

Put them to sleep, but don't hibernate

By **Barclay Bicksler** on 11/15/2011



With Windows PCs, IT pros often scratch their heads when asked about the benefits of the various operating modes, i.e., standby, hibernate, and shut down, as it relates to PC power management. Working with Verdiem - the market definer in PC power management, you'll get the benefit of our experience working with over 600 organizations. We've developed best practices that balance energy savings with user productivity.

When a PC is on and being used actively, it consumes 60-200 watts of electricity depending on the model and level of activity. When you want to put a computer into a low power state, you have the following options:

- **Sleep** (also called Standby). Uses the least amount of power while leaving the computer turned on. Programs or documents that are open are written to computer memory and remain open while the computer is in sleep mode. When you return and wake the computer, you can pick up where you left off.
- **Hibernate**. Saves open documents to the disk, closes programs, and then turns off the computer. On most computers, you can wake the computer and resume working by pressing the power button.
- **Off**. All programs are closed, the operating system is shut down, and the computer is powered off. The operating system and all programs must be restarted when the computer is turned on.

In the Off state, most modern machines use a small amount of power for the network card to listen for a Wake on LAN magic packet.

The following table shows the pros and cons of low power states as they relate to PC power management.

Table 1. Sleep (or Standby)

Pros:

- Generally supported by software developed after 2005 and hardware manufactured after 2005.
- Data for open applications is loaded into RAM enabling faster waking from standby
- Waking the system from this state is easy (through mouse or keyboard).
- Wake from standby can be scheduled or done through Wake on LAN.
- Applications generally don't block standby transitions.

- Uses slightly more energy than other low power states (1-2 W).
- Potential data loss in the event of a power outage.

Cons:

Table 2. Hibernate

- Pros:**
- Increased energy savings over standby.
 - Data loss less likely in a power outage, because information is stored on the physical drive.

Cons:

- Errors can occur in some software when the computer goes into the hibernate state.
- Not all hardware fully supports this state.
- Most computers can wake from hibernate only through Wake on LAN. However, scheduled wakes are possible for some computers.
- Because data is no longer loaded into RAM, waking from this state is slower than from standby.
- User wakes the computer by pressing the power button.

Table 3. Power off

Cons:

- Some increased energy savings over standby and hibernate.

Pros:

- Potential data loss when shutting down open applications (if using a forced shutdown).
- System might not shut down if blocked by an application (if not using forced shutdown).
- Computers can wake only through Wake on LAN.
- Because data is stored on physical drive space, waking from this state is slower than from standby.
- User wakes the computer by pressing the power button.

The Benefits of Sleep

Although the off and hibernate states provide some increased energy savings over sleep, the savings are so insignificant that the disadvantages far outweigh the savings. Wake and network issues are common when the computers have been set to Hibernate or Off.

To get a clearer idea of the trivial differences in savings, here is energy usage data based on manufacturer specs of 100 systems:

- Standby: 3-5 W
- Hibernate: 2-3 W
- Off: 2-3 W

When a computer or any device goes into a lower power state, users expect it to wake up as soon as they try to access it. Using policies that transition PCs to sleep offer the fastest wake up experience for users and significant energy savings over time, while having the least impact on productivity.

Keys to Intelligent PC Power Management

Smart PC power management starts with:

- Understanding PC power states and how they affect PC energy consumption.
- Knowing how much energy PCs and devices in your organization use, why, and at what times of day users are most active.

Verdiem Surveyor helps you gather data on the energy use and user activity in your organization and reports on that energy use to help you determine your organization's *baseline*, which is the amount of energy used by PCs and network devices before centralized PC power management has been implemented and enforced.

After you determine your baseline energy use, you can assess daily and weekly usage

patterns to determine what policies should be enforced at particular times of the day and week.

The policies you enforce should reduce energy consumption, yet not interfere with user productivity or IT software maintenance windows. Surveyor allows you to apply power settings on a scheduled basis to gracefully transition PCs into low power states based on inactivity.

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