



User's Guide

TERABYTE UNLIMITED

1350 N Town Center Dr #1049
Las Vegas, NV 89144
<http://www.TeraByteUnlimited.com>
ASP Member

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Notices

Image for DOS was compiled using an unmodified version of Open Watcom, which can be found at www.openwatcom.org.

Technical Support Policy

Technical support is provided online. The most current versions of software and documentation (including updates to this manual) are available at www.terabyteunlimited.com.

- The Image for DOS home page, with software and documentation update information, and support resources, can be found at www.terabyteunlimited.com/image.html.
- The Image for Windows home page, with software and documentation update information, and support resources, can be found at www.terabyteunlimited.com/imagew.html.
- A support knowledge base for all TeraByte Unlimited products, including Image for DOS and Image for Windows, can be found at www.terabyteunlimited.com/kb.

Registered users can email their questions to support@terabyteunlimited.com, if no suitable resolution is found via the aforementioned support resources. If the issue is not resolved via email, telephone support may be provided.

Unregistered users will be provided technical support and product information through email only.

In all cases, TeraByte Unlimited reserves the right to refuse any communication method that would incur a cost.

Ombudsman Statement

This program is produced by a member of the Association of Shareware Professionals (ASP). ASP wants to make sure that the shareware principle works for you. If you are unable to resolve a shareware-related problem with an ASP member by contacting the member directly, ASP may be able to help. The ASP Ombudsman can help you resolve a dispute or problem with an ASP member, but does not provide technical support for members' products. Please contact the ASP Ombudsman online at www.aspshareware.com/omb.

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Image for DOS/Windows System Requirements

Image for DOS

By default, Image for DOS relies on the BIOS for processing disk functions. If your computer's BIOS interface is limiting access to the hard drive, then Image for DOS will be affected by this limitation. You can have Image for DOS override the BIOS interface on most systems by using the `ATA` environment variable, as described in this user guide.

Hardware	<ul style="list-style-type: none">• IBM-compatible personal computer (i386 or newer)• 16-MB RAM• Writable CD or DVD drive (optional)
Software	<ul style="list-style-type: none">• MS-DOS or PC-DOS• XMS (HIMEM.SYS) (optional)

Image for Windows

If you will be restoring outside of Windows, or are running Windows 95/98/Me, your computer's BIOS must provide access to the hard drive.

Hardware	<ul style="list-style-type: none">• IBM-compatible personal computer.• 32-MB RAM (minimum)• Writable CD or DVD drive (optional)
Operating System	<ul style="list-style-type: none">• Windows NT (requires Administrator privileges)• Windows 2000 (requires Administrator privileges)• Windows 2003 (requires Administrator privileges)• Windows XP (requires Administrator privileges)• Windows 95• Windows 98• Windows Millennium

What Is Image for DOS/Windows?

Image for DOS and **Image for Windows** are backup and restore programs. Image for DOS functions in the DOS operating environment, while Image for Windows is designed to work within Windows.

Both products protect your system by creating a compressed or uncompressed “snapshot” of all *used areas* of your FAT, FAT32, NTFS, Ext2/3, or ReiserFS partition or volume. For other file systems, they save and restore a compressed or uncompressed snapshot of *all sectors* in the partition or volume (i.e. both used and unused areas).

The snapshot backup created by Image for DOS or Image for Windows is referred to as an “image”. The image backup can be written to a set of files on a hard drive, network drive, or directly to most USB 2, IEEE 1394, ATAPI CD-R/RW, or writable DVD drives. (Image for DOS can also work with drives that make use of ASPI drivers, if the appropriate driver is provided.)

When you create the image, the file system and files are backed up exactly as they are on your drive at the time of the backup. Image for DOS/Windows do not skip files or assume that some files—such as paging files—do not need to be backed up. The sole exception to this is that if you are using Image for Windows with the free PHYLock add-on, the paging file (`PAGEFILE.SYS`) and hibernation file (`HIBERFIL.SYS`), when present, will not be backed up. (This is done to save space in the image, and because there is no need to backup those files.)

Your computer is thereby protected from crashes, data loss, hardware problems, and malicious software (i.e. viruses), by allowing you to restore the snapshot image.

If you need to restore individual files or folders from a backup, you can use the free TBIView add-on, available from www.terabyteunlimited.com or on your installation CD, if your purchase included one.

Image for DOS and Image for Windows create images that are fully compatible with each other, and also with the image files created by the TeraByte Unlimited product, BootIt NG.

Why Two Separate Utilities?

Convenience

Image for Windows can be used from within the Windows environment, either to backup secondary hard drives, or backup the Windows drive itself—without requiring a reboot. Image for DOS can accomplish the same tasks, but it cannot be run within Windows. Instead, Image for DOS runs from a bootable floppy diskette or CD/DVD you create.

Functionality

While you can restore most partitions from within Windows, you cannot restore the Windows partition in the same manner. That is, to restore the Windows drive, you cannot be running Windows at the same time. Generally, the easiest way around this is to use Image for DOS to perform the restore. In this case, you would simply boot using your Image for DOS bootable floppy diskette or CD/DVD, and restore your Windows drive from there. Image for DOS provides a simple, menu-driven interface, so you will have your newly-restored Windows drive up and running in no time.

Automation

Using Image for DOS, you can automate image and restore operations, with the use of batch files and command line parameters. You can even use this method to automate a restore of your Windows partition. (Image for Windows also supports the use of command line parameters, and can be run from batch files. However, you will generally need to use Image for DOS to automate a restore of your Windows partition.)

What You Can Do with Image for DOS/Windows

Local Usage

Use Image for Windows to backup your Windows partition, using the free PHYLock add-on. Store your image backups on a secondary hard drive partition, or on a CD/DVD disc. Then, when you need to restore, boot from a floppy diskette or bootable CD/DVD disc that has Image for DOS installed on it, and use Image for DOS to perform the restore operation. If you use Windows 2000 and cannot readily create a bootable floppy diskette to boot from, simply create the bootable Image for DOS floppy diskette using the free MakeDisk utility.

Across a Network

Create a network-capable DOS diskette, and then use Image for DOS to create or restore the image file to or from a mapped network drive.

Use push technology (not included) to automatically start the backup or restore across a network.

With BootIt NG (a separate product offered by [TeraByte Unlimited](#))

Set up a special partition with batch files to restore certain partitions from a network or local drive. At the end of the batch file, have it run the DOS version of BootNow to boot some partition. Enable BootNow support in BootIt NG, and set up boot items to automatically run the correct batch file (via keystrokes). Now you can have a certain partition rebuilt and booted by just selecting the item from the boot menu.

Installing Image for DOS/Windows

Installing Image for DOS

Image for DOS is not “installed” in the usual sense of the word. This is because it is a program that runs under the DOS environment, rather than Windows. Instead, you run Image for DOS by creating a bootable floppy diskette or CD/DVD disc that contains the Image for DOS program. Then, you simply boot with that disc or diskette to run Image for DOS. Instructions for creating a bootable Image for DOS disc and/or diskette are provided below.






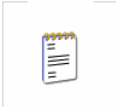


You have several options for preparing Image for DOS for use:

If you are using Windows, and wish to create a bootable Image for DOS disc or diskette, the recommended method is to use the free TeraByte Unlimited utility MakeDisk. If your Image for DOS purchase did not include an installation CD, the MakeDisk utility can be [obtained separately](#). Instructions on using MakeDisk are provided below.

Regardless of the platform you are using, you can create a bootable DOS floppy diskette or CD/DVD disc, and copy the `IMAGE.EXE` file to that media. Instructions for creating a bootable floppy diskette are provided below.

Creating Bootable Image for DOS Media Using MakeDisk (Windows only)

1. Download [MakeDisk](#) and [Image for DOS](#).
 - **Note:** If you have purchased Image for DOS/Windows, be careful not to download the trial version of Image for DOS from the TeraByte Unlimited web site. The version available on the main download page is for trial use only, and should not be used by registered users of Image for DOS. Instead, use the registered copy of Image for DOS that was provided with your purchase, or an update obtained from the registered user [Product Download page](#).
2. Extract the contents of `MAKEDISK.ZIP` and `IMAGE.ZIP` to a folder of your choice.
 - If you are using a version of Windows that has a built-in compressed folders feature (e.g. Windows Me or Windows XP), you can double click the ZIP file and then use the “Extract all files” link shown in the left pane of Explorer to extract the contents. Alternatively, after opening the ZIP file, you can select all the files listed, and copy them to another folder to extract the contents. Please note that whichever foregoing method you use, the contents of the ZIP file *must* be extracted to another folder before proceeding.

			
CDBOOT.F35	FWLIC.TXT	IMAGE.EXE	IMAGE.PDF
			
LICENSE.TXT	MAKEDISK.CFG	MAKEDISK.EXE	REGISTER.TXT

CDBOOT.F35 is the file required to create a bootable CD/DVD. Image for DOS will look in the current directory for `CDBOOT.F35` during the creation of a CD/DVD, and use it to create a bootable disc.

FWLIC.TXT is the license agreement for TeraByte Unlimited freeware (in this case, the included MakeDisk utility).

IMAGE.EXE is the Image for DOS program.

IMAGE.PDF is a copy of this manual.

LICENSE.TXT is a copy of the Image for DOS license agreement.

MAKEDISK.CFG is the MakeDisk configuration file for Image for DOS.

MAKEDISK.EXE is the MakeDisk utility, which allows you to easily create bootable media to run Image for DOS.

REGISTER.TXT is an order form for Image for DOS, and is included in the trial version only.

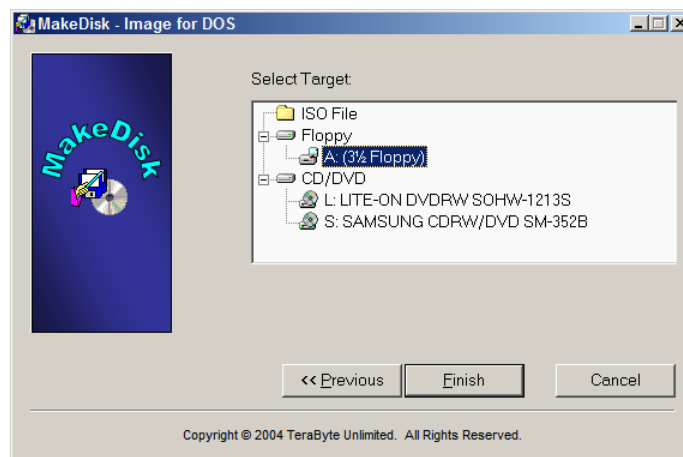
3. Run `MAKEDISK.EXE` from the folder of step 2. The MakeDisk welcome screen appears, as shown below.



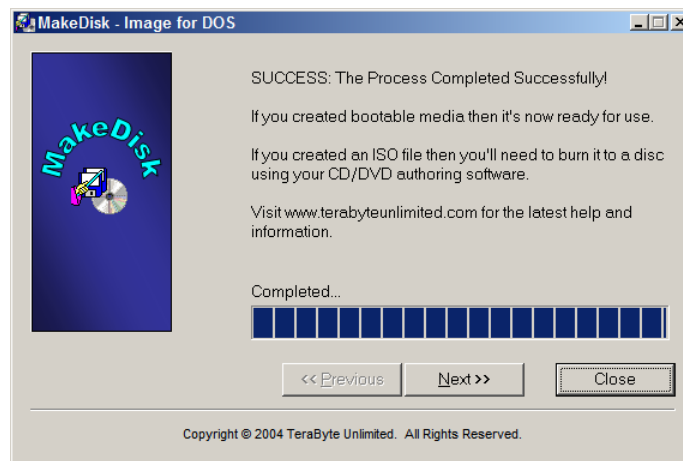
4. Click Next on the MakeDisk welcome screen. The Image for DOS license agreement screen appears, as shown below.



5. Read the Image for DOS license agreement, and if you accept it, select the "I accept the agreement" button and click Next. The "Select Target" screen appears, as shown below.



6. Choose the target that MakeDisk should use to create the bootable Image for DOS media.
 - If you choose the “ISO File” option, you must supply an ISO file name.
 - If you choose the “3 ½ Floppy” option, be sure to insert a floppy diskette before proceeding. **Note:** The entire contents of this floppy diskette will be overwritten.
 - If you choose the “CD/DVD” option, be sure to insert a *writable* CD or DVD disc before proceeding. **Note:** The entire contents of this disc will be overwritten.
 - MakeDisk can automatically overwrite CD-RW, and DVD+RW media. However, if you wish to use DVD-RW media, it must be either brand new, or fully blanked before being processed by MakeDisk. To fully blank the DVD-RW media, use your burning software’s “full erase” function. (The “quick erase” function will not work for this purpose.)
7. Click Finish, and respond to subsequent prompts as necessary. MakeDisk will then create your bootable media or ISO image. When it is done, the success screen should appear, as shown below.



8. Click Close on the MakeDisk “success” screen.
 - If you selected the “3 ½ Floppy” or “CD/DVD” option in step 6, you can now use that media to boot and run Image for DOS.
 - If you selected the “ISO File” option in step 6, you will have to use other CD/DVD authoring software to create a bootable disc from the ISO file.


Installing Image for DOS Manually (all platforms)

1. Download [Image for DOS](#).
 - **Note:** If you have purchased Image for DOS/Windows, be careful not to download the trial version of Image for DOS from the TeraByte Unlimited web site. The version available on the main download page is for trial use only, and should not be used by registered users of Image for DOS. Instead, use the registered copy of Image for DOS that was provided with your purchase, or an update obtained from the registered user [Product Download page](#).

2. Extract the contents of `IMAGE.ZIP` to a folder of your choice.
 - If you are using a version of Windows that has a built-in compressed folders feature (e.g. Windows Me or Windows XP), you can double click the ZIP file and then use the “Extract all files” link shown in the left pane of Explorer to extract the contents. Alternatively, after opening the ZIP file, you can select all the files listed, and copy them to another folder to extract the contents. Please note that whichever foregoing method you use, the contents of the ZIP file *must* be extracted to another folder before proceeding.
3. Create one of the following:
 - A bootable DOS floppy diskette, using the instructions provided under **Creating a Startup Diskette**, or using the distribution available from the [FreeDOS](#) site.
 - A bootable CD/DVD compilation, using the CD/DVD authoring software of your choice.
4. Copy the files `IMAGE.EXE` and `CDBOOT.F35` from the folder of step 2 to the bootable DOS floppy diskette, or the bootable CD/DVD compilation.
 - The bootable floppy diskette or CD/DVD disc can now be used to boot from and run Image for DOS.
 - If you are creating a bootable CD/DVD, proceed with the creation of the bootable disc at this point.

Installing Image for Windows

1. From the www.terabyteunlimited.com web site, click the **Image for Windows** link under Downloads.
 - If you purchased Image for Windows on prepackaged media, you need not download a new copy, but doing so will ensure that you obtain the latest version available.
2. When the **File Download** window displays, click **Save**.
3. Select a location to save the zipped file, `IMAGEW.ZIP`.
4. Once the download completes, locate the `IMAGEW.ZIP` file you saved and double click it to unzip the files. If you don't have an unzip program installed on your computer you'll be asked which program should be used to open the file. In this case, click cancel; you'll need to locate, download and install an unzip utility such as WinZip or WinRAR. Once you have opened the zip file and see the setup program icon you can continue to the next step.
5. Close open programs and then double-click `SETUP.EXE`.



SETUP.EXE
Image for Windows Setup
TeraByte Unlimited
6. The setup wizard will guide you to installation. Simply follow the instructions given to you.
 - If you are updating Image for Windows, you will be asked if you want to overwrite `CDBOOT.F35`. Unless you have your own custom copy of `CDBOOT.F35` in place, respond “Yes”, and allow the existing copy to be overwritten. (If you had a custom `CDBOOT.F35` file, you would know it.) Allowing the existing `CDBOOT.F35` file to be overwritten will ensure that any bootable CD/DVD discs you create will contain the latest version of Image for DOS.
7. Follow the remaining instructions in the installation program.

What is CDBOOT.F35?

This section only applies to you if you have purchased Image for DOS and/or Image for Windows.

The file `CDBOOT.F35` is used to make any CD or DVD you create with Image for DOS or Image for Windows bootable. The bootable discs created will also contain a copy of Image for DOS, which allows you to perform restore operations as needed.

If you use the trial version of Image for DOS or Image for Windows to create a bootable CD or DVD, you will only be able to restore an image contained on the disc for a limited time. Additionally, if you use the trial version of `CDBOOT.F35` with the full versions of Image for DOS or Image for Windows, you will not be able to restore any image contained on the disc unless you separately run a full version of Image for DOS or Image for Windows.

The registered copies of Image for DOS and Image for Windows have what is referred to as a full-use version of `CDBOOT.F35`. This full-use version allows you to not only boot with any CD or DVD you create with the software, but also to restore from any images contained on the applicable discs, free of any time restriction.

If you are a registered user of Image for Windows, a trial version of `CDBOOT.F35` will automatically be updated to a full-use version when either of the following events takes place:

- You manually enter your Image for Windows registration information.
- You use your registered copy of Image for Windows to create a bootable CD/DVD disc.

If you are a registered user of Image for Windows, you generally do not have to worry about `CDBOOT.F35`. When upgrading to the latest version of Image for Windows, just overwrite `CDBOOT.F35` when prompted (unless you are using your own custom copy of `CDBOOT.F35`), and then use Image for Windows as you normally do. The software will always function in full-use mode.

There is one special note for registered users of Image for Windows who do not normally use Image for Windows to create bootable CD/DVD discs, yet still need a full-use copy of `CDBOOT.F35` for other purposes (e.g. for use with the free add-on utility BINGBURN): Whenever you have updated Image for Windows (assuming you also choose to overwrite `CDBOOT.F35` during setup), you will need to manually "force" the new copy of `CDBOOT.F35` to become a full-use version. To do this, simply use Image for Windows to initiate a backup to CD/DVD, and cancel the operation when Image for Windows prompts you to insert the first disc. At that point, `CDBOOT.F35` will have been converted to a full-use copy. As an alternative, you may use the copy of `CDBOOT.F35` from your latest registered copy of Image for DOS, since it will already be a full-use copy. Either way, depending on how you intend to use `CDBOOT.F35` after that point, you may also need to expand it using the free `IMGFLPYD` utility.

Please note that Image for Windows looks for `CDBOOT.F35` in the same directory that the Image for Windows program (`IMAGEW.EXE`) is running from. Image for DOS looks for `CDBOOT.F35` in the current directory of the DOS environment.

Creating a Startup Diskette

If you do not have a copy of Windows XP or Windows 95/98/Me, then you can visit the [FreeDOS](#) site to download a free DOS clone.

Creating a DOS Boot Diskette from Windows 95/98/Me

1. Insert a floppy diskette to format.
2. Click Start, then Settings, then Control Panel.
3. Double-click Add/Remove Programs.
4. Click on the **Startup Disk** tab.
5. Click the **Create Disk** button.

Creating a DOS Boot Diskette from Windows XP

1. Insert a floppy diskette to format.
2. Click **Start** and select **My Computer**.
3. Right-click the A: drive and select **Format**.
4. Check the box next to Create an MS-DOS startup disk.
5. Click **Start**.

Starting Image for DOS Automatically Upon Boot

To have Image for DOS run automatically when booting from diskette, use a text editor (e.g. Notepad) to create a file with only one line in it, as follows:

```
IMAGE . EXE
```

Save this file as A:\AUTOEXEC.BAT (assuming that A:\ is the path of your floppy drive).

If your diskette already has an AUTOEXEC.BAT file on it, add the line above to the end of the current contents of the file (on a new line).

Creating a Network Boot Diskette

If using Windows NT 4 Server, use the Network Client Administrator under Administrative Tools to create a network boot diskette.

If you don't have Windows NT 4 Server, you can download DSK3-1.EXE and DSK3-2.EXE from the Microsoft ftp site to obtain the Microsoft Network Client for MS-DOS (<ftp://ftp.microsoft.com/bussys/clients/MSCLIENT/>) to create your own network boot diskettes. You may have to search for a DOS driver for your network card.

You may want to also consider using Bart's Network Boot Disk located at <http://www.nu2.nu/bootdisk/network>. This disk is easy to set up, and there are quite a few DOS drivers available in one place.

If you experience very slow network speeds, try using the IOBS=A environment variable, as explained later in this document.

Running Image for DOS/Windows

Running Image for DOS from Bootable Media

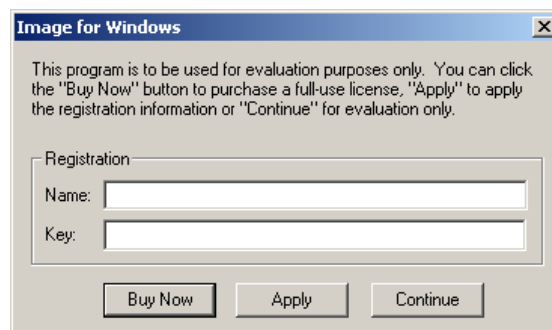
1. Create the bootable floppy diskette or CD/DVD disc as outlined above.
2. Insert the media into the appropriate drive, and reboot.
 - In order to boot from a floppy diskette or CD/DVD, you may have to change the order in which boot devices are examined. This is done by going into your computer's BIOS, usually by pressing the Delete key when prompted.

Running Image for DOS from Windows 95 or 98

1. Download [Image for DOS](#).
 - **Note:** If you have purchased Image for DOS/Windows, be careful not to download the trial version of Image for DOS from the TeraByte Unlimited web site. The version available on the main download page is for trial use only, and should not be used by registered users of Image for DOS. Instead, use the registered copy of Image for DOS that was provided with your purchase, or an update obtained from the registered user [Product Download page](#).
2. Extract the contents of IMAGE.ZIP to a folder of your choice.
3. Create a shortcut to IMAGE.EXE on your Windows Desktop, by right clicking IMAGE.EXE, dragging it to the Desktop, and selecting "Create Shortcuts Here" from the menu that appears when you release the mouse button.
4. Right-click the shortcut and select **Properties**.
5. Select the **Program** tab.
6. Click the **Advanced** button.
7. Check the box next to **MS-DOS Mode**.
8. Click OK until you return to the Windows Desktop. The shortcut can now be used to run Image for DOS.

Running Image for Windows

1. The first time you start Image for Windows, a registration screen will display.



- If you purchased Image for Windows, continue to step 2 below.
 - If you are using the trial version of Image for Windows, click Continue, and Image for Windows will operate in 30-day trial mode. Skip steps 2 and 3 below.
2. If you have purchased a boxed version of Image for Windows, you will find your registration information on the CD sleeve that was included. If you purchased a download-only copy of Image for Windows, you will have received an email message with the registration name and key. Either way, enter the registration information exactly as it appears, including any numbers following the name. (The name is everything after [name] and before [key]. If you received the registration information via email, the name may have wrapped to a second line.)

There may be special circumstances in which it is not convenient or possible to manually enter the Image for Windows registration information. Image for Windows provides two methods to account for this type of scenario:

- **For use in PE environments:** Image for Windows can run in registered-use mode by detecting the presence of a registration key file, named `IMAGEW.KEY`. To use this method, open a text editor such as Notepad, and enter your Image for Windows registered user name on the first line, with your Image for Windows key on the second line. For example:

```
User Name
XXXX-XXXX-XXXX-XXXX-XXXX-XXXX-XXXX-XXXX
```

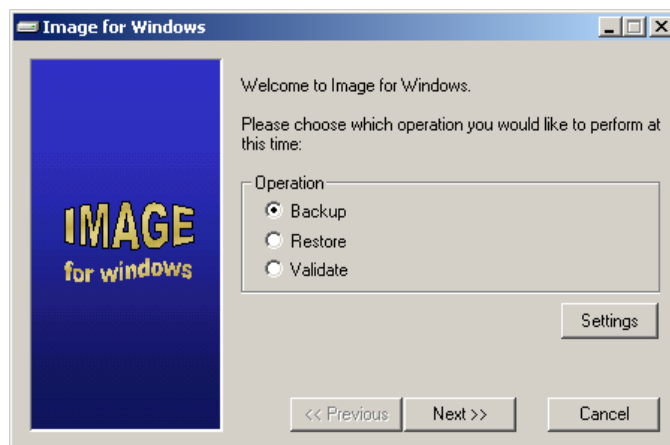
Then, save this file as `IMAGEW.KEY`, and ensure that it resides in the same folder as `IMAGEW.EXE` when it is needed. Please note that using `IMAGEW.KEY` does not result in the registration information being permanently applied to the system.

- **For multi-workstation deployment:** Image for Windows registration information can be permanently applied to the system using `IMAGEW.INI`. To use this method, open a text editor such as Notepad, and add the following content:

```
[License]
Key=User Name XXXX-XXXX-XXXX-XXXX-XXXX-XXXX-XXXX-XXXX
```

Where `User Name` is the registered name to be applied, and `XXXX[...]` is the applicable registration key. Save this file as `IMAGEW.INI` in the same folder where `IMAGEW.EXE` resides. If the registration information in `IMAGEW.INI` is accepted, the `Key=` line will be automatically removed from the file, and the Image for Windows registration information will be added to the Windows registry.

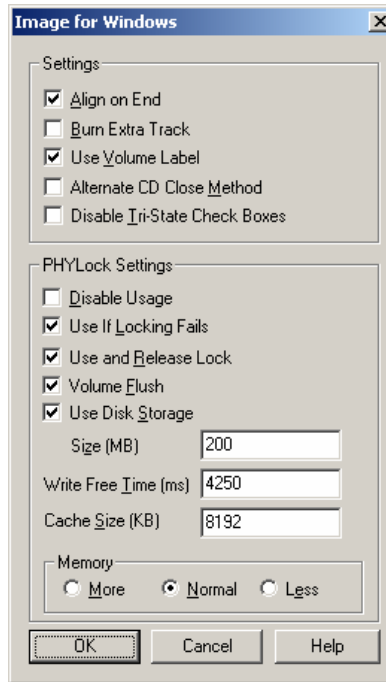
3. Click **Apply**. The Image for Windows window will display.



Configuring Image for Windows

The first time you start Image for Windows, you should make sure the settings are appropriate for your system.

1. Click the **Settings** button. The Image for Windows settings dialog appears.



2. Check a box to enable a setting.
 - Each of the settings is explained below.
3. Click **OK** when you are done.

Image for Windows Settings	
Align on End	Ensures that restored partitions are aligned at the end of a cylinder. You should leave this setting checked.
Burn Extra Track	Enable this option to write the image summary data to CD one as track two when directly imaging to CD. When burned this way, you won't have to insert the last CD before beginning the restore. NOTE: This option may not work correctly with all CD devices.
Use Volume Label	If this option is enabled and the drive contains an EMBR then FAT/FAT32/HPFS partition names will be that of the volume label instead of the name in the MPT. If no EMBR exists then this option is assumed.
Alternate CD Close Method	If you experience errors or problems when a CD is closing during an image to CD operation then enable this option to try a different closing technique.
Disable Tri-State Check Boxes	Enabling this option changes the behavior of the partition selection check boxes so that you can select an extended partition (itself) as the source of a backup.

PHYLock Settings	
<p>PHYLock is an optional software component for Windows NT/2000/XP/2003 that enables Image for Windows to maintain a consistent, reliable backup of an unlocked (i.e. in-use) partition or volume. If you purchased a boxed version of Image for Windows, you can find PHYLock on the CD that was included with your purchase. Otherwise, you can obtain PHYLock at www.terabyteunlimited.com, using the Free Software link.</p> <p>It should be noted that the consistency is based on a point in time. Although there is an attempt to pick a “clean” point in time, there is no guarantee that all programs, internal caches, and other processes are in a clean state. This is true of <i>all</i> backup software that backs up a partition or volume that is in use.</p> <p>If none of the usage options below are enabled, then PHYLock will be used, if it is installed. Options titled in blue are only in effect if PHYLock version 2 is installed.</p>	
Disable Usage	Enable this option if you do not want to use PHYLock, even if it is installed.
Use If Locking Fails	Use PHYLock if a normal lock on the backup source partition cannot be obtained.
Use and Release Lock	Attempt a normal lock, then use PHYLock whether or not the lock was obtained. If a normal lock was obtained, it is unlocked after PHYLock is enabled.
Volume Flush	Attempts forcing an additional flush on the volume.
Use Disk Storage	This setting causes PHYLock to use hard disk storage in addition to memory, up to the limit specified in the Size setting. Note that even with this setting enabled, PHYLock may sometimes run in RAM mode. Requires PHYLock version 2.
Size	This setting determines how much hard disk space is allocated for use by PHYLock, and applies only if the Use Disk Storage setting is enabled. Requires PHYLock version 2.
Write Free Time (ms)	This is the amount of time, in milliseconds, that must pass before PHYLock will become enabled. During this time, there can be no updating of the backup source partition contents. You should try to keep the value above 1250. The default value is 4250.
Cache Size (KB):	<p>This is the size of the internal cache, in kilobytes, used by PHYLock to maintain the data consistency. The default is 8192 (8192 KB / 1024 = 8 MB).</p> <p>You should not use a value below 2048 for this setting, even if you have the Use Disk Storage setting enabled.</p> <p>When backing up NTFS partitions with the Use Disk Storage option <i>disabled</i>, the value of the Cache Size (KB) setting will need to be weighed against the size of the NTFS log. You should keep the value of this setting above the size of the NTFS log, whether by increasing this value, reducing the size of the NTFS log, or both.</p> <p>You can check the size of the NTFS log file using the command line “CHKDSK <drive letter>: /L”. (The same command line will show you what the default NTFS log size is for the volume in question.) You can change the size of the NTFS log using “CHKDSK <drive letter>: /L:<log file size (KB)>”.</p> <p>Setting the NTFS log too small can result in performance degradation or a failure to boot. Do not set the size of the NTFS log to a value lower than 4096 KB.</p>
Memory	This setting controls how much memory PHYLock will allocate to additional buffers. If you receive an error that says PHYLock failed to cache changes, try increasing this setting. Requires PHYLock version 2.

Backing Up Your System with Image for DOS/Windows

Things to Consider Before Backing Up

If you will be using the PHYLock add-on program with Image for Windows, consider increasing the value of the PHYLock “Cache Size” setting. Refer to the PHYLock settings section on page 17 for more information.

There are few hard-and-fast rules to follow when formulating a backup plan. What follows, therefore, is intended more as a set of examples to spur thought, than as concrete rules to abide by.

- Consider the destination for your backup. For example, if you will be backing up around 30-GB of data, you probably will not want to store the backup on a set of CD-R/RW discs, since the resultant backup will likely require 20 discs or more (based on an expected compression ratio of 40-60%). A better option in this case would be:
 - Backup to an alternate hard drive partition (and perhaps use the free add-on utility BINGBURN later to burn the backup to a set of DVD discs).
 - Backup to a removable hard drive.
 - Backup directly to a set of DVD discs.
- Plan your backup with a restore strategy in mind. Some of your options are:
 - Save the backup directly to a set of bootable CD or DVD discs, as explained in this manual. To restore, simply boot with the restore disc, and use Image for DOS to perform the restore.
 - Save the backup to an alternate hard drive partition. To restore, run Image for DOS from a bootable floppy disk or CD/DVD disc. You can also use BootIt NG (a separate product offered by [TeraByte Unlimited](#)) to perform the restore.
- Strike your own balance between convenience and resiliency. Here are some simple ideas to consider:
 - Save your backups directly to an alternate hard drive partition, and then use the free utility BINGBURN to burn a secondary copy of the backup to a set of CD/DVD discs. Then, if you need to restore, you have the speed and convenience benefit of the backup stored on the hard drive. If things have really gone wrong and the primary copy of the backup is not available, you can fall back on the copy of the backup that has been saved on the CD/DVD discs.
 - Instead of always saving the backup to just one set of CD/DVD discs, keep two or more separate sets of backup discs, which will give you something to fall back on, if something should ever go wrong with the newest backup set.
 - If you are using multiple sets of backup CD/DVD discs, keep the newest set offsite, to guard against physical damage.

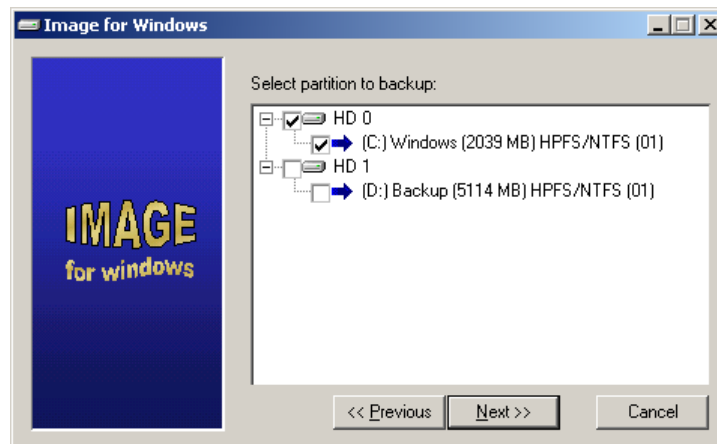
Backing up with Image for Windows

1. If you would like the partition being backed up to be locked then be sure to close any open files on the drive you are going to be backing up. If you are unable to obtain a lock, and you know the partition is not in use, you can continue or consider using Image for DOS or the PHYLock add-on. (Refer to the Image for Windows settings for more details on PHYLock.)

- Some virus-protection software will prevent a drive from being locked, even when real-time protection is turned off. Closing the anti-virus software temporarily may make it possible for the drive to be locked. However, using PHYLock in such a case is the preferred solution.
2. Run Image for Windows.
 3. Make sure the **Backup** option is selected, and then click Next.

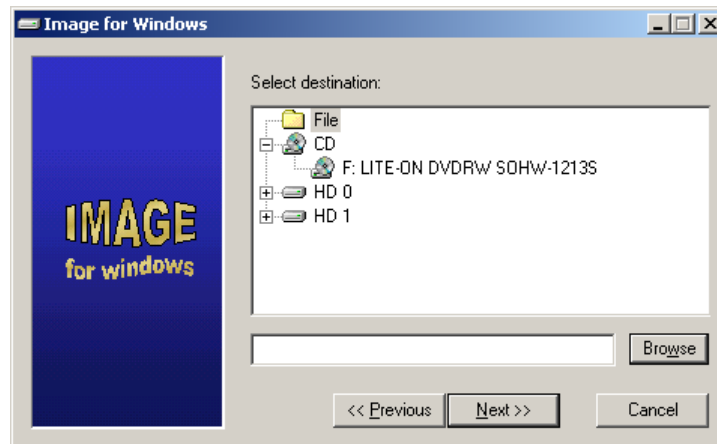


4. Select the check box(es) next to the hard drive(s) and/or partition(s) you want to back up, and then click Next.



- If you only see a blank window, you do not have Administrator privileges. You should start Image for Windows by right clicking its shortcut, choosing “Run as...” and selecting a user who has Administrator privileges.
 - The partition list is displayed below the drive (in the above example, HD 0). The drive letter is shown at the beginning (C:), followed by a description (Windows), size (16371 MB) file system type (NTFS), and the partition ID (01).
5. Select the destination for the backup file(s), before clicking Next to proceed:
 - Select File if you would like to save the backup file(s) to a folder on a hard drive which has a drive letter assigned to it by Windows.
 - If you are saving the image to a file, do not save it to the same partition you are backing up, unless you are using PHYLock. If you do, the restored partition will be in an inconsistent state, which can compromise reliability.
 - You can use the Browse button to navigate to the desired location, or manually enter the desired path and file name. You may specify UNC paths.

- You do not have to supply a file extension—just the path and file name itself. The extension will be added automatically.
- Select a listed CD or DVD drive if you would like to save the backup file(s) to a bootable CD or DVD disc.
 - Image for Windows can automatically overwrite CD-RW, and DVD+RW media. However, if you wish to use DVD-RW media, it must be either brand new, or fully blanked before being used. To fully blank the DVD-RW media, use your burning software's "full erase" function. (The "quick erase" function will not work for this purpose.)
- Select a HD entry if you would like to save the backup file(s) to a hard drive that is listed there but has not been assigned a drive letter by Windows.



- Regardless of which backup destination you select, note that Image for Windows automatically creates backup files with the .IMG extension first, and then creates additional numbered files extensions as necessary. For example, if your backup results in three image files, they will be named BACKUP .IMG, BACKUP .001, and BACKUP .002, in that order of creation. How many image files are created depends on how large the source data is, whether compression is used, and what "Maximum file size" setting you use, as described in the next step.
6. Select the desired options for your backup. The options you are presented with depend on the destination you selected in the step above.

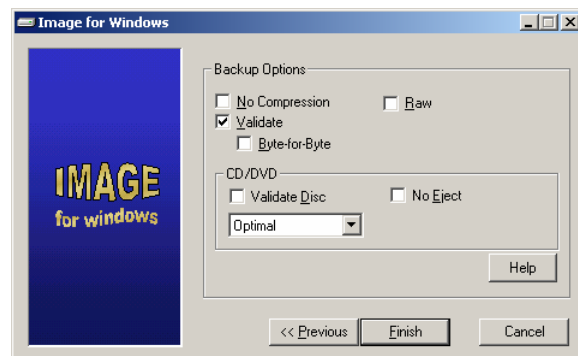
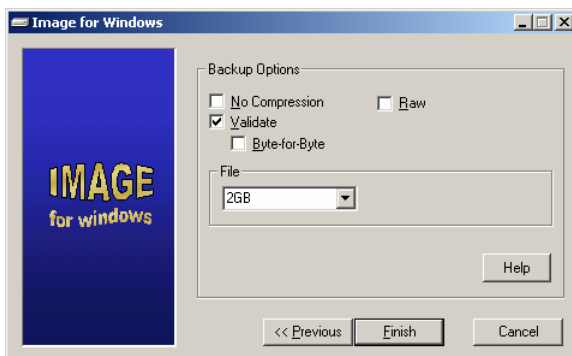
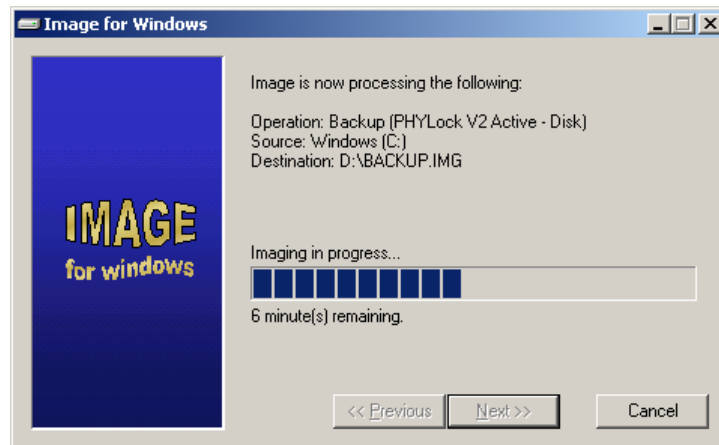


Image for Windows Backup Settings	
No Compression	<p>This setting will result in a backup that is uncompressed. Enabling this setting may increase the speed of the backup operation, but may also increase the size of the resulting image file(s). If the source partition contains primarily files that do not compress well (e.g. media files such as MP3, JPG, AVI, etc.), then enabling this option may be beneficial, by speeding up the backup process.</p> <p>By default, Image for Windows uses maximum compression when performing backup operations. However, since the compression ratio depends on a number of factors—such as the number, size, and content of the files on the source partition, the level of file fragmentation, and so on—it is not readily possible to predict what level of compression can be achieved. However, compression ratios of 40 to 60% are typical.</p>
Validate	<p>This setting tells Image for Windows to perform internal consistency checks on the backup file(s), once they are created. Enabling this option increases the overall processing time, but can help ensure that the backup is reliable.</p> <p>The validation process can be cancelled while it is being carried out.</p>
Byte-for-Byte	<p>This setting is only available if the Validate setting is selected. Enabling a byte-for-byte validation forces Image for Windows to carry out an extremely thorough check of the backup file(s) that are created, to ensure 100% accuracy. This option generally doubles the processing time of the overall backup operation, but is advisable to use where maximum reliability is required.</p> <p>The byte-for-byte validation process can be cancelled while it is being carried out.</p>
Raw	<p>This setting instructs Image for Windows to backup all sectors of the source partition, rather than just used sectors.</p>
File (For Hard Drive Destinations)	<p>This setting tells Image for Windows how large the backup file(s) that are created can be. For example, if the backup ends up being 3.5GB in size overall, and you select the “2GB” option, Image for Windows will create one 2.0GB file, and one 1.5GB file, for a total of 3.5GB.</p> <p>You can enter any multiple of 512 bytes, from a minimum of 1MB, to a maximum of 2GB. Use “M” or “MB” and “G” or “GB” to indicate megabytes or gigabytes, respectively. For example, valid values are “5M” (5 megabytes), “512MB” (512 megabytes), “1536M” (1,536 megabytes), and “1G” (1 gigabyte).</p> <p>The 2GB maximum is in place to ensure maximum compatibility with the variety of operating systems and applications with which Image for DOS/Windows may be used.</p> <p>The “698MB” and “648MB” selections are intended to create backup files that fit on 700MB and 650MB CD-R/RW discs, respectively. You can use this option, for example, if you are saving the backup file(s) to a hard drive initially, and will later burn them to a CD using the free TeraByte Unlimited utility BINGBURN.</p>
Validate Disc (For CD/DVD Destinations)	<p>This setting ensures that discs are readable after being written to, and verifies that the data on the disc appears to be the same as the data that was sent to the drive. Disc validation has the ability to detect media errors that may have occurred during the disc writing process. If an error is detected, you will be prompted to redo the failed disc. (Without this option enabled, you will only be notified of errors after the backup process is complete.)</p>
No Eject (For CD/DVD Destinations)	<p>This setting prevents the CD/DVD disc from being ejected when the backup is complete (Note: Under Windows NT/2000/XP/2003, the drive tray will open when the backup begins, but will close automatically).</p>
Writing Speed (For CD/DVD Destinations)	<p>This setting can be used to specify the maximum disc writing speed that Image for Windows will use (<i>not</i> the minimum). The maximum writing speed is also determined by the drive’s firmware and the media in use. For example, if you are using media that is rated at 8X, the maximum writing speed will be 8X, regardless of the setting you choose here. Please note that DVD speeds are approximately 1/8 CD speeds. Slower writing speeds can be used to increase reliability.</p>

7. Click **Finish**. The backup operation begins.
 - If the validation of a CD or DVD appears to hang, it may be due to problems trying to read the media. Try using a slower speed, or, failing that, different media and/or a CD/DVD drive firmware upgrade.



Backing Up the System Partition with Image for Windows

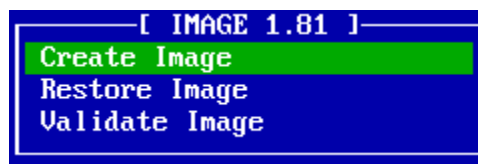
If you attempt to backup the system partition without using PHYLock, you will be warned that the partition cannot be locked. You can ignore this warning and continue, however the only way you can be sure a partition being backed up is in a consistent state is by having it locked, or by using Image for DOS.

If you are using Windows NT/2000/XP/2003, you can use the PHYLock utility to maintain the consistency of the system partition to a “point in time.” This means that once PHYLock becomes active during a partition backup, the state of the source drive is effectively frozen, with respect to the contents of the image. That is, no further changes to the source partition will be reflected in the backup, even if those changes occur while Image for Windows is performing the backup.

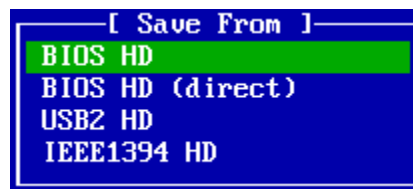
Backing up with Image for DOS

Note: You may use the Esc key to undo menu selections, and move back to the previous menu.

1. Run Image for DOS, as explained on page 14. The main Image for DOS window appears, as shown below.

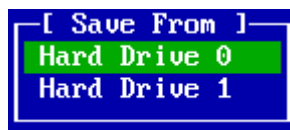


2. Use the arrow keys to select the “Create Image” menu item, and press Enter. The “Save From” window appears, as shown below.

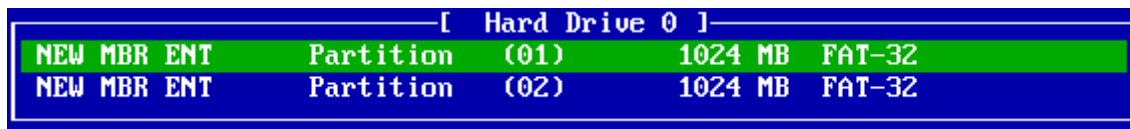


3. Select the access method you wish to use for the source hard drive:
 - **BIOS HD** -- Locates and accesses drives using the system BIOS. Please note that any problems or limitations inherent to the system BIOS will apply.
 - **BIOS HD (direct)** -- Attempts to locate the hard drive using the system BIOS, but then attempts to access it directly, bypassing the BIOS. This can sometimes be helpful in cases where performance with the "BIOS HD" option is very poor. In order to get the most out of this option when creating an image, you should select a partition--rather than a file--as the target for saving the image. (This advice applies to step 6 below.)
 - **USB2 HD** -- Examines the attached USB 2 controller, if any, for available high-speed hard drives.
 - If your USB device does not appear at first, please try pressing the Esc key, waiting a few seconds, and selecting the "USB2 HD" option again.
 - **IEEE1394 HD** -- Examines the attached IEEE 1394 controller, if any, for available hard drives.

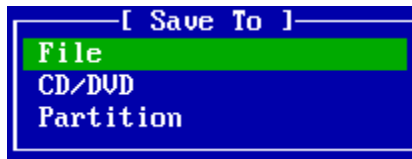
Once you make a selection, press Enter. The second "Save From" window appears.



4. Select the hard drive that contains the partition you wish to backup, and press Enter. The "Hard Drive n" window appears (where "n" is the applicable hard drive number).



5. Select the partition you wish to backup, and press Enter. The "Save To" window appears.
 - You can press the left Shift key while selecting a partition to enable "raw mode" for the backup. With this option enabled, all sectors of the source partition will be copied, rather than only used sectors. You will be prompted to confirm activation of raw mode.



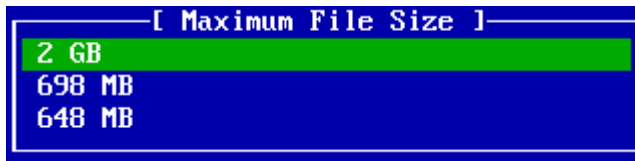
6. Select the destination for the backup file(s), before pressing Enter to proceed:
 - Select File if you would like to save the backup file(s) to a folder on a hard drive that has a drive letter assigned to it by DOS. The File option must be used when saving images to a mapped network drive.
 - If you are saving the image to a file, do not save it to the same partition you are backing up. If you do, the restored partition will be in an inconsistent state, which can compromise reliability.

- You may indirectly access drives using UNC paths, if you first map the drive using the “net use x: \\server\share” command. Then, you would simply specify the path as usual (e.g. “x:\folder\file”, where “x:” is the mapped drive).
- You do not have to supply a file extension—just the path and file name itself. The extension will be added automatically.
- Select the CD/DVD option if you would like to save the backup file(s) to a bootable CD or DVD disc.
 - Image for DOS can automatically overwrite CD-RW, and DVD+RW media. However, if you wish to use DVD-RW media, it must be either brand new, or fully blanked before being used. To fully blank the DVD-RW media, use your burning software’s “full erase” function. (The “quick erase” function will not work for this purpose.)
- Select the Partition option if you would like to save the backup file(s) to a partition that has not been assigned a drive letter by DOS. The Partition option is generally required, for example, when using Image for DOS to save images on NTFS partitions.
- Regardless of which backup destination you select, note that Image for DOS automatically creates backup files with the .IMG extension first, and then creates additional numbered files extensions as necessary. For example, if your backup results in three image files, they will be named BACKUP.IMG, BACKUP.001, and BACKUP.002, in that order of creation. How many image files are created depends on how large the source data is, whether compression is used, and what “Maximum File Size” setting you use, as described in a later step.

7. The screen that appears next depends on what “Save To” option you selected above:

- If you selected the File option, enter a path and file name, using the MS-DOS 8.3 naming convention.
- If you selected the CD/DVD option, you will be prompted to select an interface type:
 - **ATAPI:** Select this option if your CD/DVD drive is an ATAPI device, and none of the other selections apply. This is the most common option.
 - **ASPI:** Select this option if your CD/DVD drive will be accessed using an ASPI layer. (You must supply the ASPI driver for this option to work.)
 - **USB2:** Select this option if your CD/DVD drive is attached to a USB 2 controller.
 - If your USB device does not appear at first, please try pressing the Esc key, waiting a few seconds, and selecting the “USB2 HD” option again.
 - **IEEE1394:** Select this option if your CD/DVD drive is attached to an IEEE 1394 controller.
- If you selected the Partition option, you will be prompted with “Save To” options that mirror the “Save From” options that were outlined in step 2 above. The final step in specifying the destination will involve providing a path and file name, using the MS-DOS 8.3 naming convention.
 - You may save the image to a directory other than root; however, in order to do so, you must create the directory structure beforehand, in an environment that supports the file system in use. Since the MS-DOS 8.3 naming convention will be used by Image for DOS, you may want to restrict each folder name to 8 characters or less.
 - If you are saving to a directory other than root, specify the path using the format “\folder1\folder2\filename”. Do not supply a drive letter, or a file extension.

Whichever “Save To” option you selected, you will come to the “Maximum File Size” screen.



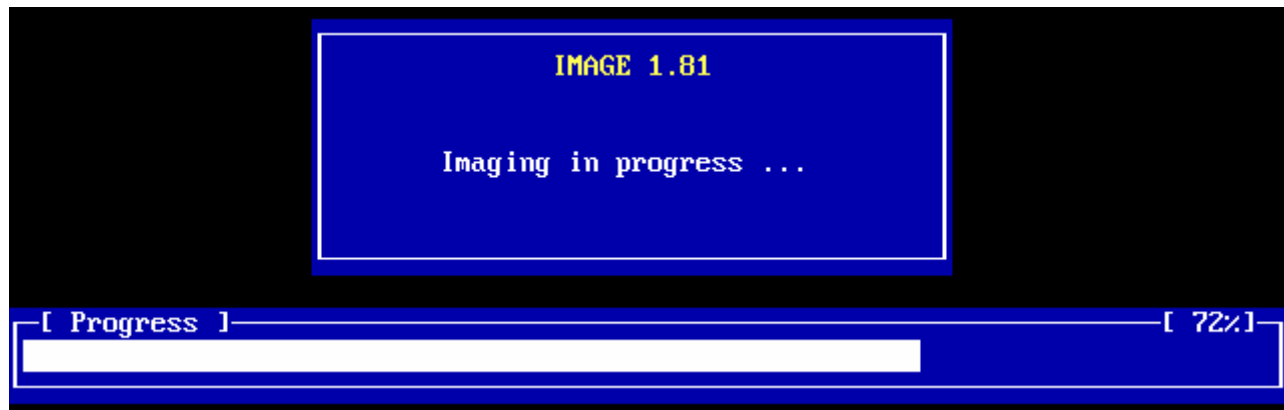
8. Your selection on the “Maximum File Size” screen tells Image for DOS how large the backup file(s) that are created can be. For example, if the backup ends up being 3.5-GB in size overall, and you select the “2 GB” option, Image for Windows will create one 2.0-GB file, and one 1.5-GB file. The “698 MB” and “648 MB” selections are intended to create backup files that fit on 700-MB and 650-MB CD-R/RW discs, respectively. You can use this option, for example, if you are saving the backup file(s) to a hard drive initially, and will later burn them to a CD using the free TeraByte Unlimited utility [BINGBURN](#).

Once you make a selection for maximum file size, you will be asked if you want the backup files validated after creation.



9. If you respond with a “Y” for the first validation prompt, you will be asked if you would like the validation to be performed with a full byte-for-byte comparison of the source and backup data.
- If you perform only a basic validation (i.e. you respond “Y” to the first validation prompt, and “N” to the second), Image for DOS will perform internal consistency checks on the backup file(s), once they are created. Enabling this option increases the overall processing time, but can help ensure that the backup is reliable.
 - If you choose to have a full byte-for-byte validation performed (i.e. you respond “Y” to both validation prompts), Image for DOS will verify that every byte in the source data was backed up correctly, ensuring 100% accuracy. This option generally doubles the processing time of the overall backup operation, but is advisable to use where maximum reliability is required.

Once you respond to the image validation prompts, Image for DOS proceeds with the backup operation, and will provide an indication of the backup progress throughout (and also for the validation progress, if any).



The backup and validation operations may be interrupted at any point by pressing the Esc key. Image for DOS will ask you to confirm that you want to cancel before it interrupts the current operation.

When all operations are done, the completion screen will appear.



Restoring from a Backup with Image for DOS/Windows

Please note the following, when preparing to perform a restore operation:

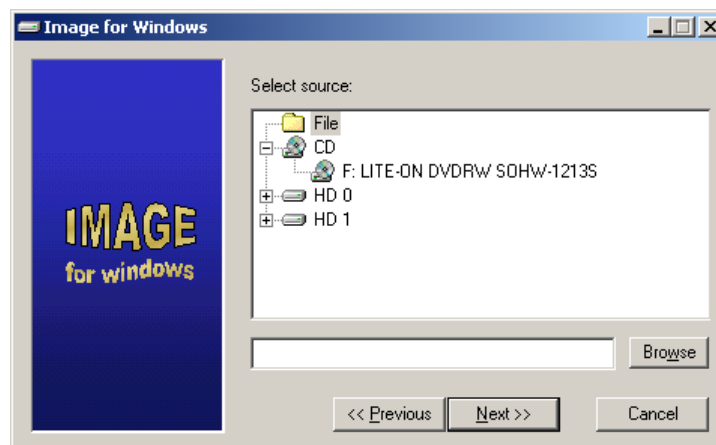
- When you are restoring an image, you cannot restore over the partition that contains the source image file.
- The restore target partition (or area of free space) must be large enough to accommodate the data from the source partition. The *minimal* amount of space required in the target is determined by the amount of space encompassed from the beginning of the source partition, to the last used area of the source partition. For example, if the partition backed up had 2 GB of data, and the last part of that data ended 15 GB from the start of the source partition, the target area would need to be at least 15 GB in size to accommodate the restore. This is true regardless of what the overall size of the source partition was.
- If the restore target partition (or area of free space) is larger than the source partition was, there will be an area of free space left over, unless the restore is performed via command line using the *x* parameter (as explained later in this manual).
- When you are booting from a restore CD/DVD, make sure the other CD/DVD drives do not also contain a bootable disc; otherwise the wrong CD/DVD drive may be used to boot.
- Since the hard drive order during the boot process may be different than it is while Windows is running, you may need to use the press a key when prompted, to access the interactive menu that will allow you to select the appropriate drive from which to restore.
- If you wish to restore your Windows partition, you cannot boot into that copy of Windows to perform the restore. You must instead run Image for DOS, and restore it from there.

Restoring with Image for Windows

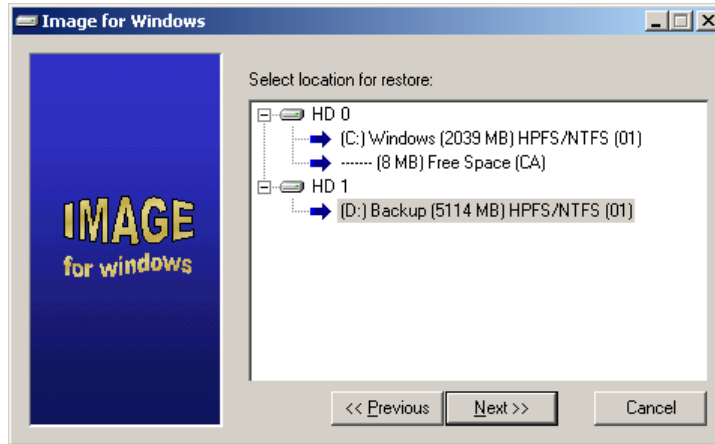
1. Run Image for Windows.
2. Make sure the **Restore** option is selected, and then click Next.



3. Select the source of the backup, before clicking Next to proceed:
 - Select File if you are restoring from backup file(s) that have previously been saved to a folder on a hard drive which has a drive letter assigned to it by Windows.
 - You can use the Browse button to navigate to the desired location, or manually enter the desired path and file name. You may specify UNC paths.
 - Select a listed CD or DVD drive if you will be restoring from a backup that had been previously saved to a CD or DVD disc.
 - Select a HD entry if you wish to restore from a backup that exists on a hard drive that is listed there, but has not been assigned a drive letter by Windows.



- Select the destination to restore the partition to, and then click Next.



- Select the desired options for your restore.

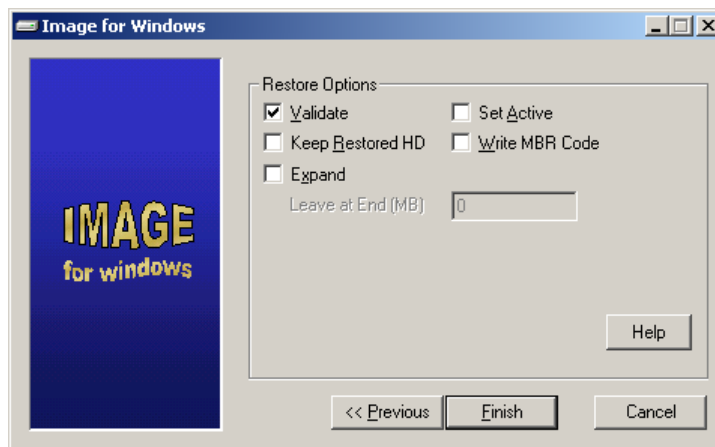
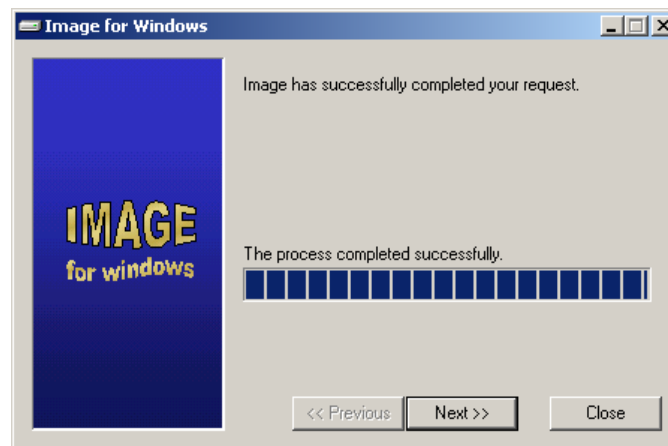


Image for Windows Restore Settings	
Validate	This setting tells Image for Windows to perform internal consistency checks on the backup file(s), prior to the restore operation. Enabling this option increases the overall processing time, but can help ensure that the restore will be reliable. The validation process can be cancelled while it is being carried out.
Keep Restored HD	This setting allows you to restore a Linux partition without changing the hard drive reference.
Expand	This setting applies only if you are restoring to a partition or free space entry that is larger than the source partition. If that is the case, this setting will instruct Image for Windows to <i>attempt to</i> increase the size of the restored partition to fill the size of the destination partition or free space entry (less the space indicated by the Leave at End (MB) setting, if any). The resulting sizes may not exactly reflect the value entered here. Also, please note that Windows 95/Me do not support FAT16 partitions over 2-GB in size.
Leave at End (MB)	This value only applies if the Expand setting is enabled, and instructs Image for Windows to leave the specified amount of free space, in MB, at the end of the restored partition, after expansion.
Set Active	If this setting is enabled, Image for Windows will set the restored partition active after the restore operation completes.
Write MBR Code	If this setting is enabled, Image for Windows will write a standard MBR after the restore operation completes (this is similar to FDISK /MBR).

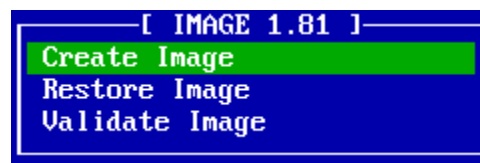
6. Click **Finish**. The restore operation begins.
 - If the selected destination for restore is a free space entry, the restore operation will begin immediately.
 - If the selected destination for restore is an existing partition, you will first be warned that the existing data will be overwritten, and will be asked to confirm before proceeding.
 - Once the restore process completes, reboot the computer if you are prompted to do so.
 - **Note:** If you do not reboot when asked, the operating system will think the partition and file system is as it was before the restore. This could cause data corruption. You can override the reboot prompt by using the `/RN` switch during a command line restore, but only do this if you are an advanced user, and understand the potential ramifications of not rebooting.



Restoring with Image for DOS

Note: You may use the Esc key to undo menu selections, and move back to the previous menu.

1. Run Image for DOS, as explained on page 14. The main Image for DOS window appears, as shown below.



2. Use the arrow keys to select the “Restore Image” menu item, and press Enter. The “Restore From” window appears, as shown below.



3. Select the source location of the backup file, before pressing Enter to proceed:
 - Select File if you would like to restore from a backup stored in a folder on a hard drive which has a drive letter assigned to it by DOS. The File option must be used when restoring images from a mapped network drive.

- You may indirectly access drives using UNC paths, if you first map the drive using the “net use x: \\server\share” command. Then, you would simply specify the path as usual (e.g. “x:\folder\file”, where “x:” is the mapped drive).
 - Select the CD/DVD option if you would like to restore from a backup on CD or DVD disc.
 - Select the Partition option if you would like to restore from a backup on a partition that has not been assigned a drive letter by DOS. The Partition option is generally required, for example, when using Image for DOS to restore images stored on NTFS partitions.
 - If you are restoring from a directory other than root, specify the path using the format “\folder1\folder2\filename”. Do not supply a drive letter, or a file extension.
4. The screen that appears next depends on what “Restore From” option you selected above:

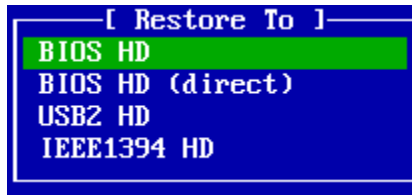
- If you selected the File option, navigate to and/or select the desired backup file, noting that the MS-DOS 8.3 naming convention is used.
- If you selected the CD/DVD option, you will be prompted to select an interface type:
 - **ATAPI:** Select this option if your CD/DVD drive is an ATAPI device, and none of the other selections apply. This is the most common option.
 - **ASPI:** Select this option if your CD/DVD drive will be accessed using an ASPI layer. (You must supply the ASPI driver for this option to work.)
 - **USB2:** Select this option if your CD/DVD drive is attached to a USB 2 controller.
 - If your USB device does not appear at first, please try pressing the Esc key, waiting a few seconds, and selecting the “USB2 HD” option again.
 - **IEEE1394:** Select this option if your CD/DVD drive is attached to an IEEE 1394 controller.

Once you select a CD/DVD interface option, you will then have to select the specific drive from which to restore. Then you will be prompted to insert the first disc of the backup.

- If you selected the Partition option, you will be prompted with the following “Restore From” options, which ask you to select the access method you wish to use for the source hard drive:
 - **BIOS HD --** Locates and accesses drives using the system BIOS. Please note that any problems or limitations inherent to the system BIOS will apply.
 - **BIOS HD (direct) --** Attempts to locate the hard drive using the system BIOS, but then attempts to access it directly, bypassing the BIOS. This can sometimes be helpful in cases where performance with the “BIOS HD” option is very poor. In order to get the most out of this option when restoring an image, you should also select the “BIOS HD (direct)” option for the “Restore To” target as well. (This advice applies to step 5 below.)
 - **USB2 HD --** Examines the attached USB 2 controller, if any, for available high-speed hard drives.
 - If your USB device does not appear at first, please try pressing the Esc key, waiting a few seconds, and selecting the “USB2 HD” option again.
 - **IEEE1394 HD --** Examines the attached IEEE 1394 controller, if any, for available hard drives.

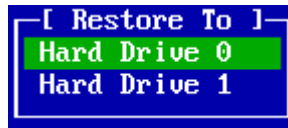
Once you make an access method selection, press Enter. Another “Restore From” window will appear, on which you need to select the source hard drive. Then, select the source partition on the “Hard Drive n” screen (where “n” is the applicable hard drive number). Finally, navigate to and/or select the desired backup file, noting that the MS-DOS 8.3 naming convention is used.

Whichever initial “Restore From” option you selected, you should now be at the “Restore To” screen.

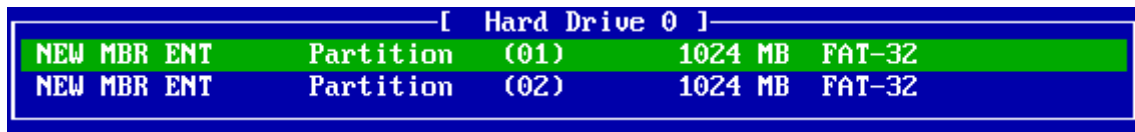


- On the “Restore To” screen, select the access method you wish to use for the destination hard drive:
 - BIOS HD** -- Locates and accesses drives using the system BIOS. Please note that any problems or limitations inherent to the system BIOS will apply.
 - BIOS HD (direct)** -- Attempts to locate the hard drive using the system BIOS, but then attempts to access it directly, bypassing the BIOS. This can sometimes be helpful in cases where performance with the "BIOS HD" option is very poor. In order to get the most out of this option when restoring an image, you should also select the “BIOS HD (direct)” option for the “Restore From” source as well. (This advice applies to step 4 above.)
 - USB2 HD** -- Examines the attached USB 2 controller, if any, for available high-speed hard drives.
 - If your USB device does not appear at first, please try pressing the Esc key, waiting a few seconds, and selecting the “USB2 HD” option again.
 - IEEE1394 HD** -- Examines the attached IEEE 1394 controller, if any, for available hard drives.

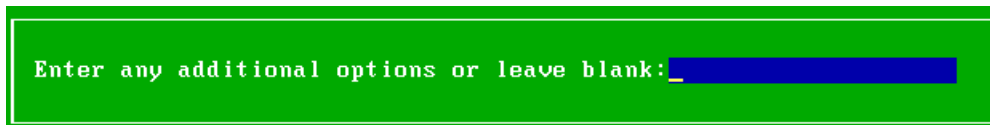
Once you make a selection, press Enter. The second “Restore To” screen appears.



- Select the hard drive that contains the partition or free space you wish to restore to, and press Enter. The “Hard Drive n” window appears (where “n” is the applicable hard drive number).



- Select the partition or free space entry you wish to restore to, and press Enter. You will be prompted to enter any additional options desired.



8. If you want to use any additional options for the restore, enter them as prompted. Otherwise, leave the text box empty and press Enter.
 - The options that can be used here are A, Z, J, T, and X[mb]. These options can be used in combination, and may be listed in any order. For example:
 JX10Z
 For further explanation of the A, Z, J, T, and X[mb] options, please refer to the table titled “Image for DOS Command Line Options: Restore” in the “Image for DOS Command Line Options” section below.
 - If the destination you selected in step 7 is a free space entry, the restore operation will begin immediately after you press Enter on the options window.
 - If the destination you selected in step 7 is an existing partition, you will first be warned that the existing data will be overwritten, and will be asked to confirm before proceeding. Then, you will be asked if you would like to validate the image before the restore operation.
 - If you choose to have the image validated, Image for DOS will perform internal consistency checks on the backup file(s), prior to the restore operation. Enabling this option increases the overall processing time, but can help ensure that the restore will be reliable.



The restore and validation operations may be interrupted at any point by pressing the Esc key. Image for DOS will ask you to confirm that you want to cancel before it interrupts the current operation.

When all operations are done, the completion screen will appear.



9. Once the restore process completes, reboot the computer if you are prompted to do so.
 - **Note:** If you do not reboot when asked, the operating system will think the partition and file system is as it was before the restore. This could cause data corruption. You can override the reboot prompt by using the /RN switch during a command line restore, but only do this if you are an advanced user, and understand the potential ramifications of not rebooting.

Validating Backups with Image for DOS/Windows

Image for DOS and Image for Windows each provide you with the option to validate backups at the time of their creation, and also before any backup is restored. However, you can also perform this validation at any time afterward, using the instructions provided below.

Validating a backup causes internal consistency checks to be performed on the backup file(s). This can help ensure that the backup will be reliable, should you ever need to restore from it.

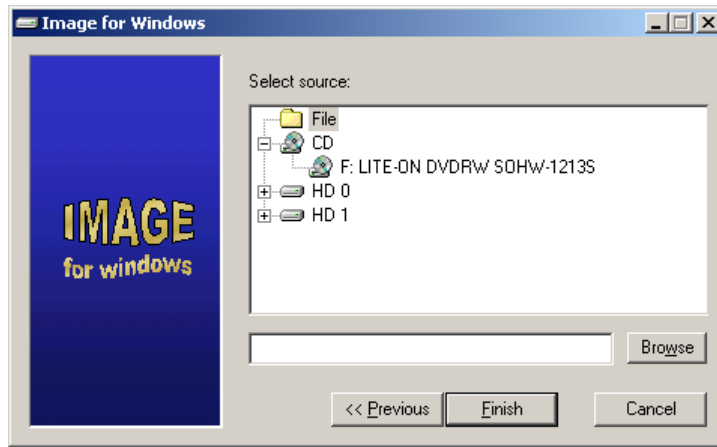
Note: A byte-for-byte validation can only be performed as part of a backup operation. That is, the Validate operation described here can only perform a standard validation, not a byte-for-byte validation.

Validating a Backup with Image for Windows

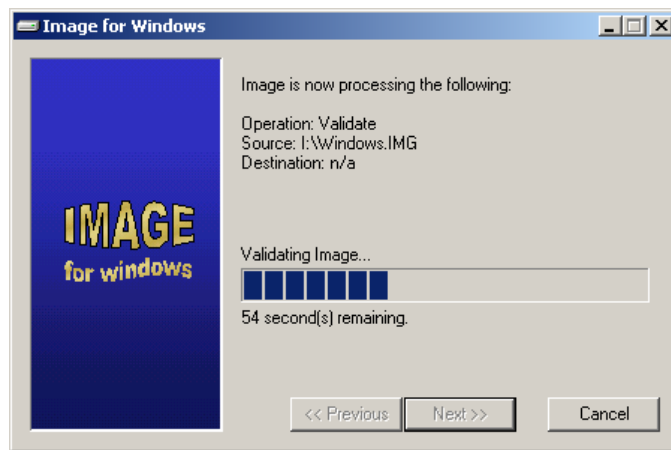
1. Run Image for Windows.
2. Make sure the **Validate** option is selected, and then click Next.



7. Select the location of the backup to be validated, before clicking Next to proceed:
 - Select File if you are validating a backup that has previously been saved to a folder on a hard drive which has a drive letter assigned to it by Windows.
 - You can use the Browse button to navigate to the desired location, or manually enter the desired path and file name. You may specify UNC paths.
 - Select a listed CD or DVD drive if you will be validating a backup that had been previously saved to a CD or DVD disc.
 - Select a HD entry if you wish to validate a backup that resides on a hard drive that is listed there, but has not been assigned a drive letter by Windows.



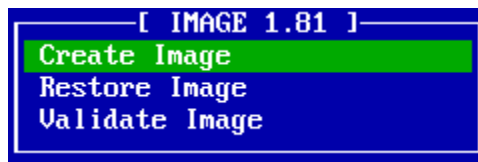
- Click Finish to begin the validation process. The validation process can be interrupted at any time by clicking the Cancel button.



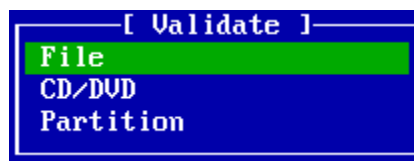
Validating a Backup with Image for DOS

Note: You may use the Esc key to undo menu selections, and move back to the previous menu.

- Run Image for DOS, as explained on page 14. The main Image for DOS window appears, as shown below.



- Use the arrow keys to select the "Validate Image" menu item, and press Enter. The "Validate" window appears, as shown below.



3. Select the location of the backup file you wish to validate, before pressing Enter to proceed:
 - Select File if you would like to validate a backup stored in a folder on a hard drive which has a drive letter assigned to it by DOS.
 - You may indirectly access drives using UNC paths, if you first map the drive using the “net use x: \\server\share” command.
 - Select the CD/DVD option if you would like to validate a backup on CD or DVD disc.
 - Select the Partition option if you would like to validate a backup on a partition that has not been assigned a drive letter by DOS. The Partition option is generally required, for example, when using Image for DOS to validate images stored on NTFS partitions.

4. The screen that appears next depends on what “Validate” option you selected above:
 - If you selected the File option, navigate to and/or select the desired backup file, noting that the MS-DOS 8.3 naming convention is used.
 - If you selected the CD/DVD option, you will be prompted to select an interface type:
 - **ATAPI:** Select this option if your CD/DVD drive is an ATAPI device, and none of the other selections apply. This is the most common option.
 - **ASPI:** Select this option if your CD/DVD drive will be accessed using an ASPI layer. (You must supply the ASPI driver for this option to work.)
 - **USB2:** Select this option if your CD/DVD drive is attached to a USB 2 controller.
 - If your USB device does not appear at first, please try pressing the Esc key, waiting a few seconds, and selecting the “USB2 HD” option again.
 - **IEEE1394:** Select this option if your CD/DVD drive is attached to an IEEE 1394 controller.

Once you select a CD/DVD interface option, you will have to select the specific drive where the backup is located. Then you will be prompted to insert the first disc of the backup.

- If you selected the Partition option, you will be prompted with the following “Validate” options, which ask you to select the access method you wish to use for the hard drive that contains the backup to be validated:
 - **BIOS HD** -- Locates and accesses drives using the system BIOS. Please note that any problems or limitations inherent to the system BIOS will apply.
 - **BIOS HD (direct)** -- Attempts to locate the hard drive using the system BIOS, but then attempts to access it directly, bypassing the BIOS. This can sometimes be helpful in cases where performance with the "BIOS HD" option is very poor.
 - **USB2 HD** -- Examines the attached USB 2 controller, if any, for available high-speed hard drives.
 - If your USB device does not appear at first, please try pressing the Esc key, waiting a few seconds, and selecting the “USB2 HD” option again.
 - **IEEE1394 HD** -- Examines the attached IEEE 1394 controller, if any, for available hard drives.

Once you make an access method selection, press Enter. Another “Validate” window will appear, on which you need to select the hard drive containing the backup to be validated. Then, select the appropriate partition on the “Hard Drive n” screen (where “n” is the applicable hard drive number). Finally, navigate to and/or select the desired backup file, noting that the MS-DOS 8.3 naming convention is used.

Whichever location you select above, once you point Image for DOS to the backup file to be validated, the validation process begins automatically. The process may be cancelled at any time by pressing the Esc key. (Image for DOS will confirm before canceling.)

Deploying Your Image

Deploying an image means to restore it to a number of computers in an organization. Therefore, the information in this section does not apply to most home users.

Image does not change the SID of Windows NT/2000/XP/2003 systems. If you are using Image for deployment purposes and want to change the SID for WinNT/2K you should use the MS sysprep utility or you can download a free utility named NewSID,

You may want to set up the base machine so that the last partition ends at one track less than the actual end of the hard drive (around 8 MB less) to leave room for different brands or models of the same size hard drive.

You may also want to investigate the free ImageAll utility available from the [TeraByte Unlimited web site](#).

See the following for more information on how to prepare for deployment:

Windows XP:

How to Prepare Images for Disk Duplication with Sysprep

<http://www.microsoft.com/WINDOWSXSP/pro/using/itpro/deploying/duplication.asp>

Windows XP Professional How-to Articles for IT Pros

<http://www.microsoft.com/windowsxp/pro/using/itpro/default.asp>

Windows 2000:

Download for the Microsoft Windows 2000 Sysprep Tool

<http://www.microsoft.com/windows2000/downloads/tools/default.asp>

Deploying MS Windows 2000 Professional and MS Office 2000 Using Sysprep

<http://www.microsoft.com/technet/prodtechnol/windows2000pro/deploy/depopt/sysprep.mspix>

Using Sysprep to Duplicate Disks

http://www.microsoft.com/WINDOWS2000/techinfo/reskit/en/Deploy/dgcb_ins_izyl.htm

Windows NT:

Windows NT Workstation Deployment

<http://www.microsoft.com/networkstation/technicalresources/deployment/default.asp>

Running Image for DOS/Windows from the Command Line

You can run both Image for DOS (`IMAGE.EXE`) and Image for Windows (`IMAGEW.EXE`) from the command line. Be sure to separate the command line options with spaces, and enter in the order shown in the following examples. Use the `/?` command line parameter for additional command line options not explained in the following section.

Advanced Configuration

Image for DOS and Image for Windows offer a number of advanced configuration options. These options may be specified in a user-created `IFD.INI` or `IFW.INI` file, or using environment variables, specified on the command line or in a batch file. Some options may be specified using either method.

Please note that if a particular setting is specified in both the INI file and in an environment variable, the latter setting specified in the environment variable will take precedence.

Further explanation of the INI file format, and the use of environment variables, is provided below the following table of configuration options.

Option Name	Option Description	IFD.INI Examples	IFW.INI Examples	IFD Environment Variable	IFW Environment Variable
ATA	Image for DOS supports this option for backward compatibility. When enabled, It is equivalent to using the 'A' device modifier on the command line. Image for Windows supports this option for creating a bootable CD/DVD disc that will cause Image for DOS to attempt directly accessing the IDE hard drive instead of using the system BIOS during a restore operation carried out after booting the disc.	ATA=0 ATA=1 (No other values are valid)	ATA=0 ATA=1 (No other values are valid)	SET IFD=ATA	SET IFW=ATA
CDCMZ	If you experience errors or problems when a CD is being closed, then you may need to use this option.	CDCMZ=0 CDCMZ=1 (No other values are valid)	CDCMZ=0 CDCMZ=1 (No other values are valid)	SET IFD=CDCMZ	SET IFW=CDCMZ
CDRS	Sets the CD read speed. For example: <code>CDRS : 8</code> sets the read speed to 8X. These speeds are CD-based; multiply by 8 to approximate DVD speeds (e.g. to read a DVD disc at 2X, use <code>CDRS : 16</code>).	CDRS=4 CDRS=8	CDRS=4 CDRS=8	SET IFD=CDRS : 8	SET IFW=CDRS : 8
CDWS	Sets the CD write speed. For example: <code>CDWS : 8</code> sets the write speed to 8X. These speeds are CD-based; multiply by 8 to approximate DVD speeds (e.g. to burn a DVD disc at 1X, use <code>CDWS : 8</code>). Note: If you are having problems burning a reliable CD/DVD, you may need to slow the write speed down using this option.	CDWS=4 CDWS=8	CDWS=4 CDWS=8	SET IFD=CDWS : 4	SET IFW=CDWS : 4
CONSOLE	Disables the Image for DOS graphical interface, and forces text-only mode. This option is only valid when Image for DOS is run from the command line, rather than interactively.	CONSOLE=0 CONSOLE=1 (No other values are valid)	N/A	SET IFD=CONSOLE	N/A

Option Name	Option Description	IFD.INI Examples	IFW.INI Examples	IFD Environment Variable	IFW Environment Variable
IAR	<p>Image Auto Response value. Set this to Y or N to auto respond to 'Y'es or 'N'o prompts and error messages. You can use errorlevel in a batch file to determine if the operation was successful or not.</p> <p>To respond to the "Unable to obtain a lock -- Abort/Ignore/Retry" message, set the second character of the IAR option to either R, A, or I. For example, IAR=YI (if using the INI file) or IAR:YI (if using environment variables).</p> <p>Note: If you use the "R" setting, the program will appear to be imaging without making progress while it tries to obtain a lock. You will need to click Cancel to stop it. If you would like to only respond to the lock message, set the first character of IAR to something other than Y or N (for example, IAR:x). You can use errorlevel in a batch file to determine if the operation was successful or not.</p>	<p>IAR=Y</p> <p>IAR=YA</p>	<p>IAR=Y</p> <p>IAR=YI</p>	<p>SET IFD=IAR:Y</p>	<p>SET IFW=IAR:Y</p>
IBXT	<p>When using the Burn Extra Track option, you will not be prompted for the last CD during a restore. This option may not work with all CD or DVD drives.</p>	<p>IBXT=0</p> <p>IBXT=1</p> <p>(No other values are valid)</p>	<p>IBXT=0</p> <p>IBXT=1</p> <p>(No other values are valid)</p>	<p>SET IFD=IBXT</p>	<p>SET IFW=IBXT</p>
IGNVLAB	<p>Ignores the use of volume labels. This can be useful when using ImageAll with an EMBR where you want the MPT entry names to stay the same.</p>	<p>IGNVLAB=0</p> <p>IGNVLAB=1</p> <p>(No other values are valid)</p>	<p>N/A</p> <p>(Setting is available through the IFW interface)</p>	<p>SET IFD=IGNVLAB</p>	<p>N/A</p> <p>(Setting is available through the IFW interface)</p>
IMSG	<p>The contents of this variable are displayed below the progress bar during the image or restore process. The message must be less than 80 characters.</p>	<p>N/A</p>	<p>N/A</p>	<p>SET IMSG=Creating the image...</p>	<p>N/A</p>
IOBS	<p>If your network performance is slow due to bugs or compatibility issues with the DOS NIC drivers, set this option to determine if it will solve your performance issues. Set the value to A to automatically determine the best value or to 1, 2 or 3. For example: IOBS=A (if using the INI file) or IOBS:A (if using environment variables).</p>	<p>IOBS=A</p> <p>IOBS=1</p>	<p>N/A</p>	<p>SET IFD=IOBS:A</p> <p>SET IFD=IOBS:1</p>	<p>N/A</p>
SEQVOLID	<p>This option only applies to volumes within an extended partition. When enabled, the SEQVOLID option allows you to specify the volume to be backed up to—or restored over—using sequence numbers, rather than the actual volume ID. The sequence numbers must be specified in hexadecimal form, and are determined by the order of the volumes within the extended partition, beginning at 1.</p> <p>To determine what volume ID to use with this option, first enable the option, and then either: (1) Use the interactive method as described under the section of this manual describing command line usage (this applies to IFD and IFW); or (2) If using IFD, run the command line:</p> <p>IMAGE /Ln -</p> <p>Where n is the applicable hard drive number.</p>	<p>SEQVOLID=0</p> <p>SEQVOLID=1</p> <p>(No other values are valid)</p>	<p>SEQVOLID=0</p> <p>SEQVOLID=1</p> <p>(No other values are valid)</p>	<p>SET IFD=SEQVOLID</p>	<p>SET IFW=SEQVOLID</p>

TZ	This option sets the time zone to be used by Image for DOS. When you are saving images to NTFS partitions or CD/DVD discs, using the correct time zone will ensure that the date/time stamps of the image files will be correct when they are viewed within Windows. Please refer to http://terabyteunlimited.com/kb/article.php?id=260 for more information.	TZ=AAA[+/-]HBBB	N/A	SET TZ=AAA[+/-]HBBB	N/A
UHCI	Enables supports for most built-in USB 1.1 controllers (typically found on older computers).	UHCI=0 UHCI=1 (No other values are valid)	N/A	SET IFD=UHCI	N/A
USBLIO	Enable this option if you are experiencing lock-ups when performing backup or restore operations to or from a USB 2.0 drive.	USBLIO=0 USBLIO=1 (No other values are valid)	N/A	SET IFD=USBLIO	N/A

Image for Windows INI File

In order to apply settings to Image for Windows using the INI file, you must create a text file named `IFW.INI`, using a text editor such as Notepad. Image for Windows will look for `IFW.INI` by examining the current directory, the Windows directory, and the system/user path (in that order). Usually, the current directory will be the same path where `IMAGEW.EXE` is located.

All settings specified in `IFW.INI` must go in a section titled `[options]`. Please refer to the example `IFW.INI` content provided below:

```
[options]
ATA=1
CDRS=32
```

Image for DOS INI File

In order to apply settings to Image for DOS using the INI file, you must create a text file named `IFD.INI`, using a text editor such as Notepad. Image for DOS will look for `IFD.INI` in the current directory only.

Settings specified in `IFD.INI` do not need to be placed under a section name. Please refer to the example `IFD.INI` content provided below.

```
ATA=1
CDRS=16
```

Image for Windows Environment Variables

Image for Windows makes use of environment variables with the command line interface only. That is, if you do not also use command line parameters when invoking `IMAGEW.EXE`, the environment variables will be ignored.

The format for Image for Windows environment variables is:

```
SET IFW=option1;option2:value;option3 ...
```

As shown above, the `SET` command is used to establish Image for Windows environment variables. An example of batch script Image for Windows invocation from Windows NT/2000/XP/2003 is as follows:

```
setlocal
set IFW=ATA;CDWS:2
start "" /wait "<path>\imagew.exe" /c00x11 /cd0
endlocal
```

For Windows 95/98/Me, you would use this batch file content instead, which is functionally equivalent to the example above:

```
set IFW=ATA;CDWS:2
start /wait "<path>\imagew.exe" /c00x11 /cd0
set IFW=
```

In each case, this would backup partition ID 0x11 on hard drive 0 (`/c00x11`), and save the image to the CD/DVD drive number 0 (`/cd0`). It would also enable the `ATA` option for any future restores carried out after booting with the CD/DVD created, and set the CD/DVD write speed (`CDWS`) to 2X (`CDWS:2`). (Command line options are explained below.)

Image for DOS Environment Variables

The format for Image for DOS environment variables is:

```
SET IFD=option1;option2:value;option3 ...
```

As shown above, the `SET` command is used to establish Image for DOS environment variables. An example of batch script Image for DOS invocation is as follows:

```
set IFD=IBXT;CDWS:4
image.exe /c20x11 /cd1
set IFD=
```

This would backup partition ID 0x11 on hard drive 2 (`/c20x11`), and save the image to the CD/DVD drive number 1 (`/cd1`). It would also enable the “burn extra track” option (`IBXT`), and set the CD/DVD write speed (`CDWS`) to 4X (`CDWS:4`). (Command line options are explained below.)

Display a List of Variables

At the command line, enter the `set` command with no parameters:

```
set
```

Remove a Variable

At the command line, enter the `set` command with no value. The following example removes “varname” from the environment:

```
set varname=
```


Image for DOS/Windows Command Line Options

Image for Windows Command Line Options

All available command line options can be viewed by running `IMAGEW.EXE` followed by the `/?` parameter, as follows:

```
imagew.exe /?
```

If you will be using a batch file, you should start the process using the `start` command:

```
start /wait "<path>\imagew.exe" [options] (Windows 9x/Me)
```

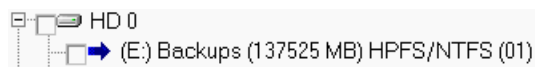
```
start "" /wait "<path>\imagew.exe" [options] (Windows NT/2000/XP/2003)
```

To run the program as a different user under Windows 2000/XP/2003, use the `runas` command:

```
runas /user:Administrator "<path>\imagew.exe" [options]
```

You can also use the Task Scheduler, the Windows service that schedules tasks. With Windows NT/2000/XP/2003, you may want to use something like `SRVANY` (included with the NT resource kit) and run it as a service under an appropriate profile.

When running Image for Windows from the command line, you may need to include references to hard drive numbers, and/or partition IDs. To determine the correct hard drive number or partition ID, run Image for Windows, select the Backup option, and then click Next. Image for Windows will then show a window that lists all available hard drives and partitions. The hard drive number will appear in the format "HD n" (e.g. "HD 0" or "HD 1"). The partition ID is shown in parenthesis on the right side of each partition description, and may consist of either two or four characters. The following image depicts "HD 0" and partition ID 01:



Note: Under certain configurations, hard drive numbers may be different in Windows than they are in DOS or other environments.

Image for Windows command line options are detailed in the table that follows.

Image for Windows Command Line Options: Backup

IMAGIEW /Chp[*[V|VB][J][R][W]*] [/U] /CDn|d:\file.img|hp:\file.img[;s]

Option	Explanation	
Required Parameters		
/Chp	/Chp	h is source hard drive number (0 through 9) p is source partition ID
/CDn		Save to CD/DVD drive "n"
d:<path>\<file>		Save to drive letter "d"
hp:<path>\<file>		Save to destination hard drive number "h" and partition ID "p"
Optional Parameters		
/U		No compression when creating image
V		Validate the image after creating
VB		Validate the image byte-for byte after creating
J		Do not eject the CD/DVD disc when the backup is complete (Note: Under Windows NT/2000/XP/2003, the drive tray will open when the backup begins, but will close automatically)
R		Perform per-disc validation (only applicable when saving to CD/DVD)
W		Use raw mode (backup all sectors, rather than just used sectors)
;[max file size]		Added to end of <path>\<file> to specify max backup file size:
	0	Maximum backup file size 2.0 GB (the default if omitted)
	1	Maximum backup file size 698 MB
	2	Maximum backup file size 648 MB
	Msize	Custom maximum backup file size: size MB (2047 Max)
Usage Examples		
<p>imagew.exe /C20x4VB /U E:\BACKUPS\WINDOWS;1 Backs up hard drive number 2, partition ID 0x4 (/C20x4VB) Saves to drive letter E:, under path and file name "BACKUPS\WINDOWS" (E:\BACKUPS\WINDOWS;1) Performs byte-for-byte validation (/C20x4VB) Uses no compression (/U) Maximum file size will be 698 MB (E:\BACKUPS\WINDOWS;1)</p>		
<p>imagew.exe /C10x5V /CD1 Backs up hard drive number 1, partition ID 0x5 (/C10x5V) Saves to CD/DVD drive number 1 (/CD1) Performs standard validation (/C10x5V) Uses compression (the default) Maximum file size will be determined by destination CD/DVD media</p>		
<p>imagew.exe /C00x1JR /CD2 Backs up hard drive number 0, partition ID 0x1 (/C00x1JR) Saves to CD/DVD drive number 2 (/CD2) Will not eject the CD/DVD disc when the backup is complete (/C00x1JR) Performs per-disc validation (/C00x1JR) Uses compression (the default) Maximum file size will be determined by destination CD/DVD media</p>		
<p>imagew.exe /C00x1 10x1:\DATA01\BACKUP Backs up hard drive number 0, partition ID 0x1 (/C00x1) Saves to hard drive number 1, partition ID 0x1, and path/file name "DATA01\BACKUP" (10x1:\DATA01\BACKUP) Performs no validation (the default) Uses compression (the default) Maximum file size will be 2.0 GB (the default)</p>		

Additional Notes on Image for Windows Command Line Backups

- For most users, the partition ID will be a number from 1 through 4. For partition IDs of 9 or below, a single digit may be used in place of hexadecimal notation (e.g. 1 is equivalent to 0x1, and 5 is equivalent to 0x5).
- Volumes will be a number formatted as 0xPVV where P is the extended partition and VV is the volume number in hexadecimal from 01 to FF.
- If you are not sure what the partition or volume ID is, run Image for Windows without any parameters, choose the Backup option, and click Next. The screen that lists the partitions and volumes also will display the ID in parentheses as a hexadecimal number. You should prefix that number with a 0x on the command line, as shown in the examples above.
- Per-disc validation is only applicable when saving images to a CD or DVD drive. This option ensures that discs are readable after being written to, and verifies that the data on the disc appears to be the same as the data that was sent to the drive. Per-disc validation has the ability to detect media errors that may have occurred during the disc writing process. If an error is detected, you will be prompted to redo the failed disc. (Without this option enabled, you will only be notified of errors after the backup process is complete.)

Creating a Bootable CD/DVD Restore Disc

As long as the file `CDBOOT.F35` is in the same directory as `IMAGEW.EXE`, a bootable CD/DVD will be created when burning directly to a CD/DVD drive. However, the `CDBOOT.F35` file will only be able to restore from an ATAPI CD/DVD drive on one of the IDE controllers. If you would like to restore from another device, you will need to create your own diskette image with the appropriate ASPI drivers and `AUTOEXEC.BAT` file to execute the image restore.

- This only applies when booting the CD/DVD created with `CDBOOT.F35`. You will be able to restore from other CD/DVD drives under Windows.

Image for Windows Command Line Options: Restore

IMAGEW /R[[hd][id][J][N][T][V][A][X|Xmb][Z][M]] [/O|/C|/CR]
/CDn[file]|d:\file.img|hp:\file.img

Option	Explanation
Required Parameters	
/R	Indicates that a restore operation is to be performed
/CDn[file]	Restore from CD/DVD drive "n" (specifying [file] is optional)
d:<path>\<file>	Restore from drive letter "d"
hp:<path>\<file>	Restore from source hard drive number "h" and partition ID "p"
Optional Parameters	
[hd]	Destination hard drive number (0 through 9)
[id]	Partition ID that will be overwritten by the restore <ul style="list-style-type: none"> o Hex notation (e.g. 0x6A) may be used if the partition ID (in hex) does not conflict with recognized command line options o Decimal notation may be used in all cases o If [id] is used, [hd] must also be present
/O	Overwrite existing data without warning (advanced users only) Cannot be used with /C or /CR options
/C	Clear MBR and EMBR before restore (advanced users only) Cannot be used with /O option
/CR	Clear MBR and EMBR, and restore NT signature (advanced users only) Cannot be used with /O option
J	Do not eject the CD/DVD disc when the restore is complete (Note: Under Windows NT/2000/XP/2003, the drive tray will open when the restore begins, but will close automatically)
N	Suppress prompt to reboot after restore (advanced users only)
T	Write standard MBR after restore (similar to FDISK /MBR)
V	Validate the image before restoring
A	Set the restored partition active
X	Expand the restored partition to fill leftover free space, if any
Xmb	Expand the restored partition to fill leftover free space, if any, minus the number of megabytes specified by "mb"
Z	Restore a Linux partition without changing the hard drive reference.
M	Restore to the first block of free space on the destination drive that is large enough to accommodate the restored partition

Usage Examples

imagew.exe /R00x6AVAX "D:\System Backups\Monthly01"

Restores to destination hard drive number 0 (/R**00**x6AVAX)

Restores over the partition with ID 0x6A (/R**00x6A**VAX)

- o Converting the partition ID 0x6A to decimal notation, 106, would also work (/R**0106**VAX)

Restores from backup source "D:\System Backups\Monthly01" (quotes required for long file name)

Provides overwrite confirmation (the default)

Will not suppress reboot prompt (the default)

Will validate the backup before performing the restore (/R00x6**V**AX)

Will not clear the MBR, EMBR, or NT signature (the default)

Will set the restored partition active (/R00x6AV**A**X)

Will expand the restored partition to fill leftover free space, if any (/R00x6AV**A**X)

imagew.exe /R /O /CD2backup

Restores over the same hard drive and partition that was originally backed up (because [hd] and [hd][id] options are not used)

Restores from CD/DVD drive number 2 (/CD**2**backup)

Restores the file named "backup.img" (/CD**2**backup) on CD/DVD drive number 2

Does not provide overwrite confirmation (**/O**)

Will not suppress reboot prompt (the default)

Will not validate the backup before performing the restore (the default)

Will not clear the MBR, EMBR, or NT signature (the default)

Will not set the restored partition active (the default)

Will not expand the restored partition to fill leftover free space, even if present (the default)

imagew.exe /R1NV 10x1:\BACKUPS\MARCH

Restores to destination hard drive number 1 (/R1NV)

Restores from hard drive number 1, partition ID 0x1, and path/file name "BACKUPS\MARCH" (10x1:\BACKUPS\MARCH)

Provides overwrite confirmation (the default)

Will suppress reboot prompt, even if reboot is required (/R1NV)

Will validate the backup before performing the restore (/R1NV)

Will not clear the MBR, EMBR, or NT signature (the default)

Will not set the restored partition active (the default)

Will not expand the restored partition to fill leftover free space, even if present (the default)

Additional Notes on Image for Windows Command Line Restores

- The restored partition will go to the same hard drive number (unless overridden) and physical location on the drive as it was backed up from.
- If the source partition was a volume and there is now no extended partition at the original location, Image for Windows will attempt to create the original extended partition. If Image for Windows cannot create the extended partition, it will be restored as a primary partition.
- If the source partition was originally a primary partition, and an extended partition now encompasses that location, it will be restored as a volume.
- If an existing partition or volume occupies the same starting location as the partition to be restored, a warning message will be issued before overwriting that partition or volume. (Unless this warning message is suppressed, as described in the table above.)

Image for Windows Command Line Options: Validate

IMAGEW /V /CDn|d:\file.img|hp:\file.img

Validate Image	Option	Explanation
	Required Parameters	
	/V	Indicates that a validation operation is to be performed
	/CDn	Validate backup on CD/DVD drive "n"
	d:<path>\<file>	Validate backup on drive letter "d"
	hp:<path>\<file>	Validate backup on source hard drive number "h" and partition ID "p"
Usage Examples		
	imagew.exe /V "D:\System Backups\Monthly01"	
	Validates the backup file "D:\System Backups\Monthly01" (quotes required for long file name)	
	imagew.exe /V /CD1	
	Validates the backup mounted on CD/DVD drive number 1 (/CD1)	
	imagew.exe /V 20x3:\BKUP	
	Validates the backup file on hard drive number 2, partition ID 0x3, and path/file name "BKUP" (20x3:\BKUP)	

Image for DOS Command Line Options

All available command line options can be viewed by running `IMAGE.EXE` followed by the `/?` parameter, as follows:

```
image.exe /?
```

When running Image for DOS from the command line, you may need to include references to hard drive numbers, and/or partition IDs. To determine the correct hard drive number or partition ID, carry out steps 1 through 4 under the section titled **Backing Up with Image for DOS**, being sure to select the hard drive whose number and/or partition IDs you need to obtain. The hard drive number will then appear in the format “Hard Drive n” (e.g. “Hard Drive 0” or “Hard Drive 1”). The partition ID is shown in parenthesis in the middle of each partition description, and may consist of either two or four characters.

Note: Under certain configurations, hard drive numbers may be different in DOS than they are in Windows or other environments.

Image for DOS command line options are detailed in the table that follows.

Image for DOS Command Line Options: Backup		
IMAGE /C[F U A]hp[[V VB][J][R][W]] [/U] /CD[S]n d:\file.img hp:\file.img[;s]		
Option	Explanation	
Required Parameters		
/Chp	/Chp	h is source hard drive number (0 through 9) p is source partition ID
	/CFhp	Prefix “hp” with “F” if source is IEEE 1394 device
	/CUhp	Prefix “hp” with “U” if source is USB 2 device
	/CAhp	Prefix “hp” with “A” for direct hard drive access (equivalent to ATA environment variable and ATA=1 INI setting)
/CDn	/CDn	Save to CD/DVD drive number “n”
	/CDSn	Prefix “n” with “S” if destination CD/DVD uses ASPI driver
d:<path>\<file>	Save to drive letter “d”	
hp:\<path>\<file>	Save to destination hard drive number “h” and partition ID “p”	
Optional Parameters		
/U	No compression when creating image	
V	Validate the image after creating	
VB	Validate the image byte-for byte after creating	
J	Do not eject the CD/DVD disc when the backup is complete	
R	Perform per-disc validation (only applicable when saving to CD/DVD)	
W	Use raw mode (backup all sectors, rather than just used sectors)	
:[max file size]	Added to end of <path>\<file> to specify max backup file size:	
	0	Maximum backup file size 2.0 GB (the default if omitted)
	1	Maximum backup file size 698 MB
	2	Maximum backup file size 648 MB
Msize	Custom maximum backup file size: size MB (2047 Max)	
Usage Examples		
image.exe /C20x4VB /U E:\BACKUPS\WINDOWS;1 Backs up hard drive number 2, partition ID 0x4 (/C 20x4VB) Saves to drive letter E:, under path and file name “\BACKUPS\WINDOWS” (E:\BACKUPS\WINDOWS;1) Performs byte-for-byte validation (/C20x4 VB) Uses no compression (/U) Maximum file size will be 698 MB (E:\BACKUPS\WINDOWS;1)		

image.exe /C10x5V /CD1

Backs up hard drive number 1, partition ID 0x5 (/C10x5V)
Saves to CD/DVD drive number 1 (/CD1)
Performs standard validation (/C10x5V)
Uses maximum compression (the default)
Maximum file size will be determined by destination CD/DVD media

image.exe /C00x1JR /CD2

Backs up hard drive number 0, partition ID 0x1 (/C00x1JR)
Saves to CD/DVD drive number 2 (/CD2)
Will not eject the CD/DVD disc when the backup is complete (/C00x1JR)
Performs per-disc validation (/C00x1JR)
Uses compression (the default)
Maximum file size will be determined by destination CD/DVD media

image.exe /C00x1 10x1:\DATA01\BACKUP

Backs up hard drive number 0, partition ID 0x1 (/C00x1)
Saves to hard drive number 1, partition ID 0x1, and path/file name "\DATA01\BACKUP" (10x1:\DATA01\BACKUP)
Performs no validation (the default)
Uses maximum compression (the default)
Maximum file size will be 2.0 GB (the default)

Additional Notes on Image for DOS Command Line Backups

- For most users, the partition ID will be a number from 1 through 4. For partition IDs of 9 or below, a single digit may be used in place of hexadecimal notation (e.g. 1 is equivalent to 0x1, and 5 is equivalent to 0x5).
- Volumes will be a number formatted as 0xPVV where P is the extended partition and VV is the volume number in hexadecimal from 01 to FF.
- If you are not sure what the partition or volume ID is, run Image for DOS without any parameters, choose the Backup option, and click Next. The screen that lists the partitions and volumes also will display the ID in parentheses as a hexadecimal number. You should prefix that number with a 0x on the command line, as shown in the examples above.
- Per-disc validation is only applicable when saving images to a CD or DVD drive. This option ensures that discs are readable after being written to, and verifies that the data on the disc appears to be the same as the data that was sent to the drive. Per-disc validation has the ability to detect media errors that may have occurred during the disc writing process. If an error is detected, you will be prompted to redo the failed disc. (Without this option enabled, you will only be notified of errors after the backup process is complete.)

Creating a Bootable CD/DVD Restore Disc

As long as the file CDBOOT.F35 is in the current directory, a bootable CD/DVD will be created when burning directly to a CD/DVD drive. However, the CDBOOT.F35 file will only be able to restore from an ATAPI CD/DVD drive on one of the IDE controllers. If you would like to restore from another device, you will need to create your own diskette image with the appropriate ASPI drivers and AUTOEXEC.BAT file to execute the image restore.

Image for DOS Command Line Options: Restore

IMAGE /R[[F|U|A][hd][id][J][N][T][V][A][X|Xmb][Z][M]] [/O|/C|/CR]
/CD[S|F|U]n[file]|d:\file.img|hp:\file.img

Option	Explanation
Required Parameters	
/R	Indicates that a restore operation is to be performed
/CDn[file]	/CDn[file] Restore from CD/DVD drive “n” (specifying [file] is optional)
	/CDSn[file] Prefix n with S if destination CD/DVD uses ASPI driver
	/CDFn[file] Prefix n with F if source is IEEE 1394 device
	/CDUn[file] Prefix n with U if source is USB 2 device
d:<path>\<file>	Restore from drive letter “d”
hp:<path>\<file>	Restore from source hard drive number “h” and partition ID “p”
Optional Parameters	
[hd]	[hd] is hard drive number (0 through 9)
F[hd] U[hd] A[hd]	Prefix [hd] with F if target is IEEE 1394 device Prefix [hd] with U if target is USB 2 device Prefix [hd] with A for direct hard drive access (equivalent to ATA environment variable and ATA=1 INI setting)
[id]	Partition ID that will be overwritten by the restore <ul style="list-style-type: none"> o Hex notation may be used if the partition ID (in hex) does not conflict with recognized command line options o Decimal notation may be used in all cases o If [id] is used, [hd] must also be present
/O	Overwrite existing data without warning (advanced users only) Cannot be used with /C or /CR options
/C	Clear MBR and EMBR before restore (advanced users only) Cannot be used with /O option
/CR	Clear MBR and EMBR, and restore NT signature (advanced users only) Cannot be used with /O option
J	Do not eject the CD/DVD disc when the restore is complete (Note: Under Windows NT/2000/XP/2003, the drive tray will open when the restore begins, but will close automatically)
N	Suppress prompt to reboot after restore (advanced users only)
T	Write standard MBR after restore (similar to FDISK /MBR)
V	Validate the image before restoring
A	Set the restored partition active
X	Expand the restored partition to fill leftover free space, if any
Xmb	Expand the restored partition to fill leftover free space, if any, minus the number of megabytes specified by “mb”
Z	Restore a Linux partition without changing the hard drive reference.
M	Restore to the first block of free space on the destination drive that is large enough to accommodate the source partition

Usage Examples

image.exe /R04VAX d:\system~1\month1~1

Restores to destination hard drive number 0 (/R04VAX)

Restores over the partition with ID 4 (/R04VAX)

Restores from backup source d:\system~1\month1~1 (the MS-DOS 8.3 naming convention is used)

Provides overwrite confirmation (the default)

Will not suppress reboot prompt (the default)

Will validate the backup before performing the restore (/R04VAX)

Will not clear MBR or EMBR (the default)

Will set the restored partition active (/R04VAX)

Will expand the restored partition to fill leftover free space, if any (/R04VAX)

image.exe /R /O /CD2backup

Restores over the same hard drive and partition that was originally backed up (because [hd] and [hd][id] options are not used)
 Restores from CD/DVD drive number 2 (/CD2backup)
 Restores the file named "backup" (/CD2**backup**) on CD/DVD drive number 2
 Does not provide overwrite confirmation (/O)
 Will not suppress reboot prompt (the default)
 Will not validate the backup before performing the restore (the default)
 Will not clear MBR or EMBR (the default)
 Will not set the restored partition active (the default)
 Will not expand the restored partition to fill leftover free space, even if present (the default)

image.exe /R1NV 10x1:\BACKUPS\MARCH

Restores to destination hard drive number 1 (/R1NV)
 Restores from hard drive number 1, partition ID 0x1, and path/file name "BACKUPS\MARCH" (10x1:\BACKUPS\MARCH)
 Provides overwrite confirmation (the default)
 Will suppress reboot prompt, even if reboot is required (/R1NV)
 Will validate the backup before performing the restore (/R1NV)
 Will not clear MBR or EMBR (the default)
 Will not set the restored partition active (the default)
 Will not expand the restored partition to fill leftover free space, even if present (the default)

Additional Notes on Image for DOS Command Line Restores

- The restored partition will go to the same hard drive number (unless overridden) and physical location on the drive as it was backed up from.
- If the source partition was a volume and there is now no extended partition at the original location, Image for DOS will attempt to create the original extended partition. If Image for DOS cannot create the extended partition, it will be restored as a primary partition.
- If the source partition was originally a primary partition, and an extended partition now encompasses that location, it will be restored as a volume.
- If an existing partition or volume occupies the same starting location as the partition to be restored, a warning message will be issued before overwriting that partition or volume. (Unless this warning message is suppressed, as described in the table above.)

Image for DOS Command Line Options: Validate

IMAGE /V /CD[S|F|U]n|d:\file.img|hp:\file.img

	Option	Explanation	
Validate Image	/V	Indicates that a validation operation is to be performed	
	/CDn	/CDn	Validate backup on CD/DVD drive "n"
		/CDSn	Prefix n with S if source CD/DVD uses ASPI driver
		/CDFn	Prefix n with F if source is IEEE 1394 device
	d:<path>\<file> hp:<path>\<file>	/CDUn	Prefix n with U if source is USB 2 device
			Validate backup on drive letter "d" Validate backup on source hard drive number "h" and partition ID "p"
Usage Examples			
image.exe /V d:\system~1\month1~1 Validates the backup file d:\system~1\month1~1 (the MS-DOS 8.3 naming convention is used)			
Image.exe /V /CD1 Validates the backup mounted on CD/DVD drive number 1 (/CD1)			
Image.exe /V /CDF2 Validates the backup mounted on IEEE 1394 CD/DVD drive number 2 (/CDF2)			
Image.exe /V 20x3:\BKUP Validates the backup file on hard drive number 2, partition ID 0x3, and path/file name "BKUP" (20x3:\BKUP)			

Glossary

Hard Drive (HD, HDD)

A high-capacity, non-volatile, data storage device. Hard drives are typically installed inside a computer, out of sight.

Partition

A unique area of a hard drive that is allocated for use by a file system. A hard drive can contain many partitions.

File System

An organized structure that allows data to be stored and accessed by a file name. You can basically think of it as the filing system used by the operating system to store and retrieve your data. On a hard drive, the file system almost always resides in a partition.

Volume

Generally, this refers to any file system or device that is used to hold data, but here it also represents a specific partition that resides in an extended partition.

Extended Partition

A special type of partition that is divided in to one or more partitions called volumes.

Drive Letter

A single letter that represents a file system in Microsoft operating systems. Since a file system on a hard drive is almost always in a partition or volume, it also represents a partition or volume.

Logical Drive

A term used in Microsoft operating systems to describe the specific drive letters that point to volumes. In practical terms, it is the same thing as a drive letter.

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Shipping Address:			
		Primary OS:	
How did you learn about Image for Windows?			
Description	Unit Price	Qty	Extended Price
Image for Windows* *Image for DOS is included with your purchase	\$26.98		\$
Image Deployment License (25 Computers)	\$175.00		\$
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Sub-Total			\$
Shipping and Handling Fees for orders not sent TO YOU via e-mail add \$9.95			\$
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How did you learn about Image for DOS?			
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Image Deployment License (100 Computers)	\$377.00		\$
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