# Installation Guide

## PowerChute Business Edition v9.5

**990-1805F-001**

**Publication Date: December 2017**

Schneider Electric

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# Installation Overview

This installation guide serves as an introduction to PowerChute Business Edition (PowerChute) and includes a description of the product, the installation procedure, and various troubleshooting resolutions.

See:

- **PowerChute Business Edition Agent**
- **Operating Systems and UPS Devices**
- **System, UPS, and Cable Requirements**
- **Installing the PowerChute Agent**
- **Troubleshooting**

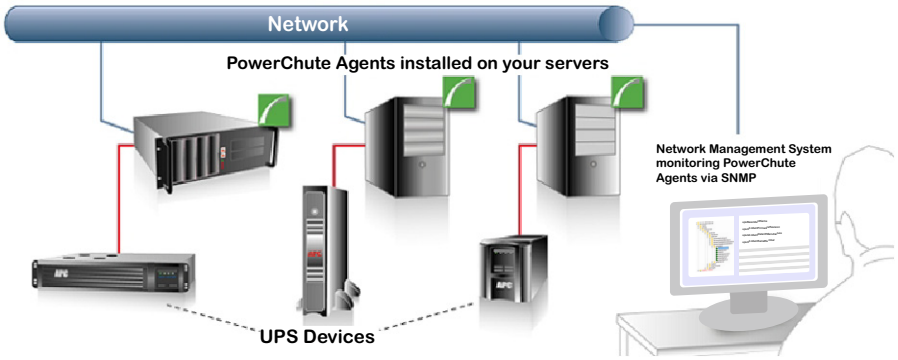
**IMPORTANT:**
After installing and configuring PowerChute Business Edition, we strongly recommend that you test your configuration before relying on it in a production environment.

## Product Center

The PowerChute Business Edition **Product Center** page (**http://swhelp.apcc.com/pcbe/help/productcenter/en/index.html**) has many links to useful up-to-date information.

## PowerChute Business Edition Agent

**PowerChute Agents with Smart-UPS devices protect your servers**




The Agent provides UPS status monitoring and, in the event of an extended power outage, system shutdown capabilities for your UPS-connected servers. See **Operating Systems and UPS Devices**.

This software must be installed on each computer that is directly attached to one of the UPS devices mentioned in **Supported UPS Devices and Accessories**.

You can also monitor your PowerChute Agents using a Network Management System (NMS), via SNMP and through **EcoStruxure IT™**.

# Operating Systems and UPS Devices

When installing PowerChute, the configuration of the Agent installed will depend on your operating system and Smart-UPS device:

- For Windows operating systems, see **Windows Installation**.
- For Linux operating systems, see **Linux Installation**.
- Manual installation will occur if the automatic detection is unsuccessful, if no UPS is attached, or if you select manual installation. See **Supported UPS Types**, and **Installing the PowerChute Agent**.
- If you are using your UPS with an **Interface Expander 2 card (AP9624)** or a **Share-UPS (AP9207)** to support multiple servers with one UPS, you will need to configure the PowerChute Agents running the devices connected to the card/Share-UPS with Simple Signaling. See **Simple Signaling**.

## Supported UPS Types

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

1. Select the model of your UPS from the list provided. The UPS model is found on the printed label at the rear of your UPS.
2. If your UPS model prefix (e.g. SMT, SMX) is not available in the drop-down list, see the definitions below to find your UPS model **type**:
   - **Type A**

     Smart-UPS models with prefix SMT, SMX, SURTD and SRT, including models SRC2KUXI, SRC3KUXI, and SRC3KUXIX709.
   - **Type B**

     Smart-UPS excluding UPS models with prefix SMT, SMX, SURTD, SRT.

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

See also: **Compatibility of Different Versions and Components**.

# System, UPS, and Cable Requirements

Your computers must meet the requirements listed in the following sections:

- **System Requirements for Installation**
- **UPS Communications Cable Requirements**

For UPS devices with outlet groups, the default outlet group is selected automatically by PowerChute.

If the UPS has Switched Outlet Groups, the default outlet group will be the first Switched Outlet Group. Otherwise, the default outlet group will be the Main Outlet Group if Switched Outlet Groups are not present.

The outlet group can be changed in the **Outlet Setup** screen in the PowerChute Agent and also in the Initial Setup Wizard after installation.

## System Requirements for Installation

For up-to-date information on the operating systems, JRE, 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.**

With modern operating systems (e.g. Windows® 8 or 10) it is particularly important to meet the hardware requirements listed below.

The computer on which you install PowerChute Business Edition must have:

- An active TCP/IP network connection
- Minimum 512MB RAM
- A Pentium® 4 1.3 GHz processor, or higher.

### Port Requirements

See Knowledge Base article **FA159597** on the **APC website** for more information on the ports used by PowerChute Business Edition.

### Browser Requirements

**Supported browsers:**

- Microsoft Internet Explorer version 11
- Mozilla Firefox version 52+
- Google Chrome version 62+
- Microsoft Edge

To use the Agent Web user interface:

- Enable JavaScript™ in your browser settings.

  **NOTE:** Windows Server 2008 has Internet Explorer Enhanced Security Configuration (IEESC) enabled by default. This blocks all JavaScript until you add PowerChute to the trusted sites.

- Enable cookies in your browser settings.
- To access the Agent web interface using HTTPS, enable either SSL 3.0 or TLS 1.0 in your browser settings. (No other versions are currently supported).

When you view the Agent, the browser will give an error saying the security certificate is not trusted. See **Accessing the PowerChute Business Edition Agent Interface** to manage this.

## UPS Communications Cable Requirements

You can connect your UPS to a server using the communications cable that is included in the box with your UPS:

- The PowerChute Agent communicates with the UPS through the communications cable that connects to the UPS to the communications port at the server running the PowerChute Agent.
- PowerChute supports the connection of only one type of communications cable (USB or Serial interface) from the UPS to the server at once.

**IMPORTANT:** Do not connect your UPS to the server with more than one communications cable at once (e.g. Serial and USB cable), as it may lead to unexpected shutdown behavior.

- See your UPS operation manual on the **APC website** for more information on the communications cable that is included with your UPS, or see the **Product Center** page for cabling requirements. Further information is also available in Knowledge Base article **FA163632** on the **APC website**.

**IMPORTANT:** If you use an unsupported UPS, or an incorrect UPS communications cable to connect the UPS and server, you may not be able to complete the PowerChute Agent installation, because the PowerChute Agent will not be able to communicate with the UPS.

PowerChute installation cannot detect a device connected by a simple-signaling cable. Therefore, during installation, choose manual installation when your UPS is connected through the basic port of an Interface Expander 2 Card or a Share-UPS, and specify the port and UPS type.

See **Communications Help – Troubleshooting Automatic and Manual UPS Detection**.

**NOTE**: A UPS can only protect one computer running a PowerChute Agent at a time, unless an **Interface Expander 2 card (AP9624)** or a **Share-UPS (AP9207)** is used.

## Supported UPS Devices and Accessories

PowerChute Business Edition Agent can manage any UPS that is shipped with the software, including most Smart-UPS™ devices (5kva and below) communicating using serial or USB connections. Depending on the cable and accessory used, both Smart and **Simple Signaling** are supported. See also: **Supported UPS Types**.

**NOTE:** For UPS devices with outlet groups, see the **Choosing which individual outlet groups to turn off in a shutdown** section of the Shutdown chapter in the PowerChute Agent help. This details how outlet groups work in shutdowns.

# Installing the PowerChute Agent

See the following sections:


- Before you Install PowerChute Business Edition
- Windows Installation
  - Starting and Stopping the PowerChute Agent on Windows
- Linux Installation
  - Starting and Stopping the PowerChute Agent on Linux
- Simple Signaling


## Before you Install PowerChute Business Edition

Make sure the date and time on your operating system is accurate before you begin installation.

Before you perform the installation, note the following information about the installation process.


- Compatibility of Different Versions and Components
- Upgrading PowerChute Business Edition
- Username and Password Requirements
- IPv6 Compatibility


### Compatibility of Different Versions and Components

PowerChute Business Edition version 9.5 and higher (9.5+) does not have a PowerChute console or server. PowerChute Business Edition version 9.5+ uses SNMP to integrate with your chosen Network Management System (NMS) for the discovery, monitoring and control previously provided by the PowerChute Business Edition console and server.

PowerChute v9.5+ Agents cannot be monitored by a console or server from an earlier version of PowerChute.

For information on the legacy Agent versions supported by PowerChute Business Edition, see Knowledge Base article FA159670 on the APC website.

## Upgrading PowerChute Business Edition

The upgrade process does not uninstall your existing PowerChute version, but installs a newer version over the previous version, retaining your configuration settings.

**IMPORTANT:** If you are upgrading your Agent from a 9.2.x version to a v9.5+ release, the legacy PowerChute Console and Server are not uninstalled, but they can no longer be used to monitor the PowerChute v9.5+ Agent. You can use SNMP and your chosen NMS to discover, monitor and control multiple PowerChute v9.5+ Agents.

### Upgrade Notes

- See **Operating Systems and UPS Devices**.
- Following an upgrade, clear your browser cache before accessing the Agent web interface to see the latest changes.
- If you are upgrading from PowerChute Business Edition v9.0.4 to v9.5+, the following UPS events are no longer supported in v9.5+:

| | |
|---|---|
| AVR Relay Fault | Electronics Unit Fan Normal |
| AVR Relay Normal | Graceful Shutdown |
| Battery Charger Failure | Humidity In Range (Probe 1/2) |
| Battery Charger Normal | Humidity Out Of Range (Probe 1/2) |
| Battery Installed | Invalid Shutdown Delay |
| Battery Removed | Inverter Fault |
| Bypass Contactor OK | Inverter Normal |
| Bypass Power Supply Failure | Isolation Unit Fan Fault |
| Bypass Power Supply Normal | Isolation Unit Fan Normal |
| Bypass Relay Malfunction | Main Relay Malfunction |
| Bypass Relay Normal | Main Relay Normal |
| Check Smart Cell Signal | Smart Cell Signal Returned |
| Communication Not Established | System Level Fan Fault |
| Contact Fault (Zone 1/2/3/4) | System Level Fan Normal |
| Contact Normal (Zone 1/2/3/4) | Temperature In Range (Probe 1/2) |
| Contactor Stuck In Bypass | Temperature Out Of Range (Probe 1/2) |
| Contactor Stuck In On Position | UPS Internal Fault |
| Electronics Unit Fan Fault | UPS Internal Fault Cleared |

**NOTE:** For some **Type B** UPS devices with the prefix SRC (for example, SRC1KI and SRC2KI), the following events relating to runtime calibration are no longer supported in v9.5+:

| | |
|---|---|
| Calibration Started | Calibration Canceled |
| Calibration Complete | |

- The previously configured default SNMP user does not carry over in case of an upgrade. This must be reconfigured after upgrading to v9.5+.
- The **Initial Setup Wizard** does not show following an upgrade as your configuration settings are carried forward.

- PowerChute versions prior to v9.5 configured for Simple Signaling with **Direct Connection to UPS** cannot be upgraded to v9.5+, as this is no longer supported. A full installation must be performed in this case, choosing either **Interface Expander Port** or **Share-UPS Basic Port** during installation.
  - Versions prior to v9.5 configured for Simple Signaling with **Connected to Interface Expander** and **Connected to Share-UPS** can be upgraded. See **Simple Signaling**.
- When upgrading a **Type A** UPS to v9.5+:
  - When upgrading from PowerChute version 9.0 or earlier, **scheduled shutdowns** are not carried forward during the upgrade, and need to be recreated following the upgrade. Any existing schedules are exported to a file called `old_shutdown_schedule.txt` in your installation folder:
    - Windows default installation folder: `C:\Program Files\APC\PowerChute Business Edition\agent`.
    - Linux default installation folder: `/opt/APC/PowerChuteBusinessEdition/Agent/`

    You can use this file as a reference to re-enter the schedules.
  - When upgrading from PowerChute version 9.1.1 and later, scheduled shutdowns are carried forward in the upgrade, and do not need to be recreated.
- When upgrading the Agent for a **Type B** UPS from version 9.1.1 or later to v9.5+:
  - After you upgrade, when you open the **E-Mail Settings** screen on the PowerChute menu of the PowerChute Agent, your existing list of e-mail addresses is validated. Any invalid formatting will mean that the e-mail address will need to be re-entered.
  - On the **Diagnostics** screen of the Agent web interface, values for Last Self Test Date and Status, and Last Runtime Calibration Date and Status are not carried forward when you upgrade. These values will be refreshed the next time a Self Test and Runtime Calibration are initiated.
  - On the UPS Settings screen of the Agent web interface, the Power Quality Sensitivity is not carried forward when you upgrade. Select a sensitivity setting following the upgrade.
  - Operating System Shutdown delay and Command File execution delay previously configured in the console are not carried forward when you upgrade, and are no longer supported. Visit the **Shutdown Settings** screen of the Agent web interface following an upgrade to check your shutdown configuration.
  - DLL shutdown of applications such as Microsoft Exchange, Microsoft IIS, Lotus Notes, Siebel, and Microsoft SQL are no longer supported. You can instead use the command file to shut down these systems.
  - **Scheduled shutdowns** are not carried forward when you upgrade to version 9.5+ of PowerChute and need to be recreated following the upgrade Any existing schedules are exported to a file called `old_shutdown_schedule.txt` in your installation folder:
    - Windows default installation folder: `C:\Program Files\APC\PowerChute Business Edition\agent`.
    - Linux default installation folder: `/opt/APC/PowerChuteBusinessEdition/Agent/`

    You can use this file as a reference to re-enter the schedules.
- When upgrading to v9.5+ on **Linux**:
  - In v9.5+, PowerChute is provided as a 32-bit and 64-bit Linux application.
    32-bit versions prior to v9.5 can be upgraded to the 64-bit v9.5+ application only.

If you are unsure whether you can upgrade or not, please contact APC Worldwide Customer Support (**http://www.apc.com/support/**).

When the upgrade is completed, check your configuration settings to ensure that they have carried over as expected.

### Username and Password Requirements

- The username must be between 6 and 128 characters in length.
- The password requires:
  - Minimum 8 and maximum 128 characters in length.
  - One upper and lower case letter.
  - One number or special character.
- The username cannot be part of the password.

It is possible to reset your username and password following installation. See topic **Resetting your Username and Password** in the PowerChute Business Edition Agent User Guide, available in the Agent web interface, and on the **APC website**.

### IPv6 Compatibility

The IPv6 address must be in one of these formats:

| IPv6 Format | Description |
|---|---|
| fe80:0000:0000:0000:0204:61ff:fe9d:f156 | full form of IPv6 |
| fe80:0:0:0:204:61ff:fe9d:f156 | drop leading zeroes |
| fe80::204:61ff:fe9d:f156 | collapse multiple zeroes to :: in the IPv6 address |
| fe80:0000:0000:0000:0204:61ff:254.157.241.86 | IPv4 dotted quad at the end |
| fe80:0:0:0:0204:61ff:254.157.241.86 | drop leading zeroes, IPv4 dotted quad at the end |
| fe80::204:61ff:254.157.241.86 | dotted quad at the end, multiple zeroes collapsed |
| ::1 | localhost |
| fe80:: | link-local prefix |
| 2001:: | global unicast prefix |

### Node Limits

In PowerChute Business Edition version 9.5 and higher, there is no limit to the number of PowerChute Business Edition Agents that you can install on your network.

## Windows Installation

Follow the steps below to install PowerChute Business Edition on Microsoft® Windows™.

See also:

- **Silent Installation of a Windows Agent**
- **Windows Server 2008/ 2012 Server Core: Installing and Uninstalling PowerChute**

**NOTE:**
You must uninstall other types of PowerChute applications before trying to install PowerChute Business Edition. These applications include PowerChute plus, PowerChute Personal Edition, and PowerChute Network Shutdown.

## Install the PowerChute Business Edition Agent on Windows

Install the PowerChute Agent on each of your UPS-connected computers. See **UPS Communications Cable Requirements**.

You can install the Agent on Windows and Linux operating systems, see also: **Linux Installation**.

If you are downloading from the APC website and installing to Windows, download the **launch** executable file and double-click to start the installation. Alternatively, place the PowerChute CD in the drive.

Follow the steps below:

1. Run the InstallShield Setup Launcher (`pcbesetup.exe`). A wizard guides you through the installation process. Click Next to proceed.
2. Accept the license agreement.
3. Choose the destination location for the PowerChute Agent files.

   You are not asked for a location during an upgrade installation. The previous location is used by default.
4. At "Would you like to automatically search all communications ports for a UPS," we recommend clicking **Yes** to allow the installation to automatically detect your connected UPS. If you select **No**, see **Manual UPS Detection** below.

   **NOTE:**

   – If you want to use simple signaling with your UPS, click **No** to use manual UPS detection. See **Simple Signaling**.

   – You are not asked to select a UPS during an upgrade installation. The UPS identified during the original installation is used.

   – If the installation program cannot detect a UPS connected to your computer, it will ask you to manually select your UPS model. See **Manual UPS Detection** below.

   ### Manual UPS Detection

   a. To manually detect your UPS, you are asked to select your UPS model from a list. See **Supported UPS Types**.

   b. You are asked to select the Communications Port to which your UPS is connected. If you are not sure, check the cable connecting the UPS to the server.
   See: **Communications Help – Troubleshooting Automatic and Manual UPS Detection**.
6. Enter a username and password. See **Username and Password Requirements**.
7. If a Windows firewall is detected by PowerChute, you can automatically enable the Agent Service in the Windows firewall exception list. Click **Yes** to enable this.

For each new UPS added to your network, repeat steps 1-7 on the computer connected to the new UPS.

## Silent Installation of a Windows Agent

With a normal, non-silent installation it is usually necessary to respond to prompts during the installation. Silent installations do not prompt for input, as the configuration is already defined in the answer file.

If you are performing an upgrade, see important information in **Upgrading PowerChute Business Edition**.

### Step 1: Creating a Silent Installation Answer File

1. Remove all components of PowerChute from your working computer.
2. Create a local folder on your disk (e.g. `C:\agent`) into which you can copy the contents of a folder from the PowerChute CD. Copy the `bin` folder from the PowerChute CD to the local folder.
3. Launch a command prompt by selecting the Windows **start** button and then **Run**, and typing `command` in the box. Click OK.
4. Make sure that a UPS is attached to the computer.
5. At the command prompt, type
   `<agent path>setup.exe -r`
   e.g. `C:\agent\setup.exe -r`
   -r records the answers you provide during the installation process.

   During the installation, select the option to have PowerChute automatically detect the UPS. Then, during the silent installations, the UPS will be detected even if it is on a different port.
6. The installation creates an **answer file** named `setup.iss` (in the `\Windows` folder). Search to find it, if necessary. Copy it to the agent folder you created in step 2 above.

### Step 2: Performing a Silent Installation

The silent installation uses the answer file you created in the previous section.

1. Copy the entire agent folder (containing the `setup.iss` file) to the computer where the silent installation is to be performed.

   Alternatively, you could copy the folder to a network drive and map to that drive from each installation computer. See an example involving a mapped drive W: below in step 3.
2. Launch a command prompt by selecting the Windows **start** button and then **Run**, and typing `command` in the box. Click OK.
3. At the command prompt, type
   `<agent path>setup.exe -s`
   e.g. `C:\agent\setup.exe -s`
   e.g. `W:\agent\setup.exe -s`
   where w is a mapped network drive

   You can also use the `-m` argument to log the results in an SMS file whose name is `status.mif`.
   e.g. `C:\agent\setup.exe -s -m`

   To determine when the silent installation has completed, leave the command prompt window open until the prompt displays again (e.g. `C:\agent>`). It might take several minutes.
4. Close the command prompt window.

## Starting and Stopping the PowerChute Agent on Windows

On Windows, after the installation process is completed, the PowerChute Business Edition Agent begins running automatically. The Agent runs automatically each time the operating system is started.

To start the PowerChute Business Edition Agent manually after it has been deliberately stopped, go into Windows **Services** under **Administrative Tools** in the **Control Panel**. The display name there is **APC PBE Agent**.

The PowerChute Agent can also be stopped under **Services**.

### Uninstalling the PowerChute Business Edition Agent on Windows

1. On Windows, visit **Control Panel > Programs and Features**
2. From the **Uninstall or change a program** list, select **PowerChute Business Edition Agent**.
3. Click **Uninstall**.
4. When prompted to completely remove the application, select **OK**.

### Windows Server 2008/ 2012 Server Core: Installing and Uninstalling PowerChute

#### PowerChute Agent and Windows Server Core

The PowerChute Agent can be installed to Windows Server 2008 Server Core or 2012 Server Core (both 32-bit and R2 64-bit operating systems).

#### Installing

You can install from the APC website or from the CD. See A. and B. below.

**A.**

From the APC website, download `pcbesetup.exe` to a non-Server Core version of Windows. Copy the file to a temporary directory on the Server Core machine, 2008 or 2012.

In the command prompt window, go to the temporary directory and run `pcbesetup.exe` by typing its name and pressing Enter.

For example,

```
cd \temp
pcbesetup
```

**B.**

If you are installing from a CD, in the command prompt window, navigate to `Windows\agent` on the CD drive, and run `setup.exe`.

For example,

```
F:
cd Windows\agent
setup
```

#### Uninstalling

In the command prompt window, go to the PowerChute installation directory and run `UninstallAgent.bat`.

For example,

```
cd "\Program Files\APC\PowerChute Business Edition"
UninstallAgent
```

## Linux Installation

For prerequisites, see **Before you Install PowerChute Business Edition**, **System Requirements for Installation**, and **Upgrading PowerChute Business Edition**.

If your Linux operating system does not use a **Supported Browser** by default, upgrade your browser to meet the required version before installing PowerChute Business Edition.

For up-to-date information on the PowerChute Business Edition compatibility with various Linux distributions, see the latest revision of **PowerChute Business Edition Operating System and Processor Compatibility Chart**.

To install PowerChute Business Edition, you must have root privileges on the Linux computer.

## Install the PowerChute Business Edition Agent on Linux

Install the PowerChute Agent on each of your UPS-connected computers. See **UPS Communications Cable Requirements**.

If your system supports IPv6 but not IPv4, then you must read the UPS hardware descriptions that are presented during the installation.

1. Download the PowerChute Business Edition installer for Linux from the **APC website**, or open it from the PowerChute CD.
2. Open the Linux directory `/Linux/`
3. Select the installation package that is suitable for your system:

   32-bit Linux: `pcbeagent-9.X.X-301.i386.tar.gz`

   64-bit Linux: `pcbeagent-9.X.X-301.x86_64.tar.gz`
4. Use the `tar` command to extract and decompress the contents of the file:

   ```
   tar -xzvf pcbeagent-9.X.X-301.XX.tar.gz
   ```
5. Execute the `rpm` command to begin installation:

   ```
   rpm -ivh pbeagent-9.X.X-301.XX.rpm
   ```

   **NOTE:** To install PowerChute Business Edition on Linux using a non-default location, use the below command and specify the location:

   ```
   rpm -ivh --prefix=[location] pbeagent-9.X.X-301.XX.rpm
   ```

   For example:

   ```
   rpm -ivh --prefix=/usr/PowerChute pbeagent-9.5.0-301.x86_64.rpm
   ```
6. Once the rpm command completes installation, you are prompted to configure PowerChute using the configuration script `config.sh`, which is located in the **installation directory**:

   ```
   /opt/APC/PowerChuteBusinessEdition/Agent/config.sh
   ```
7. Navigate to the installation directory and run:

   ```
   ./config.sh
   ```

   – Enter a username and password. See **Username and Password Requirements**.

   – Select the UPS model. See **Supported UPS Types**.

   – Select the cable type and port used to connect the computer running PowerChute to the UPS. See **UPS Communications Cable Requirements**, **Simple Signaling** and **Communications Help – Troubleshooting Automatic and Manual UPS Detection**.

   Red Hat Enterprise Linux (RHEL) versions 6.3 and earlier do not support USB communication with PowerChute v9.5+.

   PowerChute v9.5+ does not provide USB communication to **Type B** UPS devices on Linux machines.

   – Once all requested configuration parameters are provided, the PowerChute Agent service starts.

To troubleshoot Linux communications, see Knowledge Base article **FA163608** on the **APC website**.

## Starting and Stopping the PowerChute Agent on Linux

The PowerChute Business Edition Agent runs automatically each time the operating system is started. To manually start the Agent, enter the following command in a command prompt:

```
/etc/init.d/PBEAgent start
```

To manually stop the Agent, enter:

```
/etc/init.d/PBEAgent stop
```

## Accessing the PowerChute Business Edition Agent behind a firewall

To access the Agent web user interface remotely, use the following port:

- HTTPS: 6547

## Uninstalling the PowerChute Business Edition Agent on Linux

Use the erase rpm option (`-e`) to uninstall the Agent:

```
rpm -e pbeagent
```

## Using the Sample Script for Linux

A `default.sh` file is included in the installation at `<PowerChute folder>/Agent/cmdfiles/`

This file has basic information on running a command file on Linux.

## Hardware Abstraction Layer (HAL) disabled

A HAL policy file is automatically installed on Linux systems to disable the `hald-addon-hid-ups module` as it may conflict with the PowerChute Agent's control of the UPS over USB.

This policy file is automatically removed when the Agent is uninstalled.

## RPM Package Signing

The RPM package for PowerChute Business Edition is signed by the GNU Privacy Guard (GPG). The public key details are listed below which can be used to verify this RPM package.

Import the public key from the **Documentation** folder on the CD on to your operating system by using the following command:

```
rpm --import /path/to/RPM-GPG-KEY-PCBE
```

**NOTE:** The public key is also available for download on the **PowerChute Business Edition Product Page**.

Execute the following command to verify the RPM package:

```
rpm --checksig -v <filename>.rpm
```

For example:

```
rpm --checksig -v pbeagent-9.X.X-301.i386.rpm
```

The output of this command shows if the RPM package is signed and which key signed it.

### PowerChute Business Edition RPM Key

```
4096R/ 7CF6D1FD 2017-12-06 [expires: 2022-12-05]

APC by Schneider Electric (PowerChute Business Edition) <esupport@apc.com>
```

This key is used for signing PowerChute Business Edition v9.5+.

**Location:** Documentation folder on CD

**Download:** The **APC website**

**Fingerprint:** D8D195FC872BE7B53D177E66B5A962ED7CF6D1FD

# Simple Signaling

## Supported UPS Devices and Accessories

The UPS Interface Expander 2 (AP9624) card provides two additional computer interface ports for a UPS equipped with a SmartSlot™ accessory slot. By using the Interface Expander 2 with PowerChute Business Edition, you can provide a graceful system shutdown for up to three network servers (or other devices) during a power outage, by using only one UPS and simple signaling.

This guide details simple signaling using the Interface Expander 2 card only. Previous generation accessories such as the UPS Interface Expander 1 (AP9607) and the APC Share-UPS (AP9207) also provided graceful system shutdown for multiple servers, using a single **Type B** UPS and PowerChute Business Edition. For more information on the operation of the Share-UPS or Interface Expander 1, see their associated user guides available on the **APC website**, and Knowledge Base article **FA156051**.

**NOTE:** Some **Type B** UPS devices with the prefix SRC do not support simple signaling. For example: SRC1KI, SRC2KI, SRC1KI-IN and SRC1KUXI.

## Simple Signaling Cables

| Use: | Part Number |
|---|---|
| DB9-DB9 connection | 940-0020 |
| RJ45-DB9 connection | 940-0128D |

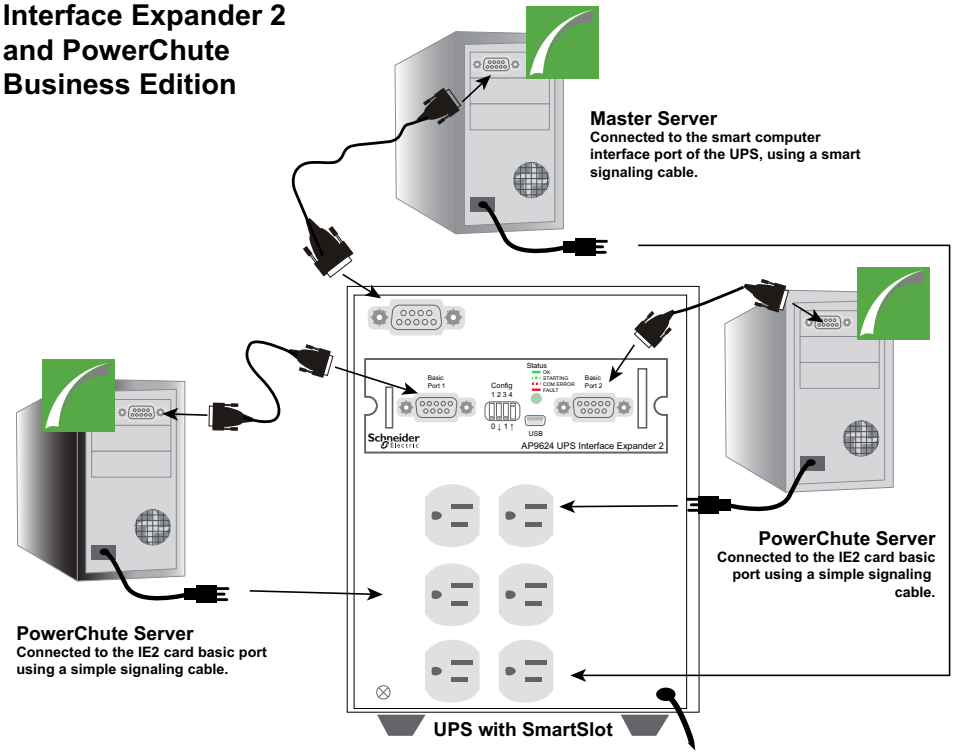
## Smart Signaling Cables

| Use: | Part Number |
|---|---|
| DB9-DB9 connection | 940-0024 |
| RJ45-DB9 connection | 940-0625A or 940-1525A |
| USB connection:<br><br>**Type A** UPS<br><br>**Type B** UPS | <br><br>940-0117B<br><br>940-0273A |

## Supported Configuration

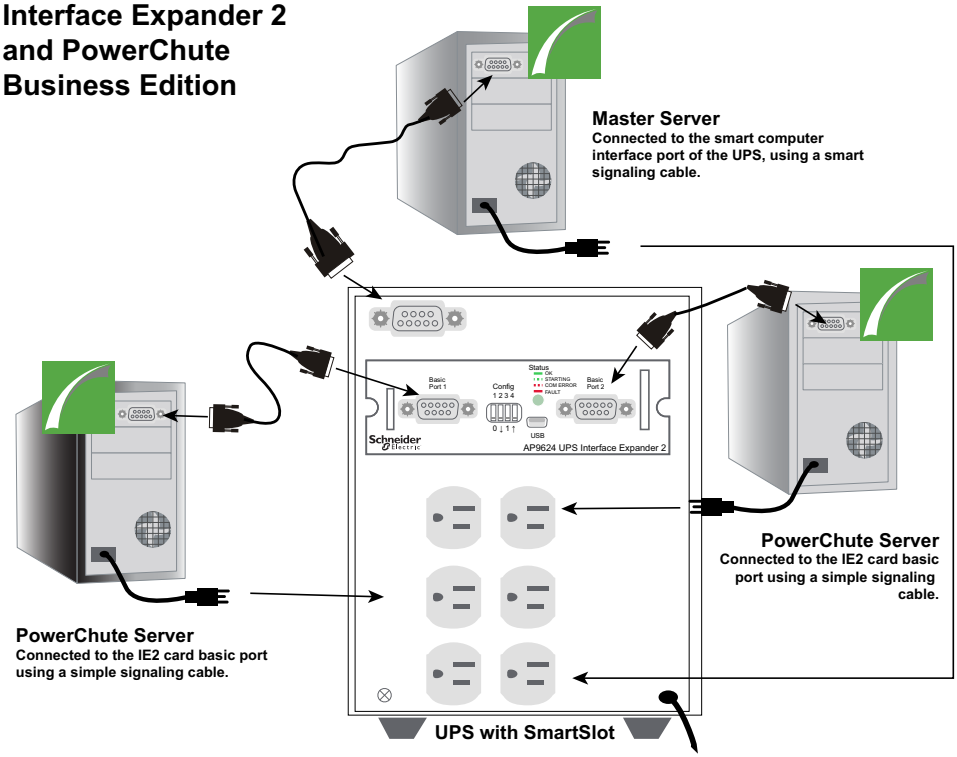
For **Type A** UPS devices:

**Interface Expander 2 and PowerChute Business Edition**




For **Type B** UPS devices:

**Interface Expander 2 and PowerChute Business Edition**



To use PowerChute simple signaling with an Interface Expander 2 (IE2) card, install the IE2 card in your UPS following the Installation and Configuration steps in the **User's Guide** available on the **APC website**, then:

- Connect the power cable of the UPS directly to a wall outlet.
- Connect the power cable of each server to the outlets at the back of the UPS.
- Connect one server to the UPS directly to the smart computer interface port of the UPS, using the appropriate cable provided for your UPS model (see **Simple Signaling Cables** above).
  This server connected to the smart port is defined as the **Master Server**.

  **NOTE:** UPS models with the prefix SURTD or SRC do not have a USB port. In this case, the server must be connected to the smart computer interface port of the UPS using a simple signaling cable.
- Connect the other two **Slave Servers** to the IE2 card, using the simple signaling cables provided with the card.

**NOTE**: If you disconnect a communication cable in an active simple signaling configuration, PowerChute will not detect the disconnected cable, and you may experience unexpected shutdown behavior. Disconnecting communication cables during simple signaling is not supported.

See Knowledge Base article **FA176957** available on the **APC website** for information on the valid configurations of the IE2 card with Simple Signaling.

## Installing PowerChute Business Edition for Simple Signaling

Each server connected to the UPS must have a PowerChute Business Edition Agent installed. Read **Installation Overview** for more information on **Operating Systems and UPS Devices** and **System, UPS, and Cable Requirements** before you begin.

Install the PowerChute Agent on each connected server, following the initial steps for **Windows Installation** or **Linux Installation** as appropriate.

During the **Windows** installation, you are prompted to select the type of connection to the UPS:

- **Connected to the UPS Port** - select this option when installing PowerChute on the **Master Server** that is connected directly to the smart communications port of the UPS using a smart-signaling cable.
- **Interface Expander Port** - select this option when installing on a **Slave Server** connected to the basic port of the IE2 card using a simple-signaling cable.
- **Share-UPS Advanced Port** - this option is available for a Master Server connected to the advanced port in a Share-UPS a using smart-signaling cable.
- **Share-UPS Basic Port** - this option is available for a Slave Server connected to any basic port in a Share-UPS a using simple-signaling cable.

  For more information on the operation of the Share-UPS or Interface Expander 1, see their associated user guides available on the **APC website**, and Knowledge Base article **FA156051**.

Select the connection to the UPS and complete the installation for your operating system.

## Shutdown Configuration

In a simple signaling configuration, multiple servers are supported by one UPS, and all are provided with graceful shutdown in the event of a power outage. All connected servers are shut down at the same time. There are two ways to configure shutdown using an Interface Expander 2 card - using PowerChute Business Edition, or using the physical DIP switches on the IE2 card.

### Shutdown Configuration via PowerChute Business Edition

In this configuration, PowerChute Business Edition is used to specify the shutdown settings.

**NOTE**: If you are using this configuration, you must ensure that:

- All PowerChute Agents have the same shutdown settings.
- All command files, if configured, use the same time required to run.
- The IE2 card DIP switches are set to:
  - 0001 for **Type A** UPS devices.
  - 0000 for **Type B** UPS devices.

See the **PowerChute Business Edition Agent User Guide** for more information on configuring shutdown settings for simple signaling.

### Shutdown Configuration via Interface Expander 2 DIP switches

In this configuration, the DIP switches on the IE2 card are used to configure when to shut down the connected servers. A PowerChute Business Edition Agent is installed on all connected servers, and the shutdown settings are set to the default configuration “When the UPS signals the Low Battery event” - PowerChute will shut down the server when the Low Battery event occurs.

The IE2 DIP switches are used to define the shutdown mode:

| Shutdown Mode | | Switch Setting (↓=0, ↑ =1) | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| Confirmed | | 0 | 0 | 0 | * |
| Until Low Battery | | 0 | 0 | 1 | N/A |
| Timer | 2 min. | 0 | 1 | 0 | N/A |
| | 5 min. | 0 | 1 | 1 | N/A |
| | 10 min. | 1 | 0 | 0 | N/A |
| | 15 min. | 1 | 0 | 1 | N/A |
| | 30 min. | 1 | 1 | 0 | N/A |
| | 60 min. | 1 | 1 | 1 | N/A |
| Server on UPS port | Await Confirmation | 0 | 0 | 0 | 0 |
| | Treat as Confirmed | 0 | 0 | 0 | 1 |

For more information on configuring the IE2 card, see the **Interface Expander 2 User Guide** and Knowledge Base article **FA176957**, both available on the **APC website**.

### Installation and Configuration with Simple Signaling and Type A UPS devices

Provide a high delay in the **Time for operating systems to shut down** field in the **Shutdown Settings** screen in the Master Server. Setting a high value here will give the operating system more time to shut down.

Connect all servers, including the simple clients, to a PowerChute outlet group. Doing this will ensure that the servers turn off in accordance with the **Outlet Sequence** screen in the Master Server.

### Shutdown Functionality with Simple Signaling and Type B UPS devices

After the Interface Expander 2 card issues a shutdown command to simple clients, a turn off command is also issues to turn off the UPS. To ensure graceful shutdown, the delay of this turn off command is forced to be equal to the values set for **Time for operating systems to shut down** and **At runtime limit** in the **Shutdown Settings** screen of the Master Server.

Set the **At runtime limit** value in the Master Server appropriately, as this decides the turn off delay of the UPS.

# Accessing the PowerChute Business Edition Agent Interface

When you first access the Agent, the browser gives an error saying the security certificate is not trusted.

Some browsers display a message box with an option to click on a button to trust the certificate. Click on the button to avoid getting the error message. With other browsers, you must add the certificate manually by adding the <`servername`> as a trusted site.

See the Product Center (**http://swhelp.apcc.com/pcbe/help/productcenter/en/index.html**) for guidance on installing the certificate on different browsers. Knowledge Base article **FA165288** on the **APC website** also has information on installing the certificate on different browsers.

## Local and Remote Access

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

To access the PowerChute Business Edition Agent on a **local** machine, select the Windows **start** button, then select **PowerChute Business Edition** > **PowerChute Business Edition**.

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

```
https://servername:6547
```

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

# Troubleshooting

These sections discuss the issues and problems that can occur when installing PowerChute Business Edition.

See the **Product Center** for information on other issues (**http://swhelp.apcc.com/pcbe/help/productcenter/en/index.html**).

See the following sections:

- **Installation Messages that can occur as you install PowerChute Business Edition**
- **Possible Issues When Uninstalling on Windows**
- **Communications Help – Troubleshooting Automatic and Manual UPS Detection**
- **Checking UPS Communications on Windows**
- **Installing without a USB Cable Connected on Windows**
- **Unexpected Shutdown and Lost Communications**
- **Standby Mode Disables the Agent Temporarily on Windows**
- **Standby Can Postpone a Scheduled Shutdown on Windows**
- **Bluetooth Port Hangs during Installation**
- **When Installing the Agent, Error Message "OpenService failed"**
- **Issues when Changing the Date and Time on the Operating System**
- **Changing the UPS following Installation or an Upgrade**
- **UPS does not Turn On after Scheduled Shutdown**

## Installation Messages that can occur as you install PowerChute Business Edition

The following messages may occur while you are installing the PowerChute Business Edition Agent.

**NOTE:**
If the problem persists, contact **APC Worldwide Customer Support** (**http://www.apc.com/support/**).

| Message | Description |
|---|---|
| An unidentified program wants access to your computer. | This message is a security feature of Windows and occurs if User Account Control (UAC) is enabled. Click **Allow** to continue the installation. |
| Could not stop the UPS service. Please reboot and retry setup. | Setup did not stop the native UPS service on Windows. Reboot the computer before you attempt to install the PowerChute Agent again. |
| Error encountered while installing the <*Agent*> service. Please reboot and retry setup. | Setup did not install the PowerChute service. Ensure that no PowerChute files are already installed and that the computer uses a supported operating system. See the latest revision of *PowerChute Business Edition Operating System and Processor Compatibility Chart*, **http://www.apc.com/wp/?um=100**, before you retry the installation. |

| Message | Description |
|---|---|
| Error <*identification*> on attempt to load dll: <*dll identification*>. | Setup did not load the identified DLL file. Before you attempt the installation again:<br>• Ensure that the computer uses a supported operating system. See the latest revision of *PowerChute Business Edition Operating System and Processor Compatibility Chart*, **http://www.apc.com/wp/?um=100**.<br>• Ensure that the computer complies with the requirements listed in **System Requirements for Installation**. |
| Cannot load necessary resource. | Setup cannot load the DLL files, native InstallShield resources, and other resources needed to install PowerChute. Make sure that the computer has sufficient memory available before you retry the installation. See **System Requirements for Installation**. |
| The password must be 8 to 128 characters in length. | Use a password that has at least 8 but no more than 128 characters. See **Username and Password Requirements**. |
| The username must be 6 to 128 characters in length. | The username must have at least 6 but no more than 128 characters. See **Username and Password Requirements**. |
| PowerChute Business Edition requires administrator privileges to install and run. Please log off and rerun Setup using an administrator-privileged account. | You must have administrative access to the computer before you can install PowerChute. |
| Setup could not determine if the selected path is valid. Please select a directory on the local hard drive. | You cannot install PowerChute on a network drive or on any other drive except the local hard-disk drive. |
| Setup cannot restart the native UPS service. You must manually restart the service or reboot to enable power protection. | The Windows UPS service did not restart. The service is stopped when you uninstall an older version of PowerChute Business Edition, for example, in order to install a newer version of the PowerChute Agent. Restart this service manually or by rebooting the computer. |
| The two passwords must match to proceed. | The passwords you entered in the **Password** and **Confirm** fields must match. |
| Windows needs your permission to continue | This message is a security feature of Windows. Click **Continue.** |
| The PowerChute console and server have been discontinued in v9.5. The PowerChute v9.5 agent cannot be monitored by a console or server from an earlier version of PowerChute. | If you are upgrading your Agent from a 9.0.4 or 9.2.x version to a v9.5+ release, the legacy PowerChute Console and Server are not uninstalled, but they can no longer be used to monitor the PowerChute v9.5+ Agent. You can use SNMP and your chosen NMS to discover, monitor and control multiple PowerChute v9.5+ Agents. See **Upgrading PowerChute Business Edition**. |

## Linux Installation Issues

| Message | Description |
|---|---|
| When installing using rpm on Linux, a warning about a key is received. | To avoid getting this error message, see Knowledge Base article **FA159700** on the **APC website**. Alternatively, you can ignore the message, the installation will proceed as normal. |
| During the Agent installation there is no option to communicate using the USB port. | There is a known issue in relation to Linux kernels where a panic can occur when a USB cable is disconnected. If the PowerChute installation cannot determine whether your kernel has the necessary patch that addresses this and does not display the USB port option, then you need to check with your OS provider whether your kernel has the fix included in it or not.<br><br>The USB option is available in RHEL v6.4 and above, as the fix has been applied to its kernel.<br><br>The commit number for the patch is 1a8e8fab790ea7af81b8f964fdec706ad1ec2271.<br><br>See also **http://git.kernel.org**. |
| PowerChute 9.5.0 Agent does not install on RHEL 5.x x64, x86 after executing Linux RPM Command.<br><br>The following message appears:<br><br>`Error: dl failure on line 864`<br><br>`Error: failed /bin/java/jre/1.7.0_25/lib/i386/server/libjvm.so, because /bin/java/jre/1.7.0_25/lib/i386/server/libjvm.so: cannot restore segment prot after reloc: Permission denied` | This problem is caused by SELinux enforcing an access policy. The policy forbids the PowerChute Agent installer from changing the attributes for memory protection of a memory segment. RedHat Enterprise Linux has SELinux set to "Enforcing" mode by default.<br>1. Allow libjvm.so to text relocate by running the change context. Type the following into the command line:<br>`chcon -t textrel_shlib_t /bin/java/jre/1.7.0_25/lib/i386/server/libjvm.so`<br>2. Run the PowerChute Agent configuration script to complete the installation.Type the following into the command line:<br>`cd /opt/APC/PowerChuteBusinessEdition/Agent`<br>`./config.sh`<br><br>Further information is in Knowledge Base article **FA173375**. |

## Possible Issues When Uninstalling on Windows

The following issues can occur when you are uninstalling PowerChute Business Edition on Windows:

- The native UPS service might not restart. See the description of the error message **Setup cannot restart the native UPS service. You must manually restart the service or reboot to enable power protection.**
- If you uninstall PowerChute from a Windows operating system, the native Windows UPS Service is restored, but you must configure it to start automatically.
- After you uninstall PowerChute Business Edition, you might need to remove some files and folders manually. Delete the installation folder, including its contents, if it still exists (the default folder `\program files\APC\PowerChute Business Edition` or the non-default folder you specified during the installation). If PowerChute Business Edition is the only PowerChute product installed, also delete the `APC` folder.
- If the following message occurs when you attempt to uninstall the PowerChute Business Edition Agent, the Agent is either not installed or is not responding:

`Error encountered while removing the Agent service. Please reboot after setup exits.`

- On Windows 2003 Web Edition *only*, some files are not deleted when you uninstall PowerChute Business Edition. These remaining files will not affect the operation of your computer system.

## Communications Help – Troubleshooting Automatic and Manual UPS Detection

Use the following troubleshooting checklist if PowerChute Business Edition does not detect the UPS automatically, or if you are having difficulty with manual UPS detection.

**NOTE:**
Setup cannot automatically detect a device connected by a simple-signaling cable. Therefore, during setup, when your UPS is connected through the basic port of an Interface Expander 2 Card, use manual detection and specify the port and UPS type. See **Simple Signaling**.

**IMPORTANT:**

- Check that you are using a UPS model that is compatible with PowerChute Business Edition. See Knowledge Base article **FA315835** on the **APC website** to find out more about supported UPS model types.
- If another service, such as a terminal emulator, is using the COM port to which the UPS is connected, stop that service or connect the UPS to another COM port. For automatic detection, use **Run Detect** to have the setup program search again for the UPS. For manual UPS detection, specify the new COM port.
- Ensure that the service `APC PBE Agent` is running.
- Check the back of the UPS to ensure that you are using the correct cable, and that it is securely connected. See **UPS Communications Cable Requirements**. After any changes, stop and restart the service `APC PBE Agent`.
- Make sure that there is only one communications cable connecting the UPS to the server on which you are installing PowerChute. If you connect the UPS to the server using both USB and serial communications cables at once, the incorrect communications type may be installed, and installation may not be successful.
- If you are using a USB cable:
  - Ensure that the Communications Port is set to USB. (To change from a serial to a USB connection, you must re-install the PowerChute Business Edition Agent.)
  - Check your USB device through the Windows Control Panel, by selecting **Administrative Tools** > **Computer Management > HID**. If either **HID**, or under **HID** the driver `American Power Conversion USB UPS` is not displayed, ensure that the USB port is enabled at your computer. If you are using a USB hub instead (not recommended), ensure that the hub is receiving power, check the hub's documentation to determine if an adapter is needed, ensure that the USB cable to the UPS is the last cable in the chain, and ensure that all USB devices upstream from the UPS have are communicating.
- If either of the following is installed or connected, check its configuration:
  - A Network Management Card must be fully configured and operational.
  - If you are using PowerChute Business Edition to monitor an Interface Expander 2 Card, ensure that you are using the correct cable (as listed in **Simple Signaling Cables**), and that "Simple signaling Accessory" was specified when the card or device was installed. If you are unsure what type of accessory was specified, reinstall the card or device with the correct settings.
- To check for USB/serial connection issues, use another port and cable, or use a terminal emulator to check the connection. See **Checking UPS Communications on Windows**.

**NOTE:**
If the troubleshooting methods in this section do not solve the problem, contact **APC Worldwide Customer Support** (**http://www.apc.com/support/**).

## Checking UPS Communications on Windows

To check the connection between a smart-signaling UPS and your computer's supported Windows operating system, use any terminal-emulation program.

**NOTE:** There is currently no way to check the communication for SURTD, SMX, and SMT devices.

The following procedure describes how to check the serial communication using the **PuTTY** terminal emulator.

1. Make sure that no other service is using the communications port.
2. Open **PuTTY**.
3. On the Putty Configuration screen, enter:
   a. **Connection Type**: Serial
   b. **Serial Line**: Specify the communications port to which the UPS is connected.
   c. **Speed**: 2400 bits/second
   d. Click **Open**
4. When a blank terminal screen is displayed, type an uppercase `Y`.
   – If the screen displays the letters, `SM` (Smart Mode), there is no problem with the serial communications link.
   – If `SM` is not displayed, type an uppercase `A`. If the screen displays `OK`, the UPS can receive signals, but it cannot send them. Possible causes of issues are:
     • There may be an issue with the serial cable. Replace the serial cable.
     • The computer's serial port may be unable to receive signals because of an interrupt conflict or a malfunctioning in the port. Try using a different computer.
     • There may be a hardware issue with the UPS. Try using a different UPS.

**NOTE:**
For further help with communications issues, or to troubleshoot Linux communications, see Knowledge Base article **FA163608** on the **APC website**. If the problem persists, contact **APC Worldwide Support** (**http://www.apc.com/support/**).

## Installing without a USB Cable Connected on Windows

On Windows, with the SMX and SMT devices, if you installed the PowerChute Agent without the USB communications cable connected to the UPS, then you cannot subsequently establish communications.

You need to correctly connect the USB communications cable from the computer to the UPS and then re-install the Agent.

## Unexpected Shutdown and Lost Communications

If communications between the UPS and the server running PowerChute Business Edition are lost, unexpected shutdown may occur in the event of a power outage, as the UPS cannot communicate with the PowerChute Agent running on the server.

## Standby Mode Disables the Agent Temporarily on Windows

The PowerChute Agent Windows service does not work while the computer is in Standby mode.

## Standby Can Postpone a Scheduled Shutdown on Windows

If your Windows computer is on standby at the time for which a shutdown is scheduled, the shutdown starts after standby mode ends. This is true even if the time scheduled for the shutdown (through the **Shutdown Schedule** command) has already passed.

For example, if a shutdown is scheduled for 7 p.m. to 7 a.m., and your computer is on standby at 7 p.m., it will not shut down at that time. But if the computer resumes normal operation at 9 p.m., the shutdown begins then. The notification will indicate that an administrative shutdown began at 7 p.m., and a minute later the computer will shut down. The computer will turn on again twelve hours later.

## Bluetooth Port Hangs during Installation

The installation of PowerChute Business Edition Agent hangs during automatic detection of a UPS if a Bluetooth® port is enabled.

Disable the Bluetooth port before installing the Agent or manually select the UPS type and port during the Agent installation.

## When Installing the Agent, Error Message "OpenService failed"

If you cancel an installation of PowerChute, you might get this error. If it happens some PowerChute folders might remain like the JRE folder. You can re-install PowerChute without any side effects or just delete the folder manually.

## Issues when Changing the Date and Time on the Operating System

Certain PowerChute functionality uses the operating system's time settings. Components such as scheduled shutdowns, event logging, and data logging rely on the time settings to function correctly. Changing the time or date after PowerChute is installed is not supported.

## Changing the UPS following Installation or an Upgrade

It is not supported to change the UPS used after installing PowerChute v9.5+ or upgrading to PowerChute v9.5 from an earlier version. You are not asked to select a UPS during an upgrade installation, the UPS identified during the original installation is used. To use a different UPS to that configured with PowerChute during the original installation, you must uninstall PowerChute and then reinstall to configure with the new UPS.

## UPS does not Turn On after Scheduled Shutdown

With the SMX1000 and SMX750 UPS devices, the UPS might not turn back on after a scheduled shutdown.

To turn on the device manually:

1. Turn off the UPS using the LCD.
2. Remove the UPS plug from the socket.
3. Disconnect the UPS battery.

Then put the device back into normal usage by reversing these steps:

1. Re-connect the UPS battery.
2. Put the UPS plug into the socket.
3. Turn on the UPS using the LCD.

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# 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.

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**990-1805F-001** **12/2017**