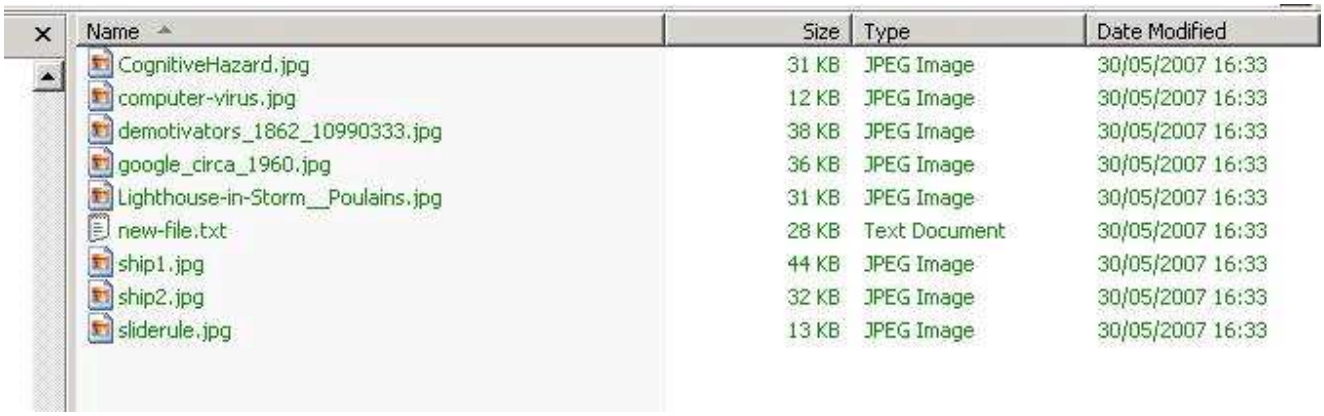
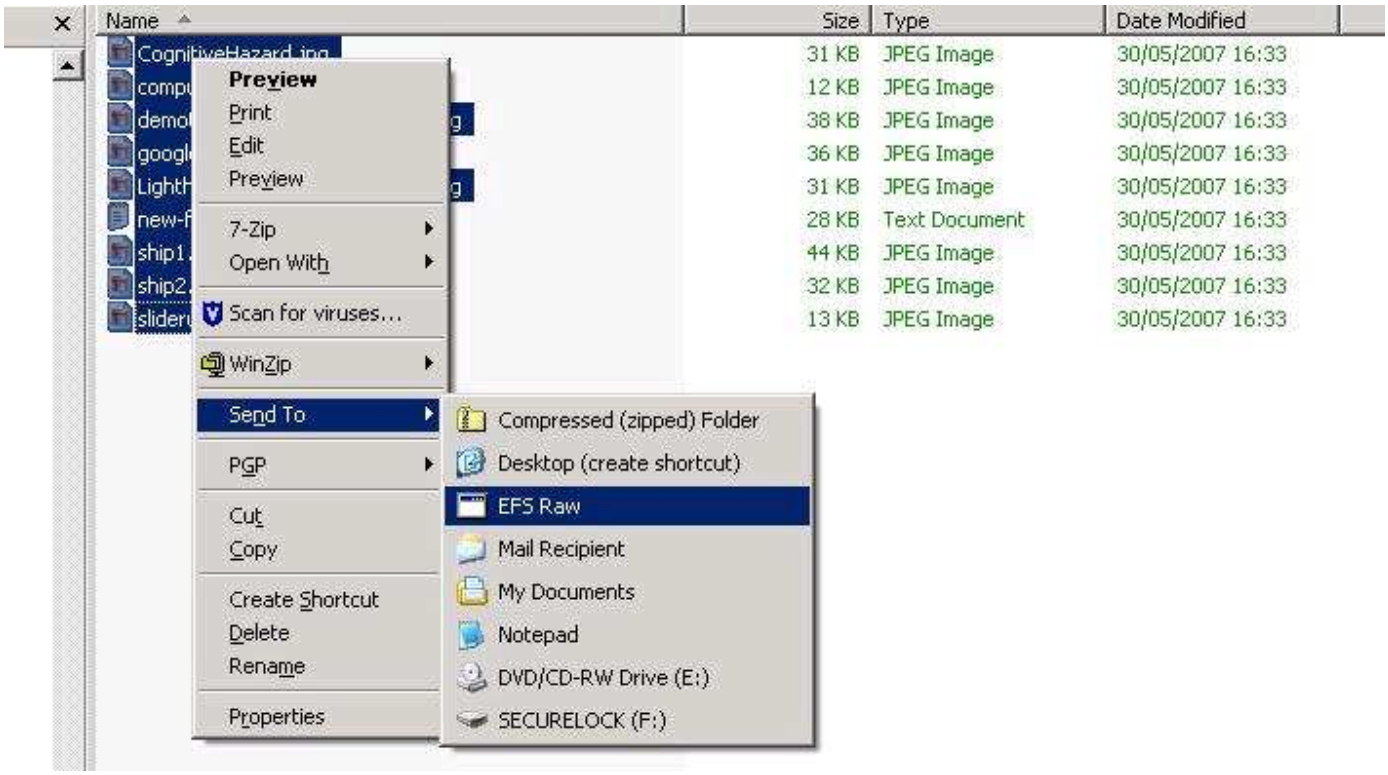
When a program reads an EFS encrypted file the Windows NTFS filesystem automatically decrypts the contents, assuming of course that the logged in user has the decryption certificate. If you copy such a file to a USB Key removable drive that is formatted with the FAT filesystem then the resulting file on the USB Key is not encrypted. It is not recommended to re-format a removable drive in NTFS because data can be lost if the drive is removed without stopping the drivers first. NTFS also causes a higher number of write cycles on the flash drive.

The Win32 API includes several routines for reading and writing EFS data without decrypting. This program uses those to read the raw binary EFS encrypted data from the hard disk and write an encrypted copy of the file. It is involed from the "Send To" menu of Windows explorer.

In this example there are nine EFS encrypted files and we wish to copy them to a removable drive while preserving the encryption.

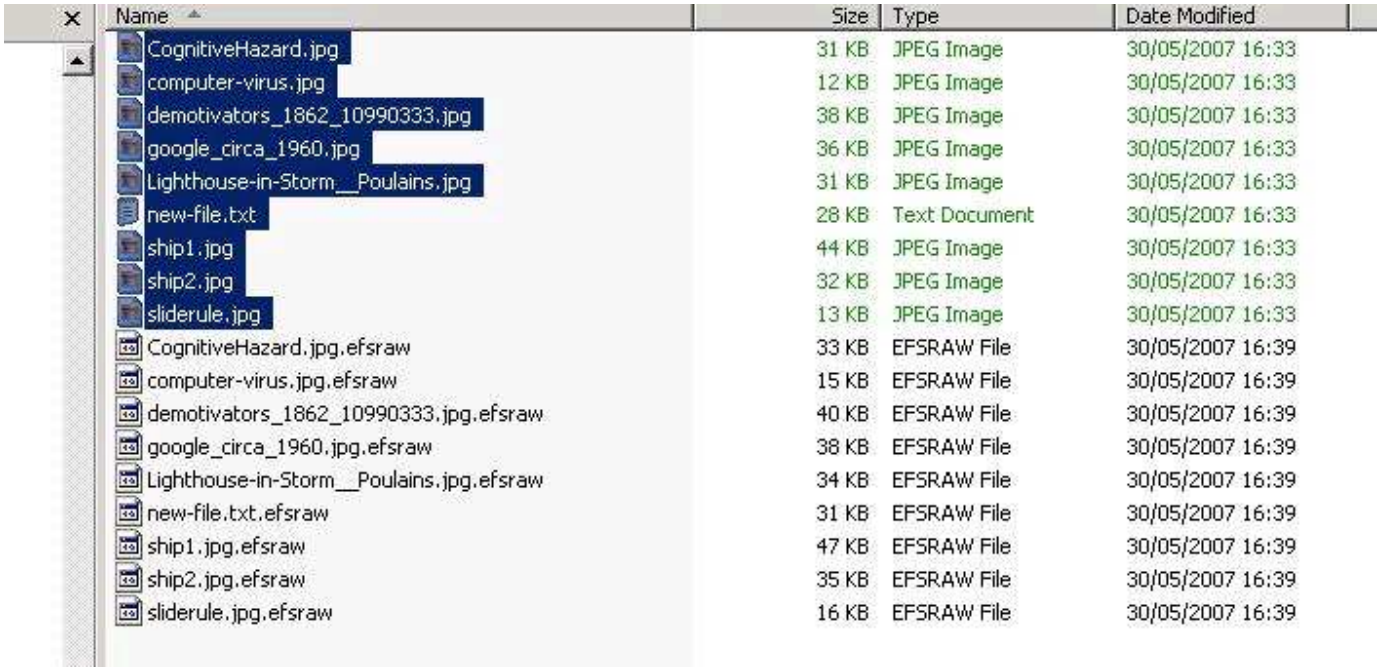


We select the nine files, right-click and use the "Send To" menu to feed them to the "EFS Raw" option.



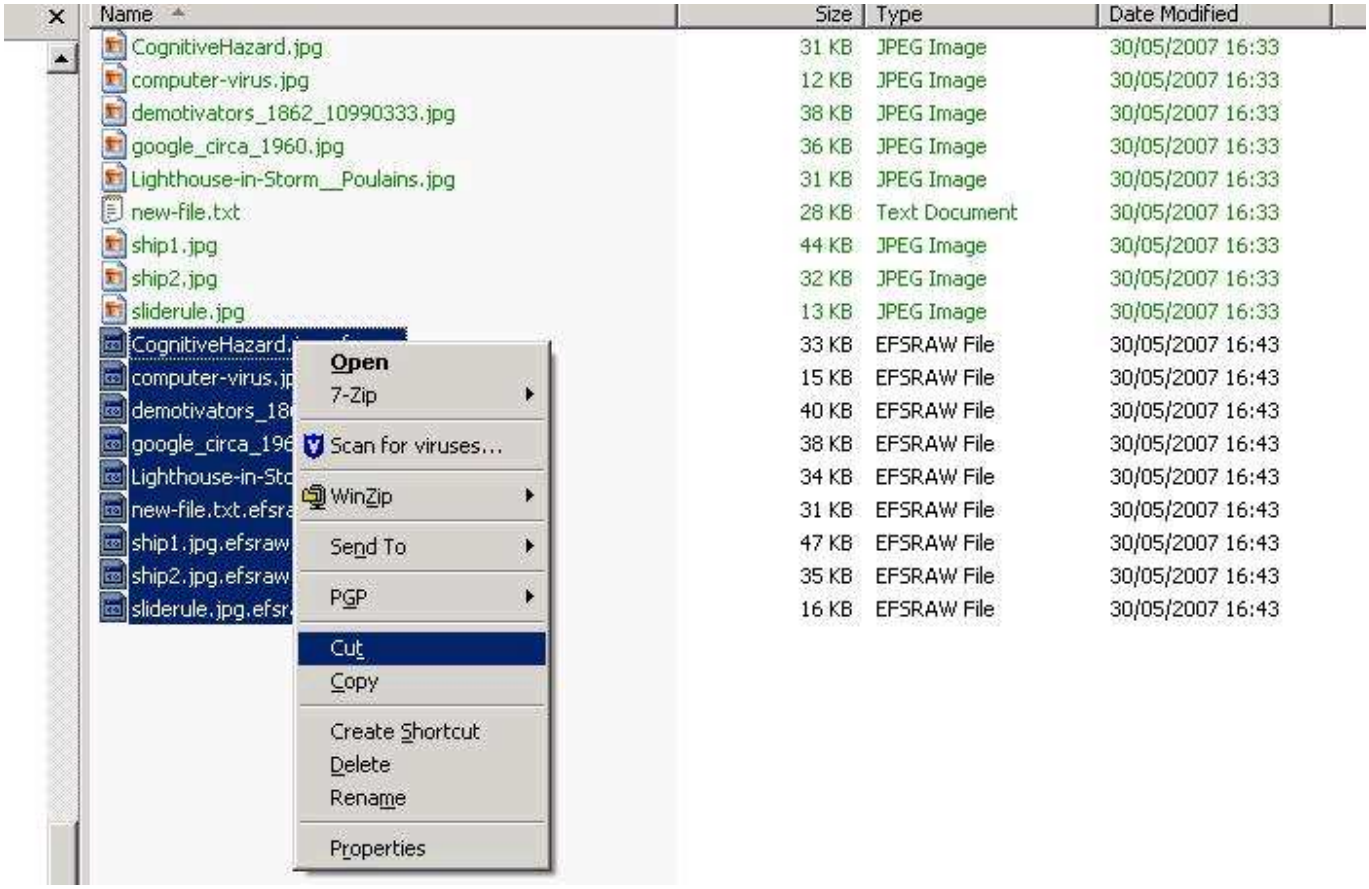
This program reads each file and writes out its raw EFS binary form in the same folder. It uses the file

extension ".efsraw" for this. Note that the efsraw form of each file is several kilobytes larger. That is because the EFS metadata that was previously hidden in the NTFS metadata layer has now been written as headers in the files. These contain the names of the user(s) that can decrypt the file and the file symetrical encryption key, itself encrypted with that users public key.



Name	Size	Type	Date Modified
CognitiveHazard.jpg	31 KB	JPEG Image	30/05/2007 16:33
computer-virus.jpg	12 KB	JPEG Image	30/05/2007 16:33
demotivators_1862_10990333.jpg	38 KB	JPEG Image	30/05/2007 16:33
google_circa_1960.jpg	36 KB	JPEG Image	30/05/2007 16:33
Lighthouse-in-Storm__Poulains.jpg	31 KB	JPEG Image	30/05/2007 16:33
new-file.txt	28 KB	Text Document	30/05/2007 16:33
ship1.jpg	44 KB	JPEG Image	30/05/2007 16:33
ship2.jpg	32 KB	JPEG Image	30/05/2007 16:33
sliderule.jpg	13 KB	JPEG Image	30/05/2007 16:33
CognitiveHazard.jpg.efsraw	33 KB	EFSRAW File	30/05/2007 16:39
computer-virus.jpg.efsraw	15 KB	EFSRAW File	30/05/2007 16:39
demotivators_1862_10990333.jpg.efsraw	40 KB	EFSRAW File	30/05/2007 16:39
google_circa_1960.jpg.efsraw	38 KB	EFSRAW File	30/05/2007 16:39
Lighthouse-in-Storm__Poulains.jpg.efsraw	34 KB	EFSRAW File	30/05/2007 16:39
new-file.txt.efsraw	31 KB	EFSRAW File	30/05/2007 16:39
ship1.jpg.efsraw	47 KB	EFSRAW File	30/05/2007 16:39
ship2.jpg.efsraw	35 KB	EFSRAW File	30/05/2007 16:39
sliderule.jpg.efsraw	16 KB	EFSRAW File	30/05/2007 16:39

We then cut and paste these efsraw files to the removable drive, treating them as ordinary binary data files.

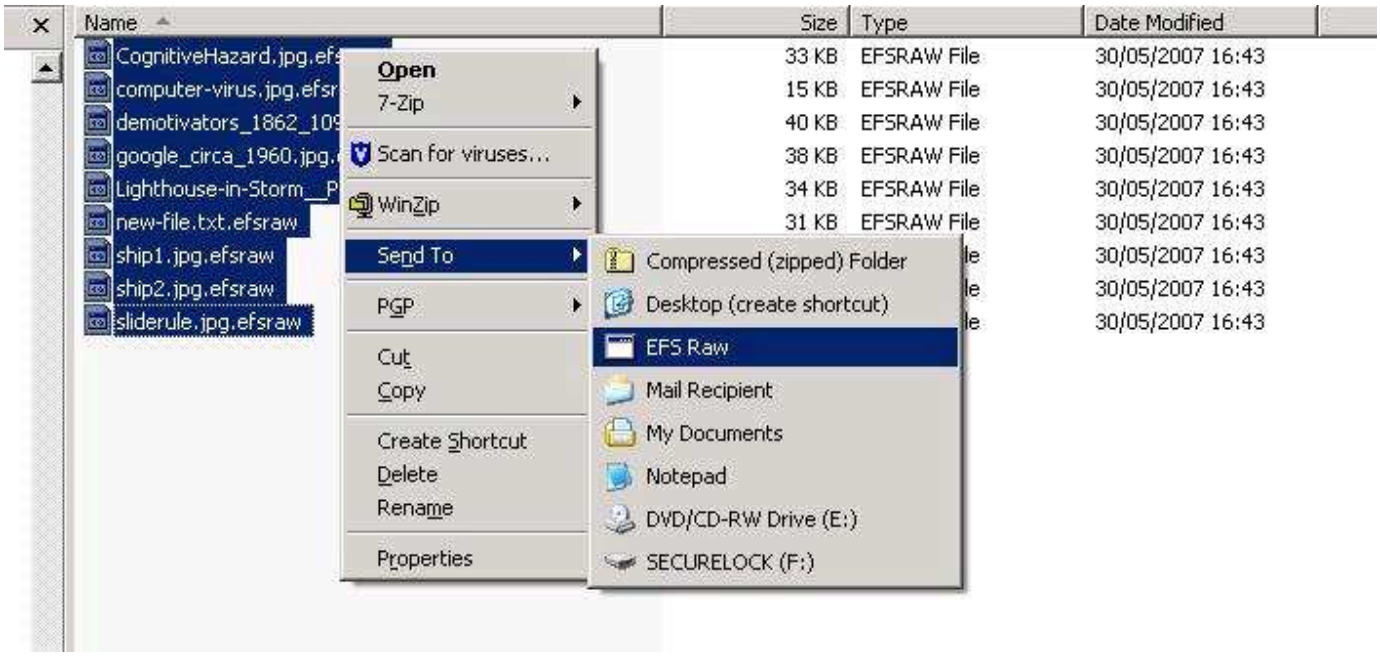


Note that if the folder containing the efswar files is marked for EFS encryption then the efsraw files will be

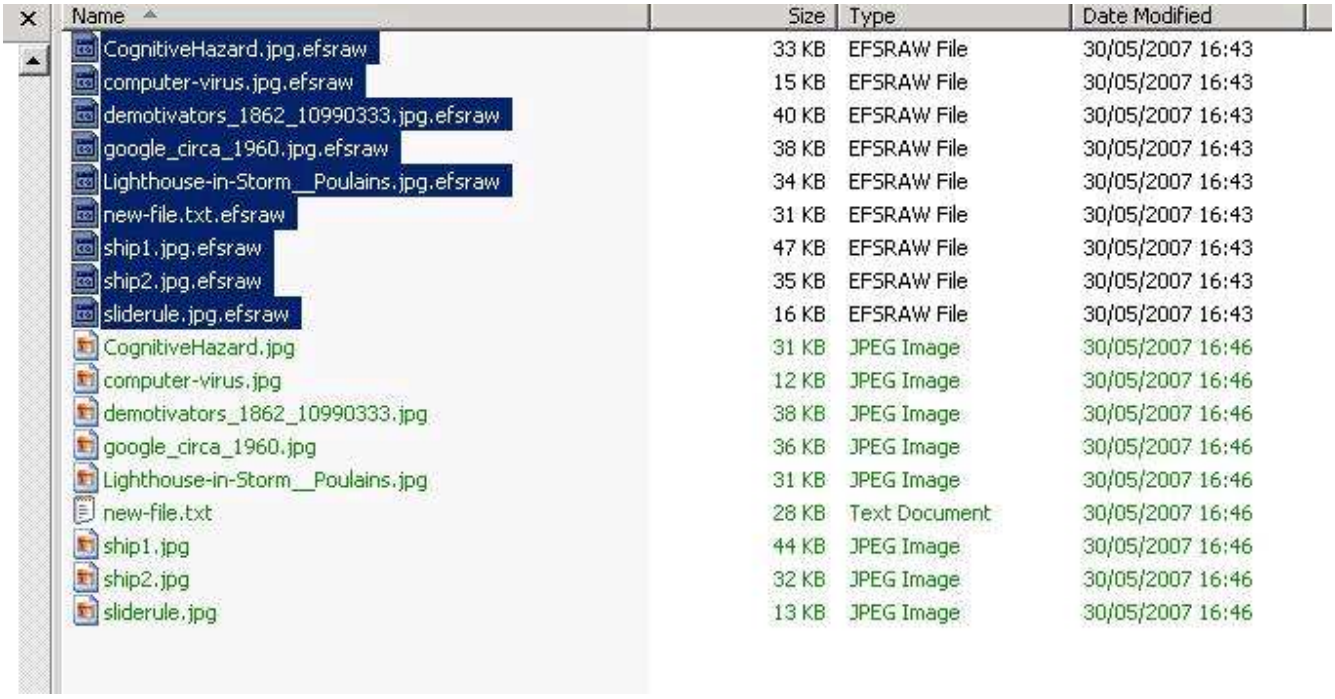
themselves EFS encrypted; they are double encrypted. As this second EFS encryption is not required it does not matter that it is lost when the files are coppied to a removable drive. The following warning mesage can therefore be safely ignored when copying efsraw files (but only for efsraw files!)

The efsraw files can be copied back from the removable drive to an NTFS volume and then this program can convert them back to normal EFS files using the same "Send To" procedure. It recognises that they are efsraw and converts them to EFS.

The decryption process needs the decryption key stored in the users EFS Certificate Private Key.



You can see that the output files are EFS encrypted as Explorer shows them in green below,



Name	Size	Type	Date Modified
CognitiveHazard.jpg.efsraw	33 KB	EFSRAW File	30/05/2007 16:43
computer-virus.jpg.efsraw	15 KB	EFSRAW File	30/05/2007 16:43
demotivators_1862_10990333.jpg.efsraw	40 KB	EFSRAW File	30/05/2007 16:43
google_circa_1960.jpg.efsraw	38 KB	EFSRAW File	30/05/2007 16:43
Lighthouse-in-Storm__Poulains.jpg.efsraw	34 KB	EFSRAW File	30/05/2007 16:43
new-file.txt.efsraw	31 KB	EFSRAW File	30/05/2007 16:43
ship1.jpg.efsraw	47 KB	EFSRAW File	30/05/2007 16:43
ship2.jpg.efsraw	35 KB	EFSRAW File	30/05/2007 16:43
sliderule.jpg.efsraw	16 KB	EFSRAW File	30/05/2007 16:43
CognitiveHazard.jpg	31 KB	JPEG Image	30/05/2007 16:46
computer-virus.jpg	12 KB	JPEG Image	30/05/2007 16:46
demotivators_1862_10990333.jpg	38 KB	JPEG Image	30/05/2007 16:46
google_circa_1960.jpg	36 KB	JPEG Image	30/05/2007 16:46
Lighthouse-in-Storm__Poulains.jpg	31 KB	JPEG Image	30/05/2007 16:46
new-file.txt	28 KB	Text Document	30/05/2007 16:46
ship1.jpg	44 KB	JPEG Image	30/05/2007 16:46
ship2.jpg	32 KB	JPEG Image	30/05/2007 16:46
sliderule.jpg	13 KB	JPEG Image	30/05/2007 16:46