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How iTunes Works

by Julia Layton and Jonathan Strickland

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Internet Connection Image Gallery The iTunes store has a slick interface and a huge library of media and applications. See options for getting online with **Internet connection pictures**.
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Introduction to How iTunes Works

Remember when Microsoft was the bad guy and Apple was the underdog? Funny how a brilliant idea can change everything. With the raging success of the iPhone, the iPod line of products and iTunes, you'll now find almost as many people ranting about Apple as about Microsoft. Where one person sees the coolest combination to hit electronics since TiVo met the TV, another sees plans for world domination. And it's all about one word: control.

In this article, we'll see what makes iTunes the most popular jukebox software ⧉ in the world, review some of its more advanced functions, explore the integrated iTunes Store and find out why the whole setup has inspired some lawsuits and epic hacking wars. First, let's cover the basics.
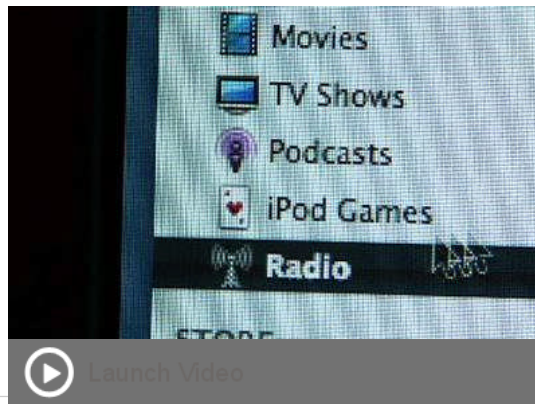
iTunes is a piece of software that lets you add to, organize and play your digital media collection on your computer, as well as sync it to a portable device. It's a jukebox player along the lines of Songbird and Windows Media Player, and you can use it on a Mac or Windows machine. The most significant difference between iTunes and some other media players is the built-in iTunes Store (where you can get podcasts; iPhone, iPad and iPod touch apps; music videos; movies; audiobooks and TV shows, too) and its multi-level integration with Apple's iPhone and its iPod portable media player.

But a portable media player isn't the only way to enjoy iTunes content. There's your Mac OS X or Windows computer, first off -- if you've got a sound card and a set of speakers (and you probably do), that's all you need to use iTunes. There's also Apple's popular entry into the smartphone market, the iPhone. Or you can play your iTunes library with one of the few phones Apple authorized to access the service, such as the Motorola ROKR E1 phone. Some enterprising hackers have created apps that let you synchronize non-Apple products with iTunes, but these aren't supported by Apple and may not work with every version of iTunes. Apple's wireless networking hub, **AirPort Express**, lets you wirelessly stream iTunes music from your computer to your hub-connected home-theater speakers. With this setup, you control playback via your computer, iPhone, iPad or iPod touch.
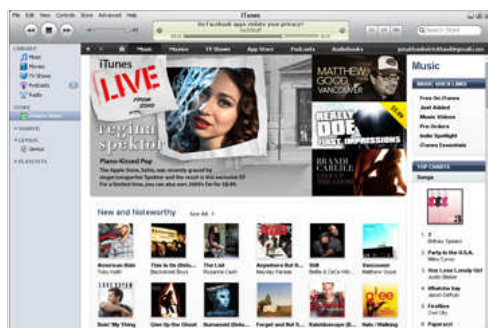
With another iTunes stream receiver, **Roku's SoundBridge** Network ⧉ Music Player, you control everything through the SoundBridge remote control. So you're not limited to any single option when it comes to playback. But you may be limited by the type of player you have and the capabilities of your computer system. You may also have some difficulty tracking down one of these devices; Roku no longer sells the units [source: Roku]

Next, learn about iTunes compatibility with your computer and MP3 player.

▶ Launch Video

iTunes Compatibility

iTunes compatibility in the realm of portable players is a bit of a quagmire, which is part of the reason why some people just avoid iTunes entirely. You can use the iTunes Mac software with, say, a Creative Nomad MP3 player (see iTunes for Mac OS X: Compatible Players for a complete list). But iTunes for Windows only supports the iPhone, iPad or iPod series -- if you connect a Creative Nomad to a Windows machine running iTunes, the software won't see it. And there's no version of iTunes for Linux machines, either. But there are ways around that -- just do a Google search for

Music is still the heart of the iTunes store.
Screenshot by HowStuffWorks.com

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"iPod Linux hacks." What's more, Apple is no longer updating the compatible players list, which may suggest iTunes won't support new non-Apple players moving forward.

Since the introduction of the iPhone, Apple no longer provides iTunes support to new phones from other manufacturers. Apple's strategy is to convince consumers to purchase Apple products and use them with Apple services. The company doesn't make it easy for you to use iTunes with any non-Apple device. Some companies, such as Palm, tried to get around Apple's closed system only to be shut down in subsequent iTunes updates.

So iTunes (or at least the Mac version) does support other players besides the iPod. But here it gets even trickier: Older music you downloaded from the iTunes Store is protected by the Apple FairPlay digital rights management (DRM) format, which is a proprietary, protected AAC file format that Apple doesn't license to anybody. The only devices that can play those files are ones with the ability to decrypt the Apple DRM, which includes your computer running iTunes, an iPod, an iPad, an iPhone, an iTunes phone and your speakers connected to AirPort Express. (You can't play them on Roku's SoundBridge, because Apple licensed Roku the iTunes software minus the DRM decryption.)

To play iTunes Store files with DRM on a portable player besides an iPod, you have to first burn them to a CD or DVD as MP3 files. The DRM encoding doesn't make it to the disc. You then rip the now-unprotected files back into your iTunes library and download them to the player.Alternatively, you can repurchase songs at a reduced price to get the version without Fairplay. Songs purchased from the iTunes Store in the iTunes Plus format don't carry DRM, which means you won't have to go through this step.

So now we know which devices will and won't work with the iTunes software. Next, we'll find out what you can do with the software if you've got the right hardware (or the wrong hardware with the right hack).

SYSTEM REQUIREMENTS

Mac

Mac OS X v10.5 or later

1 GHz or faster processor (G4 Mac or better)

QuickTime 7.6.4 or later

1 GB RAM to play HD video

16 MB of video RAM for HD video

200 MB of disk space

Broadband Internet (to use iTunesStore)

Windows

Windows XP service pack 2 or later

200 MB of disk space

2 GHz Intel Core 2 Duo or faster processor to play HD video, iTunes LP or iTunes Extras

DirectX 9.0-compatible video card with at least 32 MB of video RAM

Screen resolution of 1024 x 768 or greater

QuickTime-compatible audio card

1 GB of RAM to play HD video, iTunes LP or iTunes Extras

Broadband Internet (to use iTunes Store)

WHAT'S A PODCAST?
A podcast is an audio (or sometimes video) broadcast that you can download via the Internet and subscribe to so your computer automatically downloads all new episodes served up by that podcaster. You can listen to it on your computer or download it to a portable media player. Lots of podcasts are homemade, put together on a home PC and loaded up to a server for distribution. Many bloggers now produce their own podcasts. Some podcasts are professional-grade recordings put out by organizations like HowStuffWorks.com,

iTunes Software

Even if you never make a single purchase from the iTunes Store, you can still take advantage of the basic functions of iTunes. iTunes offers all of the features we've come to expect from a high-level jukebox media player:

• **Audio-file playback:** iTunes supports AAC, AIFF, Apple Lossless, MP3, WAV, Audible.com's .aa format and unprotected WMA audio formats.

• **Streaming music:** You can open a stream in iTunes just by entering the URL in the "Open Stream" dialog box.

Discovery Channel, NPR, PBS and The Onion. See How Podcasting Works to learn more.

You can subscribe to a podcast directly through iTunes. Just click "Subscribe to Podcast" and type the podcast's URL in the dialog box that pops up. You'll automatically receive all new podcasts from that broadcaster.

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- **Sharing music over a network**

NETWORK PROTOCOL
iTunes uses Apple's proprietary Digital Audio Access Protocol (DAAP) to transfer shared music between devices on a network. That means any other computer on the network can only access the shared music through iTunes -- unless you build yourself a DAAP server. See OpenDAAP to learn more. The iTunes 10 update reportedly interfered with third-party devices working with the service [source: Foskett].

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- **Internet radio:** You can set Internet radio presets.
- **Graphics:** You can view audio-coordinated graphics on-screen and print jewel-case art for your burned CDs.
- **CD track information:** iTunes automatically displays all available CD information when you insert a disc into the drive ⧉. You can also edit the information if it's incomplete or wrong.
- **Organization and management tools:** iTunes offers automatic and manual management options for your library.
- **File-type conversion:** iTunes will convert your AAC, AIFF, Apple Lossless, MP3, WAV or unprotected WMA files to AAC, AIFF, Apple Lossless, MP3 or WAV format.
- **Playlist creation**
- **Burning** and ripping CDs
- **Downloading files to a portable player**
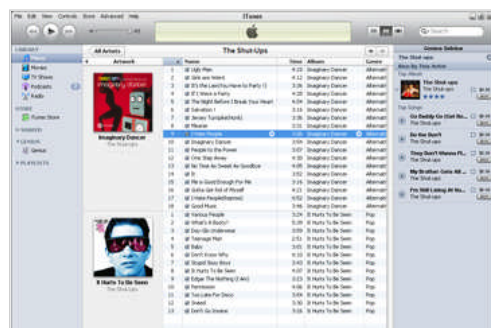
Advanced Features in iTunes

In addition to the typical jukebox functions, iTunes offers some nice advanced features:

- **Ping:** The newest major feature in iTunes is Ping, Apple's attempt at inserting a social networking element ⧉ into iTunes. With Ping, you can follow your favorite artists and see what music they like or get the early word on albums, releases and concerts. Your friends can follow you and learn more about the music you enjoy. Apple includes links to make it easier to purchase music you discover.
- **Autosyncing:** iTunes will not only detect an iPod, iPhone or iPad, but will also automatically download all content you added to iTunes since the last sync (you can set it to manual mode if you don't want iTunes to transfer everything). Your iPod will also upload to iTunes any new song ratings or playlists you created directly on your iPod (but not any songs you added -- if there's a song on your iPod that isn't in your iTunes library, say goodbye to it when you autosync). The problem with autosync is that it syncs blindly -- if, for instance, you clear out your iTunes library for some reason, and you then connect your iPod to your computer, the autosync will wipe everything off your iPod to make it look just like your iTunes library. To avoid this, just turn off autosync.
- **Smart Playlists:** You can set parameters for iTunes to create a playlist for you using songs from your library. Parameters can be the song's genre, date of release or rating. When you add a new song to iTunes that matches your Smart Playlist parameters, the software will automatically add it to the playlist.
- **Genius:** One of the more recent features in iTunes is the Genius function. Genius assembles playlists for you -- just pick a song and Genius will build a playlist around it. Ideally, the songs should all complement each other. It will also recommend songs and apps for you to purchase to build out your library.
- **Home Sharing:** If you have several computers in your household, you may have several music libraries. The Home Sharing feature lets you share music across multiple computers on your home network. All the computers must be logged into iTunes under the same account for Home Sharing to work.
- **Videos:** You can download videos, movies or TV shows from the iTunes Store to watch them in iTunes and download them to an iPod video. You can also convert your DVDs to iTunes video format using one of many pieces of external software available for just this purpose. See Engadget: HOW-TO: Convert a DVD for your iPod (with video) in Windows and AfterDawn Forums: Rip Convert DVD to iPod, iPod Video Converter.
- **Audiobooks:** You can listen to audiobooks (Audible .aa file format) through iTunes.
- **Editing ID3 tags:** ID3 tags are bits of data attached to a song that can include the artist name, album title, release date, music genre, album art and other related items. You can edit the tags and add tag data to your songs through iTunes.
- **iTunes Store:** The iTunes Store is an integrated function of the software. Click the store icon in the main iTunes interface to browse and buy content online, or click the icon next to any song, album or artist in your library to go directly to that content in the Music Store.

So that's what the software can do. In the next section, we'll find out how to get started with iTunes on your computer.

The iTunes music library gives you multiple options to organize and listen to your music collection.
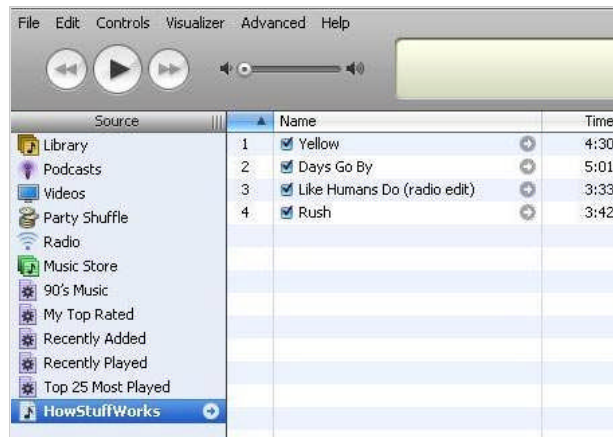Screenshot by HowStuffWorks.com

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The iTunes Interface

Here's an overview of the main iTunes interface (version 10) on a Windows machine (the Mac interface is almost identical).

There are really just a few steps to getting started with iTunes:

1. **Download and install the software:** Go to www.apple.com/itunes/ and click "Free Download ⧉ ." When you install the software, it asks if you want it to move your current music library into iTunes. It'll find it and import it all at once, organizing your files in folders by artist name and then at a second level by album title. If you don't want to import your music during the installation process because you want more control over what gets moved where, then you can do it manually after the installation (see step 2).

2. **Import your music:** You have two options in the "File" menu at the top of the iTunes interface. You can add a file to your iTunes library, add a folder to your iTunes library, or "Import." If you "Import," iTunes will search for your music and give you the option to import it all at once, which is basically the same process as letting iTunes import your music during installation. Once you import some music, the iTunes library looks something like this:

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1. **Create a playlist** - Click the "+" button at the bottom-left of the iTunes interface. A new playlist will appear in the Source column.

Name your playlist. We'll call ours "HowStuffWorks." Then right-click on each song in your library that you want on this playlist and choose "Add to Playlist" from the list of options. The playlist you just named will appear for you to choose it.

Here's our new playlist:

1. **Burn the playlist to a CD or DVD:** Just put a CD-R or DVD-ROM in your drive, and the iTunes software detects it. Now the Browse/Burn button in the top-right corner of the iTunes interface is for burning. Click it. Done. You'll have your new CD or DVD in a few minutes (depending on how many tracks are in your playlist and the speed of your disc burner).

2. **Download your music to an iPhone or iPod** - Plug your iPhone, iPod or iPad into your computer's USB 2.0 port. Done. iTunes sees the player and downloads your entire iTunes library. If you'd rather transfer files manually or only transfer certain playlists, you can change the sync settings at Edit/Preferences/Devices.

Once you've got a feel for the software, check out the Advanced tab and the Preferences and View Options areas under the Edit tab at the top of the screen. From here, you can play with some of the features like display settings, file-type conversion, burn speed, parental controls and podcast settings. And you might want to explore the built-in iTunes Store to add to your library of content. In the next section, we'll visit the iTunes Store.

If you own an iPod Touch or iPhone, you may want to check out the app store on iTunes.
Screenshot by HowStuffWorks.com

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iTunes Store

At the iTunes Store, you can find millions of songs, thousands of audiobooks, thousands of music videos, tens of thousands of podcasts, feature films, TV shows, iPad, iPod and iPhone applications, and CD album art. All you do to get to the store is click a button in the main iTunes screen. You're not going through a Web browser -- the jukebox software is the user interface for the store.

Apple has deals with record labels for iTunes-exclusive music tracks from select artists. In addition to pure content, there are community-type functions like user-published reviews, ratings and playlists, and then there is the pop-culture headshaker that is the "celebrity playlist." These are lists of songs (with a little "buy song" button next to each track) reportedly assembled by stars like Quentin Tarantino, RuPaul and Lady GaGa. In case you're curious, Lady GaGa included songs like "Thriller" by Michael Jackson, "Blue Christmas" by Elvis Presley and "Radio Ga Ga" by Queen. She also included three of her own tunes on her list. There's also a podcast dedicated to celebrity playlists if you want to keep up with what the rich and famous listen to.

Here's a breakdown of the store content areas and what you can do there:

Music
- Wide price range for albums
- Browse by genre

Music videos

- $1.49 or $1.99 each
- Browse by music genre (first level) and artist (second level)

Audiobooks
- Wide price range
- Browse by category (first level) and author (second level)

TV shows
- $0.99 to rent an episode for up to 30 days -- you have 24 hours to finish an episode once you start it.
- $1.99 to buy most episodes, $2.99 for HD episodes and selected content, or a group rate for an entire season
- Browse by title (first level) and season (second level)

Feature-length films
- $4.99 to $19.99 each, some are available in HD
- $0.99 to $3.99 to rent a film for up to 30 days -- once you start viewing it, you have 24 hours to finish it
- Browse by category

Podcasts
- Most are free, variable prices on others
- Browse by category
- Download per episode or subscribe to series
- Submit your own podcast to appear in the iTunes podcast library

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