PowerWalker

PowerMaster

User's Manual

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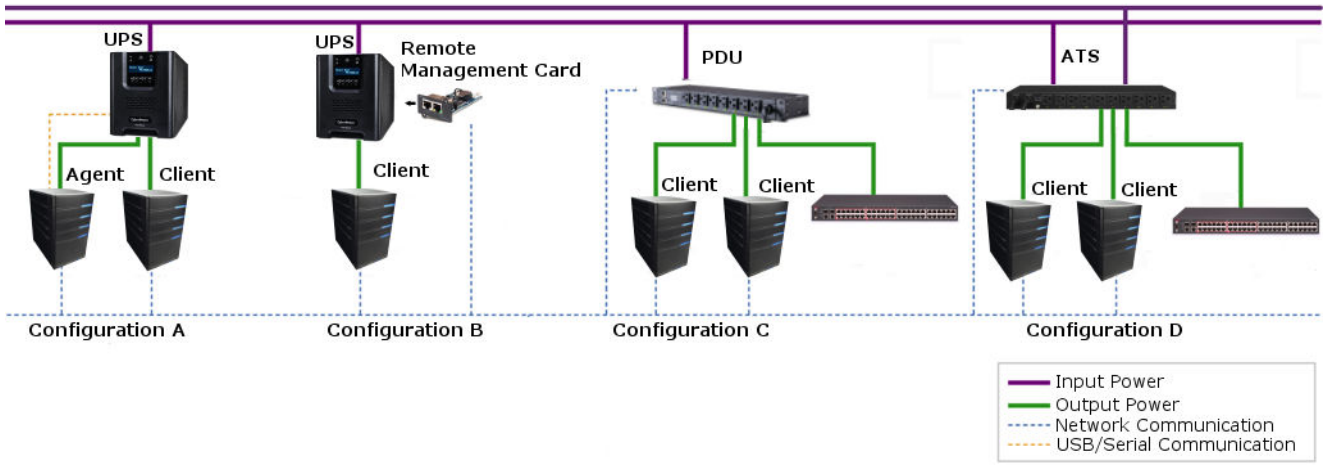
Introduction

Power Master software provides comprehensive advanced power management for UPS/PDU/ATS systems. It controls unattended shutdowns, scheduled shutdowns, and notifications for computers powered by the UPS (Uninterruptible Power Supply), PDU (Power Distribution Unit), or the ATS (Automatic Transfer Switch).

Power Master software consists of two different modules Agent and Client. Agent monitors and configures the UPS through the USB or serial connection, logs UPS status and power events, and generates actions in response to events. Client establishes communication with the Agent, UPS RMCARD, PDU or ATS and generates actions according to notifications from the UPS/PDU/ATS when a power event occurs.

The Agent should be installed on a single computer connected to the UPS with a USB or serial connection. The Agent controls the UPS and establishes communication with the Client **if the UPS has no remote management card**. The Agent relays the UPS state to each Client and the Client performs actions based on the notifications. Each computer powered by the UPS can be protected and controlled using the Client. In the event of power failure, the Agent will shut down the hosted computer and request the Client computers to shut down prior to the UPS shutting down. Refer to **Configuration A** of the Power Master structure illustration.



Power Master structure

A **UPS with a remote management card** has the ability to communicate with multiple computers which have Client installed and are on the same network and relay the UPS status to each Client. In the event of a power failure, each Client will request the hosted computer to shut down following notifications from the UPS. Refer to **Configuration B** of the Power Master structure illustration.

The Client also has the ability to communicate with a PDU. Each computer powered by a PDU can utilize the Client for protection and control. When a PDU outlet supplying power to a computer running Client is going to be switched off, the Client will perform a shutdown prior to switching off the power. Refer to **Configuration C** of the Power Master structure illustration.

Agent

Aside from the primary function of shutting systems down in the event of an outage, the Agent also provides the following functions:

- Unattended shutdown in response to various power conditions.
- User notification of power conditions.
- Flexible configuration of actions for each event and notifications via E-mail, Instant Message, and SMS.
- Run command files for custom applications.
- Historical log of events and power conditions.
- Detailed load management for all powered equipment.
- Scheduled shutdown and restart.
- Status monitoring of the UPS and utility power.
- UPS configuration.
- Quick view system summary.

Client

The Client provides unattended shutdown for the hosted computer following a notification from the UPS/PDU/ATS. The Client also provides the following functions:

- Unattended shutdown in response to various power conditions.
- User notification of power conditions.
- Flexible configuration of actions for each specific event and notifications via E-mail, Instant Message, and SMS.
- Historical logs of power events.
- Quick view system summary.

Getting Started

Prerequisites

Hardware Limitation

- 733 MHz or higher Pentium-compatible CPU.
- 256 megabytes (MB) of RAM recommended minimum; more memory generally improves responsiveness.
- Minimum of 150 MB of free space of hard disk.
- Serial port or USB port. (Required by the Agent)
- Network interface.

Operating System

Power Master software can be installed on the following operation systems:

- **Windows**
  - Windows 10
  - Windows 8
  - Windows 7
  - Windows Server 2016
  - Windows Server 2012
  - Windows Server 2012 R2
  - Windows Server 2008
  - Windows Server 2008 R2
- **Linux (32 bit)**
  - Fedora 7
  - Redhat Enterprise 6.5
  - Centos 7
  - Open SUSE 11.4
  - Debian 7
  - Ubuntu 15.04
- **Linux (64 bit)**
  - Fedora 7
  - Redhat Enterprise 7
  - Centos 7
  - Open SUSE 11.4
  - Debian 7
  - Ubuntu 15.04
- **MAC OS**
  - MAC OS X 10.6
  - MAC OS X 10.7
  - MAC OS X 10.8
  - MAC OS X 10.9
  - MAC OS X 10.10
  - MAC OS X 10.11

Note: *Because of the abundance of different Linux builds, not all builds are tested with Power Master but most builds will be able to run the program.*

Web Browser

Power Master software is accessed using a web browser and is compatible with the following browsers:

- Microsoft Internet Explorer 7 or above
- Firefox 2.0 or above
- Google Chrome
- Konqueror

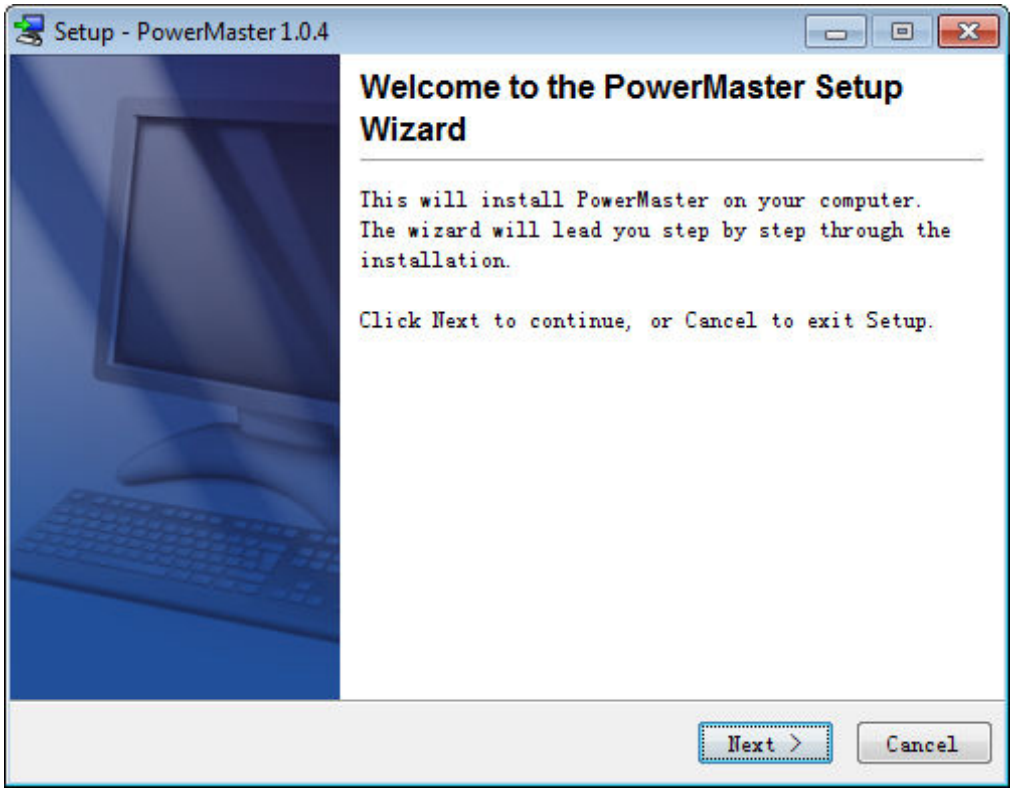
Installation

Installation on Windows

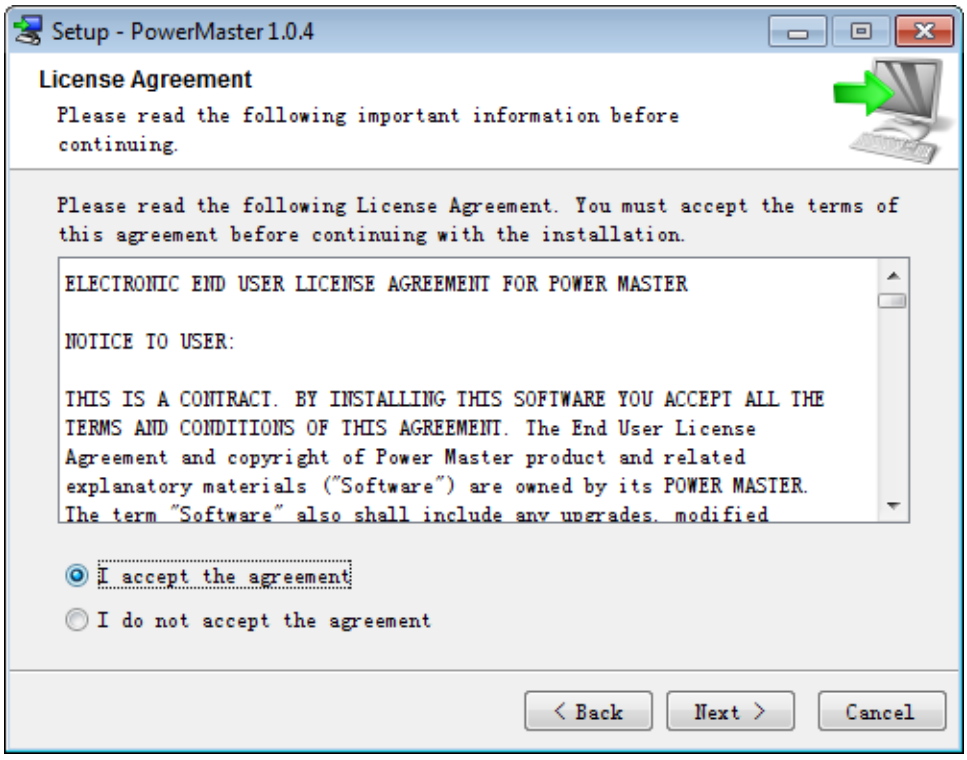
A pop-up window will be displayed automatically when inserting the Power Master installation CD. Users can click the **Install Power Master** shortcut on the pop-up window to initiate the installation procedure. If the pop-up window is not displayed when inserting the CD, browse to the CD drive and open the folder which locates at **/Software/Windows**, and then double click the file named **Setup.exe** to start the installation procedure.

Use the Power Master installation CD to complete the installation on the target computer. To install follow these steps:

- Click the **Next** button to start an installation.

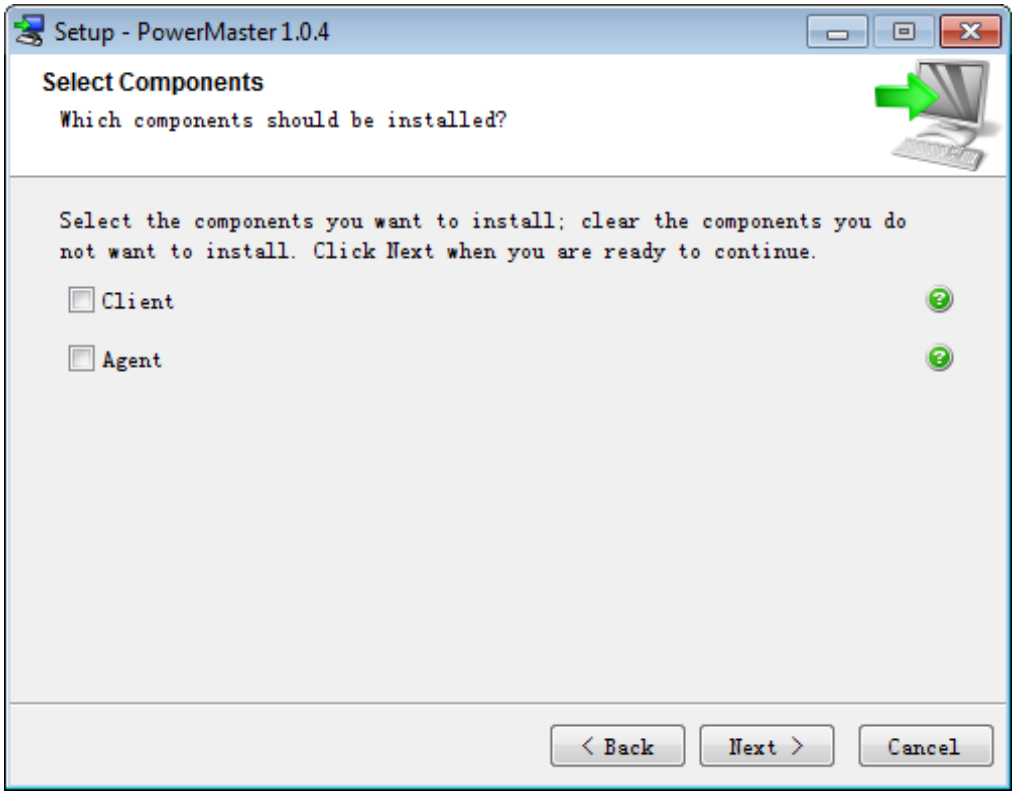


- Accept the license agreement.

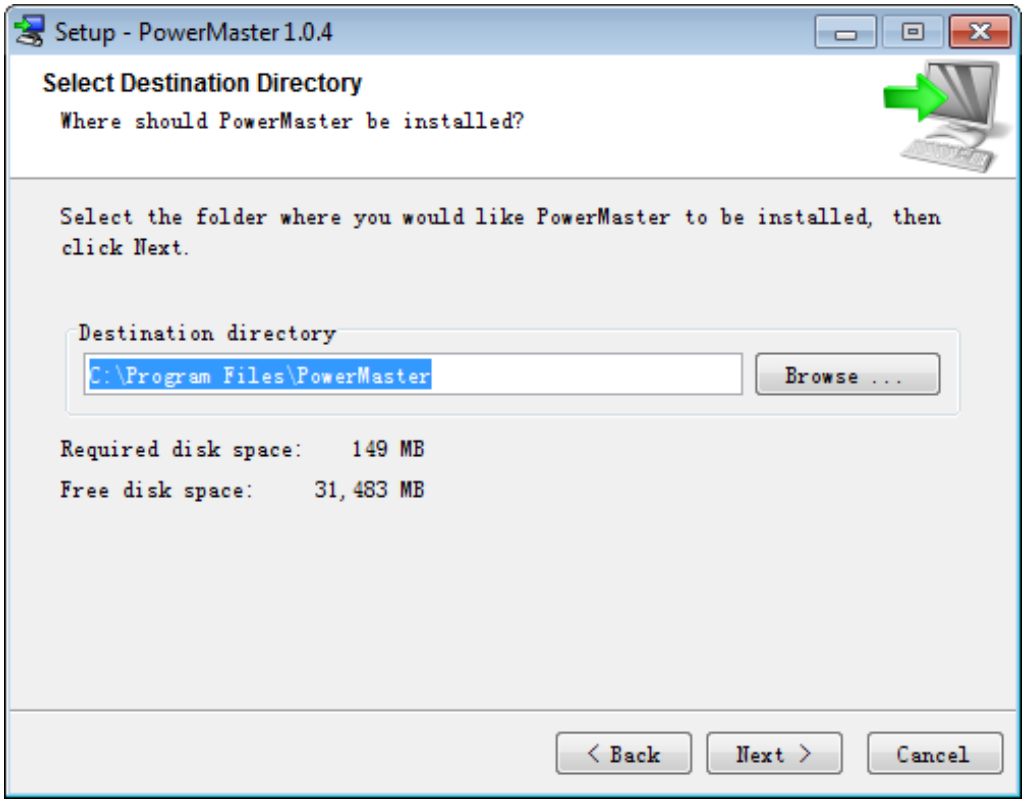


- **Choose the component.** If one single computer is connected to the UPS directly via a USB or serial connection, Agent should be installed. If the computer is powered by a UPS already connected to an Agent, has a remote management card installed or is connected to a PDU, Client should be installed. If a user is unsure of which are the correct components, they can click **Use recommendations** button to launch a wizard for assistance.

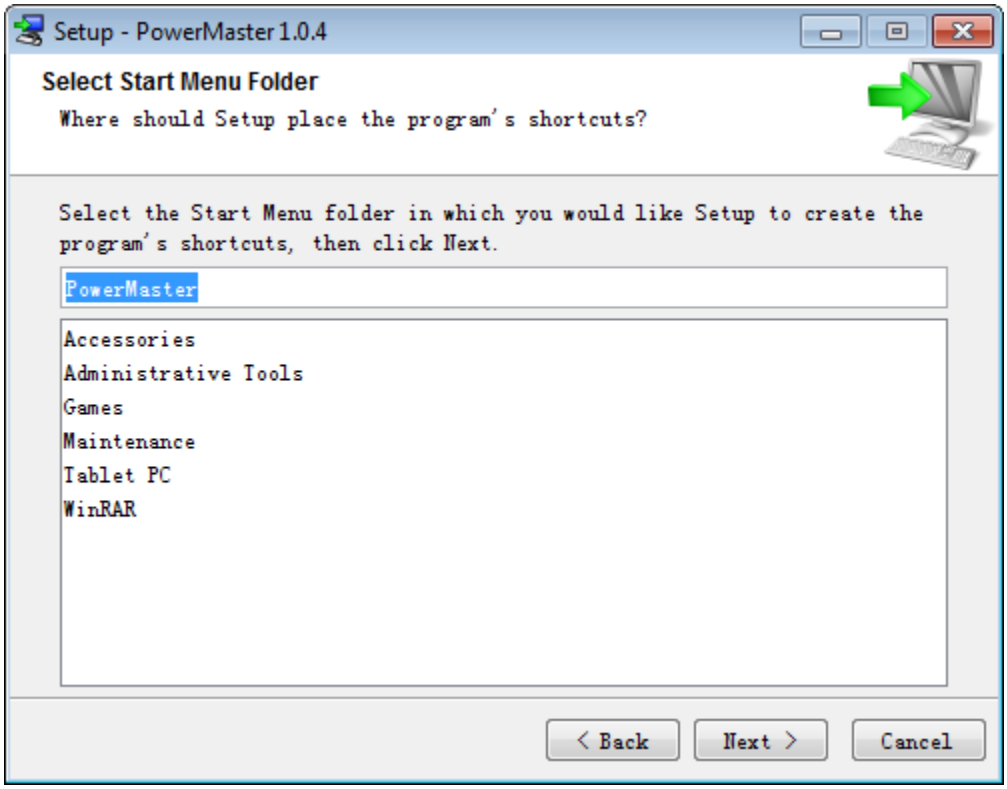
  Note: *Agent and Client cannot be installed on the same computer.*



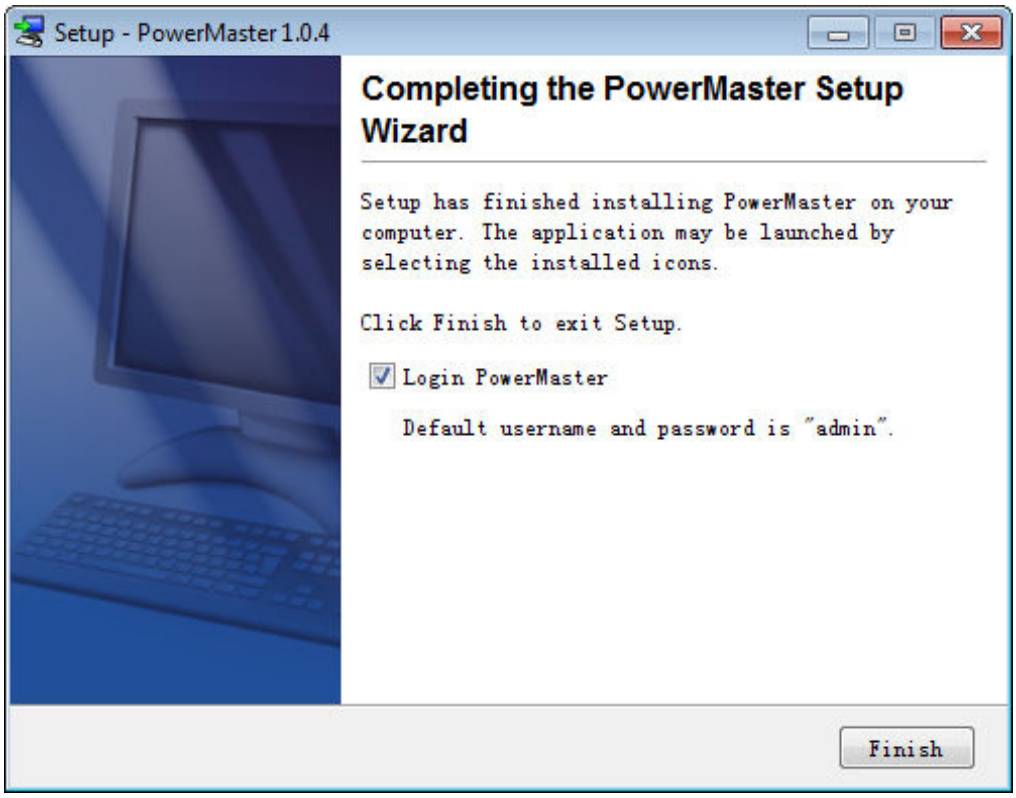
- Choose the destination directory.



- Choose the start menu directory.



- Click the **Finish** button to complete the installation.



Installation on Linux

The installer is used to install the software and requires root permission. The installation wizard will guide users in completing the installation. Browse to the CD drive and find the installerin the**/Software/Linux** folder. Initiate the wizard by running the **./pm104-linux-x86.sh** command or double clicking **pm104-linux-x86.sh** on 32-bit systems or by running the .**/pm104-linux-x86_64.sh** command or double clicking **pm104-linux-x86_64.sh** on 64-bit systems.

Note: *On Linux systems, users may mount the CD by using the mount command. Run* ***mount –t iso9660 /dev/cdrom /mnt/cdrom*** *as a root user.* ***/dev/cdrom*** *is the CD drive and* ***/mnt/cdrom*** *will be the mount point.*

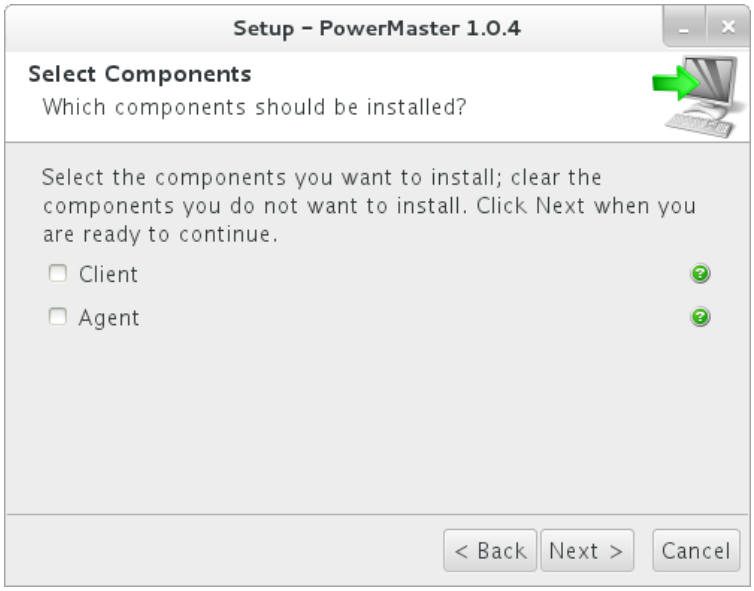
To install follow these steps:

- Click the **Next** button to start an installation.

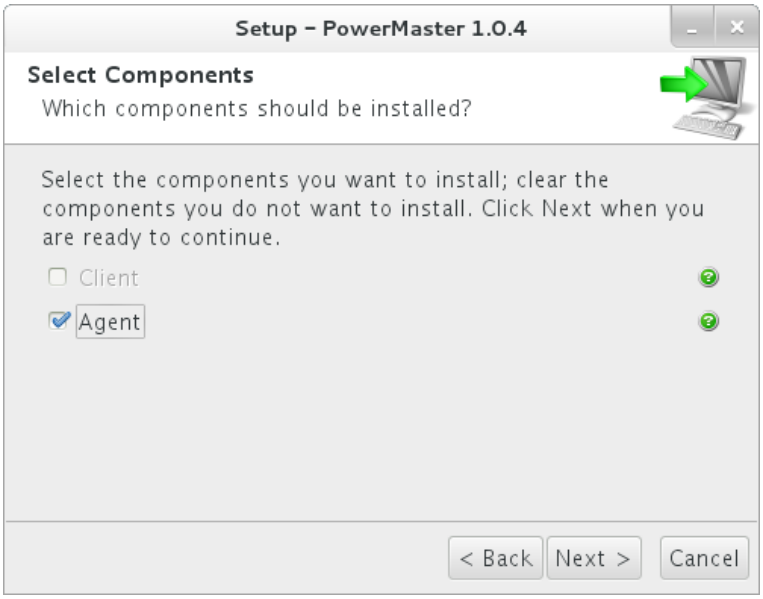
- Accept the license agreement.

- **Choose the component.** If one single computer is connected to the UPS directly via a USB or serial connection, Agent should be installed. If thecomputer is powered by a UPS already connected to an Agent, has a remote management card installed or is connected to a PDU, Client should be installed. If a user is unsure of which are the correct components, they can click the Use recommendations button to launch a wizard for assistance.

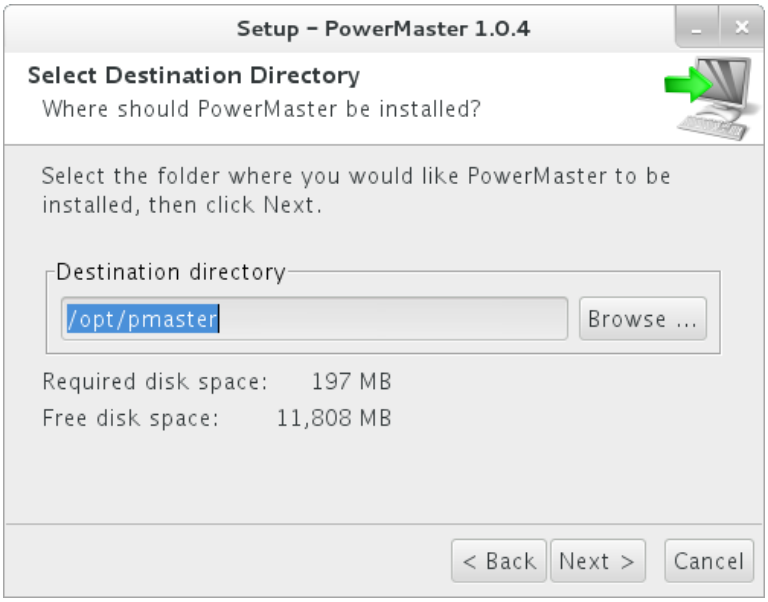
  Note:*Agent and Client cannot be installed on the same computer.*



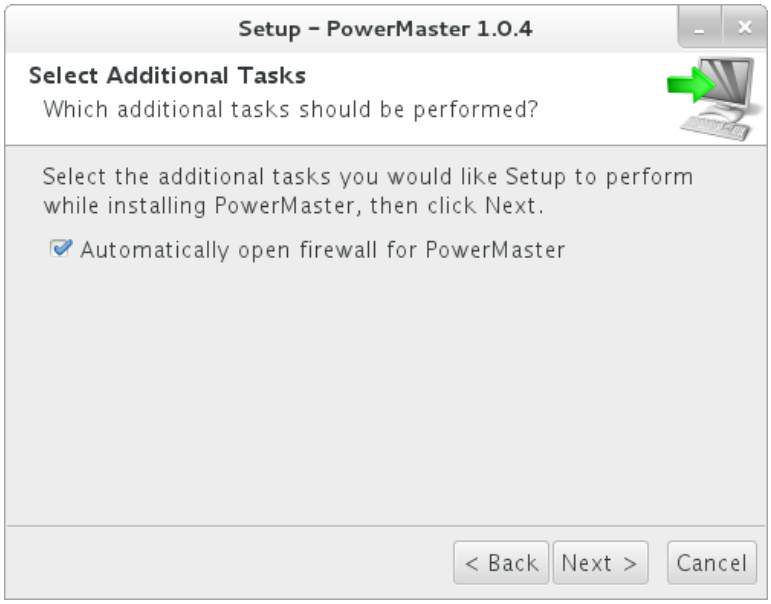
- Confirm the recommended components.



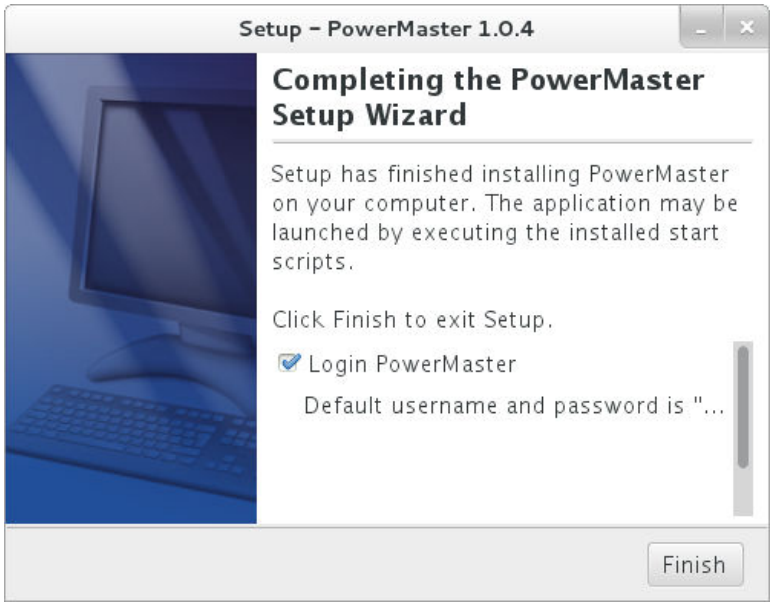
- Choose the destination directory.



- Select Additional Tasks



- Click the **Finish** button to complete the installation**.**



Installation in Text Mode

When the system does not support graphic mode, the Linux installation needs to be initiated in the terminal by using the **./pm104-linux-x86.sh –c** command on 32-bit systems or use **./pm104-linux-x86_64.sh –c** command on 64-bit systems.

The installation procedure will be initiated as following steps:

- Select language

```
Please select a language:
1: Deutsch
2: English [Enter]
3: Français
4: Polski
5: 日本語
6: 正體中文
7: 简体中文
[1 - 7]
```

- Press **Enter** to start an installation.

```
This will install Power Master on your computer.
OK [o, Enter], Cancel [c]
```

- **Accept the license agreement.**

```
YOUR ACCEPTANCE OF THE FOREGOING AGREEMENT WAS INDICATED DURING
INSTALLATION.

I accept the agreement
Yes [1], No [2]
```

- **Choose the component.** If one single computer is connected to the UPS directly via a USB or serial connection, Agent should be installed. If the computer is powered by a UPS already connected to an Agent, has a remote management card installed or is connected to a PDU, Client should be installed. If users don't realize how to choose the correct components, users can assign **Use recommendations** for assistance.

  Note: *Agent and Client cannot be installed on the same computer.*

```
Which components should be installed?
Select the components you want to install; clear the components you do not
want to install. Click Next when you are ready to continue.
Which components should be installed?
```

- Choose the destination directory.

```
Where should Power Master be installed?
[/opt/pmaster]
```

- Select Additional Tasks

```
Automatically open firewall for Power Master?
Yes [y, Enter], No [n]
```

- Installation procedure starts to process until the installation is complete.

```
Setup has finished installing Power Master on your computer.
Default username and password is "admin".
Power Master has configured iptables settings.
Power Master may not do hibernation.
Finishing installation ...
```

Installation on Mac

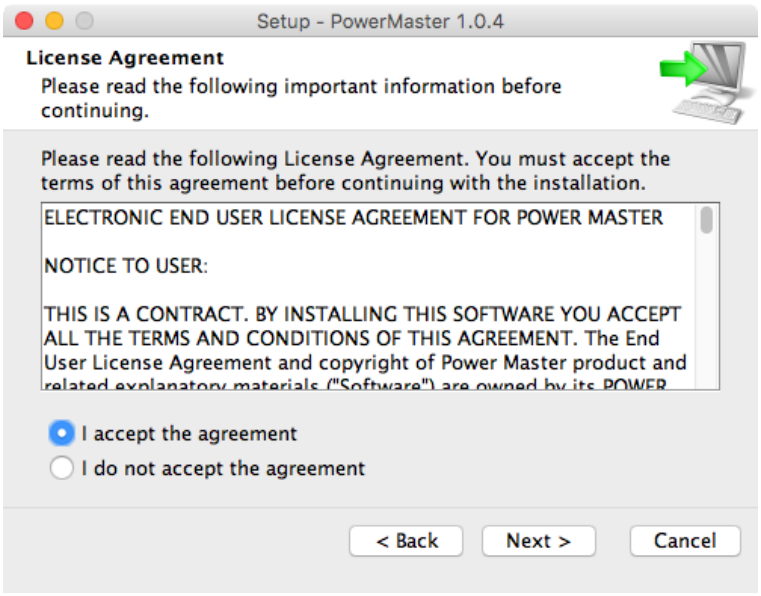
File folder will be displayed automatically when inserting the Power Master installation CD. Find the installer in the**/Software/Mac** folder, and double click the file named **Setup.dmg**, then in the same way double click the file named **Power Master Installer** to initiate the wizard. The installation wizard will guide users in completing the installation.

Note: Power Master *software is a third-party application. At the first time to launch the Power Master installer on the Mac OS X 10.8(or later version), you should do following:*
1.Right-click the Installer and choose "Open".
2. Choose "Open" again at the dialog to open it.

To install follow these steps:

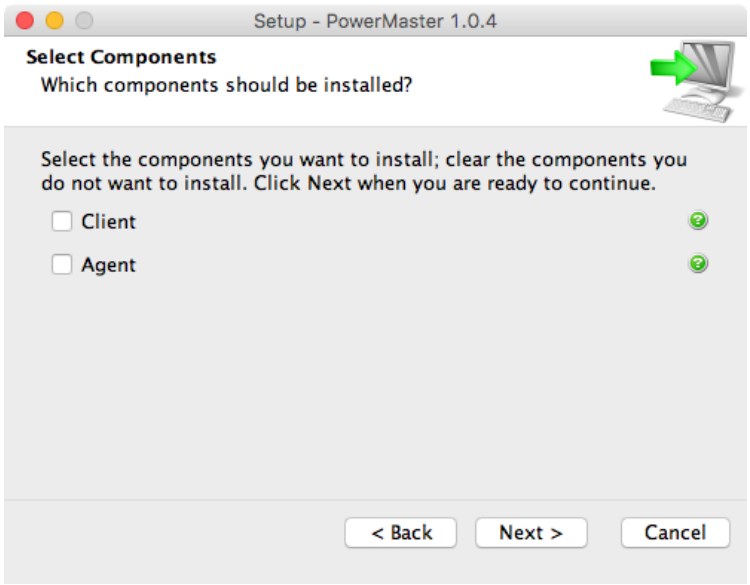
- Click the **Next** button to start an installation.

- Accept the license agreement.

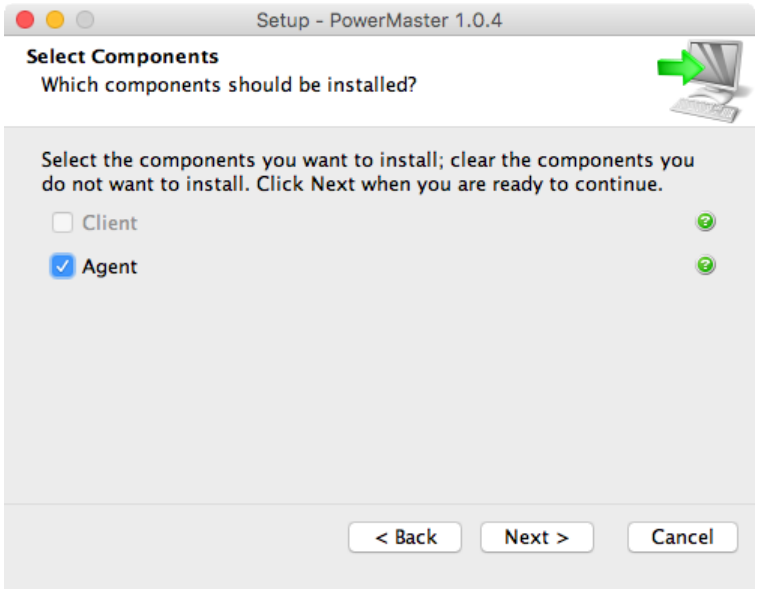


- **Choose the component.** If one single computer is connected to the UPS directly via a USB or serial connection, Agent should be installed. If the computer is powered by a UPS already connected to an Agent, has a remote management card installed or is connected to a PDU, Client should be installed.

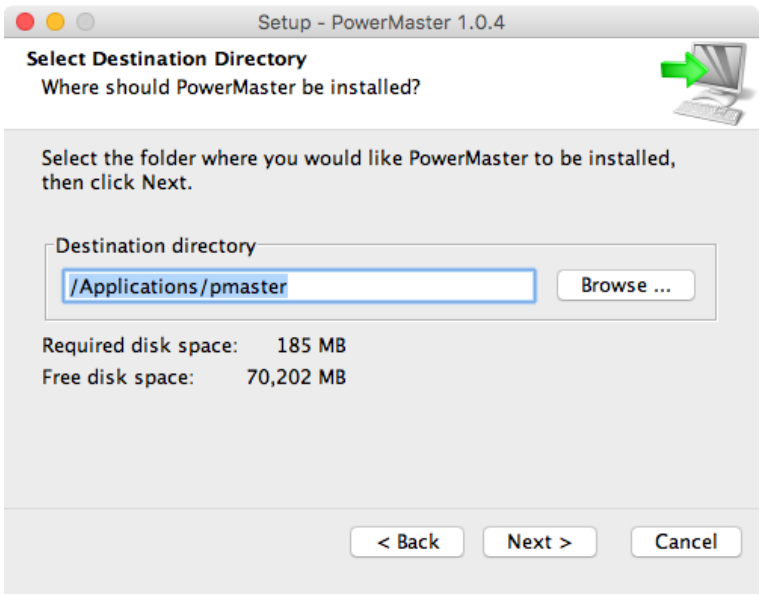
  Note: *Agent and Client cannot be installed on the same computer.*



- **Confirm the recommended components.**



- Choose the destination directory.

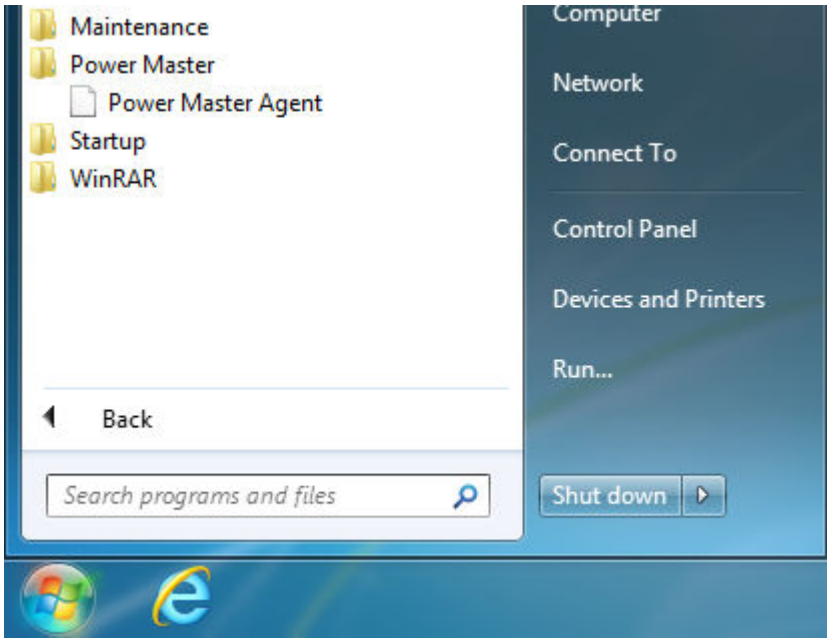


- Click the **Finish** button to complete the installation.

__Note:__ If the Power Master service stops unexpectedly in OS X version is 10.6 or earlier, please update Java to the latest version via __Software Update__, then execute __restartService.sh__ to restart Power Master service, the default file path is __/Applications/pmaster/bin/restartService.sh__.

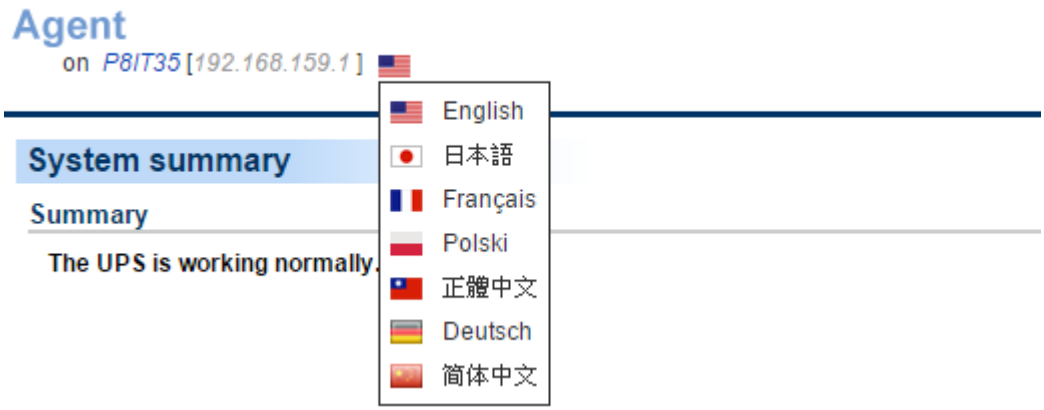
Accessing Power Master

The Power Master web interface can be accessed following the directions below. To access the web interface on a local computer, select **Start > All Programs > Power Master >Power Master Agent, Power Master Client** the Windows Desktop or enter the **http://localhost:3052** as the URL in the browser.



Launching Power Master software on a local computer

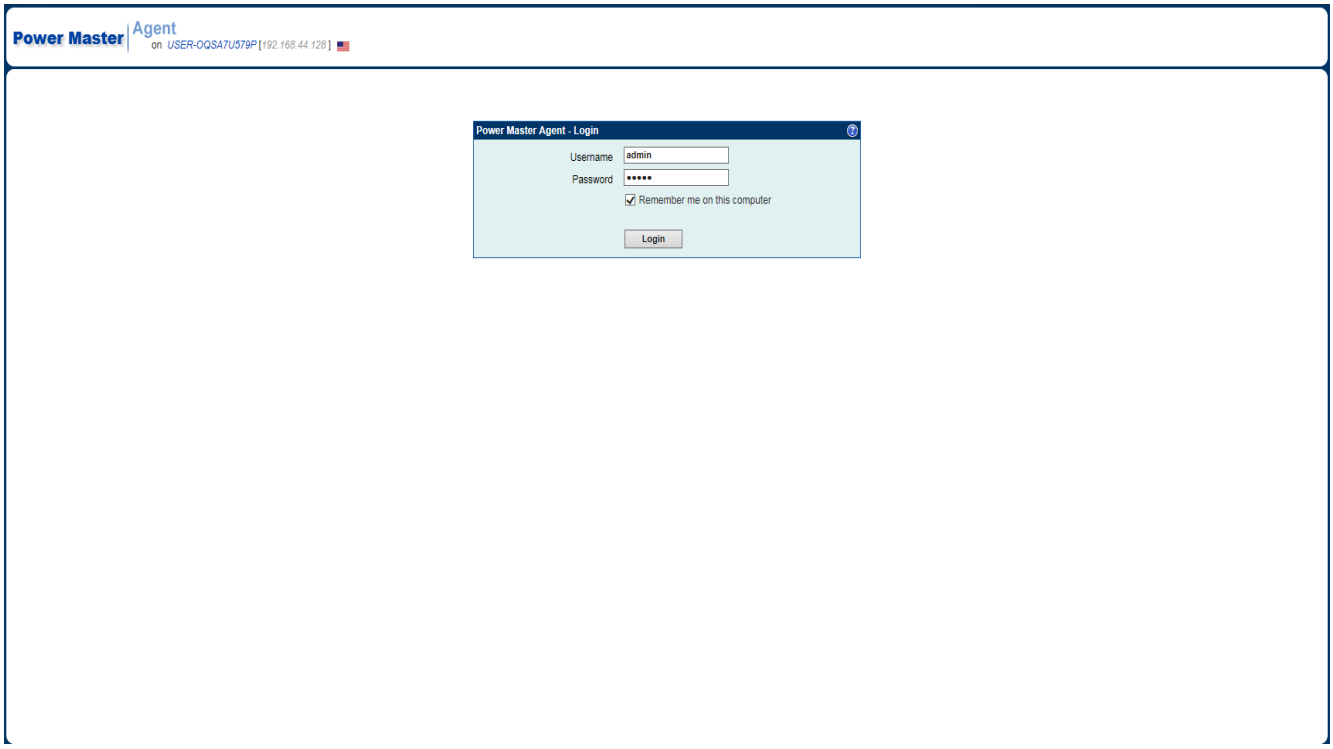
On Linux, users can enter **http://localhost:3052/**in the address of the web browser to access the interface. Users can also enter the URL, **http://localhost:3052/** in the local computer or **http://hosted_computer_ip_address:3052/** in the remote computer, to the address field of the web browser to access the Power Master software web interface. **hosted_computer_ip_address** is the IP address of the computer which has the Power Master software installed. Power Master supports multiple-language function and allows users to change language. It will choose the suitable language as the default one to display at the initial access. Users can change the language from the banner. After the language is changed, the page will refresh automatically and choose the assigned language as the default one to display.



Change language

Login

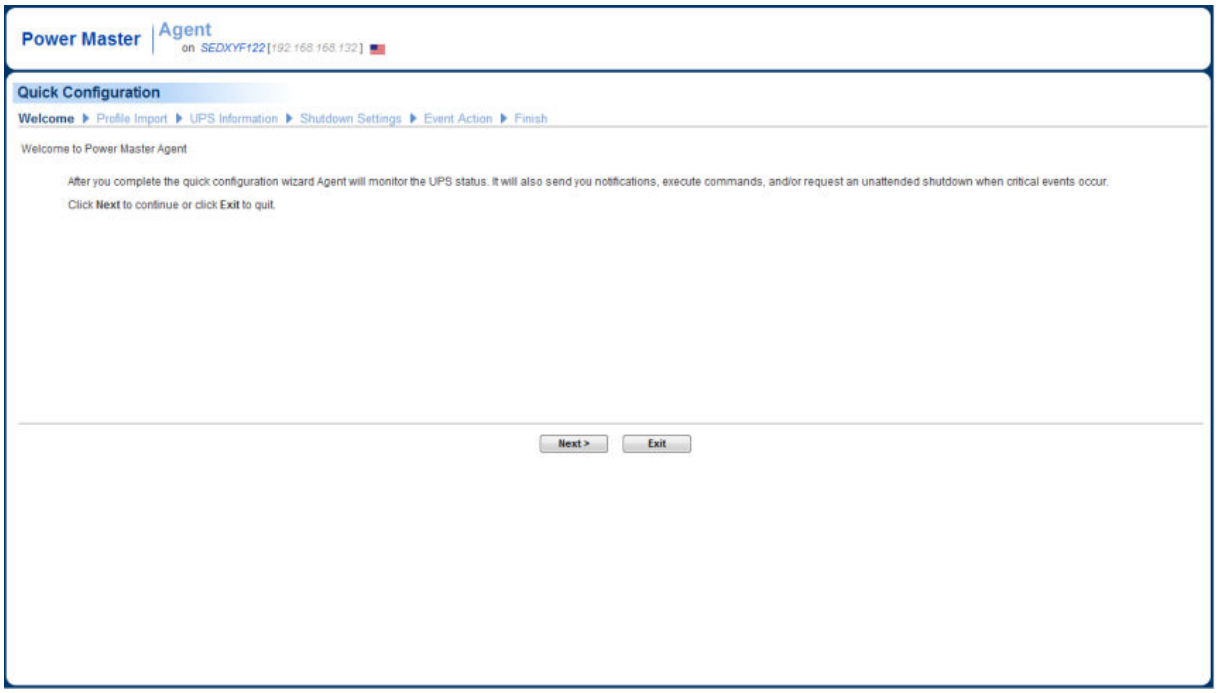
The default username is **admin** and the password is **admin**. For security, it is recommended to change the username and password on the **Security/Login** page after the initial login.



The local and remote login pages are the same.

Selecting the *Remembe rme on this computer* option on the login page allow the credentials to be remembered for automatic logon at the next session. To terminate the session, click the **Logout** button on the **Logout** page. The session will timeout and you will be logged out if no activity takes place during the time of Session Timeout. The **Session Timeout** can be configured on the Security / Login page.

Quick Configuration



A **Welcome** screen will display at the first time to use Agent and Client. The welcome screen will lead you to complete the quick configuration. You can decide whether to continue or ignore it. It is strongly recommended to complete the quick configuration. Inability to complete the quick configuration may put your computer in the extreme risk when power events occur. If you decide to ignore the quick configuration, click the **Exit** button. A popup confirm dialog will display and click the **Yes** button to ignore the quick configuration. Refer to the installation guide accordingly for more details to complete the quick configuration.

Essential Setup

In order to ensure the Power Master software functions properly, make sure that the Agent and Client have been configured correctly.

Agent

- Perform a battery test to verify the UPS can supply battery power to the connected equipment and the equipment operates properly. See the **UPS/Diagnostics** section for more details.

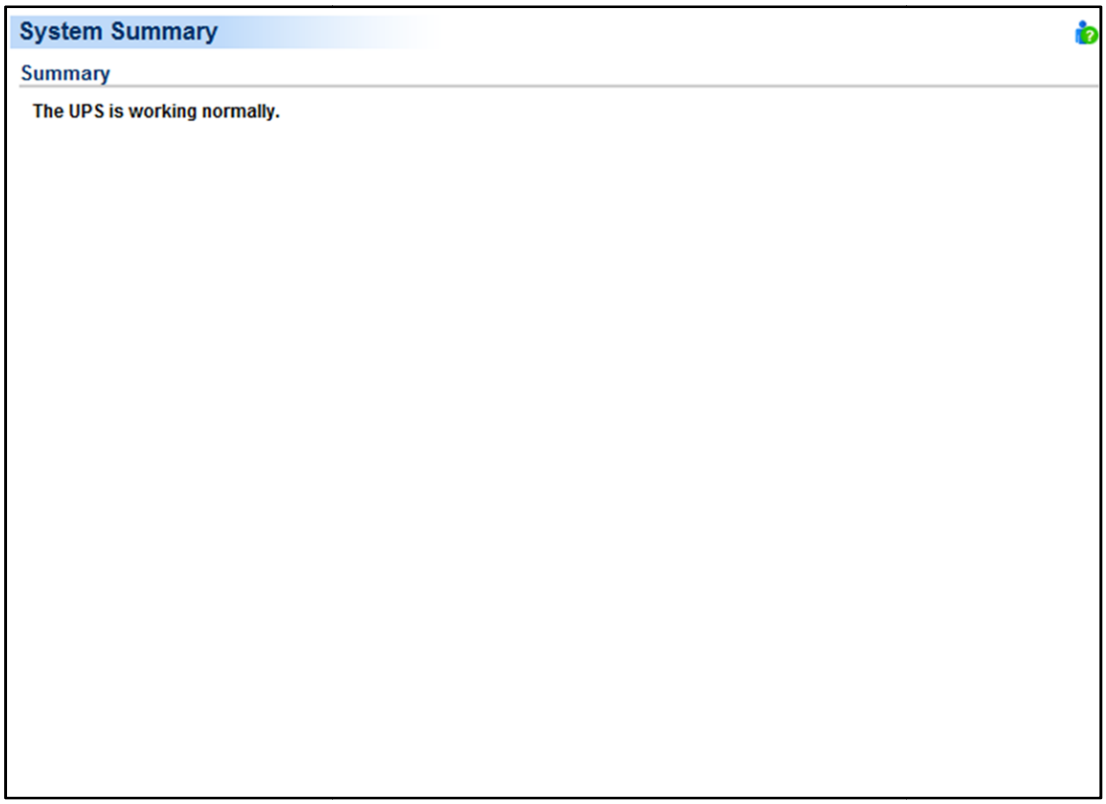
Client

- Set the port used by Client on the **Security/Network** page to match the port used by the Agent's port.

Using Power Master Agent and Client

System

Summary



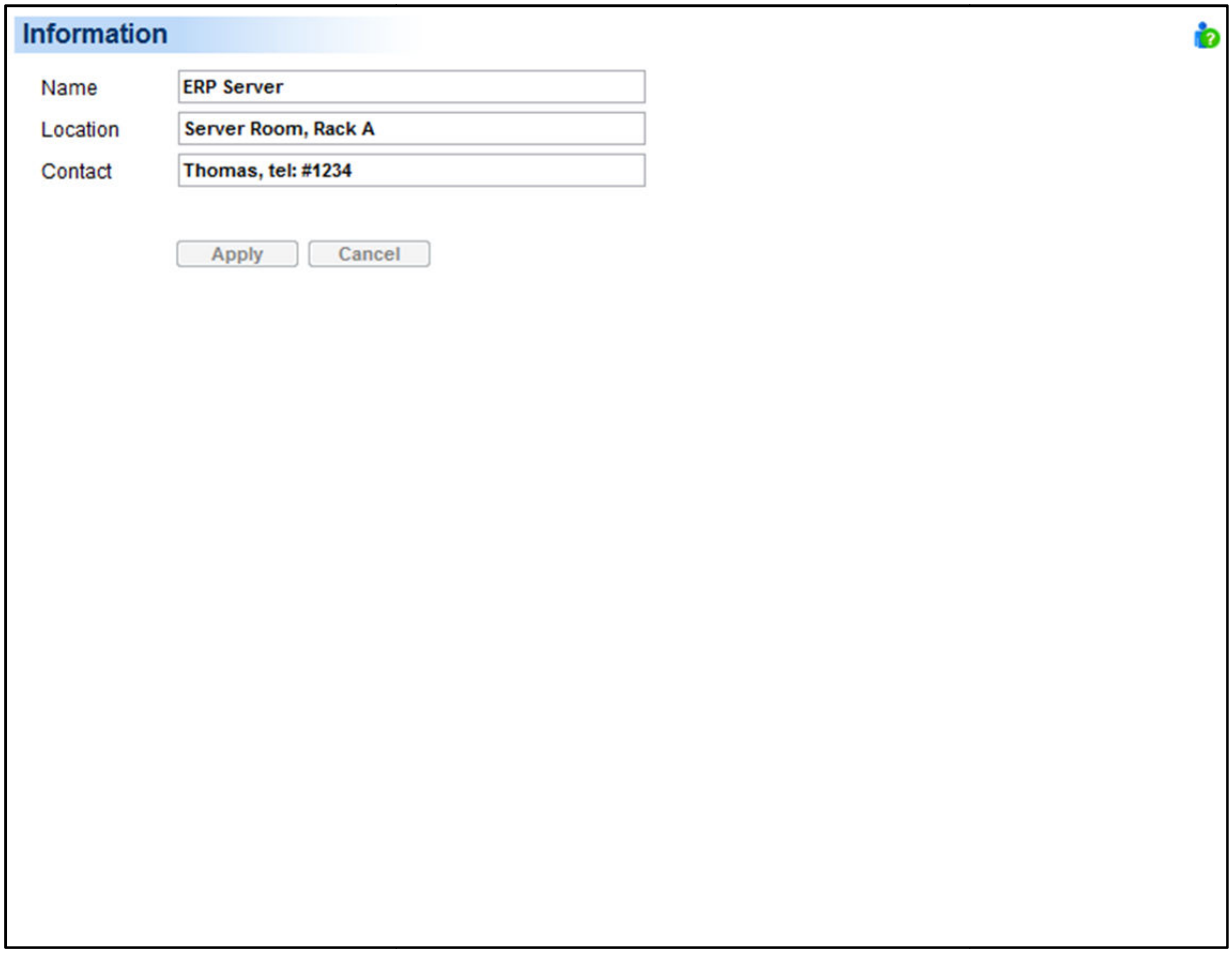
System/Summary page in Agent

In Agent, the **System/Summary** page provides an overview of the system operation. This includes the utility power status, operating status of the UPS, issues with the system and items requiring user attention.

In Client, the System/Summary page provides an overview of the system, including the communication status with the UPS/PDU/ATS, issues with the system and items requiring user attention.

Information

(The content in this section is only applicable to the Client.)



System/Information page

The **System/**Information page shows detailed information about the Client as follows.

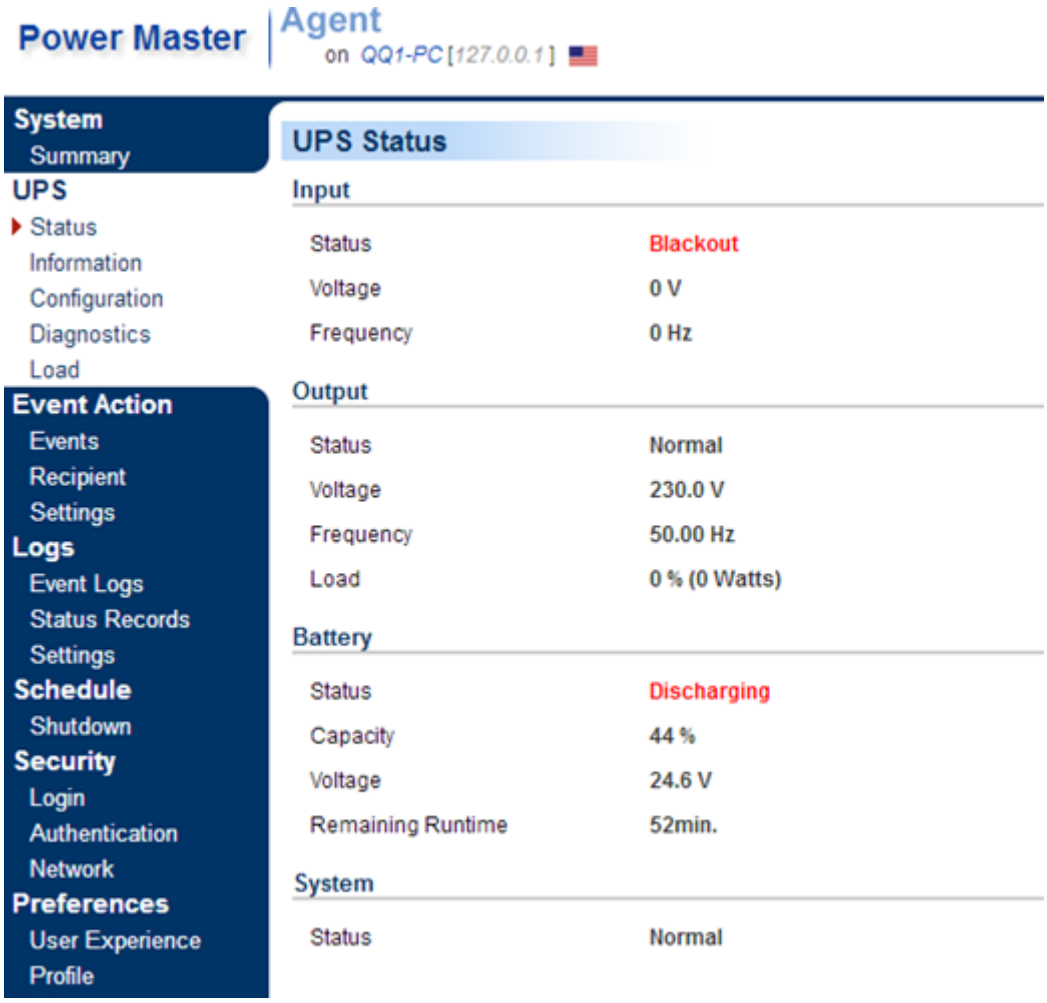
- Name: The name of the hosted computer, e.g. Web Server or Bill's Computer.
- Location: Where the hosted computer is located, e.g. Server room or Rack A.
- Contact: Who to contact about this hosted computer, e.g. someone's name, E-mail or phone number.

UPS

(The content in this section is only applicable to the Agent.)

Status

The **UPS/Status** page displays detailed status on the UPS power conditions, batteries, and system.



UPS/Status page of a Altec2000

Input

- Status: Displays the present status of the utility power supplied to the UPS.
  - **Normal**: The voltage and frequency of the utility power is normal.
  - **Blackout**: There is no utility power being supplied to the UPS and it is supplying battery power to connected **equipment**.
  - **Over Voltage**: The utility voltage is higher than the high voltage threshold and the UPS is using the battery to supply power.
  - **Under Voltage**: The utility voltage is lower than the low voltage threshold and the UPS is using the battery to supply power.
  - **Frequency Failure**: The frequency of the utility power is out of tolerance and the UPS is supplying battery power with a fixed frequency.
  - **Wiring Fault**: The UPS has detected a wiring fault in the outlet it is plugged into.

- **No Neutra**l: The neutral wire is not connected properly.
- **Generator Detected**: UPS is being supplying power by generator.
- **Power Failure**: The utility power being supplied to the UPS is not within spec due to other power noise and distorted conditions.

- **Voltage**: The voltage of the utility power supplied to the UPS.
- **Frequency**: The frequency of the utility power supplied to the UPS.
- **Current:** The current of the utility power supplied to the UPS.
- **Power Factor:** The ratio of the real power flowing to the UPS, to the apparent power of utility power. In an UPS system, a UPS with a low power factor draws more current than a UPS with a high power factor for the same amount of useful power transferred.

Bypass

- **Status:** Displays the present status of bypass circuit. In bypass mode, the UPS will provide the power from bypass input to the connected equipment directly.
  - **Normal:** The power quality of bypass circuit is normal.
  - **Blackout:** There is no input power being supplied in bypass circuit.
  - **Over Voltage:** The input voltage of bypass is higher than an acceptable threshold.
  - **Under Voltage:** The input voltage of bypass is lower than an acceptable threshold.
  - **Frequency Failure:** The frequency of bypass is out of tolerance.
  - **Power Failure:** The power of bypass is not qualify due to other power noise and distorted conditions.
  - **Wrong Phase Sequence:** The phase sequence of the bypass circuit is different from utility power.
  - **Overload:** Output power consumption exceeds the power rating of UPS.
  - **Extended Overload:** The duration of the overload is too long, UPS will shut down soon..
- **Voltage:** The voltage of the bypass supplied to the UPS.
- **Current:** The current of the bypass supplied to the UPS.
- **Frequency:** The frequency of the bypass supplied to the UPS.
- **Power Factor:** The ratio of the real power flowing to the bypass, to the apparent power of bypass. In an UPS system, a load with a low power factor draws more current than a load with a high power factor for the same amount of useful power transferred.

Output

- **Status**: Displays the present status of the output power the UPS is supplying to connected equipment.
  - **Normal**: The output power is normal.
  - **Bypass**: The UPS has switched to bypass mode and the utility power is being supplied directly to the connected equipment bypassing the UPS circuitry.
    *Note: Bypass mode is only applicable in **Online Series** UPS units.*
  - **No Output**: There is no output from the UPS. The UPS is switched off.
  - **Short Circuit**: There is a short circuit on the UPS output. This causes the UPS to stop supplying output power.
  - **Boost**: The utility voltage is below the regular voltage range. The UPS is increasing the output voltage closer to normal.
  - **Buck**: The utility voltage is beyond the regular voltage range. The UPS is decreasing the output voltage closer to normal.

Note: The Boost and Buck function are only available on a UPS with AVR; only high-end units with AVR have a Buck feature. The UPS uses the AVR function to improve the utility voltage and supplies the power to its connected equipment within a narrow range.

- **Overload**: The present load exceeds the load threshold of the UPS. Remove some equipment from the UPS to reduce the load.
- **ECO Mode**: On-line UPS enters Economy mode. The UPS will enter bypass mode according to thresholds for input voltage. Once the utility voltage exceeds thresholds, the UPS will supply battery power to its loads. Users can configure *exclusive days* and *exclusive time* to for UPS when to not enter ECO mode.
- **Manual Bypass**: The Online UPS enters Manual Bypass mode due the *Manual* option being enabled. The UPS will be forced to provide utility power to its equipment.
- **Insufficient Inverter Power**: There is no enough capacity of the inverter's power. UPS cannot back to line mode from bypass mode.
- **Redundancy Lost**：The quantity of UPS modules has no enough power to be complete redundancy; UPS has no complete fault-tolerant ability.
- **EPO**: The function of **EPO**(**E**mergency **P**ower **O**ff) has been activated; UPS output power was turned off.

- **Voltage**: The output voltage that the UPS is supplying to the connected equipment.
- **Frequency**: The output frequency that the UPS is supplying to the connected equipment.
- **Load**: The power draw of the connected equipment expressed as a percentage of the total load capacity. This is displayed as watts on some UPS models.
- **Current**: The output current of the UPS which is supplying to connected equipment.
- **Active Power**: The capacity of the circuit for performing work in a particular time.
- **Reactive Power:** Reactive power is needed in an alternating-current transmission system to support the transfer of real power over the network. In alternating current circuits, energy is stored temporarily in inductive and capacitive elements, which can result in the periodic reversal of the direction of energy flow. The portion of power flow remaining, after being averaged over a complete AC waveform, is the real power; that is, energy that can be used to do work. On the other hand, the portion of power flow that is temporarily stored in the form of magnetic or electric fields, due to inductive and capacitive network elements, and then returned to source, is known as *reactive power.*
- **Apparent Power**: The product of the current and voltage of the circuit.
- **Power Factor**: The radio of the active power flowing to the load, to the apparent power in the circuit. In an electric power systems, a load with a low power factor draws more current than a load with a high power factor for the same amount of useful power transferred.
- **NCL Outlet**: Displays the present status of the NCL outlet.
  - **On**: This outlet is turned on and supplying power to the connected equipment.
  - **Off**: This outlet is turned off and is not supplying power to the connected equipment.
  - **Pending On**: This outlet is going to turn on following an action such as a scheduled turn on.
  - **Pending Off**: This outlet is going to turn off following an action such as a scheduled turn off.

Battery

- **Status**: Displays the present status of the battery packs.
  - **Fully Charged**: The batteries are at 100% capacity.
  - **Discharging**: The UPS is supplying battery power to support the load. This is caused by a utility power failure or battery test.
  - **Charging**: The batteries are charging.
  - **Boost Charging**: Boost charging involves a high current for a short period of time to charge the battery. Boost charger enables the quick charging of depleted batteries.
  - **Float Charging**: The float charger starts charging the battery by exerting a charging voltage. As the battery is charged, its charging current reduces gradually. The float charger senses the reduction in charging current and reduces the charging voltage.
  - **Exhausted**: Batteries are exhausted; UPS stops the output power.
  - **Reversed Connection**：Connection between UPS and batteries is wrong on electrical polarity.
  - **Capacity Critically Low**: The battery capacity is too low and the UPS may shut down immediately.
  - **Not Present**: There are no batteries present in the UPS.
  - **Testing**: The UPS is performing a battery diagnostic test. See the **UPS/Diagnostics** page for more details about the test results.
  - **Normal**: The batteries are working normally.
- **Voltage**: The present voltage supplied by the batteries.
- **Remaining Runtime**: The amount of time that the UPS can supply power to its load.
- **Remaining Charge Time**: The remaining time the batteries required to be fully charged.
- **Capacity**: The present capacity of the batteries expressed as a percentage of full charge.

System

- **Status**: Displays the present operating status of the UPS.
  - **Normal**: The operating status is normal.
  - **Fault**: The UPS is in fault state due to an internal malfunction.
  - **Overheat**: The temperature exceeds the normal temperature threshold.
  - **Bypass Fault**: The bypass module of UPS has been malfunctioned.
  - **Bypass Fan Fault**: The fan of the bypass module has been malfunctioned.
  - **Module Failure**: One of UPS modules is no more normal and offline.
  - **Unable Recover**: UPS fails to recover to line mode from bypass on occurred overload condition in past one hour.
- **Temperature**: The present internal temperature of the UPS. It is displayed in both Celsius (°C) and Fahrenheit (°F).
- **Maintenance Break**: Displays the present operating status of maintenance break.

  Note: *When the UPS needs maintenance or repair, the load can be transferred to maintenance bypass without interruption and the power module can be removed for maintenance.*

Opened: The UPS is in maintenance bypass mode.

Closed: The UPS is not in maintenance bypass mode.

- **Module Status**: Displays the present operating status of each UPS module.

Normal: The module is operating normally.

Offline: The module is not installed.

Rectifier Fault: The module rectifier is faulty and stops output power.

Inverter Fault: The module inverter is faulty and stops output power.

Inverter Protected: The module inverter has been protected and stops operating.

Rectifier Overheat: The internal temperature of module rectifier exceeds the normal rating.

Inverter Overheat: The internal temperature of module inverter exceeds the normal rating.

Inverter Overload: The module inverter is overloaded.

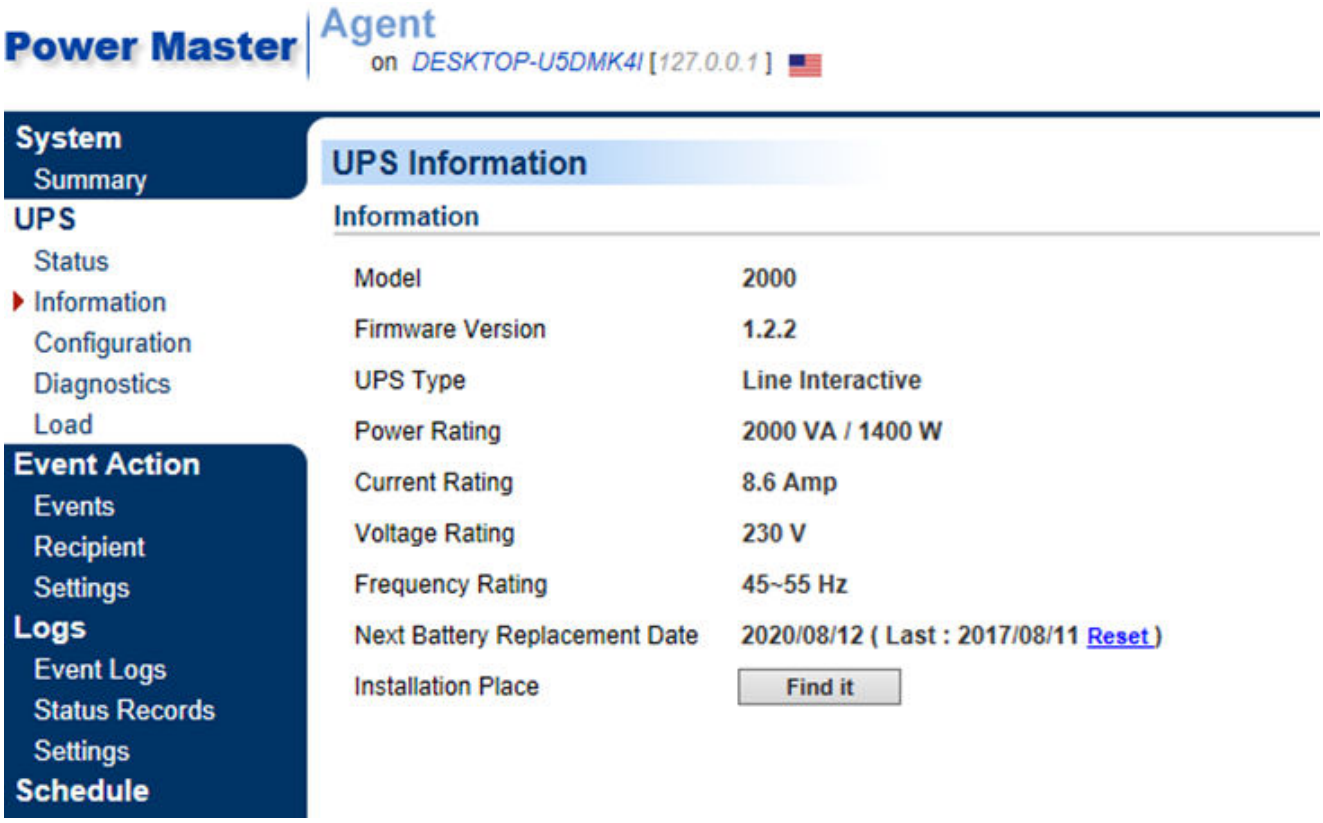
Inverter Extended Overload: The module's inverter has been overloaded for intolerable duration; the UPS will stop output power soon.

Fan Fault: The module fan is faulty. It may cause overheat in module.

- **Shutdown:** The module has been shut down and stopped its output power.

Note: Not all models provide the same information. The information displayed will vary by model.

Information



UPS/Information page of a Altec2000

The UPS/Information page shows information about the UPS:

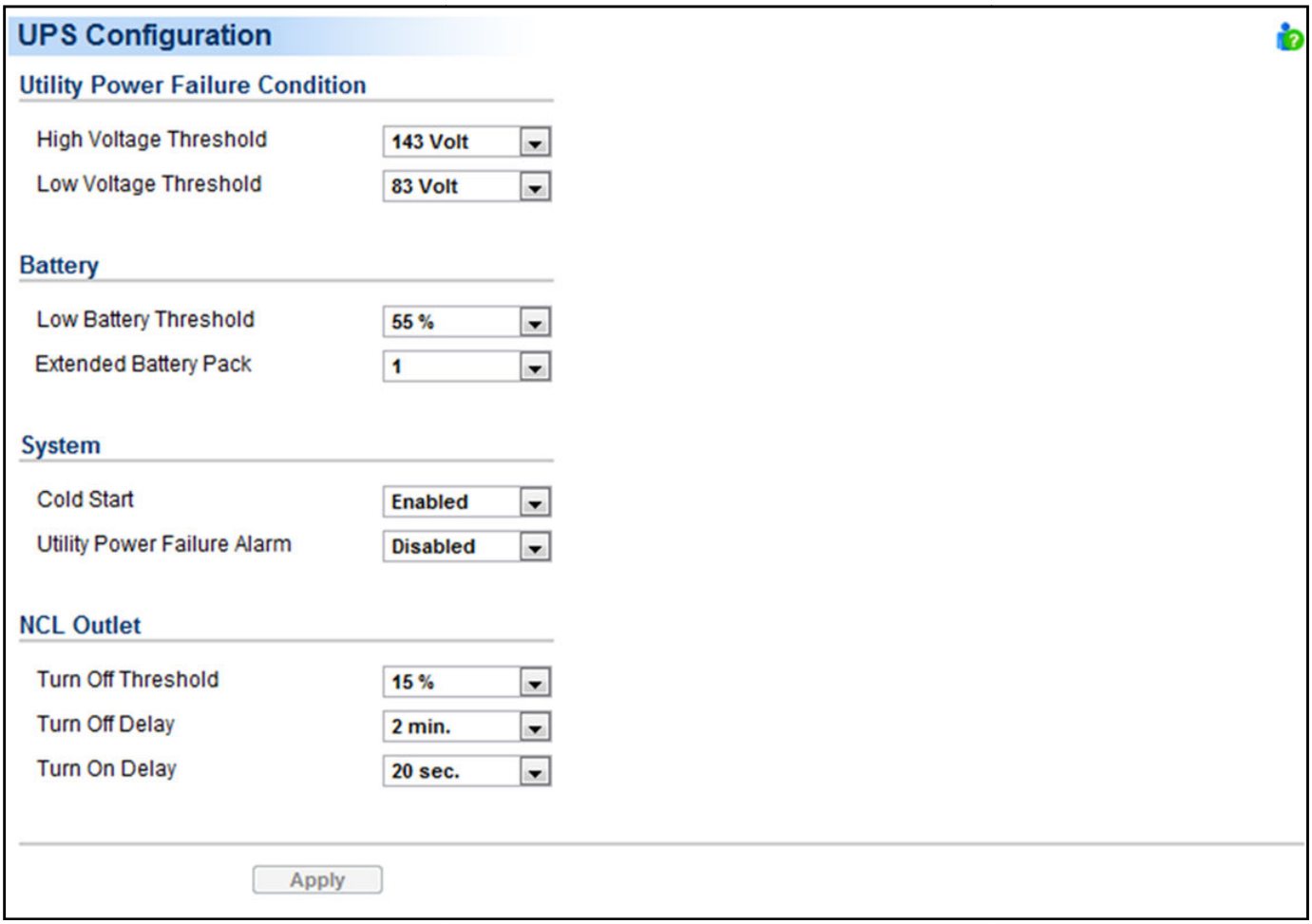
- **Model**: The model name of the UPS.
- **Firmware Version**: The firmware version of the UPS.
- **Serial Number**: The serial number of the UPS.
- **UPS Type**: The type of the UPS. e.g. *On-Line*, *Line Interactive* or *Sinewave Line Interactive*.
- **Power Rating**: The Volt-Amp rating and power rating (Watts) of the UPS.

- **Current Rating**: The output current rating (Amps)of the UPS.
- **Voltage Rating**: The input voltage range (Volts) of the UPS.
- **Frequency Rating**: The input frequency range (Hz) of the UPS.
- **Next Battery Replacement Date**: The next date that the batteries should be replaced. This date only changes based on the Battery Replacement Date.
  Battery Replacement Date is the date that batteries have been replaced. This date should be changed immediately after the battery replacement or when the unit is first purchased. The battery lifetime varies by UPS models. Once battery replacement date is changed, the software will alert the customer when the battery age has reached the lifetime.
- **NCL Outlet**: The amount of the Non-Critical Load outlets.
- **LCD Firmware Version**: The firmware version of the LCD screen on the UPS.
- **USB Version**: The version of the USB chipset on the UPS.
- **Extended Battery Pack**: The amount of extended battery packs connected to the UPS.
- **Installation Place**: Clicking the **Find it** button will ask alarm to beep or indicators to blind in order to inform users of the location. This helps users to identify the specific UPS at installation sites with multiple UPS units.

Note: Not all models provide the same information. The information displayed will vary by model.

Configuration

The UPS/Configuration page allows for customized UPS configurations to meet specific operational requirements.



UPS/Configuration page of a Altec2000

Supplied Power

- **Voltage**: Sets the output voltage which is supplied to the connected equipment.
  *Note: On some models belonging to the **Smart App Online Tower series**, this setting becomes configurable in bypass mode and the changes require a restart to activate.*

- **Frequency Working Mode**: **Smart App Online** series supports two frequency modes: Follow-up and Fixed. In the *Follow-up* mode, the UPS supplies power based off of the utility frequency. If utility frequency varies and is out of tolerance, the UPS supplies battery power with a fixed frequency to avoid supplying the connected equipment an improper frequency. The fixed frequency depends on the utility frequency detected as the UPS is powering up. In *Fixed* mode, the UPS supplies power at a fixed frequency with no regard to utility frequency. When the input frequency is unstable such as with power supplied by generators, set the UPS to fixed mode to supply power with a stable frequency.
  The UPS can be set to fixed mode if the equipment needs a different frequency from the utility power. For example, the equipment is rated at 50 Hz but utility frequency is at 60 Hz.

- **Follow-up Tolerance**: Sets the acceptable range of the output frequency on the Follow-up mode.

- **Fixed Frequency**: Sets the fixed value of the output frequency on the **Fixed** mode.
  Caution: The wrong frequency settings may damage the connected equipment. Make sure the selected frequency is correct for the connected equipment. An alert warning message will remind you of the following conditions:

  - *The frequency mode has changed from the Follow-up mode to the Fixed mode, and the fixed frequency is not equal to the utility frequency.*

  - *The frequency mode is **Fixed** mode and the fixed frequency is going to be changed.*

- **ECO Mode:** The UPS will enter bypass mode according to the utility voltage if it is in range of thresholds or the utility frequency is within 3Hz of the utility frequency. If the utility voltage or the utility frequency exceeds thresholds, the UPS will supply battery power to its loads.
  If this threshold is set to 10% and the current utility voltage is 120 V, the UPS will enter bypass mode as long as the utility voltage within the range of 108 V ~132 V. Once the voltage threshold is exceeded, the UPS will supply battery power to its loads.
  Caution: Once the UPS is made to enter Fixed mode, Generator Mode or Manual Bypass when the UPS is in the ECO mode, the UPS will leave ECO mode.
  Users can configure *exclusive days* and *exclusive time* to tell the UPS when not to enter ECO mode.

  - **Exclusive Days**: Sets the days for UPS not to enter ECO mode.

  - **Exclusive Time**: Sets the time period for UPS not to enter ECO mode.

Power Failure Condition

When the utility power exceeds specific thresholds, the UPS will supply battery power to the connected equipment.

- **Utility Voltage Upper/Lower Bound**: Before utility power is provided to the UPS, the UPS will detect whether utility voltage exceeds the threshold. If utility voltage exceeds the threshold, the UPS will supply battery power to the connected equipment.

- **Output Voltage Upper/Lower Bound**: Before the UPS uses utility power as its output power, the UPS will detect whether utility voltage exceeds the threshold. If the utility voltage exceeds the threshold, the UPS will supply battery power to connected equipment.

  *Note: **High/Low Utility Voltage Threshold & High/Low Output Voltage Threshold** settings only come into effect after a restart of the UPS.*

- **Frequency Upper/Lower Bound**: When the utility frequency exceeds the threshold, the UPS will supply battery power at a fixed frequency to the connected equipment.

- **Detected Sensitivity**: When the UPS detects that utility voltage is out of range, the UPS will switch to battery mode to protect the equipment plugged into the UPS. Low sensitivity has a wider voltage range and the supplied power may vary more. The UPS switches to battery mode rarely and also saves more battery power. The power from a fuel generator may cause the UPS to switch to battery mode more frequently, and low sensitivity is recommended. High sensitivity allows the UPS to supply more stable power to equipment but switches to battery mode frequently.

Power Restore

When a utility power failure occurs, Power Master software may order the computer to shut down and power off after the specified remaining runtime is met or if the battery capacity is low. After the utility power is restored the UPS turns on automatically and supplies power to the computer. If the computer BIOS is set to boot when power is restored the computer will automatically restart.

The following settings are used to configure the UPS restore behavior:

- **Automatic Restore**: When this option is enabled, the UPS will restore output immediately when the utility power is restored. When this option is disabled, the UPS will not restore output at that moment and users have to turn it on manually.

- **Mandatory Power Cycle**: When a shutdown sequence is initiated due to a power failure, the connected computers may be ordered to shutdown and the UPS will be also ordered to turn off after a time delay. If the utility power is restored prior to the UPS shutting off, the UPS will still turn itself off. In this circumstance, the utility power has restored, but the connected computers have shutdown and the UPS has turned off.

  If the *Mandatory Power Cycle* option is enabled, the UPS will also turn off after a time delay, but it will turn on again about 10 seconds later. The UPS has restarted and then all connected computers will boot.

Note: Most computers have the ability to boot when utility power is restored. Make sure this function is supported and enabled in the system BIOS.

- **Recharged Delay**: When the utility power is restored, the UPS will start to recharge until the specified delay is expired before restoring output power.
- **Recharged Capacity**: When the utility power is restored, the UPS will start to recharge until the specified battery capacity is met before restoring output power.
- **Startup Delay**: When the utility power is restored, the UPS will delay the restoration of output power. This option can be used to stagger the startup time of multiple UPS to avoid overloading the utility power circuit or power source. The *Startup Delay* option will take effect every time when the UPS is about to restore power. This also includes the scheduling task.
- **Stable Utility Delay**: When the utility power is restored, the UPS will delay switching to normal operation from using battery power. If the battery capacity is lower than the Low Battery Threshold as power is restored, the UPS will switch to normal operation immediately. This option can be used to prevent frequent outage due to unstable utility power.
- **Restore Action**: Sets the operating mode after utility power restores. If the *Bypass* option is selected, the UPS will enter to bypass mode and supply power from the bypass module to connected equipment when utility power restores. If the *Online* option is selected, the UPS will supply power from the UPS modules to connected equipment when utility power restores. If the *Standby* option is selected, the UPS will be off when utility power restores.

Bypass Condition

The **Online UPS series** supports the bypass function. When the UPS is in bypass mode, the utility power is supplied directly to the connected equipment. To configure whether the UPS is allowed to enter or remain in bypass mode in select from the following:

- **Qualification**: This configures the qualifications the UPS uses to determine if it will enter bypass mode when a UPS fault or overload occurs.
  - Valid Volt. & Freq.: If the utility voltage is in range of the voltage thresholds and the utility frequency is in range of the frequency tolerance, the UPS will enter bypass mode. Otherwise the UPS will stop supplying output power.
  - Valid Voltage: If the utility voltage is in range of the voltage thresholds, the UPS will enter bypass mode. Otherwise the UPS will stop supplying output power.

- Never Bypass: If this option is selected, the UPS will not enter bypass mode and will stop supplying output power.

- **Mandatory**: If this option is enabled, the UPS will enter bypass mode due to a fault or overload, even if the utility voltage is outside of the normal range. Otherwise the UPS will stop supplying output power.
  Caution: Bad utility voltage while in bypass mode may damage the connected equipment.

- **Manually Execution**: Determines whether to allow the UPS to enter Manual Bypass mode. If this *Start* option is selected, the UPS will be forced to enter bypass mode.

  Caution: Make sure that the UPS is not using generator power or converted power. When the UPS enters bypass mode, the UPS will use input power to supply to equipment. The unstable frequency of the input power may damage connected equipment.

  Caution: If this option is enabled, the UPS can't function in Generator mode.

- **Voltage Upper/Lower Bound**: When a UPS fault or overload occurs, the UPS will determine whether to enter bypass mode according to the utility power threshold range. If the utility voltage exceeds thresholds, the UPS will be forbidden to enter bypass mode and will stop supplying output power.

- **Overload**: This configures the ability of the UPS to switch to bypass mode and supply utility power when the output is overloaded. Without this enabled the UPS will stop supplying power when overloaded.

- **Bypass at Power Off**: This determines whether the UPS will switch to bypass mode and supply utility power when the UPS is switched off.

- **Bypass Frequency Tolerance**: If the UPS tries entering bypass mode due to an overload or fault, the UPS will compare the frequency with the Bypass Frequency Tolerance. If the frequency is out of range, the UPS will stop supplying output power.

Battery

- **Prevent Excessive Discharge**: When the UPS uses the battery to supply power for output, a deep discharge with a low load can shorten the battery life. If this option is enabled, the UPS will stop supplying power after discharging for 4 hours to avoid a deep battery discharge.

- **Energy Saving**: When the utility power fails, the batteries will start discharging. If this option is enabled and there is no output load, the UPS will shut down to save battery power after discharging for 5 minutes. The UPS will restart automatically and restore output after the utility power is restored.

- **Low Battery Threshold**: When the UPS supplies battery power and the remaining capacity is lower than this threshold, the UPS will sound an alarm.

- **Battery Pack Type**: sets the type of extended battery packs. When the UPS is installed with standard battery packs, Agent has capability of measurement the runtime according to the capacity of the battery packs. The option should be set *Standard*. When the UPS is installed with customized battery packs, the option should be set *Customization.*

- **Periodical Battery Test**: The UPS will periodically perform the battery test to ensure the batteries are fully functional.

  Note: Only online UPS models support the SBM (Smart Battery Management) function. After batteries are fully charged, the SBM function will invoke a battery test to verify the batteries are healthy.

- **Extended Battery Pack**: Sets the amount of extended battery packs. This allows for an accurate runtime estimate based upon the total number of batteries.

- **Boost Charge Period**: Sets the period for UPS batteries being boost charged automatically and periodically.

- **Discharge Duration Limit**: Sets the duration to limit the battery discharging to avoid a deep discharge excessively.

System

- **Cold Start**: Sets the ability of the UPS to start in the absence of input power. When this option is enabled the UPS can be turned on without having input power.

- **Short Circuit Recovery Detect**: When the output of the UPS causes a short circuit, the output will turn off immediately. If this option is enabled, the UPS will inspect the circumstance of the short circuit3 times in 30 seconds. If the short circuit is no longer present, the UPS will restore power. If the circumstances of the short circuit still remain, the UPS will not supply power.

- **Utility Power Failure Alarm**: If this option is enabled, the UPS will issue an audible alarm when the utility power fails.

- **Overload Alarm Threshold**: When the output load exceeds this threshold, the UPS will issue an audible alarm.

- **Generator Mode:** If the UPS is using a generator for its input power, this option should be enabled for UPS to function normally. If this option is enabled, the UPS will be forbidden to enter bypass mode to protect the powered equipment.

  Caution: *If this option is enabled, the UPS can't function in the Manual Bypass mode*.

- **LCD Back-light Saving:** When no UPS button is pressed or no power event occurs during this delay, the LCD screen will be turned off.

- **Wiring Fault Detecting:** If this option is enabled, the UPS will detect if the UPS wiring is not grounded or reversed. It is recommended to assure the UPS wiring has ground connection first. This option should be enabled if the UPS wiring has ground connection.

- **Dry Relay Function:** This configures the power condition for the UPS dry relay to function when the selected condition occurs. Refer to UPS manual for further information about advanced UPS dry relay utilization. The *Dry Relay Function* provides the following power conditions:
  - **Utility Failure:** The utility power fails and the UPS is using the battery power.
  - **Low Battery:** The battery capacity is low and cannot support the connected computers if they require a shutdown.
  - **Alarm:** The UPS is issuing an audible alarm due to a warning event, such as *Overload*

- **Bypass:** The UPS has switched to bypass mode due to an overload or UPS fault.
- **UPS Fault:** The UPS may be malfunctioning due to an internal problem, such as an inverter fault, bus fault or overheating.

- **Redundant Quantity:** Sets the quantity of UPS modules to be power redundancy. This power redundancy can provide the fault-tolerant protection against failures of equivalent UPS modules. UPS should avoid exceeding output load from whom deducted the power redundancy; otherwise UPS cannot afford the equivalent fault-tolerant protection as user's desire.

NCL Outlet

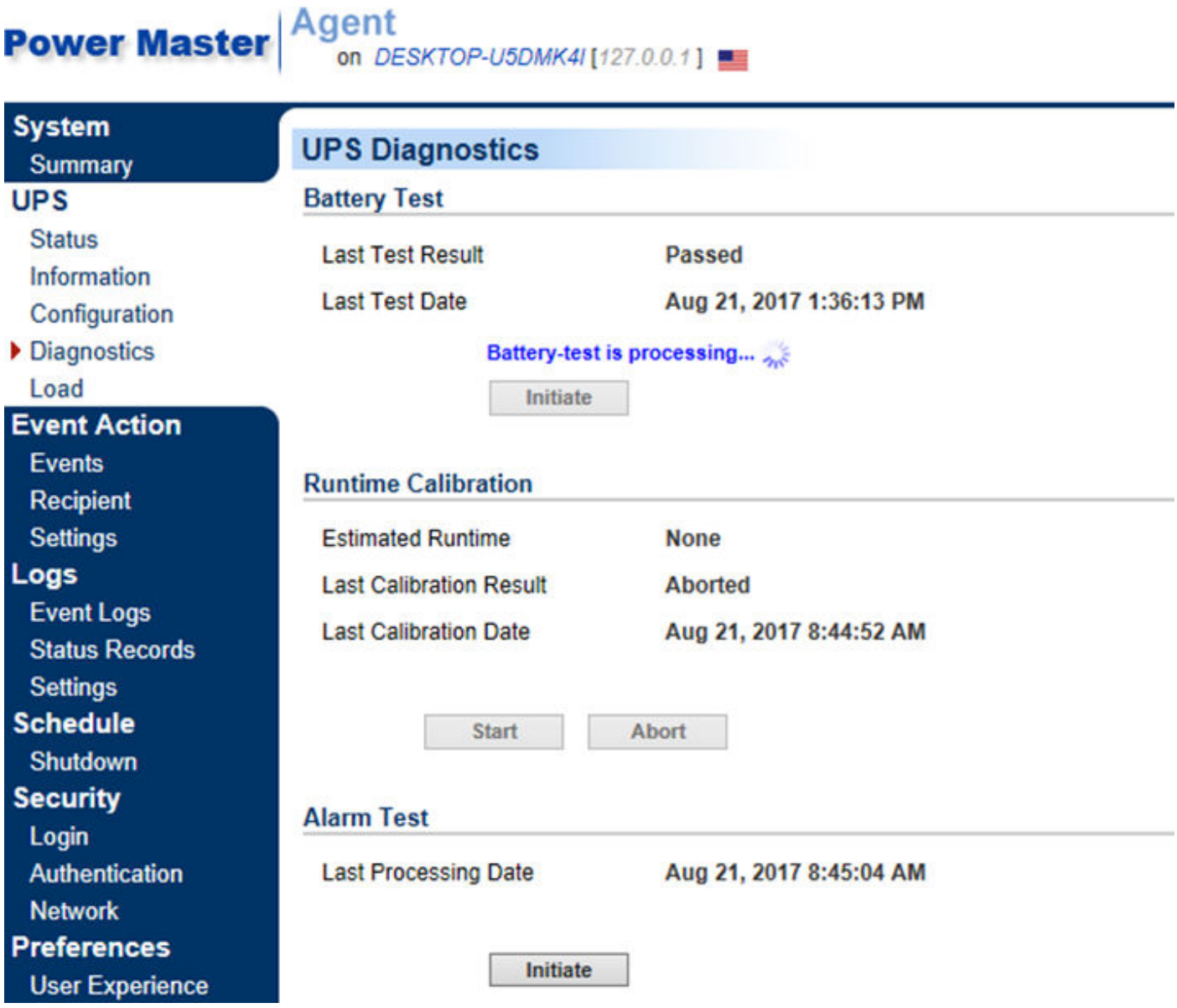
NCL stands for Non-Critical Load. Under the following conditions, the UPS will turn off the NCL outlet to conserve battery power and maximize battery runtime for the remaining outlets:

- **Turn Off Threshold**: When supplying battery power, the UPS will power off this NCL outlet if the remaining battery capacity is lower than this threshold.
- **Turn Off Delay**: When supplying battery power, the UPS will power off this NCL outlet after this delay time is met.
- **Turn On Delay**: When the utility power is restored, the UPS will restore the output of this NCL outlet after the delay time is met. This prevents excessive power consumption caused by all the connected equipment starting at the same time.

Note: Not all models provide the same configurations. These configurations will vary by model.

Diagnostics

The UPS/Diagnostics page provides the ability to verify that the UPS can supply adequate battery runtime for the connected computers to shutdown properly. Perform a complete runtime calibration to ensure an accurate estimate of the runtime for the connected load. The buzzer can be tested to ensure that the UPS can issue an alarm and that the indicator lights will display properly if requested by the UPS.



UPS/Diagnostics page

Battery Test

The Battery Test performs a battery test to verify that the batteries are good, and shows information including the result and the date of the last battery test. Click the Initiate button to begin a battery test. Performing a battery test is prohibited when the **Frequency Working Mode** option is set to *fixed*.

The results will be reported after a battery test completes:

- **Last Test Date**: The date the last battery test was performed.
- **Last Test Result**: The result of the last battery test:
  - **Passed**: The battery performed normally during the test.
  - **None**: The UPS has never performed the battery test.
  - **Failed**: The battery test resulted in failure.

Follow the below steps if the battery test fails:

- Repeat the battery test and replace the batteries if the test fails again.

Runtime Calibration

The Runtime Calibration ensures the runtime estimate is accurate with the current load. The results show the runtime, the result, and the date of the last calibration. When a runtime calibration is initiated, the connected equipment will be run on battery power until the batteries are completely discharged. The batteries will be then automatically recharged following the calibration.

Users can click the Start button to initiate a runtime calibration. Click the Cancel button to interrupt the runtime calibration. The result will be reported after a calibration is finished or canceled:

- **Estimated Runtime**: The estimated runtime of the batteries.
- **Last Calibration Result**: The result of the last runtime calibration.
  - **Passed**: The runtime calibration completed and the batteries are good.
  - **None**: The UPS has never performed a runtime calibration.
  - **Failed**: The UPS failed during the runtime calibration.
  - **Canceled**: The calibration was interrupted.
- **Last Calibration Date**: The date the last runtime calibration was performed.

Note: It is recommended to perform at least one calibration every3 months.
Note:A complete calibration causes the batterycapacity to deplete, Ensure the UPS is recharged completely after performing a calibration.

Alarm Test

The **Alarm Test** allows users to verify that the alarm can beep normally and shows the date of the last test. Click the **Initiate** button to begin an alarm test.

The details will be reported after an alarm test is complete:

- **Last Processing Date**: The date the last alarm test was performed.

Indicator Test

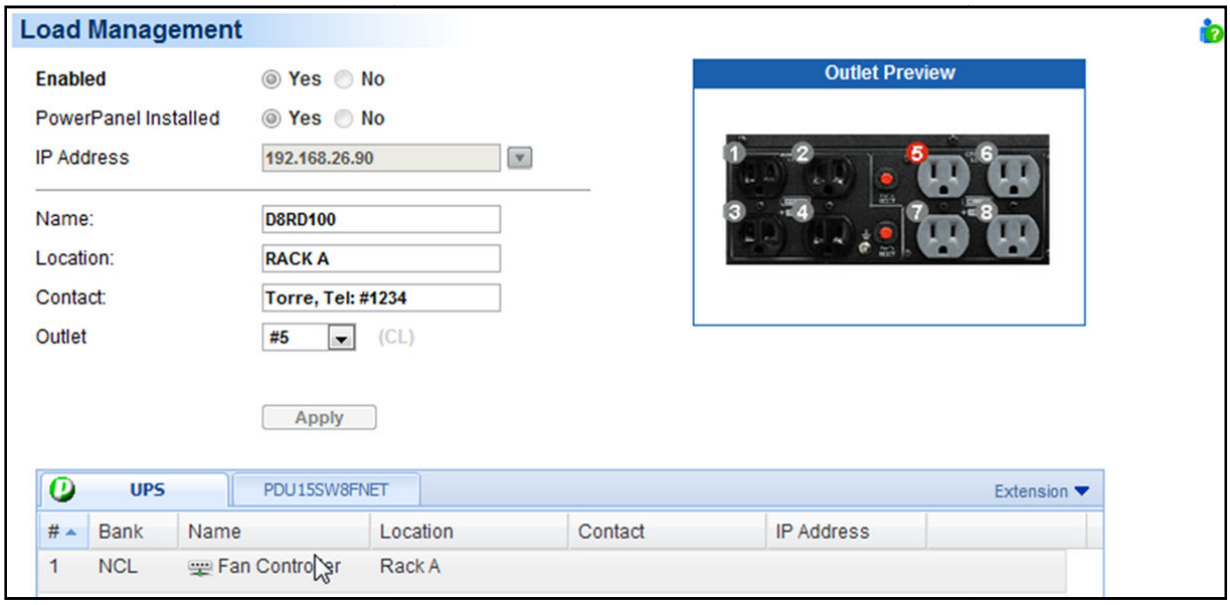
Indicators on the front panel or on the LCD screen are used to present the UPS status. Once the indicators are malfunctioning, users won't know the current UPS status. The **Indicator Test** allows users to ensure whether indicators blink normally. Click **Initiate** button to begin an indicator test.

The details will be reported after an indicator test is complete:

- **Last Processing Date**: The date the last indicator test was performed.

Load

The UPS supplies power to generic equipment and shutdown-protected computers that connect to native outlet sockets of UPS or extended PDU. The UPS/Load page provides detailed information about connected loads and the extended PDU.



UPS/Load page

Manage Loads

Users can manage connected loads that include generic equipment and computers from the **Load Management** page. A UPS and named PDU tabs whose lists contain connected loads. All connected loads can be listed with detailed information including the name, location, contact, and what type of outlet the equipment is plugged in from the list.

- **Plug a load on UPS or PDU**. Select the UPS or one of the named PDU tabs, click the target outlet from the list, and ensure the outlet from the **Outlet Preview** is correct. If you want to plug-in a computer that has installed the Power Master Client software for shutdown protection in a UPS or PDU, click **Yes** on the *Shutdown Protected* option, enter the IP address of computer and then click the **Apply** button to complete. If you want to plug-in generic equipment that has not been installed or cannot install Power Master Client software for shutdown protection in a UPS or PDU, click No on the *Shutdown Protected* option, enter the name and optional information

for the equipment and then click the Apply to complete.

A drop-down list next to the IP address field shows the IP address search result of available computers that have Power Master Client software installed. The refresh button (circular arrow) will start a new search to update the search result. If the target Client is not available in the Client list, change the scanning range on the **Preferences/User Experience** page by clicking **Do not find the target Client?** shortcut.

- **Change the load information**. Click the target load you wish to change from the list. Update the data and then click Apply to complete.
- **Move load's plug to another outlet**. Click the target load you want to move from the list. If you want to move the load's plug from one outlet to another one, assign the target outlet in the *Outlet* option; if you want to move the load's plug from UPS to PDU, from PDU to UPS or between PDUs, assign the target UPS or PDU in the *Device* option, and then click Apply to complete.
- **Unplug the load from UPS or PDU**. Click the target load you wish to unplug from the list. Click **No** on the *Enabled* option and then click Apply to complete.

The Power Master Client software can be installed on computers to benefit shutdown protection in order to ensure a proper shutdown in the extended power outage event and control demands in UPS and extended PDU.

Assigning a correct outlet is important. The *Outlet* option must be configured to match the actual equipment plugged into the UPS outlet. Depending on the UPS configuration of specific models with NCL outlets, these outlets will lose power before the entire UPS is shutdown. The Agent will request Client computers powered by these outlets to perform a shutdown to avoid data loss because of the power outage.

Note: The Client computer name will be displayed in gray if communication with the Client computer is not established.

Manage PDU and ATS

When the PDU or ATS is connected to a UPS as additional outlets, users can manage these PDU/ATS in the list on this page. A named PDU or ATS tab (i.e. PDU15, the tab will have the model name of the PDU/ATS) containing connected generic equipment and computers will be created when a connection is made with a PDU/ATS from UPS, and removed when disconnected.

- **Install a PDU on UPS.** Select **Install PDU** from the dropdown menu by clicking the **Power Distribution** shortcut on the list. If the PDU has network functionality, select *Network* from the *PDU Type* option, enter the network address of PDU and assign the target UPS outlet where the PDU is plugged in; if the PDU does not have network functionality, select *Generic* from the *PDU Type* options, select a PDU model from the *Model* options and enter a name for the PDU. Click **Apply** to complete.
- **Install an ATS on UPS.** Select **Install ATS** from the dropdown menu by clicking the **Power Distribution** shortcut on the list. Assign the target UPS outlet where the ATS is plugged in, select the preferred input source of the ATS to connect with the UPS and enter the network address of ATS. Click **Apply** to complete.
- **Move PDU/ATS's plug to another UPS outlet.** Select the target PDU/ATS tab you want to move. Select **Configure PDU/ATS** from the drop-down menu by clicking the **Power Distribution** shortcut on the list and select another UPS outlet on *UPS outlet* option. Click **Apply** to complete.

- **Uninstall the PDU/ATS from UPS.** Select the target PDU/ATS tab you want to uninstall. Select **Configure PDU/ATS** from the dropdown menu by clicking the **Power Distribution** shortcut on the list. Select *Disconnect PDU/ATS with UPS* option and click **Apply** to complete.
  Note: *When a PDU/ATS is uninstalled from the UPS, all loads include generic equipment and computers on this PDU/ATS will be removed; computers will also no longer retain communication with the UPS.*

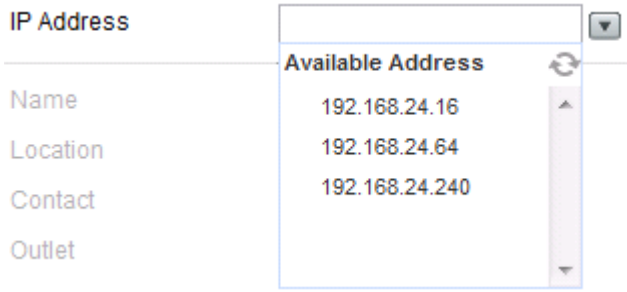
Note. *PDU or ATS may be configured in the* ***Power/Configuration*** *page of Power Master Client's web interface. A named PDU/ATS tab with the tip "Does PDU/ATS connect to UPS?" will appear automatically for users to confirm it.*
Note. *Power Master does not allow ATS to connect two input sources to one single UPS.*

#	Name	Location	Contact	IP Address	
1	DVRD60	Rack A	Torre, Tel: #4321	192.168.24.59	Hosted computer.
2	ERP Server	Rack A	Ray, Tel: #3412	192.168.24.64	
3	Backup Server	Rack A	Madson, Tel: #5566	192.168.24.240	
4	Rounter A	Rack A	Billy, Tel: #1205		
5	Fan Controller	Rack A	Thomas, Tel: #1234		
6					
7					
8					

Client computer is printed in gray when the communication is not established

The details in list are described as following:

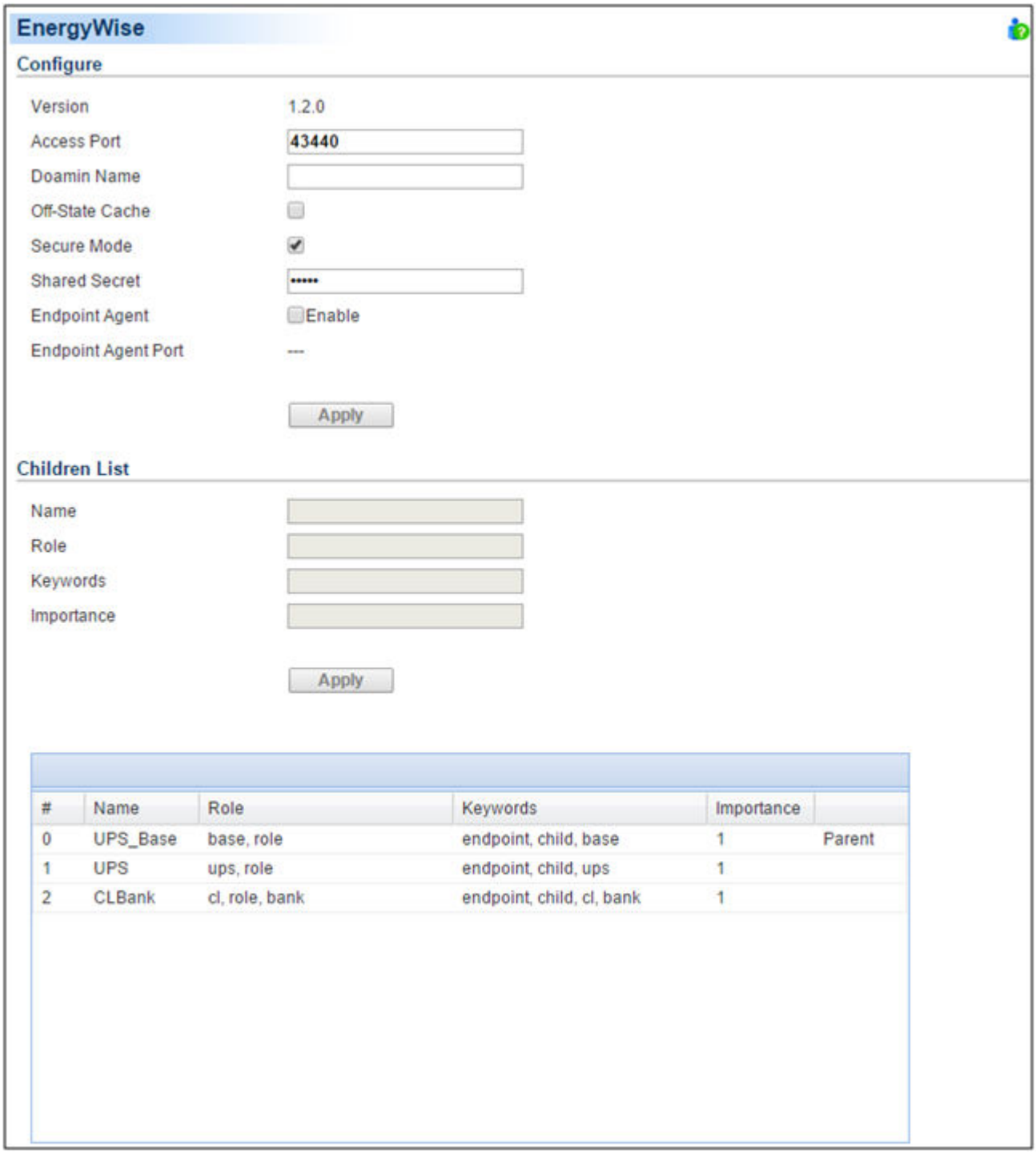
- #: Indicates which power outlet of the UPS or PDU is supplying power to the connected equipment.
- **Bank**: The bank type of the power outlet on the UPS, e.g. *NCL, CL* or *Surge.*
- **Name**: The name of the power equipment.
- **Location**: Where the power equipment is located.
- **Contact**: Who to contact about this power equipment.
- **IP Address**: In UPS tab, a PDU with network function also shows its own IP address.



Agent searches all Clients on local network.

EnergyWise

Cisco Energy Wise technology allows Cisco switches to discover Cisco EnergyWise-controllable devices, keep track of the power use and take actions to reduce the power consumption. The **EnergyWise** page allows users to configure the connection details for Cisco switch and manipulate the device as endpoints in the children list.



Connect with Cisco Switch

Users can enter all required data and click **Apply** to establish connection with the Cisco switch.

- **Access Port:** Sets the port for Agent interaction with the Cisco switch. The default port is 43440.
- **Domain Name:** Sets the domain name for Agent interaction with the Cisco switch. **Off-State Cache:** If this option is enabled, Client will allow its own endpoint d**ata to be cached** on the Cisco switch when it becomes non-operational.
- **Secure Mode:** Determines whether to use the shared secret to interact with Cisco switch.
- **Shared Secret:** Sets the secret for Agent interactions with the Cisco switch.
- **Endpoint Agent:** Determines whether to establish communication with Cisco switch.
- **Endpoint Agent Port:** Displays the port between the Agent and EnergyWise service. Agent will interact with the Cisco switch through the EnergyWise service.

Start EnergyWise Service

In order for Agent to establish the connection with a Cisco switch, users must enter the required data and verify that the data are matched. After *Endpoint Agent* option is enabled, click **Apply** to establish the connection.

Children List

The Agent that has joined into the EnergyWise network will become the endpoint member and can be divided into several nodes in children list. Each node has individual attributes for Cisco switches to manage the power usage.

These attributes describes as following:

- **Name:** Defines the device identity for which query results are filtered.
- **Role:** Defines the function which is based on the business or deployment context.
- **Keywords:** Defines the description for this device for which query results are filtered.
- **Importance:** The device rating which is based on the business or deployment context.

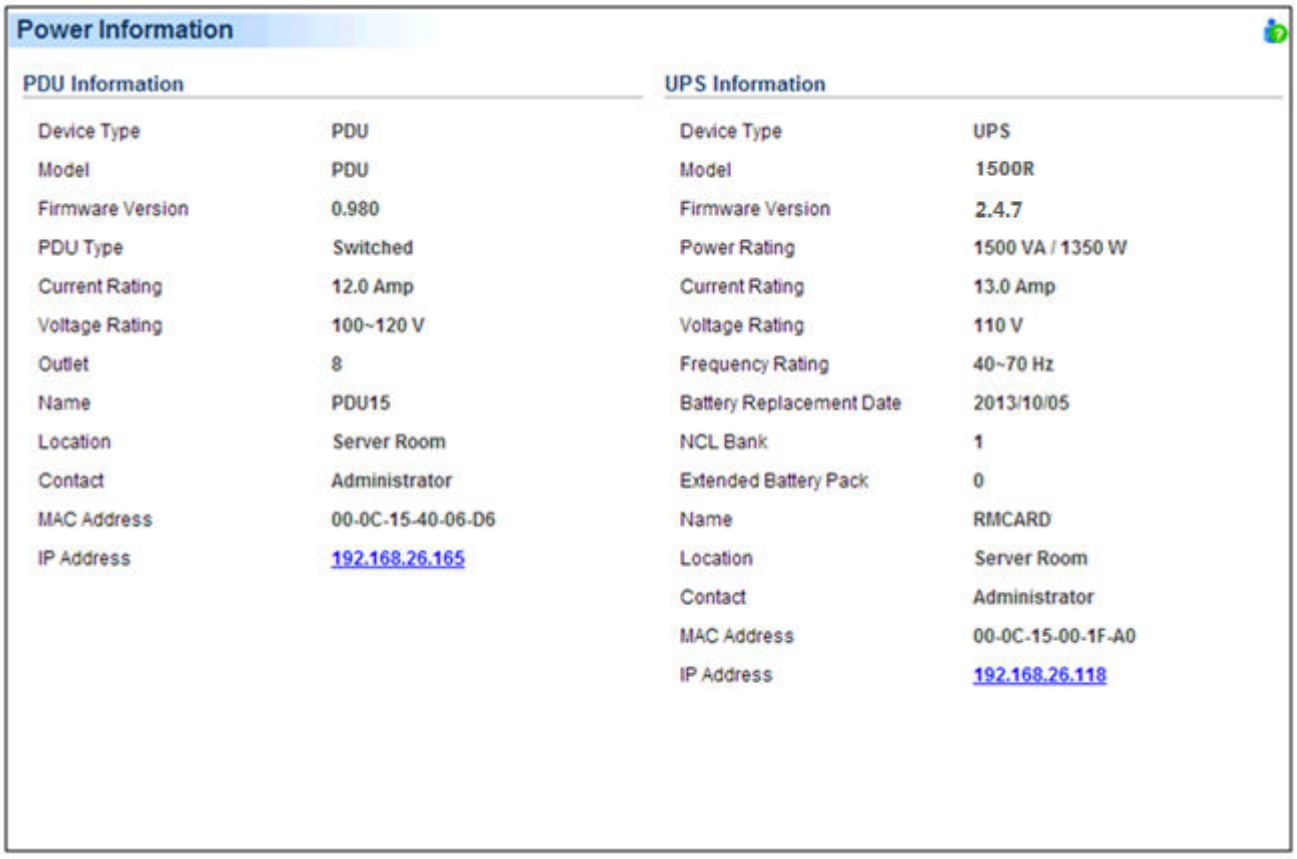
Agent is annotated as the *UPS_Base* node and *UPS* node indicates the UPS unit. According to the outlet function of the UPS, the outlet bank will be managed as *CLBank* node and *NCLBank* node. Due to limitation of the UPS, Cisco switches can only turn on or turn off an *NCLBank* node.

Power

(The content in this section is only applicable to the Client.)

The Client can interact with a UPS or a PDU through a network interface. If the UPS has no remote management card, the Agent can be installed on a single computer which is using a USB or a serial connection directly to the UPS in order to establish the network connection to the Client.

Information



Power/Information page

The Power/Information page shows information about the UPS/PDU/ATS which supplies power to the Client computer. When the Client establishes communication with a PDU which is connected to a UPS, the **Information** page displays the information about the PDU and the UPS individually.

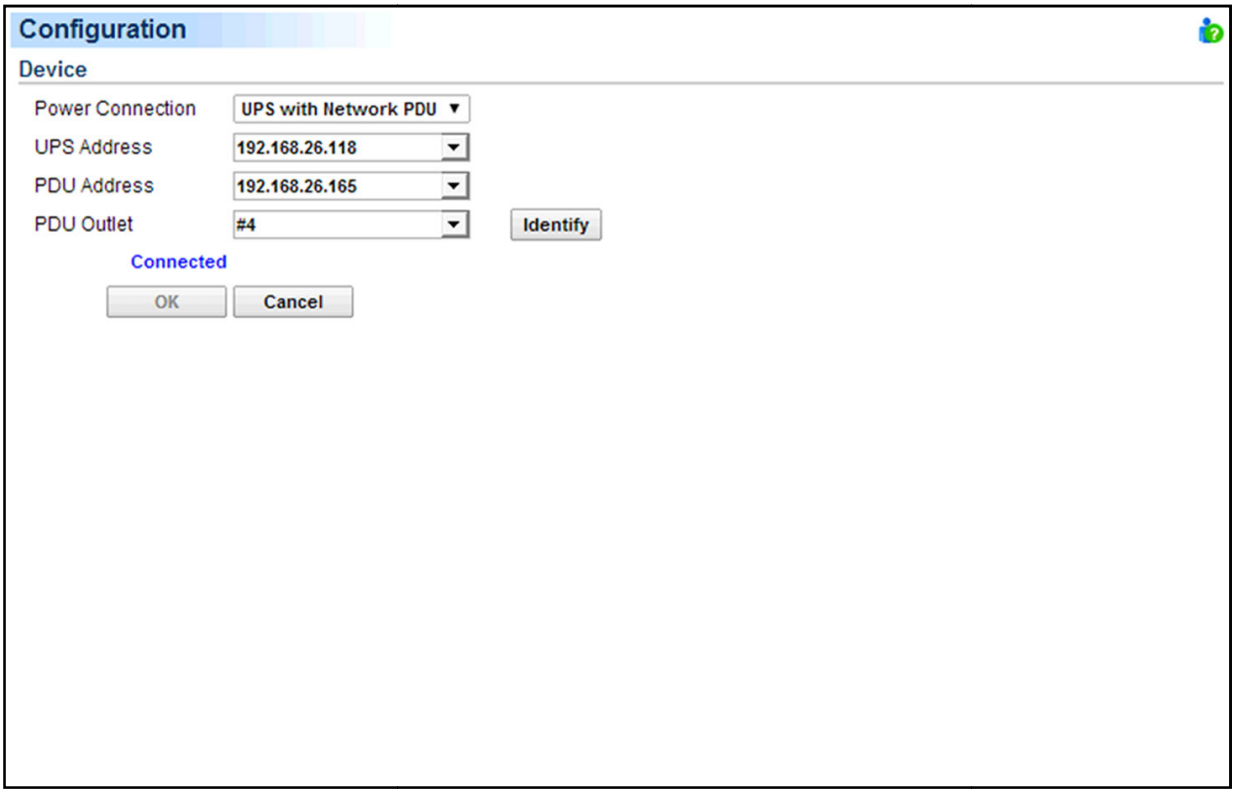
- **Device Type**: The type of the UPS/PDU/ATS, e.g. *UPS/PDU/ATS*.
- **Model**: The model name of the UPS/PDU/ATS.
- **Serial Number**: The serial number of the UPS/PDU/ATS.
- **Firmware Version**: The firmware version of the UPS/PDU/ATS.
- **UPS Type**: The type of the UPS. e.g. *On-Line* or *Line Interactive*.
- **PDU Type**: The type of the PDU. e.g. *Monitored* or *Switched.*
- **ATS Type**: The type of the ATS. e.g. *Monitored* or *Switched.*
- **Power Rating**: The Volt-Amp rating and power rating (Watts) of the UPS.
- **Current Rating**: The output current rating (Amps) of the UPS/PDU/ATS.
- **Voltage Rating**: The output voltage rating (Volts) of the UPS/PDU/ATS.

- **Frequency Rating**: The output frequency rating (Hz) of the UPS.
- **Battery Replacement Date**: The date that the batteries were last replaced.
- **NCL Outlet**: The amount of NCL (Non-Critical Load) outlets in the UPS.
- **Extended Battery Pack**: The number of extended battery packs connected to the UPS.
- **Name**: The name of the UPS/PDU/ATS.
- **Location**: Where the UPS/PDU/ATS is located.
- **Contact**: Who to contact about the UPS/PDU/ATS.
- **MAC Address**: The MAC address of the UPS RMCARD, PDU or Agent's network interface.
- **IP Address**: The IP address of the UPS RMCARD, PDU or Agent's network interface. Click the hyperlink to open the web interface of the UPS RMCARD, PDU or Agent.
- **UPS on Source A**: Indicates which UPS connects to input source A of ATS.
- **UPS on Source B**: Indicates which UPS connects to input source B of ATS.
- **Environment Sensor**: Indicates whether the environment sensor has been installed on the UPS/PDU/ATS. **Note:** When the sensor cannot be detected anymore, it will be annotated *No Response.* Users must click the **Uninstall** option if the sensor has been physically removed from the UPS/PDU/ATS.

Note: Not all models provide the same information. The information displayed will vary by model.

Configuration

In order for computers which have the Power Master Client software installed to be aware of the UPS state and get shutdown protection from power events, the correct connection type, address and connected outlet must be assigned properly in the **Power/Configuration** page.

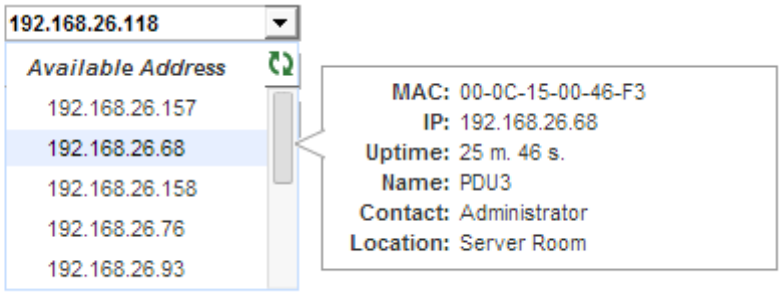


Power/Configuration page

Network communication between a computer and UPS or PDU can be established by assigning the correct power connection, address of UPS or PDU, and a computer connected outlet of UPS or PDU. The details are described as following:

- **Power Connection**: Assigns the actual power connection of how a computer connects to UPS or PDU. The power connections include as below:
  - **UPS**: Indicates the computer is plugged directly into a UPS.
  - **ATS**: Indicates the computer is plugged into an ATS.
  - **Network PDU**: Indicates the computer is plugged into a PDU with network function.
  - **UPS with Network PDU**: Indicates the computer is plugged into a network PDU, which is a power extension from the UPS.
  - **UPS with Generic PDU**: Indicates the computer is plugged into a generic PDU, which has no network function and is a power extension from the UPS.
- **UPS Address**: Assigns the network address of the UPS. Enter the IP address or use the drop down menu to show the device list and select a device address from the list. Clicking the refresh button causes to search the network to update the results. If a UPS communicates with a computer that has Power Master Agent installed, assign the IP address of the computer as the UPS network address. This option appears when the **Power Connection** is set with the **UPS** option.

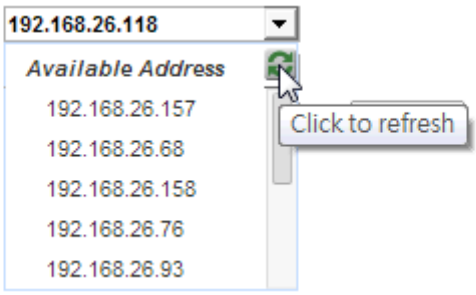
  When the **Power Connection** is set with the **ATS** option, two UPS addresses will appear to be assigned. If an input source for the ATS is a UPS, the network address of that UPS should be assigned to that field. A UPS address field which is left blank, indicates that the ATS does not use a UPS as an input power source.



Move the cursor over the target address to display details about the device

The computer searches the network and uses the device with the least uptime as the default device after an installation. One available outlet will automatically be assigned as powering the connected computer. If no outlet is available, the first critical-load outlet will be assigned as being used by the computer.
The uptime of the devices indicates the length of time that the device has been functioning without interruption. When the computer scans the network, the device with shortest uptime will be marked a yellow star icon. You can press the Reset button for 1 second to reset the uptime of device. This will make the device have the top priority. Do not press the reset button for more than 4 seconds. Otherwise, it will be recognized as a complete configuration reset demand.

If the target device is not available in the device list, change scanning range on the **Preferences/User Experience** page by clicking **Change scan range** shortcut.



Clicking the refresh button to search all devices again on the local network

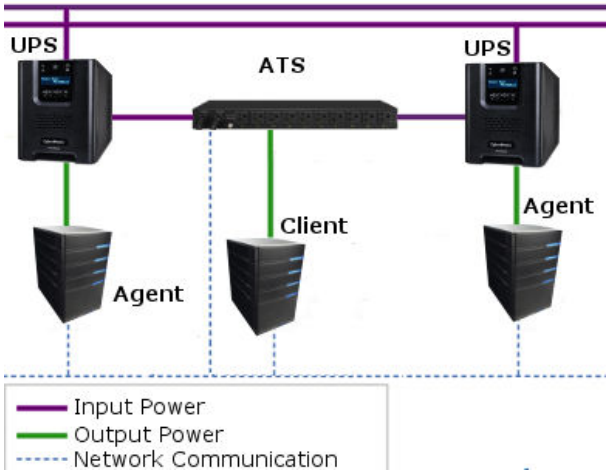
- **PDU Address**: Assigns the network address of the PDU. Enter the IP address or use the drop down menu to show the device list and select a device address from the list. Clicking the refresh button causes to search the network to update the results. This option appears when **Power Connection** is set with the **Network PDU** option.
- **ATS Address**: This option appears when **Power Connection** is set with the **ATS** option.
- **PDU Name**: Select the target generic PDU from list. When the ***UPS with Generic PDU*** option for the ***Power Connection*** setting is used and a UPS address is entered, the computer will fetch the list of installed PDUs from the UPS. If the list is empty, then users must first install the PDU in the **UPS/Load** page of Power Master Agent.
- **UPS Outlet, PDU Outlet and ATS Outlet**: Indicates which power outlet of the UPS/PDU/ATS is supplying power to the computer that has Power Master Client software installed. The outlet list will be updated after entering the network address of the UPS/PDU/ATS. An outlet preview will be shown with the selected outlet so users may verify whether the computer is connected to the proper outlet.
  The Identify button is only visible after the Client has established communication with the network PDU; the identification function helps to identify which outlet has the connected equipment. The PDU will blink the outlet number on the LCD screen to verify the actual connection on the PDU matches when the Identify button is pressed.

How to Configure Proper Power Connection

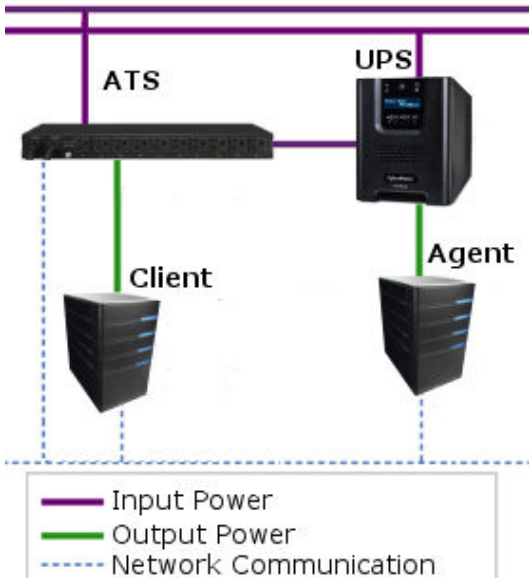
- If Client **only connects with a single UPS or single PDU**, the ***Power Connection*** should be set ***UPS*** or ***PDU***. Enter the required IP address and assign the correct outlet. Click **OK** to establish communication. **Note:** The UPS must have an RMCARD installed or be controlled by a computer which has Agent installed; the PDU must have network functionality.
- If Client **connects with a network PDU that is plugged into a UPS**, the ***Power Connection*** should be set ***UPS with network PDU***. Enter the IP address of UPS. Enter the IP address of the PDU and assign the correct PDU outlet. Click **OK** to establish the communication.
- If Client **connects with a generic PDU that is plugged into a UPS**, the ***Power Connection*** should be set as ***UPS with generic PDU***. Enter the IP address of UPS, choose the according PDU model and assign the correct PDU outlet. Click **OK** to establish communication. Note: A generic PDU is a PDU that has no network functionality.

- If a **computer with Client installed is connected to an ATS**, the ***Power Connection*** should be set to ***ATS***. Enter the IP address of the ATS and assign the outlet. Users should know whether or not the ATS is using a UPS as an input power source before the following configuration:

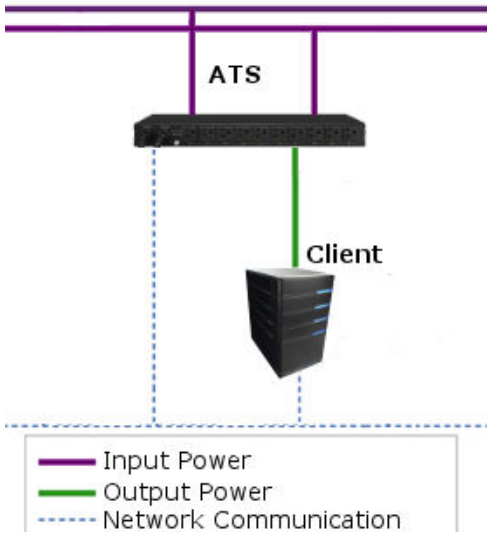
  - If **the ATS is using a UPS for both input power sources**, enter the IP address of UPS individually. Click **OK** to establish the communication.



  - If **the ATS is using a UPS as one of the input power sources**, enter the IP address of UPS for one power source while the other power source should be set to ***None***. Click **OK** to establish the communication.



- If the **ATS not connected to any UPS**, the IP address of UPS for two power sources should be set to ***None***. Click **OK** to establish the communication.



Troubleshooting Communication Problems

If Client is unable to communicate with the power devices, the following steps can help users troubleshoot the issue:

- Verify the network address is correct.
- Verify the network configuration for the UPS or PDU is correct. The Power Device Network Utility tool can be used to configure the network configuration. The tool can be installed from the **tools** folder on the installation CD or downloaded from http://www.cyberenergy.com.
- Verify that the settings in the Security/Authentication page are correct and match the settings of the device. See **Security/Authentication** for more details.
- Verify the port in the **Security/Network** page is matched with the settings for Power Master Agent.
- Check that the network status of computer and devices.
- Verify firewall settings. Port 3052(UDP/TCP), port 53568(TCP), port 162(UDP) and port 53566(UDP) should be unblocked. The computer communicates with the power device on these ports. Verify that the SSL certificate from the Client has been added into the trust list of Agent. If the Client applies a new SSL certificate and is not in the trust list, communication will be lost.

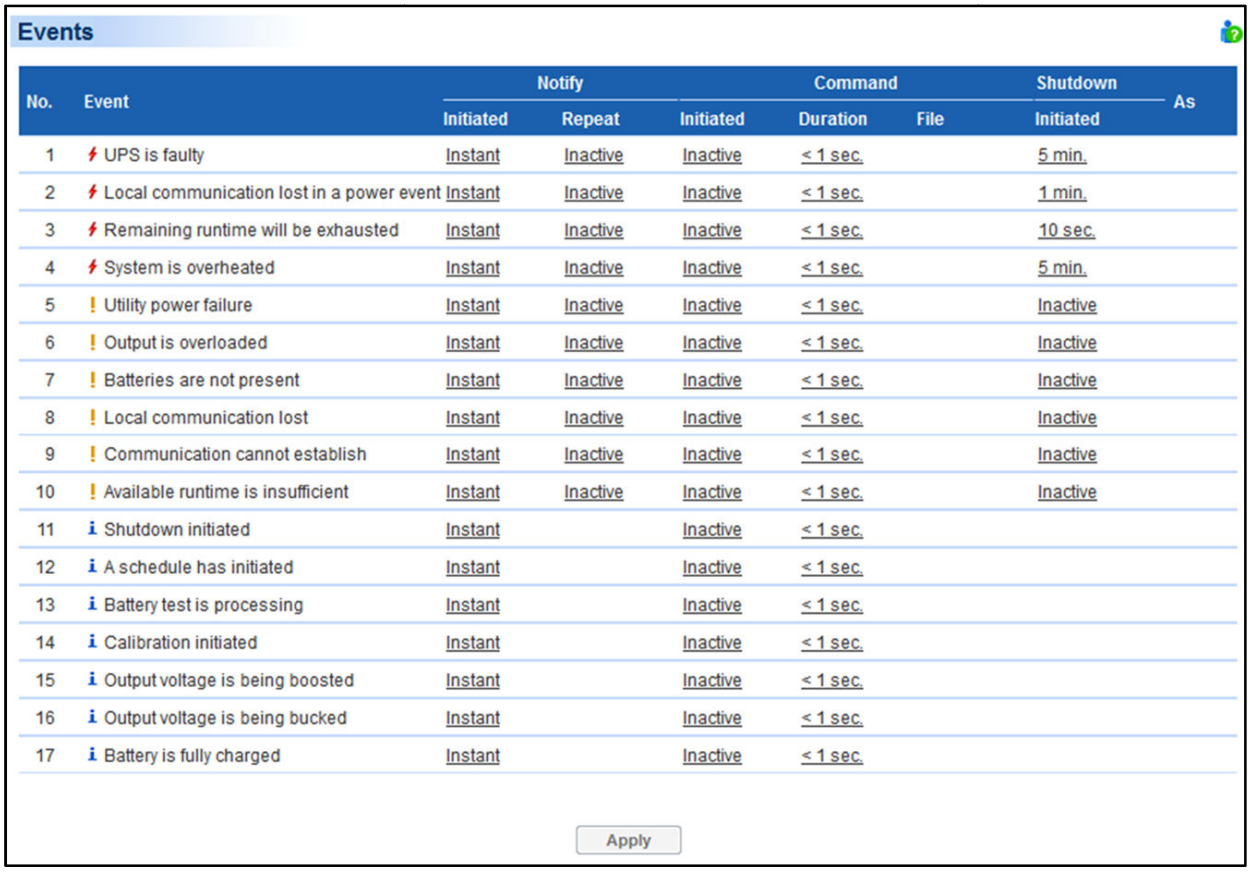
Event Action

An event is generated when the UPS/PDU/ATS encounters specific power conditions. The Power Master software can be configured to respond to specific events and perform actions based on the event. These actions include notification, command execution and computer shutdown.

If a Client establishes communication with a PDU which is connected to a UPS, the Client can generate actions in response to events from the PDU or the UPS.

Events

When an event occurs, Power Master software can notify administrators, execute a command and initiate a computer shutdown sequence. The Event Action/Events page lists events and the action settings for the events. The severity of each event is marked by a symbol. Severe level ( ) indicates users must be alerted and the computer shut down to avoid an improper shutdown. Warning level ( ) indicates a warning and users should be notified when it occurs. If a warning condition persists, a system shutdown may be imminent. Information level ( )indicates the state of the UPS or that the utility power condition has changed.



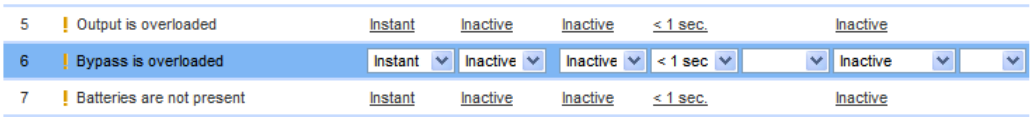
Events

No.	Event	Notify		Command			Shutdown	As
		Initiated	Repeat	Initiated	Duration	File	Initiated	
1	UPS is faulty	Instant	Inactive	Inactive	< 1 sec.		5 min.	
2	Local communication lost in a power event	Instant	Inactive	Inactive	< 1 sec.		1 min.	
3	Remaining runtime will be exhausted	Instant	Inactive	Inactive	< 1 sec.		10 sec.	
4	System is overheated	Instant	Inactive	Inactive	< 1 sec.		5 min.	
5	Utility power failure	Instant	Inactive	Inactive	< 1 sec.		Inactive	
6	Output is overloaded	Instant	Inactive	Inactive	< 1 sec.		Inactive	
7	Batteries are not present	Instant	Inactive	Inactive	< 1 sec.		Inactive	
8	Local communication lost	Instant	Inactive	Inactive	< 1 sec.		Inactive	
9	Communication cannot establish	Instant	Inactive	Inactive	< 1 sec.		Inactive	
10	Available runtime is insufficient	Instant	Inactive	Inactive	< 1 sec.		Inactive	
11	Shutdown initiated	Instant		Inactive	< 1 sec.			
12	A schedule has initiated	Instant		Inactive	< 1 sec.			
13	Battery test is processing	Instant		Inactive	< 1 sec.			
14	Calibration initiated	Instant		Inactive	< 1 sec.			
15	Output voltage is being boosted	Instant		Inactive	< 1 sec.			
16	Output voltage is being bucked	Instant		Inactive	< 1 sec.			
17	Battery is fully charged	Instant		Inactive	< 1 sec.			

Apply

Event Action/Events page in the Agent

After selecting an event, the event will become configurable. Configure all of the action settings for the selected event and apply to save the settings.



5	Output is overloaded	Instant	Inactive	Inactive	< 1 sec.		Inactive
6	Bypass is overloaded	Instant	Inactive	Inactive	< 1 sec		Inactive
7	Batteries are not present	Instant	Inactive	Inactive	< 1 sec.		Inactive

The clicked event item will be configurable.

Use these parameters to configure actions for individual events:

Notify

The administrator can be notified when an event occurs. See **Event Action/Notification Recipient**page for more details about the notification methods and recipient assignment.

- **Initiated**: Determines whether to send a notification or not and sets the notification delay. If the event is cleared within the notification delay, the notification of the occurrence and the event cleared notification will not be sent.

- **Repeat**: Determines whether to send one additional notification after the initial notification. Only events which are of severe-level and warning-level type support a repeat notification.

Command

A command will be executed when an event occurs.

- **Initiated**: Determines whether to execute a command and sets the delay for the command execution. If the event is cleared within the command execution delay, the command for this event and the corresponding event will not be executed.

- **Duration**: Sets the estimated time for the command to complete. If the event requires the computer to shut down, this delay provides time for commands and scripted actions to complete before the shutdown is initiated.

- **File**:Sets a command file to be executed when an event occurs. Shell scripts for the command file uses "cmd" as the filename extension. For more information about shell scripts read the detailed description in the "default.cmd" file in the "extcmd" folder in the Power Master installation directory. Customized shell scripts must be saved in the "extcmd" folder in the Power Master installation directory. The command file will be listed on the *Command/File* list and can be executed when the power event occurs.
  Note**:** *The command file name will be displayed in italics if the command file which had used cannot be found in the "extcmd" folder.*

The following environment variables can be placed in external commands to identify which event and which stage to be executed.

- **%EVENT_STAGE%:** Indicates what stage of firing event to execute the commands. When an event first happens, it enters the **OCCUR** stage and the assigned commands will be executed. When an event is ended, the variable will be **FINISH** and the assigned commands will be executed.

- **%EVENT%:** Indicates which event is fired to execute the commands.

- **%EVENT_CONDITION%:** Indicates which the detailed event condition of a firing event.

- **%MODULE_NO%:** Indicates which UPS module on a firing event. This variable is used on Modular UPS models.

The following table lists all details of **%EVENT%** and **%EVENT_CONDITION%** variables.

%EVENT%	%EVENT_CONDITION%	Event Name
BATTERY_CRITICAL_LOW		Battery capacity is critically low.
ENTER_BYPASS		Enters bypass mode.
BATTERY_EXHAUSTED		Battery has been depleted.
EMERGENCY_OFF		EPO is active.
BATTERY_FULL		Battery is fully charged.
SHUTDOWN		Shutdown initiated.
BYPASS_FAILURE		Bypass power source has failed.
CAPACITY_INSUFFICIENT		Insufficient inverter capacity.
LOSS_REDUNDANT		Not enough power redundancy modules.
ABNORMAL		UPS input abnormality.
	NO_NEUTRAL	No neutral input.
	WIRING_FAULT	Site wiring fault.

FATAL_ABNORMAL[4]		UPS fatal internal abnormality.
	OUTPUT_OVERLOAD	Output is overloaded.
	BYPASS_OVERLOAD	Bypass is overloaded.
	MODULE_OVERLOAD	Module is overloaded.
	SHORT_CIRCUIT	Output circuit-short.
	MODULE_RECTIFIER_OVERHEAT[1]	Module rectifier is overheated.
	MODULE_INVERTER_OVERHEAT[1]	Module inverter is overheated.
	MODULE_INVERTER_PROTECTED[1]	Module inverter is protected.
	BATTERY_REVERSED	The polarity of battery is reversed.
	BYPASS_SEQUENCE_ERROR	The phase sequence of bypass is wrong.
COMMUNICATION_FAILURE[4]		
	LOST_IN_LOCAL	Local communication lost.
	LOST_IN_NETWORK[3]	Network communication lost.
FAULT[4]		
	GENERIC_FAULT	UPS is faulty.
	BYPASS_FAN_FAULT	Bypass fan is faulty.
	BYPASS_FAULT	Bypass is faulty.
	MODULE_RECTIFIER_FAULT[1]	Module rectifier is faulty.
	MODULE_INVERTER_FAULT[1]	Module inverter is faulty.
	MODULE_FAN_FAULT[1]	Module fan is faulty.
NO_BATTERY		Batteries are not present.
RUNTIME_INSUFFICIENT		Available runtime is insufficient.
UTILITY_FAILURE		Utility power failure.
URGENT_COMMUNICATION_FAILURE[4]	LOST_IN_LOCAL	Local communication lost in a power event.
	LOST_IN_NETWORK	Network communication lost in a power event.
RUNTIME_WILL_EXHAUST		Remaining runtime will be exhausted.
OUTPUT_WILL_STOP		The output power is going to stop soon.
INPUT_NEAR_OVERLOAD[2]		Input is near overload.
INPUT_OVERLOAD[2]		Input is overloaded.
SHUTDOWN_TIME_INSUFFICIENT[2]		Shutdown time is in insufficient.
ATS FAULT[5]		ATS is faulty.
ALL_SOURCE_FAILURE[5]		Both input sources have power loss, ATS will not change input source
CURRENT_SOURCE_FAILURE[5]		ATS has automatically switched to redundant power source.
REDUNDANT_SOURCE_FAILURE[5]		ATS redundant power source has experienced a power failure.
ENV_SENSOR_LOST[6]		Environmental sensor is not responsive.
ENV_SENSOR_OVERHEAT[6]		Temperature is over the high threshold.
ENV_SENSOR_UNDERCOOL[6]		Temperature is under the low threshold.
ENV_SENSOR_OVERWET[6]		Humidity is over the high threshold.
ENV_SENSOR_OVERDRY[6]		Humidity is under the low threshold.

[1]*:This event only occurs for the Modular UPS in Agent.*

[2]*:This event only occurs for the PDU in Client.*

[3]*: This event only occurs in Client.*

[4]*: This %**EVENT**% variable must come with a %**EVENT_CONDITION**% variable.*

[5]: *This event only occurs for the ATS in Client.*

[6]: *This event only occurs for the environmental sensor for UPS/PDU/ATS in Client.*

Shutdown

Initiate a shutdown sequence when an event occurs. A shutdown sequence is only initiated by events which are of severe-level and warning-level type.

- **Initiated**: Determines whether to request that the computer be shut down based on the delay before initiating the shutdown sequence. The shutdown will be canceled if the event is cleared during this delay time. The minimum delay time to initiate shut down is based on the time set for the execution of the other actions to complete. This includes the notify delay time, command delay time and command execution time.

As

This feature is used to apply identical settings to the particular event within the same category (Severe, Warning, and Information). Once the *As* field of one event have been assigned, the settings of this event will use the assigned event's settings. The settings of this event will match with an assigned event's.

No.	Event	Notify		Command			Shutdown	As
		Initiated	Repeat	Initiated	Duration	File	Initiated	
1	UPS is faulty	Instant	Inactive	Inactive	< 1 sec.		5 min.	
2	Local communication lost in a power event	**Instant**	**Inactive**	**Inactive**	**< 1 sec.**		**5 min.**	**#1**
3	Remaining runtime will be exhausted	Instant	Inactive	Inactive	< 1 sec.		10 sec.	
4	System is overheated	Instant	Inactive	Inactive	< 1 sec.		5 min.	

*The setting for the **Local communication lost** event would be copied from the settings of the **UPS is faulty** event*

Event List

The **Event List** displays power events. The events displayed vary depending on whether they are listed in Agent or Client and which UPS/PDU/ATS is providing the events.

- **Battery capacity is critically low.** *Battery capacity is critically low; power could be lost immediately.*
- **Local communication lost in a power event.** *Communication with device has been lost during a power event.*

  Communication between the Agent and the UPS using the USB or serial cable has been lost during a power failure.

- **Batteries are not present.** *Batteries are not present; the UPS cannot provide battery power in this condition.*
- **Available runtime is insufficient.** *There is not sufficient runtime for Power Master to perform a complete shutdown based on current configuration even if the battery is 100% charged.*

  An excessive load or long shutdown time may cause this event. Reduce some UPS load or set a more accurate shutdown time to avoid this event.

- **Enters bypass mode.** *Entering bypass mode, battery power protection will no longer be provided.*
- **Utility power failure.** *Utility power failure, battery power will be supplied.*
- **Remaining runtime will be exhausted.** *Based on current configuration settings, the remaining battery runtime will be insufficient unless a shutdown of the connected computer(s) is affected immediately. Please save your work and power down immediately.*

  When the UPS switches to battery mode due to a power event, the battery power will be supplied to Agent computer and all Client computers in order to shut down completely. If battery power consumption continues, the remaining runtime will be exhausted. Agent and all Client computers should start a shutdown procedure immediately.
  The Agent postpones the shutdown until the Clients computers completes the shutdowns; if the remaining runtime is insufficient for Agent to perform a complete shutdown prior to the UPS turning off, the Clients will shut down first to ensure sufficient time for Agent to shut down completely.
  Note: *This event usually indicates that the Agent and Client risked losing battery power, they will have a tolerance of 2 minutes to avoid crashing due to a UPS turning off.*

- **Battery test is processing.** *A battery test is active in order to verify that battery power can be provided normally.*
- **Output voltage is being boosted.** *Output voltage is being boosted from a lower level.*

  The UPS is receiving utility power with low voltage and raising the voltage to a proper level for operating the connected equipment.

- **Output voltage is being bucked.** *Output voltage is being bucked from a higher level***.**

  The UPS is receiving utility power with high voltage and is lowering the voltage to a proper level for operating the connected equipment.

- **Calibration initiated.** *Calibration was initiated, the battery runtime will be evaluated. This process will last until battery power is exhausted.*
- **A schedule has initiated.** *A schedule has been initiated, the system may be shutdown.*
- **Battery is fully charged.** *Battery is fully charged.*
- **Shutdown initiated.** *Shutdown process initiated, the system will shut down or hibernate soon.*
- **ECO Mode is active.** *The UPS has entered ECO mode.*

  The UPS switches to bypass and starts to monitor whether the utility voltage and utility frequency is in range of the thresholds.

- **Battery has been depleted.** *Battery charge is depleted, output power will stop.*
- **EPO is active.***EPO was activated; the UPS output power was turned off immediately.*
  EPO (**E**mergency **p**ower **o**ff) is intended to allow the administrator to have a method of immediately turning off output power from the UPS.

- **Bypass power source has failed.** *Power input from the bypass source is out of regular range or is experiencing a black out. UPS will shut down, Bypass mode will not be activated.*

- **Insufficient inverter capacity.** *There was not enough capacity in the inverter for the UPS to switch from bypass mode to line mode.*

- **Not enough power redundancy modules.** *The internal modules used for redundancy in this UPS have either exceeded their capacity or have failed. The fault-tolerance of this UPS has been reduced or eliminated.*
  Power redundancy provides additional protection against failures of UPS modules. If one module has a fault, the other module will take over. This event will occur when the load consumption are exceeded to use extra power that belong to redundant power, some UPS modules are faulty or manual shutdown.

- **UPS input abnormality.***UPS is working abnormally due to one or more power conditions below:*

  - **No neutral input.** There is no neutral wire connected.

  - **Site wiring fault.** The wiring is reversed or not grounded.

- **UPS fatal internal abnormality.** *The UPS is experiencing one or more of the following fatal abnormalities; UPS may shut down or stop output power unexpectedly.*

  - **Output overload.** *Power consumption exceeds the power rating of UPS. If the overload is sustained, the UPS will shut off.*

  - **Bypass overload.** *Output is overloaded in bypass mode.*

  - **Module overload.** *One of the UPS modules has overloaded. If the UPS module overload is sustained, the UPS module will be shut down for protection.*

  - **Output short circuit.** *Output has short circuited, the UPS will stop supplying power.*

  - **Module rectifier overheating.** *The internal temperature of one rectifier module has exceeded the normal rating.*

  - **Module inverter overheating.** *The internal temperature of one inverter module has exceeded the normal rating.*

  - **Module inverter protected.** *A module inverter has been stopped for protection. The module inverter may be faulty or abnormal.*

  - **Reversed battery connection.** *The connection between UPS and battery has a reversed connection.*

  - **Bypass phase sequence error.** *The sequence of phases is different between utility and bypass.*

- **Communication lost.** *Communication between the UPS and computer has been lost:*

  - **Local communication lost.** *Communication between the UPS and computer via USB or serial cable cannot be established or was lost.*

  - **Network communication Lost.** *Software cannot establish communication with UPS or PDU on the network or established network communication has been interrupted.*

- **UPS is faulty.***UPS has an internal malfunction. The UPS may not be operating properly and will not be able to affect a proper shutdown. Causes include:*

- **Bypass Fan fault.**
- **Bypass Fault.**
- **Module Rectifier Fault.** *A rectifier module is faulty; this module will stop supplying output power.*
- **Module Inverter Fault.** *An inverter module is faulty; this module will stop supplying output power.*
- **Module Fan Fault.** *A fan module has malfunctioned.*

***Note**: **Batteries are not present** and **A schedule has initiated** events are only available in the Agent.*

*More events are available for the **Client**:*

- **The output power is going to stop soon**. *Output power will stop due to power event or user command. The Client will shut down the host computer.*
- **Cannot establish network communication with Power Device**. *Communication with the Power Device has been lost.*

  The Client cannot establish communication with the UPS/PDU/ATS on the network or established communication has been interrupted.

- **Network communication lost with UPS in a power event**. *Communication with the UPS has been lost during a power event.*

  When the utility power becomes abnormal and the UPS is using the battery to supply power, loss of network communication between the Client and the UPS causes the Client to generate a critical priority event because it cannot respond to changes in the status of utility and battery power.

*More events are available for a **PDU** in Client:*

- **Input is near overload**. *A PDU is near an overload condition.*
  The load level is near the maximum safe load for the PDU.

- **Input is overloaded**. *A PDU is in an overload condition.*

  The maximum safe load has been exceeded and the PDU is in an overload condition.

- **Shutdown time is insufficient.** *System shutdown time is insufficient based on the shutdown delay time as configured in the 'output power is going to stop soon' event.*

  After communication with the PDU is established and the outlet assignment is set up, the Client will detect whether the connected outlet has sufficient time to allow for a shutdown. A sufficient shutdown time for the Client computer requires at least the sum of the *Necessary shutdown time* option and shutdown delay time as configured in the *the output power is going to stop soon* event.

*More events are available for an **ATS** in Client:*

- **Both input sources have power loss, ATS will not change input source.***ATS will not switch from one input source to another because both are experiencing power failures.*

When the current source of ATS is power failure, ATS attempts to switch to another source which is functioning well. If both sources of ATS are power failure at the same time, the ATS cannot switch to another source.

- **ATS has automatically switched to redundant power source.** *The primary power source has failed or is experiencing a power event, the ATS has automatically switched to the redundant power source.*
- **ATS redundant power source has experienced a power failure.** *The primary ATS power source is functioning but the redundant source is experiencing a power failure or power event. If the primary power source fails, the ATS will not switch to the redundant power source.*
- **ATS is faulty.***ATS has an internal malfunction and may not operate properly.*

*More events are available for the **environment sensor** within UPS/PDU/ATS in Client:*

- **Environmental sensor is not responsive.** *Environmental sensor of the UPS/PDU/ATS is not responding. The sensor may be malfunctioning or has been removed from the UPS/PDU/ATS.*
- **Temperature is over the high threshold.** *The temperature measured by the sensor has crossed the high threshold.*
- **Temperature is under the low threshold.** *The temperature measured by the sensor has crossed the low threshold.*
- **Humidity is over the high threshold.** *The relative humidity measured by the sensor has crossed the high threshold.*
- **Humidity is under the low threshold.** *The relative humidity measured by the sensor has crossed the low threshold.*

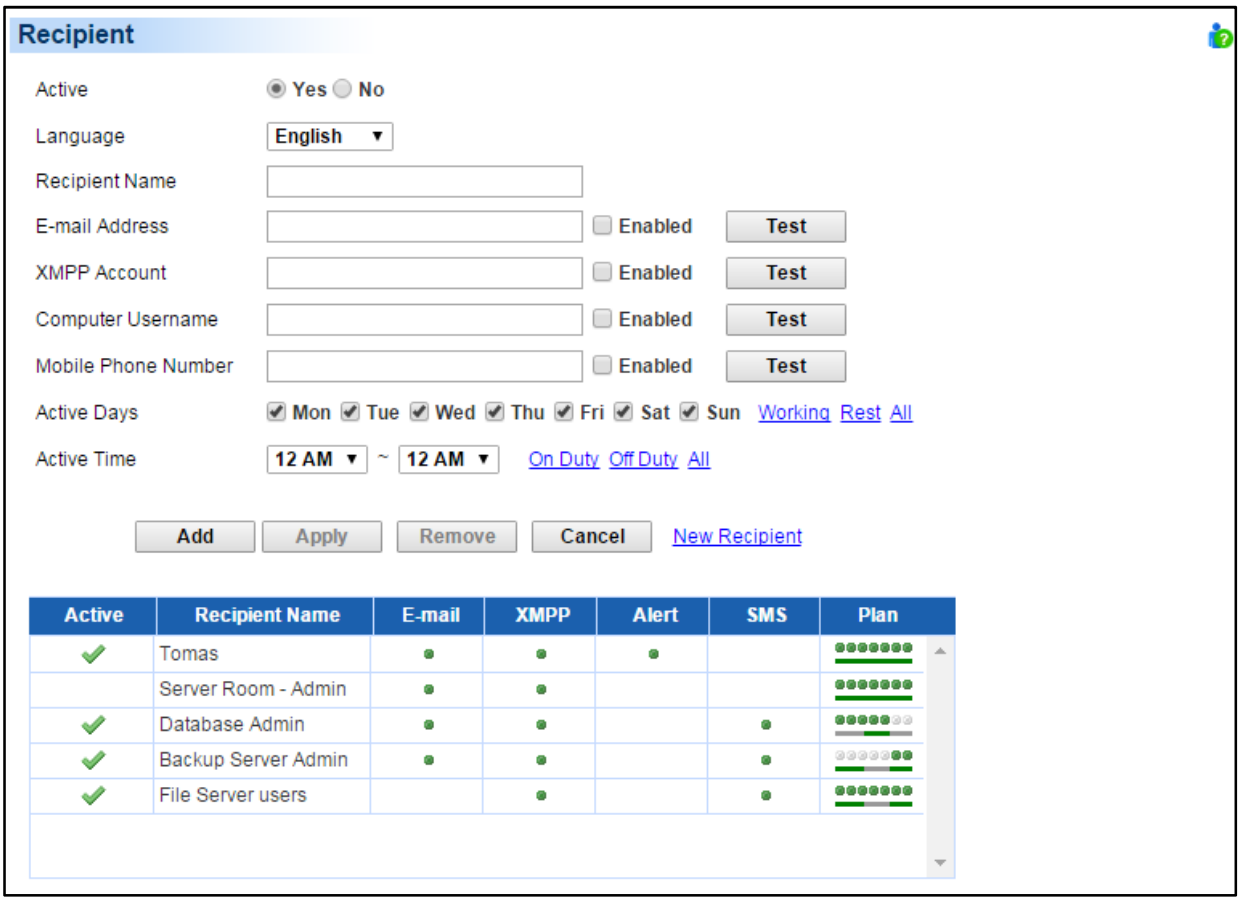
Principles for Client Firing Events

If both input power sources for the ATS are UPS units, failure events will only fire if both UPS units are affected. If there is a single UPS as an input power source (or no UPS), failure events will fire in the case of a power failure.

***Note:** In Client, events will be divided into categories according to its power connection. Each event has individual settings for each category.*

Notification Recipient

The Agent and Client can send notifications to multiple recipients in various ways, including Windows Alert Messages, Instant Messages and Mobile phone text messages (SMS). The Notification Recipient page lists all recipients in the recipient list and displays all defined notifications and whether the notification is active.



Event Action/Recipient page

Recipients can be managed as follows:

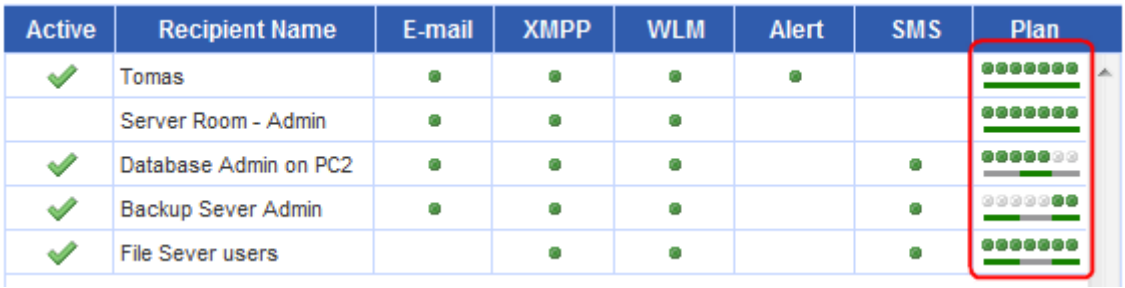
- **Add a new recipient**: Click the New Recipient to have the blank notification recipient fields or use the data from a selected recipient. Enter all required data and click the Add button to add a new recipient to the list.
- **Modify the recipient**: Select the recipient you wish to modify. After entering in the new data, click the Apply button to complete.
- **Remove the recipient**: Select the recipient to remove from the recipient list, and then click Remove to complete the recipient deletion.

The recipient detail settings and descriptions are explained below:

- **Active**: States if the recipient is active.
- **Language**: The language to which the recipient prefers. The notification sent to this recipient uses this language to display content.
- **Recipient Name**: The name of the recipient. The recipient name must be unique.

- **E-mail Address**: The E-mail address of the recipient.
- **XMPP Account**: The XMPP Instant Messaging account of the recipient. See **Event Action/Settings** for more details about XMPP.
- **Computer Username**: The computer user account name which is used to receive the windows alert messages. Due differences in the Messenger Service of different versions of Windows, please refer to the descriptions below:
  - If Power Master and the recipients are on Windows Server 2008,Windows 7, Windows Server 2012 or Windows 8, Windows Server 2016 or Windows 10, and then the alert messages will only be sent to a local user account on the computer running Power Master.

  Note: Computer Name filed and Alert column are only available on the Power Master which installed on Windows. On Linux, if Linux Message service is activated, the message will be sent to all users on the computer.
- **Mobile Phone Number**: The mobile number of the recipient to receive the mobile text message. It must contain the country code.
- **Activation Day**: Configures the days on which recipients can receive the notification. Users can define the specific ways to notify the assigned administrators on different days.
- **Activation Time**: Configures the time which recipients will receive the notification. Users can define the specific ways to notify the assigned administrators during different times.
- **Enabled**: Displays which notification(s) are active for the recipient.
- **Test**: Sends the notification in accordance with current settings in order to verify the function. The service can be tested only when the corresponding service on the Event Action/Settings page is configured as activated.
- **Plan**: The dots and line indicates the specific days and time to send a defined notification to the recipient. When an event occurs at the activated time of the activated days, the notification will be sent to recipients.



The dots and the line indicate the specific time and day of the week to notify the recipient of the event

Action Settings

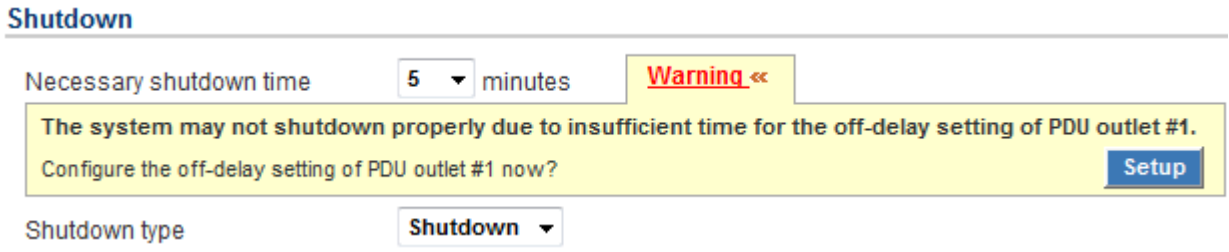
Settings page allows for configuration of various event actions, including the necessary shutdown time of the hosted computer.

After configuring all of the action parameters, and applying the settings, the Verify button can be used to verify whether the user's configurations are correct. To test whether a notification is configured properly and a recipient can receive the notification successfully, use the Test function on the Event Action/Notification Recipient page.

Each action has its own Activate option to specify whether to use the service to send a notification. If No is checked, the Verify button and the corresponding Test function will be disabled. The column displayed in the recipient list will be marked gray to indicate that action is disabled.

Shutdown

- **Necessary shutdown time**: This setting will set the amount of time which Agent and Client computers will take to shut down. The host computer will initiate the shutdown before power is stopped from the PDU or UPS in order to avoid a sudden blackout. This setting should be configured to allow for the normal shutdown time of the computer. When Client connects to a PDU outlet, the shutdown time must be set properly to avoid the delay-off time of the connected inability to support a complete shutdown. When a PDU performs a sequenced off/reboot action, each outlet has a specified delay time (delay-off) before it is turned off. This delay time must be greater than the Necessary shutdown time required by a Client computer. The Client will communicate with the PDU to verify whether this delay time is sufficient. If the delay time is insufficient a warning message will display. The user can expand it and configure the outlet delay-off of the PDU or configure it in the PDU web interface manually. The warning message will be visible until these options are setup properly.
  Note: This function must have write permission. See Security/Authentication for more details. If the Client is given write permission on the PDU it can setup the PDU directly.



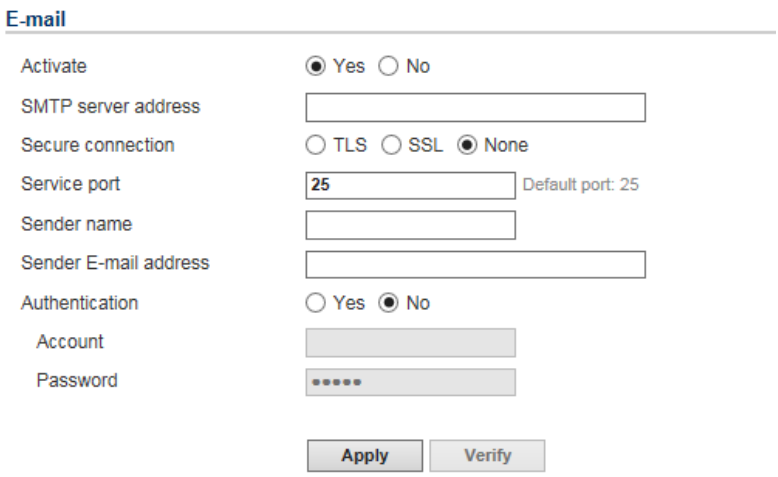
The Client will warn users there is insufficient time for a complete shutdown in the PDU.

- **Shutdown type**: This setting will specify the manner in which the Agent/Client computer is shutdown. The options are Shutdown or Hibernation. The Hibernation option is only visible on operating systems and hardware that support hibernation. When the Agent/Client shuts down the hosted computer using a Shutdown, any unnamed files will be saved automatically in a folder named Auto Saved in the My Documents folder.

- **Save opened file & log off:** When a power event occurs, the computer will shutdown in minutes. This setting is used to determine whether to save open files on desktop and then log off before the computer is shutdown.

- **Also turn off UPS**: This setting is used for Agent to determine whether to turn off the UPS after the Agent and all Client computers are shutdown completely. If **Yes** is checked, the UPS will be turned off after the Agent computer shutdown. The output power supplied to all equipment will also be turned off. If users wish that all equipment can continue being supplying power by the UPS after the Agent computer shutdown, this setting should be checked **No**.

E-mail

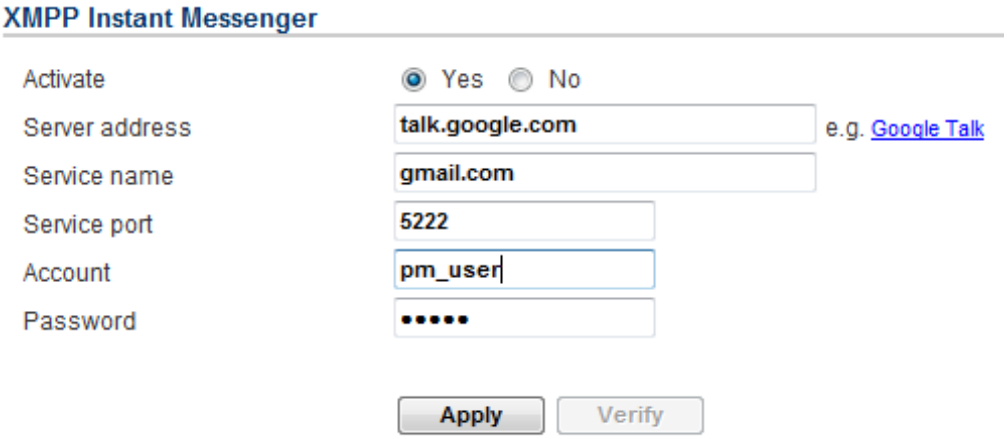


Email service

- **Activate**: Specify whether the Agent/Client can use E-mail to send an email notification to recipients.
- **SMTP server address**: Configure the SMTP server that will be used to send E-mail to a recipient's mailbox.
- **Secure connection**: Sets which secure connection for the SMTP service to sent the E-mail.
- **Service port**: Sets the port number for the SMTP service to use.
- **Sender name & Sender E-mail address**: Configure the sender information for the E-mail.
- **Authentication**: Configure whether the SMTP server requires authentication or not. If authentication is required complete the necessary account and password field.
- **Account**: Sets the account to access the SMTP server.
- **Password**: Sets the password for the account.

XMPP Instant Messaging

The XMPP (Extensible Messaging and Presence Protocol) is an open protocol for instant messaging. Users can setup the configuration to receive instant messages when an event has occurred. Users may contact a network administrator to verify if there is a XMPP Instant Messaging server in the network. If there is no XMPP Instant Messaging server, Google talk service can be used. Google Talk software can be downloaded and installed or Gmail can be used to receive event notifications via Google Talk. A local network XMPP Instant Messenger server can be setup by downloading open source XMPP Instant Messenger server software, such as **Openfire**. More server software information can be found on **XMPP server software list**.



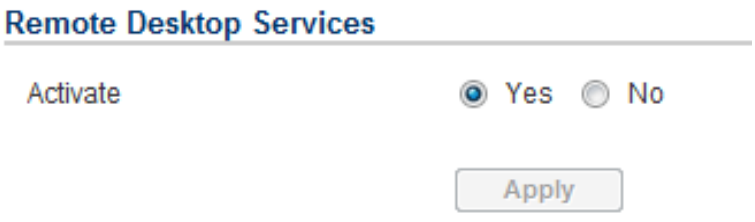
XMPP Instant Messaging service

To use XMPP Instant Messaging, users must provide a unique XMPP Instant Messaging Service account as a sender and assign different account as a receiver on Event Action/Notification Recipient page.

- **Activate**: Specifies whether the Agent/Client XMPP Instant Messaging service to notification is active or inactive.
- **Service address**: Sets the XMPP server address according to your XMPP Server configuration. Select Google Talk to use predefined settings for Google Talk service.
- **Service name**: Sets the service name on an XMPP Instant Messaging server. This option is usually not required. Contact the systems administrator of the server for the service name if required.
- **Service port**: The port number which the XMPP Instant Messaging server will use.
- **Account**: Sets the account to access the XMPP Instant Messaging server.
- **Password**: Sets the password for the account.

Note: *In order to make sure that the sender can send the XMPP notification to recipients, recipients should accept the invitation from sender.*

Terminal Services/Remote Desktop Services



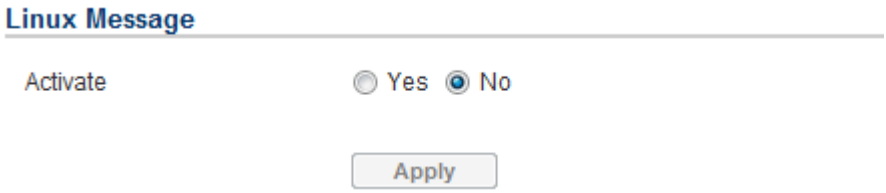
Messenger service

Messenger Service/Terminal Services/Remote Desktop Service only works on Windows platforms. Options are explained below:

- **Activate**: Specify whether to use this service to send a notification to recipients. If the service is not started, clicking **Yes** option will also start the service.

Note: Terminal Services is available on Windows Server 2008, and Remote Desktop Services is available on Windows 7 and Server 2008 R2 and Windows Server 2012 or Windows 8 and Windows Server 2016 or Windows 10.

Linux Message



Linux Message

- **Activate:** Specify whether the Agent and Client can use this service to send a notification to all users accessing to this hosted computer.

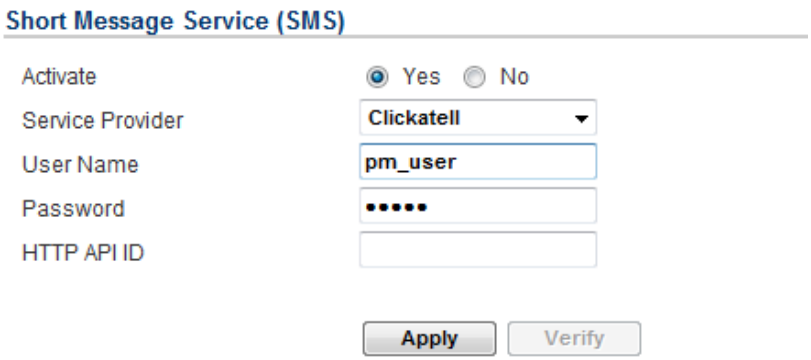
Note: *Linux Message service is only available of the Linux.*

Short Message Service (SMS)

Short Message Service (SMS) is a communication service used by mobile communication systems, using standardized communications protocols allowing the interchange of short text messages between mobile devices.

The Agent/Client sends mobile text messages to a receiver's mobile phone using an online SMS service. Users can choose**Clickatell**as a platform to send SMS or any SMS provider which sends a message via E-mail or HTTP. All account information and E-mail/HTTP specification must be acquired from the service provider before using SMS. The different SMS providers are described below:

- **Service provider is *Clickatell***:
  Select the Clickatell option at the *Service Provider* field. Complete all the account details from Clickatell with the*Username*,*Password* and *HTTP API ID*fields. The Verify function can be used once the *Activate>YES* option is checked and this option is selected and parameters are applied.



SMS(Short Message Service) service

- **Service provider accepts *HTTP POST* to send messages**:
  This specification from an SMS provider is required before using the HTTP POST method to deliver messages to

SMS providers. Select the Using HTTP POST option at the *Service Provider* field. Insert EVENT_ACTION_PHONE_NUMBER as recipient's mobile phone number and EVENT_ACTION_MESSAGE as the event message content described in the specification, and fill in the *URL* and *POST BODY* fields. The expressions will be replaced by the relevant content before the Agent/Client sends a notification to the SMS provider.

e.g.

URL:*http://send-sms-company.com/sms*
POST Body:*user=xxxxxx&password=xxxxxx&to*=EVENT_ACTION_PHONE_NUMBER
&text=EVENT_ACTION_MESSAGE

- **Service provider accepts *HTTP GET* to sends messages**:
  This specification from the SMS provider is required before using the HTTP GET method. Select theUsing HTTP GET option at the Service Provider field. Insert the EVENT_ACTION_PHONE_NUMBER as recipient's mobile phone number and the EVENT_ACTION_MESSAGE as event message's content described in the specification, and fill in the *URL* field. The expressions will be replaced by relevant content before the Agent/Client sends a notification to SMS provider.

  e.g.

  URL:*http://send-sms-company.com/sms?user=xxxxxx&password=xxxxxx&to*=EVENT_ACTION_PHONE_NUMBER&*text*=EVENT_ACTION_MESSAGE

- **Service provider accepts *E-mail* to send messages**:
  This specification from an SMS provider is required before using the E-mail to deliver the messages to SMS providers. Select the Using E-mail option at the *Service Provider* field. InsertEVENT_ACTION_PHONE_NUMBER as recipient's mobile phone number and theEVENT_ACTION_MESSAGE as event message content described in the specification. Fill in the*Address*,*Subject*and *Content* fields. The expressions will be replaced with relevant content before the Agent/Client sends a notification to the SMS provider.

  e.g.

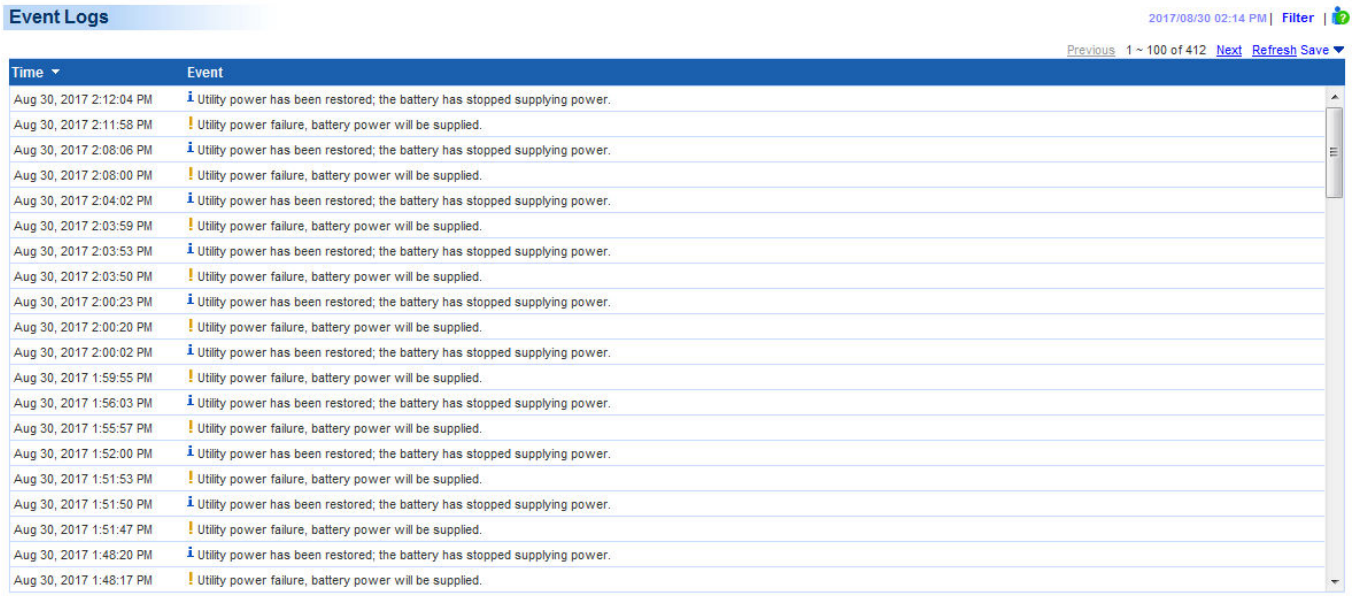
  Address: *sms@send-sms-company.com*
  Subject: *xxxxxx*
  Content: *user:xxxxxx*
  password:xxxxxx
  to:EVENT_ACTION_PHONE_NUMBER
  *text:*EVENT_ACTION_MESSAGE

Note: *Each message sent by the SMS system through the SMS provider will be subject to the SMS provider fee.*

Logs

Event Logs

Logs/Event Logs page lets you view logs that record power event details in the Agent or the Client. The logs can be analyzed to determine whether the system and the power device are operating correctly.

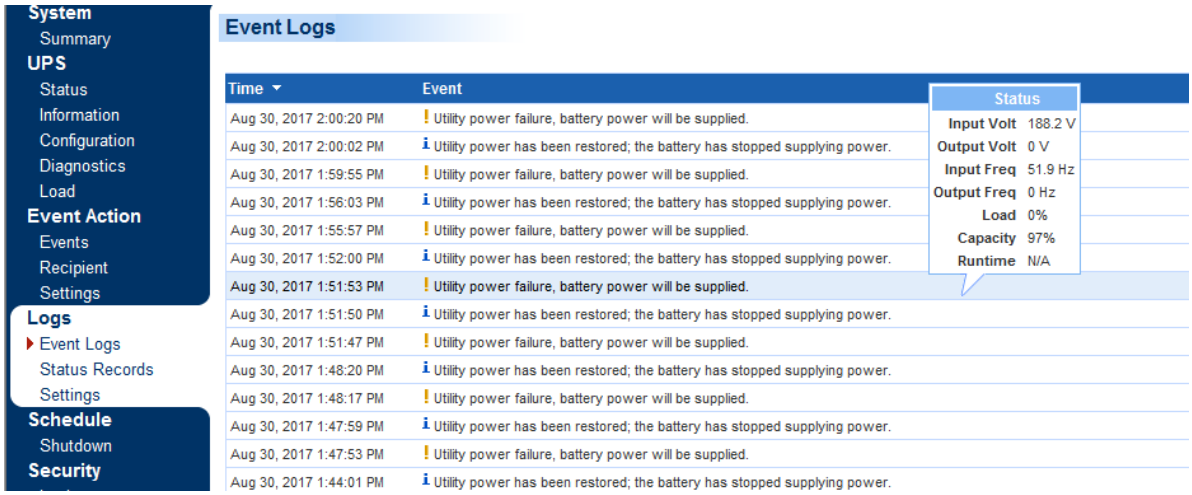


Logs/Event Logs page

Using the **Previous** and **Next** at the upper right corner of the event log list helps users to view the other range of filtered log result backward or forward. Clicking **Refresh** will update the log result to display in the list according to the current filter options and paging settings.

The time displayed at the upper corner displays the local time of the hosted computer. This time may be different from the time on your computer.

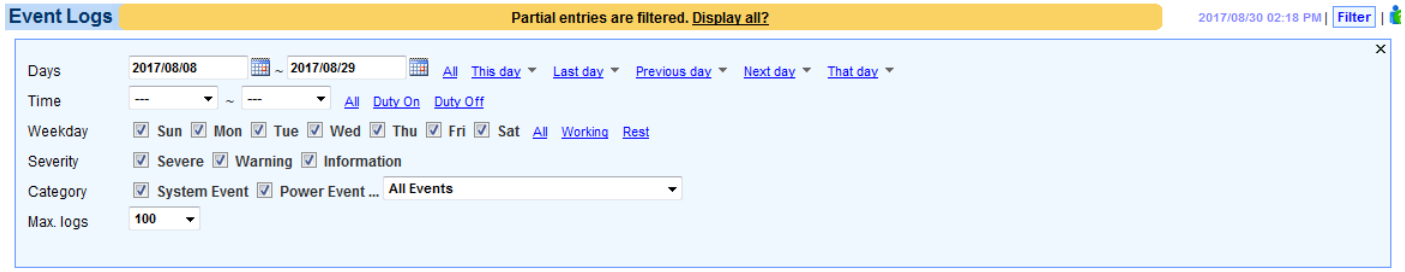
Detailed power status from the time of the event can be viewed in a pop up window when moving the mouse over a selected event.



A pop-up status window is displayed from the selected event.

Filter

The following filter options can be utilized by selecting **Filter** in the upper right corner. Once the configuration of the filter pane is configured; the logs will be requested and displayed.



Filter pane on Logs/Event page in Agent

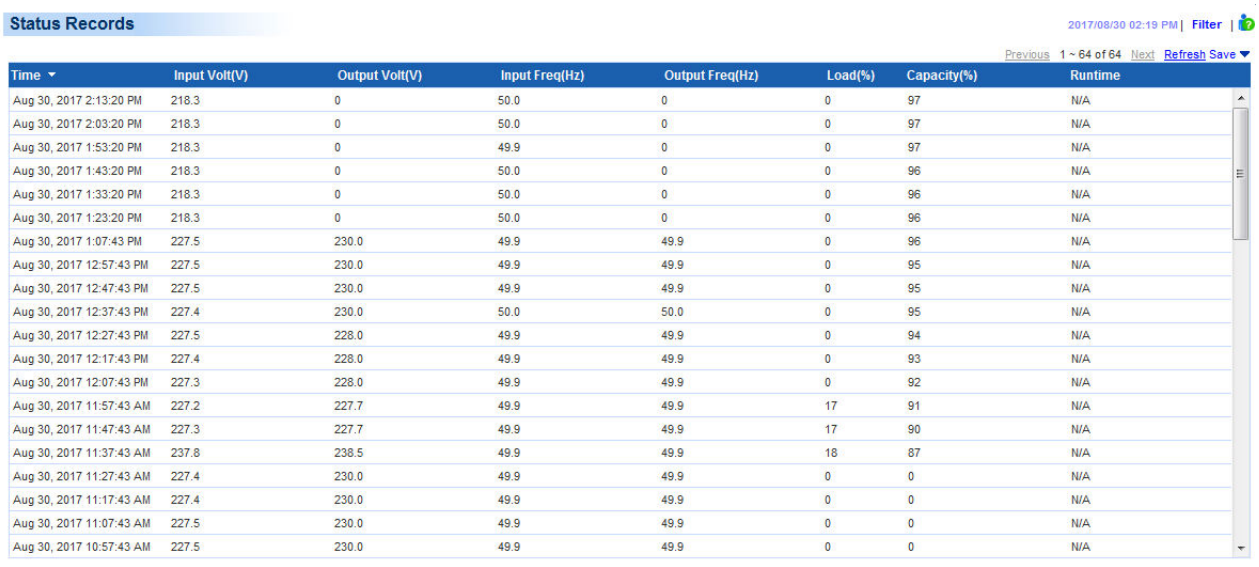
- **Days**: Selects the day(s) for the events to be displayed. The dropdown menus next to the **Days** setting can be used for additional preconfigured filters.
- **Time**: Selects the time range for the events.
- **Weekday**: Choose the days of the event occurrence.
- **Severity &Category**: The events can be filtered by category and severity. The events can be further divided by Power Event and System Event categories, and choosing the specific event. Even the events can be also filtered out by the specific device type in Client. When any event option is selected from the event list, the logs only related to this event will be displayed.
- **Max**. logs: Indicates the maximum number of events that will be displayed.

Export

Click the **Save** shortcut at the right upper corner of the event log table and select **CSV** or **PDF** file as the export file format. The exported file will be saved in the default download directory of your web browser.

Status Records

The Logs/Status Records page is used to view the logs of the UPS status. This page is only available for the Agent.



Time	Input Volt(V)	Output Volt(V)	Input Freq(Hz)	Output Freq(Hz)	Load(%)	Capacity(%)	Runtime
Aug 30, 2017 2:13:20 PM	218.3	0	50.0	0	0	97	N/A
Aug 30, 2017 2:03:20 PM	218.3	0	50.0	0	0	97	N/A
Aug 30, 2017 1:53:20 PM	218.3	0	49.9	0	0	97	N/A
Aug 30, 2017 1:43:20 PM	218.3	0	50.0	0	0	96	N/A
Aug 30, 2017 1:33:20 PM	218.3	0	50.0	0	0	96	N/A
Aug 30, 2017 1:23:20 PM	218.3	0	50.0	0	0	96	N/A
Aug 30, 2017 1:07:43 PM	227.5	230.0	49.9	49.9	0	96	N/A
Aug 30, 2017 12:57:43 PM	227.5	230.0	49.9	49.9	0	95	N/A
Aug 30, 2017 12:47:43 PM	227.5	230.0	49.9	49.9	0	95	N/A
Aug 30, 2017 12:37:43 PM	227.4	230.0	50.0	50.0	0	95	N/A
Aug 30, 2017 12:27:43 PM	227.5	228.0	49.9	49.9	0	94	N/A
Aug 30, 2017 12:17:43 PM	227.4	228.0	49.9	49.9	0	93	N/A
Aug 30, 2017 12:07:43 PM	227.3	228.0	49.9	49.9	0	92	N/A
Aug 30, 2017 11:57:43 AM	227.2	227.7	49.9	49.9	17	91	N/A
Aug 30, 2017 11:47:43 AM	227.3	227.7	49.9	49.9	17	90	N/A
Aug 30, 2017 11:37:43 AM	237.8	238.5	49.9	49.9	18	87	N/A
Aug 30, 2017 11:27:43 AM	227.4	230.0	49.9	49.9	0	0	N/A
Aug 30, 2017 11:17:43 AM	227.4	230.0	49.9	49.9	0	0	N/A
Aug 30, 2017 11:07:43 AM	227.5	230.0	49.9	49.9	0	0	N/A
Aug 30, 2017 10:57:43 AM	227.5	230.0	49.9	49.9	0	0	N/A

Logs/Status page

Additional log pages can be accessed by selecting **Previous** and **Next** in the upper right corner of the **Status Records** page. Clicking **Refresh** will update the log result to display in the list according to the current filter options and paging settings

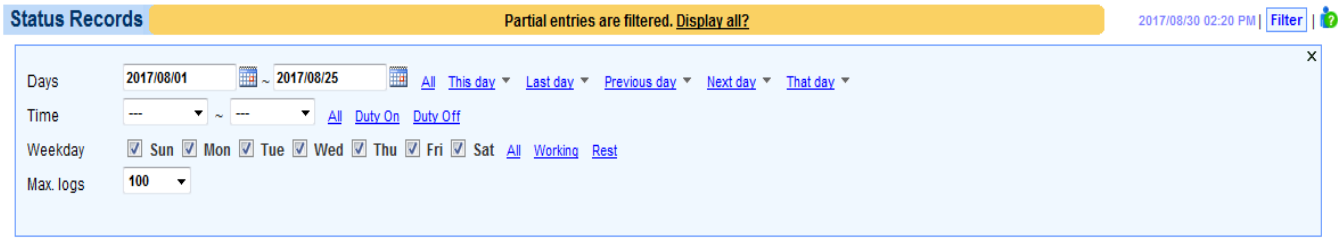
The time displayed at the upper corner displays the local time of the hosted computer. This time may be different from the time on your computer.

Export

Click the **Save** shortcut at the right upper corner of the status record table and select **CSV** or **PDF** file as the export file format. The exported file will be saved in the default download directory of your web browser.

Filter

Users can use the following filter options by clicking **Filter** in the right corner. Once the configuration of the filter panel is changed, the filtered logs will be displayed.

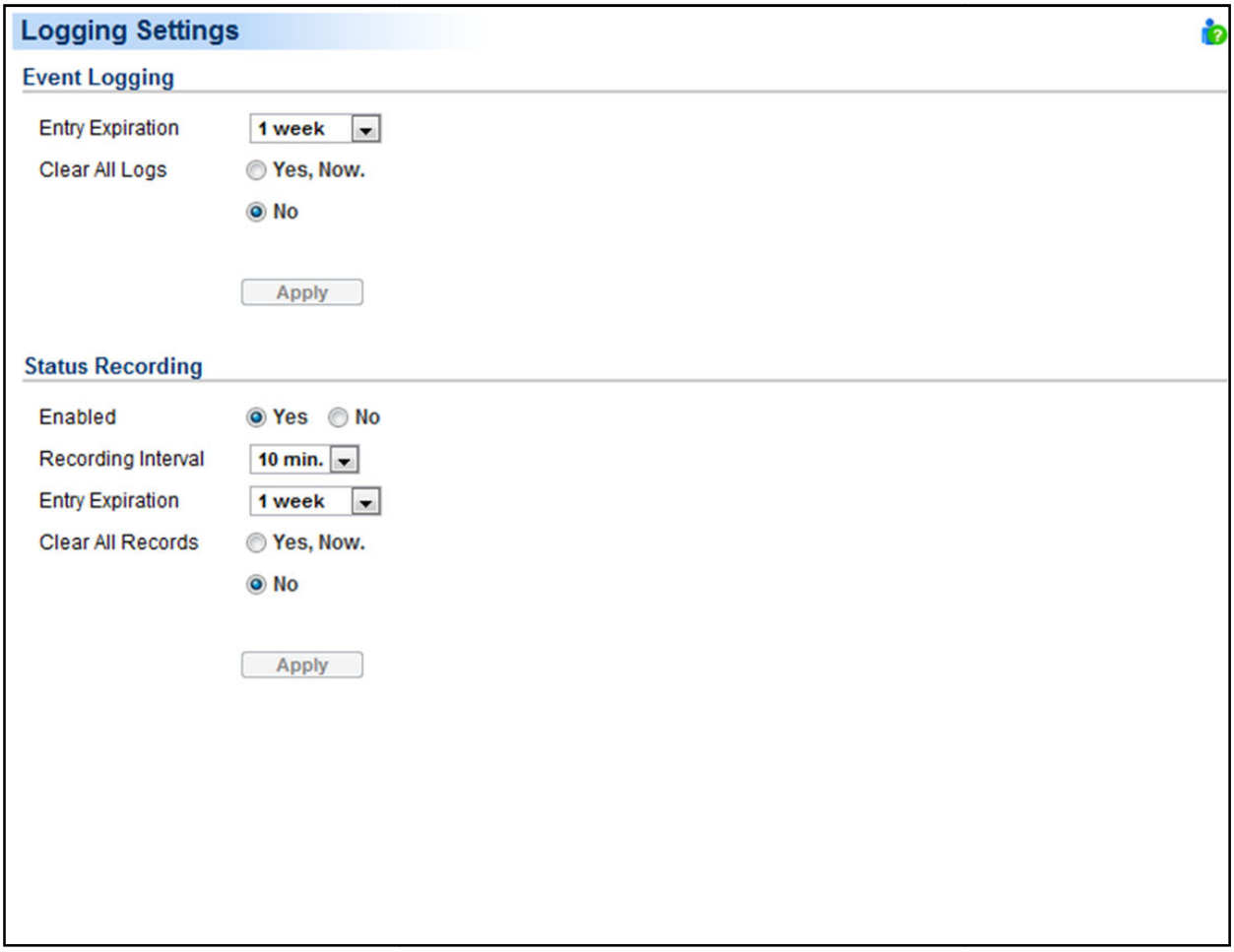


Filter pane on Logs/Status page

- **Days**: Selects the day(s) for the status records to be displayed. The dropdown menus next to the **Days** setting can be used for additional preconfigured filters.
- **Time**: Selects the time range of the status records.
- **Weekday**: Choose the days of the status records.
- **Max. Logs**: Indicates the maximum number of status records that will be displayed.

Settings

The Logs/Settings page allows for the ability to configure the log options. Click the **Apply** button to save the settings or remove all logs.



Logs/Settings page in the Agent

Event Logging

- **Entry Expiration**: This option specifies how long the log files will be retained. .
- **Clear All Logs**: When this option selected with Yes, Now, all event logs will be removed immediately after clicking Apply. The log clearing is permanent and once applied the log files cannot be recovered.
- **Log to Event Viewer**: Determines to log events to Event Viewer additionally. Users can launch the ***Control Panel > Administration Tools > Event Viewer*** to review all events in the **Application** category of the **Windows Logs** directory.

  Note: *Event Viewer is only function on the Windows platforms. If this option is not activated, you can activate this option by installing the Power Shell through Windows Update.*

Status Recording

- **Enable**: If this option is enabled, the Agent will start to record the UPS status.
- **Entry Expiration**: This option specifies how long the log files will be retained.
- **Recording Interval**: The Agent will record the UPS status at the specified intervals.
- **Clear All Records**: When this option selected with Yes, Now, all record status logs will be removed immediately after clicking Apply. The log clearing is permanent and once applied the log files cannot be recovered.
-

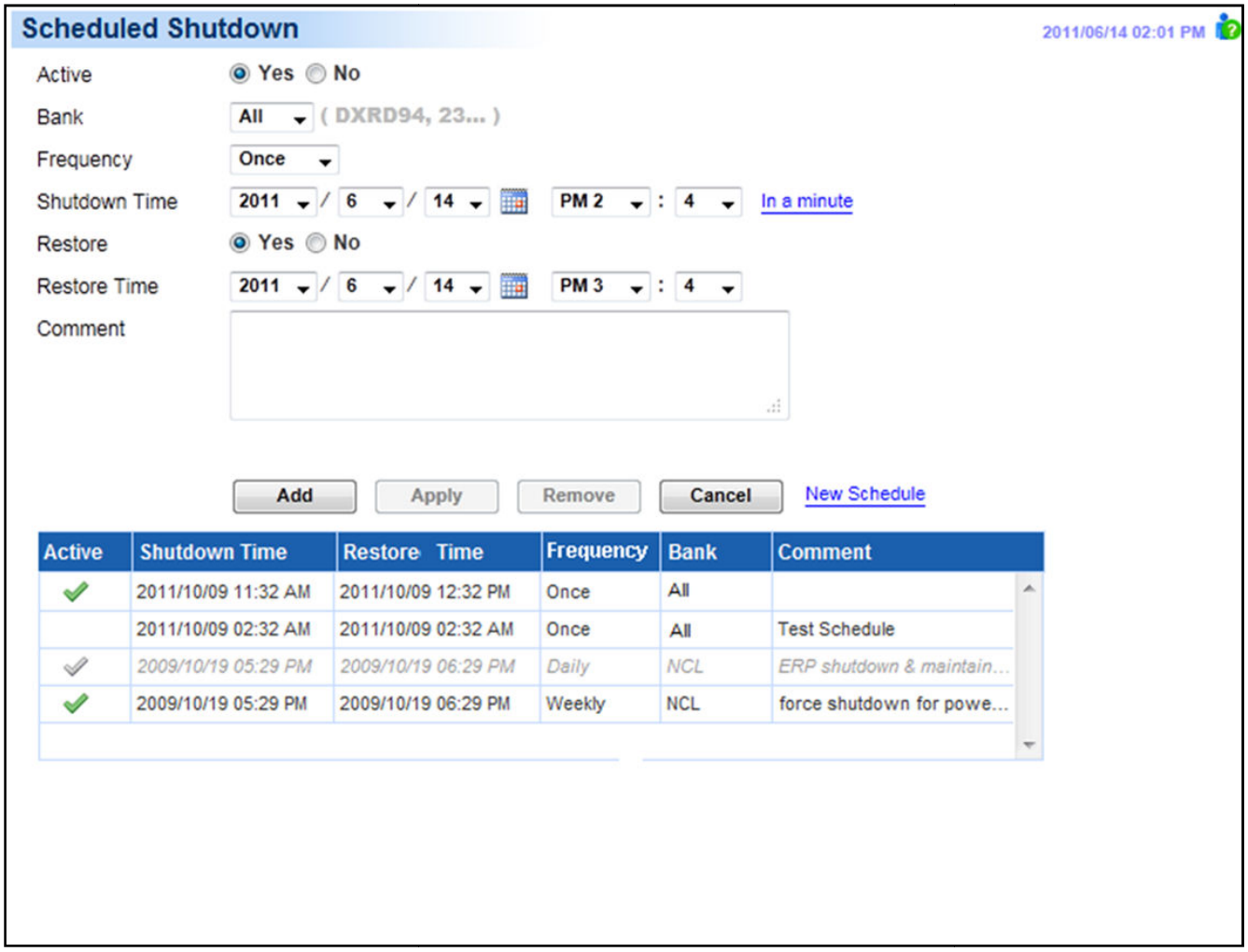
Schedule

Shutdown

In the Agent, an active schedule will cause the computer to shut down or hibernate, and then ask the UPS to completely power off the output or turn the specific outlets off at a specified date and time. It also allows users to specify the date and the time to turn on output or turn the specific outlets on. The UPS will turn on the specific outlets and begin supplying power which causes the computer to restart or wake from the hibernation.

Before the Agent shuts down because of a schedule shutdown, Client computers running Power Master Client will be shut down or hibernated to prevent data loss.

The **Schedule/Shutdown** page manages scheduled shutdowns and lists all configured schedules. Each schedule row displays the details of when the schedule will take effect and when to perform it. The time displayed at the upper right corner is the local time of the hosted computer. If you are connected to a remote Agent this time may be different from the time on your computer.



Schedule page

- **Create schedule:** Select the **New Schedule** shortcut to have the blank fields or use the data of the selected schedule. Enter all required data and click **Add** to add a new schedule.
- **Modify the schedule:** Select the schedule you wish to modify. After entering the new data, click the **Apply** button to apply the schedule modification.

- **Remove the schedule:** Select the schedule to remove from the schedule list, and click the **Remove** button to complete the schedule deletion.

The schedule detailed settings are explained below:

- **Active:** Choose **Yes** to activate this schedule effective. If **No** is selected, the schedule will be ignored.
- **Bank:** There are two conditions for this option.
  - **Power off the output completely.** When users choose the **Master Power** option, all equipment connected to the outlets labeled both **SURGE** and **BATTERY**, or all the outlets on the UPS includes labeled **CL**, **NCL**, **NCL1**, **NCL2** will be turned off. Only the UPS with NCL support the **NCL** outlets are available, and if there are two NCL outlets on the UPS, the **NCL 1**, **NCL 2** outlets are available.

    ***Caution: Surge** protected outlets provides surge protection to the equipment but does not provide battery power once a power outage occurs. When utility power fails, computers on the surge outlets will shutdown immediately due to power loss.*
  - **Turn off the NCL outlet.** If the **NCL** option is chosen, users can assign a scheduled shutdown to particular outlets on the UPS with NCL support. If there are two NCL outlets on the UPS, the NCL 1 and NCL 2 outlet can be assigned individual schedules.
- **Frequency:** There are three frequencies that can be assigned **Once**, **Daily** and **Weekly**. **Daily** and **Weekly** schedules will be repeated. If a **Once** schedule has been performed or expired, the schedule will display a gray active icon in the schedule list.

Active	Shutdown Time	Restore Time	Frequency	Bank	Comment
✓	2011/06/14 05:25 PM	2011/06/14 06:25 PM	Once	NCL	
✓	2011/06/15 04:15 AM	2011/06/15 05:15 AM	Daily	All	Force shutdown for power s
✓	2011/06/16 04:15 AM	2011/06/16 05:15 AM	Weekly	All	Server backup & Maintain
	2011/06/19 02:15 AM	2011/06/19 03:15 AM	Once	NCL	Test Schedule
	2011/06/20 02:15 PM	2011/06/20 03:15 PM	Once	NCL	Test Schedule

A once schedule with a gray active icon indicates it has been performed or expired.

- **Shutdown Time:** Configures when to perform the schedule and when to shut down computers.
- **Restore:** Configures whether to restore the controlled outlet power. If the **Yes** option isselected, the UPS will restore the power or power on the NCL outlet at the time specified in the *Restore Time* option. Otherwise the UPS output will stay powered off.
- **Restore Time:** The time to restore the output or to turn on the NCL outlet. This shutdown time must occur prior to the restore time. The maximum duration between the turn off and turn on must depends on UPS model. *Returned Delay* in the **UPS/Configuration** page will affects Restore Time. If a schedule is set to restore power at 6:00 PM and the *Returned Delay* is set 5 minutes, the schedule will actually restore power at 6:05 PM.
- **Comment:** Sets the user-defined comments for this schedule.

***Note:** If the computer bios is set to boot when power restores, the computer will automatically restart when the power is restored. Consult your motherboard documentation or PC/Server supplier for additional details.*

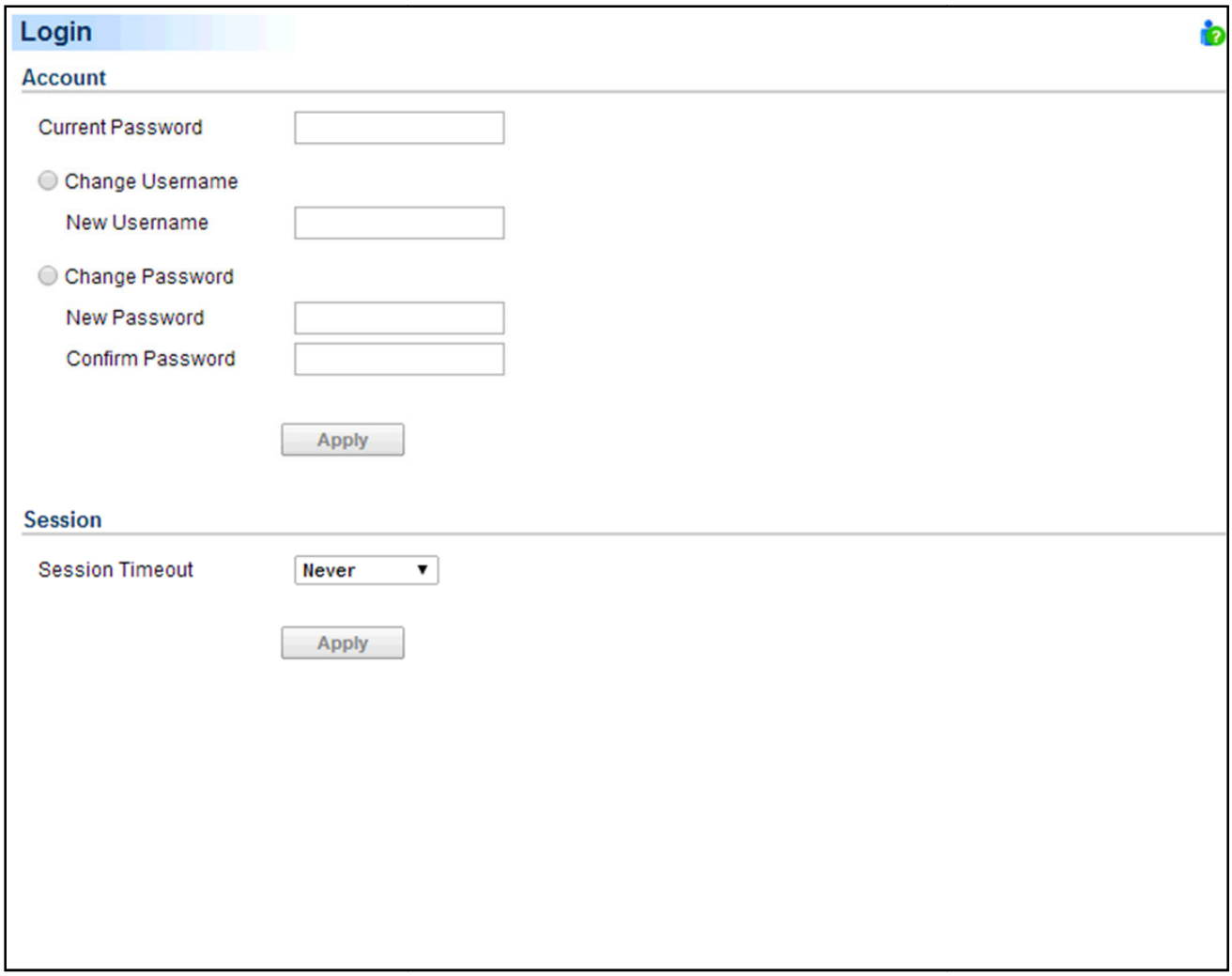
Note: *An active schedule may have aninsufficient duration to support a complete shutdown. If the active schedule has insufficient shutdown duration, the active schedule will be set inactive.*

Note: *The scheduled shutdown is functioned only for Agent with UPS.*

Security

Login

The Security/Login page is used to change the Power Master login account information, including user account, password, and the duration of login session.



Security/Login page

Account

Change Username

- Enter the password in the *Current Password* field.
- Select the *Change Username* option and enter a new username in the *New Username* field. Username must be alphanumeric(0-9, A-Z and a-z).
- Click Apply to complete the change.

Change Password

- Enter the password in the *Current Password* field.
- Select the *Change Password* option and enter a new password in the *New Password*and*Confirm Password* fields.
- Click Apply to complete the change.

Session

Session Timeout is the option which determines the duration of the session after the login. If the page isn't accessed during this period and remains inactive, users will be logged out automatically. Users will need to login again on the Login page.

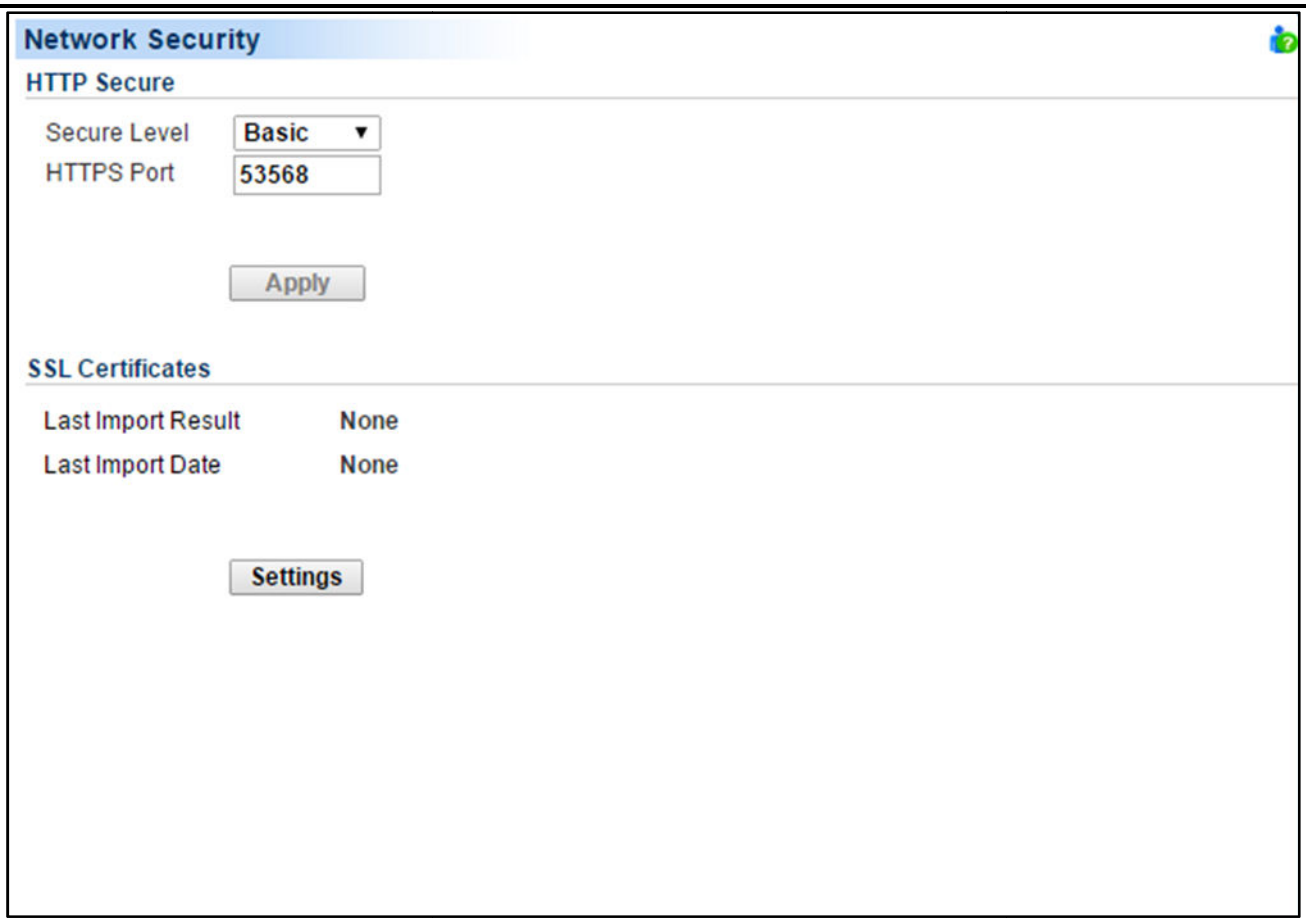
Authentication

To secure and protect network communication with the devices, security settings must be configured in the Security/Authentication page. The Secret Phrase are be configured and used for authenticating network communication with devices such as PDU or UPS.

Security/Authentication page in Client

Network

Data may be eavesdropped upon or falsified due to eavesdroppers or unknown network attacks when using the Power Master. HTTP is insecure and subject to eavesdroppers or other network attacks which can obtain the sensitive information such as website accounts or passwords. HTTPS provides secure identification and encryption. HTTPS is usually used for sensitive transactions and Power Master also provides HTTPS connections to access the web remotely.



Network page

HTTP Secure

Power Master allows users to change the secure level and port explained below:

- **Secure Level**: Determines which security level to be used to access web interface.
  - **Basic:** Web access is not protected by HTTPS. This indicates that the sensitive information may not be protected on the network.
  - **Sensitive:** Only web access including the sensitive information, such as password or secret phrase, will be protected by HTTPS. The **Login**, **Event Action/Settings**, **Security/Login**, **Security/Authentication** and **Security/Network** pages contain the sensitive information.
  - **Complete:** All web access will be over the HTTPS connections.
- **HTTPS Port**: Determines which port to be used over the HTTPS connections. The default port is 53568.

Once the secure level is changed, the new secure level will be taken effect. All pages can't be displayed during the duration to restart server. After the new security has been changed, users will be logged out by Agent and Client automatically. Users must login again on the **Login** page.

When the secure level has been changed from **Basic** to **Sensitive**/**Complete**, the browser warning will be presented after the new level is taken effect. This indicates that the user's browser considers the connection is risky. Users can ignore the warning page and continue the web access, or provide a SSL certificate which is produced by the commercial certificate providers or any trusted certificate authority.

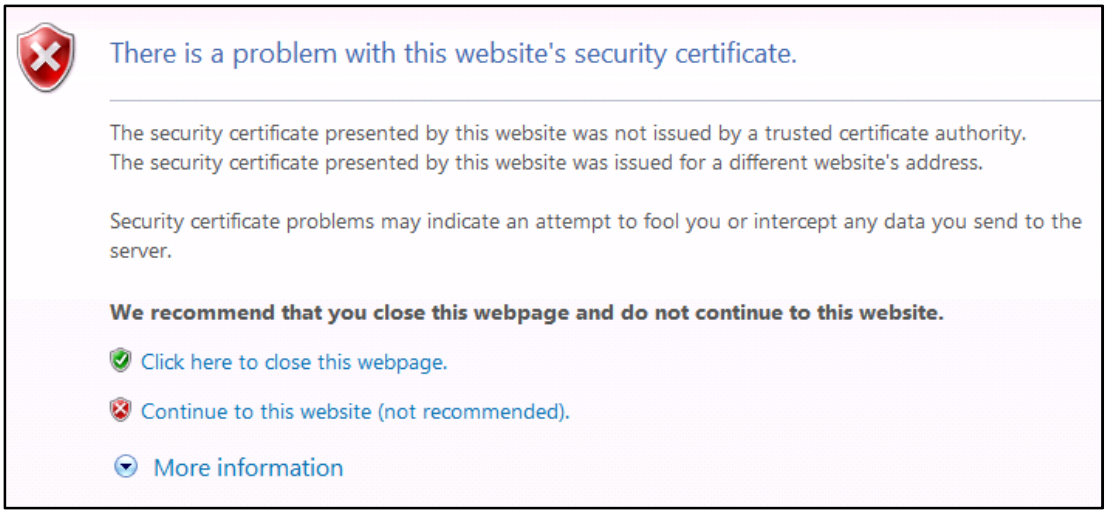
If the user would like ignore the warning page, refer to the **Ignore Warning Messages** section to continue web access; If the user has his own SSL certificate, refer to **Import SSL Certificates** section for further details how to import the new certificate.

Ignore Warning Messages

Users that plan not to import the SSL certificate may have to ignore these warning and continue the web access. Below illustration are the warning pages displayed on popular browsers. Follow the steps according to your browser to continue the web access:

Internet Explorer

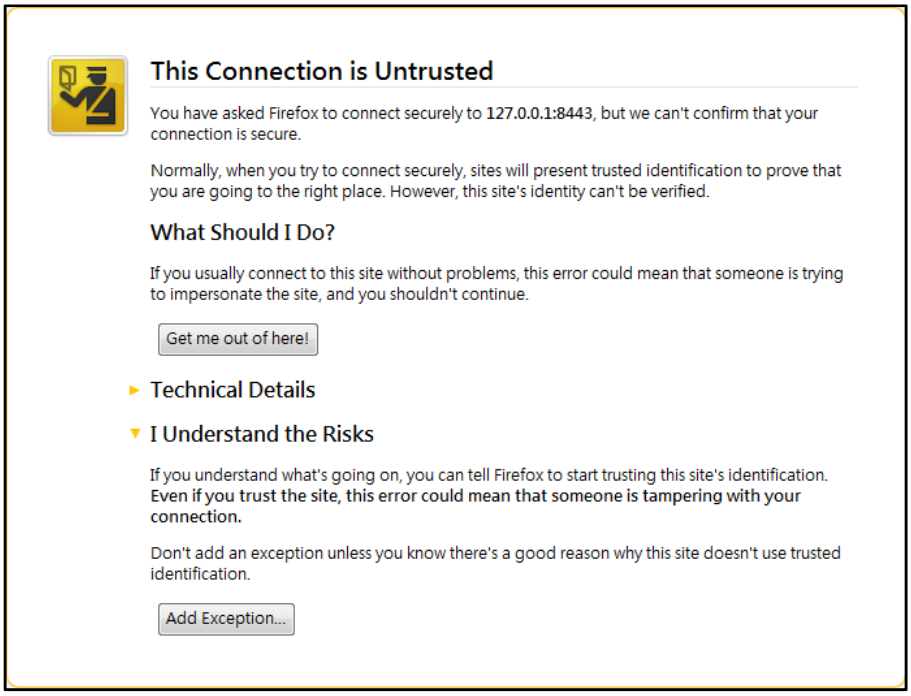
Click ***Continue to this website (not recommended)***in order to proceed.



Internet Explorer displays that the security certification is not trusted.

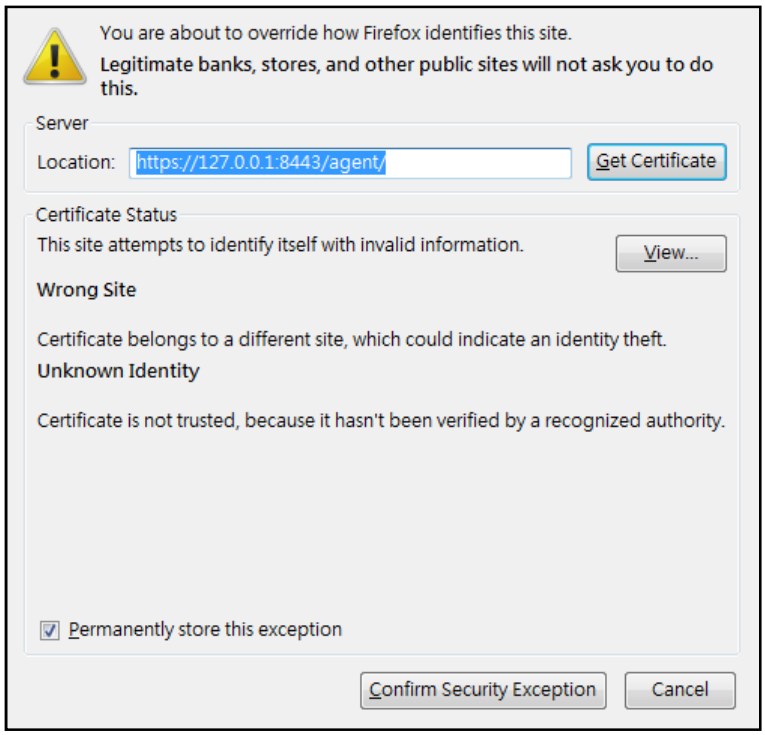
Mozilla Firefox

At first, click ***I Understand the Risks*** item to expand the content and click ***Add Exception*** button to continue the next step.



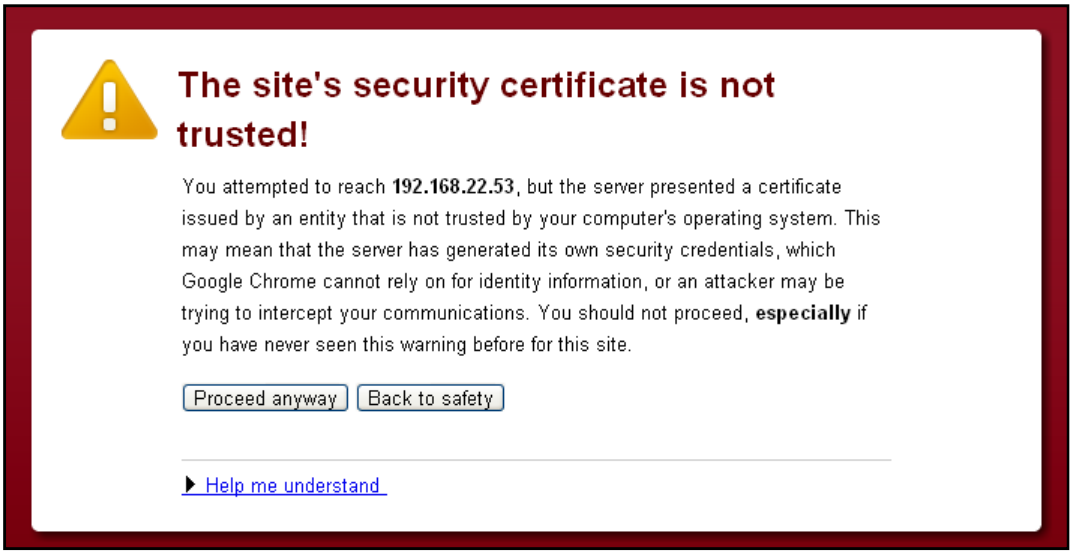
Firefox displays that the security certification is not trusted.

Second, select ***Permanently store this exception*** option and click ***Confirm Security Exception*** button to continue the web access.



Google Chrome:

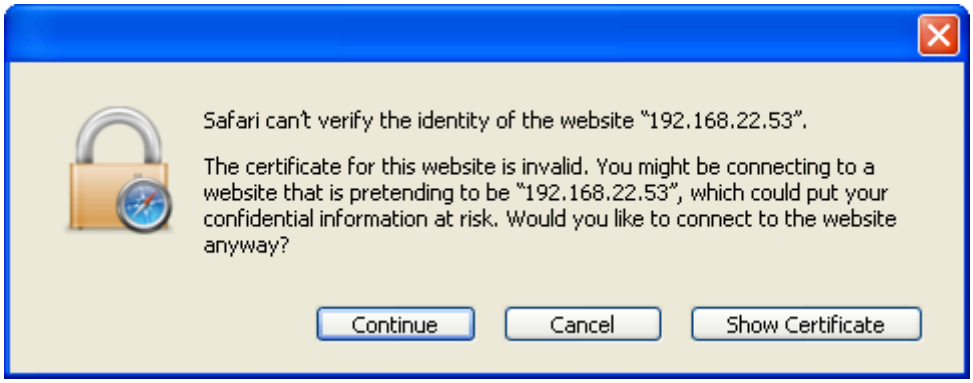
Click ***Proceed anyway*** button to continue the web access.



Google Chrome displays that the security certification is not trusted.

Safari

Click the **Continue** button to continue the web access.



Safari displays the security certification alert.

Note: *The performance will be lower once accessing to the website over the HTTPS connection.*

SSL Certificate

Import SSL Certificates

The user's browser that connects with the Power Master web interface will serve the SSL certificate. The certificate proves to the browser that the provider believes that it has issued a certificate to the owner of the Power Master. The **Security/Network** page allows users to import your own SSL certificate and *SSL Certificate* displays the date and result for the last time to import SSL certificates. Users can import the certificates as following steps:

- Click the **Settings** button to switch the *SSL Certificates Wizard*.
- Click the **Import** button to upload the SSL certificate file.

- Enter the *Key Passphrase* field and the *Keystore Password* field. Click the **Continue** button to import the SSL certificates.

Note: *Applying for a certificate from the commercial certificate provider will be subject to the provider fee.*

Add SSL Certificate into Trust List

A certificate trust list is a pre-defined list of SSL certificates that have been signed by a trusted entity. A certificate trust list of Power Master is used to identify the certificate authority of another one with whom interacts. When importing a new SSL certificate, this will result in communication loss between the Agent and Client.

As an example, when the Client that has been connected with the Agent imports a new SSL certificate, the Clint cannot interact with the Agent. Users must to add the certificate of Client into the trust list of the Agent manually and thus the Agent considers the Client's SSL certificate valid.

Users can follow the steps to add the certificate into the trust list – Client and Agent, for example:

- Place the SSL certificate of the Client as file extension of **.crt** in the *<agent_installation_directory>/jre/lib/security.*
- Switch to the *<agent_installation_directory>/jre/lib/security*directory in the command prompt.
  cd <agent_installation_directory>/jre/lib/security
- Run the below command to add the certificate to the trust list.
  <agent_installation_directory>/jre/bin/keytool.exe –import –trustcacerts –file <cert_name>.crt –alias<alias_name> –keystore cacerts.
- Enter "*change it*" as the password for the certificate addition.
- Enter "y" to apply the certificate addition.
- Restart the Agent service to reload the trust list and take effect. Refer to **How to restart Power Master service** of **FAQ** chapter for further details about how to restart Power Master service.

Note: agent_installation_diretory *is the directory where the Power Master Agent installation locates;* ***cert_name*** *is the filename of the certificate file and* ***alias_name*** *is the alias for the certificate available in the trust list.*

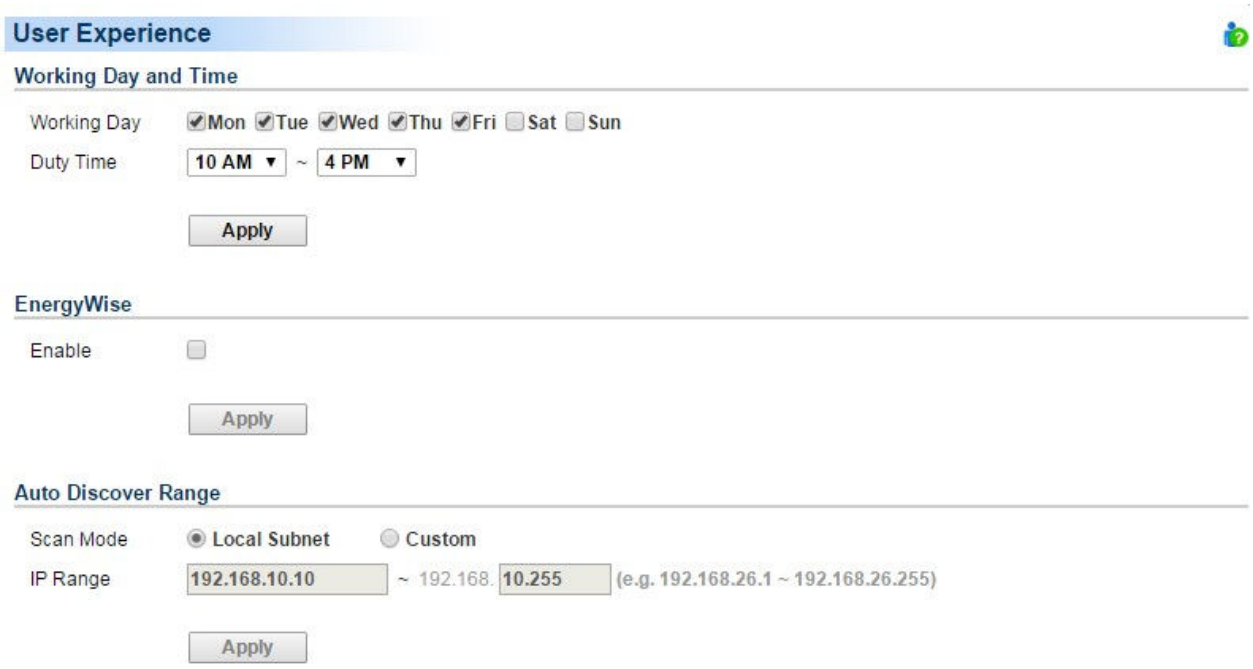
Note: *The aforementioned steps are applicable to the interactions between Power Master software.*

Note: *Due to security reasons, user may have to change the password to access the trust list. Refer to* ***How to change the password to access the trust list*** *of* ***FAQ*** *chapter for more details.*

Preferences

User Experience

The **User Experience** page is used to configure common settings for the user's experience. The settings configured here will be used on the **Event Action/Recipient**, **Logs/Event Logs** and **Logs/Status Records** pages.



Preferences/User Experience page

Working Day and Time

- **Working Day:** Set the days users normally work.
- **Duty Time:** Set the work hours for users.

EnergyWise

- **Enable**: Sets to activate the EnergyWise function. This function is only supported in Agent and is not activated. After this option is activated, the **EnergyWise** item will appear in the UPS category. If the Agent never connects with any UPS, this function is disallowed to be activated.

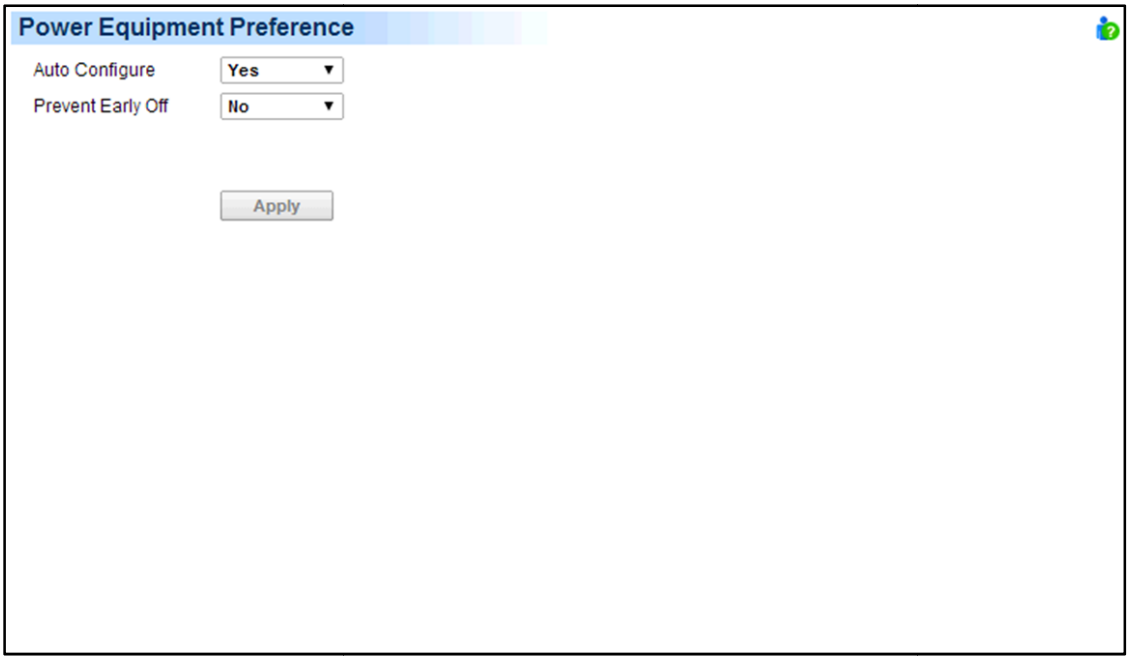
Auto Discover Range

In order to search devices and computers in different segments or a specific range, users can set IP range on this page. The settings will be used on the **UPS/Load** and **Power/Configuration** pages.

The IP range detail settings and descriptions are explained below:

- **Scan Mode**: If the **Local Subnet** option is selected, the scanning will scan devices or computer in the same segment. If the **Custom** option is selected, the scanning will scan a specific range which configured in IP range field.
- **IP Range**: Set the range which used in devices and computers scanning.

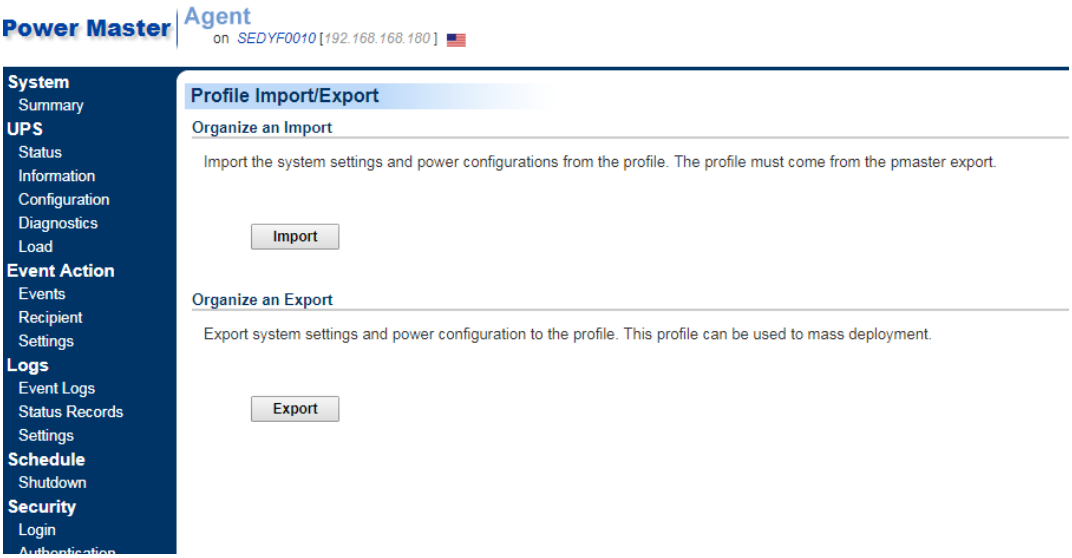
Power Equipment



In order for Client to operate properly with the power device, device options can be configured in Client:

- **Auto Configure**：Any time the IP address of the power device is changed, the Client will lose communication with the power device. If this option is checked, the Client will scan the network and automatically acquire the new IP address of the power device.
- **Prevent Early Off**：When the Client detects that the PDU outlet which is powering the Client computer, is going to be shut off, the Client will prepare to shut down the hosted computer. If the necessary shutdown time of the Client computer is more than the delay off time of the outlet, the Client will stop the computer shutdown and signal the PDU to cancel to outlet turn off.

Profile



In order for administrators to do mass deployment, **Profile** page allows users to export all power configuration and system settings from the target computer. Each computer running Power Master can import this profile to apply the same power configuration and system settings.

Organize an Export

Users can click the Export button to export the current configuration to the profile. The profile will be exported as a zip file and save to the assigned location.

Agent will export the following power configuration and system settings to the profile:

- Detailed configuration for UPS.
- Detailed settings of each event, recipient and action.
- Preferences and security settings.

Client will export the following power configuration and system settings to the profile:

- Detailed configuration with power device.
- Detailed settings of each event, recipient and action.
- Preferences and security settings.

Note. *To avoid the profile being unzipped automatically by using Safari on Mac, the 'Open "safe" files after downloading' option in* ***Safari > Preferences > General*** *should not be checked.*

Organize an Import

Importing the profile will reduce the duplicate steps during mass deployment. For each computer running Agent or Client, users click the **Import** button to apply the same profile.

When a profile is imported, the content will be verified to determine whether it can be applied. One profile cannot be applied to every computer because not all settings and configuration are applicable for both Agent or Client. For example, when Agent attempts to import the profile exported by Client or another Agent which is connecting with different UPS, the imported profile cannot be applied completely.

Import Profile on Installation

Power Master installer has the capability to import a profile in unattended installation mode. In order to reduce the interaction with users, the installation will be launched in unattended mode.

Copy the below example code and save as the new file named **setup.varfile**.

```
installModule=agent_or_client
installationDir=pw_installation_directory
profilePath=exported_zip_location
programGroupName=Power Master
```

Users can assign the installation module, installation directory and the located folder of the profile:

- **installModule.** Sets which module wish to install. This should be **agent** or **client**.
- **installationDir.** Assigns the absolute path of the installation directory of Power Master, e.g. *C:/Programs/Power Master/Power*
- **profilePath.** Assigns the absolute and complete path of the profile which is located, e.g. *C:/Import/profile.zip* or */import/profile.zip*.
- **programGroupName.** Assigns the program group name which is used the folder name in the start menu to Power Master software, the default name is *Power Master*.

Place the **setup.varfile** and installer in the same directory and make sure that filename must be the same, e.g. **setup.exe** and **setup.following**. Different filename will result in unknown fault during installation.

For Windows, run the below command to launch the installation in the command prompt:

```
setup.exe –q –console –Dinstall4j.detailStdout=true
```

For most Linux distributions,run the followingcommand to launch the installation in terminal:

```
sudo setup.sh –q –console –Dinstall4j.detailStdout=true
```

After the installation is complete, the profile will be imported and all settings will be applied successfully.

Note. *When you would like to upgrade the pre-installed Agent or Client during the unattended installation, set the* ***installationDir*** *parameter blank. The installer will automatically detect where preinstallation Power Master directory locates and attempt to complete the upgrade installation.*

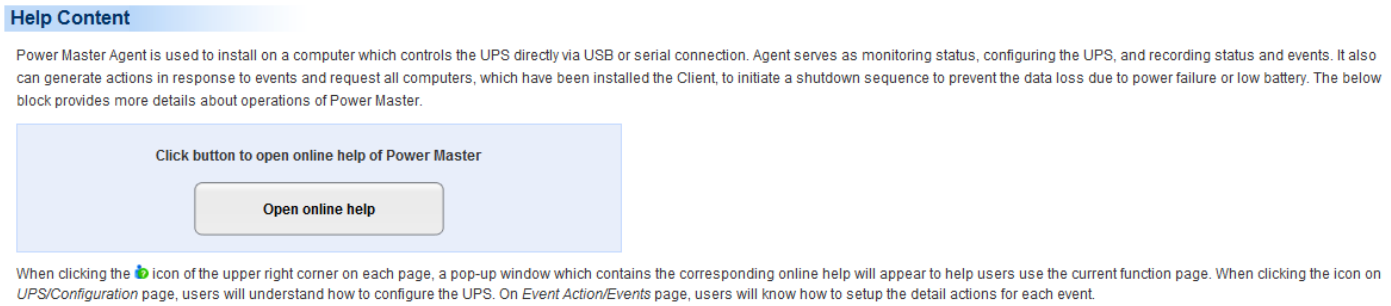
Computers which never installed Agent or Client can be installed the Power Master by assigning a valid path. Assigning a blank path to the ***installationDir*** *parameter during the unattended installation will allow the installer to use*

*the default path as the installation directory.**C:/Program Files/Power Master/** will be the default installation directory in Windows systems. **/opt/pmaster** or **/usr/local/ pmaster** will be the default installation directory in most Linux distributions,*

Help

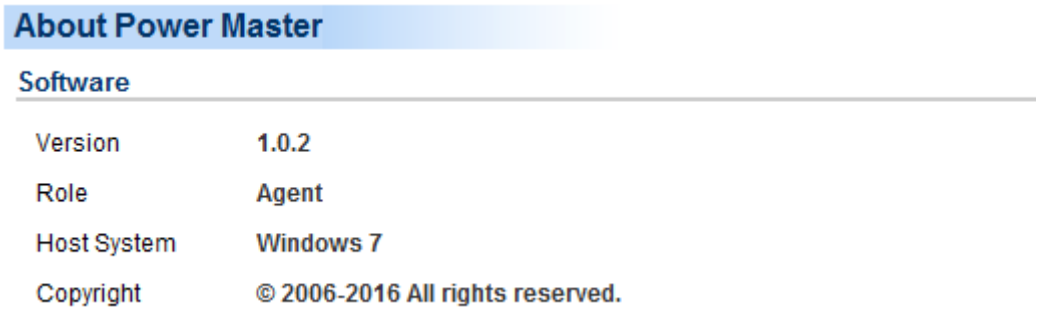
Content

The **Content** page provides an overview which introduces the brief functions of what Agent and Client to do and indicates how to get related online-help content for current function page. It indicates a button to access to online-help directly.



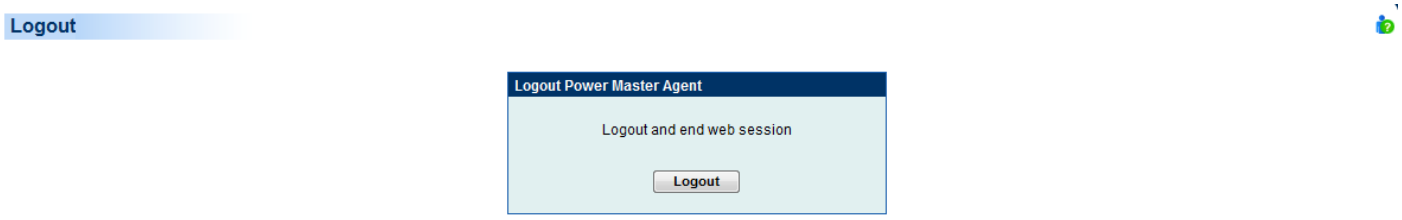
About

The **About** page is an overview which includes the Power Master and host operating system. It also provides resources to contact website for assistances and the EnergyWise version that is using.



Logout

The **Logout** page allows users to log the user out of the web interface. The user will be asked if they are sure that they want log out, and users can then log out by clicking the **Logout** button.



Technical Support

Troubleshooting

1. **I cannot access the Power Master web interface after complete installation.**

   Please follow the below steps resolve the problem:

   - Make sure that there is no other application utilizing port3052 (UDP/TCP) and port 53568 (TCP).Use a command prompt with the command "netstat -o" to obtain information about which ports are used by which programs.
   - Ensure the **Power Master** service is running on the hosted computer. If the service is stopped, restart the service and then try again in the same way.
   - Make sure the port3052 (UDP/TCP) and port 53568 (TCP)on the hosted computer are not blocked by a firewall.
   - Make sure the URL in the address filed of the browser for a remote computer is correct.

2. **I have installed the Power Master Agent on my computer, but the Agent cannot establish communication with the UPS.**

   - Make sure that no other application is using the serial port if the UPS is connected with a serial cable.
   - Make sure the serial or USB cable is securely and properly connected to the UPS and computer.

3. **The Client cannot establish communication with the UPS/PDU/ATS.**

   The lack of communication may be caused by the following conditions:

   - The network communication between the Client computer and the UPS/PDU/ATS is down.
   - The device network address is configured improperly.
   - The authentication settings are configured improperly.

   Follow the steps below to resolve the problem:

   - Verify the device network address is correct.
   - Verify the network configuration in the device is correct. Use the Power Device Network Utility tool to configure the device network configuration.
   - Verify the settings on the Security/Authentication page are correct and match the settings of the UPS/PDU/ATS. See **Security/Authentication** for more details.
   - Verify the port on the **Security/Network** page is matched if establishing communication with Agent.
   - Check the network status of the UPS/PDU/ATS and Clients.
   - Verify firewall settings. Port 3052(UDP/TCP), port 53568(TCP), port 162(UDP) and port 53566(UDP) should be unblocked. The Client communicates with UPS/PDU/ATS and Agents using these ports.

4. **The battery test failed.**

   - Replace the batteries if the batteries have used over 3 years.

5. **The Power Master installation failed.**

   The installation may have downloaded incompletely or become corrupt. Download the installation file again.

6. I failed to extend the off-delay time of Necessary shutdown time option.

- The communities on the **Security/Authentication** page in the Client and on the **Network/Access of Control** page in the PDU may be not matched. Confirm that the communities with the write permission are matched.
- The Client may use the community without write permission to access the PDU. Please promote the permission of the community which is used by the Client to access the PDU.

7. The web interface is displayed abnormally due to large or tiny size on Google Chrome 3.

It is caused by the default settings for minimum font size on the Google Chrome. Verify the below steps to improve the web pages due to font size:

- Close the Chrome first. Find the preference file located at ***Users\User_Name \AppData\Local\Google\Chrome\User Data\Default\Preferences*** in Windows 7/8/10.
- Use the text editor to open preference file. You will find the keyword *"webkit:*" in the file and insert *minimum_font_size* and *minimum_logic_font_size* in the below example:

```
"webkit":{
    "webprefs": {
            "default_fixed_font_size":  13,
            "default_font_size": 16,
            "fixed_font_family": "Courier New",
            "minimum_font_size": 10 ,
            "minimum_logical_font_size": 10
            ……..(skipped)
  }
}
```

Set both *minimum_font_size* and *minimum_logic_font_size*to *10* in order to display the pages normally. Save the preference file and launch the Chrome again to access Power Master software.

8. The shutdown occurs earlier than expected time.

It may be caused by the following conditions:

- When batteries have been used for a long time, they are unable to reach a full charge. Check to see if the output load is too high. A high load on the UPS will cause the batteries to discharge faster and the remaining runtime quickly decrease. Disconnect some load from the UPS to reduce the load in order to extend the runtime.
- Verify that the batteries are fully-charged. If the capacity is too low, please charge the batteries to full capacity.

9. Pages cannot be displayed after I set up another port number in the Security/Network page.

The port that was set up in the **Security/Network** page may be occupied by other applications or services. This indicates that the pages can't be accessed through the assigned port. Follow below steps to continue accessing the Agent/Client web:

- Find the **webserver.xml** file located at ***<Installation_directory>/etc/agent***folder on the Agent computer or ***<Installation_directory>/etc/client*** folder on the Client computer.
- Use the text editor to open the **webserver.xml** and you can find the **<httsPort>** tag in the file as below example:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

<webServer>
<httpsMode>ENABLE</httpsMode>

<httpsPort>port_number</httpsPort>

</webServer>

</webServer>
```

Change the port of the ***<httpsPort>*** and make sure that the port is not occupied by other services or applications. Save the webserver.xml file. (***httpsNumber*** is numeric from 1 - 65535)

Note: *The default port number is 53568.*

- Find the Power Master service at the **Control Panel/Administrator Tools/Services** and restart the service in order to access through this new setting.

10. My Client computer always shuts down/ hibernates on each time my system starts.

It may be caused by the following conditions:

- Due to too short shutdown time or an unresolved problem, a power event which causes system shutdown may occur incessantly on each time system starts. For example, if a network communication lost event final results in system shutdown, Client will be aware of communication loss and shutdown system soon.
- Make sure that Client computer is assigned to match the actual outlet connection. Computers on NCL outlets will shutdown prior to ones on CL outlets when a power event occurs.

Follow below steps to avoid the Client shutdown/hibernation on each time system boots.

*For **Windows** Users.*

- Press ***F8*** when your computer boots. Your system will go to *Windows Advanced Options Menu* and select **Safe Mode** option to enter the safe mode.
- Log on to your computer as an administrator.

Note: *When your computer is in safe mode, you'll see the words Safe Mode in the corners of your monitor.*

- Edit the preferences.xml file located at ***<Installation_directory>/etc/client*** folder on the Client computerand search the *<shutdown_pause>* tag as below example:

```
<?xml version="1.0" encoding="UTF-8"?>
 <preference>
  ……
   <action>
    ……
     <shutdown>
      <shutdown_pause>false</shutdown_pause>
     </shutdown>
   </action>
 </preference>
```

  Change *<shutdown_pause>* value from **false** to true. Save the preferences.xml file and restart your computer.

- Login the Power Master page to check the setting.

  Note: *All shutdown or hibernation in safe mode will not take effect by events evoked currently.*

- Restart the service to apply new setting from the Power Master service of the **Control Panel/Administrator Tools/Services**.

*For **Linux** Users (Example for Ubuntu)*

- Press and hold the **Shift** key as your computer reboot to enter the GRUB screen. Press "***e***" key to edit the GRUB command.
- Lookup the commands similar to below examples. Append *single* parameter following the command as '*root=UUIS=67f1e90f-d48b-40a3-9559-612cd821e4d1 ro quiet splash **single***'

```
linux /boot/vmlinuz-3.2.0-27-generic
root=UUIS=67f1e90f-d48b-40a3-9559-612cd821e4d1 ro quiet splash
$vt_handoff (skip…)
```

- Press the ***Ctrl + x*** key or ***F10*** key to restart the boot up process of your Linux Core in the **runlevel1 mode**. (single user mode)

  Note: *These changes are not persistent. Any change to the kernel boot options made this way will only affect the next boot and only if you start that boot by pressing either "**Ctrl + x**" or "**F10**" while still in GRUB edit mode.*

- Edit the preferences.xml file located at ***<Installation_directory>/etc/client*** folder on the Client computerand search the *<shutdown_pause>* tag as below example:

```
<?xml version="1.0" encoding="UTF-8"?>
 <preference>
   ……
   <action>
   ……
    <shutdown>
      <shutdown_pause>false</shutdown_pause>
```

```
    </shutdown>
  </action>
</preference>
```

Change <shutdown_pause> value from ***false*** to ***true***. Save the preference.xml file file and restart your computer.

- Restart your computer to access the page to check the settings.

11. I install the Client on one single virtual machine and then make amounts duplicates. The Agent only interacts with one of them.

Please follow below steps:

- When multiple virtual machines start, this may result in duplicating network names. Please contact the administrator to resolve this condition first.
- Stop the Power Master service. For **Windows** users, stop the service from **Start > Control Panel > Administrative Tools > Services > Power Master Service**.
- Open the **preference.xml** file located at ***<Installation_directory>/etc/client.*** Delete the **<uid>**tag as below example:
  <uid>2c779a9a-818a-4949-a8b9-50535bf2f6c1</uid>
- Start the Power Master service. For **Windows** users, start the service from **Start > Control Panel > Administrative Tools > Services > Power Master Service**.

12. Inability to Shutdown NAS during Power Failure.

When using sshpass tool cannot shut the NAS down during power failure, the version of the sshpass tool may be 1.04.

The sshpass tool whose version is 1.04 will result in inabiltiy to shutdown NAS. You must check whether the version of the sshpass tool is 1.04. If the version is 1.04, you must change another version..

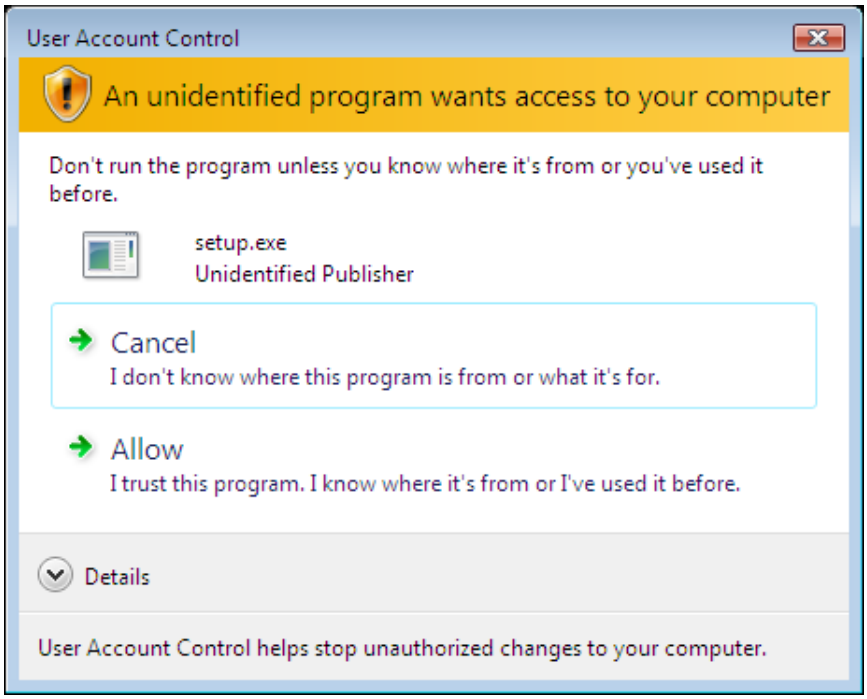
13. The communication cannot be established between the Agent and Client.

The SSL certificate is changed in Power Master 3.1.2, so Power Master version earlier than 3.1.2cannot interact with Power Master 3.1.2 or later. For example, the Clint which version is 3.1.1 cannot interact with the Agent which version is 3.1.2.To resolve this problem, please update Power Master version earlier than 3.1.2 to the latest version.

14. The Power Master installation file's digital signature is not valid.

It is caused by the operating system is not support SHA-256 signatures the installation file uses. Please follow the solutions below to resolve the problem for different versions of Windows:

- On **Windows 10, Windows 8.1**, **Windows 8**, **Windows 7**, **Windows Server 2016** or **Windows Server 2012(R2)** or **Windows Server 2008(R2)**, please update the Windows via **Windows Update** to support SHA-256 signatures.



FAQ

1. **If multiple computers are connected to a single UPS, how do I determine which computer to install the Agent or the Client on to ensure each computer can be shut down gracefully in event of power outage?**

   The computer that is connected to the UPS with a serial or USB cable should install the Agent, and the remaining ones should install the Client.

2. **After the Power Master installation is complete, how do I access the web interface?**

   On Windows, you can select the **Start>All programs>Power Master>Power Master Agent**(or **Power Master Client**) for local use. You can also enter the URL, **http://*hosted_computer_IP_address:3052***, in the address filed of the web browser from a remote computer.

   On Linux, you only enter the URL, **http://localhost:3052**, the address field of the web browser from a remote computer for a local access. You can also enter the URL, **http://hosted_computer_IP_address:3052**, in the address filed of the web browser from a remote computer.

3. **Which operation systems are supported by Power Master software? And which browser supports them?**

   Refer to the **Getting Started/Prerequisites** for more details.

4. **My Client computer connects to a PDU. How do I ensure the IP address assigned on the Power/Configuration page matches the actual PDU IP address? How do I ensure the outlet configured on the Power/Configuration page matches with the actual connection?**

   Click the **Identify** button at the **Outlet** block screen. The PDU LCD screen will blink the outlet number on the connected PDU. The PDU IP address can be verified by pressing the select button on the PDU until the IP address displays on the LCD.

5. What is the difference of the NCL (Non-Critical Load) outlet and CL (Critical Load) outlet? Which equipment should connect to NCL outlet or CL outlets?

The NCL outlets are only available on specific UPS models and are designed to be powered off early to maximize the battery runtime for the CL outlets. Non-critical equipment such as redundant equipment ,monitors, or other non-critical equipment should be connect to the NCL outlets to be powered off early. This will maximize the battery runtime for critical equipment such as servers on the CL outlets.

6. The UPS/Load page allows users to establish communication with the Client by assigning the Client's IP address. Are there other ways to establish communication?

Communication can be established by assigning the Agent's IP address on the **Device Network Address** section on the **Power/Configuration** page in the Client. See the **Power/Configuration** for more details about how to establish the communication with the Agent.

7. How can I make Power Master run a program when a particular event has occurred?

Create a .cmd file and save it into the **extcmd** folder of Power Master installation folder. Then write a command to run your own programs into this script file. Please refer to the **default.cmd** in the **extcmd** folder to write your own script.

8. I am not sure what the IP address of the UPS/PDU/ATS is. How can I obtain the correct IP address?

Use the **Power Device Network Utility** tool to help you to find the correct IP address of UPS/PDU/ATS.

9. How do I uninstall Power Master?

On Windows, go to **Start>Control Panel>Add or Remove Programs.** Click the **Change/Remove** button of **Power Master** to uninstall the program.

10. How can I get a notice when a power condition has cleared?

When a power condition is clear, it will broadcast a notification and also run the command file. A custom script can be created for events. The script can utilize the environment variable **EVENT_STAGE** to compare the key **OCCUR** to identify an event that has occurred or **FINISH** to identify an event that has cleared.

11. What network protocol is used in Power Master?

SNMP is used on communications between Client,, PDU or UPS with remote management card. **HTTP** and **HTTPS** are used between the Agent and the Client.

12. What the network ports are used by Power Master?

Port 3052 (UDP/TCP), port 53568 (TCP), port 162 (UDP) and port 53566(UDP)

13. I try to set the Client to establish to communication with one of PDUs. How do I identify the targeted device IP?

Refer to the **Easy-to-Setup Device IP** for details.

14. How do I ensure that the SNMP settings between the Client and UPS/PDU/ATS are properly setup?

To receive the trap notification from the UPS/PDU/ATS all the time, follow steps to verify the SNMP settings:

- Open the **Network/Trap Notification** page on the UPS/PDU/ATS web and the **Security/Authentication** page on the Client.
- Confirm that the IP address of the Client can be found on the **Network/Trap Notification** page of the UPS/PDU/ATS web. If the IP address can be searched, skip the step 3.
- If the IP address of the Client could not be found, click the **Trap Receiver** shortcut of the **Network/Trap Notification** page to enter the **Trap Configuration** page. Enter the required data to add a new trap receiver.
- If the IP address of the Client could be found, verify the SNMP settings are matched.

15. How do I determine that if my computer is using hibernation or not?

If the operating system is **Windows 7, Windows Server 2008(R2)**,**Windows 8** or **Windows Server 2012(R2),Windows 10** or **Windows Server2016** please follow the below steps to enable the hibernation.

- Open the **Command Prompt** dialog box.
- Use the command**powercfg.exe -hibernate on**to enable the hibernation.

17. How do I restart the Power Master service?

For windows, restart the service from the ***Power Master Service > Services > Administrative Tools > Control Panel***.

For Linux, run the commands in order to restart the service:*sudo service pmasterd stop*and *sudo service pmasterd start*.

18. How do I change the password to access the trust list of Power Master?

The default password is "*change it*". User can edit<*Power Master_installation_directory>/web/etc/cacertpd* in the text editor to replace the default password with the default one. *Power Master_installation_directory* is the directory to install the Power Master.

19. I cannot add the new SSL certificate into the trust list.

Due the duplicate alias name is available in the trust list, the certificate cannot be added. In order to add the new certificate into the list, the certificate which has the duplicate alias name should be removed from the list. Follow the steps to remove the certificate:

- Switch to the *<agent_installation_directory>/jre/lib/security* directory in the command prompt.
  cd <agent_installation_directory>/jre/lib/security
- Run the below command to remove the certificate from the trust list.
  <agent_installation_directory>/jre/bin/keytool.exe –delete –alias <alias_name> -keystore cacerts
- Enter "*changeit*" as the password for the certificate removal.
- Enter "y" to apply the certificate removal.
- Restart the Agent service to reload the trust list and take effect. Refer to **How to restart Power Master service** of **FAQ** chapter for more details.

Glossary

- **Citrix XenServer:** A virtual-machine monitor allows several guest operating systems to execute on the same computer hardware concurrently. XenServer is supported by Citrix systems, Inc.
- **IP address:** An **IP address** is a series of numbers that identifies a particular computer or NIC on a network. **IP** is an abbreviation for **Internet Protocol.**
- **HTTPS:** Abbreviation for HTTP Secure. It provides encryption and secure identification of servers by using HTTP with SSL/TLS protocol. HTTPS connection is usually used for the sensitive transaction.
- **Power Device Network Utility:** Is an easy to use tool to setup network configurations of the UPS RMCARD/PDU/ATS. This includes setting the IP address, subnet mask, or gateway of UPS RMCARD/PDU/ATS.
- **PDU:** A PDU is a device which provides power output controls for individual outlets and connected equipment. **PDU** is an abbreviation for **Power Distribution Unit.**
- **SNMP:** The simple network management protocol. It is used by network management systems for monitoring network-attached devices for conditions that warrant administrative attention.
- **SSL:** Abbreviation for **Secure Sockets Layer**. SSL is a transaction security standard that provides data encryption, server authentication, and message integrity.
- **TCP/UDP:** Family of protocols for the transport and network layers.
- **TLS:** Abbreviation for **Transport Layer Security**. TLS is a cryptographic protocol which provides communication security over the internet. TLS and SSL provide data encryption and server authentication for message reliability.
- **ATS:** ATS is an electrical switch that switches a load between two sources. It can switches power automatically to a generator or other standby power source after a power outage. **ATS** is an abbreviation for **Automatic Transfer Switch.**
- **Environment Sensor:** A sensor accessory that can be installed on UPS/PDU/ATS for monitoring environment condition and obtaining information about the temperature and humidity.