



## IT Essentials v4.1 LI 6.4.1 Describe how to configure power settings

### CompTIA A+ 220-701 Objective

- 3.3 Suspend
- 3.3 Wake on LAN
- 3.3 Sleep timers
- 3.3 Hibernate
- 3.3 Standby

One of the most popular features of a laptop is the ability to operate using batteries. This feature allows laptops to operate in locations where AC power is not available or is inconvenient. Advances in power management and battery technology are increasing the time that laptop users can remain disconnected from AC power. Current batteries can last anywhere between 2 to 10 hours without recharging. Managing the power by configuring the power settings on a laptop is important to ensure that the battery charge is used efficiently.

The ACPI standards create a bridge between the hardware and OS and allow technicians to create power management schemes to get the best performance from the computer. The ACPI standards can be applicable to most computers, but they are particularly important when managing power in laptops. Click the power states in Figure 1 to view more information about each power state.

**NOTE:** When working in Windows XP, Windows Vista, or Windows 7, the ACPI power management mode must be enabled in BIOS to allow the OS to configure all of the power management states.

Technicians frequently are required to configure power settings by changing the settings found in BIOS. Configuring power settings in BIOS affects the following conditions:

- System states
- Battery and AC modes
- Thermal management
- CPU PCI bus power management
- Wake-On-LAN (WOL)

**NOTE:** WOL might require a cable connection inside the computer from the network adapter to the motherboard.

Figure 2 shows an example of power settings in BIOS.

**NOTE:** There is no standard name for each power management state. Manufacturers might use different names for the same state.

Here are the steps to check the ACPI settings in BIOS:

1. Enter BIOS setup by pressing the appropriate key or key combination while the computer is booting. Typically, this is the **Delete** key or the **F2** key, but there are several other options.
2. Locate and enter the Power Management settings menu item.
3. Use the appropriate keys to enable ACPI mode.
4. Save and exit BIOS setup.

**NOTE:** These steps are common to most laptops and should be used only as a guideline. Be sure to check your laptop manual for specific configuration settings.

The Power Options feature in Windows XP, Windows Vista, or Windows 7, allows you to reduce the power consumption of a number of devices or of the entire system. Use Power Options to control the power management features of the following:

- Hard drive
- Display
- Shut Down, Hibernate, and Suspend modes (Windows XP)
- Shut Down, Hibernate, and Sleep modes (Windows Vista and Windows 7)
- Low-battery warnings

### **Configuring Power Settings in Windows XP, Windows Vista, or Windows 7**

You can adjust power management by using Power Options in the Control Panel. The Power Options displays only the options that can be controlled.

**NOTE:** Power Options automatically detects devices that might be unique to your computer; therefore, the Power Options windows might vary by the hardware that is detected.

To configure your power settings in Windows XP, click:

**Start > Control Panel > Power Options**

To configure your power settings in Windows Vista and Windows 7, click:

**Start > Control Panel > Hardware and Sound > Power Options**

### **Managing Power Usage**

Power Schemes and Power Plans are a collection of hardware and system settings that manage the power usage of the computer. These power settings can help you save energy, maximize system performance, or achieve a balance between the two. Both the hard drive and the display consume large amounts of power. They can be configured under the Power Schemes tab in Windows XP and the Change Plan settings in Windows Vista and Windows 7.

When you open Power Options, you will notice that Windows XP has preset power schemes and Windows Vista and Windows 7 have preset power plans. These are the default settings and were created when the operating system was installed. You can use the default setting, or create customized schemes or plans that are based on specific work requirements. Customized sleep timers are shown in Figure 3 for Windows XP Power Scheme and in Figure 4 for Windows Vista and Windows 7 Power Plans.

To configure sleep timers in Windows XP, click:

**Start > Control Panel > Power Options > select the time you want.**

To configure sleep timers in Windows Vista and Windows 7, click:

**Start > Control Panel > Hardware and Sound > Power Options > click the link **Change when the computer sleeps** > select the time you want.**

### **Power Management for the Hard Drive and the Display**

One of the biggest power consumers on a laptop is the hard drive. In our example, the hard drive is not accessed often. The “Turn off hard disks” time is set for 1 hour when the laptop is plugged in, and 3 minutes when the laptop is “Running on batteries”. You can also set the LCD to turn off after a specified period of time.

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You decide that Windows XP default settings for the Standby and Hibernate modes are acceptable and no changes are made. In Windows Vista and Windows 7 these settings are Sleep, Hybrid Sleep, and Hibernate. Power Schemes and Power Plans can be saved with a customized name. Saving the new setting with a custom name allows the user to easily switch back to the default settings. In Figure 5 and Figure 6, the new settings are saved with the name Research.

### Setting the Laptop Power Options

If you do not want to completely shut down the laptop, you have two options in Windows XP: Standby and Hibernate.

- **Standby** – Documents and applications are saved in RAM, allowing the computer to power on quickly.
- **Hibernate** – Documents and applications are saved to a temporary file on the hard drive, and takes a little longer than Standby to power on.

Figure 7 shows Hibernate enabled in the Power Options properties.

If you do not want to completely shut down the laptop, you have three options in Windows Vista and Windows 7: Sleep, Hybrid Sleep and Hibernate.

- **Sleep** – Documents and applications are saved in RAM, allowing the computer to power on quickly.
- **Hybrid Sleep** – Documents and applications are saved in RAM and data is written to the hard disk, and takes a little longer than Sleep to power on.
- **Hibernate** – Documents and applications are saved to a temporary file on the hard drive, and takes a little longer than Hybrid Sleep to power on.

### Adjusting Low Battery Warnings

In Windows XP, you can set the low battery warnings. There are two levels: Low Battery Alarm and Critical Battery Alarm. The Low Battery Alarm warns you that the battery is low. The Critical Battery Alarm initiates a forced standby, hibernate, or shut down mode, as shown in Figure 8. Standby is called Sleep in Windows Vista and Windows 7.

## IT Essentials v4.1 LI 6.4.3 Laptop communication hardware installation and configuration

### CompTIA A+ 220-701 Objective

#### 1.10 Communication connections

Windows 7:

**Start > Control Panel > Network and Internet > Network and Sharing Center > Change adapter settings > right-click the connection that you want to set up > Properties > Internet Protocol Version 4 (TCP/IPv4) > Properties > configure IP setting > OK > Close.**

**Windows 7 Changes:** Add Windows 7 to the Modem Installation and Configuration Steps.

Windows 7:

**Start > Control Panel > Search for Phone and Modem in the Search Control Panel box > Phone and Modem > New to create a new location or Edit to modify a listed location > specify the dialing information for your location > OK > Modems > Add > Next > Add Hardware Wizard installs the device > Finish.**

**Windows 7 Changes:** Add Windows 7 to the Bluetooth Installation and Configuration Steps.

Windows 7:

**Start > Control Panel > Add a device > select the discovered device and click Next > enter the pairing code provided by Windows 7 into the Bluetooth device > when the device has been successfully added, click Close.**

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