FLASH2GUI Application

Review Record

Issue	Date	Section	Changes made	Reviewed
0-1	1st Oct 2016	All	FLOPPYFlash/SCSIFlash	n/a
0-2	28th Oct 2016	All	Updated to reflect Flash2GUI v1.1	NR
0-3	20th April 2018	All	Updated to reflect Flash2GUI v2.0.0004 and include Flash2CMD	NR
0-4	29th Feb 2020	All	Updated to reflect Flash2GUI v4.1.3	NR

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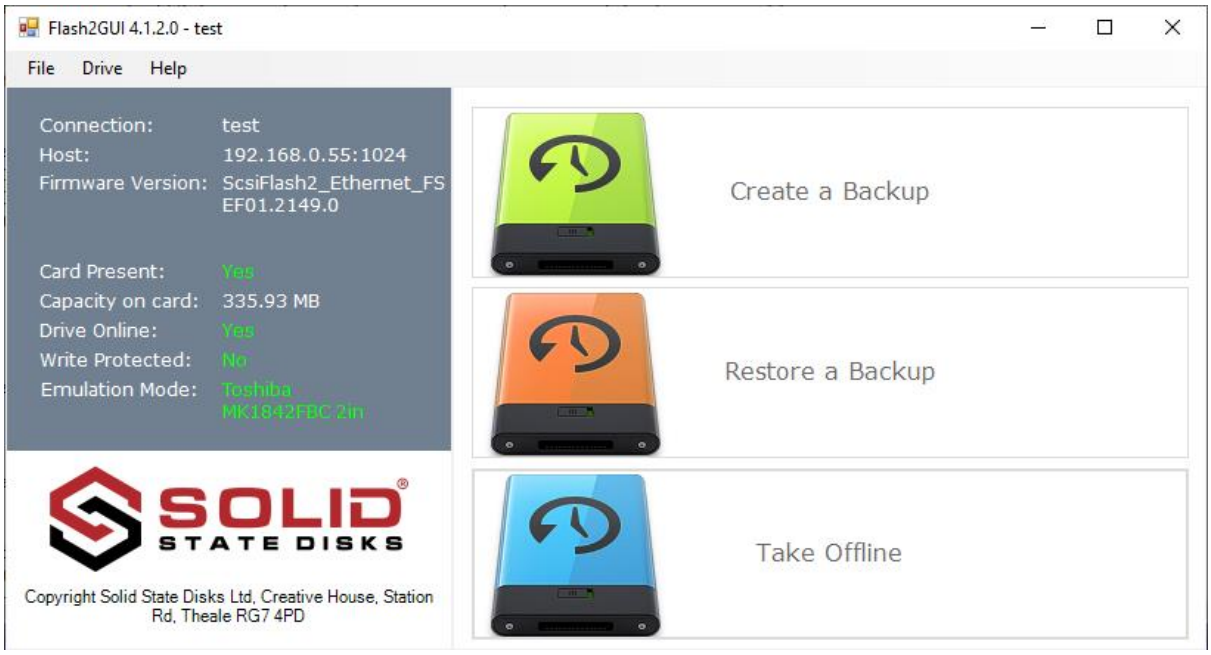
FLASH2GUI Key Points



Flash2GUI is written to support remote management of the SF2 and related products. It enables devices to be backed up, restored, taken online or offline (visible to the host), and changing the emulation presented to the host.

On installation, Flash2GUI has a 30 day evaluation period and will prompt the user to request a license then apply it to the application.

Flash2GUI supports usernames and passwords to guard against accidental execution of destructive commands such as erasing a drive. If the logged in user has the appropriate permissions though, destructive commands can be executed. Note this is not a protection against malicious behaviour.

SF2 and related products are supplied with a default IP address of 192.168.1.44. If that is not appropriate for the network where the device is installed, this manual covers how to change that IP address.

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Installation & Licensing

Installation

Flash2GUI is delivered as a single MS Installer file – Flash2GUI.msi. To install simply double-click on this file and you can run through a standard Windows installer. You have the option to change the location where the application is installed, and to control whether start-menu or desktop shortcuts are created.

To uninstall, go through the MS Windows Add / Remove Programs control panel.

Licensing

The first time the product is run on a given machine, a 30-day evaluation period is activated. On startup you will see a dialog as below.

This dialog will continue to be displayed on initial startup until a license is installed into the application. If the evaluation period expires before a license is applied, this dialog will continue to be displayed to allow you to add in a full license. If a full license is not added in (after expiration of the evaluation period) then the application will exit when this dialog is closed. Once a full license is applied this screen is not shown on startup but can be found under the File menu from the main screen.

Full licenses are locked to individual hosts - you need a separate license from SSD for each host.

In order to request a full license, click either 'Send Email for License Request' or 'View Information for license Request' and follow the instructions given.

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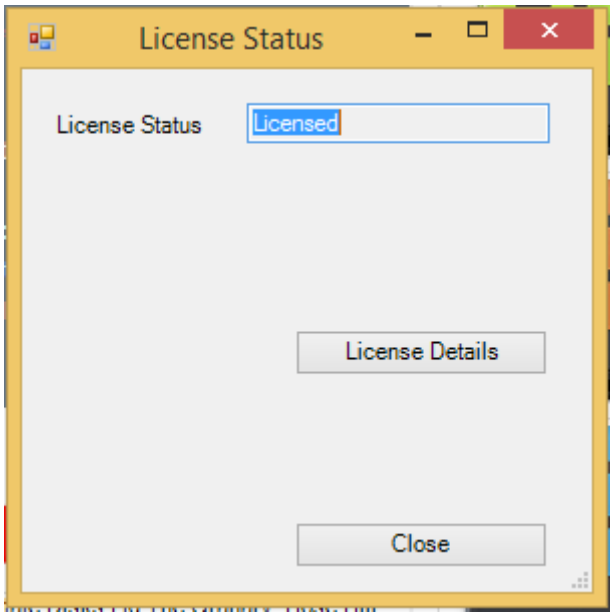
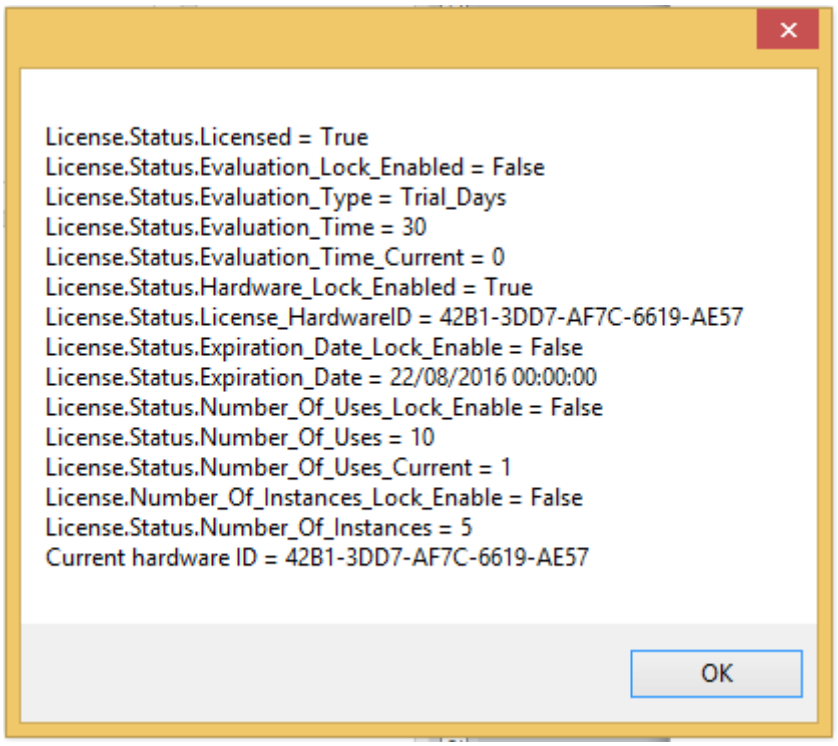
Licenses are delivered as files and must applied by saving the file to your local disk then loading it using the 'Load New License' button.

Once this machine is properly licensed, the license dialog will not be displayed on startup. It can always be viewed from the File -> License Status menu item, on a licensed machine this will show



License Details button shows all of the relevant information for the licensing.



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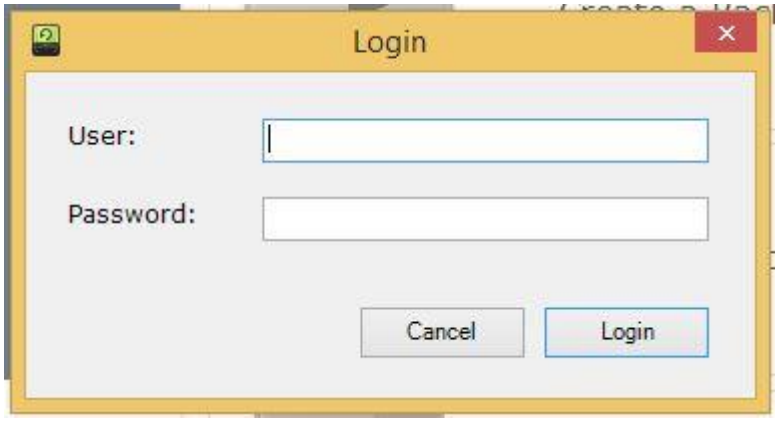
Usernames and Passwords

Logging into Flash2GUI

Flash2GUI employs a simple username / password scheme to control access to the application and the drives being controlled. After checking license status, the application displays the logon screen before allowing access to the main screen. Note that the intended usage of the usernames is around policy protection and reducing the likelihood of accidentally causing problems on the system. It is not appropriate for guarding against malicious behaviour.



Enter the appropriate username and password here.

Once you have logged on the application configures itself to disable any rights for which your username doesn't have permissions.

You can always change the logged in user through the File -> Change User menu item.

Permissioning Levels

When users are defined they are assigned a Level which controls what rights they have. There are 4 defined user levels with increasing rights for administering the system

Level	Rights
Level1	Backup
Level2	As above plus Restore and Erase
Level3	As above plus manage the connection list, manage the drive emulation, manage the write protection and take a drive offline / online as well as run the Image Manager to inspect the content of backups
Administrator	All rights which means as above plus manage users

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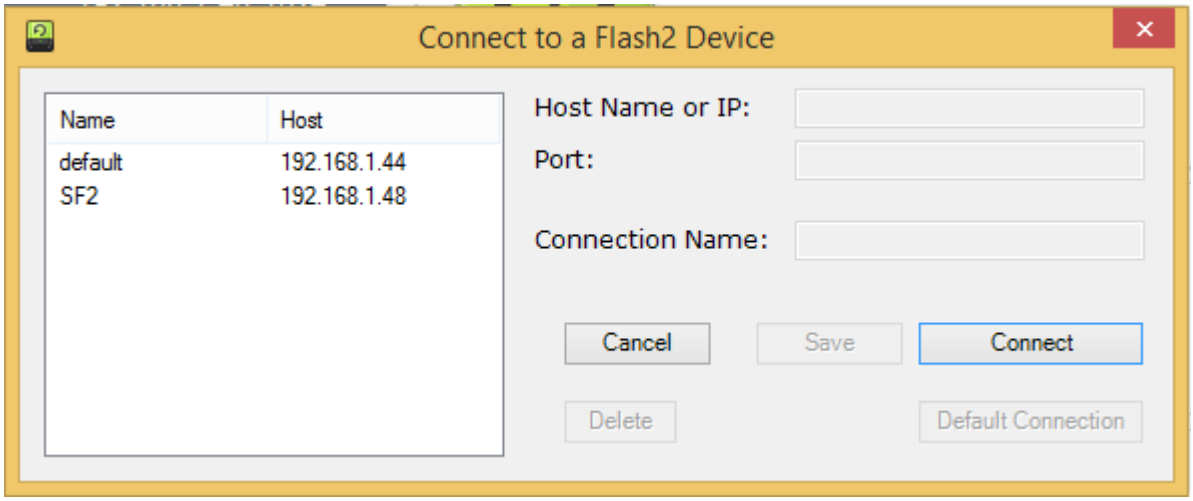
Actions are greyed out on the application if a user does not have the appropriate permissions. So for a Level 1 user (backup only) the main window looks like this – with the Restore and Offline icons and the Drive menu greyed out.

And the Connect window looks like this with the Save, Delete & Default buttons greyed out



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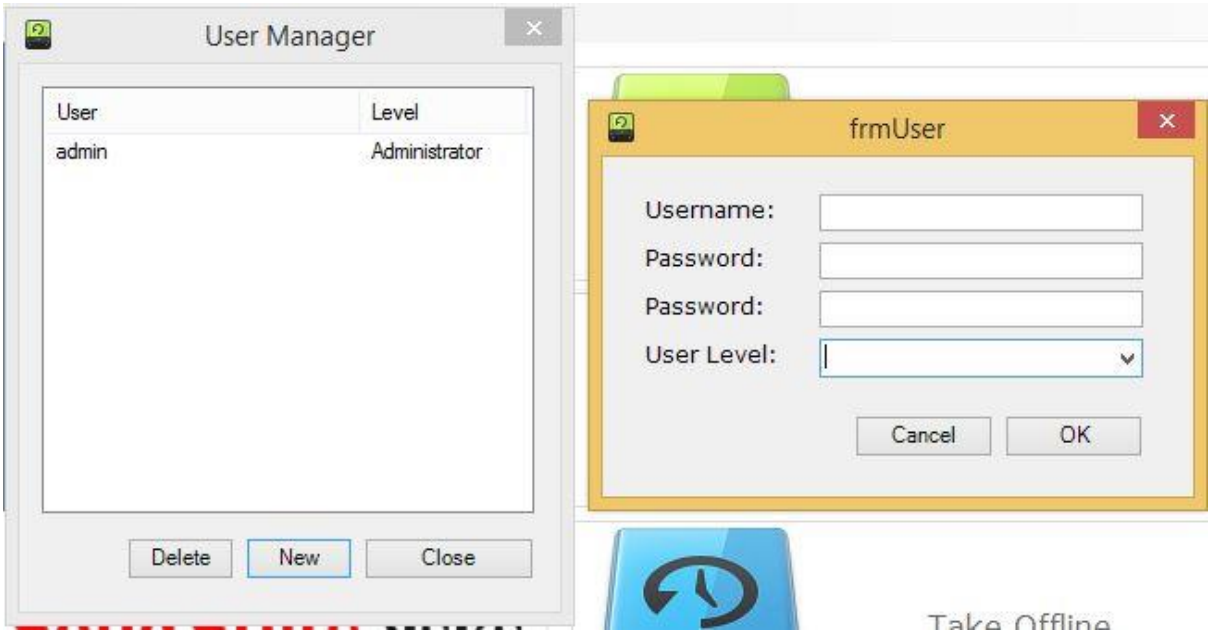
Creating Users

From the File menu on the main screen you can access the User Manager screen – assuming you are logged in as a user of the appropriate Level - and from that the form for defining new users.



Note that the username / password information is local to the machine which Flash2GUI is running on – if Flash2GUI is installed on multiple machines then you need to create the usernames on each machine independently.

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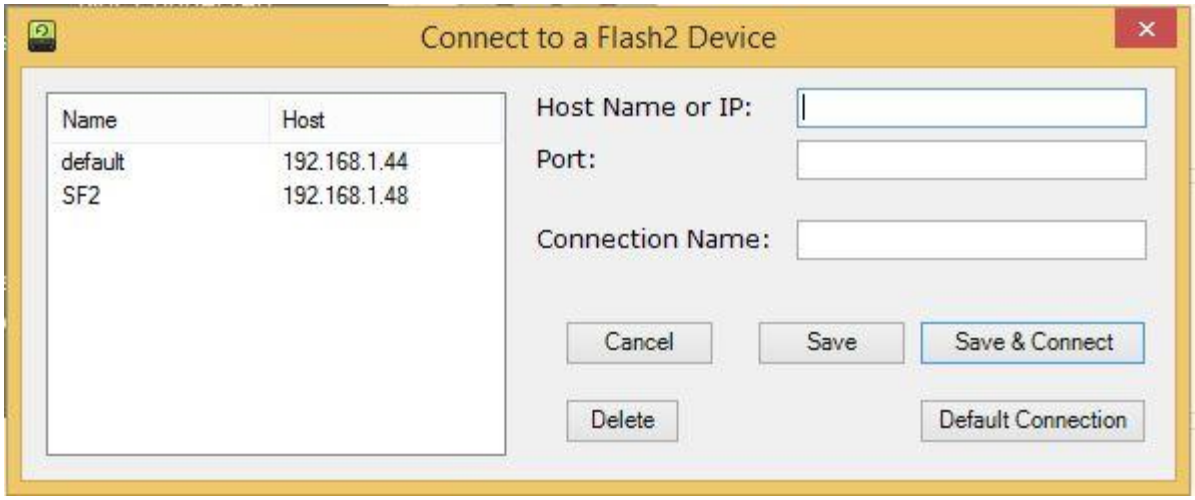
Connecting to the Drive

Having logged in, a window appears to enable connection to the drive.



The left box show the stored connections. Click on the required connection. The IP address and port number will be displayed on the right. To connect to the drive press the Save & Connect button.

If the connection is a new one then fill in the IP address and port number and give the connection a name. Press Save & Connect.

If the drive is a new one its IP and port number will be the factory default which is 192.168.1.44:1024, you can connect to this device by just pressing the Default Connection button.

If the drive is on a network which is not 192.168.1.xxx then the application can't connect. See the section 'Connecting to Factory Defaults' on page 13 for instructions.

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Creating & restoring backups

When the application has connected to the drive the following screen is displayed.

The box at the top left shows the status information for the drive.

The buttons at the right show the main operations that can be performed.

Take offline disables the host interface.

To create a backup click on Create a Backup.

A browser window will appear.

Navigate to the folder where the backup file is to stored and give it a file name. The default name is Backup.bak.

Click on Save to start the backup.

A progress bar is displayed as the backup is taken.

When the backup is complete a message box appears to confirm the backup completed successfully. Pres OK to continue.

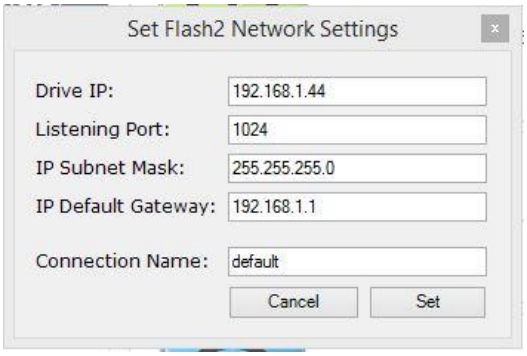
The procedure for restoring a backup is similar.

Note that if a drive is write protected it is not possible to restore a backup or erase the drive. These options are greyed out to show they are not available.

Changing the network (IP) address.

To change the Ethernet settings from the factory default, first connect to the drive. Then click on the Drive menu select NetworkSettings then Set Drive IP & Port.

The following box then appears.



Enter the new settings and give the connection a name. Click the Set button.

The new settings are stored in the drive, the drive applies those settings and the application re-connects using the new settings.

Connecting to Factory Defaults

On delivery the drive IP address is set to the factory default of 192.168.1.44 and the port number is 1024.

Most internal LANs run with an IP address which lies between 192.168.0.0 and 192.168.255.255

If your LAN is not set to 192.168.1.xxx you will not be able to connect to the SF2.

To change the IP to an address which will work on your LAN you need to change your PC/laptop to a static IP address within the default settings of the drive.

The exact way you do this is operating system dependent.

For Windows 7 click on Control Panel , View Network Status & Tasks. You will then see the window below.

Click on Change adapter settings to get the window below. This shows the networks on your computer.

Right click on the network adapter to be changed and click on properties. A window as below will appear.

Left click in TCP/IPv4 as shown and then click properties.

To change to a fixed IP address click on Use the following IP address.

Enter a suitable IP address which must start 192.168.1. the last number can be anything except 44 and set the Subnet mask to 255.255.255.0

Click OK.

You will now be able to connect to the drive using the default IP address.

Connect to the SF2 and using the procedure decribed in section 0 Changing the network (IP) address. Change the IP address to one that suits your LAN.

Then follow the procedure above and reset the TCP/IPv4 settings to Obtain an IP address automatically.

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Connecting to the SF2 over the Internet

Using the FLASH2GUI application it is possible to connect to an SF2 over the internet. Firstly the SF2 must be connected to the Internet router. Then port forwarding for port 1024 must be set up.

Here is how this is done with the BT Home Hub. Not all routers will be setup the same, but this will help for configuring other routers.

From the Home screen select Settings & Advanced Settings then Continue to Advanced Settings

Select Home Network & Refresh. Now check the Physical connections for the connected SF2. This can be done easily if you know the MAC address (xx:xx:xx:xx:xx:xx). But if you don't, then you will need to click in each of the unknown connections until you find the correct device as identified by the IP address.

Once you've found the device, enter a name (e.g. SF2) & Apply

Now select Port Forwarding &Supported Applications then Add new game or application

Fill in the Game/application name: (e.g. SF2) Port Range & Translate To boxes then Apply

This will then appear in the User-defined games & Application list

Now, to get access remotely you need to know you Internet router IP address.

Select Broadband & the Broadband network IP address: is the router IP address

So, from a remote location use the Broadband network IP address & the port number 1024 with the FLASH2GUI.

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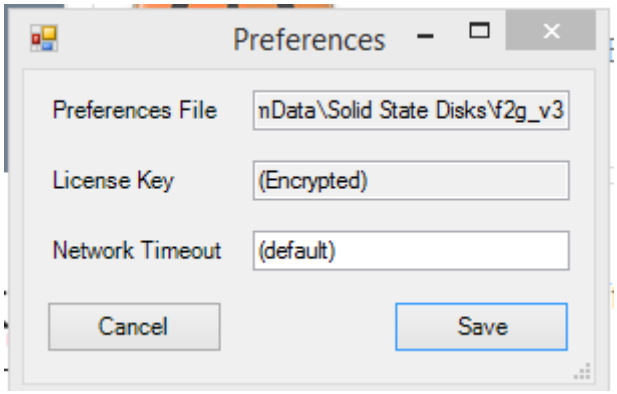
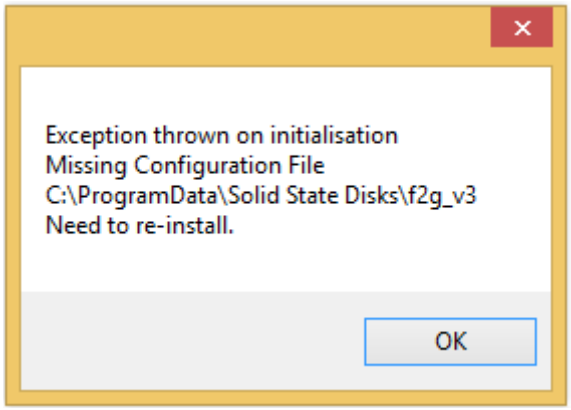
Preferences

You can view the preferences for Flash2GUI using the File -> Preferences menu item. This shows where the loaded preferences file came from, whether there is a license key and allows the default network timeout to be overridden.



Note that the preferences file needs to be created as part of the installation routine – if that file is corrupted or deleted you should revert to a backup of it or reinstall the software. If there is a problem loading this file on startup of the application an appropriate error message is displayed and the application fails to start. The preferences file is unique to a machine, you cannot take the preferences file from one machine and apply to a different machine.



The default network timeout starts at 20 seconds and then gets overridden to 5 * the duration of the original connect process. As a general rule this should be sufficient for all cases however this timeout can be controlled through the preference s screen if necessary.

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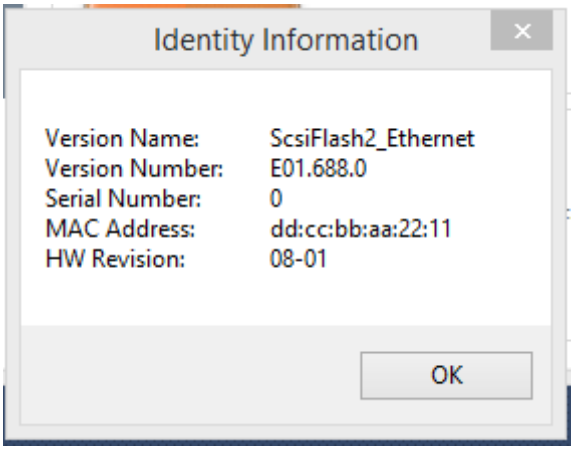
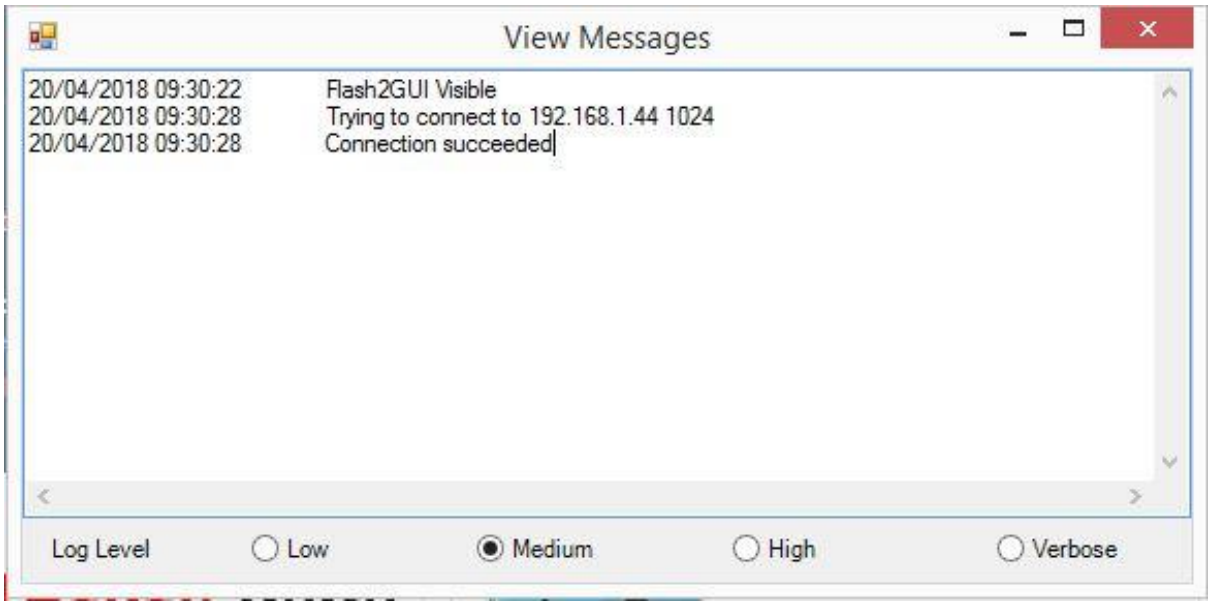
Drive Details

Using the Drive -> Show Details menu, there is detailed version information available for the connected drive. Note that the contents of this window is dependent on the version of software running on the SF2 device.



Activity Logging

There is very detailed logging of the activity between the Flash2GUI application and the connected disk drive, which is visible through the Help -> Messages menu item.



This shows the last 5,000 lines of data transmitted between the GUI and the disk, and is primarily intended for debugging purposes.

Note that this is only available for users with Admin level privileges.

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Menu Items

File

Connect	Connect to a different disk, or reconnect to the current disk
Change User	Relogin to Flash2GUI, allows you to change user (therefore permisisons)
Image Manager	Start the Image Manager to inspect the contents of backups from disks
User Manager	Allows you to manage the set of users defined for Flash2GUI
License Status	Show the license status and request or apply a permanent license
Preferences	Shows where the preferences are stored and modifies the network timeout

Drive

Set Size	Shows a dialog box to switch the SF2 between emulating a specific device (therefore having that devices' size), exposing the entire compact flash card to the host or setting a custom capacity in MB or Blocks (1 block = 512 bytes)
Emulation Mode	The SF2 has stored the set of devices it is capable of emulating. The list shown within Flash2GUI is dynamically built up by querying the SF2 and allows switching between different emulated devices.
Set Online / Offline	Toggle the SF2 online (visible to the SCSI host) and offline. This is the menu equivalent of the button on the main screen.
Write Protect	WARNING – this is not defined in the SCSI standard for fixed devices like hard disks. For removable devices this does the software equivalent of setting a write-protect switch.
Backup	Backup the SF2. Note that the button on the main screen will always backup just the size exposed to the host. As per the set-size menu item, the SF2 is capable of switching between an emulated devices size, the complete CF card size and a custom size. From the menu you can choose which of these to backup.
Restore	Restore the SF2 as per the button on the main screen. Restore will always restore the full set of data within the selected file. Flash2GUI will not check the size or type of emulated device the backup was created from against that currently configured on the SF2. Note that depending on the performance of the Compact Flash card this procedure can take a significant duration.
Erase	Erase the Compact Flash card. Again this allows you to select between erasing the Emulated Device, the complete Compact Flash card and the custom capacity defined on the SF2. Note that depending on the performance of the Compact Flash card this procedure can take a significant duration as it does a proper erase (writes to every byte on the CF card within the desired size).
Network Settings	Allows the IP Address, Port, Subnet Mask and Gateway on the SF2 to be changed.
Refresh Status	Updates the information Flash2GUI holds on the currently connected SF2.
Show Details	Gives additional version information on the connected SF2.
Flash LEDs	This will only be available connected to an SF2 running firmware at a version number greater than 1604.8. Executing this command will cause the red and green LEDs on the front of the SF2 to flash alternately for 30 seconds as a means to verify you are connected to the correct SF2.
Get Trace Files	This will only be available if the SF2 is running firmware which supports the tracing filesystem. If used it allows any trace files on that filesystem to be downloaded.

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Clone	This will only be available when connecting to an SF2 running as a fixed drive emulation (i.e. disk) and also running the SCSI Initiator firmware. Executing this will show a list of any other disks on the SCSI bus with the SF2, allowing you to select one other disk to copy the contents to the SF2.
Execute Commands	This will only be available when connecting to an SF2 running firmware later than 1774.9. This allows a user to enter a CLI command (as normally entered on the serial port) and execute that via Flash2GUI. Results will be shown in the pop-up dialog from Flash2GUI.
Get Emulation	This will only be available when connecting to an SF2 running the SCSI Initiator firmware. Executing this will show a list of any other devices on the SCSI bus with the SF2,allowing one to be selected. The SF2 will then execute a series of SCSI commands allowing SSD to then generate an emulation of that selected device.
CmdSequence	This causes Flash2GUI to read in a sequence of commands where each of them will be executed as per the Execute Commands menu option above.

Help

About	Shows credits for this application and details where to find out further information
Messages	Gives a log of the most recent information transmitted between Flash2GUI and the SF2

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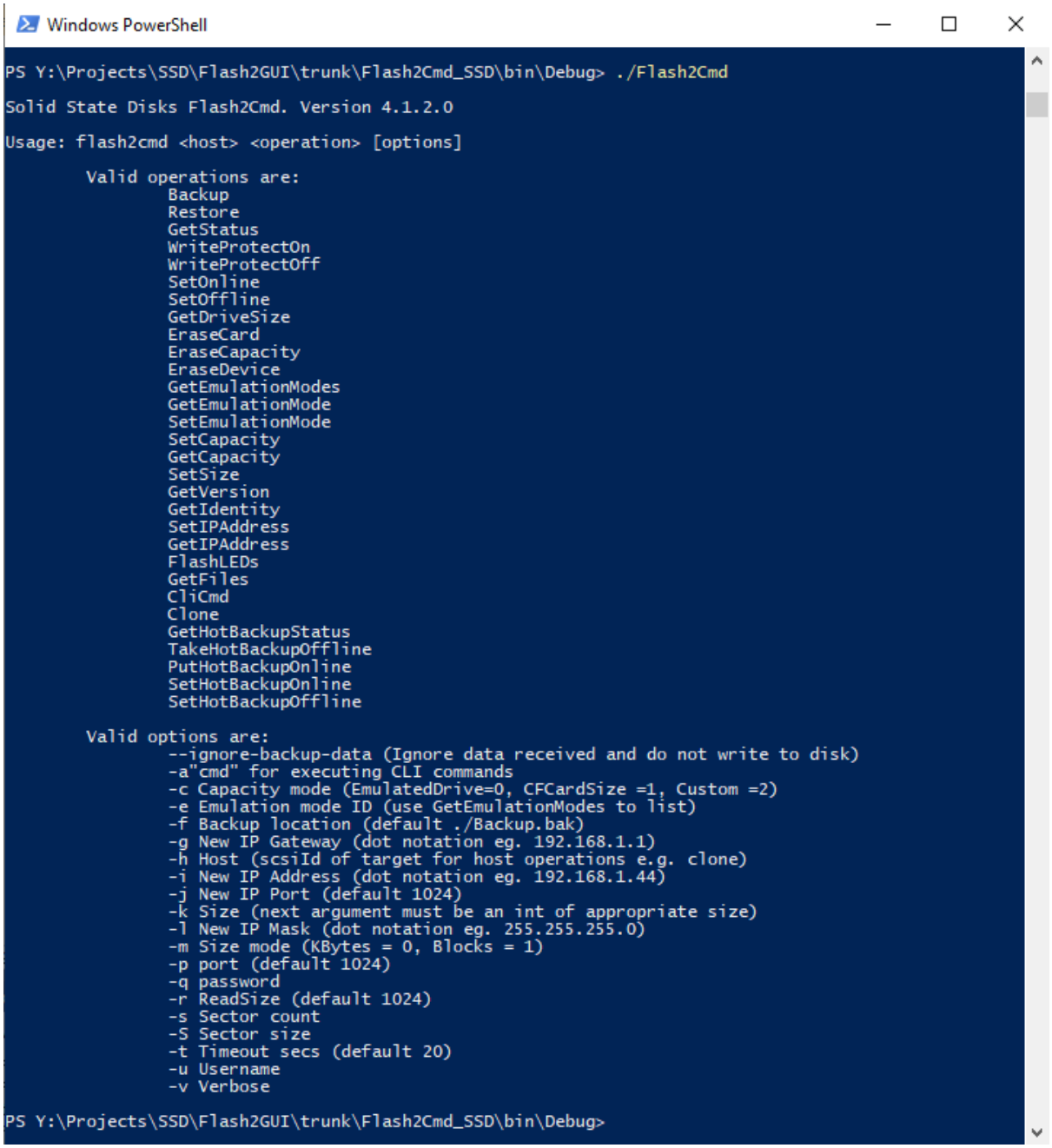
Flash2Cmd Key Points

Flash2Cmd is a command line utility shipped with Flash2GUI. It enables the disk drive emulators to be managed from a command line which has the advantage that it is possible to script processes. For example to have a regular backup every night you could use the Windows SCHTASKS process to run Flash2CMD with appropriate parameters.



Flash2Cmd Permissions

Flash2Cmd follows the Flash2GUI permissions, therefore all Flash2Cmd calls need to include –u <username> -q <password>

Usernames and passwords can only be administered from Flash2GUI.

Note the password should be prefaced by a –q.

See the examples following for how to use this.

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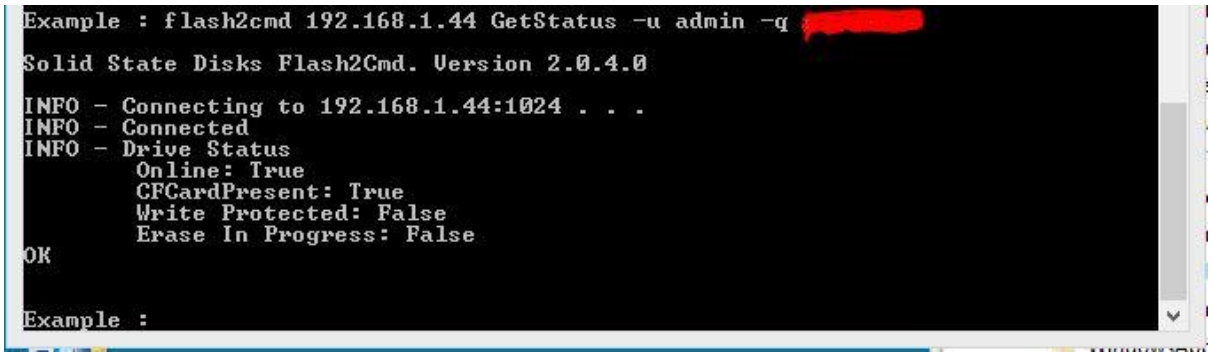
Flash2Cmd Examples

GetStatus



GetVersion

```
Example : flash2cmd 192.168.1.44 GetVersion -u admin -q xxxxxxxx
Solid State Disks Flash2Cmd. Version 2.0.4.0
INFO - Connecting to 192.168.1.44:1024 . . .
INFO - Connected
INFO - Firmware version: SF280_Ethernet Version E01.0044.1
OK

Example :
```

Backup

```
Example : flash2cmd 192.168.1.44 Backup -f d:\backup.bak -u admin -q
xxxxxxxx
Solid State Disks Flash2Cmd. Version 2.0.4.0
INFO - Connecting to 192.168.1.44:1024 . . .
INFO - Connected
INFO - Drive Status
        Online: False
        CFCardPresent: True
        Write Protected: False
        Erase In Progress: False
INFO - Drive is offline
INFO - 512000 sector(s) of 512 byte(s)
INFO - Drive is 262144000 byte(s) / 0.24Gb
INFO - Drive Status
        Online: False
        CFCardPresent: True
        Write Protected: False
        Erase In Progress: False
INFO - Backing up 262144000 byte(s) with a chunk size of 1024 byte(s)
INFO - Saving backup to d:\backup.bak . . .
INFO - 250.00mb of 250.00 (100.00%) in 173.07 second(s). 1479KB/s
INFO - Backup completed in 173 second(s)
OK

Example :
```

Restore

Example : **flash2cmd 192.168.1.44 Restore -f d:\backup.bak -u admin -q xxxxxxxx**

```
Solid State Disks Flash2Cmd. Version 2.0.4.0
INFO - Connecting to 192.168.1.44:1024 . . .
INFO - Connected
INFO - Drive Status
        Online: True
        CFCardPresent: True
        Write Protected: False
        Erase In Progress: False
INFO - Drive online, taking offline . . .
INFO - Drive Status
        Online: False
        CFCardPresent: True
        Write Protected: False
        Erase In Progress: False
INFO - Drive is offline
INFO - 512000 sector(s) of 512 byte(s)
INFO - Drive is 262144000 byte(s) / 0.24Gb
INFO - Drive Status
        Online: False
        CFCardPresent: True
        Write Protected: False
        Erase In Progress: False
INFO - 250.00mb of 250.00 (100.00%) in 168.66 second(s). 1517KB/s
INFO - Restore completed in 168 second(s)
INFO - Putting drive online . . .
INFO - Drive Status
        Online: True
        CFCardPresent: True
        Write Protected: False
        Erase In Progress: False
OK
```

Example :

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Flash2Cmd All Commands and Options

Note all commands need a –u <username> and –q <password> in order to run. Usernames and Passwords can be managed through the GUI application.

Command	Comment
Backup	Creates a backup from the drive, use –f to set the location
Restore	Restores a backup to the drive, use –f to set the location
GetStatus	Displays the status of the drive
WriteProtectOn	Software Write Protects the drive – equivalent of the WP tab on a floppy or tape but can also be set on hard disk emulations.
WriteProtectOff	Remove the software Write Protect from the drive – equivalent of the WP tab on a floppy or tape but can also be set on hard disk emulations.
SetOnline	Make the drive inaccessible to the host.
SetOffline	Makes the drive inaccessible from the host. Note backups and restores do an Offline before starting and an Online on completion to stop the host accessing the drive during the backup or restore.
GetDriveSize	Reports the amount of the card being used. Note compact flash cards always have 512 bytes per sector so if the emulated drive uses 256 or 768 bytes per sector then the amount of the card being used will be greater than the drive size as exposed to the host.
SetDriveSize	DEPRECATED – use SetSize instead
EraseCard	Erases the whole compact flash card. Note this can be very time consuming however it does report progress.
EraseCapacity	Erases as much of the card as the host is using – this would normally be the same as EraseDevice unless a custom capacity has been set.
EraseDevice	Erases as much of the card as the currently emulated device would use as a default.
GetEmulationModes	Lists all the available drive emulations on the connected drive.
GetEmulationMode	Gets the detail for the current emulation mode on the connected drive
SetEmulationMode	Use –e to specify the emulation mode, using the ID from GetEmulationModes
SetCapacity	Sets the capacity mode, needs the –c flag to define the new mode (card = use whole card, device = default for the emulated device or custom = specified by SetDriveSize)
GetCapacity	Returns the current capacity mode (card = use whole card, device = default for the emulated device or custom = specified by SetDriveSize)
SetSize	Use –m for size mode and –k for size
GetVersion	Returns the version information from the drive
GetIdentity	Returns detailed information about the drive
SetIPAddress	Sets the Ethernet parameters, use –i for IP address, -j for IP port, -g for IP gateway and –l for subnet mask
GetIPAddress	Returns the Ethernet parameters on the drive.
FlashLEDs	Causes the LEDs on the SF2 to flash alternately for 30 seconds
GetFiles	Downloads any trace files on a File System enabled SF2
CliCmd	Executes serial-port commands over the Ethernet
Clone	Clones another device on the same SCSI bus, use –h <n> to set the target

	SCSI Id
GetHotBackupStatus	For HotBackup enabled SF2, get the status of the Hot Backup
TakeHotBackupOffline	For HotBackup enabled SF2, control the status of the two cards
PutHotBackupOnline	For HotBackup enabled SF2, control the status of the two cards
SetHotBackupOnline	For HotBackup enabled SF2, control the status of the two cards
SetHotBackupOffline	For HotBackup enabled SF2, control the status of the two cards

Option	**Comment**
--ignore-backup-data	Used on backup to prevent writing to the local disk. Acts as a performance test of network only.
-a	Set the cmd to be used by CliCmd
-c	Capacity Mode – used by SetCapacity
-e	Emulation Mode – used by SetEmulationMode
-f	Locates the backup / restore file – used by Backup and Restore
-g	New IP Gateway – used by SetIPAddress
-h	Set the target host id for Clone
-i	New IP Address – used by SetIPAddress
-j	New IP Port – used by SetIPAddress
-k	Defines the new size – used by SetSize and SetDriveSize
-l	New IP Mask – used by SetIPAddress
-m	Size Mode – used by SetCapacity
-p	Port – allows Flash2CMD to change the port it uses to connect to the drive
-q	Password – looks up the password set by Flash2GUI for the user
-r	ReadSize – amount of data to put in a network packet on backup or restore
-s	DEPRECATED – used by SetDriveSize for sector count
-S	DEPRECATED – used by SetDriveSize for sector size
-t	Timeout – how long to wait for responses from the drive
-u	Username – as defined by Flash2GUI
-v	Verbose – produces lots of logging

Flash2Cmd Errors

Cannot Connect

Note that a single SF2 or FF1 will only permit ONE connection at a time. Whilst Flash2GUI is connected to a drive, Flash2Cmd will not be able to connect to that same drive. Equally a second instance of Flash2GUI on a different PC could not connect to that same drive.

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Image Manager

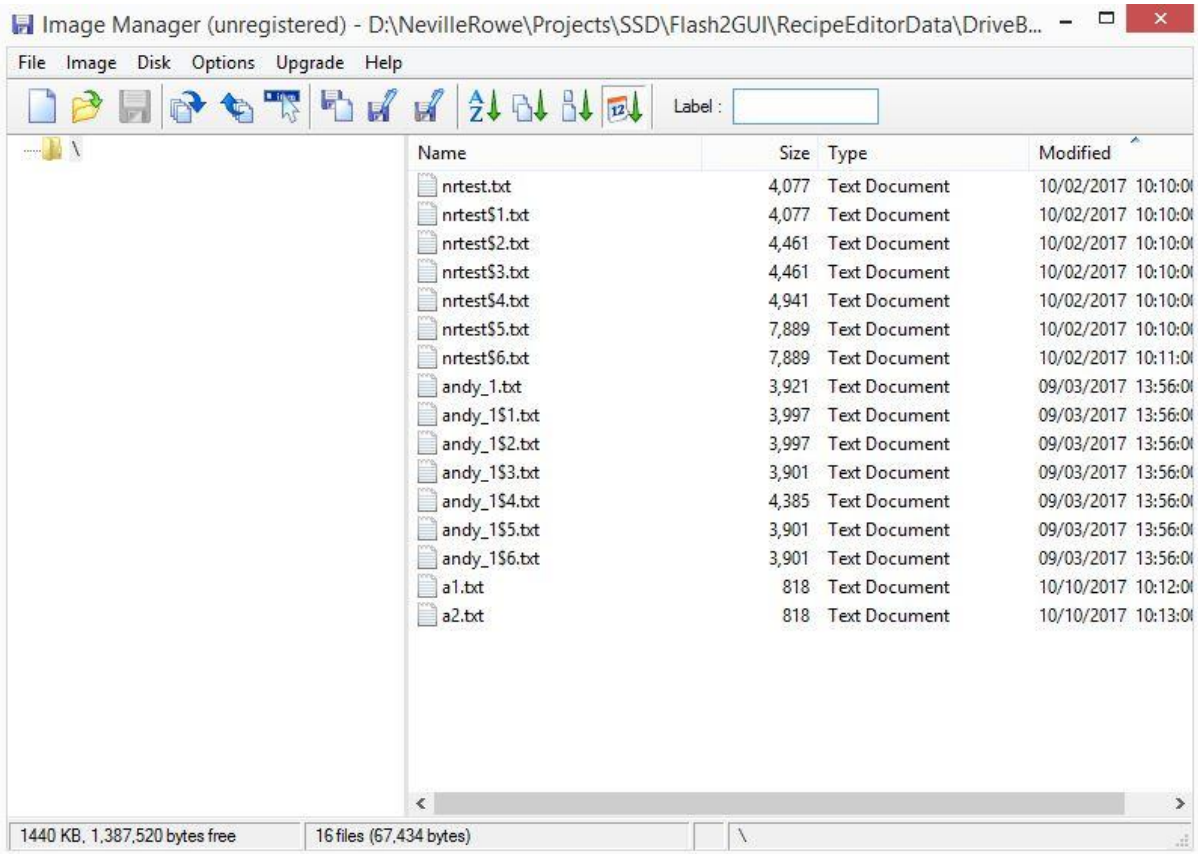
Introduction

Image Manager is a tool provided to allow the contents of backup images to be edited – either extracting files from images or inserting new files to those images.

Image Manager only works where the image being edited is either a FAT, FAT32 or OS-9 format. OS-9 is the Microware multi-tasking operating system.

Usage

Open up Image Manager using the File -> Image Manager menu option in Flash2GUI. This will open the application and display a window which looks very similar to the Windows file manager.



Open a backup image by either selecting the Open icon or File -> Open from the menu. Once you open an image you will be presented with a Save dialog. Note that Image Manager edits the image file directly on the disk therefore when you open an image, the application immediately tries to copy the original image to a new file so that you can make changes without affecting the original image. If you don't want to create a new file then just select the original image file.

Having opened an image you can add and delete files and directories, etc.