



## Factsheet 14 - Issues to consider before formatting your hard disk and when it is recommended

### Purpose

The purpose of this Factsheet is to help you recognise when it is prudent to format your computer's hard disk drive (HDD) as a way to recover from a serious malware infection.

**This Factsheet does not seek to explain how to format your hard disk drive**, but aims to raise awareness of the issues you need to consider before attempting it and when to seek professional assistance to do it.

### What does formatting your hard disk drive mean?

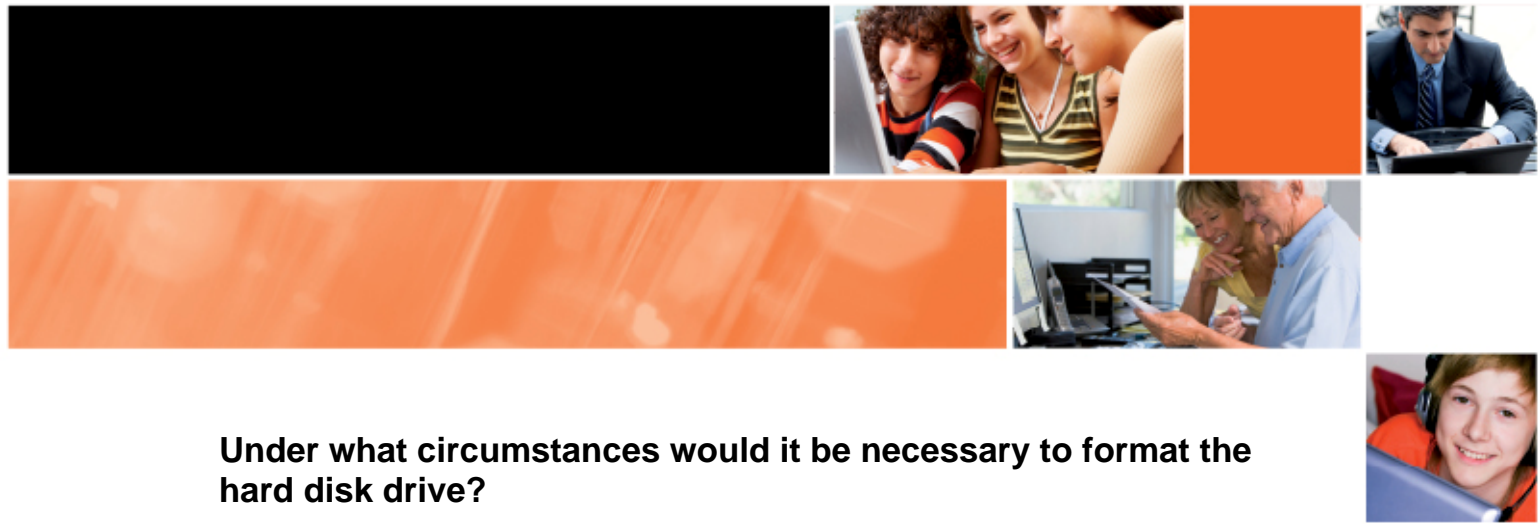
Formatting is the process of erasing the existing information on your computer's hard disk drive (HDD)<sup>1</sup> and preparing it for storage.

Formatting is the process of deleting the operating system software,<sup>2</sup> all application software installed and all user files. A computer which has had its hard disk drive formatted or wiped clean cannot be used in the normal way until the operating system is installed again. Even once the operating system is installed, you will not be able to find copies of emails or other files saved to your computer unless you have access to back-up files, saved prior to the formatting process.<sup>3</sup>

<sup>1</sup> HDD is the primary storage area for your software and files created by the computer's users. On Microsoft operating systems, the hard disk drive is often referred to as the C: drive.

<sup>2</sup> The operating system is software such as Microsoft Windows XP or Vista, or Apple Mac's OS X. The operating system controls all other software installed on the computer and controls access to the various drives (such as network drives, removable storage, etc), all input devices (such as keyboard, mouse) and output devices (such as screen and printer).

<sup>3</sup> For information about backup, see Factsheet 12



## Under what circumstances would it be necessary to format the hard disk drive?

Formatting the hard disk drive is not a trivial task and requires advanced computer skills. It should be regarded as a “last resort” to fix serious computer problems. In other words, it should only be attempted after other less drastic steps have been attempted and failed.

Reasons to format your HDD:

1. You have reason to suspect your computer is infected with malware which you have not been able to detect or remove through alternative methods (such as those outlined in [Factsheet 11, part 1](#), [part 2](#) and [part 3](#)).
2. Your computer has ‘unrecoverable’ operating system errors, such as:
  - a. when the operating system fails to boot normally from the hard disk drive; or
  - b. when the operating system frequently crashes, making the computer difficult to use and unreliable.

### Malware infection

Once a computer becomes infected with serious types of malware, the computer cannot be trusted, even though the computer may still appear to work normally. In such a situation, **where you have reason to suspect your computer may be infected with malware** that you have been unable to detect and remove through other means, it is recommended that you seek professional assistance to format your computer’s hard disk drive.

This process will remove the malware (and everything else on your computer) and allow you to reinstall your computer’s software and user files.

### Issues to consider before making a decision to format your hard disk drive

Before you format your HDD, the following steps should be completed to see if the problem can be resolved through simpler means:

1. Perform a full disk error check
2. Perform a disk defragmentation



3. Check for malware infection (Factsheet 11, parts 1 - 3)
4. Did you install new software or hardware before the issue started? If so, uninstall it to see if the problems continue.
5. For Microsoft Windows, System Restore can return your computer's state to an earlier point in time prior to the problem
6. Some computer manufacturers make it possible to restore the original configuration as purchased. This may involve the loss of your information and you should always consult the documentation supplied with your system.

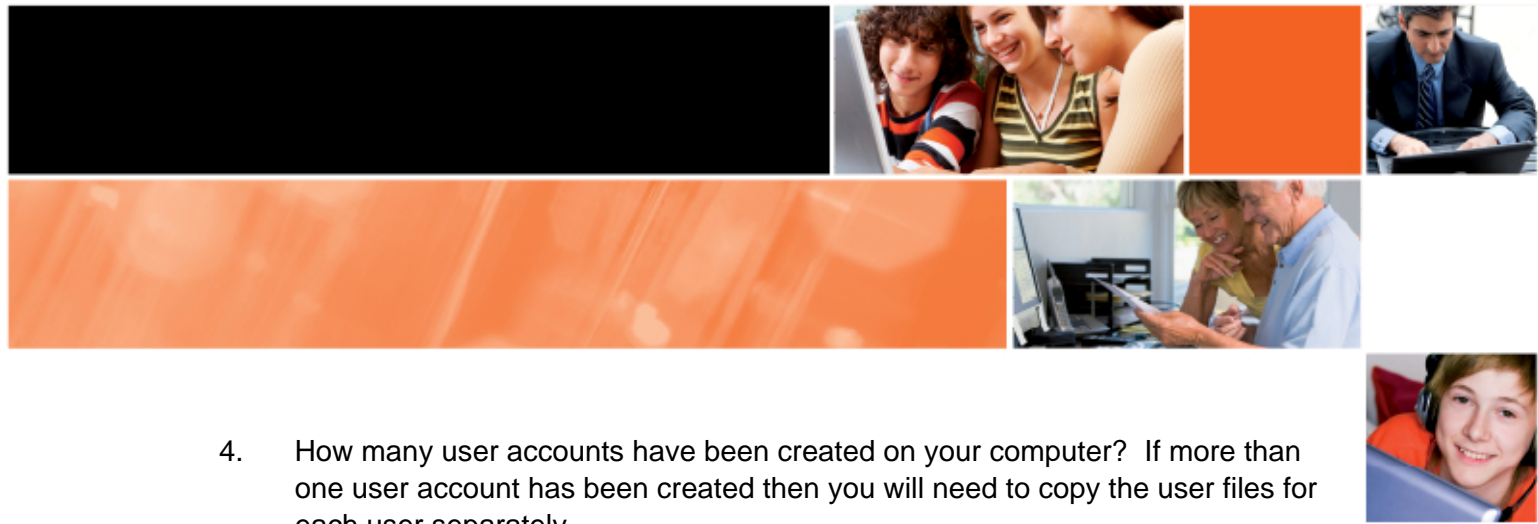
Before you format your HDD:

1. Make sure you have access to original operating system media stored on CD-ROM with licence keys
2. Make sure you have access to other application software with licence keys stored on CD-ROM or other removable media. If you use a separate Firewall product (such as Norton's Internet Security or Zone Alarm), ensure you have a copy of this product and the license key.
3. Make copies of user files<sup>4</sup> that you wish to keep on removable storage such as USB sticks<sup>5</sup> or writeable CDs/DVDs or separate removable hard drive. User files are those files created by all users of your computer and includes things like:
  - documents (common extensions include: .doc, .docx, .pub, .wps, .pdf, .rtf, .txt, .odt)
  - spreadsheet files (.xls, .xlsx, .ods)
  - presentation files (.ppt, .pptx, )
  - photographs and other image files (.jpg, .png, .gif)
  - audio and video files (.mpg, .mp4, .mpeg, .mp3, .avi, .mov, .wav, .wmv)
  - emails sent and received and saved on your computer<sup>6</sup> (.dbx, .pst)
  - web favourites, saved within your web browser

<sup>4</sup> See Factsheet 12 about making back-ups

<sup>5</sup> USB sticks are also called memory sticks or thumb drives.

<sup>6</sup> It is not necessary to make back up copies of emails from web-based email accounts such as Hotmail, G-Mail or Yahoo as these are stored on a remote web site but you will need to know your password in order to retain access to these web-based accounts.



4. How many user accounts have been created on your computer? If more than one user account has been created then you will need to copy the user files for each user separately.
5. Do you save passwords on your computer so that you don't need to remember the password for various accounts? If you do and can no longer remember what these passwords are (or do not have them written down somewhere and safely hidden), those passwords will be no longer accessible to you after you format your hard disk.

In these situations, reset<sup>7</sup> all your passwords and keep a copy of the new passwords hidden on a piece of paper so that when your computer software is reinstalled after formatting then, you can reactivate your accounts with the new passwords. It is also important to immediately change all these passwords after they have been re-activated because if your computer was infected with malware, the criminal with access to your malware-infected computer would know what these new reset passwords were, when they were changed.

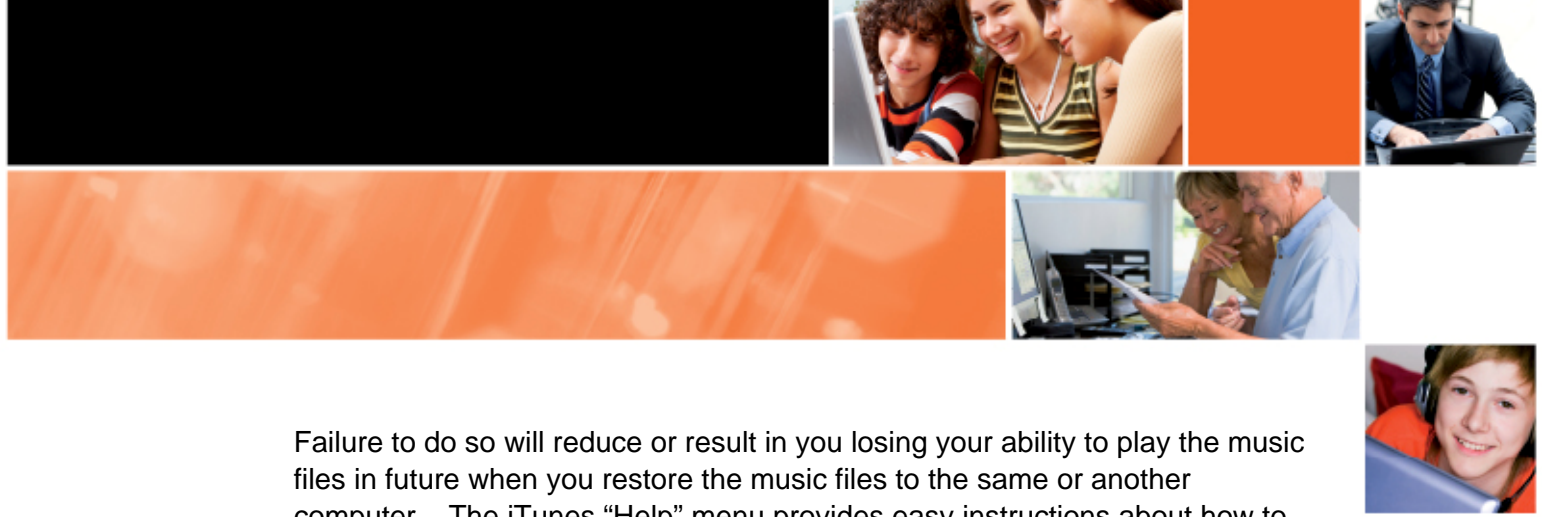
If there is more than one user of your computer, then each user needs to do this in order retain access to their online (web based) accounts.

6. Do you purchase and download licensed music files such as through the iTunes Music Store (or others)? Licensed music files have Digital Rights Management controls on them. If you have downloaded licensed music files, make sure you "deauthorize"<sup>8</sup> your computer before formatting the HDD.

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<sup>7</sup> To reset passwords for web-based accounts, most web sites have a link near the "log on" fields which says "Forgotten password?" Click on this link and follow the prompts. Typically, a new password will be sent to the email address used when you first registered the account. Keep a copy of the new reset password by printing it out and hiding the email. If you have forgotten your online banking password, generally you will be required to ring your bank and provide proof of your identity over the telephone.

<sup>8</sup> For example, when you purchase music files online under licence through iTunes, you are allowed to play the music files on up to five computers at any one time. Special keys that allow an authorised computer to play each music file are stored on the computer; the keys are the licence to play the music. Without the licence (key), the file still exists but will not play. When you deauthorize your computer, you in effect release the licences for those music files for that computer so they can be used on another computer in future. In this way, you are able to maintain the maximum number of computers on which you can play the music files at any one time. If you format your HDD before you deauthorize the computer, you in effect delete the key which allows you to listen to the music file on that computer. Also, the licence is not released and the DRM controls prevent you from playing the music file on another computer until it is "authorised" to do so. If you fail to release licences which are no longer being used (such as when you sell your computer or format your hard disk) then you eventually reduce and eliminate the available number of computers on which you can play your music files.



Failure to do so will reduce or result in you losing your ability to play the music files in future when you restore the music files to the same or another computer. The iTunes “Help” menu provides easy instructions about how to deauthorize your computer.

You will need to reactivate (authorise) the licence with your password when you restore the music files onto the computer after it has been formatted – as such you will also need to know the password for the online music store account which you used to purchase the music files (under licence).

## Formatting the hard disk drive

It is not the purpose of this Factsheet to describe this process, which normally should not be attempted without appropriate training. **It is recommended you seek professional assistance from a reputable professional computer technician.**

After the disk is formatted, ask the technician to reinstall the operating system and all other software and user files **and update all software patches for the operating system and application software.**

## After formatting the hard disk drive

If not already done so by the computer technician, in order you should:

- activate software firewall (if part of operating system<sup>9</sup> – otherwise install a software firewall);
- reinstall the anti-virus software and/or other security software
- connect to the Internet and update all security patches and signature files for the anti-virus software
- update all security patches for the operating system
- install and update other remaining application software.

This process is likely to take several hours and require substantial download usage.

Like automobile repairs, the process of formatting a hard disk is a job left for the experienced technician. However, by following the steps in this document and being prepared for the process you will save time, money and, potentially, heartache.

<sup>9</sup> Microsoft Windows XP and Vista both come with “Windows Firewall” as part of the operating system. In the absence of other firewall software, activate Windows Firewall. Do this through the “Security” menu in the “Control Panel”.