

1. Place the software in a custom folder. The following example is uploading to the /opt/protector folder, Protector is a new custom folder.

2. Decompress the file and run the **tar -zxvf protector\_64.tar.gz** command.

```
[root@localhost:~/opt/protector]
[root@localhost:~/opt/protector] tar -zxvf protector_x64.tar.gz
protector/
protector/protector
protector/preoff.sh
protector/install.sh
[root@localhost:~/opt/protector]
```

3. Open the decompressed folder and run the **cd protector** command.

```
[root@localhost:~/opt/protector]
[root@localhost:~/opt/protector] cd protector/
[root@localhost:~/opt/protector/protector] ls -l
total 440
-rwxrwxrwx 1 1000 1000 2402 Jun 27 10:21 install.sh
-rwxrwxrwx 1 1000 1000 115 Dec 1 2021 preoff.sh
-rwxr-xr-x 1 1000 1000 441592 Jul 2 09:44 protector
[root@localhost:~/opt/protector/protector]
[root@localhost:~/opt/protector/protector]
```

4. Run the **./install.sh** command to grant root permission.

- (1) Press the keyboard letter K key to select the communication mode, SNMP communication or serial communication.
- (2) Press the d key to set the number of minutes to shut down the server after the "mains outage" alarm occurs.
- (3) Press the letter B key to set the number of minutes to shut down the server after the battery low alarm occurs.
- (4) Press the keyboard letter U key to set the delay of the UPS command (send shutdown command before the server shutdown).

```
SNMP Protector v1.0.0 built on 02:43:44 Jul 2 2022
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+-----+
[d] System Shutdown Delay Time When AC Power Failed: 0.0 Min.
[b] System Shutdown Delay Time When Battery Low : 3.0 Min.
[u] UPS Turn Off Delay Time : 3.0 Min.
[p] Ip Address : 10.2.146.131
[o] Community Name : public
[n] Shutdown Count Down Display : ENABLE
[l] Scheduling Function : DISABLE
[a] Turn off UPS after System Shutdown: ENABLE
[t] Time Scheduling(hh:mm)
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
Start-Up: --:-- --:-- --:-- --:-- --:-- --:-- --:--
Shutdown: --:-- --:-- --:-- --:-- --:-- --:-- --:--
[k] <<Change UPS Monitoring>> Monitor local UPS SNMP agent
[s] Save Configuration.
[q] Quit.
+-----+
Press the letters in brackets to select items.
Press [+], [-], or [il], [m] to change values.
Message:
```

**When you select the SNMP communication mode, you need to set the IP address and community string.**

- (5) Press p to set the SNMP card IP address.
- (6) Press the keyboard letter O to set the community string, which must be consistent with that set on the SNMP card.

**When selecting the serial port communication mode, set the serial port position and baud rate.**

- (7) Press the keyboard letter C to set the serial port position.
- (8) Press keyboard letter H to set the serial port baud rate.

```
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-----+-----
[d] System Shutdown Delay Time When AC Power Failed:  3.0 Min.
[b] System Shutdown Delay Time When Battery Low      :  3.0 Min.
[u] UPS Turn Off Delay Time                          :  3.0 Min.
[c] Communication Port: /dev/ttyS0
[h] Baud rate           : 2400
[n] Shutdown Count Down Display                      : ENABLE
[l] Scheduling Function : DISABLE
[a] Turn off UPS after System Shutdown: ENABLE
[t] Time Scheduling(hh:mm)
      Sun.  Mon.  Tue.  Wed.  Thu.  Fri.  Sat.
Start-Up:  --:--  --:--  --:--  --:--  --:--  --:--  --:--
Shutdown:  --:--  --:--  --:--  --:--  --:--  --:--  --:--
[k] <<Change UPS Monitoring>> Monitor UPS from local serial port
[s] Save Configuration.
[q] Quit.
-----+-----
Press the letters in brackets to select items.
Press [+], [-], or [i], [m] to change values.

Message:
```

- (9) Press n to enable Shutdown Count Down Display.
- (10) Press l to enable the Scheduling Function, That is, the computer can be turned on or off at a specified time.
- (11) Press a to enable the UPS Turn off THE UPS after System Shutdown.

**Press s to save the configuration and q to exit.**

The default installation path is /VMFS volumes/datastore1/protector ,if manual stop after, need to start under the default installation path.

## 5. Shutdown protection program

Command: **./protector -s &**

Command: **./protector -m** Check whether the status of the server and SNMP card is normal.

If relevant data can be displayed as shown in the following figure, it indicates that the system is in the normal monitoring state. Press Q to exit the monitoring state after starting and confirming the error, otherwise the shutdown protection program will not take effect. Notice This function needs to transmit data through UDP161 port, that is, open UDP161 port .

```
[root@localhost:/opt/protector/protector] ./protector -s &
[root@localhost:/opt/protector/protector] Cfg path: /opt/protector/protector/protecto
[root@localhost:/opt/protector/protector] ./protector -m
Cfg path: /opt/protector/protector/protector.cfg.
SNMP Protector v1.0.0 built on 02:43:44 Jul  2 2022
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```

```
<<< [l] Local device >>>
```

```
<<< [r] Remote device >>>
```

```
<< Monitor a UPS which provides your computer's power >>
<< UPS may be connected to the NETWORK or to the SERIAL PORT >>
Press [enter]-Proceed, [r]-Monitor remote UPS, [q]-Quit
```

Message:

```
SNMP Protector v1.0.0 built on 02:43:44 Jul  2 2022
Copyright 2021(C) Shenzhen KSTAR Science & Technology Co.,Ltd.
```

```
<<< [l] Local device >>>
```

```
<<< [r] Remote device >>>
```

```
<< Monitor a UPS which provides your computer's power >>
<< UPS may be connected to the NETWORK or to the SERIAL PORT >>
Press [enter]-Proceed, [r]-Monitor remote UPS, [q]-Quit
```

Message:

```

Message:
SNMP Protector v1.0.0 built on 02:43:44 Jul  2 2022
Copyright 2021(C) Shenzhen KSTAR Science & Technology Co.,Ltd.
+-----+
|      IP      : 10.2.146.131
| Input voltage : 229.9 V
| Input frequency : 50.0 Hz
|
| Output state  : On mains
| Output voltage : 220.1 V
| Output load   : 0 %
|
| Battery state : Normal
| Battery voltage : 24.84 V
| Battery capacity: 65 %
+-----+

```

6. Cut off the mains input for simulation test.

```

[root@localhost:/vmfs/volumes/62b8775f-e870737a-a046-000c2961de6c/protector] ./protector -s &
[root@localhost:/vmfs/volumes/62b8775f-e870737a-a046-000c2961de6c/protector] Cfg path: /vmfs/volumes/62b8775f-
e870737a-a046-000c2961de6c/protector/protector.cfg.
[root@localhost:/vmfs/volumes/62b8775f-e870737a-a046-000c2961de6c/protector] [2022-07-06 09:42:22] System will
be shutdown in 3 minute(s).
[2022-07-06 09:43:22] System will be shutdown in 2 minute(s).

```

7. Frequently Asked Question

(1) Relevant commands

- ① The command to start the shutdown protection program is: `./protector -s &`
- ② To turn off the shutdown protector, run the following command: `./protector -t`
- ③ Command for modifying configuration parameters: `./protector -c`
- ④ To view the process of running a program: `ps -aux | grep protector`

(2) How do I create a port development policy for Linux EXSI?

- ① Create a new Protector. XML file (or just use the one already edited in the package) with the following contents:

```

<ConfigRoot>
  <service id='0300'>
    <id>protector</id>

    <rule id='0000'>
      <direction>inbound</direction>
      <protocol>udp</protocol>
      <porttype>src</porttype>
      <port>161</port>
    </rule>

    <rule id='0001'>
      <direction>outbound</direction>
      <protocol>udp</protocol>
      <porttype>dst</porttype>

```

```

        <port>161</port>
    </rule>

    <enabled>true</enabled>
    <required>true</required>
</service>

```

```
</ConfigRoot>
```

- ② Place the Protector. XML file in the /etc/vmware/firewall directory. In addition, save the protector. XML file in a directory similar to/VMFS /volumes/ XXX /. Otherwise, data in /etc/vmware/firewall will be lost after a power failure. Therefore, if a power failure occurs, after the system is shut down and restarted, you need to re-place the protector. XML file in the /etc/vmware/firewall directory, otherwise the shutdown protection software cannot work properly.
  - ③ Restarting the Firewall: `esxcli network firewall refresh.`
  - ④ Verify in the Linux Exsi system web console that you can see the Protector service is complete.
- (3) The shutdown protection software fails to start after the Ubuntu Linux system is shut down and restarted.

The following configurations are required:

- ① `sudo gedit /lib/systemd/system/rc-local.service ;`
- ② Add at the end:
 

```

[Install]
WantedBy=multi-user.target
Alias=rc-local.servic

```
- ③ Save the Settings and exit
- ④ Check whether the Settings in the previous step are successful:
 

```
cat /lib/systemd/system/rc-local.service
```
- ⑤ `sudo gedit /etc/rc.local`, Add content to the first line of the file (`#!/bin/sh`) and save the Settings and exit.
- ⑥ `sudo systemctl enable rc-local`
- ⑦ `sudo systemctl start rc-local.service`
- ⑧ Restart the server and check whether the shutdown protection program starts automatically.