# So, You Want to Run DOS Contest Loggers on Your Shiny, New, Windows XP Computer!

I still use DOS logging programs for most of my Amateur Radio Contest Activities. I really like TR-Log for Single-Operator, Two Radio contests and CT for Field Day and at some Multi-Operator stations. These programs don't run very well under Windows, if at all. It's pretty easy to set up even a brand new computer with Windows XP to dual boot real MS-DOS and Windows XP. The same basic technique works for Linux, too! Unfortunately, it's very tricky and I haven't seen the entire procedure documented anywhere.

All you need to install DOS on your new Windows XP computer is access to a highspeed internet connection to download a few files and one program, a CD burner, and one or two blank CD's! Your computer must be able to boot from a CD drive...almost all modern computers can. A floppy disk drive and a blank floppy will make this easier. (I'll add the procedure for CD-only machines later).

I'll tell you how to do the installation and set up the dual boot in Chapter 1. Chapter 2 (to be written) will discuss how to set up your DOS environment, add serial ports to your computer, and use an external voice keyer with your new DOS installation. You will not have to reinstall Windows XP and you won't lose any of your data.

# FAQ (Frequently Asked Questions)

1. Why don't you just use the official Microsoft procedure for dual-booting Windows XP and DOS?

For the Microsoft procedure, see:

http://www.microsoft.com/windowsxp/using/setup/learnmore/multiboot.mspx

The Microsoft procedure works fine. However, it requires destroying the existing Windows XP installation, installing DOS, and then reinstalling Windows XP. The computers I am dealing with have Windows XP pre-installed and I am not willing to destroy the existing installation. My procedure allows adding DOS without affecting the Windows XP installation.

2. Why don't you just use a commercial package to re-partition the disk and dual boot?

I used to use Partition Magic for this. However, Partition Magic 8.02 did not successfully resized most of the NTFS partitions I tested it with so I sent it back. Also, Partition Magic's license agreement required buying a separate license for each computer I wanted to dual boot. The open source tools I am using, including ntfsresize, qtParted, and the GAG boot loader, are stable and widely used by people who want to dual-boot Linux and Windows XP and are available free.

I have no experience with other commercial packages.

3. How can I try this without having to download a large rescue CD image?

The procedure calls for downloading a free bootable Linux System Rescue CD. This is over 100 MegaBytes. It turns out that a group at www.linuxcd.org sells copies of the CD for under \$4.00 including shipping. You can order the CD from them if you would rather not mess with downloading it. There are similar resellers in Europe. You want the "System Rescue CD 0.2.15 i386."

4. The System Rescue CD uses Linux? Won't I have to install Linux on my hard disk too?

No. The System Rescue CD is a bootable CD. You just insert it in the CD-Drive and reboot. It runs strictly from the CD and memory and does not need the hard drive at all. You won't even know it's Linux...just type in "run\_qtparted" and go from there.

There is a whole family of what are called "Linux Live" CD's that run strictly from CD. They allow you to run Linux without touching the hard disk AT ALL in ANY WAY. BTW, you can do the same thing with DOS...run it without touching the hard drive at all. :-)

The only OS's the hard drive will contain are Windows XP and DOS.

5. My computer already dual boots Windows and another operating system (perhaps Windows XP and Windows 98). Should I use this procedure?

Probably not. If your computer is currently configured to dual boot and is meeting your needs, there is no advantage to re-partitioning your disk drive using this procedure. Also, DOS requires a PRIMARY disk partition. There can only be three or four of these on a disk. Laptops often have a "maintenance" partition as the first primary partition and WindowsXP as the second primary partition. If you have another operating system, you may not be able to create a primary partition for DOS.

# **Technical Notes about Re-partitioning Disk**

I know of only one way to re-size an NTFS disk partition. This is to use an open-source program called "ntfsresize." There is a commercial product I have used called "Partition Magic." Version 8.02 of this program DOES NOT work on the NTFS partitions I have tried. YMMV (Your Mileage May Vary).

The easiest way to run ntfsresize is actually from another program called qtparted. We are going to do this from a wonderful, free Linux CD called the System Rescue CD. Even if you don't know anything about Linux, you can use this CD and tool to shrink your existing NTFS partition, create a new FAT partition for DOS, and format the new partition. Note: Most desktop partitions delivered with Windows XP pre-installed have one NTFS partition which takes up the entire disk. Some desktop computers, and most laptop computers, have a small, often hidden, system partition on the disk before the

NTFS partition. Do NOT, under any circumstances, modify, format, resize, relabel, or otherwise modify that partition! Do not reformat or relabel the NTFS partition either!

NOTE: If you have a Sony Vaio laptop computer, the System Rescue CD doesn't work correctly. You can try a SimplyMEPIS live cd, which has the same programs on it. It is a larger download, however. Please contact me if you are willing to verify the procedure using a Sony Vaio laptop and SimplyMEPIS.

NOTE: If the System Rescue CD does not boot to a "root #" prompt, try entering "fb640 nodetect" at the "boot:" prompt. Please let me know whether this works for you!

# **Installing DOS for Dual-Booting**

# Overview

What you are going to do is re-partition the hard disk that has Windows XP installed on it. We're going to shrink the Windows XP part of the hard disk just a little bit. I can't imagine using even 500 MegaBytes for DOS. You will probably never notice that your Windows XP disk is 500 MegaBytes smaller. NOTE: This is tricky. You should DEFINITELY have a backup of the data on your computer BEFORE you perform this procedure. Your NTFS partition MUST be a primary partition, not part of an extended partition. We will confirm that this is the case using the System Rescue CD.

I am going to provide a very detailed procedure. However, if you are not comfortable with installing programs and rebooting your computer, you may want to get someone to help you with this.

You will have to burn "ISO" file images to a CD. There are various ways to do this.

# Downloading System Rescue CD

NOTE: If you don't wish to download and burn the System Rescue CD, you can order it for under \$4.00, including shipping, from <a href="http://www.linuxcd.org/">http://www.linuxcd.org/</a>. See "System Rescue CD ("System Rescue CD 0.2.15 i386). If you have the System Rescue CD, skip to "Resizing Your NTFS Partition."

Point your web browser at http://www.sysresccd.org and select "Download now (mirror list)" under the "Stable x86" entry.



Download from one of the mirrors. I selected "Aleron" in Virginia. Save the file systemrescuecd-x86-0.2.15.iso to your desktop. This file is a bit over 100 MegaBytes, so downloading may take a while.

Warning: Do NOT use a different Linux distribution that uses a version 2.6.X kernel unless you are sure that a known bug in Parted will not mess up your disk partition table! Use the System Rescue CD!

### **Burning the System Rescue CD**

### **CD Burning Software**

You may have CD creation software on your computer that will burn an ISO image to CD and create a bootable CD. For example, Easy CD Creator (Roxio) will do this. If not, you can download the "Power Toy" from the Web and use that to burn the CD.

#### Burning the System Rescue CD using Easy CD Creator (Roxio)

Thanks to Doug Freestone, VE5UF, we have a procedure to burn ISO images to a bootable CD using software that may be already installed on your computer.

Procedure to burn the Rescue CD using "Easy CD Creator-5" (now ROXIO)

Should be similar to subsequent versions Roxio-6 and -7

- 1. Insert a blank CD
- 2. Start the Project Selector and choose "Make a Data CD"
- 3. When the application starts, choose "Record CD from CD Image..." from the FILE menu
- 4. In the File selector window, choose "ISO image files" in the Files of Type: box and browse to where the downloaded rescueCD image was saved.

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5. Double-click the ISO image file and press Start Recording in the "ready-to-burn" dialog when it appears.

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#### Burning the System Rescue CD using the "Power Toy"

First, we need to download a CD image from the World Wide Web and create a bootable CD. To make the CD, we need a small utility program. The usual CD burning program provided with Windows XP won't create a bootable CD, it just copies files to the CD.

Let's download the ISO Recorder Power Toy for Windows XP first. To do that, we have to determine if SP2 (Service Pack 2) is installed on your Windows XP computer. Press the "Start" button on the lower left of your Windows XP screen and select "Control Panel." Double click on "Add or Remove Programs." This may be called "Add or Remov…" Scroll through the list. If SP2 is installed, you will see a bunch of entries like the ones show below.

🐻 Add or Re	move Programs		
	Currently installed programs:	Sort by: Name	*
C <u>h</u> ange or Remove	😽 Windows XP Hotfix (SP2) [See Q329048 for more information]		^
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1	🔀 Windows XP Hotfix (SP2) [See Q329390 for more information]		
<b>11</b>	🔀 Windows XP Hotfix (SP2) [See Q329834 for more information]		
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	🛃 Windows XP Hotfix (SP2) Q328310		
Add/Remove	🔀 Windows XP Hotfix (SP2) Q329170		
<u>Windows</u> Components	🔀 Windows XP Hotfix (SP2) Q329441		
	🔀 Windows XP Hotfix (SP2) Q331953		
	🚱 Windows XP Hotfix (SP2) Q810565		
Set Program	🔀 Windows XP Hotfix (SP2) Q810577		
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	🛃 Windows XP Hotfix (SP2) Q814033		
	🔀 Windows XP Hotfix (SP2) Q814995		
	🛃 Windows XP Hotfix (SP2) Q815021		
	🛃 Windows XP Hotfix (SP2) Q815485		
	🔀 Windows XP Hotfix (SP2) Q817606		*

#### Now, go the following web site: http://isorecorder.alexfeinman.com/beta.htm

If you have Service Pack 2 installed, you need to download the beta version (2) of the ISO Recorder Program. Click on "here is the current build" and save it to the desktop on your computer. If not, click on "use the original", scroll down to Download and click on "here." If you don't have Service Pack 2, just double click on the "ISO Recorder…" icon on the desktop and install the software. If you do have Service Pack 2, open or uncompress the ISO RecorderV2 zip file and double click on the V2 installer icon. The V2 installation starts out like this:

讨 ISO Recorder
Welcome to the ISO Recorder Setup Wizard
The installer will guide you through the steps required to install ISO Recorder on your computer.
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Cancel < Back Next >

Hit "Next," select "Everyone", hit "Next" and install the software. When the installation asks, select "Yes" and reboot your computer.

After the file has completed downloading, insert a blank CD-R disk into your CD burner, right click on the systemrescuecd-x86-0.2.15.iso file and select "Copy Image to CD."



Click "Next" in the CD Recording window. The ISO Recorder Power Toy will now write the system rescue CD iso file and create a bootable CD. Remove the CD and label it "systemrescuecd-x86-0.2.15."

# Resizing your NTFS Partition

Put the CD you just created and reboot your computer. If the System Rescue CD "boot splash" does not appear and Windows XP comes up instead, check your computer documentation for how to make your computer boot from CD.



Enter a carriage return at the boot prompt to boot the System Rescue CD. When it prompts you for a keyboard layout, hit the return key to select the default.

When the System Rescue CD completes booting, you will get a "root #" or "root … %" prompt.



Type in "run\_qtparted" at the prompt. Then type in "0" to autodetect your mouse.

You will see the main qtparted screen. This will show you your hard disk, called hda.

### Alternate Procedure using SimplyMEPIS

SimplyMEPIS is a much more capable Linux Live CD. It is about a 600MByte download, however. If you have a Sony Vaio laptop, this may work better than the System Rescue CD. Go to http://www.mrbass.org/linux/mepis/ and download <u>SimplyMEPIS-2004.04.iso</u>. Burn it to a CD and boot it. When you boot SimplyMEPIS, you will see a boot screen similar to that below. Make SURE that you select the 2.4.26 kernel option, NOT the default 2.6.7 kernel. There are other download sites if MrBass doesn't work. Go to <u>http://www.mepis.org</u> and select "download" to see a list.

Courtesy of OSDir.com GNU GRUB version 0.95 (638K lower / 522176K upper memory) PRIMARY BOOT - 1024x768, 2.6.7 kernel, us ALTERNATIVE BOOT - 1024x768, 2.4.26 kernel, us FAILSAFE BOOT - 1024x768, vesa, acpi=off, ide=nodma, 2.4.26 kernel, u→ Go to PRIMARY Boot Menu Go to ALTERNATIVE Boot Menu Aller au menu FR Zum DE menu Uai al Menu IT Uaya al Menu ES MEMTEST About starting SimplyMEPIS User License ↓ Use the  $\uparrow$  and  $\downarrow$  keys to select which entry is highlighted.

Use the  $\uparrow$  and  $\downarrow$  keys to select which entry is highlighted Press enter to boot the selected OS, 'e' to edit the commands before booting, or 'c' for a command-line.

The highlighted entry will be booted automatically in 29 seconds.



Welcome Bienvenue Willkommen Benvenuto Welcom Velkommen Bienvenida Bemvindo

NOTE: Use "ALTERNATE BOOT - 1024x768, 2.4.26 kernel, us!"

At the login prompt (below), enter username "root" and password "root". NOTE: You will not see 2.6.7...you will see 2.4.26!!!

	Courtesy of OSDir.com	Simp
demo toot	SimplyMEPIS 2004 (2.6.7)	IVMEPIS

When you log in, the desktop will actually be RED, not blue like in the second picture showing the qtParted menu.



When the desktop appears, go to the "K" button in the lower left and select "System->Filesystem->QTParted."



Proceed with repartitioning the disk.

# Repartitioning the Disk

NOTE: This procedure will work fine for other types of Windows partitions, including FAT32, used by older operating systems. For these, you can actually shrink the partition from the beginning and install DOS6.22 if you wish. NOTE: This technique has not been extensively tested on FAT32 partitions. If you have a FAT32 partition, first use the Windows XP utility "Disk Defragmenter" to defragment it. This is available under "Start->All Programs->Accessories->System Tools->Disk Defragmenter." This step is not necessary if you have an NTFS partition. Thanks to Paul Erickson, VA7NT, for verifying that this works!

NOTE: Ed Parish, K1EP, got the following error from QtParted: "Filesystem check failed..." If you get this error, it indicates that the NTFS partition has at least one error. You can fix this by booting Windows XP, bringing up a "Command Prompt" (Start->All Programs->Accessories->Comamnd Prompt" and entering "chkdsk /f c:" at the C:> prompt. You will have to reboot your computer.

Click on the Disks "/dev/hda" entry on the left. You will see the partition or partitions on the disk. Click on the "ntfs" partition...in my case, /dev/hda2. In my case, on this HP laptop, there is a small, special partition at the beginning of the drive and my NTFS

partition is /dev/hda2. On your computer, it may be /dev/hda1. It will be large (many GigaBytes) and of type NTFS for a Windows XP computer.

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		L	🏦	03	/dev/hda2	ntfs	Active	27.82GB	21.22GB	125.51 MB	27.95GB
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Status:	available.										
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QTParted :) by	Zanac (c) 2002-2003	[									

The below is qtParted on a desktop without a hidden partition. NOTE: I could have just created a partition in the 38Mbytes of "free" space on this drive. That would have been big enough. In this case, the NTFS partition is /dev/hda1.

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WARNING: This installation procedure assumes that your NTFS partition is a primary partition. That means that it has a number like this one which is at the first level of the disk. If your NTFS partition is a logical partition, which must be located inside an extended partition, I do not believe this procedure will work for you. The above screen shots show primary NTFS partition. The following screen shot shows an extended partition, partition 2, and several logical partitions (partitions 3-7). If your NTFS partition is configured in an extended partition, the new DOS installation will not boot. I do not know how to work around this problem.

It also assumes that there is an "available" primary partition. A disk can have three primary partitions and an extended partition, or four primary partitions. These are the ONLY possibilities. If you already have three primary partitions and an extended partition, this procedure will not work for you unless you delete one or more partitions! The disk below does not have any "room" for more primary partitions either, since /dev/hda2 is an extended partition and extended partitions have to be at the end of the disk. The below example is NOT the way a computer with pre-installed Windows XP looks, however!



Assuming you have your ntfs partition as a primary partition, the next step is to shrink it a little bit.

Select "Resize" from the Operations Menu or click on the double-headed arrow. Type "500" into the "Free Space After" box and make sure that the size is set to MB.

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Length sectors:	58605120	Free Spac	e <u>A</u> fter: 500				4B 💌		
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Next, click on the new free space entry and select "Create Partition". This is next to the "wrench" or available under the "Operations" menu.

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This needs to be a "Primary" partition of type FAT16. When you are done, qtparted should look something like the below. Recall, you may have /dev/hda1 as an NTFS partition and the new partition may be /dev/hda2.

**≜** MB

<u>S</u>ize:

502.03

This filesystem cannot be greater of 2.00GB

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Percent of unallocated space: 100 🚔

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🦾 🍪 /dev/sdb		-	02	/dev/hda-1	free		101.97MB	N/A	23.53MB	125.51 MB	
			<b>fi</b> 03	/dev/hda2	ntfs	Active	27.33GB	N/A	125.51 MB	27.45GB	
			<b>6</b> 04	/dev/hda3	fat16		494.19MB	N/A	27.45GB	27.94GB	
			05	/dev/hda-1	free	Hidden	7.84MB	N/A	27.94GB	27.95GB	
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Model:	TOSHIBA MK3018GAP										
Capacity (Mb):	28615.8	L									
Length sectors:	58605120										
Status:	available.										
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Now, you need to repartition the disk. You haven't actually changed anything on your disk yet. Select "Commit" under the "File" menu.

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🦾 🍪 /dev/sda		🚟 01	/dev/hda1	fat16		23.50MB	16.03MB	0.03MB	23.53MB
		02	/dev/hda-1	free		101.97MB	N/A	23.53MB	125.51 MB
		🏦 03	/dev/hda2	ntfs	Active	27.33GB	N/A	125.51 MB	27.45GB
		🚟 04	/dev/hda3	fat16		494.19MB	N/A	27.45GB	27.94GB
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····· Star /dev/sdb		Getting in	o apour pa	ar tition vaevvr	1082.			23.53MB	125.51MB
							N/A	125.51 MB	27.45GB
							N/A	27.45GB	27.94GB
							N/A	27.94GB	27.95GB
Driv	e Info	Time Left:		$\bowtie$					
Device:	/dev								
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Capacity (Mb):	286								
Length sectors:	586(				<u>0</u> K				
Status:	availa	able.							
			•						•
QTParted () by 2	Zanac (c)	2002-2003	[						

Now, exit QTPARTED ("File" and "Exit") and enter "shutdown –h now" at the System Rescue CD prompt (root ... %).

Remove the CD and reboot. Windows XP will appear. You will get a warning like "Checking File System on C:." Let that complete. You may have to reboot Windows (if it says something like "New hardware detected. You must reboot to access it" or something like that.

When Windows XP comes up, click on "My Computer." You should see a new disk drive. In my case it is "F:".



Right Click on the F: icon. You should see a FAT formatted disk of about 500 Mbytes.

Local Disk (F:) Properties		? 🛛
General Tools Hardware Sharing		
<b></b>		
Type: Local [	Disk	
File system: FAT		
Used space:	40,960 bytes	40.0 KB
Free space:	517,881,856 bytes	493 MB
Capacity:	517,922,816 bytes	493 MB
	Drive F	Disk Cleanup
OK Cancel Apply		

# Install GAG Boot Loader

We are going to install a simple multi-boot loader called GAG. For more information, see http://gag.sourceforge.net/.

Now, boot from the System Rescue CD again. However, at the "boot:" prompt, type "gag" and return instead of just return. The GAG boot screen will come up.

Below, I will show your keystrokes, with the option you are selecting in parenthesis. Enter the following:

4 (Install GAG)
Space Bar (Press any key to continue)
1 (QWERTY Keyboard)
F (English)
S (Setup)



A (Add a new Operating System)

At this point, you will see the following options. Note that you may not have the B partition that I had on my laptop and B may be your Windows XP Partition.

A Boot From Floppy

B A0h .....

C 07h ... Windows-NT NTFS

D 0Eh MS Windows FAT32

C (Select NTFS Partition...may be B for you) Windows XP (Enter Description) Carriage Return Key (Password...don't enter one) C (Select Windows Icon)



A (Add a new Operating System) D (Select MSDOS Partition...may be C for you) MSDOS 7.1 (Enter Description) Carriage Return Key (No password) E (Select DOS Icon) H (Save in hard Disk) Carriage Return Key (Acknowledge message with OK)

Remove the CD and reboot. Enter the digit "2" to boot Windows XP. You will see a much simpler version of the GAG boot loader introduction screen show below, with "Windows XP" and "DOS" shown as the operating systems. NOTE: If you hit "S" for setup, you can add a timer and select an operating system to be automatically booted in some number of seconds if you don't press a key.



# Installing DOS or Windows 98SE

At this point, you can install Windows98SE or DOS onto your new disk partition. GAG will boot the new operating system or Windows XP. You have several options. If you have a license for Windows98SE, or an EULA (End-User License Agreement) for another operating system with a "downgrade" or "upgrade" right, you can install DOS "7.1" or Windows98SE on your new partition.

Alternatively, you can install FreeDOS from <u>www.freedos.org</u>. Finally, you can install OpenDOS. You need the new version (called a WIP or Work In Progress) from <u>www.drdosprojects.de</u>. You will also need several support files from OpenDOS 7.01 which are also available from <u>www.drdosprojects.de</u>.

### **Installing DOS 7.1**

Now, we need to be able to install DOS. Not just any DOS, but the version of DOS that comes with Windows 98SE. Older versions of DOS won't work with disks larger than 2 GigaBytes. This version of DOS is often called 7.1. I don't know if that is an official designation or not. I know that DOS 6.22 will not work on these large disks. I don't know about other versions of DOS, but Windows 98SE does work. FreeDOS did not work correctly for my TR-Log logging program last time I tried it, but others have reported success with it.

NOTE: You must have a valid license to run DOS on your computer. You need either a License Agreement for Windows XP that has what is called a "downgrade" right to run older operating systems or a Windows 98SE or DOS License. I have transferred several licenses from old, broken computers. You can also purchase Windows98SE with a license.

You can create bootable CD's or floppies from an existing Windows 98SE installation or use a Windows 98SE installation CD. However, the easiest way to get this version of DOS is to download a bootable floppy disk from the World Wide Web. Go to http://www.bootdisk.com/bootdisk.htm and click on Windows 98SE OEM. Save boot98se.exe to your desktop.



# Installing DOS 7.1 from a Floppy Drive

If you have a floppy disk drive, it will be set up as A:. Insert a 1.44 MegaByte floppy disk and double click on the **boot98se.exe** icon on your desktop. This will create a Windows 98SE boot floppy. Reboot your computer. If your computer does not boot from the floppy drive, see your computer's documentation and enable booting from floppy. You should get a DOS prompt A:>.

Do a "DIR C:" to make sure that your new partition is correctly mounted. There should be no files. To install DOS, enter "SYS C:". Remove the floppy disk and reboot.

Select "3" from GAG to boot DOS. You should get a DOS prompt "C:>." You can now install the rest of the DOS files necessary from a floppy disk or boot into Windows XP and copy them onto this partition. You can copy the files you need from a Windows98 installation CD or Windows 98 installation.

## Alternate Source for DOS7.1

I am unsure about the legality of this CD, but it does work and does install a rather complete version of DOS7.1 on your hard disk. You still will need a valid Windows 98SE license or a "downgrade" right to run this software. I have successfully installed from this CD. I did not elect to install any of the "Extra" or handicapped access features.

Use at your own risk. Go to <u>http://newdos.yginfo.net/msdos71/</u> and click on "<u>MS-DOS 7.10 Installation CD ISO Image</u> (**Bootable**, All-In-One)." Save the file dos71scd.zip to your desktop and extract the file dos71scd.iso to your desktop.



Insert a second blank CD-R disk, right-click on the dos71cd.iso file, and create a bootable DOS CD. Remove the CD and label it "dos71cd." This is the same procedure used to create the bootable Linux System Rescue CD.