

Authoring A Cross-Platform CD-ROM



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In this tutorial we are going to look at making an automatically running cross-platform CD (an autorun hybrid CD if you want to be technical) for a piece of work.

The aim is to make looking at the work as smooth and easy as possible for the end user.

The basics of burning a CD are pretty simple, the little tricks to make it all come together are less well known.

The things we need to do:

- Optimise the Flash content for playing from a CD
- Prepare the Macintosh data
- Prepare the PC data
- Burn the data sessions

Until fairly recently burning autorun hybrid CDs on a PC was if not impossible then at least pretty damn complicated, the solution to this usually being “buy a Mac”. Obviously this isn’t really a viable solution if you don’t have the budget to get another computer just to burn CDs on, but it was pretty much the only sensible option.

There are however a couple of utilities out there now which will happily build a cross platform disk image ready to burn on a PC, so this tutorial has two approaches; first off, the Macintosh route and secondly the PC route.

For the Macintosh route we’ll be using Roxio’s *Toast*, while on the PC we’ll be using i2rd’s *CDEverywhere* to create a disk image and then any software that is capable of burning disk images will do; I’ll use Ahead Software’s *Nero*.

Optimising the Flash

The first thing to do before we go anywhere near the blank CDs is to make the actual Flash application run as smoothly as possible.

To begin, we’re going to take the main movie with the actual content in (referred to as “main.swf” from here on in) and load that into an empty projector (referred to as the “stub projector” from here on), rather than make it a projector itself.

Open Flash, create a new blank movie, and make the movie the same dimensions as main.swf. In the first frame of the new movie put these actions:

```
loadMovieNum("fscommand/main.swf",0);  
//Load the real movie in  
stop();  
//Don't do it again!
```

The first thing you should notice here is that I’ve put “main.swf” in a subfolder called fscommand. The reason for doing this is simple; a cleaner layout for the top level of the CD. The name “fscommand” for the folder is basically for the same reason; when you want to use Flash to execute other applications (e.g. a software installer) they must be within a folder called “fscommand” for security reasons. Using this same folder to store the rest of the data for the project just makes everything a bit cleaner and easier to manage.

The next thing to do with your project is to check that any uses of `getURL` use “_blank” as their target.

```
getURL("www.flashkit.com", "_blank");  
//make a new window  
getURL("www.flashkit.com", "_parent");  
//Open the link in the window holding this file
```

Correct and incorrect use of `getURL` in a projector

This is to make sure a blank window is spawned from a browser for the page you are linking to, so avoiding freezing up the Flash player while it works out what to do with a window it knows nothing about. The easiest way to check for this problem is to use the Movie Explorer to search for uses of `getURL`.

Finally, save the file as “Start.fla” and publish the stub projector in both Mac and PC formats. Choose “Publish Settings...” from the “File” menu in Flash, check the boxes next to Macintosh Projector and Windows Projector. You should now have two files, one called “Start.exe” and then depending if you’re on a Mac or not another called either “Start Projector” or just “Start.hqx”.

OK, so now we have prepared the content for the CD, let’s look at actually making it.

Collect the data

Before we even begin, get everything in the right place; i.e. get all of the content for the CD and put it in a folder on the same computer you’ll be burning from to make sure that when you burn the CD the content is all available locally to the CD writer.

You should split the content into two; the things for the Mac side and the things for the PC side, this will make things a whole lot easier later.

Making the CD on a Mac

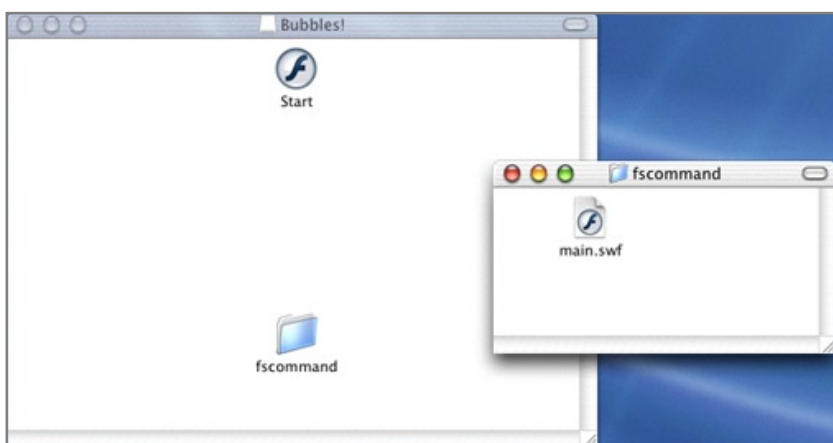
To start with we need to make the Macintosh section of the CD.

Open Toast, and choose “Create Temporary Partition...” from the “Utilities” menu.

Set the size to the total size of all your Mac files plus about 5MB for hidden system files/safety’s sake.

You should now have on your desktop an icon for what looks like another hard drive in your machine.

Now open your CD content folder you created right at the beginning and drag the contents of the Mac folder onto the temporary partition. Earlier I talked about having a directory called “fsccommand”, if we now create this folder and move “main.swf” into it we’ve created the basic layout for the Mac CD



The basic layout of the CD

Simple stuff so far, but looks pretty uninteresting, so next up is window dressing.

Firstly, notice that the stub projector (“Start”) is at the top of the window and the fscommand folder way down at the bottom. This may look a bit odd at first, but we’ll see the reason for it in just a second.

One of the cool things about Macs has always been their customisability, pre-OS X as far as our project is concerned this means icons; both for the CD and the stub projector.

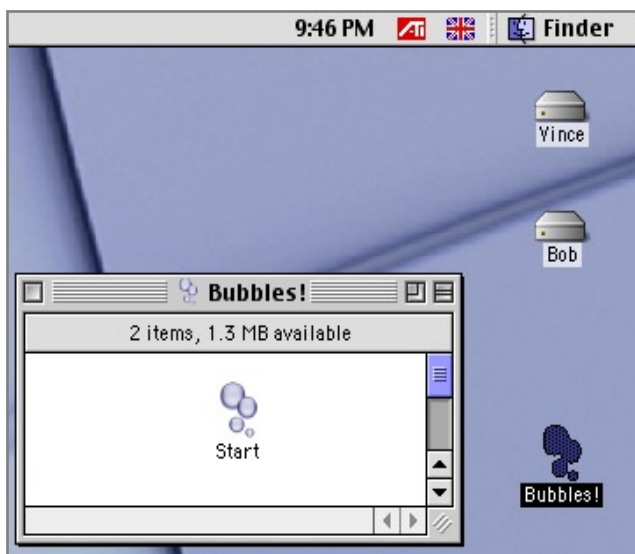
In Mac OS X we’ll look at setting an image as the background to a window as well as custom icons.

The first thing to do for adding a custom icon is of course to make the icon itself. There are several programs that can do this; I like IconBuilder from <http://www.iconfactory.com> It’s a Photoshop plug-in, so you get the full power of Photoshop and an easy way to create the masks for icons and smaller preview icons automatically.

Once you’ve created your icon, it’s simple. Select the icon you created, press apple-i (or choose “Get Info” from the File menu), click on the icon image in the top left corner of the window that appears, copy it with apple-c. Next, select the temporary partition, “Get Info” on it, choose its icon and paste. You should now have a nice little custom icon sitting on your desktop.

The exact same process applied to the stub projector will change its icon too.

If you are working in OS X, then you’ll need to reboot into OS 9 to change the disk icon for OS 9 users. Setting the icon in OS X will not result in OS 9 users seeing it when they use your CD



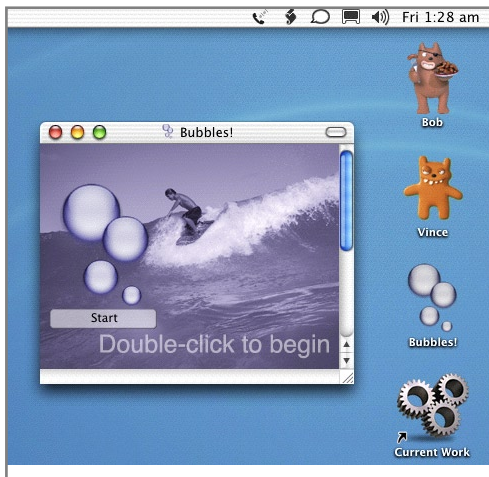
The CD and stub projector with custom icons.

Notice that I’ve resized the window so that the “fscommand” folder is now hidden, this just cleans things up and makes it easier for the user to go straight to the important bit of the CD.

In OS X, the next stage of customising the disk is the background of the window, if you’re only working in OS 9 then you can skip this bit.

You can use any graphics editor you like to make up the background image.

Match up the canvas size to how big you want your window to appear and draw something nice for the background. One of the great things about this is you can put down some basic instructions for the user which they’ll see straight away, no need for “Readme” files which a lot of people will ignore.



*The CD and stub projector with custom icons in a customised window.
Photography by genki from <http://stock.d2.hu/>*

Once you've created your background image, with your disk's window open choose "View Options..." from the View menu in the Finder, be sure to check the "This window only" option, or you'll be in for a nasty shock.

At the bottom of the info panel that pops up you'll see you can pick a background image for the window. Here is also where you can scale your icon up to a good size, in my example the icon is at its maximum 128x128 pixels.

Once you've set the image, you'll want to make sure the window is sized to fit the image and you may also want to turn the tool and status bars off to give a cleaner look.

Ok, that's the Macintosh section ready. Now we'll move on to making the PC side of the disc.

Before we get into the technicalities, there are a few things to explain.

First off, this is where the reason for creating a stub projector really comes into play. If we have several files that the flash projectors use, then there's no sense in putting them on the CD twice; once for the Macintosh and once for the PC. If say we had 400MB of data that the projector used, then obviously duplicating that for each platform would mean there was no room left on the CD for the actual projectors or anything else. The solution to this is to share data that is used on both platforms, so that it is only burnt to the CD once. First, make sure you've set the structure of the PC folder up the same as the structure on the Mac partition; you should have "start.exe" and a folder called "fscommand". However, as both the Mac projector and the PC projector use "main.swf", there's no sense in burning it twice to the CD; we'll just share "main.swf" across the platforms, so there's no need to put this in the "fscommand" folder. Why create the "fscommand" folder for the PC at all? Well, we may want to store some items in the "fscommand" folder for the PC's use only; in this case it's just the icon file, but it could be a PC software installer for example.

The next thing we need to do is to create that icon for the CD and set the autorun preferences.

For the icon, once again we can use our trusty IconBuilder to create Windows icons.

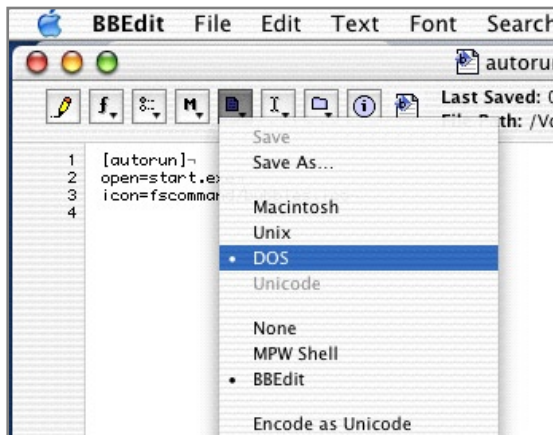
Once you've saved out your icon and made sure it has the .ico extension on the file name, move it into the "fscommand" folder in the PC section, I'm going to call my icon "bubbles.ico".

Next, we'll write the autorun file for the PC, for this we need to use a text editor that uses Windows linebreaks, otherwise it won't work when a PC tries to read it. For this SimpleText or TextEdit won't do; I'd recommend BBEdit Lite from [Bare Bones Software](#). It's free, and does the job very easily.

```
[autorun]
open=start.exe
icon=fscommand/bubbles.ico
```

The autorun file

Put the preceding text into a new file in BBEdit Lite, then go up to the toolbar and click the small document icon, choose DOS from the list of file encodings.



Choosing the right line breaks

Save the file as "autorun.inf" and put it in the PC folder.

Notice that the third line in the "autorun.inf" file points to the windows icon created earlier, this sets the icon for the CD when it appears in "My Computer" on a PC. I'm not going to set the icon for the projector as a) there's no real need; double clicking the CD icon will start the projector automatically because of the "autorun.inf" file, so users rarely see the actual projector and b) as far as I know, it's impossible to set a PC application icon on a Macintosh.

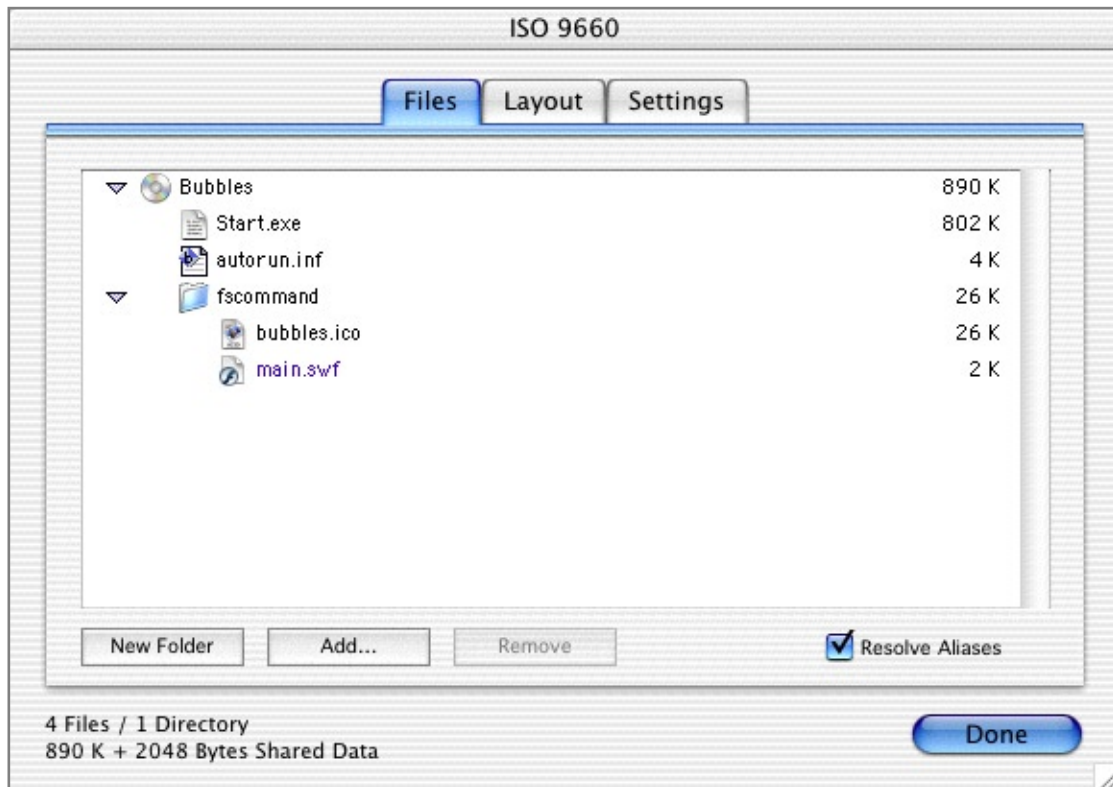
OK, so we've tweaked the layout nicely, now for putting the files on the CD.

This is actually pretty simple. Probably the easiest way to deal with this is to think of the Macintosh partition as the "master"; anything you want to appear on both platforms should be on the Macintosh partition.

Open up Toast and click and hold on the "Other" button; from the drop-down list choose "Custom Hybrid". Now take your temporary partition ("Bubbles!" in this example) and drag it to the Toast window, you should now see the Toast window display something like "Mac: Bubbles! 1.6Mb Macintosh Volume".

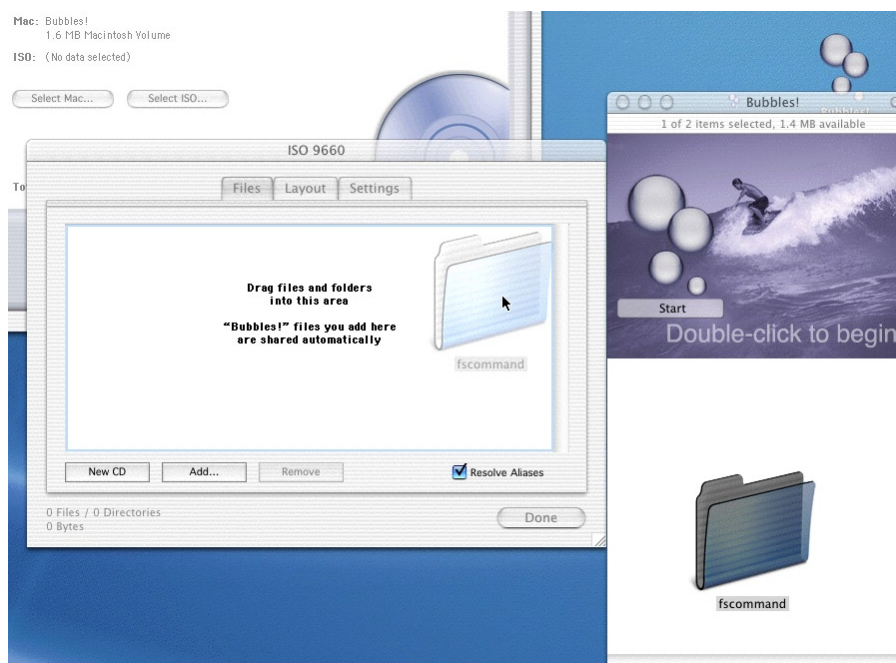
Click the "Select Mac..." button to make one final setting; the AutoStart for Macintosh. If you check the "AutoStart" box a dialogue box will appear asking you to choose a file. Pick the "Start" stub projector on the partition and that's the Mac side ready to go.

For the PC side there are two steps; first is to get the shared data. Click the “Select ISO...” button, then click the “New CD” button, name the CD “Bubbles”. Now open up the temporary partition (The same “Bubbles!” partition we used for the Macintosh side) in the Finder and find the “fsccommand” folder in the window. Drag “fsccommand” into the “ISO 9660” window in Toast.



Choosing shared files

So, we now have the “fsccommand” folder and it contains the “main.swf” file, shared from the Macintosh volume (you can double check that a file has been shared; a shared file is listed in purple). Next we need to add the files that are PC only. Open up your PC folder and find “Start.exe” and “autorun.inf”, drag these into the window and onto the CD icon (make sure they don’t end up in the “fsccommand” folder). Finally, drag the files that are in the “fsccommand” folder in your PC folder into the “fsccommand” folder listed in Toast.



The final file layout for the PC

That's the layout complete; the final step is to click the "Settings" tab in the "ISO 9660" window. Here, set the format to CD-ROM if you want a closed CD or CD-ROM XA if you want to add more sessions later; if you don't know what this means or if you plan to send the CD to press, choose CD-ROM. Set the naming to "Joliet (MS-DOS + Windows)", this allows you to use longer names in your files than the DOS standard 11 characters. Also check the "Use Apple Extensions" box. And finally, burn the CD. When the record dialogue box appears, be sure to click "Write Disc" unless you plan on adding further sessions.

Making the CD on a PC

Making a cross platform CD on a PC is slightly more complex due to the fact that PCs can't deal with Macintosh formatted disks and often will break Macintosh files just by copying them onto a PC disk (this is due to the destruction of resource forks in traditional Macintosh files, which I won't go into here). Because of these factors Macromedia Flash on a PC will publish Macintosh projectors as .hqx files. You can think of .hqx as a wrapping for Macintosh files which protects them on the PC, then these files must be 'unwrapped' in order to act like normal files and applications once on a Mac. For this reason, do not attempt to open or decode "Start.hqx" on a PC; you'll only break the file. Because of this limitation it makes it quite difficult to manipulate the Macintosh projector on a PC without breaking it; this basically boils down to no custom icons or custom backgrounds for the Macintosh.

On the PC I'll be using i2rd's [CDEverywhere](#) to create a disc image, this disc image can then be burnt to CD with a recording program (for example, Ahead Software's Nero). The reason I'm using CDEverywhere is that it can decode (i.e. 'unwrap') the Macintosh projector as it creates the disc image, so the projector will function normally on a Mac.

The first thing to do is to create the layout for the CD in CDEverywhere as this will be the same on both platforms. In the bottom half of the CDEverywhere window there are four tabs, make sure the "All Platforms" tab is selected. Right click in the "Files on CD" pane and create a new directory called "fscommand". Now put a copy of "main.swf" into the "fscommand" directory in the "All Platforms" tab; this basically means the file is shared across the disc.

Don't worry about .swf files not functioning on a Mac, they won't break like a projector will. The only possible issue is that a Mac treats them as owned by Quicktime; this is not a problem as the .swf files will be loaded into a projector anyway, not double-clicked. If you want to make your .swf files appear as normal flash files on a Mac, then you need to add .swf to the "File Types" mapping in the advanced options for "Macintosh (HFS)"; add a new file type and set the Type to "SWFL" and Creator to "SWF2" (without quotes), the File Pattern should be "*.swf" (also without quotes).

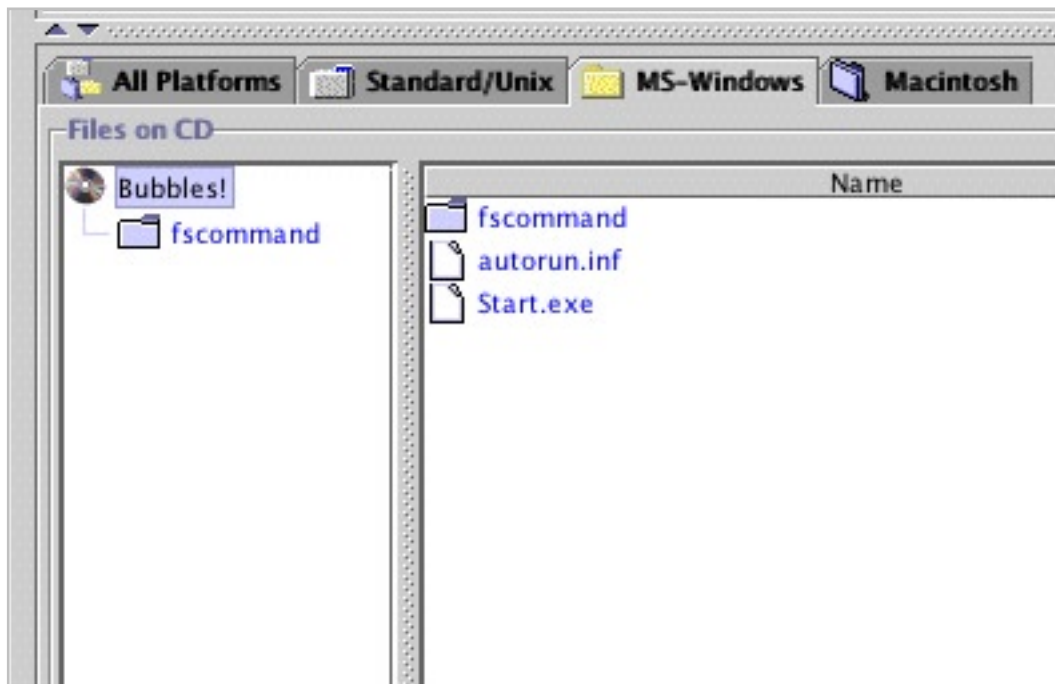
To customise the CD a little, we can use IconBuilder to make up a windows icon file, as in the Macintosh tutorial I've created "Bubbles.ico". We also need to create the autorun file.

```
[autorun]
open=start.exe
icon=fscommand/bubbles.ico
```

The autorun file

Put the preceding code in Notepad and save the file as "autorun.inf". Now put the PC files on the disc. This is pretty simple, just click the "MS-Windows" tab and move your .ico file into "fscommand" and your "autorun.inf" file and "Start.exe" into the top level of the CD. You shouldn't use the CDEverywhere autorun feature for Windows as it will merely replace your customised autorun file with a standard one. Also, make sure that "Microsoft Windows (Joliet)" is enabled.

That's the PC section of the CD complete, onto the Macintosh section.



The final file layout for the PC

In the Macintosh tab, the only file we need is “Start.hqx”; the projector. Place this in the top level of the CD, and then right-click on the file. Choose “Decode” from the two options in the “BinHex” menu option. This ensures the projector appears as a working application on the Mac, not just an archive. As I indicated earlier, you can't set icons for Macintosh from a PC. Finally, click the “Platform” tab and enable AutoStart for Macintosh; browse to your projector.

The one last touch is the name for the CD, you can set this in the “General”; “Volume Name”.

Now use CDEverywhere to create your ISO image file, and then use your recording software to burn it to CD.

That's it; CD complete.

Interactive Audio CDs (CD-Extra)

Some CDs contain both audio that's playable on a standard Audio CD player as well as interactive content for computers. Creating this isn't actually all that difficult, first of all get all your audio together and if necessary convert it to AIFF format. Once you've done this, create an Audio CD session in your CD recording program (e.g. Toast, Nero etc.). Once you've added your audio files, make sure the pause for the first track is 2 seconds; it has to be to comply with the Audio CD standard. Now burn the Audio CD, but be sure to record it as a session on the CD; i.e. do not write a closed disc. Once you've written the Audio CD session, create your hybrid as in this tutorial and record this as the second session on the CD. In general it's better to close the disc when writing the second session, I've found this to be more broadly compatible.

Written by Sam Thorne © 2003

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