User Guide

PowerChute Business Edition v10.0.2 Agent

For Smart-UPS models, excluding prefix SMT, SMX, SURTD, SRT, SMTL, SCL and SMC

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Introduction

PowerChute™ Business Edition (PowerChute) provides UPS management, system shutdown, and energy management for devices connected to the UPS, via serial or USB interface.

In the case of a UPS critical event, the software performs a graceful system shutdown of connected devices before the UPS battery is exhausted.

Following installation, configure the software using the PowerChute initial setup wizard. This ensures that PowerChute is configured to monitor and manage your system for power events.

This document describes the options available in the PowerChute Business Edition Agent user interface for a Type B UPS.

Supported UPS Types

During manual installation you are asked to select your UPS from a list of UPS model prefixes:

- The UPS model is found on the printed label at the rear of your UPS:
  - Type A
    - Smart-UPS models with prefix SMT, SMX, SURTD, SRT, SMTL, SCL and SMC including models SRC2KUXI, SRC3KUXI, and SRC3KUXIX709.
  - Type B
    - Smart-UPS excluding UPS models with prefix SMT, SMX, SURTD, SRT, SMTL, SCL, and SMC, and models SRC2KUXI, SRC3KUXI, and SRC3KUXIX709.

Visit Knowledge Base article FA315835 on the APC website to find out more about UPS model types.

Related Documents

This document describes the PowerChute Agent web user interface:

- For up-to-date information on the operating systems, JDK, service packs, and processors with which PowerChute Business Edition is compatible, see the latest revision of PowerChute Business Edition Operating System and Processor Compatibility Chart available on the APC website.
How to Log On

You can access the user interface of the PowerChute Business Edition Agent in two ways, locally and remotely.


To access the PowerChute Agent remotely, in a Web browser type the servername or Agent IP address and port:

https://servername:6547
https://agentipaddress:6547

For example, if your server is named COMP1, enter:
https://COMP1:6547

If you have forgotten the username or password created during installation, you can reset the credentials by using the PowerChute configuration file. See Resetting your Username and Password.

Account Lock-Out

PowerChute will automatically “lock out” for 2 minutes after three unsuccessful login attempts (incorrect username and/or password) to prevent brute force password cracking.

Changing Language

The PowerChute Agent User Interface (UI) is available in two languages: English and Chinese. To change the UI display language, click on the language selector in the top-right corner of the UI, and select a language from the drop-down list. The country flags of the available UI languages are also displayed.
UPS Device Model

The model name of your UPS displays at the top level of these menu options, e.g. Smart-UPS 1500, Smart-UPS 3000. All of the menu options relate to your UPS.

UPS Status

The UPS Status screen has three sections — System Status, Power Status, and Battery Status. Each of the sections is collapsible and expandable by clicking the – and + icon to the left of the section name.

System Status

The Device Status field under System Status indicates the present operating status of the UPS and displays one of the following states listed in the table below.

<table>
<thead>
<tr>
<th>Possible Device Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>On Line</td>
<td>The UPS is running normally on AC utility power.</td>
</tr>
<tr>
<td>On Line (Green Mode)</td>
<td>The UPS is running normally on AC utility power, and the electrical input is being utilized with high efficiency.</td>
</tr>
<tr>
<td></td>
<td>In addition, the value must be above the At runtime limit value set on Shutdown Settings.</td>
</tr>
<tr>
<td>Initializing</td>
<td>The UPS is attempting to establish communications with the UPS.</td>
</tr>
<tr>
<td>On Battery</td>
<td>The UPS is using its battery to provide output power to the load.</td>
</tr>
<tr>
<td>Low Battery</td>
<td>The UPS is on battery, and the Runtime Remaining reported by the UPS is less than the At runtime limit value on the Shutdown Settings screen.</td>
</tr>
<tr>
<td></td>
<td>By default, a Low Battery shutdown begins. (It is possible to reverse this setting on the Event Configuration screen).</td>
</tr>
<tr>
<td>Battery Discharged</td>
<td>The UPS is on line, and the Runtime Remaining reported by the UPS is less than the At runtime limit value on the Shutdown Settings screen.</td>
</tr>
<tr>
<td></td>
<td>If you get a power outage when your battery is discharged, PowerChute immediately begins the process of gracefully shutting down your system.</td>
</tr>
<tr>
<td></td>
<td>PowerChute can display this status immediately after a runtime calibration (which deeply discharges the battery) or when the UPS returns to On Line operation after an extended power outage.</td>
</tr>
<tr>
<td></td>
<td><strong>NOTE:</strong> It is possible to see this status when the Battery Charge under Battery Status on this screen is displaying as 100%. This can happen when the Runtime Remaining value falls below the At runtime limit value set on Shutdown Settings.</td>
</tr>
<tr>
<td>Replace Battery</td>
<td>The UPS battery has reached the end of its life.</td>
</tr>
<tr>
<td></td>
<td>See Battery Management for more information.</td>
</tr>
<tr>
<td>No Batteries Attached</td>
<td>Your UPS cannot detect any batteries.</td>
</tr>
<tr>
<td>UPS in Bypass*</td>
<td>Your UPS is in bypass mode.</td>
</tr>
</tbody>
</table>
**Possible Device Status** | **Description**
--- | ---
**Maintenance Bypass**<sup>*</sup> | Your UPS is on bypass for maintenance purposes.

**UPS Initiated Bypass**<sup>*</sup> | The UPS is reporting an internal hardware issue that caused it to switch to bypass operation. For further information, see the support services at [www.apc.com/support](http://www.apc.com/support).

**User Initiated Bypass**<sup>*</sup> | A user requested bypass operation through either the PowerChute Business Edition or the UPS LCD user interface.

**Bypass Power Supply Fault**<sup>*</sup> | The UPS auxiliary power supply is not functioning. For further information, see the support services at [www.apc.com/support](http://www.apc.com/support).

*NOTE:* If you try to put the UPS on bypass while this condition exists, the UPS loses all output power and the connected load shuts off.

**Overloaded** | The UPS cannot support the current load. Unplug some equipment to reduce the load.

If the UPS still indicates an overload, see the support services at [www.apc.com/support](http://www.apc.com/support).

**AVR Boost Active** | The UPS is using AVR Boost (Automatic Voltage Regulator) to correct a low input voltage without switching to battery power.

**AVR Trim Active** | The UPS is using AVR Trim to correct a high input voltage without switching to battery power.

**Performing Self Test** | The UPS is performing a self test, see Diagnostics.

**Performing Calibration** | The UPS is performing a runtime calibration, see Diagnostics.

**Sleeping** | One or more outlets on your UPS are turned off but are scheduled to turn on.

**Unknown** | The status of the UPS is unknown.

**UPS Communication Lost** | The PowerChute Agent has lost communications with the UPS.

Make sure that the UPS cable is securely connected at both ends. For further information, see the PowerChute Business Edition Product Center.

**UPS Off** | Your UPS is turned off.

---

* While on bypass, the UPS can protect its supported equipment from power surges and minor power disturbances, but not from other power problems like a power outage.

**System Status** also reports the following:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UPS Load</strong></td>
<td>In watts, the power supplied by the UPS as a percentage of its full rating.</td>
</tr>
<tr>
<td><strong>Runtime Remaining</strong></td>
<td>The amount of time the UPS — while on battery — could support the present load. The value is shown in minutes.</td>
</tr>
<tr>
<td><strong>NOTE:</strong> The maximum value of this field varies depending on the communication method used with PowerChute. If USB connection is used, the maximum value that will be shown is 1092. Whereas if serial connection is used, the maximum value is 9999.</td>
<td></td>
</tr>
<tr>
<td><strong>Internal Temperature</strong></td>
<td>The temperature inside the UPS.</td>
</tr>
<tr>
<td><strong>Load Power</strong></td>
<td>In VA, volt-ampere, the power supplied by the UPS as a percentage of its full rating.</td>
</tr>
<tr>
<td><strong>Load Current</strong></td>
<td>The current drawn from the UPS by the connected equipment.</td>
</tr>
</tbody>
</table>
Power Status

Power Status reports on the power voltage and frequency of your UPS.

Battery Status

Battery Status reports the following:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery Charge</td>
<td>The present charge of the UPS battery, as a percentage of the total possible capacity.</td>
</tr>
<tr>
<td>Battery Voltage</td>
<td>The present voltage of the UPS battery.</td>
</tr>
<tr>
<td>Total Battery Packs</td>
<td>This is only reported for some UPS types. It states the number of battery packs connected to your UPS.</td>
</tr>
</tbody>
</table>

Battery Management

Use this screen to view the present status of your UPS batteries. The screen also lists information on your battery packs including the part numbers, and can predict when your batteries need replacing.

Some fields described in this section do not display for every UPS and configuration.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery Status</td>
<td>The possible values here are Normal, Replace Battery, and No Batteries Attached.</td>
</tr>
<tr>
<td></td>
<td>If you need to replace your battery, see Battery Part Number below in this table.</td>
</tr>
<tr>
<td>Battery Charge</td>
<td>The present charge of the UPS battery, as a percentage of the total possible capacity.</td>
</tr>
<tr>
<td>Battery Voltage</td>
<td>The present voltage of your UPS battery (as distinct from AC utility power) in volts DC.</td>
</tr>
<tr>
<td>Runtime Remaining</td>
<td>The amount of time the UPS battery could support its load.</td>
</tr>
<tr>
<td>Replacement Battery</td>
<td>This part number is essential for re-ordering. Click on the Re-Order Battery link to go to a web page where you can buy a new battery for your UPS online.</td>
</tr>
<tr>
<td></td>
<td>If a part number is not shown for your UPS device, the Re-Order Battery link will take you to a web page where you can enter your UPS model number to find the correct replacement battery for your device.</td>
</tr>
<tr>
<td>Battery Part Number</td>
<td>This part number is essential for re-ordering. Click on the Re-Order Battery link to go to a web page where you can buy a new battery for your UPS online.</td>
</tr>
<tr>
<td></td>
<td>If a part number is not shown for your UPS device, the Re-Order Battery link will take you to a web page where you can enter your UPS model number to find the correct replacement battery for your device.</td>
</tr>
</tbody>
</table>
Predicting the replacement date of your UPS battery

The Predictive Battery Replacement section of this Battery Management screen can help ensure your battery is in good working order by notifying you when your UPS battery is nearing the end of its life.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery Installation Date</td>
<td>This displays the date that your UPS battery was installed. For some UPS devices, this information is derived from the UPS itself. For other devices you can input an installation month and year. A link to the APC website where you can re-order your battery is also provided.</td>
</tr>
<tr>
<td>Predicted Replacement Date</td>
<td>This date is supplied by the UPS and indicates when it is recommended that the battery be replaced.</td>
</tr>
</tbody>
</table>

Internal and External Battery Packs

For some UPS devices only, the collapsible sections named Internal Battery Packs and Battery Packs give up-to-date information on the number of battery packs installed within the UPS itself and the number of external battery packs attached to the UPS.

If PowerChute cannot identify an internal battery pack, the battery pack information will be displayed in the Battery Packs section.

For certain UPS models, the number of battery packs can be edited via the PowerChute Agent web interface. The range of values permitted for Total Battery Packs is 0-99. Changing the total number of battery packs changes the UPS Runtime Remaining on the UPS Status screen.

NOTE: Total Battery Packs must reflect the number of physical battery packs connected to the UPS, or unexpected behavior may occur.
Diagnostics

The Diagnostic screen displays the last diagnostic results, and enables you to initiate tests and calibrations.

There are three types of diagnostics:

- a self test performs internal UPS diagnostics
  
  **NOTE:** If the UPS is On Battery, a self test cannot be performed. Restore power to the UPS to run a self test.

- an alarm test of your UPS (using a drop-down box in the Initiate Diagnostics section).

- a runtime calibration causes the UPS to recalculate its available runtime capacity based on its present load. This ensures that the runtime reported is more accurate. Not all UPS models support runtime calibration. See Notes on Runtime Calibration.

You can initiate an immediate self test, a calibration, or a UPS alarm test by selecting an option in the drop-down box under the Initiate Diagnostics section and clicking on Apply.

**Notes on Runtime Calibration**

- Runtime calibrations deeply discharge UPS batteries, which can leave a UPS temporarily unable to support its equipment if a power outage occurs.

- You can perform a calibration only if battery capacity is at 100%.

- To optimize the efficacy of the runtime calibration, it is recommended to perform the calibration using a connected device load that accurately represents the average load on the UPS.

- Frequent calibrations reduce the life of batteries. Therefore, select runtime calibrations to occur only annually or semi-annually. Also perform a calibration whenever you significantly change the load that the UPS is supporting.

  **NOTE:** Type B UPS models connected to a PowerChute Business Edition Agent report ‘Passed’ for a successful Runtime Calibration test, and ‘Aborted’ for an unsuccessful test. To find out if your UPS is a Type B model, visit Knowledge Base article FA315835 on the APC website.

In the Schedule Self Test section, you can configure your system to perform a self test at frequencies available in the drop-down box, explained in the table below.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>On UPS start-up</td>
<td>The UPS performs a self test when it turns on.</td>
</tr>
<tr>
<td>On UPS start-up and every 7 days since start-up date</td>
<td>The UPS performs a self test when it turns on and subsequently performs a test every 7 days. (The dates do not deviate from the 7-day interval unless you turn the UPS off and then on again). <strong>For example,</strong> you turn on the UPS on September 3, so it performs a self test at turn-on and subsequently on Sept. 10, Sept. 17, Sept. 24, etc.</td>
</tr>
<tr>
<td>On UPS start-up and every 14 days since start-up date</td>
<td>The UPS performs a self test when it turns on and subsequently performs a test every 14 days. See the example in the row above.</td>
</tr>
</tbody>
</table>
The UPS reports the following values for status:

<table>
<thead>
<tr>
<th>Test Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Progress</td>
<td>The diagnostic test is ongoing.</td>
</tr>
<tr>
<td>Passed</td>
<td>The self test passed.</td>
</tr>
<tr>
<td></td>
<td>This is not relevant for the other tests: alarm test and calibration</td>
</tr>
<tr>
<td>Failed</td>
<td>Your self test, alarm test, or calibration did not succeed.</td>
</tr>
<tr>
<td>Refused</td>
<td>Your UPS refused the diagnostic test.</td>
</tr>
<tr>
<td></td>
<td>For a calibration, this will happen when the load on the UPS is less than 10% of its full capacity. In addition, for a calibration the UPS battery must be fully charged.</td>
</tr>
<tr>
<td></td>
<td>For a self test on a Type B UPS model connected to a PowerChute Business Edition Agent via USB, this will happen when there is system status of Battery Discharged.</td>
</tr>
<tr>
<td></td>
<td>To find out if your UPS is a Type B model, visit Knowledge Base article FA315835 on the APC website.</td>
</tr>
<tr>
<td>Aborted</td>
<td>Your self test, alarm test, or calibration could not run to completion because something stopped it, for example, a power outage, or it was canceled by a user.</td>
</tr>
<tr>
<td>Completed</td>
<td>Your runtime calibration has finished successfully.</td>
</tr>
<tr>
<td>Unknown</td>
<td>The status of your diagnostic test is unknown. This could be caused by a communication issue.</td>
</tr>
</tbody>
</table>
**UPS Settings**

Use this screen to configure UPS values and thresholds, for example, output voltage and a maximum internal temperature.

The options explained below do not display for all UPS devices. Only supported options will be displayed for your UPS model.

### Power Settings

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Voltage(^a)</td>
<td>The voltage the UPS will supply when operating on battery power.</td>
</tr>
<tr>
<td></td>
<td><strong>NOTE:</strong> For some UPS models, you can only change this setting on the UPS directly.</td>
</tr>
<tr>
<td>Upper Bypass Limit(^b)</td>
<td>When operating in bypass, this is the highest voltage the UPS will supply to the connected load.</td>
</tr>
<tr>
<td>Lower Bypass Limit</td>
<td>When operating in bypass, this is the lowest voltage the UPS will supply to the connected load.</td>
</tr>
<tr>
<td>High Transfer Voltage</td>
<td>On UPS devices that do NOT support bypass, this is the <em>highest</em> voltage the UPS will supply to the connected load.</td>
</tr>
<tr>
<td></td>
<td><strong>NOTE:</strong> On UPS devices that support AVR Trim, it will be reported when the Input Voltage is higher than this value.</td>
</tr>
<tr>
<td>Low Transfer Voltage</td>
<td>On UPS devices that do NOT support bypass, this is the <em>lowest</em> voltage the UPS will supply to the connected load.</td>
</tr>
<tr>
<td></td>
<td><strong>NOTE:</strong> On UPS devices that support AVR Boost, it will be reported when the Input Voltage is lower than this value.</td>
</tr>
<tr>
<td>Power Quality Sensitivity</td>
<td>The sensitivity of the UPS to distortions in the line voltage.</td>
</tr>
</tbody>
</table>

\(^a\) If you change the Output Voltage setting, the UPS sometimes changes the Upper and Lower Bypass Limit values, also displaying on this screen. When that happens, these fields become read-only. Check these values after you set output voltage.

\(^b\) If the supported equipment can tolerate a wide voltage range for On Line operation, you can increase the Upper Bypass Limit value and decrease the Lower Bypass Limit value. A wider voltage range reduces the number of times the UPS switches to battery operation, especially in areas where the input voltage is unstable or is chronically high or low.
General Settings

The options explained below do not display for all UPS devices. Only supported options will be displayed for your UPS model.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPS Name</td>
<td>A user-customizable name for the UPS. You can use US-ASCII characters only, codes 32-126.</td>
</tr>
<tr>
<td></td>
<td><strong>NOTE:</strong> Depending on the UPS type, a maximum of between 8 to 16 alphanumeric characters is allowed.</td>
</tr>
<tr>
<td></td>
<td>The PowerChute Server Description in the top-left corner of the UI defaults to the UPS Name. This description is user-customizable and if edited, it will override the UPS Name.</td>
</tr>
<tr>
<td>Audible Alarm</td>
<td>With this field, you can enable or disable the UPS audible alarm that sounds in response to power problems. On the top right of your screen, one of the following three alarm icons displays:</td>
</tr>
<tr>
<td></td>
<td>🔈 The alarm is enabled.</td>
</tr>
<tr>
<td></td>
<td>🔊 The alarm is disabled.</td>
</tr>
<tr>
<td></td>
<td>⚠ Your system has lost communications with your UPS.</td>
</tr>
<tr>
<td>UPS Output Load Threshold</td>
<td>Each UPS has a maximum rating, for example, 1500 VA. Use this field to set the preferred highest percentage of this rating used by the load.</td>
</tr>
<tr>
<td></td>
<td>For example if this threshold is set to 70 (%), when the load consumes more than 1050 VA (70% of 1500), the <strong>Output Load Threshold Exceeded</strong> event is generated.</td>
</tr>
<tr>
<td>High Internal Temp Threshold</td>
<td>When this temperature is exceeded, an <strong>UPS Internal Temperature Threshold Exceeded</strong> event is generated. (By default, this event causes a shutdown).</td>
</tr>
<tr>
<td></td>
<td>This temperature should be greater than (or at least equal to) the <strong>High Internal Temp Warning Threshold</strong> in the row below.</td>
</tr>
<tr>
<td></td>
<td><strong>NOTE:</strong> Set this value above the normal temperature range of the UPS. If you don’t, the Internal Temperature Exceeds Critical Range event will be continually generated.</td>
</tr>
<tr>
<td></td>
<td>To troubleshoot this, see <strong>UPS Internal Temperature Threshold Exceeded</strong>.</td>
</tr>
<tr>
<td>High Internal Temp Warning Threshold</td>
<td>When this temperature is exceeded, a <strong>UPS Internal Temperature Warning</strong> event is generated.</td>
</tr>
</tbody>
</table>
Bypass Settings

The UPS can be placed into bypass mode for maintenance.

The options explained below do not display for all UPS devices. Only supported options will be displayed for your UPS model.

To place the UPS in bypass, the input voltage to the UPS must fall between the upper and lower bypass limits.

Possible values include:

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptable</td>
<td>Input voltage is within the bypass limits. The UPS can be placed into bypass mode.</td>
</tr>
<tr>
<td>Pending Acceptable</td>
<td>Input voltage is marginally outside the bypass limits.</td>
</tr>
<tr>
<td>Voltage Too High</td>
<td>Input voltage is above the upper bypass limit.</td>
</tr>
<tr>
<td>Voltage Too Low</td>
<td>Input voltage is below the lower bypass limit.</td>
</tr>
<tr>
<td>Distorted</td>
<td>Input voltage is distorted.</td>
</tr>
</tbody>
</table>

Select Bypass Action

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Put in Bypass</td>
<td>This option is available when the UPS is not in bypass mode.</td>
</tr>
<tr>
<td>Return from Bypass</td>
<td>This option is available when the UPS is in bypass mode.</td>
</tr>
</tbody>
</table>
Event Configuration

The **Event Configuration** screen lists the events that can occur and separates them into three categories - critical (severe), warning, and informational. You cannot change an event's category.

By default, the Informational events are hidden, click the + icon beside **Informational** to display them. You can also click the - sign to hide any of the three categories.

You can configure events to cause certain actions, named in separate columns:

- **Logging**: Records the event in the Event Log when the checkbox is selected.
- **E-Mail**: Sends an e-mail message to users and administrators when an event occurs. The checkbox must be selected to enable this. E-mail must be configured in PowerChute, see **E-Mail Settings**.
- **Shutdown**: Initiates an operating system shutdown sequence in response to an event when the checkbox is selected. See **Shutdown**.

**IMPORTANT**: Changing the shutdown and command file options for events has a direct effect on the configuration you specify on the **Shutdown Settings** page. See **Power Outage Configuration and Shutdown on Event Configuration**.

- **Command File**: Runs a user-specified command file when an event occurs.

Command files are often used to shut down open applications in order to avoid loss of data. They have to be placed in this folder:

<Installation folder>\APC\PowerChute Business Edition\agent\cmdfiles

which for example is, by default on Windows, this folder:

C:\Program Files (x86)\APC\PowerChute Business Edition\agent\cmdfiles

Click on the Command File icon to enable it, and choose a file to run and a duration.

All command file types are supported.

**IMPORTANT**: PowerChute does not check the contents of a command file before executing it.

When you have enabled a command file for an event, the icon color changes from grey, 🔄️, to green, 🔄️.

See also **Command file durations and shutdowns** and **Power Outage Configuration and Shutdown on Event Configuration**.

Some events cannot be configured to trigger certain actions and have no checkbox for that action. For example, most informational events cannot cause a shutdown so the checkbox is missing in the Shutdown column for those events.

Description of events

For descriptions of individual events, see:

- Critical events
- Warning events
- Informational events
The events that display depend on your UPS, some events described below might not display for your UPS.

**Critical events**

Critical (severe) events can cause the UPS to stop supplying power to its supported equipment. These events require your immediate attention.

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication Lost While on Battery</td>
<td>A problem occurred causing PowerChute to lose communication with the UPS while the UPS was operating on battery power. Make sure that the proper communications cable is being used and that it is connected correctly.</td>
</tr>
<tr>
<td>UPS Internal Temperature Threshold Exceeded</td>
<td>The internal temperature of the UPS has exceeded the user-configured threshold. This causes a shutdown which cannot be canceled, even if the internal temperature returns to normal. You can set this threshold in the High Internal Temp Threshold under UPS Settings. After this event occurs, to prevent it occurring repeatedly, when you log onto the machine with the Agent installed, you must stop the Agent service immediately. You should disconnect your UPS and wait for the temperature to cool down. See &quot;Starting and Stopping the PowerChute Agent&quot; in the Installation Guide available on the APC website.</td>
</tr>
<tr>
<td>Low Battery</td>
<td>A UPS that is operating on battery power has reached the low runtime threshold - the Runtime Remaining reported by the UPS is less than the At runtime limit value on the Shutdown Settings screen.</td>
</tr>
</tbody>
</table>

**Warning events**

Warning events alert you to situations that should be monitored

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>On Battery</td>
<td>The UPS has switched to battery operation due to a power outage or poor power quality.</td>
</tr>
<tr>
<td>Battery Discharged</td>
<td>An On Line UPS has reached the low runtime threshold. If a power outage occurs, a shutdown will begin immediately. The low runtime threshold indicates that the Runtime Remaining reported by the UPS is less than the At runtime limit value on the Shutdown Settings screen.</td>
</tr>
<tr>
<td>Event Name</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Overload</td>
<td>The UPS cannot support the current load. It is at 105% or more of its maximum capacity. (This percentage varies between UPS devices and can be as high as 110%). If the overload was not caused by adding new load equipment, do the following: 1. Run a UPS self test to see if the problem clears. 2. If the problem persists, disconnect all equipment from the UPS and reboot the UPS. 3. If the problem is cleared, reconnect and turn on the load equipment, one piece at a time, to determine which piece of equipment causes the overload. If the overload still exists, the UPS needs to be repaired or replaced. For further information, see the support services at <a href="http://www.apc.com/support">www.apc.com/support</a>.</td>
</tr>
<tr>
<td>Self Test Failed</td>
<td>The UPS did not pass its last self test. It might have a bad battery. If the system is reporting an Insufficient Runtime Available or an Overload condition, clear the event and test the UPS again. If the self test fails again, see the support services at <a href="http://www.apc.com/support">www.apc.com/support</a>.</td>
</tr>
<tr>
<td>Communication Lost</td>
<td>Communication between PowerChute and the UPS has been lost while the UPS was On Line. Make sure that the proper communications cable is being used and that it is connected correctly. See also Communication Lost While on Battery.</td>
</tr>
<tr>
<td>Time on Battery Threshold Exceeded</td>
<td>The UPS is on battery and has breached the user-configured threshold. Specifically, the time that the UPS has been on battery exceeds the After UPS has been on battery for value on the Shutdown Settings screen.</td>
</tr>
<tr>
<td>Output Load Threshold Exceeded</td>
<td>The UPS has exceeded the user-defined load threshold. See UPS Output Load Threshold on UPS Settings. This threshold event can be seen as a warning. The UPS itself determines when the UPS is actually overloaded and this generates another more serious event, see Overload.</td>
</tr>
<tr>
<td>Insufficient Runtime Available</td>
<td>The UPS is On Line and is below the low runtime threshold - the Runtime Remaining reported by the UPS is less than the total turn-off delays for the outlet group supplying power to the Agent. This outlet group is designated by the PowerChute logo on the Outlet Sequence screen, see Using the graph and common fields. In a forced shutdown, the UPS might not have enough runtime available to perform a graceful shutdown.</td>
</tr>
<tr>
<td>Event Name</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Low Runtime Available</td>
<td>The UPS is on battery and is below the low runtime threshold - the Runtime Remaining reported by the UPS is less than the total turn-off delays for the outlet group supplying power to the Agent. This outlet group is designated by the PowerChute logo on the Outlet Sequence screen, see Using the graph and common fields. In a forced shutdown, the UPS will NOT have enough runtime available to perform a graceful shutdown.</td>
</tr>
<tr>
<td>Battery Needs Replacing</td>
<td>One or more UPS batteries need to be replaced. See Battery Management.</td>
</tr>
<tr>
<td>UPS Internal Temperature</td>
<td>The warning threshold in place for your UPS internal temperature has been exceeded. See High Internal Temp Warning Threshold.</td>
</tr>
<tr>
<td>Bypass Internal Fault</td>
<td>The UPS has reported an internal hardware problem.</td>
</tr>
<tr>
<td>AVR Boost Enabled</td>
<td>The UPS began using AVR Boost to correct a low voltage condition.</td>
</tr>
<tr>
<td>AVR Trim Enabled</td>
<td>The UPS began using AVR Trim to correct a high voltage condition.</td>
</tr>
<tr>
<td>Battery Disconnected</td>
<td>The battery in your UPS has been disconnected or removed. Reconnect the battery. If this does not clear the problem, see the support services at <a href="http://www.apc.com/support">www.apc.com/support</a>.</td>
</tr>
<tr>
<td>Frequent Overvoltage</td>
<td>The UPS has been using its AVR Trim feature to decrease a high input voltage more than five times during the last 24 hours, or more than fifteen times during the last seven days. This may indicate that the quality of the input voltage provided to the UPS needs to be improved. This event will resolve when the input voltage returns to normal, or the input voltage becomes too high to be gracefully decreased (On Battery event). If the devices connected to the UPS can accept a less sensitive input power quality, configure the UPS to use the AVR Trim feature less frequently, by setting the Upper Bypass Limit (or High Transfer Voltage) to its highest setting, and the Power Quality Sensitivity to Low.</td>
</tr>
<tr>
<td>Frequent Undervoltage</td>
<td>The UPS has been using its AVR Boost feature to increase a low input voltage more than five times during the last 24 hours, or more than fifteen times during the last seven days. This may indicate that the quality of the input voltage provided to the UPS needs to be improved. This event will resolve when the input voltage returns to normal, or the input voltage becomes too low to be gracefully increased (On Battery event). If the devices connected to the UPS can accept a less sensitive input power quality, configure the UPS to use the AVR Boost feature less frequently, by setting the Lower Bypass Limit (or Low Transfer Voltage) to its lowest setting, and the Power Quality Sensitivity to Low.</td>
</tr>
</tbody>
</table>
Informational events report data about the operation of the UPS device.

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Description</th>
</tr>
</thead>
</table>
| Extended Overvoltage                            | The UPS has been using its AVR Trim feature to decrease a high input voltage continuously for at least one hour. This may indicate that the quality of the input voltage provided to the UPS needs to be improved.  

This event will resolve when the input voltage returns to normal, or the input voltage becomes too high to be gracefully decreased (On Battery event).  

If the devices connected to the UPS can accept a less sensitive input power quality, configure the UPS to use the AVR Trim feature less frequently, by setting the Upper Bypass Limit (or High Transfer Voltage) to its highest setting, and the Power Quality Sensitivity to Low.  

Contact APC Support for information on how to improve the quality of UPS input power. |
| Extended Undervoltage                           | The UPS has been using its AVR Boost feature to increase a low input voltage continuously for at least one hour. This may indicate that the quality of the input voltage provided to the UPS needs to be improved.  

This event will resolve when the input voltage returns to normal, or the input voltage becomes too low to be gracefully increased (On Battery event).  

If the devices connected to the UPS can accept a less sensitive input power quality, configure the UPS to use the AVR Boost feature less frequently, by setting the Lower Bypass Limit (or Low Transfer Voltage) to its lowest setting, and the Power Quality Sensitivity to Low.  

Contact APC Support for information on how to improve the quality of UPS input power. |
| Invalid Configuration File                      | The contents of the pcbeconfig.ini file are invalid. Open the pcbeconfig.ini file using a text editor (e.g. Notepad) to view and resolve the errors. |

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Description</th>
</tr>
</thead>
</table>
| On Line (Green Mode)                            | Your UPS has begun operating in green mode: it is running normally on AC utility power, and the electrical input is being utilized with high efficiency.  

NOTE: Some UPS devices can incorrectly signal they are in this mode when the internal battery is disconnected. |
| No Longer On Battery                            | AC utility power has been restored; the UPS is no longer running on battery power. This event follows On Battery. |
| Overload Solved                                 | The overload condition has been corrected. See Overload. |
| Output Load in Range                            | The UPS load out-of-range condition has been corrected. See Output Load Threshold Exceeded. |
| Shutdown Starting Shutdown in Progress          | Various stages of the shutdown procedure. |
| Calibration Started Calibration Complete        | Various stages of a runtime calibration. A calibration cancellation can be caused by either a user or a power outage. See Diagnostics. |
| Calibration Canceled                            |                                                                                                                                            |
Command file durations and shutdowns

The Time for other applications to shut down on the Outlet Sequence screen is an important element in a shutdown (see the OFF sequence for more details). The value is read-only on the Outlet Sequence screen.

It represents the longest command file duration configured for any event that has shutdown enabled. Time for other applications to shut down is automatically updated when the longest command file duration is increased by using the Event Configuration screen.

For example, the Battery Discharged and On Battery events are both configured to shutdown. If you configure the command file associated with the Battery Discharged event to have a duration of 3 minutes, and the On Battery command file duration to 4 minutes, Time for other applications to shut down will be 4 minutes.

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication Established</td>
<td>PowerChute has established communication with the UPS.</td>
</tr>
<tr>
<td>Monitoring Started</td>
<td>PowerChute has started or stopped monitoring the UPS.</td>
</tr>
<tr>
<td>Monitoring Stopped</td>
<td></td>
</tr>
<tr>
<td>Sufficient Runtime Available</td>
<td>This event follows Insufficient Runtime Available. Your UPS now has enough runtime available to perform a graceful shutdown.</td>
</tr>
<tr>
<td>Administrative Shutdown</td>
<td></td>
</tr>
<tr>
<td>Scheduled</td>
<td>You have commanded a shutdown to start soon. This event is shown either ten minutes before a scheduled shutdown is due to occur, or when a shutdown has been created in the Shutdown Now screen. An administrative shutdown is caused by a user rather than an event such as a power outage. See Shutdown.</td>
</tr>
<tr>
<td>Pending</td>
<td>A shutdown will start after the user-specified delay has expired. This delay is specified in the Scheduled Shutdown screen, or under ‘Begin OS Shutdown Sequence In’ in the Shutdown Now screen. See Shutdown.</td>
</tr>
<tr>
<td>Canceled</td>
<td>Cancel Server Shutdown was selected by the user and the shutdown process was aborted. An administrative shutdown is caused by a user rather than an event such as a power outage. See Shutdown.</td>
</tr>
<tr>
<td>Self Test Initiated</td>
<td>The UPS has started or passed its internal diagnostic self test. See Diagnostics for details of the date and status of the self test.</td>
</tr>
<tr>
<td>Self Test Passed</td>
<td></td>
</tr>
<tr>
<td>AVR Boost No Longer Active</td>
<td>The UPS no longer needs to use AVR Boost to correct a low voltage condition. This event follows AVR Boost Enabled.</td>
</tr>
<tr>
<td>AVR Trim No Longer Active</td>
<td>The UPS no longer needs to use AVR Trim to correct a high voltage condition. This event follows AVR Trim Enabled.</td>
</tr>
<tr>
<td>Battery Reconnected</td>
<td>The battery in your UPS had previously been disconnected and is now reconnected.</td>
</tr>
<tr>
<td>Bypass Maintenance</td>
<td>The UPS has been switched to bypass using the rear-panel switch on the device.</td>
</tr>
<tr>
<td>Bypass User-Initiated</td>
<td>A user has initiated a bypass using either the software or the UPS front-panel control.</td>
</tr>
<tr>
<td>Bypass Ended</td>
<td>The UPS is no longer on bypass.</td>
</tr>
<tr>
<td>Battery Replaced</td>
<td>Various states relating to the battery.</td>
</tr>
<tr>
<td>Internal Temperature in</td>
<td>The internal temperature of the UPS has returned to an acceptable level. This event follows UPS Internal Temperature Threshold Exceeded or UPS Internal Temperature Warning.</td>
</tr>
<tr>
<td>Range</td>
<td></td>
</tr>
<tr>
<td>Configuration File Changed</td>
<td>The pcbeconfig.ini file has been edited directly.</td>
</tr>
</tbody>
</table>
E-Mail Settings

The E-Mail Settings screen lists the e-mail addresses of users configured to be notified when an event occurs. In order to receive e-mail notifications when an event occurs, the e-mail address must be set up here. See Event Configuration for information on configuring an event to send an e-mail when it occurs.

The following five fields must be defined to enable PowerChute to send e-mail messages when events occur. (This includes messages to pagers that accept e-mail).

- **SMTP Server (Hostname, IPv4, or IPv6)** identifies the SMTP server by one of the three methods mentioned: its name, its IPv4 address, or its IPv6 address. An example hostname is mail.server.com.
- **From E-Mail Address** specifies the e-mail that the recipient gets the mail from. It is the e-mail account to be used to send notifications.
- **Port** specifies the port number from which e-mail is sent via SMTP. Port numbers can have a maximum of five digits and can be set to 25, 465, 587, or any number ranging from 5000 to 32768. If you do not enter a port number, the default of 25 is used.
- **Use SSL/TLS** defines the e-mail encryption protocol that will be used when e-mail is sent. There are three options available:
  - **None selected** – if authentication is disabled, no e-mail encryption protocol will be used and e-mail will be sent unencrypted. If authentication is enabled, e-mail will be encrypted using the SMTPS protocol.
  - **SSL** – e-mail will be encrypted using the SSL encryption protocol. You must select port 465 or the port your email administrator has assigned for SSL communications.
  - **TLS** – e-mail will be encrypted using the TLS encryption protocol. You must select port 587 or the port your email administrator has assigned for TLS communications.
If you are using SSL/TLS and your SMTP Server uses a self-signed certificate, the certificate must be added to the trusted certificate store of the bundled Java JRE.

**On Windows:**
1. Stop the PowerChute service via the services console – APC PBE Agent – or using the command `net stop pbeagent`.
2. Copy `server.crt` (or `server.cer`) to the security directory in the installed PowerChute directory (e.g. `C:\Program Files (x86)\APC\PowerChute Business Edition\jre\lib\security`).
3. Open a command prompt with Administrator privileges and navigate to this security directory.
4. Execute the following command to import the email certificate into the JRE trusted certificate store:
   ```
   ..\..\bin\keytool -import -alias mailserv -file server.crt -keystore cacerts -storepass changeit
   ```
5. Accept the certificate when prompted.
6. Start the PowerChute service via the services console – APC PBE Agent – or using the command `net start pbeagent`.

**On Unix/Linux:**
1. Stop the PowerChute service using one of the following commands: `service pbeagent stop`, or `systemctl stop PBEAgent.service`, or `/etc/init.d/PBEAgent.stop`.
2. Copy `server.crt` (or `server.cer`) to the security directory in the installed PowerChute directory (e.g. `opt/APC/PowerChuteBusinessEdition/jre/lib/security`).
3. Open a Terminal with Administrator privileges and navigate to this security directory.
4. Execute the following command to import the email certificate into the JRE trusted certificate store:
   ```
   ../../bin/keytool -import -alias mailserv -file server.crt -keystore cacerts -storepass changeit
   ```
5. Accept the certificate when prompted.
6. Start the PowerChute service using one of the following commands: `service pbeagent start`, or `systemctl start PBEAgent.service`, or `/etc/init.d/PBEAgent.start`

**NOTE:** In the above examples, `mailserv` is the alias of the mail server used within the cert file, and `server.crt` is the self-signed SSL cert of the mail server. `.cer` files are also accepted.

For more information, see Replace Default PowerChute SSL Certificate.

See also: Authenticating e-mail.

- To E-Mail Address: See Adding and removing e-mail recipients.

### Adding and removing e-mail recipients

To add an e-mail, under the **Add/Remove E-Mail Recipients** section, type an e-mail address and click the **Apply** button.

To remove an e-mail, select the checkbox to the right of the address, and click **Apply**.

Filling in the **Contact Name** and **System Location** under **Contact Information** is optional. If present, the information is included in e-mails. The name is intended to represent the person responsible for the maintenance of the UPS. The location is the physical location of the server hosting the PowerChute Agent.
We advise testing your e-mail settings after configuration. You can do this by selecting an E-Mail checkbox for an event with Event Configuration, and then create that event.

**Authenticating e-mail**

Authenticating e-mail is optional. You can enable it by selecting the Basic E-Mail for Authentication checkbox. Contact your e-mail administrator if you’re not sure about authentication.

If you are going to use authentication, you can specify a server username and password in the respective fields, but you do not have to do so. If you don’t specify a server username and password, PowerChute uses the SMTP Server (Hostname, IPv4, or IPv6) to obtain a list of IP Addresses that are allowed to send authenticated e-mails.

**SNMP Settings**

PowerChute Business Edition can be configured to communicate via Simple Network Management Protocol (SNMP), and can be discovered via SNMP by a Network Management System (NMS). Using SNMP and the PowerNet MIB, you can query and configure PowerChute settings, and generate SNMP traps to automatically notify you of UPS shutdown events and lost communication events.

The PowerNet MIB is located in the etc directory in the PowerChute installation directory. The latest version is also available on the APC website, choose Firmware Upgrades - MIB from the Filter by Software / Firmware drop-down box.

SNMPv1 and SNMPv3 are supported by PowerChute Business Edition, and are enabled via the Agent web interface. The SNMP Agent is not discoverable via SNMP until SNMPv1 or SNMPv3 is enabled, and one user profile is configured.

SNMPv1 is less secure than SNMPv3. SNMPv1 does not provide encryption or authentication, and the Community Name is sent over the network in plain text. To use encryption and authentication with SNMP, configure SNMPv3 settings.

See:

- SNMP v1 Configuration
- SNMP v3 Configuration
- SNMP Trap Configuration
- SNMP Data Points
SNMP v1 Configuration

Select **Enable SNMPv1 access** to configure the User Profiles required to communicate via SNMPv1. Select **Add Profile** or edit the default profile (PCBEUser) and configure:

1. **Community Name**: The Community Name is sent with each SNMP request to obtain access to a device. The maximum length is 15 ASCII characters.
2. **NMS IP/Host Name**: The IP address, Host Name or Fully Qualified Domain Name of the Network Management System (NMS). An NMS is software that is used to manage software and hardware components on the network. It can be used to manage PowerChute via SNMP by issuing SNMP GET and SET commands. The default value of 0.0.0.0 permits access from any NMS.
3. **Access Type**:
   - **Disable**: No SNMP GET or SET requests are permitted.
   - **Read**: Only SNMP GET requests are permitted.
   - **Read/Write**: SNMP GET and SET requests are permitted.

   To edit an existing SNMPv1 user profile, click the button. To delete an SNMPv1 user profile, click the button.

   Click **Apply** to save the SNMPv1 configuration.

   Certain Network Management Systems require the SNMP Engine ID to communicate via SNMP. The SNMP Engine ID is displayed under the Miscellaneous section of the SNMP Settings page.

   See also: **SNMP Data Points**

SNMP v3 Configuration

Select **Enable SNMPv3 access** to configure the SNMPv3 settings. Select **Add Profile** and configure:

1. **User Name**: In SNMPv3, all GET and SET requests and SNMP Traps are matched to a user profile by the User Name. Enter a user name of a length less than or equal to 32 ASCII characters.
2. **Authentication Protocol**: Select MD5, SHA-1 or SHA-2 (SHA256 or SHA512) protocol. It is recommended to use an SHA-2 protocol, if the NMS supports it.
3. **Authentication Passphrase**: Enter an authentication password for the protocol selected, of 8-32 ASCII characters.
4. **Privacy Protocol**: Select AES-128, AES-192, AES-192 Ex†, AES-256, AES-256 Ex†, or DES. It is recommended to use the AES-256 protocol, if the NMS and PowerChute JRE support it:
   
   **† NOTE**: Certain SNMP Network Management Systems use a non-standard AES key extension algorithm for 192 and 256 bit key lengths. This non-standard implementation or “Key extension algorithm” is specified by the IETF.

   If your NMS requires the use of the Key Extension algorithm, select Privacy Protocol options AES-192 Ex or AES-256 Ex.
5. **Privacy Passphrase**: Enter a privacy password for the encryption protocol selected, of 8-32 ASCII characters.
6. **Access Type**:
   - **Disable**: No SNMP GET or SET requests are permitted.
   - **Read**: Only SNMP GET requests are permitted.
   - **Read/Write**: SNMP GET and SET requests are permitted.

   To edit an existing SNMPv3 user profile, click the button. To delete an SNMPv3 user profile, click the button.
Click **Apply** to save the SNMPv3 configuration.

Certain Network Management Systems require the SNMP Engine ID to communicate via SNMP. The SNMP Engine ID is displayed under the Miscellaneous section of the SNMP Settings page.

See also: **SNMP Data Points**

### SNMP Trap Configuration

You can specify the device(s) that receive the SNMP traps generated by PowerChute for UPS critical and lost communication events.

To configure a Trap Receiver, select **Add Trap Receiver** and configure:

1. **Enable**: Select the checkbox to enable the Trap Receiver.
2. **NMS IP/Host Name**: The IP address, Host Name or Fully Qualified Domain Name of the NMS.
3. **Port**: The port on which the NMS will listen for incoming traps. The default port number is 162.
4. **SNMPv1**: Select this if you want to send the traps via SNMPv1.
   - **Community Name**: Enter the Community Name of the SNMPv1 user profile to be used as an identifier when SNMPv1 traps are sent to this receiver.
5. **SNMPv3**: Select this if you want to send the traps via SNMPv3.
   - **User Name**: Select the user name of the SNMPv3 user profile to be used as an identifier when SNMPv3 traps are sent to this receiver.

Click the **SNMP Trap Receiver Test** to send a test trap to the configured Trap Receiver. Check the Trap Receiver to ensure that the test trap was received.

To edit an existing SNMP Trap Receiver, click the **Edit** button. To delete an SNMP Trap Receiver, click the **Delete** button.

### UPS Critical Events

PowerChute sends SNMP traps to the configured Trap Receiver(s) upon the following events:

- **PowerChute Shutdown Event Occurs**
  
  When a shutdown event occurs and a Shutdown is triggered, PowerChute sends an SNMP trap to the configured Trap Receiver detailing the Event Name.

- **PowerChute Shutdown Event Resolved**
  
  If the option to Send Trap when condition is cleared is enabled, when a shutdown event which triggered a Shutdown is resolved, PowerChute sends an SNMP trap to the configured NMS.

### Lost Communication Events

PowerChute sends SNMP traps to the configured Trap Receiver(s) when the **Communication Lost** event occurs.

If the option to **Send Trap when condition is cleared** is enabled, a Communications Established trap is sent when the communications lost event is resolved.
Other Events

Software Update Available Trap
When the PowerChute Auto Update functionality detects that there is a new update available; a trap is sent to the configured Trap Receiver.

PowerChute Test Trap
When configuring a Trap Receiver, a test trap can be sent to determine if the Trap Receiver is receiving the traps. See SNMP Trap Configuration.

Configuring SNMP Trap Notification Settings
To configure the settings for UPS Critical Event or Lost Communication traps:

1. Go to SNMP Settings > SNMP Traps
2. Click on the icon next to UPS Critical Events or Lost Communication Events
3. Select the Enable checkbox to enable traps for those events.
4. Delay: Specify the length of time that Event must persist before a trap is sent. If the Event is cleared before this time, no trap is sent.
5. Repeat Interval: Specify the time interval in seconds that the trap is re-sent.
6. Select:
   – Repeat until condition clears if you want the trap to be sent at the repeat interval until the Event is cleared.
   – Repeat X times to specify the number of times the trap will be sent when the Event occurs.
7. Select Send Trap when condition is cleared to be notified when the Event is cleared.

NOTE: If the PowerChute Business Edition Agent is shutdown due to a UPS Critical Event, no clearing Trap will be sent to the NMS.

See also: SNMP Data Points > SNMP Traps
SNMP Data Points

The following table lists the SNMP Object Identifiers (OIDs) supported by PowerChute Business Edition.

NOTE: Your UPS may not support all SNMP OIDs listed.

Refer to the PowerNet MIB available on the APC website for detailed descriptions of each OID, including parameters for SET and GET operations.

## UPS Information

<table>
<thead>
<tr>
<th>SNMP OID Name</th>
<th>Access</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>upsBasicIdentModel</td>
<td>read-only</td>
<td>The UPS Model Name (e.g. APC Smart-UPS 1000).</td>
</tr>
<tr>
<td>upsBasicIdentName</td>
<td>read-write</td>
<td>The UPS Name.</td>
</tr>
<tr>
<td>upsAdvIdentFirmwareRevision</td>
<td>read-only</td>
<td>The version number of the UPS firmware.</td>
</tr>
<tr>
<td>upsAdvIdentDateOfManufacture</td>
<td>read-only</td>
<td>The date that the UPS was manufactured, in mm/dd/yy or mm/dd/yyyy format.</td>
</tr>
<tr>
<td>upsAdvIdentSerialNumber</td>
<td>read-only</td>
<td>The internal serial number of the UPS internal microprocessor. NOTE: This value does not correspond to the serial number at the back of the UPS.</td>
</tr>
<tr>
<td>upsBasicBatteryStatus</td>
<td>read-only</td>
<td>The status of the UPS batteries.</td>
</tr>
<tr>
<td>upsBasicBatteryTimeOnBattery</td>
<td>read-only</td>
<td>The elapsed time since the UPS switched to battery power.</td>
</tr>
<tr>
<td>upsBasicBatteryLastReplaceDate</td>
<td>read-write</td>
<td>The date that the UPS batteries were last replaced, in mm/dd/yy or mm/dd/yyyy format.</td>
</tr>
<tr>
<td>upsAdvBatteryCapacity</td>
<td>read-only</td>
<td>The remaining battery capacity, expressed as a percentage of full capacity.</td>
</tr>
<tr>
<td>upsAdvBatteryTemperature</td>
<td>read-only</td>
<td>The current internal UPS temperature, in Celsius.</td>
</tr>
<tr>
<td>upsAdvBatteryRunTimeRemaining</td>
<td>read-only</td>
<td>The time remaining before the UPS batteries will be depleted.</td>
</tr>
<tr>
<td>upsAdvBatteryReplaceIndicator</td>
<td>read-only</td>
<td>This value indicates if the UPS batteries need to be replaced.</td>
</tr>
<tr>
<td>upsAdvBatteryNumOfBattPacks</td>
<td>read-only</td>
<td>The number of external battery packs connected to the UPS.</td>
</tr>
<tr>
<td>upsAdvBatteryActualVoltage</td>
<td>read-only</td>
<td>The battery voltage, in Volts.</td>
</tr>
<tr>
<td>upsBasicInputPhase</td>
<td>read-only</td>
<td>The current AC input phase.</td>
</tr>
<tr>
<td>upsAdvInputLineVoltage</td>
<td>read-only</td>
<td>The current voltage of the input power to the UPS, in VAC.</td>
</tr>
<tr>
<td>upsAdvInputFrequency</td>
<td>read-only</td>
<td>The current input frequency to the UPS, in Hertz.</td>
</tr>
<tr>
<td>upsAdvInputLineFailCause</td>
<td>read-only</td>
<td>The most recent reason why the UPS transferred to battery power.</td>
</tr>
<tr>
<td>upsBasicOutputStatus</td>
<td>read-only</td>
<td>The current state of the UPS (e.g. On Line, On Battery, etc.).</td>
</tr>
<tr>
<td>upsBasicOutputPhase</td>
<td>read-only</td>
<td>The current output phase.</td>
</tr>
<tr>
<td>upsAdvOutputVoltage</td>
<td>read-only</td>
<td>The output voltage of the UPS, in VAC.</td>
</tr>
<tr>
<td>upsAdvOutputFrequency</td>
<td>read-only</td>
<td>The current output frequency of the UPS, in Hertz.</td>
</tr>
<tr>
<td>upsAdvOutputLoad</td>
<td>read-only</td>
<td>The current UPS load expressed as a percentage of the UPS rated capacity.</td>
</tr>
</tbody>
</table>
| **upsAdvOutputCurrent** | read-only | The current (in amperes) drawn by the load connected to the UPS.
| **upsAdvConfigRatedOutputVoltage** | read-write | The nominal output voltage from the UPS, in VAC.
| **upsAdvConfigHighTransferVolt** | read-write | The maximum line voltage in VAC permitted before the UPS transfers to battery power. See [High Transfer Voltage](#).
| **upsAdvConfigLowTransferVolt** | read-write | The minimum line voltage in VAC permitted before the UPS transfers to battery power. See [Low Transfer Voltage](#).
| **upsAdvConfigAlarm** | read-write | An indication of how the UPS should handle audible line fail alarms.
| **upsAdvConfigSensitivity** | read-write | The sensitivity of the UPS to input power noise.
| **upsAdvConfigLowBatteryRunTime** | read-write | The desired runtime of the UPS, once the low battery condition is reached, in seconds.
| **upsAdvConfigShutoffDelay** | read-write | The number of seconds the UPS remains on, once it has been commanded to turn off.
| **upsAdvConfigAllowedSetTable** | read-only | Read this OID to get the UPS data points for which you set values, using an SNMP SET.

Querying this table returns the following OIDs:
- `upsAdvConfigRatedOutputVoltage`
- `upsAdvConfigHighTransferVolt`
- `upsAdvConfigLowTransferVolt`
- `upsAdvConfigLowBatteryRunTime`

The query also returns the acceptable range of values you can set for each OID. If your UPS does not support an OID, the query will return `null`.

| **upsAdvControlFlashAndBeep** | read-write | Write to this OID to control the UPS audible alarms and UPS display indicator lights.
| **upsAdvControlBypassSwitch** | read-write | Write to this OID to control the UPS bypass mode.
| **upsAdvTestDiagnosticSchedule** | read-write | Write to this OID to control the battery test schedule of the UPS.
| **upsAdvTestDiagnostics** | read-write | Write to this OID to command the UPS to perform a diagnostic self test.
| **upsAdvTestDiagnosticsResults** | read-only | The results of the last diagnostic UPS Self Test.
| **upsAdvTestLastDiagnosticsDate** | read-only | The date of the last UPS diagnostic test in mm/dd/yy format.
| **upsAdvTestRuntimeCalibration** | read-write | Writing to this OID provides options to perform a Runtime Calibration Test.
| **upsAdvTestCalibrationResults** | read-only | The results of the last Runtime Calibration test.
| **upsAdvTestCalibrationDate** | read-only | The date the last Runtime Calibration test was performed, in mm/dd/yy format.
| **upsCommStatus** | read-only | The status of the SNMP Agent's communication with the UPS.
| **powerNetSoftwareSystemDescription** | read-only | A description of the PowerChute Business Edition Agent.
<p>| <strong>upsOutletGroupStatusTableSize</strong> | read-only | The number of outlet groups in the UPS. |</p>
<table>
<thead>
<tr>
<th>upsOutletGroupStatusTable</th>
<th>read-only</th>
<th>This table allows you to get the status of the outlet groups in a UPS, as defined in the PowerNet MIB. The number of entries in this table depends on upsOutletGroupStatusTableSize.</th>
</tr>
</thead>
<tbody>
<tr>
<td>upsOutletGroupConfigTableSize</td>
<td>read-only</td>
<td>The number of outlet groups in the UPS.</td>
</tr>
<tr>
<td>upsOutletGroupConfigTable</td>
<td>read-write</td>
<td>A list of outlet groups that can be configured with a range of parameters as defined in the PowerNet MIB: • Name • PowerOnDelay • PowerOffDelay • RebootDuration • MinReturnRuntime • LoadShedControlSkipOffDelay • LoadShedControlAutoRestart • LoadShedControlTimeOnBattery • LoadShedControlRuntimeRemaining • LoadShedControlInOverload • LoadShedTimeOnBattery • upsOutletGroupConfigLoadShedRuntimeRemaining</td>
</tr>
</tbody>
</table>
PowerChute Business Edition Identity Information

<table>
<thead>
<tr>
<th>SNMP OID Name</th>
<th>Access</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pcbehostname</td>
<td>read-only</td>
<td>The hostname of the PowerChute Business Edition Agent.</td>
</tr>
<tr>
<td>pcbeVersion</td>
<td>read-only</td>
<td>The PowerChute Business Edition version number, in the format x.x.x.x.</td>
</tr>
<tr>
<td>pcbeOS</td>
<td>read-only</td>
<td>The operating system and version on which the PowerChute Business Edition is installed.</td>
</tr>
<tr>
<td>pcbeUIProtocol</td>
<td>read-only</td>
<td>The protocol used to connect to the PowerChute Agent web interface (http/https).</td>
</tr>
<tr>
<td>pcbeHttpsPort</td>
<td>read-only</td>
<td>The port used for the PowerChute https web interface.</td>
</tr>
</tbody>
</table>

PowerChute Business Edition Alarm Information

<table>
<thead>
<tr>
<th>SNMP OID Name</th>
<th>Access</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pcbeCriticalFlag</td>
<td>read-only</td>
<td>This OID indicates that PowerChute Business Edition has begun a graceful shutdown of the host.</td>
</tr>
<tr>
<td>pcbeCriticalCause</td>
<td>read-only</td>
<td>This OID provides the reason that PowerChute Business Edition has begun a graceful shutdown of the host.</td>
</tr>
<tr>
<td>pcbeComsLostFlag</td>
<td>read-only</td>
<td>This OID indicates that PowerChute cannot communicate with the UPS.</td>
</tr>
<tr>
<td>pcbeUpdateAvailableFlag</td>
<td>read-only</td>
<td>This OID indicates that a new version of PowerChute is available.</td>
</tr>
<tr>
<td>pcbeUpdateDesc</td>
<td>read-only</td>
<td>This OID provides the description of the new version of PowerChute that is available.</td>
</tr>
</tbody>
</table>

SNMP Traps

The tables below details the OID names of the SNMP traps sent by PowerChute for critical and lost communication events.

UPS Critical Events

<table>
<thead>
<tr>
<th>SNMP OID Name</th>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pcbeCriticalEventActive</td>
<td>Severe</td>
<td>PowerChute Business Edition has begun a graceful shutdown of the host due to a critical event.</td>
</tr>
<tr>
<td>pcbeCriticalEventResolved</td>
<td>Informational</td>
<td>The PowerChute critical event has been resolved, and a graceful shutdown of the host continues.</td>
</tr>
</tbody>
</table>

Lost Communication Events

<table>
<thead>
<tr>
<th>SNMP OID Name</th>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pcbeComsLost</td>
<td>Severe</td>
<td>PowerChute cannot communicate with the UPS.</td>
</tr>
<tr>
<td>pcbeComsLostResolved</td>
<td>Informational</td>
<td>PowerChute has re-established communications with the UPS.</td>
</tr>
</tbody>
</table>
### Other Events

<table>
<thead>
<tr>
<th>SNMP OID Name</th>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pcbeTest</td>
<td>Informational</td>
<td>PowerChute has sent a test trap to the NMS.</td>
</tr>
<tr>
<td>pcbeUpdateAvailable</td>
<td>Informational</td>
<td>PowerChute has detected that an update is available.</td>
</tr>
</tbody>
</table>
Shutdown

In PowerChute Business Edition, shutdowns can be initiated:

• Through an event occurring, see Event Configuration.
• By using a schedule, see Scheduled Shutdown.
• By manually shutting down your system, see Shutdown Now.
• By manually shutting down an outlet, see Outlet Control.

Shutdowns can also be initiated manually through the UPS LCD, or from “outside” PowerChute, e.g. from the Network Management Card (NMC). However, using the NMC in conjunction with PowerChute Business Edition is not supported.

Initial Setup

This option guides you through a series of screens that enable you to complete your shutdown configuration.

You can select this menu option at any time but this screen displays automatically when you first install PowerChute.

The configuration screens are listed below in their display order. You can also access these screens individually at any time.

• Shutdown Settings
• Outlet Sequence
• Scheduled Shutdown

You can exit the shutdown configuration on any of the screens. When you click the Next or Advanced Setup button, your changes are saved and are retained even if you cancel out of the Initial Setup sequence before the end.

Shutdown Settings

This screen summarizes your shutdown configuration and also enables you to configure some steps of the shutdown sequence. (This screen is also part of the shutdown configuration accessible through Initial Setup).

The summary includes timing and delays, with the “base time” being the occurrence of the On Battery event. The options chosen on this screen can affect the configuration of events, set up in Event Configuration. This can include which events are selected to cause a shutdown. Read the other sections below for further information.

See also:

• Power Outage Configuration
• Power Outage Configuration and Shutdown on Event Configuration
• Interactivity in shutdown durations
Power Outage Configuration

The **Power Outage Configuration** options define the response when a power problem causes the UPS to switch to battery operation.

- **Immediately** initiates a shutdown as soon as a **On Battery** event indicates that the UPS switched to battery power.
- **After UPS has been on battery for** initiates a shutdown when the UPS has been operating on battery power for the period of time configured here.
- **At runtime limit** configures the **Low Battery** event to shut down; this is viewable on the **Event Configuration** screen.
  - The Low Battery event is generated when the UPS is on battery and the battery runtime falls below the number of seconds you set here.
  - The Battery Discharged event is generated when the UPS is on line and the battery runtime falls below the number of seconds you set here.
- **Do not shut down during a power outage** relies on the Low Runtime Warning event to cause a shutdown.
  - The Low Runtime Warning event is generated when battery runtime falls below the combined time configured for Application and Operating System shutdown: see the **Operating System and Application Shutdown** section of this screen.

**NOTE:** This Low Runtime Warning event does not display on the **Event Configuration** screen as it is not configurable (because it *always* causes a shutdown).

When you select different radio button options here, the displayed summary information on this screen (under the **Shutdown Summary** heading) changes.

**Power Outage Configuration and Shutdown on Event Configuration**

Choosing one of the four **Power Outage Configuration** options on Shutdown Settings (discussed above) works interactively with the Event Configuration **Shutdown** checkboxes for different events.

You can see this by selecting a radio button option here, pressing Apply, and going to the **Event Configuration** screen to note the differences.
This is also true in reverse: changing a **Shutdown** checkbox for an event in Event Configuration can change which radio button option is selected here on Shutdown Settings.

This table summarizes the interaction:

<table>
<thead>
<tr>
<th>With this On Battery option selected:</th>
<th>...the Shutdown checkbox of these events is selected</th>
<th>Time on Battery Threshold Exceeded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Battery</td>
<td>On Battery</td>
<td></td>
</tr>
<tr>
<td>Immediately</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>After UPS has been on battery for</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>At runtime limit</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Do not shut down in the event of a power outage</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

* The **Low Runtime Remaining** event is always configured to shutdown for these **Power Outage Configuration** options. This event is only displayed in the **Event Log**, and is not configurable on the **Event Configuration** page.

For example, if you choose **Immediately** here and apply it, you will see in the **On Battery** row of the **Event Configuration** that the **Shutdown** checkbox has been selected automatically.

And if you then clear the **Shutdown** checkbox for the **On Battery** event of Event Configuration, apply it, and return here to **Shutdown Settings**, the **Immediate** option will NOT be the selected option.

**Interactivity in shutdown durations**

The value for **Time for operating system to shut down** on this **Shutdown Settings** screen displays as a read-only field on the **Outlet Sequence** screen, see **OFF sequence**. Upon installation, this is set to a value specific to your UPS model, usually 180 seconds or higher. If there is an attempt to change this value outside of PowerChute (e.g. via a Network Management Card), PowerChute will override this setting, reset it to the value specified via the PowerChute user interface, and log the override to the event log.

Another field on this **Shutdown Settings** screen, **Time required for command file to run** under Operating System and Application Shutdown, interacts with the **Command File Execution Duration** field for the **Shutdown Starting** event on **Event Configuration**. When they are changed, these fields automatically update each other.

(Note that the **Time required for command file to run** field only displays on **Shutdown Settings** when you have chosen a command file).
Hyper-V Server operating system shuts itself down only after shutting down its virtual machines. Allow for this in the Time for operating system to shut down value. Perform a test shutdown to gauge the time needed.
Scheduled Shutdown

Use this option to view and create scheduled shutdowns. (This screen is also part of the shutdown configuration accessible through Initial Setup).

See Outlet Sequence for information on setting up delays and sequencing in shutdowns.

Viewing and creating scheduled shutdowns

The calendar view is by month. Move from month to month by clicking on the arrow buttons on the top left. Click on the today button beside the arrow buttons to make today the highlighted date.

You can schedule a shutdown to:

- Occur once: runs once only
- Repeat Daily: runs every day at the same time.
- Repeat Weekly: runs on the same day of the week, every week.

A schedule that displays in red or with a red outline indicates one of the following:

1. The scheduled shutdown is due to run within ten minutes. At this point, you cannot edit a schedule though you can cancel it. The schedule is labeled as Pending.
2. The schedule can’t be run: something has happened since you created the scheduled shutdown. You should edit or delete this schedule, see Creating and editing schedules.

See also:

- Creating and editing schedules
- Moving and resizing schedules
- Overlapping scheduled shutdowns
- Daylight savings and scheduled shutdowns

Creating and editing schedules

Ensure that your local time settings (timezone, date, and time) are correct. We recommend that you don't create schedules from a web user interface in a different time zone.

To create a schedule:

- Click on a date in the main calendar view, and the Scheduled Shutdown dialog displays.
  NOTE: You can only create shutdown schedules for a future time and date.
- Fill in the fields:
  - Schedule Name: Provide a meaningful name for the schedule.
  - Shutdown sequence starts at: Enter the date and time at which you want the shutdown sequence to begin. Due to your UPS model, the time value can only be updated in 6-minute increments.
  Notes:
    - You can define the shutdown sequence by the configuring the Shutdown Settings.
    - Once you enter a date and time to start the shutdown sequence, the Turn-on sequence time is automatically populated to include:
      - The Time required for command file to run (defined in the Shutdown Settings), plus
      - The Time for Operating System to shutdown (defined in the Shutdown Settings), plus
      - A minimum stay off delay of 6 minutes (to ensure that the attached device has enough time to restart).
The time is displayed in 6-minute increments. The turn-on sequence cannot commence before the shutdown sequence has completed.

Turn-on sequence starts at: Enter the date and time at which you want the turn on sequence to begin. Due to your UPS model, the time value can only be updated in 6-minute increments.

**NOTE:** You can define the turn on delay settings on the Outlet Sequence page.

- Click OK and the schedule displays back on the calendar view.
- You can enter as many schedules as you like during a session and they all display in the calendar.

**NOTE:** Browser performance may suffer if you enter more than 1000 schedules.

- However, they are not saved until you press the Apply button.

To change or delete a schedule:

- Click on the scheduled shutdown in the main calendar view and the Scheduled Shutdown dialog displays with the current details.
- Change any field value as necessary and choose OK.
- Choose the Delete button to erase it from the calendar view.

A schedule is removed from the calendar after it runs.

A scheduled shutdown starts with the shutdown being initiated, and ends with the turn-on command. Though the schedule duration does not appear to include the turn-on delays, they are added to the schedule when it is executed. See Outlet Sequence.

### Moving and resizing schedules

You can move a schedule in the calendar view by clicking and dragging. However, you can’t copy a schedule.

You can expand a schedule into a future date, but not into a past date. Expanding can save you time because you don’t need to open the Scheduled Shutdown dialog.

To expand in the calendar view, hover the mouse pointer over the right edge of the schedule until you see the double-headed arrow, and click and drag.

### Overlapping scheduled shutdowns

Two overlapping scheduled shutdowns have some or all of their timing in common.

PowerChute Business Edition uses criteria to ensure that the overlapping schedules you enter make sense, as well as actually being possible to run.

To achieve this, PowerChute prevents the creation of some overlapping schedules and enforces priorities and rules, as outlined in Guidelines for running overlapping schedules.

### Guidelines for running overlapping schedules

If schedules overlap when they have one outlet group in common, then only one schedule is actually run.

How does PowerChute decide which one is run? By using this logic:

A once-off schedule has priority over:

1. a weekly schedule which has priority over
2. a daily schedule

The starting and ending times of the schedules are irrelevant in this.
For example, see the graphic, showing two overlapping schedules which both shut down the outlet called “Main Server”. Even though it begins later, the “Once off with Main Server” schedule has priority over the “Weekly for Main Server” schedule, and it is the only schedule which will run.

<table>
<thead>
<tr>
<th>Fri</th>
<th>Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>0:00 Once off</td>
<td>2:00 Weekly</td>
</tr>
<tr>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>2:00 Weekly</td>
</tr>
</tbody>
</table>

Prioritizing once-off schedules enables you to schedule a unique shutdown like a public holiday.

Prioritizing weekly over daily schedules enables you to shut down at the weekend, while maintaining daily scheduled shutdowns.

**IMPORTANT:** As indicated, a schedule could be designated to start before an overlapping one and still not run.

**Daylight savings and scheduled shutdowns**

Don’t schedule a shutdown to start or finish during a Spring daylight savings “transition hour”.

The transition hour means the skipped hour when daylight savings commences in Spring.
Outlet Sequence

The Outlet Sequence screen enables you to configure your outlet group to turn off and on in a specific sequence during a shutdown. (This screen is also part of the shutdown configuration accessible through Initial Setup).

Additionally, you can choose whether your outlet group should automatically turn back on after a shutdown. (By default, they turn on). The delays on this screen apply to all shutdowns whether initiated by a power event, a scheduled shutdown, or manually by a user.

Examples of how you might use this screen

You configure the Off Sequencing of your outlet groups by specifying the turn-off delays of individual outlet groups.

An example of this usage is in electronic “Point of sale” transactions, where it is essential to ensure that all the front office equipment has been shut down gracefully before the back office equipment shuts down also. This maintains the accuracy of the sales transaction data.

Similarly, On Sequencing is achieved by delaying the turning on of individual outlet groups. This applies when your system is starting up initially or on the return of AC utility power after an outage.

You might use on sequencing to avoid a temporary overload if all the devices connected to your UPS try to turn on at the same time. Another use might be to ensure that certain equipment, such as network switch devices, turns on before other equipment, such as servers, which need the network switch in order to communicate.

Turning On

<table>
<thead>
<tr>
<th>Outlet Group</th>
<th>Outlet Group</th>
<th>Outlet Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>with no delay</td>
<td>with 40 sec delay</td>
<td>with 80 sec delay</td>
</tr>
</tbody>
</table>

Point of sale | Back office equipment

0 100
Seconds
Understanding the usage of outlet groups can be facilitated by thinking of them as separate UPS devices in their functionality, or “virtual UPS devices”.

**Using the graph and common fields**

The graph at the top of this Outlet Sequence screen shows a timeline of delays, turn offs, and turn ons, for each outlet group included in a shutdown.

Each outlet group has its own row in the graph, with the outlet group name on the same row, to the right. The outlet group supplying power to the PowerChute Agent is designated by the PowerChute logo, 🚀

Time, in minutes and seconds, is measured along the bottom of the graph. The selected outlet group has a green border in the graph.

Move your pointer over each section in the graph to display text with information on time values for that outlet group.

View and edit the turn off and turn on values in individual fields lower down on the screen.

To move between outlets, you can either click on a different row in the graph, or select a different tab.

The **Automatically turn on all outlet groups when AC utility power returns** checkbox underneath the graph applies to all outlet groups displayed on this screen. If you want to turn on outlets manually after your system has turned off, clear this checkbox.

**Choosing which individual outlet groups to turn off in a shutdown**

At the top of each area under the tabs, a message states whether the selected outlet group turns off during a shutdown. The outlet group supplying power to the PowerChute Agent always turns off during a shutdown, so **This outlet group is included in a turn-off sequence** always displays under that tab.

What displays here for other outlet groups depends on which type of outlet group — Main or Switched — supplies power to the server that the PowerChute Agent is protecting. The different set-ups are discussed below.
**NOTE:** On Smart-UPS devices, any outlet group labeled Group 1, Group 2, is a Switched Outlet Group. Any unlabelled outlet group is a Main Outlet Group. (Some devices have no Main Outlet Group).

- If your UPS has a Main Outlet Group and it supplies power to the PowerChute Agent, then all outlet groups will automatically turn off. When turning off, a Main Outlet Group always turns off all the Switched Outlet Groups.

![Diagram](image)

**Turning off a Main Outlet Group also turns off all Switched Outlet Groups**

### Deciding on delay times for individual outlet groups

**OFF sequence**

The outlet group supplying power to the PowerChute Agent has these possible turn-off delay times:

- **Time for other applications to shut down**: this value represents a duration for applications like Siebel and Microsoft SQL to shut down gracefully and for any command file to run.
  
  This is a read-only value here. In many circumstances, it derives from Time required for command file to run on Shutdown Settings. However, if you configure ANY individual shutdown event to use a greater command file running time, then that is displayed here instead. (You configure this on Event Configuration). See also the Interactivity in shutdown durations.

- **Time for operating system to shut down**: this value is configured on the Shutdown Settings screen.

### Turn-off delays for the PowerChute Agent Outlet Group

![Diagram](image)
ON sequence

The following fields are present for all outlet groups:

- **Minimum battery charge required before outlet group turns on**: Select the percentage of battery charge that must be available before the outlet group will turn on. This value is included following a Low Battery, On Battery or Time on Battery Threshold Exceeded-related event shutdown.

- **Use this additional delay to sequence outlet group turn-on**: Selecting different delay values in this field causes the sequencing of turn ons. Place the mouse pointer over the different graph rows for further information on the delay values shown.

- Select a value (in seconds) to wait before the UPS will turn on the Main Outlet Group.
Outlet Control

The Control Outlet Groups screen shows you the name and present status of each outlet group on your UPS. In addition, you can specify actions to occur immediately by choosing from lists in the drop-down boxes.

The possible types of status for each outlet group are:

- On
- On, turning off
- On, processing shutdown
- On, processing sleep

To choose an action for an outlet group, select it from the drop-down box and click Apply. The available actions are:

- **Off with Delay** - turn off the outlet group power while enforcing the configured delays.
- **Shut down with Delay, AC restart** - turn off the outlet group while enforcing the configured delays; if AC utility power subsequently returns, the outlet group will restart, with configured delays.

When performing actions on the PowerChute Outlet Group, a turn off delay is always applied to allow for graceful shutdown.

This user interface always displays a confirmation screen before carrying out any of these actions. Use the Confirm button on that screen to continue with the action or Cancel to stop. The confirmation screen also specifies any configured delays in seconds.
Shutdown Now

Use the Shutdown Now screen to initiate a shutdown sequence, either immediately or within fifteen minutes. You can also control how and when the UPS turns on after the shutdown.

The screen can be used as a quick alternative to scheduling a once-off shutdown. In addition, it gives you the option of manually turning on power to the UPS after a shutdown.

<table>
<thead>
<tr>
<th>UPS Shutdown Type</th>
<th>With both of these options in this drop-down box — Delayed Wakeup and Manual Restart — the turn-off delays you have set up on Outlet Sequence are observed. However, the turn-on delays are observed with Delayed Wakeup but they are NOT observed with Manual Restart.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wakeup Delay</td>
<td>This field displays only when you choose Delayed Wakeup. Use it to specify the amount of time the UPS will remain turned off.</td>
</tr>
</tbody>
</table>

Use the Cancel Pending Shutdown button on this screen if you change your mind about shutting down. It displays on this screen before the shutdown commences.
Logging

Event Log

A PowerChute event can be critical, warning, or informational. An example of a critical event is a low battery, and a warning event could be when power to the UPS has been interrupted. Informational events are everyday occurrences such as the monitoring of your system has started, or a self test has passed.

The View Event Log screen lists and classifies the recent UPS events and the date and time each event occurred. The list starts with the most recent events. See Event Configuration for descriptions of events.

To export the log to a text file, EventLog.txt, click the Export button. View this file in Program Files (x86)\APC\PowerChute Business Edition\agent (or wherever it is installed).

To delete the contents of the event log, click the Clear Log button at the bottom of the screen.

Click Refresh to view events that might have occurred after you first displayed this screen.

Data Log

The View Data Log screen logs are sorted by date, then time, with the most recent data appearing at the top of each screen. This table gives a brief description of the fields:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Line Voltage (VAC)</td>
<td>The AC voltage being provided to the UPS at the time that the entry is made in the data log.</td>
</tr>
<tr>
<td>UPS Output Voltage (VAC)</td>
<td>The voltage, in volts AC, supplied by the UPS to its supported equipment.</td>
</tr>
<tr>
<td>Battery Voltage (VDC)</td>
<td>The voltage, in volts DC, on the UPS device's battery.</td>
</tr>
<tr>
<td>Battery Charge (%)</td>
<td>The percentage charge of the UPS battery capacity.</td>
</tr>
<tr>
<td>Input Frequency (Hz)</td>
<td>The frequency, in Hertz, of the input voltage to the UPS.</td>
</tr>
<tr>
<td>Output Frequency (Hz)</td>
<td>The frequency, in Hertz, of the output voltage.</td>
</tr>
<tr>
<td>UPS Load (%)</td>
<td>The percentage of the possible UPS load that your equipment used during the recording interval.</td>
</tr>
<tr>
<td>Internal UPS Temp (°C)</td>
<td>The UPS temperature in degrees Celsius or Fahrenheit.</td>
</tr>
</tbody>
</table>

NOTE: If the UPS has no internal temperature sensor, this column does not display.

Use the Show / Hide Columns button to hide any of the displayed columns, other than date and time which cannot be hidden.

Click the button to display the column checkboxes and clear any checkbox to hide that column. This feature affects the display only; all data is still recorded.

By clicking and dragging on a column heading, e.g. Output Frequency (Hz), you can move and re-arrange columns. To return to the original, default arrangement, click on the Reset Columns button.

To delete all records in the data log, click Clear Log at the bottom of the screen.

Click Refresh to view new data since you first displayed this screen.
Log Settings

Log Settings enables you to configure the recording parameters of both the Event and Data Logs. This includes disabling logging. If event logging is disabled, the options relating to logging in Event Configuration are also disabled.

The Event Log records individual event occurrences. The Data Log, by contrast, provides you with a snapshot of your system by recording values at regular time intervals.

Use Event Log Entry Expiration and Data Log Entry Expiration to choose a time interval for deleting log entries. For example, if you choose a month, then entries are deleted when they are a month old.

Log files taking up disk space

The log files can take a lot of disk space on your server. Be aware of this when you configure the options on this screen:

- With the Expiration fields (Event Log Entry Expiration and Data Log Entry Expiration), choosing a long time interval could mean that your log eventually takes up a lot of disk space.
- The Data Recording Interval field specifies how often the data is recorded to the Data Log. The smaller the interval, the more times the data is recorded and the larger the log file.
- If you choose Do Not Delete Entries, the files might get very large after a period of time.
Energy Management

Energy Management enables you to monitor the energy consumption of equipment attached to your UPS. This includes carbon dioxide consumption and your energy costs.

Energy Management accesses data on Schneider Electric servers by using the Internet.

Energy Reporting

The energy report gives you information on **Energy** consumed in kilowatts per hour and the **Cost** incurred in your local currency.

On installation, PowerChute references your operating system and determines your system locale. From the locale, PowerChute determines average prices and emissions for your country. (See Energy Settings).

**CO2**: The carbon dioxide that was emitted in generating this energy. This is measured over the chosen time period in kilograms or pounds.

Carbon dioxide is a greenhouse gas — it traps heat radiation that would otherwise escape from Earth — and is a primary cause of climate change.

Energy report time span

The energy report period is by default from the PowerChute Business Edition installation date to today.

You cannot enter a date prior to the PowerChute installation date in the **From** field. You cannot enter a date after today's date in the **To** field.

If you change the From date, this new date becomes the default, whereas the To date is always today's date.

(If you have performed a PowerChute upgrade, the From date is still the original installation date).

Energy usage reported by the UPS

For some UPS devices, cumulative energy from your UPS is displayed in the **Cumulative energy from your UPS** field at the bottom of the screen. This will always correspond to the kWh on the UPS LCD. It is the total energy usage of the UPS, so will also include any energy used prior to the PowerChute installation.

If you replace the UPS supporting your server with another UPS, the existing energy report values are not deleted.

Energy Settings

With this screen, you can change the country used in energy calculations, the cost of your energy, and your CO2 emissions calculation.

If you change your country here, ALL historical values, including CO2 emissions, are deleted. This is because energy costs vary between countries, so the historical costs would be very likely inaccurate.

The country selected is used to calculate average costs. However, if you know your energy costs from your electricity bill, then you can use the **Cost per <Kilowatt/ Pounds> Hour** column to input a different value.
Click on + at the foot of the **Energy Cost History** table to add another row.

Click on ⌒ to edit a row and ⌐ to delete a row.

![Warning]

If you delete a row, it will not be used in any future energy calculation.

**Energy calculation**

The costs and dates on display here combine to generate the report on **Energy Reporting**.

For example, suppose your screen by default displays 04/25/2017 with a cost of 0.1. You add a row with a date of 10/30/2017 and a cost of 0.15.

For the example, let’s say today’s date is January 3, 2018 (displayed as 01/03/2018).

In calculating the total cost, the Energy Reporting screen uses the 0.1 cost per hour for the dates 04/25 to 10/29 in 2017, and the 0.15 cost per hour for the period from 10/30/2017 to 01/03/2018.
About

The About dialog provides information about the UPS, and the system connected to the UPS.

**UPS Information Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPS Model</td>
<td>The model name of the UPS, e.g. Smart-UPS 750.</td>
</tr>
<tr>
<td>Firmware Revision</td>
<td>The revision of the UPS firmware. <strong>NOTE:</strong> This value does not display for all UPS devices.</td>
</tr>
<tr>
<td>Manufacture Date</td>
<td>The date that the UPS was manufactured.</td>
</tr>
<tr>
<td>Serial Number</td>
<td>The serial number of the UPS. This number is also printed on the label of the UPS.</td>
</tr>
<tr>
<td>Battery Installation Date</td>
<td>The date the UPS battery was installed.</td>
</tr>
<tr>
<td>UPS Name</td>
<td>The UPS name, as defined on the <strong>UPS Settings</strong> page.</td>
</tr>
</tbody>
</table>

**Protected System Information**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server Name</td>
<td>The name of the server connected to the UPS on which the PowerChute Agent is running.</td>
</tr>
<tr>
<td>IP Address</td>
<td>The IP address(es) of the server connected to the UPS.</td>
</tr>
<tr>
<td>Operating System</td>
<td>The operating system running on the server connected to the UPS.</td>
</tr>
<tr>
<td>UPS Communication Port</td>
<td>The communication port on the server to which the PowerChute Agent is connected.</td>
</tr>
<tr>
<td>Contact Name</td>
<td>The contact name assigned to the server connected to the UPS.</td>
</tr>
<tr>
<td>System Location</td>
<td>The location of the server connected to the UPS.</td>
</tr>
</tbody>
</table>

**Product Version**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Java Version</td>
<td>The version number of Java running on the server.</td>
</tr>
</tbody>
</table>

To update the Java version used with PowerChute, see **Java Update**.
General

PowerChute Configuration File

PowerChute stores some configuration settings in a file called `pcbeconfig.ini`, located in the Agent directory in the installed PowerChute directory. If the default location was chosen during installation, the `pcbeconfig.ini` file can be found at:

- C:\Program Files (x86)\APC\PowerChute Business Edition\agent for Windows systems
- /opt/APC/PowerChuteBusinessEdition/Agent/ for Linux systems

PowerChute stores the below settings to the configuration file:

- **Scheduled Shutdown**
- **SNMP Settings**
  
  SNMPv3 passphrases are not saved to the configuration file as they need to be stored securely. When the configuration file is copied over to another machine, you must manually enter the passphrases. For more information, see Knowledge Base article FA360658 on the APC website.

- **Language Settings**
  
  It is not recommended to edit the `pcbeconfig.ini` file directly as this may lead to invalid configurations.

After you have configured one installation of PowerChute, you can use the `pcbeconfig.ini` file to apply the same configuration to another copy of PowerChute on a different machine.

To apply the settings on the target machine:

1. Stop the PowerChute service. For more information, see Knowledge Base article FA360654 on the APC website.
2. Replace the existing copy of `pcbeconfig.ini` in the Agent directory.
3. Start the PowerChute service.

Resetting your Username and Password

If you have forgotten the username or password created during installation, you can reset the credentials by using the `pcbeconfig.ini` file:

1. Open the `pcbeconfig.ini` file with a text editor (e.g. Notepad) and add the following:

   ```
   [Credentials]
   username=
   password=
   ```
Enter the new username and password directly after the equals sign.
– The username must be between 6 and 128 characters in length.
– The password requires:
  • Minimum 8 and maximum 128 characters in length
  • 1 upper and lower case letter
  • 1 number or special character
  • The username cannot be part of the password.

2. Save the `pcbeconfig.ini` file.
3. Restart the APC PBE Agent service. See Knowledge Base article FA360654 on the APC website for more information.
4. If the username and password meet the requirements, the [Credentials] section is deleted from the `pceconfig.ini` file, and the new credentials are ready to use.
   – If the credentials entered in `pcbeconfig.ini` do not meet the requirements, an error is written to the file. Check the file for the error, adjust the credentials accordingly, and restart the Agent service.
5. Log in to the PowerChute web interface with your new credentials.

Java Update

The Java Update feature enables you to change the Java Development Kit (JDK) used by PowerChute to any other JDK already installed on your system. Follow the steps below to update the Java version used by PowerChute:

1. Download a valid JDK on your system. JDKs can be downloaded from the OpenJDK website. PowerChute v10.0.2 supports Java 15 or above. You can only update the Java version used with PowerChute to a 64-bit JDK.

   The Java versions supported by PowerChute are posted on the APC website at http://www.apc.com/wp/?um=100.

2. Navigate to the PowerChute installation directory, and create a new folder called “Updates”. If the default installation directory was chosen during installation, this location will be:
   – C:\Program Files (x86)\APC\PowerChute Business Edition\Updates for Windows systems
   – /opt/APC/PowerChuteBusinessEdition/Updates/ for Linux systems
3. Copy the Java file (tar.gz or zip) downloaded in Step 1 above to the Updates directory.
4. Navigate to the About dialog in the PowerChute UI. Under Software Updates, the downloaded Java file will be listed in a drop-down box in the Java Update Available field.
5. Select the Java version you want to update PowerChute to use from the drop-down box, and click Update Java.
6. An authentication dialog will appear asking for your PowerChute credentials if you are upgrading the Java version used for the first time. Enter your credentials and click Sign In. Upon successful authentication, the Java upgrade process begins.
7. PowerChute restarts automatically during the Java upgrade process. Wait 3-5 minutes for the Java version to successfully update.
8. When the PowerChute service restarts, refresh your browser and navigate to the About dialog. The Java Version field will be updated to show the new Java used by PowerChute.
Replace Default PowerChute SSL Certificate

For information on how to replace the default PowerChute SSL certificate, see the PowerChute Business Edition Security Handbook, available on the APC website.
Troubleshooting

PowerChute Files ZIP Archive

To help the PowerChute team resolve customer issues, the PowerChute files ZIP archive feature creates a ZIP archive of the necessary PowerChute configuration files for troubleshooting. This feature can be found in the Troubleshooting section in the About dialog. This ZIP archive will be saved in the Agent directory in the installed PowerChute directory. If the default location was chosen during installation, the PcbeFiles-<TimeStamp>.zip file can be found at:

- C:\Program Files (x86)\APC\PowerChute Business Edition\agent for Windows systems
- /opt/APC/PowerChuteBusinessEdition/Agent/ for Linux systems

The PowerChute configuration files exported to the ZIP archive are:

<table>
<thead>
<tr>
<th>directory</th>
<th>file</th>
</tr>
</thead>
<tbody>
<tr>
<td>etc directory</td>
<td>EventLog.txt file</td>
</tr>
<tr>
<td>log directory</td>
<td>pcbeconfig.ini file</td>
</tr>
<tr>
<td>comps.m11 file</td>
<td>PCBE-Summary.json file</td>
</tr>
<tr>
<td>critical.cfg file</td>
<td>procllog.txt file</td>
</tr>
<tr>
<td>data.dat file</td>
<td>cmdfile.log file</td>
</tr>
</tbody>
</table>

If you have a PowerChute customer issue, contact your regional Technical Support team, and provide the PcbeFiles-<TimeStamp>.zip file to help resolve your issue.
APC by Schneider Electric
Worldwide Customer Support

Customer support for this or any other product is available at no charge in any of the following ways:

• Visit the APC by Schneider Electric web site, to access documents in the APC Knowledge Base and to submit customer support requests.
  – www.apc.com (Corporate Headquarters)
    Connect to localized APC by Schneider Electric web site for specific countries, each of which provides customer support information.
  – www.apc.com/support/
    Global support searching APC Knowledge Base and using e-support.
• Contact the APC by Schneider Electric Customer Support Center by telephone or e-mail.
  – Local, country-specific centers: go to www.apc.com/support/contact for contact information.

For information on how to obtain local customer support, contact the APC by Schneider Electric representative or other distributor from whom you purchased your APC by Schneider Electric product.