

# **Introduction**

The IECHost GUI Client is a multi-threaded software that operates in conjunction with the IECHost hardware.

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## **Installation**

The IECHost GUI Client doesn't include an installer. For manual installation, the contents of the distribution archive need to be extracted in a location of the file system that is convenient to the user.

Note: Under Windows the IECHost GUI Client requires the installation of the GTK+ 2.24.31 runtime, unless the portable archive is used. Under Linux the GTK+ 2.x.y runtime is usually already available, depending on the desktop engine in use, however version 2.24.31 is the minimum required.

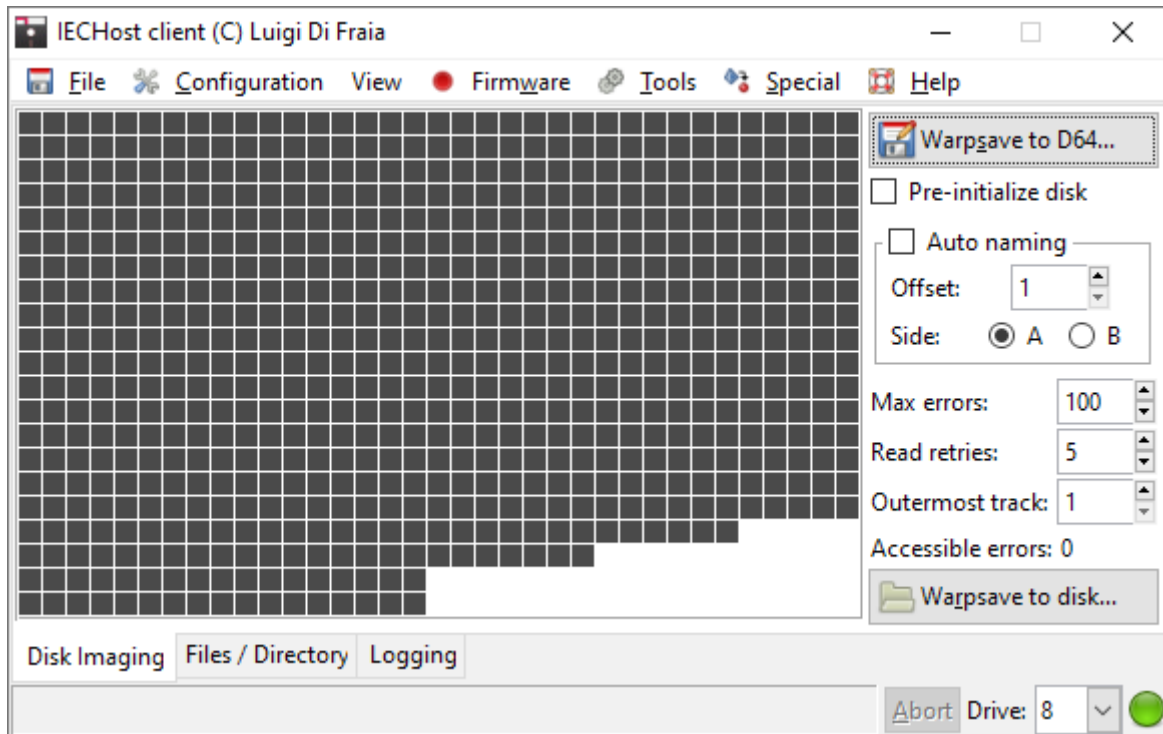
## **Configuration persistence**

A number of user-configurable options and settings are persisted to file so that they can be restored when the application is restarted. Those settings that are not persisted aren't by design, in order to avoid their propagation between sessions.

The location of such file depends on the operating system in use and is displayed in the "Logging" page when the application is started. As an example, under Windows 10 the location is `%LOCALAPPDATA%\iechost-client\user.ini`.

# Executing the IECHost GUI Client

Upon starting the IECHost GUI Client, its main window is displayed.

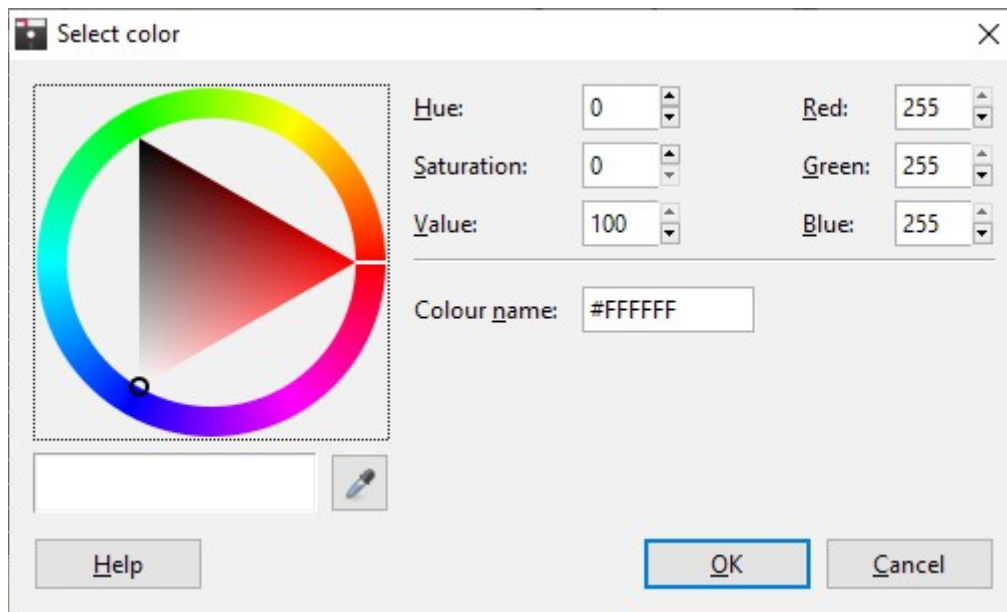


In the bottom right corner of the main window there's the "Drive" selection widget that allows users to switch between drive 8, 9, 10, and 11.

The "Abort" button becomes active when an operation is in progress. Furthermore the status icon turns from green to red when a drive operation is in progress, which is handy in noisy environments such as demo parties.

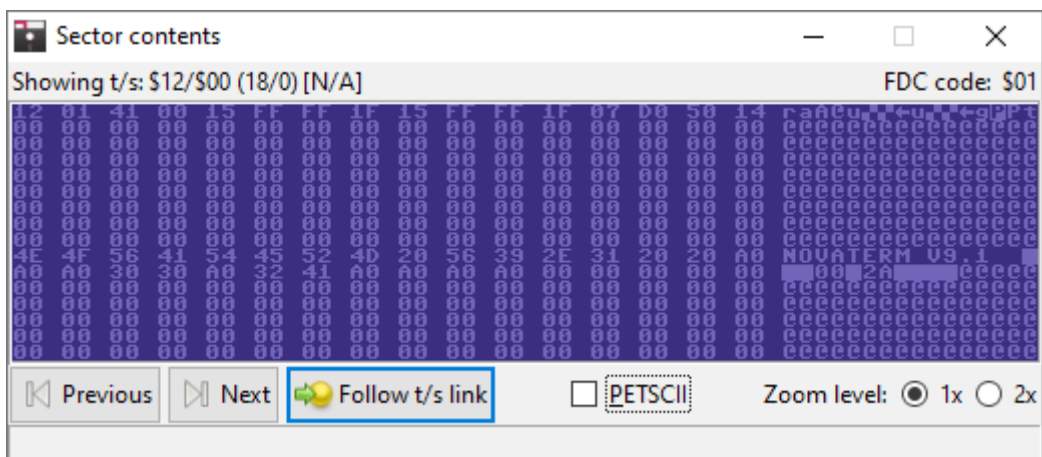
## Background color chooser

If the left mouse button is clicked on the blank area of the sector grid while holding down the Ctrl key, then users are presented with the following dialog in order to choose the background color of the grid itself:



## Sector content explorer

If the left mouse button is clicked on a sector cell while holding down the Ctrl key, then users are presented with the following window in order to explore sector contents:



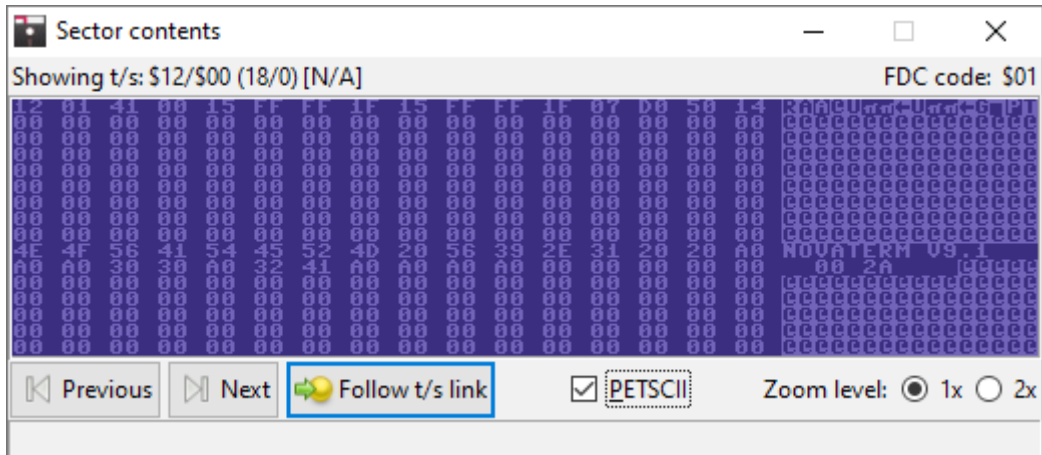
## Sector navigation buttons

The "Previous" and "Next" buttons jump to the previous and next sector, if applicable.

The "Follow t/s link" button jumps to the sector pointed by the t/s link within the current sector, if applicable.

## PETSCII mode

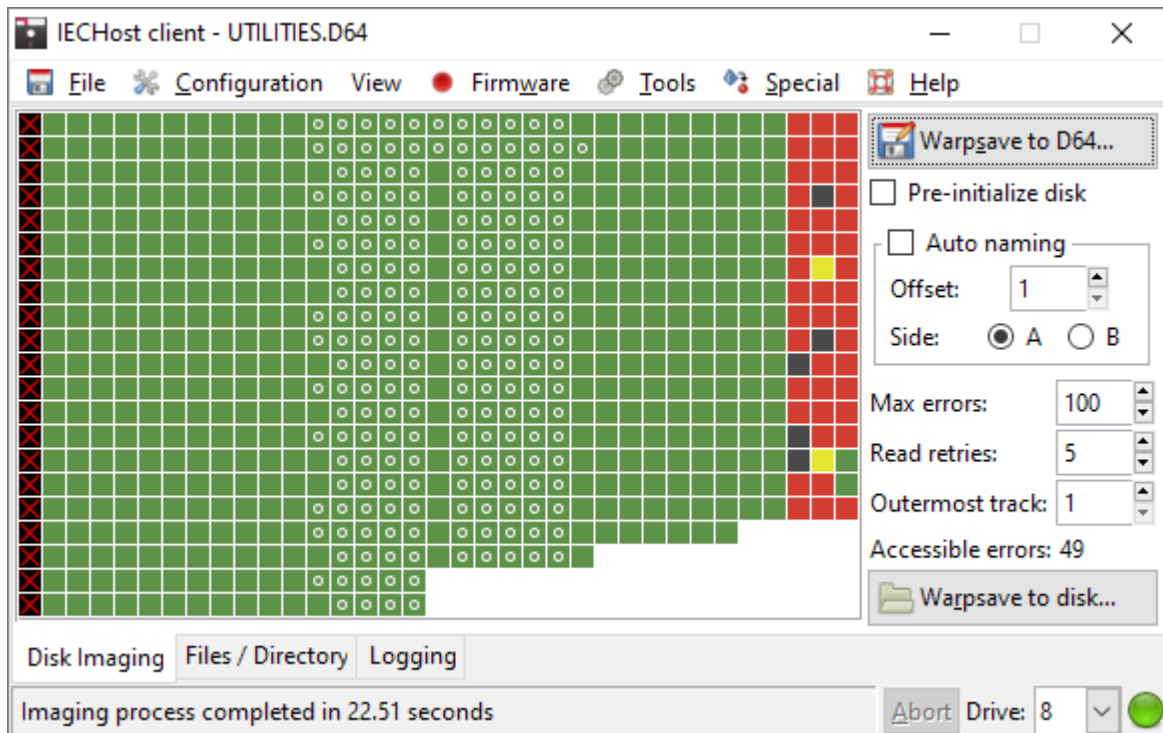
If this option is enabled, then the data display mode is switched from using screen codes to the PETSCII set. As an example:



# The Disk Imaging page

## Warp save to D64...

This button is used to warp save a disk image from the selected drive to a D64 file, using Graham's "WarpCopy64" drive code.



## Legend of overlay symbols and colors

- Overlay symbols:
  - A white circle on a sector means that the sector is allocated (contains file data), according to the information stored within the BAM sector (only displayed if the latter is error free);
  - A red X on a sector means that the sector is in an inaccessible track (this results into status code 0x0F stored in the block error info);
- Sector colors:
  - Green: GCR decoded OK and data check byte check succeeded (status code 0x01);
  - Yellow: GCR decoded OK but data check byte check failed (status code 0x05);
  - Red: GCR decoding failed, due to an illegal GCR sequence being found (status code 0x09 is used in this scenario for the lack of a better one);
  - Black: the sector's sync pattern has not been found (status code 0x03).



## **Operational considerations**

For 35-track floppy disks, it takes roughly 23 seconds to warpsave a disk image to D64.

Once the imaging process completes, the IECHost GUI Client goes through the following steps:

- Check if there are any block errors so that retries can be made, if applicable;
- Check if the disk image requires shifting due to the presence of inaccessible tracks at the disk's edge (refer to the "Outermost track" option below for more details);
- Check if the disk is unformatted;
- Decode the BAM sector and, if it is error free, mark allocated sectors with a white circle;
- Check if tracks beyond 35 are used by looking at sector contents after the disk ID;
- Check if an image was made out of a 1571 disk's side B;
- Save the disk image (which includes the block error info if and only if there are block errors).

## **Pre-initialize disk**

If this option is enabled, a disk is initialized ahead of being dumped, thus creating a strong reference for track navigation. Refer to the "Initialize disk" menu item below for additional details.

## **Auto naming**

If this option is enabled, when dumping a disk, D64 filenames are automatically generated and the save dialog is not used. This is particularly useful for mass dumping scenarios.

## **Offset**

Numeric prefix for auto-generated filenames.

## **Side**

Select to flag the next disk dump as either side A or B.

## **Max errors**

When dumping or re-reading a disk, sectors are re-read only if the number of accessible sectors with errors is lower than or equal to this value.

## **Read retries**

Number of additional times a sector is read from a physical disk if it contains errors just after being dumped or when re-read.

## **Outermost track**

If a disk was written by a drive whose head stop had been tinkered with, a few tracks might be inaccessible on a stock drive. In this scenario, setting the index of the outermost accessible track accordingly prevents the drive head from bumping and prevents the dumping process from waiting for non existing sectors at the edge of each speed area.

## **Accessible errors**

When dumping or re-reading a disk, this is the count of sectors with errors that are accessible and can therefore be re-read.

## **Warpsave to disk...**

This button is used to warpsave a disk image from a D64 file to a floppy disk in the selected drive, using Graham's "WarpCopy64" drive code.

## **Operational considerations**

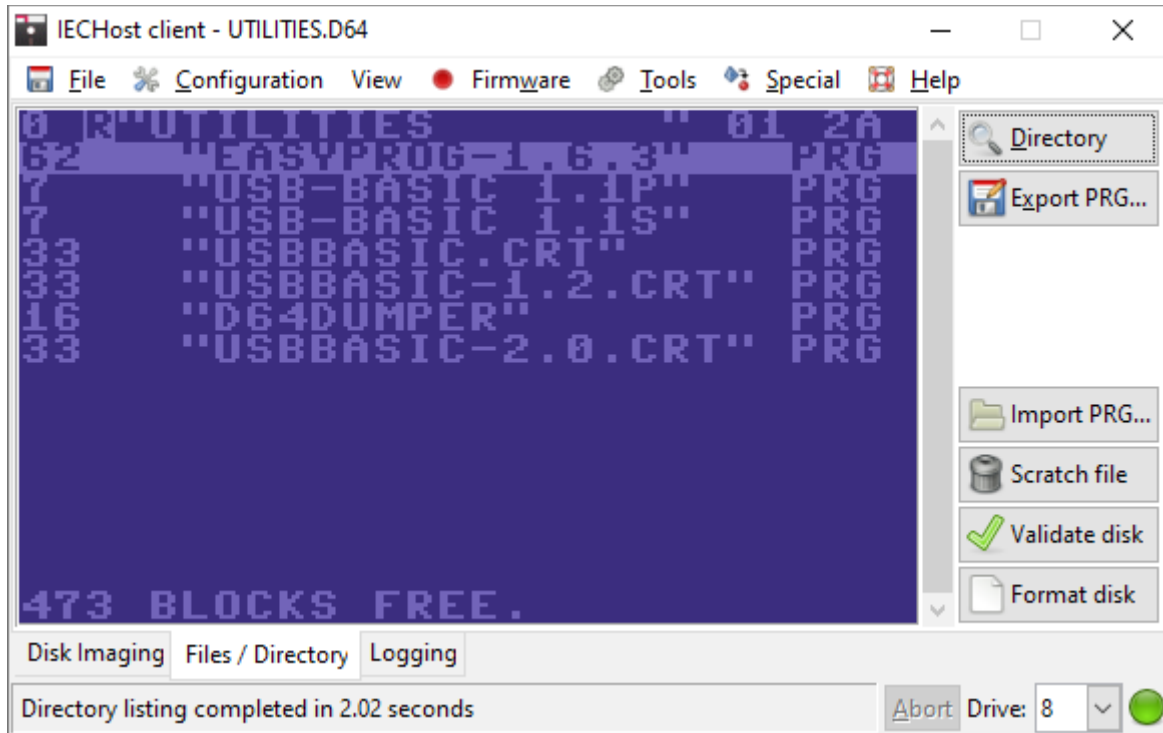
It should be noted that the destination floppy disk has to be DOS formatted at least once before warpsaving to it. In the case of 40-track D64 files, the destination floppy disk must have been formatted as a 40-track disk at some point in time.

For 35-track floppy disks, it takes roughly 36 seconds to warpsave a disk image to disk.

# The Files / Directory page

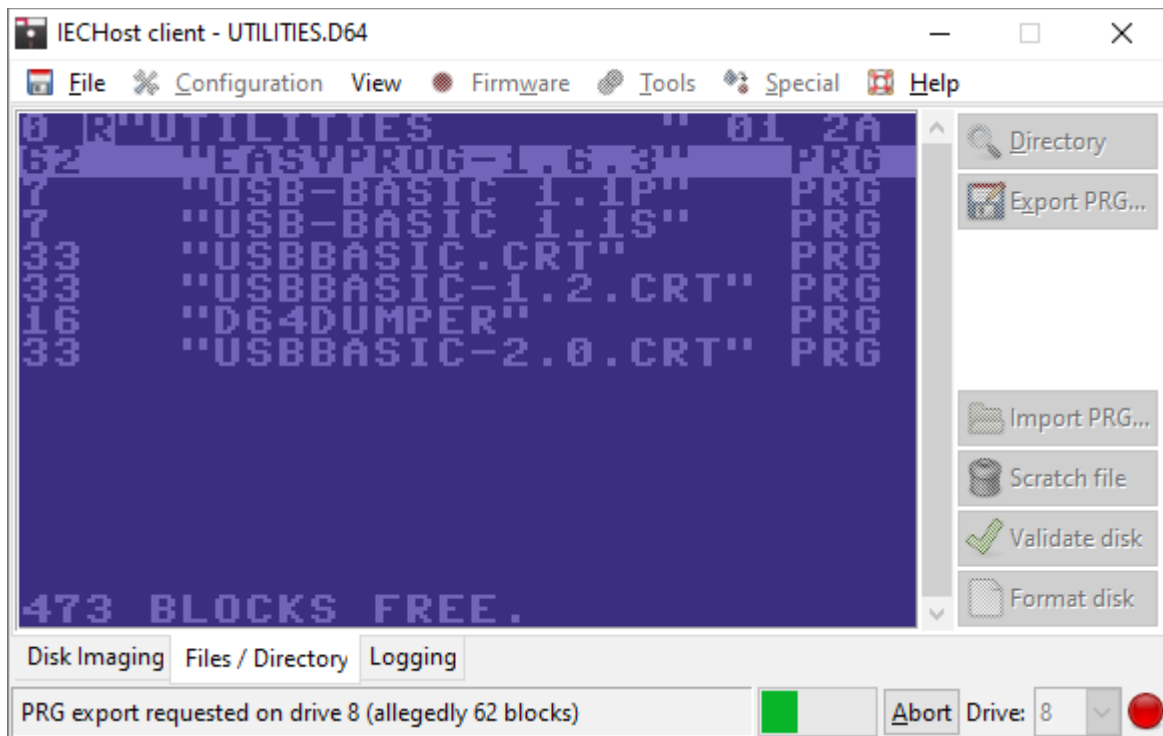
## Directory

This button is used to list directory contents from the disk currently in use.



## Export PRG...

This button is used to export the selected PRG file. A progress bar appears next to the "Abort" button until the export is over.



## Format disk

This button is used to format a disk using (slow) DOS routines.

## Validate disk

This button is used to validate a disk. This process deletes any file that was not properly closed, in which case the \* char is printed before the file format in a directory listing.

## Scratch file

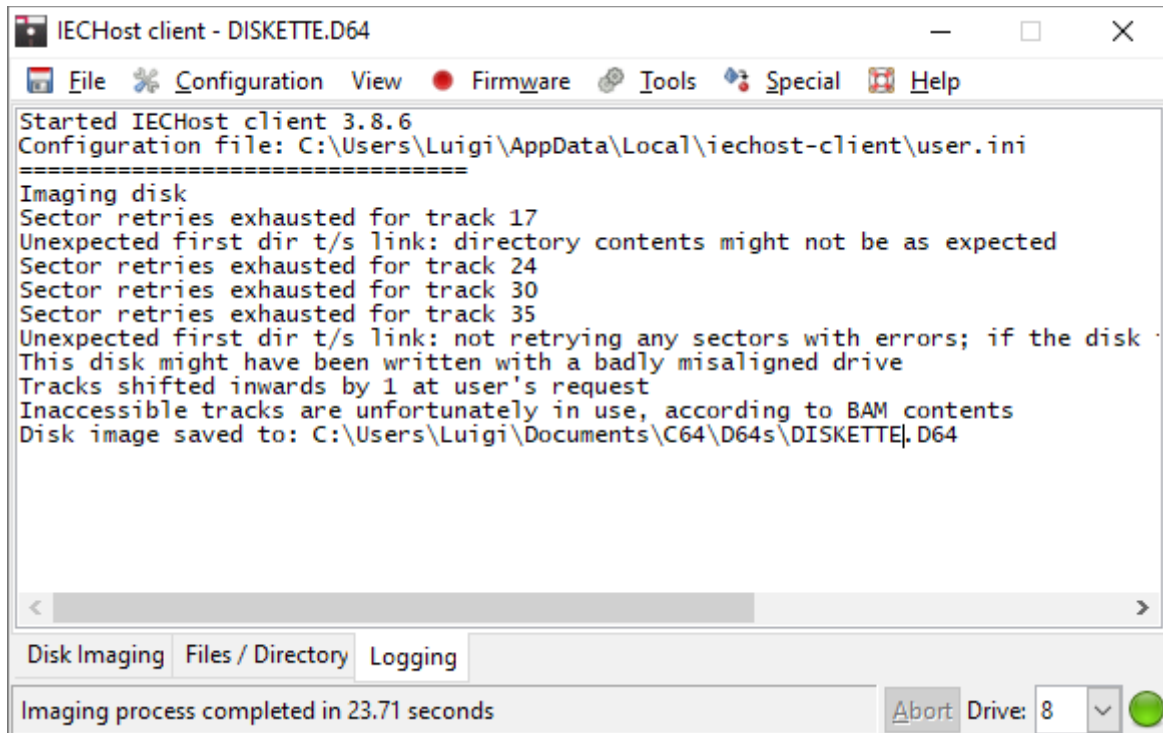
This button is used to delete the selected file.

## Import PRG...

This button is used to import a PRG file into the floppy disk currently in use. A progress bar appears next to the "Abort" button until the import is over.

## The Logging page

This is the last page available in the main window. It tracks commands and provides feedback on their execution.

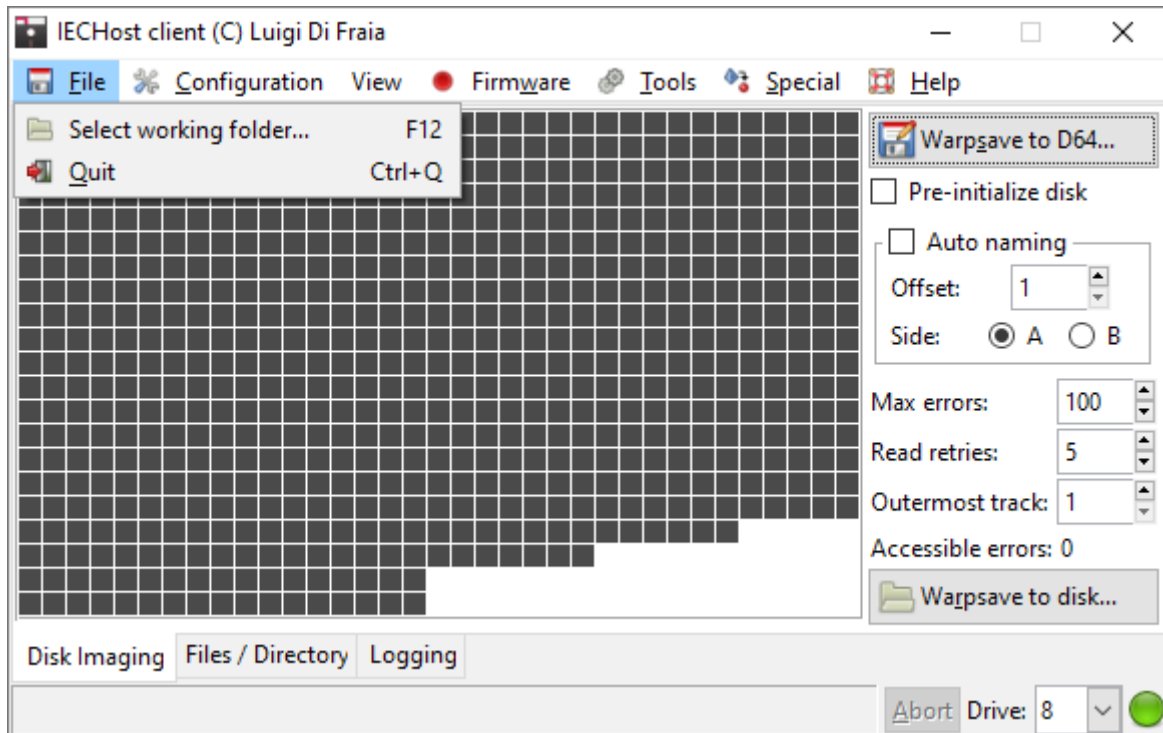


It should be noted that this area is editable: users can add comments and remove content. It may be handy to copy and save the contents of this area after each session.

# The Menubar

The menubar comprises 7 menu groups, all of which are initially enabled.

## File menu



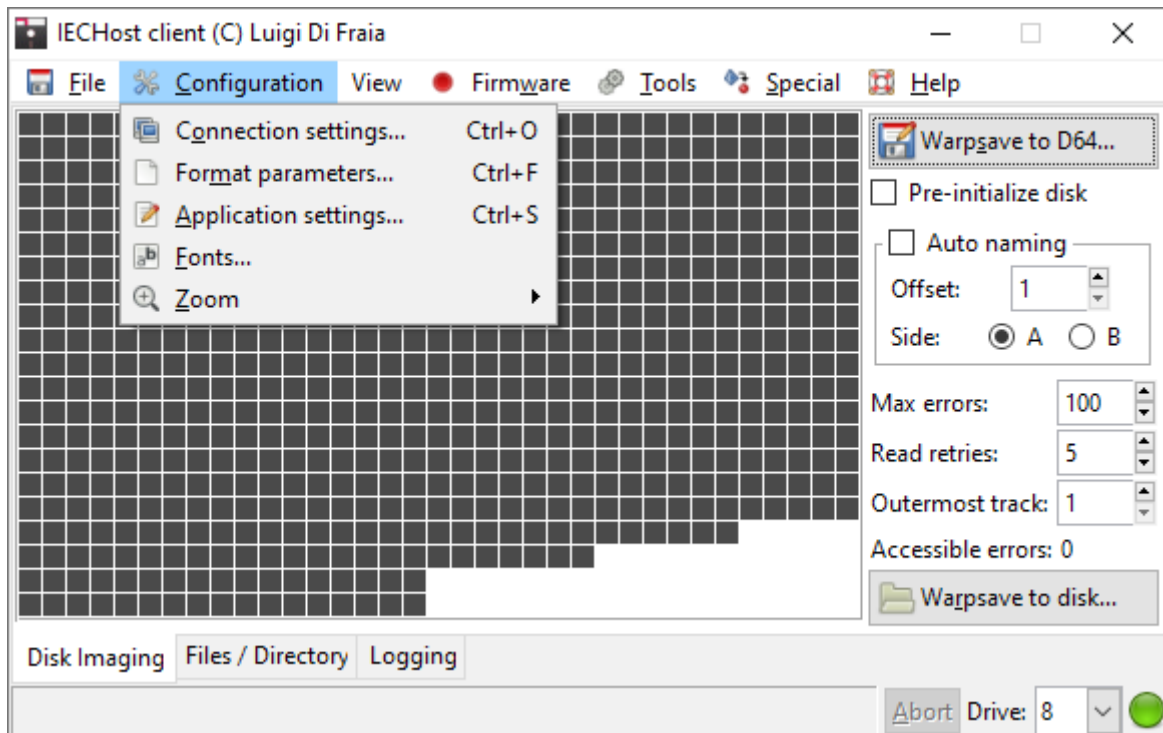
### Select working folder...

This menu item is used to select the folder where disk images are saved to and loaded from.

### Quit

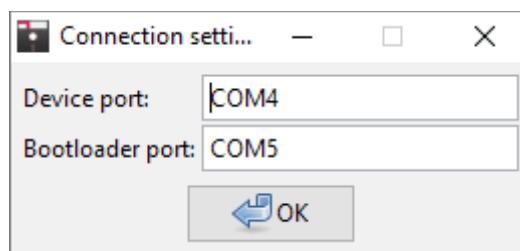
This menu item is used to quit the program.

## Configuration menu



### Connection settings...

This menu item is used to configure the ports to connect to the IECHost hardware. In order to do so, users are presented with the following dialog.



#### Device port

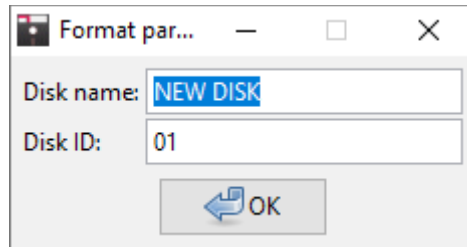
This is the USB serial port to use for connecting to the IECHost firmware. Refer to the hardware manual for more information.

#### Bootloader port

This is the USB serial port to use for connecting to the AVR bootloader. Refer to the hardware manual for more information.

## Format parameters...

This menu item is used to configure parameters required to format disks. In order to do so, users are presented with the following dialog.



### Disk name

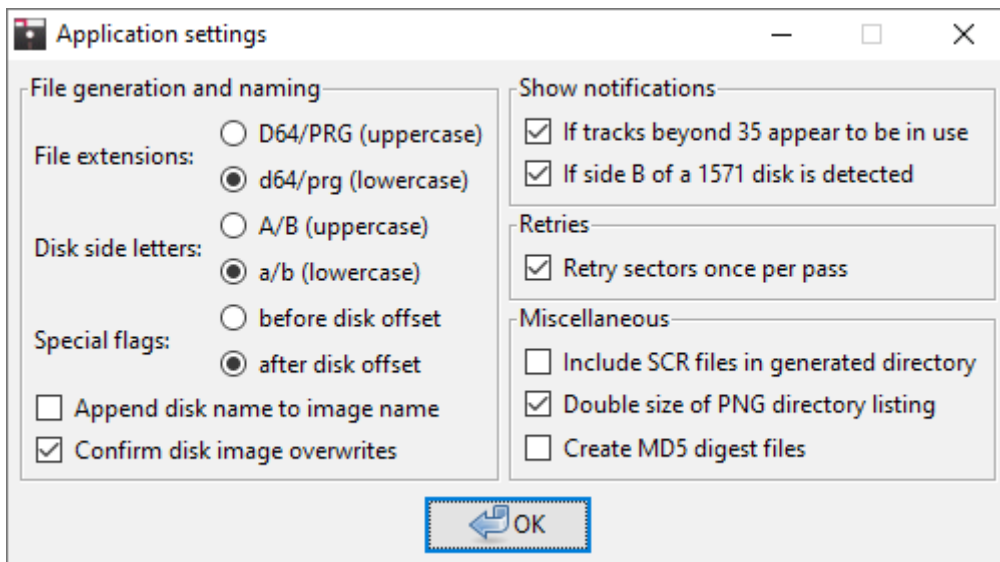
Name to use when formatting disks. Bear in mind that this text entry does not support PETSCII characters.

### Disk ID

ID to use when formatting disks. Bear in mind that this text entry does not support PETSCII characters.

## Application settings...

This menu item is used to configure miscellaneous application settings. In order to do so, users are presented with the following dialog.



### File extensions

This option selects whether to use uppercase or lowercase file extensions when creating output files.



### **Disk side letters**

When auto naming is enabled, this option selects whether to use uppercase or lowercase characters for the disk side identifier.

### **Special flags**

For partial disk dumping, one of the following flags is inserted in the output filename:

- T18: Dump track 18 only (dir track);
- T18+: Dump track 18 and the first sector of each PRG only;
- BAM: Dump sectors that show as allocated within the BAM sector;

Users can use this option to prepend or append each flag to the output filename.

### **Append disk name to image name**

When auto naming is enabled, this option selects whether or not the disk name (as it appears in T/S 18/0) should be added to the output filename when dumping a disk.

### **Confirm disk image overwrites**

When auto naming is enabled, this option selects whether or not the user is prompted to overwrite existing disk images.

### **If tracks beyond 35 appear to be in use**

This option selects whether or not to show a notification when extra data appears in the BAM block after the disk ID.

### **If side B of a 1571 disk is detected**

This option selects whether or not to show a notification when a disk image appears to be side B of a 1571 disk.

### **Retry sectors once per pass**

This option selects whether to retry a sector once per pass or exhaust all retries for a single sector before retrying the next one. Note that this is not always possible, so there are exceptions.

### **Include SCR files in generated directory**

This option selects whether or not to include SCRatched files in the directory listing of D64 files.

### **Double size of PNG directory listing**

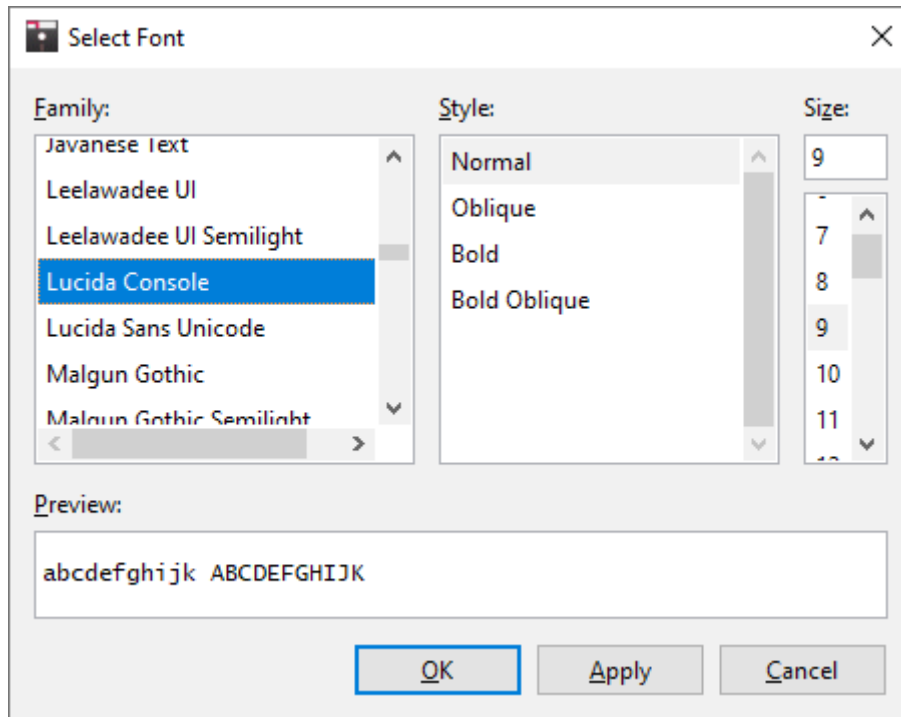
This option selects whether to double the image size when exporting the directory listing to PNG.

## Create MD5 digest files

This option selects whether to also create MD5 digest files when saving disk images.

## Fonts...

This menu item is used to set the font of text areas, through the following dialog:

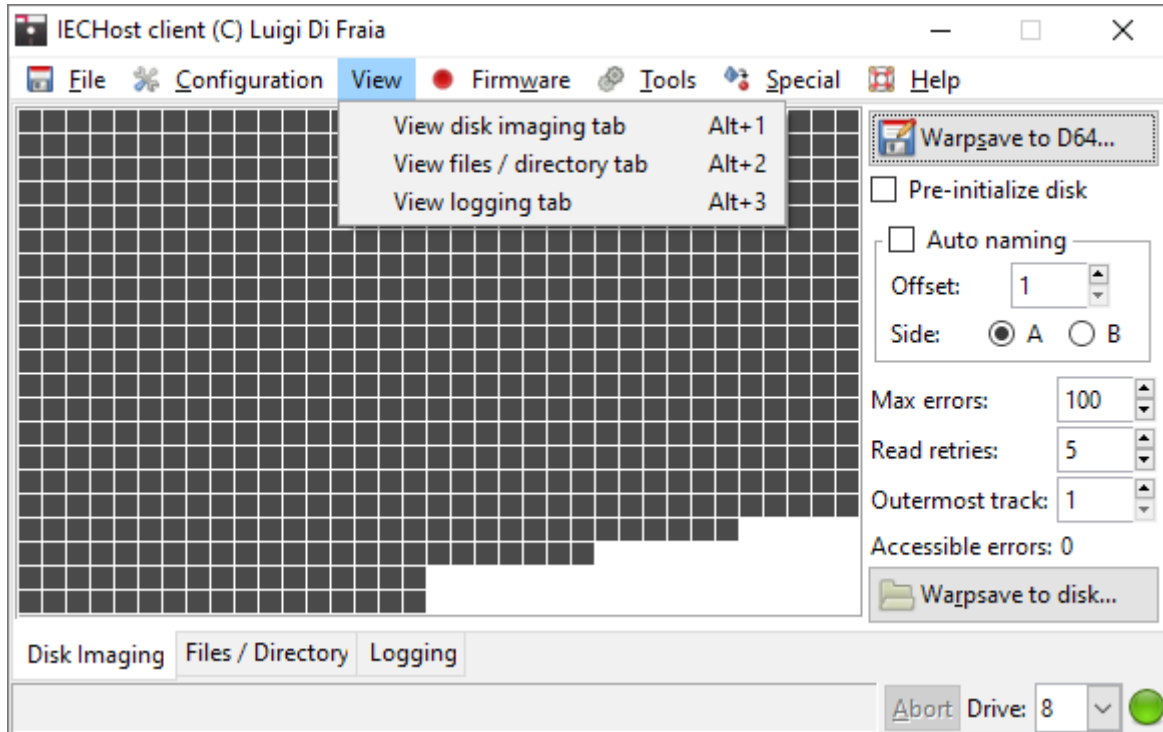


## Zoom

Menu items in this group are used to set the zoom level of drawing areas in the main window.

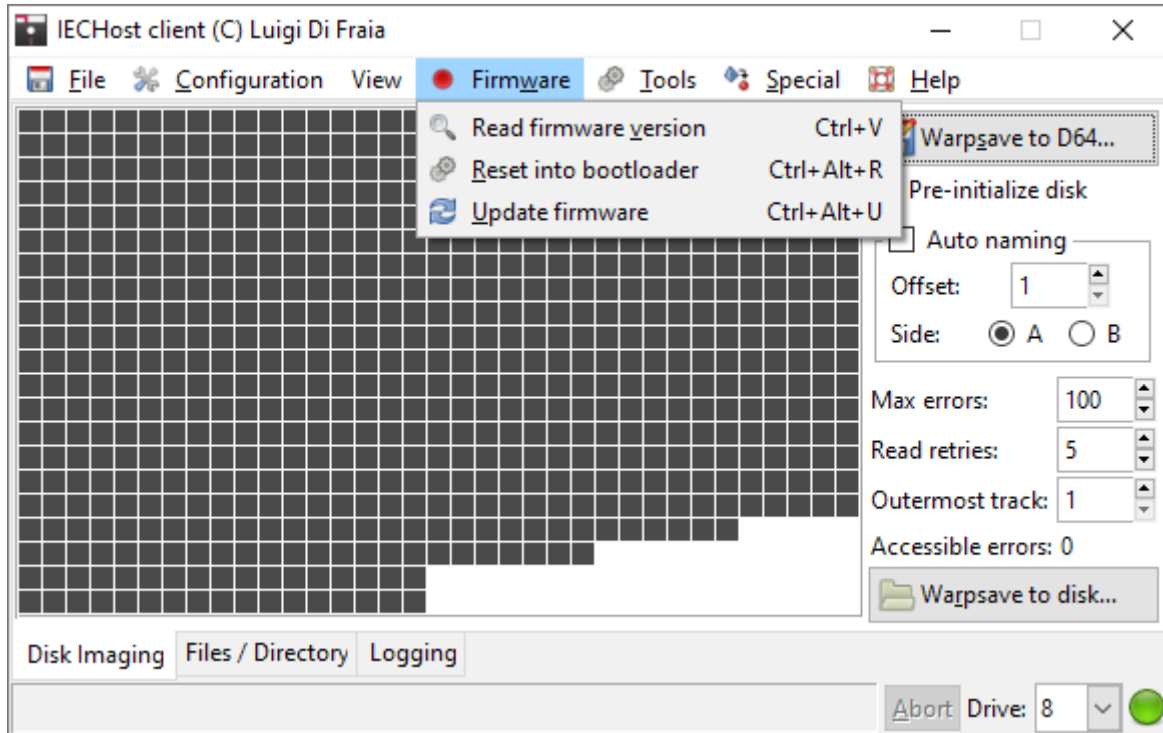
## View menu

This menu is used to switch between the main notebook pages.



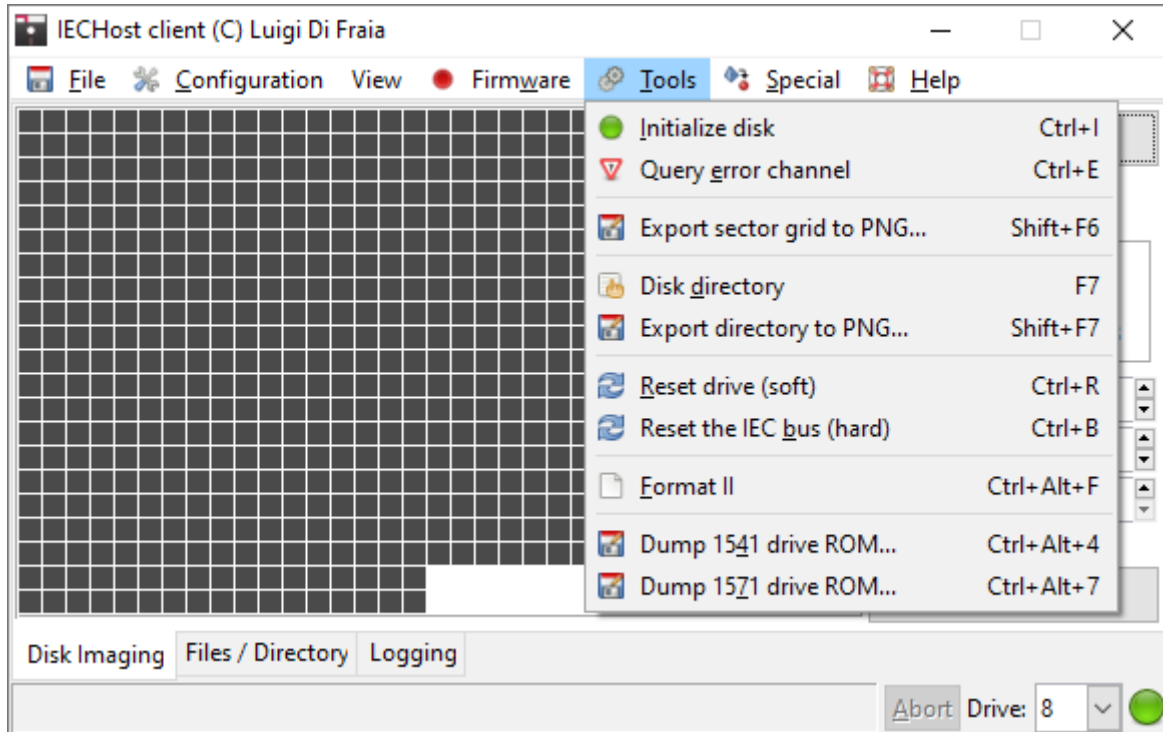
## Firmware menu

This menu is used to perform low level operations, including reading the firmware version from the IECHost hardware and updating it to the latest version. Furthermore the ability to reset the hardware is provided in order to facilitate the discovery of the AVR bootloader port to use within the "Connection settings" dialog.



## Tools menu

This menu is used to perform miscellaneous operations.



### Initialize disk

This menu item is used to clear the error channel and force the DOS to read the disk ID and the contents of the BAM, storing these in the drive's RAM.

### Query error channel

This menu item is used to query the error channel of the selected drive.

### Export sector grid to PNG...

This menu item is used to export sector grid contents to a PNG image.

### Disk directory

This menu item is used to list directory contents from the disk currently in use.

### Export directory to PNG...

This menu item is used to export in-memory directory contents to a PNG image.

### **Reset drive (soft)**

This menu item is used to soft reset the selected drive (through the "UJ:" command).

### **Reset the IEC bus (hard)**

This menu item is used to hard reset the IEC bus by pulling the reset line down for 20 ms.

### **Format II**

This menu item is used to fast format a disk in the selected drive, using Daniel Kahlin's "Format II" code.

### **Operational considerations**

For 35-track floppy disks, it takes roughly 19 seconds to complete the format process.

### **Dump 1541 drive ROM...**

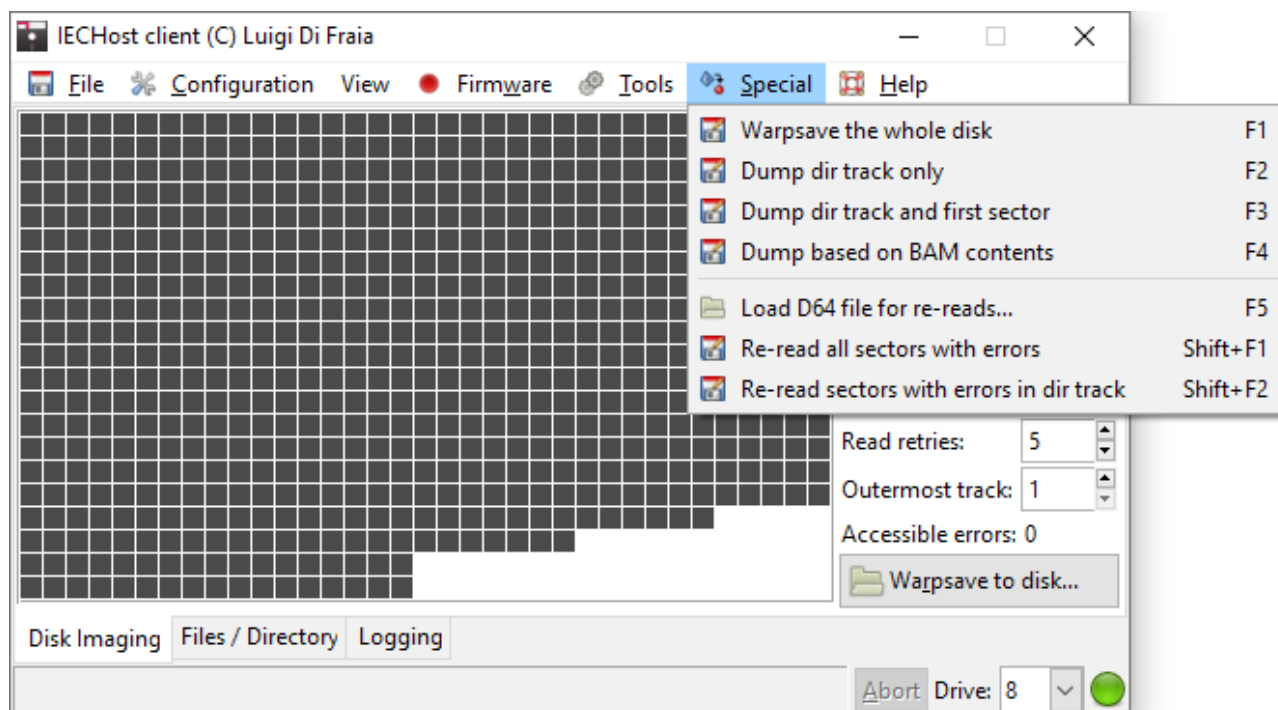
This menu item is used to dump a 1541 drive's ROM (\$C000-\$FFFF) to file.

### **Dump 1571 drive ROM...**

This menu item is used to dump a 1571 drive's ROM (\$8000-\$FFFF) to file.

## Special menu

This menu is used to perform specialized operations.



### Warpsave the whole disk

This menu item is used to warpsave a disk image from the selected drive to a D64 file.

### Dump dir track only

This menu item is used to dump sectors in track 18 (dir track) only.

### Dump dir track and first sector

This menu item is used to dump sectors in track 18 (dir track) and the first sector of each PRG file that's part of the directory listing.

### Dump based on BAM contents

This menu item is used to dump only sectors that are allocated, according to BAM contents.

### Load D64 file for re-reads...

This menu item is used to select a disk image for re-reading sectors with errors.

**Re-read all sectors with errors**

This menu item is used to re-read all accessible sectors with errors.

**Re-read sectors with errors in dir track**

This menu item is used to re-read all sectors with errors in track 18 (dir track).