

Deep Sleep v. 1.2 documentation

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This software is distributed WITHOUT ANY WARRANTY.

Deep Sleep is a simple Dashboard widget which allows users to put their computer into hibernation. This widget only works on a limited number of Apple computer models. Most users should read sections 1, 2, 3, 4 and 5 of this document. Advanced users can also read sections 6, 7 and 8 to learn more about the inner workings of the widget and the power saving modes of Mac OS X. Finally, sections 9, 10 and 11 might be useful if you experience issues while running the widget.

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1. Purpose of the Deep Sleep widget

Deep Sleep is a convenient way to make your computer hibernate. Hibernation is a different way to turn off your computer. When entering into hibernation, your system will be totally switched off and no power will be used. However, when you turn back on your computer, you will find it in the same exact state as when it entered hibernation. Open software

and documents will still be on your desktop, music will continue to play in the background... just as if you had never turned it off.

2. System requirements

The following operating systems are supported:

- Mac OS X Tiger from 10.4.3 to 10.4.10
- Mac OS X Leopard from 10.5.0 to 10.5.8
- Mac OS X Snow Leopard from 10.6.0

Later versions may work, but are not tested. Earlier versions will definitely *not* work.

Any computer with the *safe sleep* function is supported. This includes :

- Apple Powerbook HD 12", 15" and 17" (released on October 2005)
- Apple Macbook Pro 15" and 17" (released on January 2006)
- Apple Macbook 13.3" (released on May 2006)
- Apple iMac "intel" (released on January 2006)
- Apple Mac Mini "intel" (released on February 2006)
- Apple Mac Pro (released on August 2006)

This list will grow as newer hardware is introduced by Apple. However, there is an unsupported way to make this widget work on most of the recent computers. Cautious users can learn about it in section [9](#).



3. Installation and use

Install Deep Sleep in Dashboard by double-clicking on its icon.

The widget will appear as a moon. To put your computer in hibernation, click on it once. **You should eject all external devices before entering hibernation.**

On first use, the widget will ask for an administrator password. Enter it, click the OK button, then click again on the moon to switch on hibernation. Deep Sleep will only ask once for your password, unless a wrong one is entered.

To exit hibernation, press on the power button of your computer. During the wake up, a progress bar showing the state of the process will be shown.

Several configuration options are available for advanced users on the back panel of the widget. This panel can be reached by clicking on the  symbol on the lower right of the moon. Two fields can be set:

- Regular sleep mode: chooses the sleep mode which will be used when the computer is sent to sleep by the Apple system menu, or when its lid is closed on laptops.

- Widget sleep mode: chooses the sleep mode which will be used when the widget is clicked on.

For each of these two fields, three settings are available:

- Quick: No hibernation features are enabled. Also known as *mode 0*.

- Safe: Hibernation features are only used when the computer runs out of battery power. Also known as *mode 3* or *7*.

- Deep: Full hibernation. Also known as *mode 1* or *5*.

The exact operation of these modes is described in section [7](#).

By default, the widget sleep mode setting is *deep*. The regular sleep mode default depends on the computer model used: this is usually *quick* for desktop computers, and *safe* for laptops computers.



4. Removal of the widget

To remove the widget, locate the `Deep Sleep.wdgt` file in the `Library/Widgets` folder of your home directory, and put it to the trash. You can also remove the configuration file named `widget-fr.beaume1.widget.deepsleep.plist` in the `Library/Preferences` folder of your home directory.

If the computer still enters hibernation after the removal of the widget, please refer to section [7](#) in order to set back the hibernation mode to 0, 3 or 7.

5. Known issues

At the time of writing of this document, the following issues are known:

- Mac OS X 10.4 may crash with a kernel panic at wake-up from hibernation if one of the following devices are connected:
 - IPEVO Free-One USB handset;
 - D-Link G122 USB adapter.
- On a Macbook Pro, the “Tap trackpad with two fingers for secondary click” feature may get disabled after wake-up from hibernation. Unchecking and checking again the option in the Keyboard and Mouse pane of the System Preferences will restore the correct behavior. This issue might have been fixed in Mac OS X 10.4.9.
- On a Macbook Pro, the keyboard may get disabled if text is entered too soon after wake-up from hibernation. A reboot is needed to fix the correct behavior.

These issues are not related to the widget by itself, but to the Mac OS X kernel. Should you encounter them, there is unfortunately little I can do to fix them for the time being.

- Parts of the text on the widget might get stuck and stop fading out under rare circumstances. This does not affect the correct behavior of the widget. This issue can be fixed by reloading the widget: see section [10](#) for full details.

6. More information about sleep and hibernation

The state of a computer is stored into its main memory, which is also called RAM. When a computer is powered off, the contents of this memory are irremediably wiped out. Hibernation works in the following way: before being powered off, the computer saves all the contents of the memory to a file on the hard disk drive. On wake up, data stored in this file is read out and restored to the memory. Therefore, the RAM contents are the same before and after the hibernation process, and the state of the computer is also the same. The saved file is named `sleepimage`, and is located in the `/private/var/vm` directory. Hibernation is sometimes also called “software suspend” or “suspend to disk”.

The default suspension feature of Mac OS X, called *sleep* works in a different way. When entering sleep, every subsystem of the computer is shut down, except the main memory which is still powered. This process preserves the contents of the memory, and allows the computer to wake up quickly. However, a sleeping computer still consumes a small amount of power. Sleep is sometimes also called “hardware suspend” or “suspend to RAM”.

Apple introduced the *safe sleep* feature in Mac OS X 10.4.3 for the Powerbook HD line of laptops. This feature is a variation of the default suspension behavior. The main memory is still powered during the sleep, but the contents of the memory are also saved to the disk at the beginning of the operation. The saved file will only be used if the laptop runs out of battery power *while sleeping*, in order to restore the original state of the computer.

This safe sleep feature is what makes hibernation possible in Mac OS X 10.4.3 and above.

7. Description and modification of the different hibernate modes

When the computer goes into sleeping mode, its behavior depends on a power management variable called *hibernate mode*. The hibernate mode can be set to different values:

- 0 (*quick*): Default sleep behavior on most Apple computers. RAM is still powered on while sleeping. Wake up is fast. Safe sleep is disabled.
- 1 (*deep*): Hibernation behavior. System is totally shut down while sleeping. RAM contents are dumped to disk. Wake up is slow.
- 3 (*safe*): Default behavior on Powerbook HD and later computers. RAM is still powered on while sleeping. Wake up is fast. Safe sleep is enabled, so RAM contents are also dumped to disk before going to sleep.
- 5 (*deep*): Same as mode 1 for systems with encrypted virtual memory.
- 7 (*safe*): Same as mode 3 for systems with encrypted virtual memory.

Only a single mode can be activated at a time. In order to check what hibernate mode is currently active, the following command can be used in the Terminal application:

```
pmset -g | grep hibernatemode
```

In addition, users with administrator privileges can choose the hibernate mode. In order to do so, the following command can be used:

```
sudo pmset -a hibernatemode X
```

with X replaced by the value of the hibernate mode to set.

The hibernation modes which will be used by the system and the widget can be set on the widget back panel. Refer to section [3](#) in order to access it.

8. Deep Sleep operation in detail

Deep Sleep allows you to use hibernation without having to use the Terminal to change the hibernation mode. When clicking on it, its operation can be broken down into the following steps:

- check if the operating system revision is supported;
- check if the hibernation file is present on the system;
- check what the current hibernate mode setting is, and store it;
- check if the system is using encrypted virtual memory;
- set the hibernate mode to the *widget sleep mode* chosen on the back panel, depending on the previous step;
- tell the system to go down to sleep;
- on wake up, restore the original hibernate mode.

In order to modify the regular sleep behaviour, Deep Sleep uses a similar process:

- check if the operating system revision is supported;
- check if the hibernation file is present on the system;
- check if the system is using encrypted virtual memory;
- set the hibernate mode to the *safe sleep mode* chosen on the back panel, depending on the previous step.

9. How to enable safe sleep on unsupported computers

This operation is unsupported and might cause unexpected behavior or damage your computer. Do it at your own risk. A “hack” to enable the safe sleep behavior on most of the recent Apple computers has been found and published on the internet. Deep Sleep will work on computers supporting this “hack”.

Read more about it at <http://matt.ucc.asn.au/apple/machibernation.html>.

10. Frequently Asked Questions

What is the difference between sleep and hibernation ?

To make a long story short, sleep uses power while hibernation does not. On the other hand, waking up from sleep is almost instantaneous, whereas waking up from hibernation can take many seconds. Read section [6](#) for more technical details.

How to uninstall the widget ?

Find the Library/Widgets folder in your home folder, and throw the Deep Sleep file to the trash.

Why should I eject my external drives before entering hibernation ? This is not really handy.

USB and Firewire ports get powered off during hibernation, which could cause data loss. An automated ejection procedure is likely to appear in a future revision of this widget.

Why does the widget need my password ?

As described in section [8](#), Deep Sleep needs to change the *hibernate mode* of the computer. This operation needs administrator (also called *root*) privileges. Regular software cannot gain this kind of privileges without the password of an administrator.

The password is only asked once. Does this mean the widget keeps my password stored somewhere ?

No, the widget does not keep your password stored. When you enter your password for the first time, you grant the widget the right to gain administrator privileges whenever needed. For the technically inclined, this operation is called *setuid root*.

Is there a way to use this software without Dashboard ?

Yes. The widget itself is only an interface to a command line utility called `deepsleep` which does all the “magic work”. You will find this utility inside the widget package, by control-clicking on it and selecting “Show Package Contents”.

The computer did not come out of hibernation correctly. I had to shut it down manually. Now every time I try to make the computer sleep, it enters hibernation instead. What can I do ?

As the computer crashed during wake up, Deep Sleep was unable to set back the correct hibernate mode. Access the back panel of the widget as described in section [3](#), and set the *regular sleep mode* to *quick* or *safe*. Alternatively, you can consult section [7](#) to set back manually the hibernate mode to 3 or 7.

I get the following message when I try to switch on hibernation : “Hibernation file is missing”. What does this mean ?

This means that the hibernation file, located in `/private/var/vm/sleepimage` does not exist. There are two usual causes of this error.

Most of the times, you will get this error message if your computer does not support safe sleep. Refer to section [9](#) to enable it.

In rare cases, you will get this error message on a supported computer if for a reason or another, the hibernation file has never been created. In order to create it, please refer to section [7](#) to set the hibernation mode to 1, then back to 0.

I get the following message when I try to switch on hibernation : “Failed to get the hibernation mode”. What does this mean ?

This means that the widget was unable to determine the sleep mode that is currently selected on your computer. You might get this message if safe sleep is not enabled on your computer. Refer to section [9](#) to enable it.

I get the following message when I try to switch on hibernation : “Install the widget in root Library folder”. What does this mean ?

This means that you are using FileVault in order to encrypt your home folder. As encrypted home folders are mount by Mac OS X in *nosuid mode*, the widget is unable to gain administrator privileges required for its correct operation. As a consequence, you should install the widget in the `Library/Widgets` folder located at the root of your system hard drive.

Several lines of text are stuck on the widget, and no longer fade-out. How can I get rid of them ?

Access the back panel of the widget as described in section [3](#), then press simultaneously the keys `⌘` and `R` in order to reload the widget.

The widget does not work and keeps crashing ! What can I do ?

Unfortunately, this means that your computer is probably not supported. You can try sending me an e-mail with the error messages and a description of the behavior of the software, and I'll do my best to help you. See section [11](#) for contact information.

11. Contact information

For most enquiries, suggestions or casual gossip, you can contact me by electronic mail at matthieu.beaume@fastmail.fm or cochonou@fastmail.fm.

You should always be able to find the latest version of this widget at the following URL: <http://deepsleep.free.fr>.

12. Version history

- 0.1 : Initial test release.
- 0.2 : Added the automated setuid procedure to the widget.
- 0.3 : Made a few cosmetic changes to the widget.

- 0.4 : Added an operating system revision check to the command-line utility. First version to be widely released.
- 0.5 : Added an hibernation file check to the command-line utility. Updated the documentation with a few common issues.
- 0.6 : Fixed a bug which would cause some computers models to only enter deep sleep when the “custom” power profile was selected. Support for x86 architecture added.
- 0.7 : Added the default mode restoration behavior: if the widget detects that the computer has crashed, it will set back the hibernation mode to its default setting. Added a workaround to prevent widget messages from not showing up in special circumstances. Added the detection of systems running FileVault.
- 0.8 : The widget can now work with non-administrator accounts. Added protection from multiple clicks. Changed the name of a file to enable the widget to work on case sensitive HFS+ filesystems. Added a workaround to enable the widget to work on computers supporting hibernation, but missing the hibernation file.
- 0.9 : Added a back panel allowing the modification of the system and widget sleep mode. This takes the place of the automatic crash recovery behavior introduced in version 0.7, which is now disabled. More modifications in order to make the widget work on case sensitive HFS+ filesystems. Added support for Mac OS X 10.4.10 and Mac OS X 10.5.
- 1.0 : Fixed a layout bug under Mac OS X 10.5 and Safari 3. Upgraded to GPLv3. Miscellaneous documentation and source code cleanup for a better readability.
- 1.1 : Worked around an issue which caused a significant time delay before sleep under Mac OS X 10.5. Fixed a rare synchronization issue which could cause computers with secure virtual memory to enter incorrect hibernation modes. On the password backpanel, put the focus on the password field by default.
- 1.2 : Changed the authentication method from sudo to Applescript. This should fix the authentication issues under Mac OS X 10.6. Thanks to Oliver Kusche for finding this solution.

13. Distribution and modification of this software

This software is free and can be distributed under the terms of the GNU General Public License version 3 (GPLv3). You can find a copy of the GPL in the included file named “GPL-3.0.txt”, in the directory called “license” of the widget package, or on the internet at the <http://www.gnu.org/licenses/gpl.html> address.

The source code of the `deepsleep` command line utility can be found in the directory called “source” of the widget package. This utility is released under the GPL, and therefore can be modified under its specific terms to suit your needs.

14. Additional credits

This widget uses the wonderful GreyWyvern's Buffered Text-fade Effect, which you can get at <http://www.greywyvern.com/code/js/fade>.

Thanks to the adventurous people at <http://forum.macbidouille.com> who have tested the widget in its early stages, and to every user who gave me feedback by e-mail.

Thanks to Fabio Corneti for his help on troubleshooting case-sensitive HFS+ filesystem issues.

Many thanks to Oliver Kusche for fixing up the authentication problems with Snow Leopard.