
- To check the setting, simulate the system shutdown by SPS according to section 8.5

2 Installation and configuration for SPS in the Windows

2.1 Installing the SPS

- For Windows XP and server 2003 operating system, open the Windows folder, the installing process can be executed by double click the program icon ("setup.exe" or "setup.msi") directly.
- For Microsoft Windows Vista, server 2008, server 2012, Windows 7 and 8 operating systems, it recommends the installing process is executed with the administrator account, please right click the "setup.exe" and choose "Run as Administrator".

🚺 setuj		0./*	29/2011 2:07 PM	Application	336 KB
🛃 setuj		Open	9/2011 2:07 PM	Windows Installer	3,815 KB
	۲	Run as administrator			

Note: The setup.msi is not available for Windows Vista operating system, server 2008, server 2012, Windows 7 and Windows 8 OS.

- For Windows 2000 operating system, open the Windows-2000 folder, the installing process can be executed by double click the program icon "setup.exe".
- Follow the instruction step by step to finish the installing process.
 - By default of 32 bit operating system, SPS installs to "C:\Program Files\System Protect Software".
 - By default of 64 bit operating system, SPS installs to "C:\Program Files (x86)\System Protect Software"

2.2 Starting the SPS

SPS service starts automatically when operating system boots as default.

- There are two methods to start the SPS manually:
 - Select Start menu > "All Programs" > "System Protect Software "to start the Tray Icon and SPS service.



- Select Start menu > Control Panel > Administrative tools > Services, and find the service "System Protect Service". Right click it and select "Start" to start the SPS service.

🆏 stilssvr			Manual	Local System
🆓 System Event Notification	Tracks syst	Started	Automatic	Local System
System Protect Service		Started	Automatic	Local System

• SPS Icon appears in status area of the task bar after the SPS service start. Double click the Icon will start up the SPS interface screen.



2.3 Configuring the SPS

 SPS offers authority system. Only the administrator of SPS has full privilege to configure SPS. General Users have privilege for reading SPS only. The administrator of SPS is able to login by click "System" > "Act as Administrator" and then enter the password. By default, the password is "admin".

Act as Administrat	or	X
Enter Password		
••••		
	ОК	Cancel

• Enter the IP address of NMC via click "Add" button on SPS interface.

Add		x
IP Address or Host Name:	172.18.139.97	'
Service or Port:	2993	
Device Model:		
Cluster:	-	·
ОК	Cancel	

Note: If the IP address is IPV6, Please add the network id as suffix at the end of IP address (for example: %4) as the below image.

İ	C:\WINDOWS\system32\cmd.exe	_ [⊐ ×	
	lindows IP Configuration		^]
1	thernet adapter Local Area Connection:			
	Connection-specific DNS Suffix . : IP Address : 172.18.127.97 Subnet Mask : 255.255.255.0 IP Address : fe80::3ed9:2bff:fe65:6e1e:4 Default Gateway : 172.18.127.1			
ľ	Add			
	IP Address or Host Name: FEF7:1008%4			
	Service or Port: 2993			
	Device Model:			
	Cluster:			

• Enter the Cluster name if the computer is protected by the redundant UPS Input. The NMC UPSs that under the same Cluster will become a group.

Cancel

Add	X
IP Address or Host Name:	172.18.139.97
Service or Port:	2993
Device Model:	
Cluster:	group1 👻
ОК	Cancel

For more information, please refer to section 8.4

OK

System Protec	t Configuration	
Device List □-③ group1 ④ 172.18 172.18	8.139.97(2993) 8.139.73(2993)	Events Ac Fail Battery Low UPS Overload UPS Over Temperature Weekly Schedule Shutdown Specific Day Schedule Shutdown CMD Over Temperature
Add	Remove	EMP Over Humidity
Modify	View	4
Local Configura Alias: LIACNW	tion HP7501365.napa	a.ad.etn.com

• SPS supply three way for Power: Master, Load segment 1, Load segment 2 Note: The SPS version should be 1.5.0.2 and later

Add	X
IP Address or Host Name:	172.18.139.77
Service or Port:	2993
Device Model:	
Cluster:	group1 -
Powered By:	Master 🔹
0	Master Load segment 1 Load segment 2

If the UPS support Load segment, you can choose LS1 or LS2. The device use LS1 as default. If the UPS don't support Load segment, you can use Master.

For example: 172.18.139.82 use master power and 172.18.139.77 use LS1 power.

System	Log	Language		
Device	Device List			
<u> </u>	172.1	8.139.82(2993)		
<u>_</u>	A 172.18.139.77(2993) LS1			
A	dd	Remove		
Mc	odify	View		

• The device icon in the "Device List" will be abnormal if enter the error IP address. Click the View button, the Connection Status shows "Not Connected"

System	Protect Configuration		
<u>S</u> ystem	Lo <u>g L</u> anguage		
Device L	ist	Events	
1	72.18.127.83(2993) 72.18.127.11(2993)	 Ac Fail Battery Low UPS Overload 	-
	View Device and Warning	of managers, in the second	wn
	172.18.127.11		hutdown
Ad	Device Model:	1	
Mo	Host Name: Unknown	-	
	Connection Status: Not C	Connected	
-Local Co	Shutdown Status: Unkno	wn	
Alias:	UPS Shutdown Delay: Or	IKHOWH	- Default
System		ОК	

Note: The connection will fail if the UPS output is off.

Synchronously, the Tray Icon in the task widows will be signed with warning. Move the mouse to the Tray Icon, The detailed information will be prompted.



• Select the alarms checkbox in the Event list: When the events occur, the SPS will pop up alarm dialog or shut down the computer gracefully.

Unselect the alarms checkbox in the Event list: When the events occur, the SPS will not pop up alarm dialog and will not shut down the computer.

Events	
📝 Ac Fail	
Battery Low	
UPS Overload	=
UPS Over Temperature	_
Weekly Schedule Shutdown	
Specific Day Schedule Shutdown	
EMP Over Temperature	
EMP Over Humidity	
EMP Contact1 Alarm	Ψ.

Supported Alarms:

Alarm	Default Setting
Ac Fail	checked
Battery Low	checked

UPS Overload	unchecked
UPS Over Temperature	unchecked
Weekly Schedule Shutdown	checked
Specific Day Schedule Shutdown	checked
EMP Over Temperature	unchecked
EMP Over Humidity	unchecked
EMP Contact1 Alarm	unchecked
EMP Contact2 Alarm	unchecked
Battery Capacity Below Limit	checked
	(The SPS version should be 1.3.0.3 or
	later)
Battery Backup Time Below Limit	checked
	(The SPS version should be 1.3.0.3 or
	later)

• In the Action option, select Event Warning, Shutdown, or Sleep button。 By the default, "Shutdown" is selected



Event Warning

Shutdown

Sleep

Action	Definition
Event Warning	When the events occur, The SPS will pop up the alarm
	dialog, but the system will not be shut down or sleep.
Shutdown	When the shutdown condition is met, the system will be
	shut down
Sleep	When the shutdown condition is met, the system will be
	sleep

• In the System shutdown options, set the shutdown parameters.

System Shutdown Options

Cancel Shutdown if events Restored in Shutdow

Shutdown Delay: 0	Sec
-------------------	-----

Run Script Before Shutdown

File Path:

Script Max Execution Time: 60 Sec.

The parameters are defined as following: (For more information, please refer to section 8.3)

Shutdown Parameters	Definition
Cancel Shutdown if events	Checkbox is selected: The shutdown (sleep) will be

Restored in Shutdown Delay	cancelled during shutdown delay timer counting down if
	the events restore to normal.
	Checkbox isn't selected: The system will be shut down
	(sleep) during shutdown delay timer counting down even
	if the events restore to normal.
	The checkbox isn't chosen as default.
Shutdown Delay	The system begins to shut down after shutdown delay
	time counting down to 0.
	The shutdown Delay is 0 s as default.
Run Script Before Shutdown	If the checkbox is selected, the Script will be executed
	before the system shutdown (sleep).
	By the default, the SPS will not execute the script before
	system shutdown.
Script Max Execution Time	The script will be ended when the max execution time is
	met.
	The script max execution time is 60s as default.

• Click "System" -> "about", check the software version

About System Protect Software		
0	System Protect Software Version: 1.3.0.4 Default Password: admin	
	ОК	

• Click "Log"-> "Event log", check the SPS events log

2.4 Uninstall the SPS

• Right click the Tray Icon, select Exit.

Select the Exit System Protect Service in the prompted dialog to exit the SPS user interface and SPS service $_{\circ}$

Confirm	X
8	Exit System Protect Software? ixit System Protect Service If exit service, system would lost protection!
	OK Cancel

• Select Start menu > All Programs > System Protect Software > Uninstall System Protect Service, uninstall the SPS

2.4 Configuring the Port

The SPS use UDP 3034 as the communication port with NMC as default. Please open the port according the command as below:

netsh. exe firewall add portopening udp 3034 SPSPort

Note: If the UDP 3034 is captured by the other program, the number of the port value will be added 1(range from 3034~3083)

3 Installation and configuration in Linux, MAC OS and

Unix

•

3.1 Installing the SPS

Operation System	packages
Linux i386 with GUI (Graphics User	SPS-GUI-*.*.*.+linux-i386.tar.gz
Interface Mode)	SPS-CUI-*.*.*.*-linux-i386.tar.gz
	The two packages above are supported in GUI
	mode
Linux i386 with CUI (Console User	SPS-CUI-*.*.*.+linux-i386.tar.gz
Interface Mode)	
Linux AMD 64 with GUI(Graphics Mode)	SPS-GUI-*.*.*.+linux-x86_64.tar.gz
	SPS-CUI-*.*.*.*-linux- x86_64.tar.gz
	The two packages above are supported in GUI
	mode
Linux AMD 64 with CUI (Console Mode)	SPS- CUI-*.*.*.*-linux-x86_64.tar.gz
MAC OS 10.7 and later for Intel	SPS-intel-*.*.*-MACOS.tar.gz
MAC OS 10.6 for Intel	SPS-*.*.*.*-MACOSX-10.6-intel.tar.gz
MAC OS 10.5 for PPC	SPS-*.*.*-MACOSX-10.5-ppc.tar.gz
Solaris 10 for Intel	SPS-CUI-*.*.*-solaris-intel.tar.gz
Solaris 10 for Sparc	SPS-CUI-*.*.*.*-solaris-sparc.tar.gz

 Extract the file, Enter the command: tar –zxvf SPS* Note: for the solaris OS, please extract as following: gunzip SPS*.tar.gz

tar –xvf SPS*.tar

• Installing the file, Enter the command:

./SPS.install

- Finish the installation, Enter "y"
- By default, the SPS is installed to the path "/opt/sps"

3.2 Starting the SPS

3.2.1 Linux (MAC OS) with GUI

• SPS service will run automatically in the background when the system boot.

Start or stop the SPS service when the system boots by the following command in table.

Operatio	Starting the SPS Service when system	Stopping the SPS Service when system
n System	boot	boot
RedHat	chkconfigadd SPSService	chkconfig del SPSService
SUSE	chkconfigadd SPSService	chkconfig del SPSService
Ubuntu	sudo update-rc.d SPSService defaults	sudo update-rc.d –f SPSService remove
MAC OS	sudo launchctl load	sudo launchctl unload
	/Library/LaunchDaemons/SPSService.	/Library/LaunchDaemons/SPSService.p
	plist	list

- Start the SPS service manually ,go to the installation directory, enter the command: ./SPSService
- For the Linux , Start the SPS user interface in the installation directory, enter the command: ./SPS

For the MAC OS, Start the SPS user interface in the installation directory, enter the command:

open SPS.APP

The packages in the below table are needed. In generally, the packages will be installed in the system as default:

Library Name	Provided by Package	Super Package
gtk-x11-2.0	gtk2	
gdk_pixbuf-2.0	gtk2	
gthread-2.0	libgthread-2_0-0	glib2
glib-2.0	glib2	glib2
gmodule-2.0	libgmodule	glib2
gobject-2.0	libgobject-2_0-0	glib2
atk-1.0	atk/libatk	
pango-1.0	pango	
freetype	freetype2	
fontconf	fontconfig	
Xrender	xorg-x11-libXrender	xorg-x11
x11	xorg-x11-libX11	xorg-x11
Xext	xorg-x11-libX11	xorg-x11
png12	libpng12-0	
Z	zlib	

3.2.2 Linux (Unix) with CUI

Note: The GUI mode of SPS for Unix OS is not supported. Please use the CUI mode of SPS for Unix.

- Start the SPS service in the installation directory, enter the command:
 - ./SPS-s

Restart the SPS service if necessary, Enter the command: **./SPS -r** SPS service starts automatically at system boot as default.

• The SPS user interface is unavailable in the Linux with CUI, refer to the SPS command parameters in the below table:

Parameter	Function	Comment
-h	Print all the parameters and functions	
-V	Show the software version	
	and copyright	
-S	Start SPS service automatically at	Take effect at next boot
	system boot	
-X	Stop SPS service at system boot	Take effect at next boot
-S	Start SPS service	Take effect immediately
-X	Exit SPS service	Take effect immediately
-r	Restart SPS service	Take effect immediately
-1	List all the device and status	
-р	Check the shutdown parameters	
-i	Modify the configuration parameters	Enter the password, edit the
		configuration by the vi tool
-C	Modify the password	Enter the old password, then
		input the new password

3.3 Configuring the SPS

3.3.1 Linux (MAC OS) with GUI

Refer to the SPS configuration in Windows (section 2.3)

Note: Please add the network id as suffix at the end of IPV6 address (for example: %eth0) as the below image if the IP address is IPV6.

root@pc1: ~
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>T</u> erminal <u>H</u> elp
<pre>connect: Invalid argument root@pc1:~# ping FE80::220:85FF:FEF7:1373 ping: unknown host FE80::220:85FF:FEF7:1373 root@pc1:~# ifconfig eth0 Link encap:Ethernet HWaddr 00:19:21:bb:fd:42 inet addr:172.18.139.68 Bcast:172.18.139.255 Mask:255.255.255.0 inet6 addr: fe80::219:21ff:febb:fd42/64 Scope:Link UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1 RX packets:249695 errors:0 dropped:0 overruns:0 frame:0 TX packets:127784 errors:0 dropped:0 overruns:0 carrier:0 collisions:0 txqueuelen:1000 RX bytes:17467825 (17.4 MB) TX bytes:125197970 (125.1 MB) Interrupt:21 Base address:0xa000</pre>
<pre>lo Link encap:Local Loopback inet addr:127.0.0.1 Mask:255.0.0.0 inet6 addr: ::1/128 Scope:Host UP LOOPBACK RUNNING MTU:16436 Metric:1 RX packets:4 errors:0 dropped:0 overruns:0 frame:0 TX packets:4 errors:0 dropped:0 overruns:0 carrier:0 collisions:0 txqueuelen:0 RX bytes:240 (240.0 B) TX bytes:240 (240.0 B)</pre>
root@pcl:~#

O Link once	System Pro	tect Configu	ration	_ _ _ X
<u>S</u> ystem Lo <u>g</u>	<u>L</u> anguage			
Device List		Events		
		 Ac Fail Battery L UPS Ove UPS Ove UPS Ove Weekly S Specific I 	.ow rload r Temperature Schedule Shutdov Day Schedule Shu	vn utdown
	0	Add	×	
Add Modify	IP Address of	or Host Name:	1373%eth0	~
Local Configura	Service or P	ort:	2993	
Alias: pc1	Device Mod	lel:		Default
System Shutdov	Cluster:		~	
Cancel Shut				
Shutdown Dela		<u>C</u> ancel	<u>O</u> K	Warning

3.3.2 Linux (Unix) with CUI

Note: The GUI mode of SPS for Unix OS is not supported. Please use the CUI mode of SPS for Unix.

- Enter the command: **./SPS –i**. Input the password, the password is admin as default. Open the configuration by "vi" tool.
- Modify the parameters configuration, save and exit.

3.3.2.1 Add one device, or set the Redundant UPS Input if the computer is protected by multi-devices.

Note. The SPS version should be 1.5.0.2 or later for Load segment function.

Add one device. Add the NMC IP address in the "name" parameter. (e.g the NMC IP address is 172.18.139.60). If the UPS support Load segment, set the "powerby" parameter as LS1 or LS2. If the UPS don't support Load segment, set the "powerby" parameter as Master.

Format as below:

<RemoteList>

<Remote name="172.18.139.60" serv="2993" model="" powerby="LS1"/> </RemoteList>

Or you can use the following format also:

<RemoteList>

```
<Remote name="172.18.139.60" serv="2993" model="" powerby="LS1"/>
```

<Cluster name="">

<Remote name="" serv="2993" model=""/>

</Cluster>

</RemoteList>



Add redundant devices in groups, system will be shutdown whenever any of the group met the shutdown condition.

If the UPS support Load segment, set the "powerby" parameter as LS1 or LS2. If the UPS don't support Load segment, set the "powerby" parameter as Master. For example:

The IP address of NMC is 172.18.127.65 and 172.18.127.66 in group1 The IP address of NMC is 172.18.127.73 and 172.18.127.74 in group2

```
Format as below:

<RemoteList>

<Cluster name="group1">

<Remote name="172.18.127.65" serv="2993" model="" powerby="Master"/>

<Remote name="172.18.127.66" serv="2993" model="" powerby="Master"/>

</Cluster>

<Remote name="group2">

<Remote name="172.18.127.73" serv="2993" model="" powerby="Master"/>

<Remote name="172.18.127.74" serv="2993" model="" powerby="Master"/>

</Cluster>

</Remote name="172.18.127.74" serv="2993" model="" powerby="Master"/>

</Remotelist>
```

Note: Please add the network id as suffix at the end of IPV6 address (for example: %eth0) if the communication mode is IPV6. Refer to the section "3.3.1 Linux (MAC OS) with GUI".

3.3.2.2 Set the alarm attribute

Enable the alarm, set the value to 1. The SPS will pop up alarm in the console and protect the system to shut down gracefully.

Disable the alarm, set the value to 0. The SPS will not pop up alarm and will not shut down the system.

The default setting as below:

<AcFail>1</AcFail>

<BatteryLow>1</BatteryLow>

<Overload>0</Overload>

<OverTp>0</OverTp>

<EMPTp>0</EMPTp>

<EMPHum>0</EMPHum>

<EMPCt1>0</EMPCt1>

<EMPCt2>0</EMPCt2>

<WSS>1</WSS>

<SSS>1</SSS>

<Capacity>1</Capacity>

<RemainTime>1</RemainTime>

Event parameters	Alarm	
<acfail></acfail>	Ac Fail	
<batterylow></batterylow>	Battery Low	
<overload></overload>	UPS Overload	
<overtp></overtp>	UPS Over Temperature	
<wss></wss>	Weekly Schedule Shutdown	
<\$\$\$>	Specific Day Schedule Shutdown	
<emptp></emptp>	EMP Over Temperature	
<emphum></emphum>	EMP Over Humidity	
<empct1></empct1>	EMP Contact1 Alarm	
<empct2></empct2>	EMP Contact2 Alarm	

<capacity></capacity>	Battery Capacity Below Limit	
	(The SPS version should be 1.3.0.3 or	
	later)	
<remaintime></remaintime>	Battery Backup Time Below Limit	
	(The SPS version should be 1.3.0.3 or	
	later)	

3.3.2.3 Set the shutdown parameters

<Cancellf>0</Cancellf>

<ShutDelay>0</ShutDelay>

<EnableScript>0</EnableScript>

<Script></Script>

<MaxScriptTime>60</MaxScriptTime>

For more information, please refer to section 8.3

Shutdown Parameters	Definition
Cancel Shutdown if events Restored	If the value is 0, the system will be shut down
in Shutdown Delay	(sleep) in shutdown delay even if the events
<cancellf>0</cancellf>	restore.
	If the value is 1, the shutdown (sleep) will be
	cancelled in system delay if the events restore.
Shutdown Delay	The system begins to shut down after shutdown
<shutdelay>0</shutdelay>	delay time counting down to 0
	The shutdown Delay is 0 s as default.
Enable or disable the Script	If the value is 1, enable to run the script
<enablescript>0</enablescript>	If the value is 0, disable to run the script
Run Script Before Shutdown	Enter the path of the script; the script will be
<script></script>	executed before the system shutdown (sleep).
	By the default, the SPS will not run the script
	before system shutdown.
	For example:
	<script>/opt/sps/shutdown.sh</script>
Script Max Execution Time	The script will be ended when the max execution
<maxscripttime>60</maxscripttime>	time is met.
	The script max execution time is 60s as default

3.3.2.4 Set the actions

<Action>1</Action>

Note: The system should have hibernation function if the action is set to 2.

Action	Definition
Event Warning	When the events occur, The SPS will pop up the alarm
(The action value is set to 0)	dialog, but the system will not be shut down or sleep.
Shutdown	When the shutdown condition is met, the system will be
(The action value is set to 1)	shut down
Sleep	When the shutdown condition is met, the system will be

(The action value is set to 2) sleep

- Restart the SPS service after configuration end, Enter the command: ./SPS –r
- View the device status by the command:

./SPS-I

For example: The device status for 172.18.127.65 as below image.

```
[root@PC001 sps]# ./SPS -1
172.18.127.65[group1]
Device Mode: C1K
IP Address: 172.18.127.65
Host Name: Unknown
Connection Status: Connected
Shutdown Status: Norma1
UPS Shutdown De1ay: 2s
```

• View the shutdown configuration by the command:

./SPS-p

For example, the shutdown configuration as below image:

```
[root@PC001 sps]# ./SPS -p
Event Accepted:
Ac Fai1: enable
Battery Low: enable
UPS Overload: enable
UPS Over Temperature: enable
Week1y Schedule Shutdown: enable
Specific Day Schedule Shutdown: enable
EMP Over Temperature: enable
EMP Over Humidity: enable
EMP Contact1 Alarm: enable
EMP Contact2 Alarm: enable
```

Ignore restore event in shutdown delay: enable Shutdown delay: Os

Run script before shutdown: disable

• Modify the password, enter the command: ./SPS -c

3.3.2.5 Check the log

Go to the SPS installation path "/opt/sps". Check the document "ProtectSW.txt"

3.4 Uninstall the SPS

• Exit the SPS user interface, Select the Exit System Protect Service in the prompted dialog to exit the SPS service.

Confirm
Exit System Protect Software?
I I I I I I I I I I I I I I I I I I I
If exit service, system would lost protection!
OK Cancel

For the Linux with CUI, exit the SPS service, run the command: ./SPS -x

• Uninstall the SPS, enter the command in the directory where the installation package extracted:

./SPS.remove

3.5 Configuring the Port

- The SPS use UDP 3034 as the communication port with NMC by default.
 Note: If the UDP 3034 is captured by the other program, the number of the port will be added 1(range from 3034~3083)
- Open the UDP port by the following command: iptables -I INPUT -p udp --dport 3034 -j ACCEPT iptables -I OUTPUT -p udp --dport 3034 -j ACCEPT /etc/rc.d/init.d/iptables save

4 Installation and configuration for SPS in the VMware ESX

4.1 Configuring for VM ware ESX

4.1.1 Configuring VMs startup/shutdown automatically

• Start VMware Client, select Configuration -> Virtual Machine Startup/Shutdown->Properties



 Select Allow virtual machines to start and stop automatically with the system checkbox. Enter the settings as shown on the Virtual Machine Startup and Shutdown window: Move up the virtual machines to the Automatic Startup list.

The virtual machines will start/stop when the host start/shutdown automatically.

ystem Settings						
Allow virtual machines to	start and stop automat	ically with the system				
Default Startup Delay			Default Shutdown Delay			
For each virtual machine,	delay startup for:		For each virtual machine,	, delay shutdown for:		
10 seconds			30 seconds			
Continue immediately	if the VMware Tools sta	ırt	Shutdown Action:	Guest Sh	iutdown	
ower on the specified virtu	al machines when the s	stem starts. During sho	Itdown, they will be stopped in the	opposite order.		
ower on the specified virtua	Startup Startup I	Del Shutd Shutdor	utdown, they will be stopped in the will be s	opposite order.		
Ord Virtual Machine	Startup Startup I	Del Shutd Shutdon	Itdown, they will be stopped in the	opposite order.		Move <u>U</u> p
Ord Virtual Machine Automatic Startup 1 1 🚇 win2003 2 🗠 wMA5 5	Startup Startup I Enabl 10 secon	ds Shut 30 seco	Itdown, they will be stopped in the win	opposite order.		Move Up
Ord Virtual Machine Automatic Startup 1	Startup Startup I Enabl 10 secon Enabl 10 secon Enabl 10 secon Enabl 10 secon	ds Shut 30 seco ds Shut 30 seco ds Shut 30 seco ds Shut 30 seco ds Shut 30 seco	Itdown, they will be stopped in the wn	opposite order.		Move Up Move Dow
ower on the specified virtu: Ord Virtual Machine Automatic Startup 1 Image: win2003 2 Image: win2003 3 Image: win2 Any Order	Startup Startup I Enabl 10 secon Enabl 10 secon Enabl 10 secon	ds Shut 30 seco ds Shut 30 seco ds Shut 30 seco ds Shut 30 seco	Itdown, they will be stopped in the wn	opposite order.		Move Up Move Down Edit
Ord Virtual Machine Automatic Startup 1 1 Image:	al machines when the s Startup Startup I Enabl 10 secon Enabl 10 secon Enabl 10 secon	ds Shut 30 seco ds Shut 30 seco ds Shut 30 seco ds Shut 30 seco	nds	opposite order.		Move Up Move Down Edit
ower on the specified virtu: Ord Virtual Machine Automatic Startup 1 Image: Win2003 2 Image: Win2003 3 Image: Win2 Any Order Manual Startup	al machines when the s Startup Startup I Enabl 10 secon Enabl 10 secon Enabl 10 secon	ds Shut 30 seco ds Shut 30 seco ds Shut 30 seco ds Shut 30 seco	Itdown, they will be stopped in the minds inds inds inds inds inds inds index will be stopped in the s	opposite order.		Move Up Move Down Edit
Ord Virtual Machine Automatic Startup 1 1 Image: Win2003 2 Image: Win2003 3 Image: Win2003 Any Order Manual Startup	Startup Startup I Startup Startup I Enabl 10 secon Enabl 10 secon Enabl 10 secon	ds Shut 30 seco ds Shut 30 seco ds Shut 30 seco ds Shut 30 seco	Itdown, they will be stopped in the win	opposite order.		Move Up Move Dow Edit
ower on the specified virtu. Ord Virtual Machine Automatic Startup 1 Image: win2003 2 Image: win2003 3 Image: win2 Any Order Manual Startup	Startup Startup I Startup Startup I Enabl 10 secon Enabl 10 secon Enabl 10 secon	ds Shut 30 seco ds Shut 30 seco ds Shut 30 seco ds Shut 30 seco	Itdown, they will be stopped in the wn	opposite order.		Move Up Move Dow Edit

4.1.2 VMware tools

Install the VMware tool for each guest OS.
 Select the guest OS, click summary menu, the status for VMware tools will show OK if the VMware tools is installed successfully.

<u>File E</u> dit Vie <u>w</u> I <u>n</u> ventory <u>A</u> dministra	ation <u>P</u> lug-ins <u>H</u> elp			
🖸 💽 🏠 Home 🕨 🛃 Inv	entory 🕨 🎁 Inventory			
- II 🕨 🚱 🚳	13 🕑 🅪 🧇			
□ 172.18.127.73 red hat 5 xp pro	red hat 5 Getting Started Summary Resource Allocation Perf	ormance E	vents Console Permissions	
	General		Resources	
	Guest OS: Red Hat Enterprise Linux 5 (32-bit) VM Version: 7 CPU: 1 vCPU Memory: 256 MB Memory Overhead: 118.45 MB VMware Tools: OK IP Addresses: 172.18.127.124 DNS Name: localhost.localdomain State: Powered On Host: localhost Active Tasks: Powered On	View all	Consumed Host CPU: Consumed Host Memory: Active Guest Memory: Provisioned Storage: Not-shared Storage: Used Storage: Datastore datastore1	50 MHz 283.00 MB 20.00 MB Refresh Storage Usage 8.25 GB 8.00 GB 8.00 GB Capacity Free Last Update 67.00 GB 43.02Last updated on: 20
	Commands		Setwork	Standard switch network
	Shut Down Guest Suspend Suspend Restart Guest Bo Edit Settings Sopen Console			

4.1.3 Configuring the Port

• The SPS use UDP 3034 as the communication port with NMC as default.

Note: If the UDP 3034 is captured by the other program, the number of the port will be added 1(range from 3034~3083)

 Open the UDP port by the following command: esxcfg-firewall -o 3034,udp,in,SPS esxcfg-firewall -o 3034,udp,out,SPS

4.2 Configuring the SPS

- Start the VMware Server host, refer to the chapter 3 (Linux with CUI) to finish the SPS Installation and configuration.
- Set the shutdown script for VMware ESX. The document of shutdownESX.sh is the script for shut down the virtual machines. Enter the command: ./SPS -i
 Find the two lines in the configuration and edit it as below: <EnableScript>1</EnableScript>
 <Script>/opt/sps/ShutdownScript/shutdown</Script>
- Set the Script Max Execution Time based on the amount of Virtual machines. Set apart 30s for each virtual machine.
 For example: there are ten virtual machines:
 Enter the command: ./SPS i
 Find the line in the configuration and edit it as below:
 <MaxScriptTime>300</MaxScriptTime>
- Restart the SPS service by the command: ./SPS -r

5 Installation and configuration for SPS in the VMware ESXi

(paid version)

Over viewer



Shutdown Sequence



- The full name for the vMA is "vSphere Management Assistant", it is released by the VMware company to manage the vSphere
- The script "shutdownESXi.sh" is used to notify the local ESXi host and the remote ESXi hosts to shut down.

If the script "shutdownESXi.sh" is executed on the general OS, the executed permission will be refused

- The Virtual Machines on the ESXi host are shut down automatically by the ESXi host with the "Allow virtual machines to start and stop automatically with the system" function. So the local and remote ESXi hosts should enable "Allow virtual machines to start and stop automatically with the system" function. please refer to section "5.1.2 Configuring VMs startup/shutdown automatically"
- Run the config.pl to save the local and remote ESXi hosts IP address and corresponding username and password, the information is saved in the "hostlist".
 When runs the "abutdownESXi sh" to patify the ESXi hosts to shut down it paeds to

When runs the "shutdownESXi.sh" to notify the ESXi hosts to shut down, it needs to

provide the ESXi hosts username and password to pass through the verification.

• The local and remote ESXi hosts will accept the shutdown notification from vMA with right password and take effect to shut down

5.1 Configuring for VMware ESXi

5.1.1 Installing and configuring the VMA

- Go to the website :<u>http://www.vmware.com/support/developer/vima/</u>
 Download the VMA, and extract it, the format for the VMA document is *.OVF.
- Start the VMware Client, select File > Deploy OVF Template, click the browse button, select the OVF document.
- Start VMA, the default user name is vi-admin. Set the password for the first login.

5.1.2 Configuring VMs startup/shutdown automatically



 Select Allow virtual machines to start and stop automatically with the system checkbox. Enter the settings as shown on the Virtual Machine Startup and Shutdown window: Move up the virtual machines to the Automatic Startup list The virtual machines will start/stop when the host start/shutdown automatically.

Svstem Settings ✓ Allow virtual machines to :	start and stop automatical	with the system			
Default Startup Delay For each virtual machine, (10 seconds Continue immediately Startup Order Power on the specified virtu:	lelay startup for: If the VMware Tools start al machines when the syste	m starts. During shutdow	Default Shutdown Delay For each virtual machine, de 30 seconds Shutdown Action:	Cuest Shutdown Guest Shutdown Power Off Suspend posite or dir.	<u>-</u>
Ord Virtual Machine	Startup Startup Del	. Shutd Shutdown			
Automatic Startup	Enabl 10 seconds	Shut 30 seconds			Move Up
2 🗗 vMA5.5	Enabl 10 seconds	Shut 30 seconds			Move Down
3 🖶 win2003	Enabl 10 seconds	Shut 30 seconds			
Any Order Manual Startup					Edit

Note: if the "Guest shutdown" is selected in the "Shutdown Action", make sure the VMware tools are installed for each virtual machine. If the "Power off" is selected in the "Shutdown Action", the VMware tools are not needed for the virtual machine.

Please refer to the official website for more VMware tools information.

If the OS is Windows, right click one of the VMs, click Guest -> Install/Upgrade VMware Tools

After the VMware tools installation, the VMware tools status will be changed to "OK" from the Summary

18.127.11 - vSphere Client dit View Inventory Administ	ration Plug-ins Help	
Image: Home Image: Home	nventory 🕨 🚰 Inventory	
172.18.127.11 redhat5 VMA4.0 windows2003	VMA4.0 Getting Started, Summary Resource Allocation, Performance	Events Console Permissions
	Guest OS: Red Hat Enterprise Linux 5 (64-bit) VM Version: 4 CPU: 1 vCPU Memory: 512 MB Memory Overhead: 94.80 MB VMware Tools: 0K IP Addresses: 172.18.127.85	Consumed Host CPU: 99 MHz Consumed Host Memory: 282.00 MB Active Guest Memory: 343.00 MB Provisioned Storage: 5.50 GB Not-shared Storage: 5.00 GB Used Storage: 5.00 GB
	DNS Name: liuqiong State: Powered On Host: LIACNSTCESXI01.localdomain Active Tasks:	Datastore Capacity Free Last Updal Image: Im
	Commands Subt Down Guest Suspend Restart Guest Bot Settings G Open Console	VM Network Standard switch network
	Annotations	-
	d Edit	

5.1.3 Configuring the port

- The SPS use UDP 3034 as the communication port with NMC as default. The port is opened as default in the vMA. Note: If the UDP 3034 is captured by the other program, the value of the port will be added 1(range from 3034~3083)
- Neglect this step unless the port is disabled: iptables -I INPUT -p udp --dport 3034 -j ACCEPT iptables -I OUTPUT -p udp --dport 3034 -j ACCEPT /etc/rc.d/init.d/iptables save (for the ESXi 5.5 and later, this command can be neglected)

5.2 SPS Configuration

• Start VMA, refer to the chapter 3 (Linux with CUI) to finish the SPS Installation and configuration.

Note: please add with "sudo" if the user isn't root user.

For example: (the NMC IP address is 172.18.139.60)

- 1. Enter the /opt/sps directory, start the SPS service by the command: sudo ./SPSService
- Open the configuration document by the command: sudo ./SPS -i Input the password: admin
- 3. Add the NMC IP address

<RemoteList>

```
<Remote name="172.18.139.60" serv="2993" model=""/>
```

</RemoteList>



- 4. Restart the SPS Service by the command: sudo ./SPS -r
- 5. List the added NMC by the command: sudo ./SPS-I

VMA5.5 Getting Started Summary Resource Allocation Performance Events Console Permissions
localhost:/opt/sps # ./SP3 Usage: SPS [-h] [-v] [-S] [-X] [-s] [-x] [-r] [-l] [-i] [-p] [-c]
-h,help print this help message
-v,version print product version -S start Sustem Protect Service at next boot
-X don't start System Protect Service at next boot
-s,start start_System_Protect_Service now
-x,exit stop System Protect Service
-1,1ist list all remote information
-i modify configuation
-p view the configuration
-c change password
172.18.139.60
Device Mode:
IP Address: 172.18.139.60
Connection Status: Connected
Shutdown Status: Normal
UPS Shutdown Delay: 120s
localhost:/opt/sps # _

The config.pl is used to add the local ESXi host and remote ESXi hosts to be shutdown. • Go to the "ShutdownScript" subdirectory: cd/opt/sps/ShutdownScript

Enter the command: sudo ./config.pl

Input the target VMware ESXi local host IP (or hostname), username, password. SPS supports multi-hosts shutdown.

Also, you can input the target VMware remote ESXi hosts IP (or hostname), username, password.

For example: 172.18.139.35 and 172.18.139.36 will be added:



Note: SPS supports multi-hosts shutdown, but the local and remote ESXi hosts should enable "Allow virtual machines to start and stop automatically with the system" function, please refer to section "5.1.2 Configuring VMs startup/shutdown automatically".

The VMware host information will be saved in hostlist document. Enter the command: **cat hostlist,** get the input hosts information Note: The password will be encrypted.

localhost:/opt/sps/S	hutdownScript	#	cat	hostlist
172.18.139.35	root			cGFzc3dvcmQ=
172.18.139.36	root			b291ZQ==

• Set the shutdown script for VMware ESXi. The shutdownESXi.sh is the script to shut down the ESXi hosts.

Enter the command: **sudo** ./**SPS** -**i** Find the two lines in the configuration and edit it as below: <EnableScript>1</EnableScript> <Script>**/opt/sps/ShutdownScript/shutdownESXi.sh**</Script>

• Set the Script Max Execution time. Time based on the amount of Virtual machines. For example: set he max script time to 1 minute Enter the command: **sudo** ./**SPS** -**i** Find the line in the configuration and edit it as below: <MaxScriptTime>**60**</MaxScriptTime>

- Restart the SPS service, enter the command : sudo ./SPS -r
- The time sequence for host and VMs shutdown can be seen by VMware client.

cd /opt/sps/ShutdownScript

Please run the script "**sudo**./**shutdownESXi.sh**" first to check if the setting is correct and check if the local and remote ESXi hosts and VMs can be shut down

The shutdown sequence as below image:

Name		Target		itus	Details	Initiated by	Requested Start Ti 🔽	Start Time	
Power Off virtual machine	Ð	VMA4.0	0	Completed		root	2012-11-8 8:48:16	2012-11-8 8:48:16	
🖉 Power Off virtual machine	Ð	vSphere Mana	0	Completed		root	2012-11-8 8:48:14	2012-11-8 8:48:14	
🖉 Power Off virtual machine	B	Windows XP P	0	Completed		root	2012-11-8 8:48:12	2012-11-8 8:48:12	
🖄 Initiated guest OS shutdown	Ð	redhat5	0	Completed		root	2012-11-8 8:47:43	2012-11-8 8:47:43	
🖄 Auto power Off			0	Completed		root	2012-11-8 8:47:43	2012-11-8 8:47:43	
🖉 Shutdown Host		172.18.127.11	0	Completed		root	2012-11-8 8:47:42	2012-11-8 8:47:42	

6 Installation and configuration for SPS in the Hyper-V Server

6.1 Hyper-V configuration

Start Hyper-V Manager in the client
 For example: there are two virtual machines, Windows server 2003 and 2008.
 Select the VM. Click Setting -> "Automatic Stop Action Save", there are three methods.
 Save the virtual machine state:
 Turn off the virtual machine:

Shut down the guest operating system:

Hyper-	V Manager									_ 8 ×	
File -	I File Action View Window Help										
🗢 🔿											
Hyper-	V Manager	Mintered Marshie							_	Actions	
WI	N-TS0GOFSK37B	Virtual Machin	es	State	CPULIADAD	Momony	Lintimo	Status		WIN-TSOGOFSK37B 🔺 📥	
		Server 2003		Running	0 %	512 MB	01:26:50	Jidius		New	
		server 2008		Running	0 %	512 MB	01:26:49			🔒 Import Virtual Machin	
E	Settings for Server 200	3						_ 🗆 🗵		Hyper-V Settings	
	Server 2003	•	ا 🖌 🕨	a						Virtual Network Mana	
	¥ Hardware		Auto	omatic Stop Actio	n					🔬 Edit Disk	
	* Management		What do	you want this vi	rtual machine to dr	when the nhươ	cal computer shute d	owp?		Inspect Disk	
	I Name Server 2003		€ Sa	ive the virtual ma	achine state	when the phys	car comparer snats a			Stop Service	
	Integration Services	3	От	irn off the virtual	machine					X Remove Server	
	All services offered	00	O SH	out down the gue	st operating system	m			▶	🔉 Refresh	
	C:\ProgramData\Mi	crosoft\Windo	T	ne integration ser	vice that controls	shutting down th	e guest operating sy	/stem	۲	View 🕨	
	Automatic Start Acti Restart if previously	ion v runnina	"	ust de installeu a	nu enableu on trie	virtuai machine.				New Window from Here	
	o Automatic Stop Actio	on								? Help	
	Save									Server 2003	
										Connect	
										Settings	
										Turn Off	
										O Shut Down	
										Save	
										Pause	
										Reset	
										Snapshot	
										5 Revert	
										Rename	
										🛛 Help 💌	
灯 Start	👃 🛛 🧱									★ P P P P 2:49 PM 1/29/2010	

• If the third method is selected, install the "Integration Service" in the Action menu



6.2 Installing and configuring the SPS

- Copy the installation file "setup.exe" to Hyper-V server 2008, enter the path where the installation file exists
- Install the SPS, enter the command: setup.exe.
 By the default, the SPS file is installed to the directory C:\Program Files\System Protect
 Software for the 32 bit windows. And it is installed to the directory C:\Program
 Files(x86)\System Protect Software for the 64 bit windows.



• Enter to the installation path: cd C:\Program Files(x86)\System Protect Software Start SPS service and user Interface by the command: StartSPSService.exe Add the NMC IP address in the SPS interface

	Directory of C	Administrator: C:\\ C:\Program Files (x86	Windows\system32	\cmd.exe	- X
GI <u>C:\</u>	g5/07/2014 01: System Protect System Log Language	46 AM ⟨DIR⟩ Configuration		; blorer IT jare	
 Domain/Mon Computer 1 Conjuter 1 Configure Configure Configure Sounload z Paenote Des Network St Date and 1 Help impi Log Off 1 Log Off 1 Shat Down Shat Down Shat Down Shat Down 	Device List Even 172.18.139.60(2993) Image: Constraint of the second se	tts Ac Fail Battery Low UPS Overload UPS Over Temperature Weekly Schedule Shutdown Specific Day Schedule Shutdow EMP Over Temperature EMP Over Humidity EMP Contact1 Alarm EMP Contact2 Alarm	View 172.18.139.60 Device Model: IP Address: 172.18.13 Host Name: Linknow Connection Status: C Shutdown Status: No UPS Shutdown Delay	Device and Warning	*
Enter number	Alias: qit			OK	
	System Shutdown Options Cancel Shutdown if events Restored in Shu Shutdown Delay:	ntdown Delay Action	nt Warning	« •tSPSService	=
	Run Script Before Shutdown File Path: Script Max Execution Time:	Shut G0 Sec.	edown p		~

Refer to the chapter 2.3 to finish the SPS configuration.
 The SPS Service will be started automatically when the system boots
 If the parameters need to be set, open the SPS interface by the command: SPS.exe

6.3 Uninstall the SPS

• Close the SPS user interface.

Confirm 🛛 🔀
Exit System Protect Software?
OK Cancel

• Enter to the directory where the installation package existed. Enter the command: setup.exe:

🖥 System Protect Software			
Welcome to the System Wizard	Protect S	oftware Setup	
Select whether you want to repair or rem	nove System Prot	ect Software.	
 <u>Remove System Protect Software</u> <u>Remove System Protect Software</u> 			
	Cancel	< Back	<u> </u>

7 Installation and configuration for SPS in the Citrix XenServer

SPS is installed on the XenServer host. When the shutdown condition is met, the SPS will notify the XenServer host to shutdown.

The VMs will be shut down automatically before the host shut down. (This action takes effect as default by the XenServer)



7.1 Citrix XenServer Configuration

7.1.1 Installing XenServer tools for each Virtual Machine

• Open the XenServer Client, Choose the VMs, Right click VMs, Click "Install XenServer Tools"

XenCenter		
File View Pool Server VN	Storage Templates Tools Window Help	
G Back - C Forward - Rack Ad	ld New Server 🚏 New Pool 🔟 New Storage 🔟 New VM 🍥 Shut Down 🛞 Reboot 🕕 Suspend	V No Syst
Views: Server View	Windows Server 2008 (64-bit) on 'xenserver6'	Logged in as: Local
Search 🔎	General Memory Storage Networking Console Performance Snapshots Logs	
XenCenter		Looking for quest (
Windows Server 2008 (64-bit	Elect	Looking for guest of
DVD drives		
Cocal storage		
With the storage	Recycl Citrix XenServer Tools Installer	
	Installing Citrix XenServer Tools	
	Direct Intelling	
	Unversimitation Viss Provider : Installing Giuet Anent : Installing	
	adden / gels - installing	
	Back Next Cancel	
	🧾 Start 🛛 🚠 🛄 🏉 🖉 Citrix XenServer Tools In	📑 🕼 8:46 AM

• The XenServer Tools is installed as below image:

S XenCenter			
File View Pool Server VN	M Storage Templates	Tools Window Help	
😋 Back 🔹 🔘 Forward 🖂 🔩 A	dd New Server 💷 🚟 Ne	w Pool 🛅 New Storage 🛅 New VM 🗉 🥹 Shut Down 🛞 Reboot 🕕 Suspend	Vo System Alerts
Views: Server View	B Windows Serve	r 2008 (64-bit) on 'xenserver6'	Logged in as: Local root account
Search 🔎	General Memory Stor	rage Networking Console Performance Snapshots Logs	
) XenCenter	VM General Prop	erties	
Windows Server 2008 (64-bit DVD drives	Properties	Expand all Collapse all	
Removable storage	General		
	Name:	Windows Server 2008 (64-bit)	
	Description:		
	Tags:	<none></none>	
	Folder:	<none></none>	
	Operating System:	Windows Server® 2008 Standard	
	BIOS strings copied:	No	
	Virtualization state:	Optimized (version 6.2 installed)	
	Time since startup:	3 minutes	
	UUID:	e9d71ca6-8885-a2c4-c975-048140c2bcfa	
	Boot Options		
4 11			

7.1.2 Open XenServer host ports

- The SPS use UDP 3034 as the communication port with NMC as default.
 Note: If the UDP 3034 is captured by the other program, the value of the port will be added 1(range from 3034~3083)
- Open the XenServer Client, click the host console, Open the UDP port by the following command:
 iptables -I INPUT -p udp --dport 3034 -j ACCEPT
 iptables -I OUTPUT -p udp --dport 3034 -j ACCEPT
 /etc/rc.d/init.d/iptables save

7.2 Installing and Configuring for SPS

7.2.1 Installing SPS

- Upload the installation file "SPS-CUI-*.*.*.*-linux-i386.tar.gz" to the XenServer host using WinSCP tools
- Unzip the installation file and install the SPS by the command tar -zxvf SPS-CUI-*.*.*.*-linux-i386.tar.gz
- Install the SPS by the command:
 ./SPS.install

7.2.2 Configuring SPS

- Enter the /opt/sps directory, start the SPS service by the command: ./SPSService
- Open the configuration document by the command: ./SPS –i Input the password: admin Add the NMC IP address, for example the NMC IP is "172.18.139.102" <RemoteList>

<Remote name="172.18.139.102" serv="2993" model=""/>

</RemoteList>

- Please refer to chapter 3 (Linux with CUI) for more information about shutdown parameter setting
- Restart the SPS Service by the command: ./SPS –r
- Check the NMC is connected or not by the command: ./SPS -I

The NMC will be connected as below:



• The alarm will pop up when the AC fail as below image

💿 xe	enserver	6								Lo	gged in as:	Local root accoun
Search	General	Memory	Storage	Networking	NICs	Console	Performance	Users	Logs			
xens	erver6 s	erver co	nsole									
			Broadcas	st message f	`rom roo	t (Wed A	pr 16 17:46:	07 2014):			
			spswalln 2014-04	nsgTJ0PA1wa I I-16 17:46:0	1 Syste 07 Who:	m Protec 172.18.1	t Software M 39.102 What:	essage: Utilit	Topic: y power	Event Warning When: is not available		
			Broadcas	st message f	rom roo	t (Wed A	pr 16 17:46:	17 2014):			
			spswalln	nsg2YNAhu								
			Broadcas	st message f	rom roo	t (Wed A	pr 16 17:46:	17 2014):			
			spswalln 2014-04	nsg2YNAhvwa I I-16 17:46:1	1 Syste 7 Who:	m Protec 172.18.1	t Software M 39.102 What:	essage: Utilit	Topic∶ y power	Event Warning When: is not available		
			Broadcas	st message f	`rom roo	t (Wed A	pr 16 17:46:	27 2014):			
			spswallr	nsgxGgUNk								
			Broadcas	st message f	rom roo	t (Wed A	pr 16 17:46:	27 2014):			
			spswalln 2014-04	nsgxGgUNkwa I I-16 17:46:2	1 Syste 7 Who:	m Protec 172.18.1	t Software M 39.102 What:	essage: Utility	Topic: y power	Event Warning When: is not available		

8 Shutdown Operation

8.1 Shutdown flow chart



8.2 Shutdown setting (NMC Webpage Side)

8.2.1 Shutdown actions setting

 Open the NMC website, select UPS Management ->UPS shutdown, and check the Actions setting.

UPS Management » UPS Shutdown		
Event	Actions	
AC Failed	Disable 🔻	
Battery Low	Disable	
UPS Overload	Client Shutdown	
UPS Over Temperature	Client&UPS Shutdown	

There are four definers for Actions:

Action	Definition
Disable	The NMC will not send the alarm and shutdown
	notification to the SPS client, when the events occur.

Warning	The NMC will send the alarm notification to the SPS client,	
	when the events occur.	
Client Shutdown	The NMC will send the alarm and shutdown notification to	
	the SPS client, when the events occur.	
Client & UPS Shutdown	The NMC will send the alarm and shutdown notification to	
	the SPS client when the events occur. Besides, the NMC	
	will send the shutdown command to the UPS.	

Note: Please select the action to "Client Shutdown" or "Client & UPS Shutdown", so that the SPS client can be shut down gracefully by the NMC.

8.2.2 Warning Period and Warning Interval Setting

• Open the NMC website, select UPS Management ->UPS shutdown. Check the "Warning Period "setting and "Warning Interval".

UPS Management » UPS Shutdown help			
Event	Actions	Warning Period (Sec)	Warning Interval (Sec)
AC Failed	Client&UPS Shutdown 🔻	30	10

For example:

The Warning Period is set to 30S and the Warning Interval is set to 10S.

The NMC will send the "AC fail" notification to the SPS client every 10 seconds and will last about 30 seconds. The NMC will notify the SPS client to shut down after AC failing for 30S.

8.2.3 UPS Shutdown Delay Setting

 Open the NMC website, select UPS Management ->UPS shutdown. Check the UPS Shutdown Delay setting.

UPS Management » UPS Shutdov	/n		help
Event	Actions	Warning Period (Sec)	Warning Interval (Sec)
AC Failed	Client&UPS Shutdown -	900	30
Battery Low	Client&UPS Shutdown -	0	30
UPS Overload	Client&UPS Shutdown 🔻	900	30
UPS Over Temperature	Client&UPS Shutdown 👻	900	30
Weekly Schedule	Client Shutdown -	900	30
Specific Day	Client&UPS Shutdown -	900	30
EMP Temperature Threshold	Client Shutdown 🔻	900	30
EMP Humidity Threshold	Client Shutdown -	900	30
EMP Alarm-1	Client Shutdown -	900	30
EMP Alarm-2	Client Shutdown -	900	30
Below Battery Capacity Setting	Client&UPS Shutdown 👻	900	30
Cancel UPS Shutd	own if events Restored in Shutdown Delay		
	UPS Shutdown Delay(Sec)	120	
			Save

The UPS will be shut down after the "Warning Period" plus "UPS Shutdown Delay", if the

action is "Client &UPS Shutdown". By the default, the UPS shutdown delay timer is 120 seconds. For example: AC failed Event, the "Warning Period" is 900S and the "UPS Shutdown Delay" is 120S The UPS will be shut down after AC failing for 1020S (900S+120S).

Make sure the time for NMC "UPS Shutdown Delay" should be longer than the timer for SPS client "Shutdown delay" plus SPS "Script MAX Execution time", or else the warning dialog will pop up that the time is unreasonable in SPS client.
 For example:

The SPS Shutdown delay timer is 90 seconds and the Script Max Execution Time is 60 seconds. The total time value is 150seconds (90S+60S) in SPS client.

But the UPS shutdown Delay time is 120 seconds in NMC webpage side. The UPS shutdown Delay time 120s is shorter than the 150 seconds, so the alarm dialog will pop up that the time is unreasonable.

Local Configuration				
Alias: LIACNWHP7501365.napa.ad.etn.com Default				
System Shutdown Options				
Cancel Shutdown if events Restored in Shutdow	Action			
Shutdown Delay: 90 Sec.	C Event Warning			
Run Script Before Shutdown	Shutdown			
File Path: E:\test.bat				
Script Max Execution Time: 60 Sec.				
OK Cancel	Apply			

System P	rotect So	oftware
	Topic:	Unreasonable Time
-	When:	2014-09-29 14:50:47
	Who:	172.18.139.73
	What:	The UPS shutdown delay (120)s isn't greater than the setting time (150)s
	Dor	't show this message again
		OK(7s)

8.2.4 Cancel UPS Shutdown if events restored in Shutdown Delay

Open the NMC website, select UPS Management ->UPS shutdown, enable/disable the checkbox for "Cancel UPS shutdown if events restored in Shutdown Delay".

JPS Management » UPS Shutdown help			
Event	Actions	Warning Period (Sec)	Warning Interval (Sec)
AC Failed	Client&UPS Shutdown -	900	30
Battery Low	Client&UPS Shutdown -	0	30
UPS Overload	Client&UPS Shutdown -	900	30
UPS Over Temperature	Client&UPS Shutdown -	900	30
Weekly Schedule	Client Shutdown -	900	30
Specific Day	Client&UPS Shutdown -	900	30
EMP Temperature Threshold	Client Shutdown -	900	30
EMP Humidity Threshold	Client Shutdown -	900	30
EMP Alarm-1	Client Shutdown -	900	30
EMP Alarm-2	Client Shutdown -	900	30
Below Battery Capacity Setting	Client&UPS Shutdown -	900	30
			3
Cancel UPS Shutde	own if events Restored in Shutdown Delay		
	UPS Shutdown Delay(Sec)	120	

• Select the checkbox:

If the events restore after the events occur for "Warning Period" time, the NMC will cancel the UPS shutdown command and cancel the SPS client shutdown notification

• Unselect the checkbox: Even If the events restore after the events occur for "Warning Period" time, the NMC still

send the shutdown notification to the UPS and SPS client if the event restored during the "UPS Shutdown Delay" timer.

• For example:

AC failed Event, the "Warning Period" is 900S and the "UPS Shutdown Delay" is 120S, select "Cancel UPS shutdown if events restored in Shutdown Delay" checkbox.

After AC failing for 900S, then the AC restore, the NMC will cancel the UPS shutdown command and cancel the SPS client shutdown notification

8.3 Shutdown order

8.3.1 Shutdown continue if events restored

For example:

• NMC webpage side:

Set the action to "Client &UPS Shutdown", set the "warning period" to 30s, set the "UPS Shutdown Delay" to 120s. Unselect the "Cancel UPS shutdown if event restored" checkbox.

JPS Management » UPS Shutdo	wn		help
Event	Actions	Warning Period (Sec)	Warning Interval (Sec)
AC Failed	Client&UPS Shutdown 😪	30	10
Battery Low	Client&UPS Shutdown 😪	30	10
UPS Overload	Client&UPS Shutdown 😪	30	10
UPS Over Temperature	Client&UPS Shutdown 😪	30	10
Weekly Schedule	Client&UPS Shutdown 😪	30	10
Specific Day	Client&UPS Shutdown 👻	30	10
EMP Temperature Threshold	Client&UPS Shutdown 😪	30	10
EMP Humidity Threshold	Client&UPS Shutdown 😪	30	10
EMP Alarm-1	Client&UPS Shutdown 👻	30	10
EMP Alarm-2	Client&UPS Shutdown 🗸	30	10
Cancel UPS Shutdow	n if events Restored in Shutdown Delay		
	UPS Shutdown Delay(Sec)	120	

• SPS client side:

Set the Shutdown Delay to 60s, set "Script Max Execution Time" to 40s, unselect "Cancel Shutdown if events restored in Shutdown Delay" checkbox.

Local Configuration				
Alias: LIACNWHP7501365.napa.ad.etn.com Default				
System Shutdown Options				
Cancel Shutdown if events Restored in Shutdow	Action			
Shutdown Delay: 60 Sec. © Event Warning				
Run Script Before Shutdown				
File Path: E:\test.bat				
Script Max Execution Time: 40 Sec.				
OK Cancel Apply				

- Shutdown order:
 - 1. When AC fails, the NMC send the warning to SPS client. SPS will pop up warning dialog, this process will last 30S.
 - After AC failing for 30S, the SPS client and UPS begin to shutdown count down. After SPS client counting down for 60S, SPS begins to execute the shutdown script Note: Even if the AC restore during the shutdown counting down, the SPS client still continue to shut down.
 - 3. After executing the shutdown script for 40S, SPS client begins to shut down.
 - After UPS counting down for 120S, the UPS begins to shut down Note: Even if the AC restore during the UPS counting down, the UPS still continue to shut down

5. The system and UPS will cancel shutdown if the AC restore before AC failing for 30S.

8.3.2 Shutdown discontinue if events restored

For example:

• NMC webpage side:

Set the action to Client &UPS Shutdown, set the warning period to 30s, set the UPS shutdown Delay to 120s. Select the Cancel UPS shutdown if event restored checkbox.

UPS Management » UPS Shutdown help			
Event	Actions	Warning Period (Sec)	Warning Interval (Sec)
AC Failed	Client&UPS Shutdown 💌	30	10
Battery Low	Client&UPS Shutdown 🔽	30	10
UPS Overload	Client&UPS Shutdown 💌	30	10
UPS Over Temperature	Client&UPS Shutdown 💌	30	10
Weekly Schedule	Client&UPS Shutdown 💌	30	10
Specific Day	Client&UPS Shutdown 💌	30	10
EMP Temperature Threshold	Client&UPS Shutdown 🐱	30	10
EMP Humidity Threshold	Client&UPS Shutdown 💌	30	10
EMP Alarm-1	Client&UPS Shutdown 🐱	30	10
EMP Alarm-2	Client&UPS Shutdown 💌	30	10
Cancel UPS Shutdown if events Restored in Shutdown Delay			
	UPS Shutdown Delay(Sec)	120	
Save			

• SPS client side:

Set the Shutdown Delay to 60s, set Script Max Execution Time to 40s. Select Cancel Shutdown if events restored in Shutdown Delay.

Local Configuration				
Alias: LIACNWHP7501365.napa.ad.etn.com Default				
System Shutdown Options				
Cancel Shutdown if events Restored in Shutdow	Action			
Shutdown Delay: 60 Sec.	C Event Warning			
Run Script Before Shutdown	Shutdown			
File Path: E:\test.bat				
Script Max Execution Time: 40 Sec.	C Sleep			
OK Cancel	Apply			

- Shutdown order:
 - 1. When AC fails, the NMC send the warning to SPS client. SPS client will pop up warning dialog, this process will last 30S.
 - 2. After AC failing for 30S, the UPS and SPS client begin to shutdown count down. After SPS

client counting down for 60S, SPS begins to execute the shutdown script Note: If the AC restore during the SPS client shutdown counting down, the system cancel to shut down.

- 3. After executing the shutdown script for 40S, SPS client begins to shut down.
- 4. After UPS counting down for 120S, the UPS begins to shut down Note: If the AC restore during the UPS counting down, the UPS will cancel to shut down
- 5. The SPS client and UPS will cancel shutdown if the AC restore before AC failing for 30S.

8.4 Redundant UPS Input shutdown

• For a computer powered by more than one NMC UPS, we can add them into a cluster. The system will start to shut down when the shutdown conditions are all met for the devices under the group1.

Enter the IP address of NMC via click "Add" button on the screen of SPS.

Enter a Cluster name, for example, group1.

Add the two NMC IP address, and enter the same Cluster name.

Add	×
IP Address or Host Name:	172.18.139.97
Service or Port:	2993
Device Model:	
Cluster:	group1 🗸
ОК	Cancel
Add	X
IP Address or Host Name:	172.18.139.73
Service or Port:	2993
Device Model:	
Cluster:	group1 🔻
ОК	Cancel

The NMC UPSs that under the same Cluster will become the same group

System Protect Configuration	
<u>S</u> ystem Lo <u>g</u> <u>L</u> anguage	
Device List	Events
group1	 Ac Fail Battery Low UPS Overload UPS Over Temperature Weekly Schedule Shutdown Specific Day Schedule Shutdown
Add Remove Modify View	EMP Over Temperature EMP Over Humidity FMP Contact1 Alarm
Local Configuration Alias: LIACNWHP7501365.napa	.ad.etn.com Default

Multi-groups are supported.

The system will be shutdown whenever any of the group is met the shutdown condition

System Protect Configuration	
<u>S</u> ystem Lo <u>g</u> <u>L</u> anguage	
Device List	Events
□ group1 □ □	 Ac Fail Battery Low UPS Overload UPS Over Temperature Weekly Schedule Shutdown Specific Day Schedule Shutdown
AddRemoveModifyView	EMP Over Temperature EMP Over Humidity EMP Contact1 Alarm
Local Configuration Alias: BAOCNWHP7501365.napa	.ad.etn.com Default

8.5 Simulate shutdown by event

Before doing this simulate test, please make sure the system is not running with critical mission, and is allowed to shut down for a while.

Open the NMC website, select UPS Management -> UPS Powered Devices.

🖉 💭 🗢 🤔 http://172.18.13	9.73/				▼ 4		Bing	
🖕 Favorites 🛛 🙀 🛅 Suggi	ested	Sites 🔻						
Network Management Card					△ - [<u>a</u> - E	I 📻 ▼ Page▼ S	afety 🔻 Tools 👻
			NETWORK MANAGE	MENT CA	RD FOR UPS		LINE-INT Location: Office 29/09/2014 14:43:	:34
PS Monitoring		UPS Monito	ring » UPS Powered Devic	es				he
IPS Status								
IPS Alarm								
IPS Parameters		The amount o	r connected devices is:		1			
PS Powered Devices		Index	IP Address		Host Name		Date	Time
PS Identification		1	172.18.139.64		LIACNWHP7501365.napa.ad.e	etn.com	29/09/2014 10:58:4	3
'S Management							•	
IPS Battery Test		Remote PC S	hutdown Test	AC F	ailed 🔹			Submit
PS Battery Test Schedule								
NMP TRAP Receivers								
PS Configuration								
PS Control								
PS Shutdown								
	1.22							

- The server for the SPS client will be added to the "UPS Powered Devices" table if the communication is established between the SPS and NMC.
- Select the event in the "Remote PC Shutdown Test" drop list, click submit button, the NMC will send the warning and shutdown notification to the SPS client.
- The SPS will show the alarms dialog and shutdown/sleep the computer.
- After the test, wait for "UPS Shutdown Delay" time (120S as default, refer to section 8.2.3), then turn on the computer system.

8.6 Load segment shutdown

Note: SPS version should be 1.5.0.2 or later

Set the "power by" parameter to Load segment 1 or Load segment 2 on the SPS client

Add	×
IP Address or Host Name:	172.18.139.77
Service or Port:	2993
Device Model:	
Cluster:	•
Powered By:	Load segment 1 🔹
0	K Cancel

System Log	Language		
Device List		Events	
Add Modify	18.139.77(2993) LS1	 Ac Fail Battery Low UPS Overload UPS Over Temperature Weekly Schedule Shutdown Specific Day Schedule Shutdown EMP Over Temperature EMP Over Humidity EMP Contact1 Alarm FMP Contact2 Alarm 	
Local Config	guration		
Alias:	LIACNWHP7501365.r	napa.ad.etn.com	Default

Set the Load segment shutdown timer on the NMC website

For example, the LS1 "shut down timer" is 180s and the LS2 "shut down timer" is 240s When the AC fail event occurs, the LS1 will be shut down after AC failing for 180s When the AC fail event occurs, the LS2 will be shut down after AC failing for 240s

UPS Monitoring	UPS Management » UPS Configuration						help	
UPS Status	UP S							
UPS Alarm	Over Load Set Point(%) 21							
UPS Parameters	0 T 1 0 1 D	: vlo		40		1		
UPS Powered Devices	Over Temperature Set Po	Int(-C)		40				
UPS Identification	Save							
UPS Management	END.	Auto A d						
UPS Battery Test	EMP	Auto						
UPS Battery Test Schedule	Sensor	Description			Low	Point	High Point	
SNMP TRAP Receivers	Temperature(⁰ C)	uu				10	44	
UPS Configuration	Humidity(%)	rwr				46	99	
UPS Control	Alarm-1	hty			Nor	mally Closed 🔽		
UPS Shutdown	Alarm-2	asewe			Nor	mally Closed 🗸		
Shutdown Schedule	Save							
Settings								
NMC System	UPS Battery							
Reboot System	Last Replace Date(dd/mr	m/yyyy)		03/07/2015				
Access Control	Shutdown when battery c	apacity is below (%)		30				
Date and Time								
SNMPv1/2 Configuration	Save							
Wake On LAN	Load Segment							
Email Notification	Loud orginent		Shutdown time	r		Startup timor		
Firm ware Upload	1 10 14/0 1				_			
File Management	Load Segment 1(Sec)		180			5		
Logs	Load Segment 2(Sec)		240			5		
UPS Log	Save							

8.6.1 Load segment timer is shorter than AC fail warning period

Set the UPS shutdown timer and AC failed warning period on the NMC website
 For example: The "UPS shutdown delay" timer is 60s and the AC failed "warning period" timer is 900s ,so the load segment timer is shorter than AC fail warning period. (180<900, 240<900)

UPS Monitoring	UPS Management » UPS Shutdov	vn		help
UPS Status UPS Alarm	Event	nt Actions Warnin (Sec)		Warning Interval (Sec)
UPS Parameters	AC Failed	Client&UPS Shutdown 🗸	900	10
UPS Powered Devices	Battery Low	Disable	0	30
UPS Identification	LIPS Opdagd	Disable	000	20
UPS Management	UPS Overload		900	30
UPS Battery Test	UPS Over Temperature	Client&UPS Shutdown	60	10
UPS Battery Test Schedule	Weekly Schedule	Disable 🔽	900	30
SNMP TRAP Receivers	Specific Day	Disable 🔽	900	54
UPS Configuration	EMP Temperature Threshold	Disable 🗸	152	30
UPS Control	EMP Humidity Threshold	Disable 🗸	900	30
UPS Shutdown	EMP Alarm-1	Disable 🗸	43	34456
Shutdown Schedule	EMP Alarm-2	Disable	343	30
Settings	Below Battery Capacity Setting	Disable	0	30
Reboot System		,		
Access Control	Cancel UPS Shutdown	if events Restored in Shutdown Delay		
Date and Time	-	UPS Shutdown Delay(Sec	60	
SNMPv1/2 Configuration				Save

• Shutdown order:

The SPS client will be shut down after AC failing for "Load segment shutdown timer" minus "UPS shutdown Delay" timer

- 1. If the system powered by LS1, the NMC will notify the SPS client to shut down after AC failing for 120s (180-60=120)
- 2. If the system powered by LS2, the NMC will notify the SPS client to shut down after AC failing for 180s (240-60=180)

8.6.2 Load segment timer is longer than AC fail warning period

Set the UPS shutdown timer and AC failed warning period on the NMC website
 For example: The "UPS shutdown delay" timer is 60s and the AC failed "warning period" is
 90s ,so the load segment timer is longer than AC fail warning period(180>90, 240>90)

UPS Monitoring	UPS Management » UPS Shutdow	vn		help
UPS Status			Warning Period	Warning Interval
UPS Alarm	Event	Actions	(Sec)	(Sec)
UPS Parameters	AC Failed	Client&UPS Shutdown 🗸	90	10
UPS Powered Devices	BatteryLow	Disable		30
UPS Identification	LIPS Opdagd	Dicable	000	20
UPS Management			900	30
UPS Battery Test	UPS Over Temperature	Client&UPS Shutdown	60	10
UPS Battery Test Schedule	Weekly Schedule	Disable	900	30
SNMP TRAP Receivers	Specific Day	Disable 🗸	900	54
UPS Configuration	EMP Temperature Threshold	Disable 🗸	152	30
UPS Control	EMP Humidity Threshold	Disable 🗸	900	30
UPS Shutdown	EMP Alarm-1	Disable	43	34456
Shutdown Schedule	EMP Alarm-2	Disable	343	30
Settings			040	
NMC System	Below Battery Capacity Setting		0	30
Reboot System				
Access Control	Cancel UPS Shutdowr	n if events Restored in Shutdown Delay		
Date and Time		UPS Shutdown Delay(Sec)	60	
SNMPv1/2 Configuration				Save

• Shutdown order:

The SPS client will be shut down after AC fail "Warning Period" timer is met

- 1. If the system powered by LS1(LS1 shutdown timer is longer than AC failed "warning period", 180>90), the NMC will notify the SPS client to shut down after AC failing for 90s
- 2. If the system powered by LS2(LS2 shutdown timer is longer than AC failed "warning period", 240>90), the NMC will notify the SPS client to shut down after AC failing for 90s