

IsMyHWOK: Is My Hardware Okay?

A program to check hardware devices for compatibility with Fully-Free drivers.

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Revision History

Thomas Dennis (31st August 2010): Initial version created. Licence used: GNU FDL 1.3

Introduction

IsMyHWOK is a hardware compatibility program for fully-free GNU/Linux distributions such as Trisquel and gNewSense. It is licensed under the terms of the GNU General Public Licence version 3.0 (or, at your option, any later version of this licence).

The program automatically detects information about the local system (including kernel name, version and architecture and PCI/USB hardware) and compares it against a ratings database in order to determine how well the system will function using a GNU/Linux system that uses only 100% libre device drivers.

It also provides facilities to export this information in a number of formats, such as HTML and CSV, so that it can be further processed by other programs.

Later versions of the program will allow users to submit information about their hardware to online databases such as h-node (<http://www.h-node.com>) or the Free Software Foundation Hardware pages (<http://www.fsf.org/resources/hw/>) simply by clicking a button.

This document describes **version 0.4.0** of the program.

Licence Information

The main IsMyHWOK program is licensed under the GNU GPL version 3. However, the source code for the CSV library used to parse input files is licensed under the more permissive MIT/X11 licence. Both of these licences are included in the appendices at the end of this document.

The program as a whole is covered by the terms of the GNU GPL 3 licence, and any derived products must also be licensed under those terms. However, should you wish to use just the CSV code (i.e. anything in the `csv/` directory of the source code folder) in another product, then the terms of MIT X11 license apply instead.

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Files Used (and Where To Find Them)

The program relies on a number of external files in order to give meaningful information to the user. These files contain device names, ratings and other, similar information.

Device Names

In order to assign a meaningful name and manufacturer to a device, the following files are used:

PCI

`/usr/share/misc/pci.ids`

If this cannot be found, the program falls back to looking in `./` (the local directory).

USB

`/usr/share/misc/usb.ids`

If this cannot be found, the program falls back to looking in `./` (the local directory).

Device Ratings

The following files contain a list of device IDs and compatibility ratings in CSV format. Each record in the file is in the format `[Device ID], [Score]`, where `[Score]` can be any of the following numeric values:

- **1 (Red)** – The device does not work.
- **2 (Yellow)** – The device is partially working, but some features may be unavailable.
- **3 (Green)** – The device is fully functional.

Any other values are rated as zero (Grey), which should be interpreted as Unknown. If any of these files cannot be found, every device of that type is rated as zero.

PCI

`/usr/share/ismyhwok/pci_ratings.csv`

If this cannot be found, the program falls back to looking in `./` (the local directory).

USB

`/usr/share/ismyhwok/usb_ratings.csv`

If this cannot be found, the program falls back to looking in `./` (the local directory).

Device Comments

Comments files are similar to the ratings files described above. They are CSV files in the format `[Device ID], [Comment]` where `[Comment]` is a UTF-8 text string.

If any comment file cannot be found, all comments for devices of that type will be blank.

PCI

`/usr/share/ismyhwok/pci_XXXX.csv`

...where XXXX is the result of the `getenv("LANG")` function. For example, if the system is set to use British English as the default language, the the `LANG` environment variable would be set to **en_GB.UTF-8** and so the program would look for a file named **pci_en_GB.UTF-8.csv**

If this cannot be found, the program falls back to looking in `./` (the local directory).

USB

`/usr/share/ismyhwok/usb_XXXX.csv`

...where XXXX is the result of the `getenv("LANG")` function. For example, if the system is set to use British English as the default language, the the `LANG` environment variable would be set to **en_GB.UTF-8** and so the program would look for a file named **usb_en_GB.UTF-8.csv**

If this cannot be found, the program falls back to looking in `./` (the local directory).

Submitting Ratings

In the future, the program will have the ability to submit ratings to online hardware compatibility databases in order to expand the list of known/rated hardware. The following sections deal with each potential submission target.

FSF Hardware Pages

Currently, the Free Software Foundation does not offer an automated method for submitting new hardware ratings. Instead, new devices must be submitted via email to hardware@fsf.org so that they can be added manually.

Automating submission to the FSF will have to wait until discussions can be held to determine if and how this should be done.

h-node

The h-node database allows new ratings to be submitted and existing ratings to be downloaded in XML format. Thus there are two aspects to this: Importing ratings information from h-node and submitting new ratings via the IsMyHWOK program (which would then be added to the database, added to the XML file, downloaded, etc.).

Import

The XML data provided by h-node could be loaded into the program using the TinyXML library.

This needs some more planning in order to determine how files should be overwritten and updated. For example, h-node uses a 5-point system to rate devices, whilst IsMyHWOK uses a 3-point system. How should the conversion be handled?

Export

Submission to h-node could be done via a GTK Link Button, the URL of which would be built from the device information available (something along the lines of <http://www.h-node.com/auto.php?type=usb&rate=5&comment=something> would work without too much trouble).

A minor problem is that device ratings would need to be converted from the 3-point system used by isMyHWOK to the 5-point system used by h-node. This can be solved fairly easily:

IsMyHWOK Rating	h-node rating
1	1
2	3
3	5

Kernel name, version and architecture information is available to IsMyHWOK via the output of `uname`. It could therefore be submitted to h-node without any problems.

The name of the GNU/Linux distro being used could be chosen from a combo-box, with a drop-down list of known fully-free distributions (Trisquel, gNewSense, etc.). However, the user would be able to type the name of another distro into the text field of the combo box if their operating system

was not listed.

Other Operating Systems

IsMyHWOK was originally intended for use with the Trisquel GNU/Linux operating system, possibly as part of a LiveCD. However, the program could be ported to other operating systems in order to check compatibility without requiring a LiveCD.

Windows NT (2000, XP, Vista, and 7)

uname, lspci and lsusb will need to be emulated.

GTK+ works fine on these systems, but it requires 11MB of DLLs just to get the program to run. As such, it might be wise to reimplement the GUI using FLTK or something similar in order to minimise the download size.

Qt is out of the question, since it would also require about 11MB of DLLs to create the GUI window, in which case the program might as well just stick with GTK+.

MacOSX (before and after 10.4.x)

There are a number of potential problems here:

- It has uname, but doesn't support lspci or lsusb (at least, not out of the box).
- Also, whilst it is based on FreeBSD, it doesn't include pciconf.
- MacOSX versions prior to 10.4 might need to be handled differently.
- Older machines will be based on the PowerPC architecture rather than x86.

Note: The only Macintosh machine I currently have access to is an old PowerPC Mac Mini with Mac OS X 10.3.9 on it. It can't even run Code::Blocks, so it might be best if someone else handled this port, using a more up-to-date Intel-based machine with MacOSX 10.4+

BSD (FreeBSD, OpenBSD, NetBSD, DragonflyBSD)

This should be a simple case of replacing the lspci/lsusb code with pciconf stuff instead. That said, I'm no BSD expert.

Others

Anyone with too much free time on their hands could try to port the program to MacOS 9 and below or the old DOS-based Windows OSes (95, 98 and ME).

TODO

The following is a brief list of things that are yet to be implemented by the program.

- Need to stop the selection hiding the rating colour.
- Must implement i18n support (text strings loaded from UTF-8 files).
- Searching (using the keyboard) doesn't work.
- Columns aren't sorted when clicked on.
- Need to emulate lspci/lshw for the Windows/MacOSX versions.
- Need to check whether the MacOSX build targets actually work.
- Printing doesn't work.
- Automatic submission needs to be arranged with the FSF and h-node.
- Ratings can't be edited.
- Need more devices! Need more ratings!

Appendices

The following sections are provided for reference purposes.

Appendix A: The GNU GPL version 3

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