Podcast Creation Guide

Fall 2005

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Introduction

This guide will assist you in learning to create and distribute an audio podcast accessed with the iTunes application. The guide assumes that you have the following:

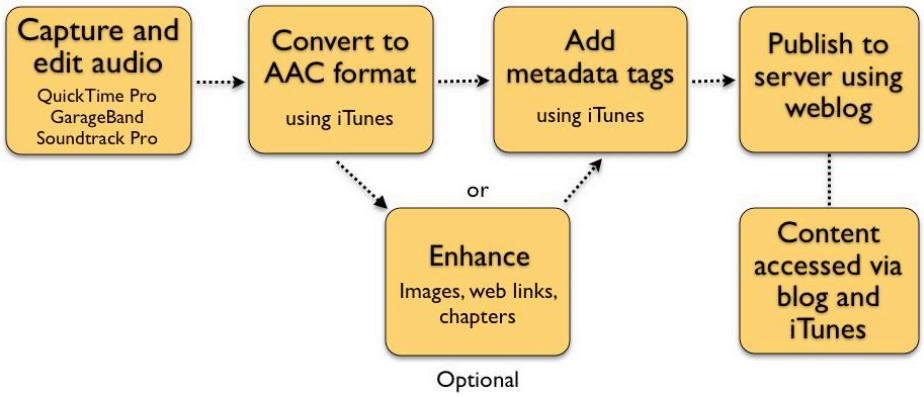
- Access to Mac OS X Server (version 10.4.3 or later, which incorporates the latest version of blojsom, an open source blog engine)
- A Macintosh computer with the latest version of Mac OS X and iTunes installed.
- Recording equipment as described in "Setting Up for Audio Capture" later in this document.
- For audio production, access to and at least beginning skills with QuickTime Pro, GarageBand, or Soundtrack Pro

  When creating content for a new distribution medium, it is important to understand the available production tools and processes. It is equally important to understand the software used to access the podcasts and the user experience. The Podcast Creation Guide will provide an exploration of both.

Steps Involved in Creating a Podcast

Like web publishing, podcasting requires several main steps:

Workflow



Step 1 Record and edit audio for your podcast. This document provides information about using QuickTime Pro, GarageBand, or Soundtrack Pro to record and edit podcast audio.

Step 2 Compress the audio files for delivery over the Internet. There are different ways to compress and decompress audio and video content called codecs. Most podcasts are compressed using the older MP3 codec or the newer, more efficient MPEG-4/AAC codec. Audio files that will be accessed with the iTunes application can optionally be enhanced with synchronized images, chapter markers, and web links.

Step 3 Add embedded metadata for the audio file using iTunes. Metadata is descriptive information about the content. It is sometimes referred to as a tag when information is embedded with the content. This might include an image, a descriptive name, a more detailed description, the author of the podcast, and copyright information.

Step 4 Publish the audio as described in "Posting Podcasts to Weblog Server," later in this document. A weblog supports the posting of a timestamped journal. Content is posted and accessed chronologically. Each post can optionally contain attachments, including podcast audio.

Step 5 Users on the Internet can access the content via the associated blog or by subscribing to the content with iTunes.

Podcasting Overview

Description

Learn what podcasting is and explore its educational uses.

Tools

- iTunes 4.9 or later
- Internet access

What Is Podcasting?

Podcasts are the new phenomenon of professional and homemade audio broadcasts available on the Internet. Unlike traditional radio shows with set schedules, podcasts can be listened to at any time in the iTunes application or on an iPod. With iTunes 4.9, Apple took podcasting mainstream by building into iTunes everything you need to find, subscribe to, manage, and listen to podcasts. You can even publish your podcast to iTunes (as long as it's free of copyrighted material) and reach a potential audience of millions.

Types of Media Included in Podcasts

In its most popular form, podcasting is a way for people to selectively subscribe to audio content over the Internet. This audio content can then be automatically downloaded to a computer or mobile device, like iPod. Think of a podcast as a radio show that you can listen to whenever and wherever you want. When listening to podcast audio on iPod with a color display, the content may have an associated cover image (similar to album art for iTunes music). The content may display images synchronized with the audio track. Also, chapter markers can be embedded that allow listeners to jump to specific sections of the content.

If you are listening to enhanced audio in iTunes, the cover art and synchronized images are displayed in the album art window (at the bottom-left of the iTunes window). Access to chapters is possible from a pop-up menu at the top-right of the iTunes window. The author of the content can also display a web link overlapping any of the displayed images (in the album art window). This makes it possible for the podcast listener to access related web content in their default browser when listening in iTunes.

Podcasting can also be used to distribute PDFs, graphics, and digital video. This provides a convenient, subscription-based model for distributing educational materials.

Podcasting in Schools

iPod is a natural for today's learning environment. It's easy to use, mobile, and supports anywhere, anytime learning. Mastering the process of podcasting will make it possible for you to make the most of this new distribution medium.

With more and more educational content being developed for and delivered through podcasting, educators and students have on-the-go access to audio that ranges from curriculum-related content to professional development programming.

Podcasting is also a way for teachers and students to publish and distribute content. Imagine a science instructor posting daily assignments and recorded lectures from class to a website that provides an RSS feed. Students can subscribe to the feed from home and then sync the assignments and content with the iPod, taking it wherever they go. There are many possibilities. For example, these types of communication needs can be met by distributing audio to a mobile educator or learner:

- District updates or announcements for parents and community
- Recorded classes for homebound students
- Faculty lectures
- Interviews
- Synchronized slideshows
- Music education
- Sharing of instructional methods by master teachers
- Sharing of other professional development resources
- Broadcasting student audio plays or other productions
- Foreign language practice
- Student poetry projects
- Sound-seeing tours
- Audiobooks or supplemental textbook materials

Exploring the iTunes Podcast Environment

Description

Use the iTunes application as a client for managing podcast content.

Learning how to author podcasts will be easier if you first explore the application that your listening audience will be using to subscribe. In this section, you will explore the iTunes application, paying special attention to the elements that are required for each podcast.

Tools

- The latest version of iTunes
- Internet connection

Directions

Exploring the iTunes Music Store

- Open iTunes and click Music Store in the Source list at the left of the iTunes window.

  Before you visit the iTunes Music Store Podcast Directory, it is helpful to understand the role of iTunes in music distribution. The iTunes Music Store has over two million songs. More than 10 million customers purchase more than 1.8 million songs from the store each day. Apple has sold over 600 million songs in total. Almost 30 million iPod players provide mobile access to this content. Songs are purchased with a single click for 99 cents apiece and can be played from iTunes, burned to a CD, or transferred to an iPod for listening. These numbers are important to a potential podcaster because they illustrate the robustness of the infrastructure and the potential subscriber base for your podcast.

  When these 10 million-plus users enter a search term on the iTunes Music Store home page, the podcasts are included in the results, increasing the potential for world exposure of your podcast content. If you choose not to submit your podcast, your constituents can still subscribe to your podcast in iTunes.

If you haven't used the iTunes Music Store for downloading music before, try the following:

1. From the main page of the Music Store, click in the search field in the upper-right corner of the window and enter "Dallas." Press Return.

   A list of songs and podcasts that all have Dallas in their title or keywords is displayed in the window.

2. Preview 30 seconds of any song or podcast by selecting the title and clicking the Play button in the upper-left corner of the iTunes window.

   Note that a subscriber can purchase and download songs by simply clicking the Buy Song icon. For podcasts, clicking the Subscribe button adds the podcast to the user's subscription list. The most recent episode of that podcast is then downloaded each time iTunes is opened.

   A few pieces of content may be marked Explicit. You can cause all such content to be unavailable to students by using the iTunes parental control preferences.

Exploring Access to Podcast Content in iTunes

A solid understanding of iTunes and how it provides access to podcast content is important before you begin to publish content. By exploring the iTunes podcast genre page, search tools, and your personal library of podcast subscriptions, you can identify the elements that you will have to collect for your podcast series and for each episode.

Follow these steps to learn more about the podcast content available from the iTunes Music Store:

1. Return to the main page of the iTunes Music Store.
2. In the column at the left, choose Podcasts from the Choose Genre pop-up menu.

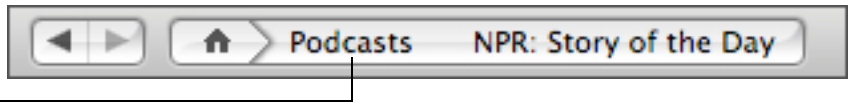
   The genre page for podcasts appears from which you can locate a podcast in a number of ways, assuming the author has submitted his or her content to the iTunes Music Store. Note that some podcasts are selected to be featured with graphics on the podcast genre page. If your podcast is chosen for the page, your cover art should look impressive when displayed in a small size.

   Clicking the Publish a Podcast image links you to a submission page where you can optionally enter the URL of your podcast. This adds a podcast to the iTunes searchable index. The iTunes Music Store does not host the content; it remains on the author's server.

3 Click the graphic for a featured podcast to find out more about a podcast channel. At the top of the page, the graphic provided by the author is displayed. A channel title, source, description, and a link to a website are shown. The window also lists all of the items for the selected channel. For each item, note that, when you create the podcast, you will need to supply a name, duration, publication date, and a one-line description.

4 Select an item from the list of episodes and click the Play button at the top-left of the window to hear 30 seconds of the content. Since iTunes users may make a decision to subscribe based on this preview, you will want to be sure you leave a good first impression in the first 30 seconds when you create your podcast.

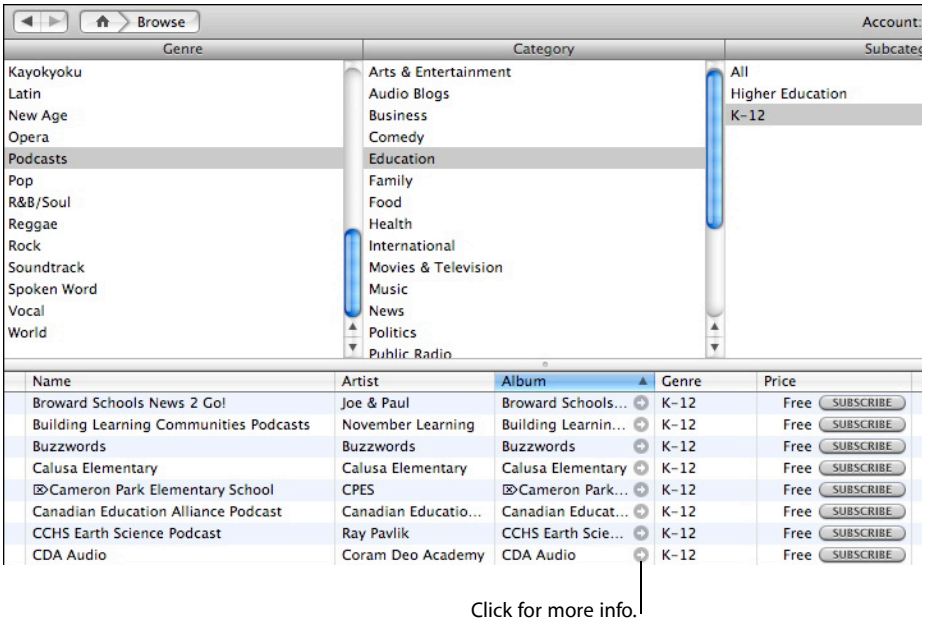
5 Return to the podcast genre page by clicking the Podcasts link at the top of the page.

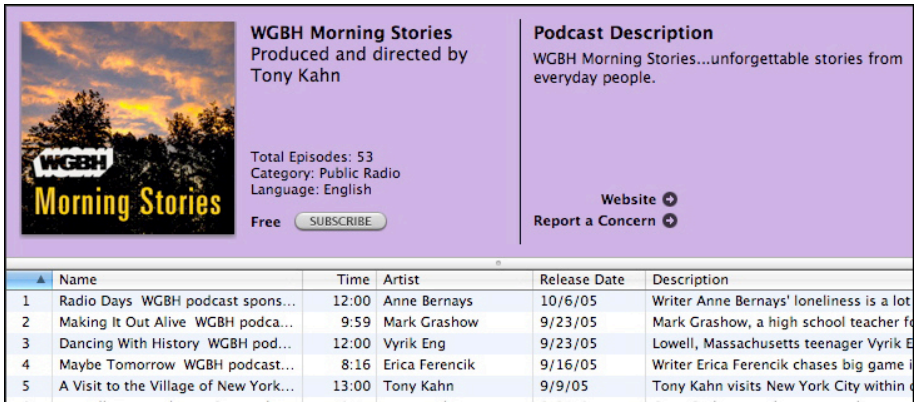


Another way users can find podcasts is by clicking one of the selections in the Top 100 Podcasts list on the right of the page.

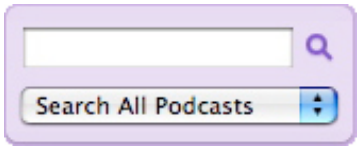
6 You can also browse podcasts by category. In the Category list on the left side of the page, click Education, then click the K-12 or Higher Education subcategory.

In the list that is displayed when you browse by category, you can preview audio from the latest episode or click the disclosure triangle in the Album column to see more information about the podcast.





7 Return to the podcast genre page and try out the search field in the column at the left. You can use the pop-up menu to search by author or words in the title.



Setting Up for Audio Capture

Description

Set up your podcast recording system.

Tools

- Mac OS X
- Audio input hardware

Overview

Capturing audio for your podcast can be accomplished with a variety of setups. These configurations vary from those that are low cost and simple to operate to those at a higher cost that provide more flexibility. The setup that is right for you will depend on the function of your podcast, complexity of the recording task, and the audio quality you require.

If the podcast will be informal announcements by a single speaker, you can get by with a very basic setup. If, however, your goal includes an interview with two or more people and you desire a professional "radio sounding" podcast complete with music and effects, your recording setup will need to be more complex. Another factor to consider is the potential need for portable recording in the field.

This section identifies a few combinations in order of increasing flexibility. In general, your audio setup will consist of some combination of a microphone for capturing analog audio, an integrated or separate device for converting the analog signal to digital, and an application that usually supports both the capture and editing.

	Good	**Better**	**Best**
Application	QuickTime Pro	GarageBand	Soundtrack Pro

	Good	**Better**	**Best**
Audio Input	iSight camera (not with GarageBand) Microphone directly connected to a Macintosh that has a microphone input jack	External condenser 1/8-inch jack microphone with Griffin iMic USB adapter USB Plantronics or Logitech microphone and headset	One or more high-quality XLR microphones in combination with a USB or FireWire pre-amp adapter

Examples of Hardware for Input

iSight camera

The iSight camera contains a directional microphone and can deliver an audio signal directly to QuickTime Player. The instructions for recording audio with QuickTime Player are included in "Recording Audio for Your Podcast with QuickTime Pro," later in the document.

The Griffin iMic USB

The Griffin iMic USB adapter accepts either an external condenser mike or line level (1/8 inch miniature jack) signal, converts it to a digital signal, and delivers it to your Macintosh. You can record with QuickTime Player, GarageBand, or Soundtrack Pro. You can select from a handheld, lapel, or wireless microphone.

Microphone and headset

A USB combination microphone and headset will keep the microphone close to your mouth. This will eliminate some of the ambient room noise. These headsets will work with QuickTime Player, GarageBand, and Soundtrack Pro.

USB or FireWire digital converter

A full featured USB or FireWire audio to digital converter provides more flexibility and higher quality sound. These devices also work with higher quality XLR microphones. Examples are the M-Audio Mobilepre USB Recording Interface and the M-Audio FireWire 410 Audio MIDI Interface. Both of these interfaces support up to two simultaneous microphones, making it easy to record a two-person interview. Both also make it possible to monitor the recording using earphones. Monitoring while recording is a good practice and will let you discover sound quality problems early.

Designating an Audio Source

Many Macintosh computers have a built-in microphone and this input is often the default. It would be hard to get the quality required for a podcast with this microphone, so you will probably be using one of the input sources described earlier. Core Audio, which is a part of the Macintosh operating system, supports the communication between external audio hardware and Macintosh applications. When both the hardware and application involved are compliant with Mac OS X Core Audio, setup will be painless. The computer will recognize any new input devices connected without the need for drivers. For more information, go to:

http://www.apple.com/macosx/features/coreaudio/

If you have multiple input devices or if the application involved does not directly support Core Audio plug and play, you may need to install drivers or manually select the audio source.

1. Begin by installing required drivers as described in the documentation that came with your audio application, if necessary.
2. Open the Applications folder, then open the Utilities folder. Within the Utilities folder is the Audio MIDI Setup utility.
3. Open the Audio MIDI Setup utility application and click the Audio Devices button. Here you can change the Default Input device from Built-in Audio to your input device. For most devices, you will leave the source format at 44100.0 Hz. If your device also supports audio output, you can make the device the default output in this pane.
4. Open your audio application, then open the Preferences dialog in the application. Confirm that the application is accepting input from your default selection. For QuickTime Player preferences, you can find the selected input by clicking the Recording button. In GarageBand preferences, you can make changes to the input in the Audio/MIDI pane. In Soundtrack Pro, make your selection in the Recording pane.

Your Recording Location

Pick a location for recording your audio with very low ambient noise. Check for air conditioning or other background noises that will potentially show up on your audio recordings. If you can't eliminate ambient noise, control the level with noise absorbing curtains, rugs, and so on. Avoid recording methods that use automatic gain, such as most consumer grade camcorders, if you are in a room with high ambient noise. Automatic gain systems tend to increase gain during pauses in your audio, making the ambient noise more objectionable. Refer to the manual that came with your recording equipment to determine if automatic gain is used and if it can be turned off.

If possible, create a dedicated recording setup that stays in a "ready to use" mode. You are more likely to have problems if you have to set up from scratch for each recording.

If you are recording in the field, you could use a laptop running your recording software. If you are using an analog device, such as a tape recorder, you can transfer the audio from the earphone or line out jack through a USB or FireWire digital converter such as those referred to earlier.

Recording Audio for Your Podcast with QuickTime Pro

Description

Use QuickTime Player for capturing podcast audio.

Tools

- QuickTime Pro
- Audio source

Preparation

To record podcast source material with QuickTime Player, you must be using a registered version of QuickTime. While QuickTime is installed on every Macintosh, you must purchase a registration code to enable many of its authoring related capabilities. Learn about the many new features that QuickTime Pro can provide and purchase the registration code here:

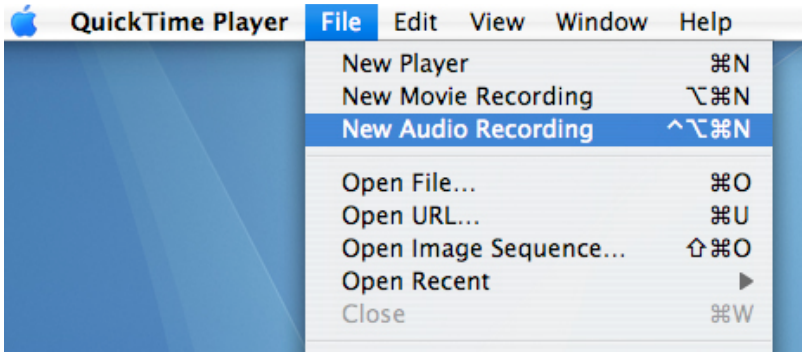
http://www.apple.com/quicktime/pro/mac.html

You will need an audio input source before following the steps below. See "Setting Up for Audio Capture" earlier in this document for more information. For instructions about telling the application which input to use, see "Designating an Audio Source."

Directions

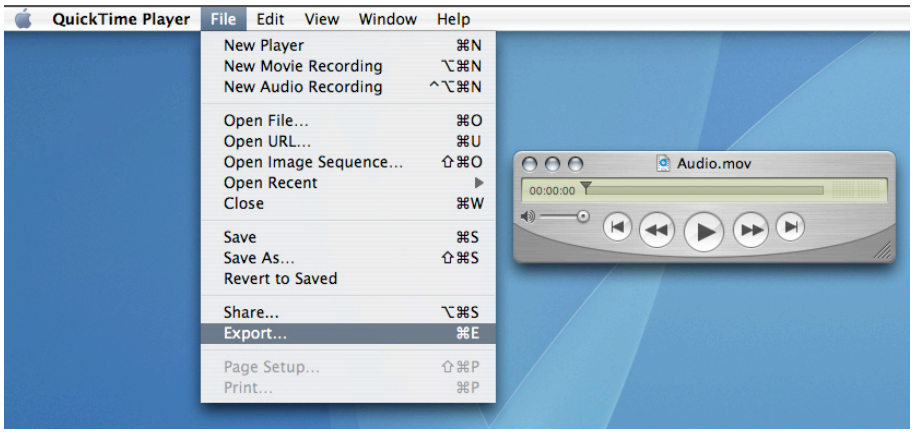
1 Open QuickTime Player in the Applications folder.

2 Choose File > New Audio Recording.



3 Click the red Record button and begin recording with your audio input device. Click the button again when you are done recording.

4 Choose File > Export.



5 In the dialog that appears, choose Movie to MPEG-4 from the Export pop-up menu. From the Use pop-up menu, choose Broadband - High or you can choose Broadband - Medium for smaller file size and lower quality. For complete control over compression parameters, click the Options button.

6 Name your file with the .m4a extension (for example, my_podcast.m4a) in the export dialog. Select the desired location for your new file and click Save.

You now have a file that is ready to be published.

Recording Audio for Your Podcast with GarageBand

Description

Use GarageBand to capture audio, sequence audio clips, and edit audio podcasts.

GarageBand is a multitrack capture tool and editor for both audio and MIDI sound. With GarageBand, you can capture audio from input sources and use effects and filters to enhance the audio's quality. GarageBand includes libraries of audio and MIDI loops that can be used to add introductory and transitional music to podcast content. The editing environment allows you to integrate many separate audio clips into a professional-sounding audio file. Following are just a few tips and tricks that will help you get the most out of GarageBand to record your podcast. GarageBand 2 is a component of the iLife application suite from Apple and may already be installed on your computer.

Tools

GarageBand 2

Audio source

Preparation

This section assumes basic skills with GarageBand. There are basic tutorials in the .Mac Learning Center as well as tips and techniques in the Apple GarageBand Support pages:

http://www.apple.com/support/garageband

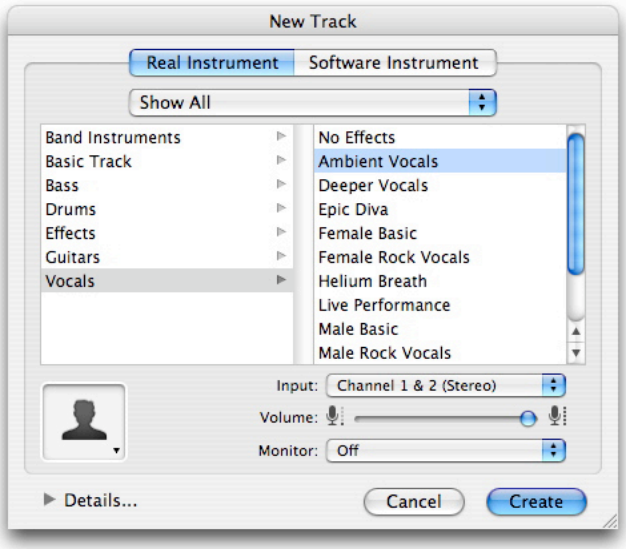
You will need an audio input source before following the steps below. See "Setting Up for Audio Capture" earlier in this document for more information. For instructions about telling the application which input to use, see "Designating an Audio Source."

Directions

1 Attach your preferred audio interface and a microphone to your Mac, or use your computer's built-in microphone. (Note: The iSight camera is not supported as a microphone input in GarageBand.)

2 Create a Real Instrument track in GarageBand with your favorite preset vocal setting or build your own.

Tip: Using the Gate helps to eliminate unwanted noise when you aren't speaking, and using Compression smoothes out the overall sound of your voice. Be sure to try the vocal transformer for some really fun effects!



3 Adjust the Gain control on your audio interface and within GarageBand to set the recording level of your voice.

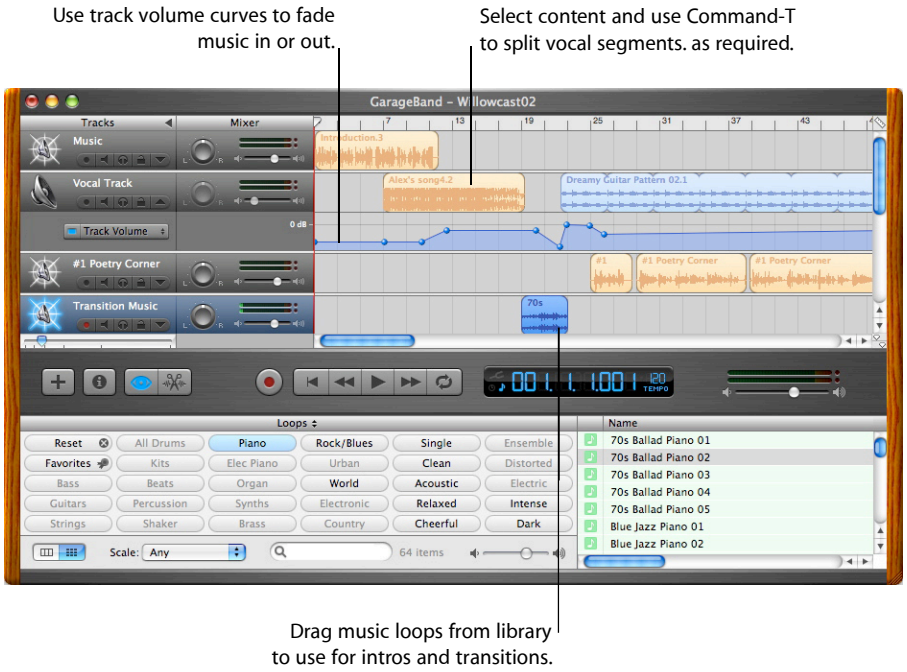
It's good practice to test your distance from the microphone to determine where you sound the clearest. Attach headphones directly to your Mac or audio interface for the best quality recording (sound from speakers will be picked up in your recording).

4 Optionally, add an AIFF, MP3, or AAC file (except protected AAC files), or a selection of GarageBand Apple Loops to serve as your introductory, transition, or background music.

GarageBand Apple Loops allow for the most flexibility because you can easily vary their length. GarageBand Jam Packs are also a great way to add thousands more professional loops that will add punch and polish to your podcast. Many professional broadcasts use music introductions (known as jingles) to signify the beginning or end of a show. In podcasts, these are sometimes called bumpers. Apple Loops offer you the ability to create your own unique copyright-free jingles for use in your podcast.

To split a vocal segment, select the content and press Command-T.

Drag music loops from the Loop Browser to the timeline for intros and transitions.



5 Record, edit, and mix your final recording.

6 Export your file to iTunes and then convert it to AAC, as described in "Compressing Audio with iTunes" later in this document.

Recording Audio for Your Podcast with Soundtrack Pro

Description

Use Soundtrack Pro to capture audio, sequence audio clips, and edit audio podcasts.

Soundtrack Pro is a professional multitrack sound recording and editing application that has powerful tools for improving the quality of your production. Built-in effects and filters, such as audio cross dissolve, normalization of audio level, and equalization, are available. You can use noise analysis tools to automate the removal of pop, clicks, and even ambient noise. Soundtrack Pro provides more than 1000 sound effect Apple Loops, ranging from earthshaking explosions and whooshes to subtle ambience and foley effects, all selected from professionally produced sound effects libraries. Soundtrack Pro also includes thousands of music Apple Loops and supports Jam Pack Apple Loops, as well as third-party sound effect and music libraries, including Acid, AIFF, WAV, and MP3 libraries. You will be able to use the multitrack editing environment to combine recorded audio with music introductions and transitions for a creative audio product.

Tools

- Soundtrack Pro
- Audio source

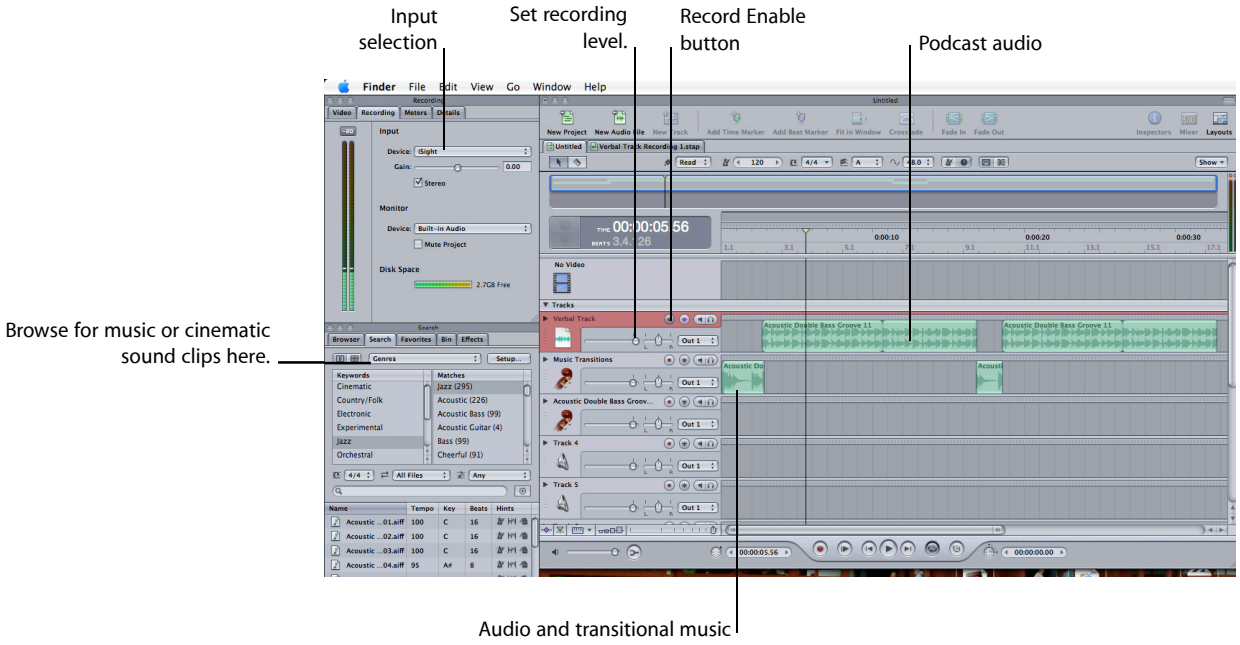
Preparation

You will need an audio input source before following the steps below. See "Designating an Audio Source" earlier in this document for more information.

Getting started with recording audio in Soundtrack Pro is easy. The following steps will show you how to record some sample audio. This is a very deep and flexible application. Be sure to read the user manual, which can be found via the Help menu.

1. Choose Window > Recording. Set Monitor Device to none, unless you are monitoring with earphones (this prevents feedback).
2. Begin by clicking the track on which you want to record.
3. Click the Record Enable button as shown in the illustration on the next page.
4. Use the Device pop-up menu in the Input area of the Recording tab to choose your audio source.

5 Set the recording level while speaking normally into your microphone and watching the left and right level meters (at the left of the Recording tab). The indicators should show the audio level close to, but not reaching the top.



Directions

1 To record your primary podcast verbal content, click the red Record button in the transport controls at the bottom of the window.

2 Pause and continue recording as needed.

3 Add introductory and transitional music on an additional track. Click the Search tab in the Media and Effects Manager. Use the pop-up menu to select music by genre. Click a genre button and preview audio samples. Drag any file you want to use into an empty Timeline track.

4 Use track volume envelopes or the Mixer to control relative track segment or track levels.

5 Choose File > Export Mix to save an AIFF format audio file.

6 Import the file into iTunes for further preparation, as explained in the next section, “Compressing Audio with iTunes.”

Compressing Audio with iTunes

Description

Use iTunes to compress audio for podcasting.

Tools

iTunes 4.9 or later

Preparation

The audio file you want to compress should be in the iTunes Library. When you export from GarageBand to iTunes, the file is brought in as an uncompressed AIFF format file. To deliver the file as a podcast, it must be compressed.

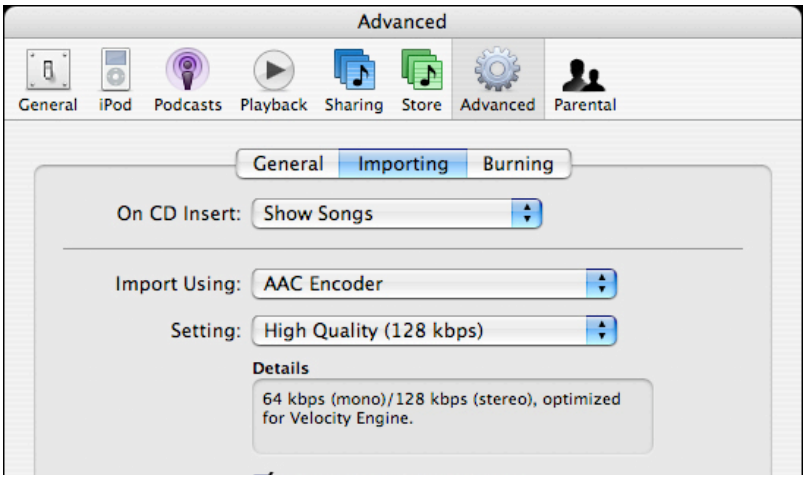
Note: If the file is already compressed, you should not recompress it—that will lower the quality. Instead, compress an uncompressed original file. This procedure will be used primarily with audio exported from GarageBand or another audio editing application that is used to produced a noncompressed AIFF file.

Directions

1 Open iTunes.

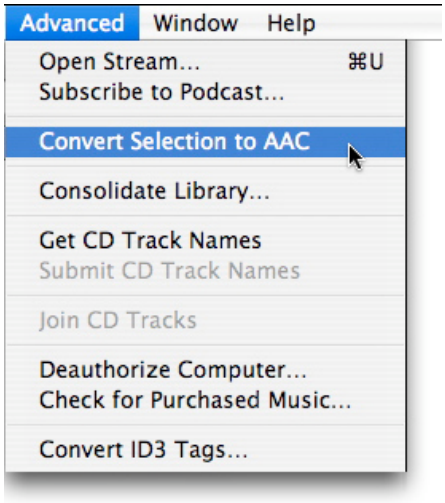
2 To set the default compression format that iTunes will use, choose iTunes Preferences > Advanced > Importing. Select the AAC audio codec and specify the bit rate that you want to encode.

Note: The iTunes Music Store uses 128 kbps AAC compression. This provides great quality at a very reasonable bit rate.

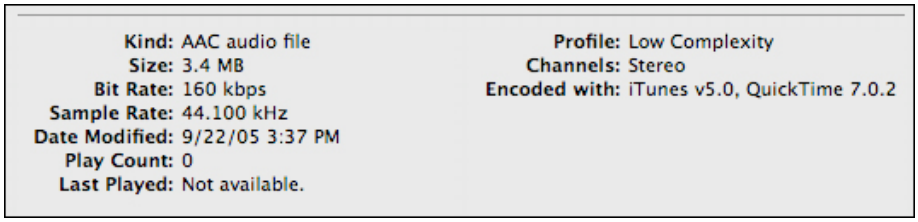


3 Find and select the audio file to compress in the iTunes Library. Note that you can use the Shift key to select files listed together, or the Command key to select multiple files individually. All selected files are compressed in the next step.

4 Choose Advanced > Convert Selection to AAC.



5 Compressed songs can be identified by selecting the file in the iTunes Library, then choosing File > Get Info. In the Get Info Summary pane, compressed files will display the Kind as AAC audio at the bit rate you selected in iTunes preferences.



6 You may want to delete the original uncompressed AIFF files from the iTunes Library. The uncompressed files can consume quite a bit of disk space. To delete files, select them in the iTunes Library, then choose Edit > Clear. To free up disk space, click Move to Trash in the dialog.

Adding Metadata and Artwork in iTunes

Description

Use iTunes to add metadata about your podcast and artwork.

While some metadata is entered when you publish your audio file to the server, it is also important to include some embedded metadata in the audio file itself. iTunes and many other applications can display and use this metadata for cataloging as well as search and retrieval functions. If you add metadata in iTunes, the metadata stays with the content even if it is separated from an associated webpage or XML file.

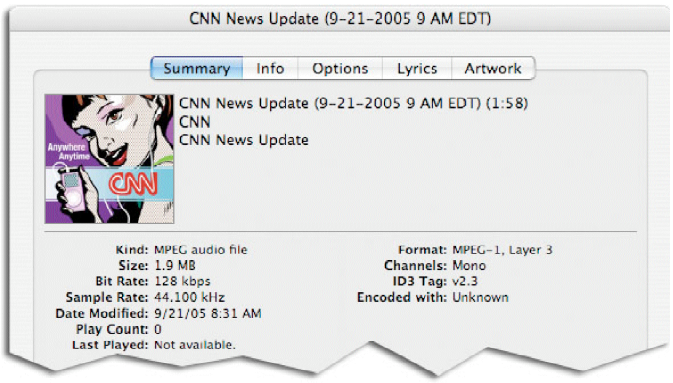
Tools

iTunes 4.9 or later

Directions

1. Begin by exploring the metadata in published iTunes podcasts.
2. Return to the podcast genre feature page and enter "CNN" in the podcast search field.
3. Subscribe to the CNN News Update podcast.

   The most recent episode is downloaded.
4. Expand the channel to see a list of the recent episodes (click the disclosure triangle). By default, only the last episode published is automatically downloaded to your library.
5. Select the last episode.
6. To see the metadata, choose File > Get Info



The Summary pane includes ID3 tag information as well as other information about the file. The remaining panes are where data can be entered or modified.

7 Click the Info button and think about appropriate metadata you would include with each episode of your podcast. The Name field should have the name of the specific episode you are tagging. Including the publishing date along with the name may also make sense for your podcast. The Artist field is sometimes the institutional source of a podcast. You may want to add the series name in the Album field. In the Genre field you may want to add "Podcast." Some iTunes users who create smart playlists that automate transfer to the iPod use this tag.

8 The Lyrics pane is a new type of metadata for iTunes. In the case of music files, the use is obvious. For podcasts, the function is up to you. You could include a transcript to support hearing disabled learners, a summary, a list of support resources, or other information.

9 Now inspect the Artwork pane. You will definitely want to include an image for all your published episodes. It can be the same graphic for each published episode or you can use unique graphics for each item published. This graphic is the "cover" art for your content and is displayed in iTunes in the Album art window when the episode is selected. (For a non-enhanced podcast, this is the only image displayed for the episode.) In addition, the image is shown on an iPod that can display photos while the audio is being played.

10 Create a 300 x 300 JPEG or PNG image in your favorite graphics application. Compress the image and use the Add button in the artwork pane to update the metadata with the image.

11 When you click OK to close the Get Info window, the new metadata is saved as an integral part of the audio file. If you want to add synchronized images, embed web links, or add chapter markers, you will use this file with an appropriate enhanced podcast utility. Otherwise, your podcast is ready to be uploaded to your blog as an attachment upload using an FTP application.

Posting Podcasts to Weblog Server

Description

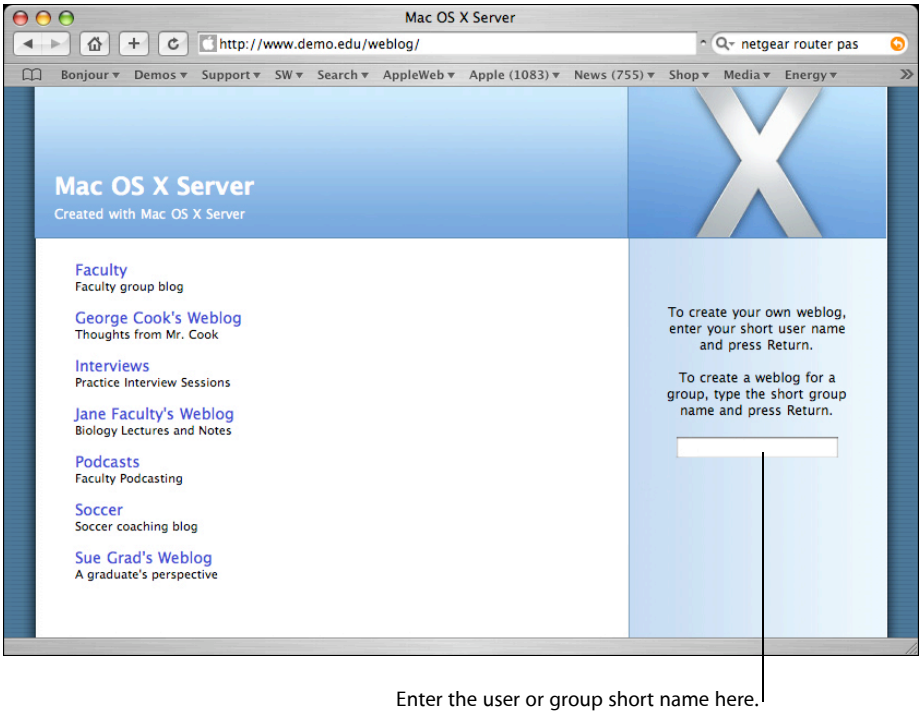
Post your completed podcast to Weblog Server, part of Mac OS X Server.

Tools

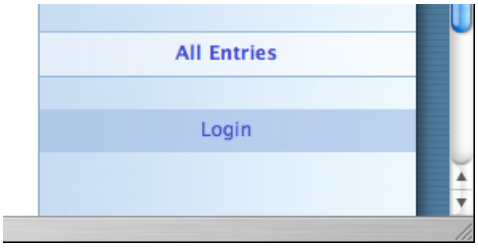
- Web browser
- iTunes 4.9 or later
- Mac OS X Server 10.4.3 or later with Weblog Server configured

Posting Podcasts to a Weblog Server

1 By default, any user or group set up on the server has a weblog. To access the weblog for a particular user or group, enter the short name in the weblog window:

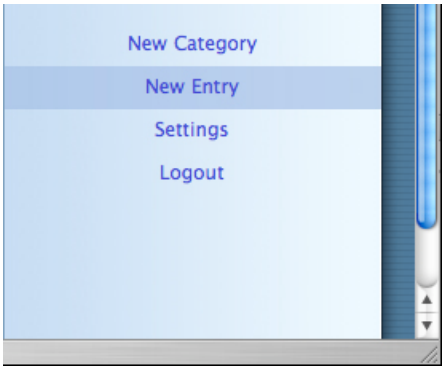


2 The next page displays the weblog for that user or group. Use the Login button to authenticate as the user or a user in the group:

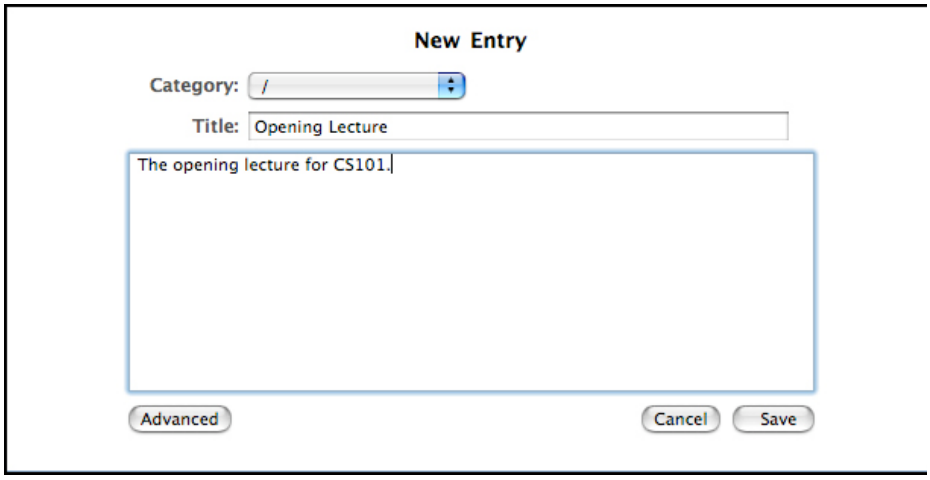


Once you have successfully logged in, you can create new categories or entries or change blog settings. Categories allow you to organize your blog posts. Entries are used to create ordinary blog posts and podcasts. Note: Your blog may look different based on the theme selected in the blog's settings.

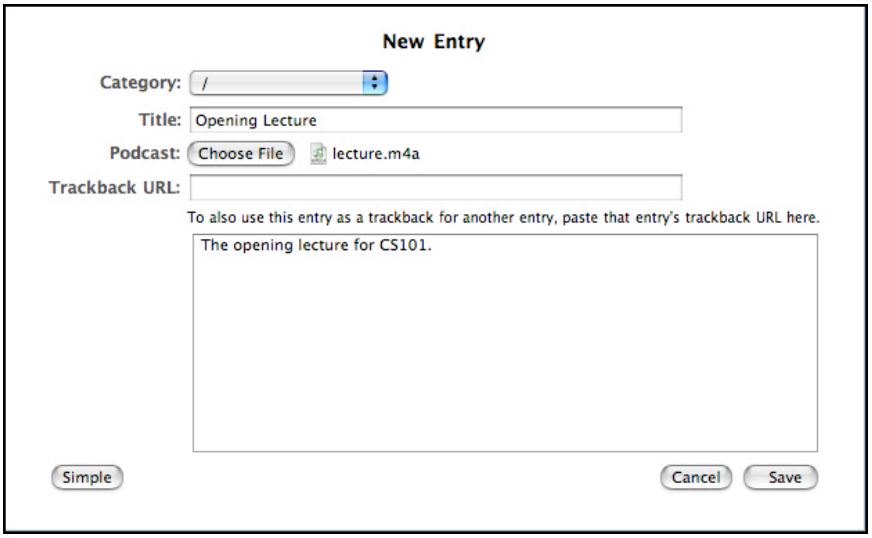
3 To create a podcast entry, click the New Entry button:



A dialog appears in which you can create the title and description for your entry. The title will appear as the Podcast column in iTunes. The description will appear in the Description column in iTunes.



4 Click the Advanced button to upload your podcast audio file with the post. Click the Choose File button to upload a podcast-compatible audio file:



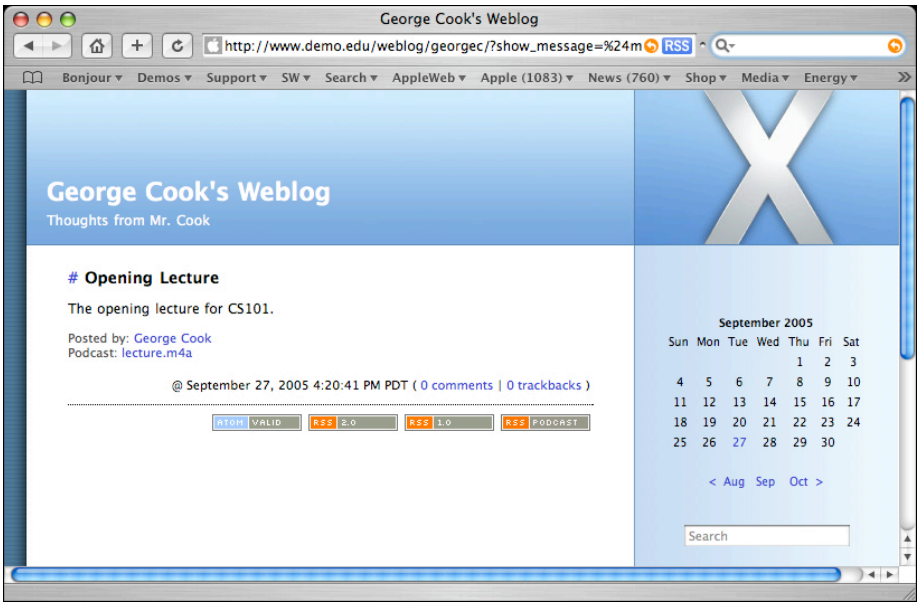
Note: Trackback URLs provide a mechanism for linking blogs and aggregating individual blogs in a central location. More information is available here:

http://www.movabletype.org/trackback/beginners/

5 Click the Save button when you are finished.

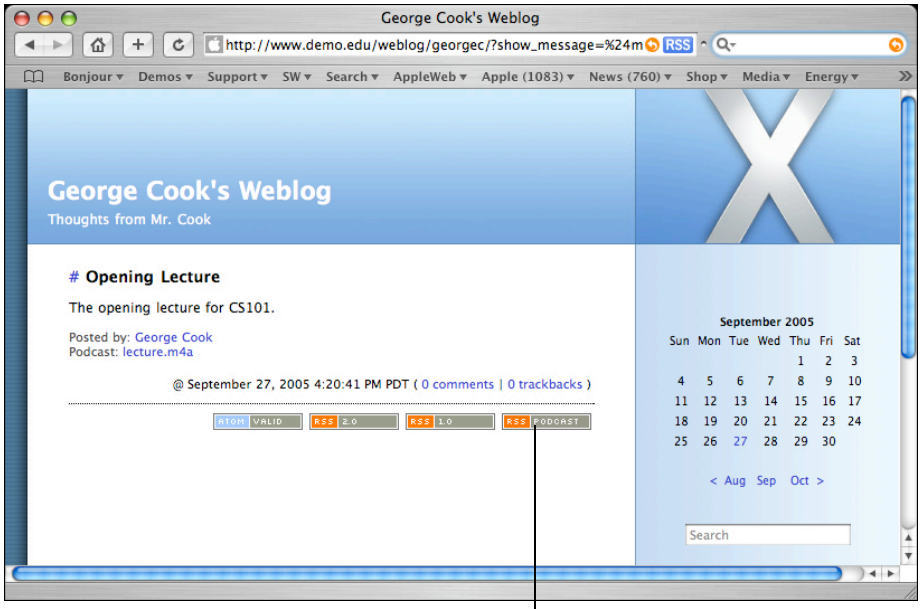
Accessing the Weblog Post with a Web Browser

Once your podcast entry is posted, it can be accessed via a web browser. Others can get to a specific blog using the URL http://<server address>/weblog/<shortname>/. Podcasts appear as individual entries with a download link for the podcast audio file:



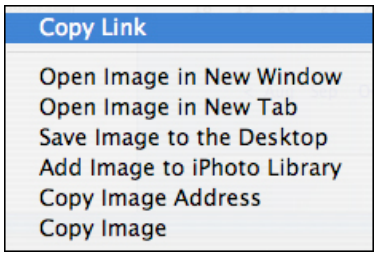
Subscribing to the Weblog with iTunes

To subscribe to the podcast in iTunes, simply click the RSS|Podcast link:



Creating iTunes links to Weblog Podcasts

If you need to create an HREF link to a podcast, Control-click the iTunes RSS|Podcast link on the blog site, then choose Copy Link from the shortcut menu. Note: With a two-button mouse, right-click to copy the URL.



The link will be in the following format:

itpc://<server address>/weblog/<short name>/?flavor=rss2

This URL can be used in an HREF tag to link to the podcast from any website.

Glossary

AAC—A modern audio codec that is part of the MPEG-4 specification. At any given bit-rate, AAC delivers higher quality audio than the older MP3 codec.

Bandwidth—In a network connection, bandwidth refers to the rate that data can be delivered. The maximum bandwidth of an analog modem is 57,600 kilobits per second (or 56K). Broadband connections such as DSL or cable modems have much more bandwidth available, typically at least 500 kilobits per second (kbits/s). In a local area network, or LAN, a slow connection is 10 megabits or 10,000 kbits/s.

Bit rate—This is another way to refer to bandwidth. It is also used to specify how a media file is compressed. For example a media file compressed to be delivered in real time over a 56K modem would need to be compressed at a bit rate of less than 56 kbits/s. The bit rate is also referred to as data rate.

Codec—An acronym for compressor/decompressor. Uncompressed audio and video files are very large. As a result, media delivered on the Internet is compressed. When a client plays the media, it is decompressed.

Enhanced podcast—In addition to audio-only podcasts, Apple has created a specification for enhancing audio podcasts. An enhanced podcast can be divided into chapters, allowing clients to quickly navigate to specific parts of the podcast. Each chapter can have an associated piece of artwork. Chapters can also have a URL that links to a website.

Metadata—Information about information is called metadata. For example, an audio file contains audio information. The name of the person that created the file, length of the file, title of the file, description, and so on are metadata.

MP3—A compressed audio file format that can be used with podcasting. This audio format was originally created as the audio portion of an MPEG-1 file. It is an older codec—quality at any given bit rate will be lower than media compressed with newer codecs.

MPEG-4—The Moving Picture Experts Group defines and licenses specifications for digital media. For example, DVD video uses the MPEG-2 specification. The MPEG-4 specification defines a file format and set of codecs for Internet delivery of digital media.

RSS—Really Simple Syndication or Rich Site Summary is an Internet technology that provides a method for Internet clients to subscribe to content delivered by web servers. RSS version 2 added the ability for multimedia enclosures and is the basis for podcasting. With the release of iTunes 4.9, Apple provided an easy way to find, subscribe, and listen to podcasts. Podcasts are delivered over the Internet as RSS feeds.

XML—This acronym stands for eXtensible Markup Language. The syntax of XML is similar to HTML. This file format is used to deliver RSS feeds over the Internet. The XML file contains metadata about the RSS feed. With podcasts, enclosure metadata contains the location of the actual audio file on the Internet.

Resources

- Podcasting in Education
  http://www.apple.com/education/podcasting/
- About iTunes Podcasts
  http://www.apple.com/itunes/podcasts/
- Submit your Podcasts
  https://phobos.apple.com/WebObjects/MZFinance.woa/wa/publishPodcast
- Podcasts with QuickTime Pro
  http://www.apple.com/quicktime/tutorials/podcasting.html
- Soundtrack Pro Features
  http://www.apple.com/finalcutstudio/soundtrackpro/
- GarageBand Support: Recording Your Podcast
  http://www.apple.com/support/garageband/podcasts/
- XML Tag Specification for iTunes Podcast Publishing
  http://phobos.apple.com/static/iTunesRSS.html
- Syncing Your iPod
  http://www.apple.com/itunes/sync/