

## **No. 88. Bootable CD-ROMs**

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Do you have a CD "Burner"? That is the common name in the industry for a CD-ROM drive that can create CDs. The burners sold today create CD platters of two different types. 1. CD-R, which stands for CD-Recordable. This type of platter (and the drive that creates it) is known as a WORM device - "Write Once, Read Many". Once you "burn" one of these disks, the data cannot be overwritten or changed, and the data is rated to last between 10 and 100 years, depending upon the brand and style of CD-R disk you use. 2. CD-RW, which stands for CD-ReWritable platters. These are a different kind of disk, slightly more expensive, whose data can be changed at least a thousand times. Note that the word "changed" was used. Unlike an ordinary floppy disk, you cannot truly erase the data on one of these. When you physically rewrite it with new data, that act effectively erases the old. Both the CD-R and CD-RW platters work based upon changing the reflectivity of dyes buried above the plastic "underbelly" or bottom surface of the disk. The dye is melted by the laser, which makes it lose its reflectivity. The physical pits in a manufactured CD-R disk are similarly of low reflectivity. Loss of dye reflectivity in a CD-R is permanent, but is reversible in a CD-RW.

If your computer was manufactured fairly recently, it has the capability of booting from a CD. You can tell if this is the case easily by entering the CMOS setup. Most computers display a message on screen during the very early part of the boot process telling you to press the DELEte key to enter this series of setup screens. Once there, select the BIOS Features Setup, usually the second option on screen. There should be an option that allows you to select the order in which bootable devices are searched. For example, A, C tells the computer to look in the A: floppy for a bootable disk first, followed by the C: (hard) drive. C, A reverses this sequence. Note how it is set now, then highlight this entry and go through the options by pressing the Page Down key in some brands, or the + key in others. Cycle through all the options - you will eventually get back to your original setting. If one of those options includes CDROM, then your machine can boot from this device. If you are going to prepare and use bootable CDs, then I recommend this sequence: C, CDROM, A if that is an option. Alternatively, you can leave things as they were and just file away the information on how to alter this when you want to boot from a CD. Or, you can set the option to C, A, CDROM. With the option set this way, if the hard drive will not boot, the machine will seek a bootable floppy first, then a bootable CD-ROM.

Well then, when would you want to boot from a CD? The first answer is: whenever there is "Trouble in River City". Wouldn't it be nice to have a bootable CD, complete with virus scanning/killing software whenever you suspect an infection? Wouldn't it be nice when some darn program or other messed up your C: drive, so you could just boot from CD and recopy the whole darn drive back to some previously well-working state? Do not forget, those CDs hold about 650 Mb of data - often enough space for the entire contents of your entire C: drive if you keep applications on D: and created data on E: as I do. There are other uses, too, other than just emergencies. Wouldn't it be nice to work with packet radio using DOS and YAPP software all isolated and neatly packaged on a single CD-ROM disk? If you are using Windows ME or 2000, that may be your only choice with some DOS based programs. How about other oldies but goodies that just do not work well under Windows? Take, for example, Harvard Graphics - sometimes still useful but Windows 95 and 98 simply cannot handle it efficiently. Why not put the program on an MS-DOS 6.22-bootable CD-ROM? That may not be exactly what Microsoft has in

mind for the end user to do. On the other hand, remember that you are the owner and human master of your computer, which means that you can “do it your way”. There are several issues to consider. First, making a bootable CD-ROM is not like making a bootable floppy (indeed, you need to first create a bootable floppy in order to make the bootable CD-ROM). Second, both the bootable CD-ROM and the floppy from which it was created need to have more than just the boot system files on them, at least if the final product is to be at all useful. For example, it doesn't do much good for you to boot an operating system if you cannot access the CD-ROM drive for data once the boot process is done. Therefore, your CD-ROM drivers and other drivers that you normally use (mouse, scanner, printer, etc.) also need to be considered as candidates for loading from the boot CD. That means that both a CONFIG.SYS and AUTOEXEC.BAT file need to be present so that these drivers can be loaded. Still another issue is drive letter changes. Booting from a CD can cause some unexpected changes in drive letters unless you do some careful preplanning. So the message is that creating a useful bootable CD takes some design and forethought. Nevertheless, it can easily be done and yields a very useful product.

In the next issue, we will explore making a bootable floppy – the kind you need before you can create a bootable CD. Specifically, the next column will cover how to create a Windows 98 Startup Disk, a very special and important disk, indeed. Happy Computing!