# Raspberry Pi Backup and Restore Procedures

The Raspberry Pi (RPi) software image should be backed up before and after any changes are made. There are many ways to backup and restore the RPi software image; however, the method described here is simple and has the least risk of corrupting the image beyond repair.

It is not possible to simply copy the distribution image from an RPi memory card to a Windows PC or from a Windows PC to a memory card; instead, a special image reader/writer program is needed. Suitable programs are Win32 Disk Imager {WDImg} and HDD Raw Copy Tool {HDDRaw}. This guide is based on Win32 Disk Imager. Download and install the program, and place a shortcut to it on the Desktop. Mark the shortcut to run as Administrator.

Connect a card reader/writer suitable for a micro-SD memory card to the PC. Some micro-SD cards and early card reader/writers are incompatible, so it may be necessary to install the micro-SD card in a full-size SD card carrier or adapter and insert the carrier into the reader.
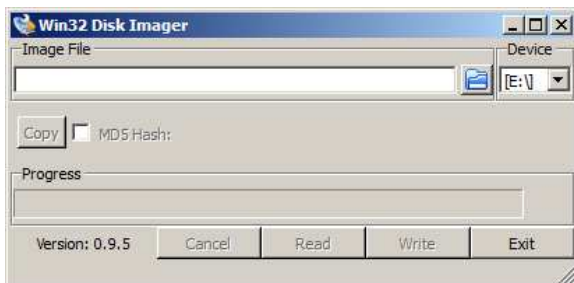


Note: Not all secure digital memory cards of a given size (say, 8 GB) actually have the same storage space even if the cards are made by the same manufacturer. A backup from one memory card and restore to another may not be possible if the restore card is slightly smaller than the backup card. On the other hand, memory cards of exactly the same model from a given manufacturer will have the same space.

Backup:

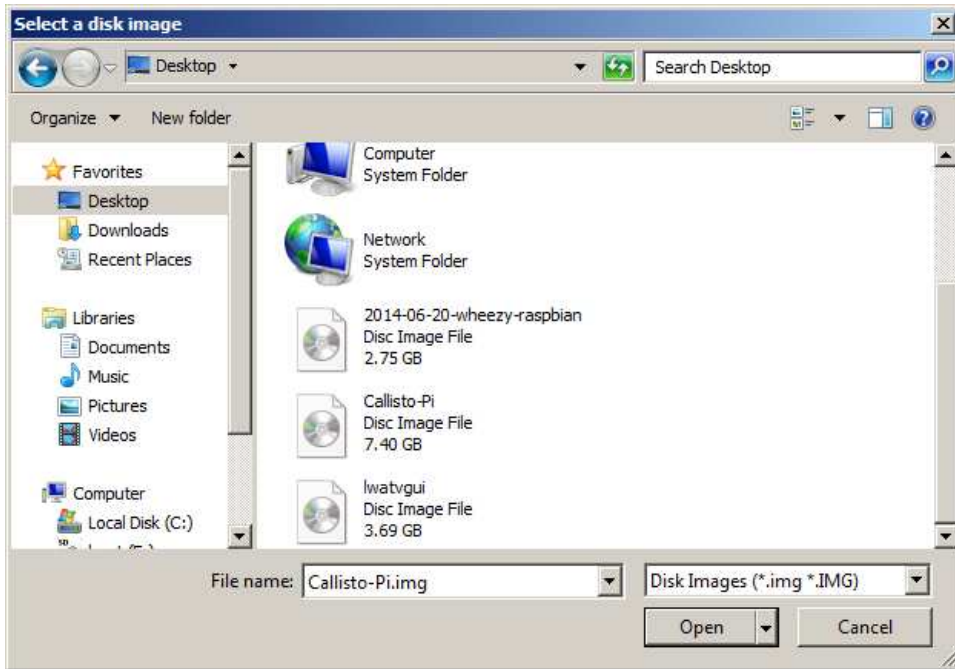To backup the image on a memory card to a Windows PC, first shutdown RPi:

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sudo halt
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After the RPi has completely shutdown, remove power from it. Shutdown is indicated by no activity on any LEDs except the power LED, which will remain on until power is removed. Remove the memory card and install it in the card reader/writer. Open Win32 Disk Imager:
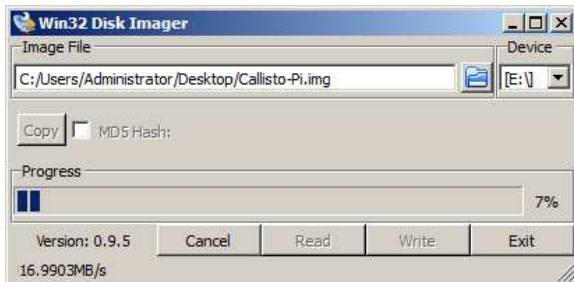


The drive letter for the memory card is shown in the Device field in upper-right. If you have more than one USB memory device plugged into the PC, select the letter corresponding to your memory card (drive letter E: in example above).

Click the folder icon to right of the Image File input field. Windows Explorer will open (below). Navigate to the location where the RPi image is to be saved and enter the desired name of the image in the File name field of the Explorer window. In the example below the filename is **Callisto-Pi.img** and it is to be saved to the Desktop. Click Open.



At this time you will be returned to the Win32 Disk Imager user interface. Click the **Read** button. After a moment the Progress bar will show the Read operation. The read operation will require several minutes so be patient.



When the Read process finishes, a Success window will pop up.



<u>Restore</u>:

To restore the RPi image from a Windows PC to a memory card:

- ✪ Insert a memory card in the reader/writer. The target device size must be at least as large as the source image. Any data on the card will be overwritten
- ✪ Open Win32 Disk Imager and select the memory card drive letter under Device. If the target memory card is not recognized it may need to be formatted. Use SD Formatter to format the card {SDFormatter}
- ✪ Navigate to the RPi image file to be restored at the location where it was saved and select it
- ✪ Click Open
- ✪ Click the **Write** button on the Win32 Disk Imager user interface

After a moment you will see the Write Progress bar advance as the image is written to the memory card. The write operation will require several minutes (much longer than Read). Upon completion a Write Successful window will pop up. The memory card then may be ejected from the Reader/Writer and installed in the RPi. Remember, do not insert or remove the memory card with power on the RPi.

**Web Links**

{HDDRaw}        http://hddguru.com/software/HDD-Raw-Copy-Tool/
{SDFormatter}   https://www.sdcard.org/downloads/formatter_4/
{WDImg}         http://sourceforge.net/projects/win32diskimager/

**Document information**

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