

Podcasting for developers

How to plan, record, mix, and host your first podcast

Skill Level: Introductory

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Many articles and books on podcasting assume that you have experience with sound recording, you can recognize XLR cables, and you understand decibels. Consequently, they spend a lot of time discussing the computer-specific aspects, such as MP3 encoding and hosting Really Simple Syndication (RSS) files, and comparatively little on the audio aspects. If you search on audio, you find plenty of articles on audio recording for musicians and home studio. Some of that material is useful but, again, the tendency is to assume that computers are the difficult bit. What makes this tutorial unique is that it is written by a developer, for developers. So it assumes that you can handle the developer's tasks (such as writing the RSS feed) and concentrates on the novelty: the use of audio.

Section 1. Before you start

About this tutorial

This tutorial walks you through the creation of your first podcast. It begins with the planning phase and ends with the hosting. In between, you'll find reviews of audio hardware, recording, and mixing.

I have been working with XML since the very early days. In fact, I first discussed XML in 1997 when it was still in draft status. Throughout the years I have seen many

incredible applications of XML. Some developments (such as Web services) have been very exciting for me because they enable me to solve thorny technical issues.

And yet if I had to vote for the best application of XML, I might vote for podcasting. Podcasting has brought back a lot of the fun and enthusiasm of the early days of XML. So thank you, Adam Curry, for offering podcasting to the world.

As this tutorial demonstrates, podcasting is not just XML, it's XML and audio (or video), and it's the combination of the two that opens incredible opportunities.

I hope that, as you learn about podcasting, you'll share my enthusiasm. Let's get started.

Objectives

After completing this tutorial you will be able to record, mix, and host your first podcast.

Prerequisites

This tutorial assumes that you know how to write an XML file, host a file and register a domain name. It concentrates on the novelty (in podcasting) for IT people, that is, the recording of the audio file to insert in the XML document.

System requirements

Audio applications use a lot of RAM and require fast hard disks. One Gb is the minimum to record comfortably, and a 7200 RPM disk is recommended. Obviously, you need a microphone and a sound card. The built-in microphone in your computer can get you started, and the tutorial includes a section on selecting audio gear.

In addition you need recording software, such as Audacity (see [Resources](#)), an open source product.

Section 2. What is podcasting?

A technical definition

Technically, *podcasting* is the distribution of audio (and sometimes video) episodes or segments through an RSS feed (the RSS popularized by blogs).

Subscribers to the RSS feed can either use a regular RSS client, such as Firefox (in its latest versions), or a dedicated podcast client, such as iTunes. Podcasting shines with dedicated clients because they download the audio/video episodes when the computer is idle. Dedicated clients can also synchronize with MP3 players (the "pod" in podcast stands for the iPod, the most popular MP3 player), allowing listeners to listen to episodes in the car/metro/train/plane or while jogging, exercising, or shopping.

You do not need an MP3 player to enjoy podcasts. I work from my home office and listen to podcasts mostly on my desktop, although I enjoy listening on an iPod while traveling by train to a customer or a conference.

A definition for subscribers

Many less technical definitions of podcasting have been proposed: *radio-on-demand* (the listener chooses when to consume the episodes), *portable Web* (the listener can carry Web episodes on an MP3 player), *audio blog* (combining a blog with audio features), *the renaissance of free radio* (podcasts are usually produced by amateurs). Each of these definitions carries some truth...which shows that podcasting is a significant evolution for the Web.

What is being discussed in podcasts? Anything really. You can find podcasts on software development (right here, at developerWorks), movie reviews, wine tasting, photography, comedy, personal matters (audio blogs) and, of course, music! Unlike radio, there are no strict rules to adhere to because anybody with a microphone and a computer can give it a go.

A good selection of podcasts is available at many online directories. The most popular directory is the iTunes Music Store; other popular directories include PodcastAlley, Yahoo! Podcast, and Odeo (see [Resources](#)).

Section 3. Thinking the podcast

In this tutorial

The following sections lead you through the development of your first podcast. This tutorial devotes a fair amount of time to the *design* of your podcast because, not

unlike software development, spending time on the design speeds the development and results in less rework. The tutorial also provides basic information on gear and digital recording. Depending on your experience with audio (and the scope of your project), some of the steps might be less relevant to you.

To illustrate the steps, I have used my own podcast, Declencheur. Note that Declencheur is just an example of the process; you might make different decisions along the way. Also note that, being Belgian, I choose to record Declencheur in French. Technically, it makes little difference.

Subject matter

To start, define your subject matter. What is the topic of the podcast? Refine the topic throughout the project, of course, but first take some time to select a subject you are comfortable with. After all, if the podcast is successful, you are going to live with it for a long time.

Say you start your podcast on cooking. Subscribers join on the strength of your scrumptious apple pie and fresh home-made pasta. If you run out of recipes and switch to travel tips, you risk alienating most of your subscribers. People are making time on their otherwise busy schedule to listen to you, and you should respect their trust by being coherent.

Of course, if your podcast topic is "anything that goes through my mind" that's fine, it's your podcast. *Make that clear to potential subscribers, though!*

Take a moment to write down your subject matter and describe the podcast in two or three sentences. Also describe your intended audience.

Example

Declencheur is a podcast on photography, a lifelong passion of mine. The podcast covers lighting techniques, composition, and anything to improve one's photography. Regularly, episodes are devoted to the passion and joy of photography. A few episodes discuss the growing use of photography in business. The audience is anyone with a camera and a willingness to learn how to go beyond snapshots.

Section 4. Planning the podcast

Looking for inspiration

As you work on your podcast, take the time to listen to other podcasts. Subscribe to at least a dozen podcasts related to your subject matter and a few podcasts on other subjects. Listen to as many episodes as you can for a few weeks.

Podcasting is (still) a virgin territory. There are no strict rules (yet), but it helps you define your podcast if you identify features that you like and dislike. Take ample notes and try to recognize the features that make podcasts worthwhile to you.

For example, some podcasts are very informal: you may hear the host answering the phone or brewing a cup of coffee! Others follow a very rigid structure, not unlike radio. Many podcasts fall somewhere in between these extremes. Where do you plan to sit?

Some podcasts are very short (only a few minutes), others seem to last forever. What do you like best?

Identify at least three features that you like and want to reproduce in your own podcast.

Example

While researching for Declencheur, I realized that the quality of the recording is important to me. Poor recording turns me off, even when the subject is relevant to me. I don't like to concentrate just to hear the host.

I also found that I like episodes running 20 to 40 minutes long. When I have some time to listen to a podcast, usually it's around half an hour.

I like podcasts that include comments from their listeners. I like to be part of a *community* of listeners.

Finally, I prefer audio podcasts to video podcasts. Podcasts already require more attention than radio and they are difficult to listen to while developing, for example. Video just requires too much attention for me.

Those are personal thoughts, and your likes and dislikes are probably different, but the experience of listening to many podcasts can shape your work.

Section 5. Coming up with a winning formula

Decision points

Now it's time to refine your decisions and flesh out your description. Be as specific as you can. At minimum, consider the following:

- Length and frequency
- Video or audio
- The tone
- Naming the podcast

Length

Length is the duration of each episode. *Frequency* is how often you publish episodes. This is a delicate balancing act: if the episodes are too short or too infrequent, it becomes difficult to build up your audience. If the episodes are too long or too frequent, the workload may be too great (especially after six months, when the novelty has faded away).

Consider your audience, too. For example, a podcast on exercising could be as long as a training session.

Audio or video format

Generally speaking, audio is more accessible. There's a reason TV has not replaced radio: you can listen to the radio in cars, trains, while jogging... video is a more demanding medium. MP3 players are cheap and largely available; video players are more expensive and more recent.

Audio is more accessible to the podcaster as well: it takes less work to prepare an audio rather than a video episode and audio hardware is less expensive than video hardware. Not to mention size. Compressed audio is large; compressed video is *huge* so the hosting costs are significantly higher with video.

Finally, consider the file format. MP3 is available on every platform and every portable player (including smartphones). There's no clear winner for video files and you may have to encode your video to two or more formats.

Having said that, if your subject matter requires video and you have the ability to deliver it, *by all means do so!*

Tone

Again, a very personal decision. When deciding on the tone, consider whether you want to include humor, sound or video effects, explicit content... Let your audience and subject matter be the guide.

If the subject and audiences are business-oriented, use a more formal tone. Conversely, a personal podcast should be... well... personal.

Name

You're almost done with the planning. Now for a fun question: what do you want to call your podcast? Remember that:

- This is an audio media, so the name should be easy to pronounce (for example, stay clear of word games).
- Listeners (and you) hear the name repetitively; choose a name that can take the constant repetition.
- If you're planning a new Web site, make sure the domain name is available.

A simple strategy is to make a list of possible names, sleep on it, and request the opinion of friends. Don't rush to choose a name because you'll live with that decision for a long time.

Example

For Declencheur, the episodes last roughly half an hour long and are published every other week. I use a purely audio format because I dislike video podcasts... this is a challenge given the subject matter (photography) but one that I can handle. I wanted a personal warm tone, to reflect my enthusiasm for photography. Making it sound like "conversation with a friend" is the goal.

I had a simple and strict criterion for the name. I wanted one word, known to French photographers for which the .com domain was still available. As expected, only a handful of those remain available!

After trying different names, I went through a photo jargon dictionary, looking for a domain that remained available. I ended up with a few possibilities and declencheur (incidentally, it means shutter release) immediately rose to the top of the list.

Section 6. Recording gear

Basic setups

Congratulations! You have a clear plan for your podcast. Now it's time to record it, so make sure you have the following:

- Microphone
- Soundcard or audio interface
- Headset to listen to your recording (preferably while you are recording)
- Recording software

Let's ignore the software for a moment and discuss the hardware. You can choose from thousands of microphones and hundreds of sound cards, so I have narrowed the choices down to three typical configurations. In increasing level of quality, they are:

- The internal (built-in) computer microphone or plugging a microphone into the computer sound card
- USB multimedia headset or a multimedia microphone with an external USB audio card
- Condenser microphone, a USB audio card, a preamp, and (optionally) a compressor

Internal microphone

The least expensive solution is to use what you already have: the microphone built into your computer (an alternative is to plug a multimedia microphone into the soundcard). It works, but the recording is very noisy. The problem is that the sound card is picking up a lot of noise. Note that I wrote "the sound card." Usually the problem is not due to the microphone.

Consider that the manuals of most audio and video gear include warnings to keep the devices away from sources of electromagnetic interference **such as computers and screens**. Now where is that sound card again? That's right: in the computer, exposed to as much interference as possible! And that explains the noise you're recording.

USB sound card

To control the noise, use an external (typically USB) sound card, a USB multimedia headset, or one of the new USB microphones. The USB interface isolates the sound card from the computer's noise resulting in a cleaner signal.

Expect to spend around \$100 on these recording devices.

Preamps and pro microphones

The recording has improved and noise is now under control, but the sound level (the volume) tends to be weak. The next step-up in quality is to control the level through a good preamp and, possibly, a compressor.

Signal from a microphone is very weak. A preamp raises the signal to a more typical level. Because sound cards are designed for gamers, they might not include a preamp or, when they do, it's a low quality one.

Pop filters and windscreens

Say the word "podcast" with your hand directly in front of your mouth and you feel a little burst of air (say "rss" to compare with). The microphone also feels the burst of air and this causes distortions. A pop filter or a windscreen is made of foam, fabric, or metal and it deflects the burst of air when pronouncing "p," "b" and (to a lesser extent) "s" and "z." The pop filter prevents the distortion. Some microphones have built-in pop filters; others require you to buy one.

The solution is to move from gamers' devices to musicians' devices. The latter include a good preamp and give you a lot of control over the *gain* (the volume at which you are recording). Good preamps also have the connectivity to take professional microphones.

Two types of microphones are in common use: dynamic and condenser. *Dynamic microphones* are rugged, durable and less sensitive to noise. They are best suited for rooms with poor acoustics or noisy environments (such as interviews).

Condenser microphones are more sensitive and are, therefore, ideal to record all nuances of the voice (...in a quiet room). To operate, condenser microphones must be powered by the preamp, a feature known as *phantom power*, which is not available on low-end devices.

On the subject of microphones, also consider the pickup pattern. *Omnidirectional* microphones record sound coming from every direction, in other words they record you speaking into them, but also record a car passing in the street and the fridge in the background. For podcasting, you want a microphone that primarily records your voice and ignores the kids running in the backyard. What you want is a *cardoid* or *supercardoid* microphone.

Plug the preamp into an external sound card (in this price range, they are called A/D converters, but they are essentially fancy sound cards) to minimize noise, as you

have seen earlier. Several brands make combos that pack a preamp and a sound card into one small box.

Headphones

If at all possible, listen to yourself while recording. Listening to yourself (or monitoring) is necessary if only to judge how far or close you must be from the microphone. Plug in the headphones before the digitalization if your setup permits. Digital audio suffers from a small delay (called *latency*) and it is very difficult to speak naturally if you listen to what you said one second ago.

You can spend as much money as you want on quality audio hardware, but buying studio equipment is a waste of money unless you know how to operate it and have access to a real studio. And, you'll compress to MP3 in the end, so you'll lose all the nuances of high-end gear.

You can achieve excellent results by spending around \$500 on the hardware.

Example

I've provided sound samples (see [Download](#)) for you to hear the difference between the three typical setups.

Section 7. Recording levels and compression

The challenge of gain

For the best clarity, you want to record with as much gain as possible. If you record too low you need to increase the gain by software or your listeners have to turn up the volume.

But there's one twist: digital converters cannot operate over a certain level. If the level tips, even slightly, over the capacity of the sound card, distortion follows and it's pretty ugly: loud whistling and other funky sounds. Most recording software has a level indicator that turns red when distortion occurs, but by then, it's already too late. So, set the gain on the preamp to record high, but not so high that distortion follows. Before recording, test yourself and adjust the gain to your voice.

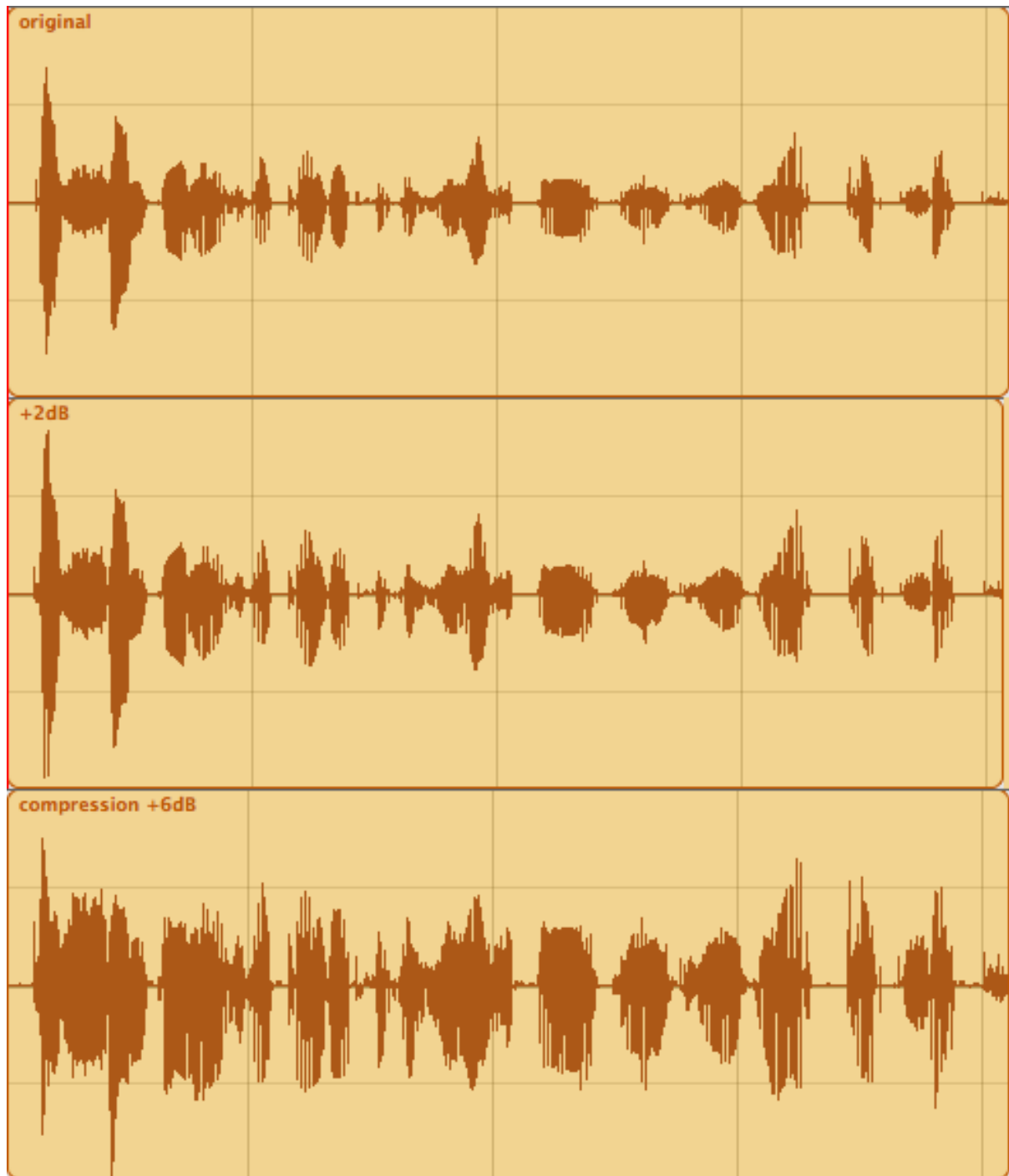
Compression

As you have just seen, gain is limited by the loudest segment in the recording. Because the voice tends to rise when you are enthusiastic, that defines your upper limit. You cannot record higher, even if most of the recording happens at a significantly lower level for fear of distortion.

Enter the compressor (which has nothing to do with MP3 compression). A *compressor* reduces (compresses) the gain on the loudest segments. The best analogy for a compressor is to imagine a sound engineer with his hand on the gain control. When the voice rises, he lowers the gain. The more excited the speaker, the more it is necessary to lower the gain. When the level returns to normal, the engineer increases the gain back to default.

See Figure 1 to understand this better. The top sample is the original recording. Note the peak at the beginning of the recording.

Figure 1. The effect of compression



The middle sample has some gain applied to it. It is louder, but not much. To increase the gain further would cause distortion at the peak. Your ability to increase gain is limited by the peak.

In the last sample, compression was used to control the peak. With compression, it was possible to raise the level by +6dB (in effect, doubling the volume). Note that

most of the sound wave is higher except for the peak, which remains almost unchanged. Thanks to the +6dB, the perceived loudness is significantly higher.

Software or hardware

You can compress in the recording software or by using a hardware device that sits between the preamp and the sound card. *Software compression* is useful to increase the level of the recording (for example, a recording made with a multimedia headset) but it is too late if distortion has already occurred.

Only *hardware compression* can prevent distortion during the recording. A compressor is a *safety net* against distortion.

Personally, I find compression liberating because it allows me to express my enthusiasm (and raises the level of my voice) without worrying about distortion.

If you plan to use a hardware compressor, make sure that you can plug one between your preamp and your sound card (few combos offer the option) or buy a combo that already includes a compressor.

Now it's time to visit a computer store (for multimedia gear) or an audio store (for pro audio gear) and test different microphones and preamps until you find one that you are comfortable with.

Example

Having identified the quality of the sound as an important criteria, for Declencheur, I chose to replace my multimedia headset with the following:

- Alesis iO|2 (a combo preamp, USB sound card)
- Audio-Technical AT3035 microphone
- dbx 266XL compressor
- Beyerdynamic DT150 headphone
- Konig & Meyer boom arm
- Shure SM58 to record interviewee

Section 8. Recording and encoding software

Multitrack software

On the computer, you need recording software. Again, the choices vary in price and features. Some of the big ticket products are Adobe Audition, Apple Logic, and Bias Peak. Free products that come bundled with computers include Sound Recorder (Windows) and GarageBand (Apple).

An alternative is to record with an MP3 player or a Minidisc. They are great for portability and less taxing on the computer.

What about a mixer?

Much of the literature on home studios recommends using a mixer. A *mixer* combines different sound sources, for example, your voice and background music, into one signal. In many respects, multitrack software like Audacity is easier to work with because it allows you to change the mix after recording. If you find that the background music is too loud, you lower its track. With a mixer, you would have to re-record. Still some podcasters like to mix "life," if you think that's you, then get a mixer.

A popular recording software product is Audacity. Audacity is available on Windows, Linux and MacOS, has all the features you need to record and mix a podcast, and is open source. Audacity supports multi-track recording, meaning that you can record your voice in one track and play music in another track. You control each track independently, for example, to reduce the music level compared to the voice.

Audacity can export to MP3 through the open source Lame encoder library, allowing you to handle all the production in one tool.

See [Download](#) to install Audacity and Lame on your platform.

Section 9. Planning the episode

Be prepared

You have planned your podcast, decided on audio hardware, and installed the recording software. You are now ready to record your very first podcast.

It helps to prepare an outline of the episode. The outline tells you which topic to cover when and how to transition from one to the other. When preparing the outline, you might find that you need to research the subject some more.

How detailed do you want the outline to be? Again, it depends on your style. Most podcasters are happy with a rough outline but if you'd rather read from a script, do so. Just make sure that you don't declaim.

Example

For Declencheur, I organize each episode around four sections:

- Welcome the audience, repeat the address of the site
- Editor's comment: a short (3 to 4 minutes) discussion of a book, site, or product that caught my eye
- Main segment: a discussion of one photographic aspect, for example, inkjet printing, white balance, tripod, histogram
- Listeners' feedback: answers to comments and questions about previous episodes

Section 10. Recording, mixing, and encoding

Hit record

Wow, now you're ready to record your first podcast! If you've never done any audio before (that was me, at the end of 2005), spend some quality time with your microphone, getting to know each other.

It takes a book to describe how to use a microphone, but here are a few important things to remember:

- Do not speak directly in front of the microphone, but rather from an angle of 45 degrees. This reduces pops.
- Keep the distance between the mouth and the microphone constant or the volume varies.
- Smile when speaking, be enthusiastic, move your arms as you would in a conversation. Auditors cannot see you, but they can hear the difference.
- Realize nobody likes their voice when recording. Don't worry, others like you.

When you're ready, hit the record button and have a go. Don't panic, if you make a fool of yourself, just delete the recording. No one ever has to know. The beauty of recording digitally is that you can delete your errors.

If you find yourself going down a wrong path, just pause for a second (the blank on the recording helps you find the spot) and repeat yourself. By all means don't push the stop button or it breaks the flow! Pause if you need to (for example, to answer the phone) but don't stop.

When you're done, listen to the recording, select and delete unwanted portions (for example, remove most of the "uhs"). If you want to, you can add a layer with background music, a jingle, and other sound. Save your work and encode to MP3.

Encode to 128Kbps in stereo because it is the most widely supported format. Some players do not recognize other variations of MP3.

Section 11. Really Simple Syndication (RSS) sharing

The (happy) XML ending

You have an episode! That was a lot of hard work, but it paid off. You are now ready to invite the world to listen to your podcast! This is where the XML kicks in.

Podcasts are distributed through an RSS feed. The *feed* is an XML document that points to the MP3 files. See [Resources](#) for a more complete introduction to RSS.

Anyone with an interest in your work can subscribe to the RSS feed and be notified when new episodes become available. RSS clients (such as iTunes) download the RSS feed periodically and look for new episodes. If a new episode is available, the user is notified. Subscribers benefit because they can monitor dozens of podcasts (and even Web sites through their feeds) automatically. It saves them regular visits to the sites.

RSS 101

If you are not familiar with RSS coding, it is a surprisingly easy vocabulary. The feed is enclosed in the `rss` element. It can contain, at most, one `channel` child element. The `channel` element contains the description of the feed as a whole: the feed title (`title`), the URL related to the feed (typically your Web site, `link`), the description of the feed (`description`, as well as categories), the language of the feed (`language`), and publication date (`pubDate`). See [Resources](#) for the actual

specification.

After the feed description, you find a list of `item` elements. Each item represents "something" that happened on your Web site. If yours is a news site, the items are news items. If yours is a cooking site, the items are recipes. Because yours is a podcasting site, the items are podcast episodes.

The children of `item` are mostly identical to the channel description: the item title, the URL related to the item, the date the item was published, and a description. Include HTML tags in the description using a CDATA section.

The `item` element has two special children:

- `guid` is a unique identifier (unique within the feed) for the item. Clients use the `guid` to determine whether an item is new.
- `enclosure` is the URL of the MP3 file attached to the item, in other words, the episode.

The `enclosure` tag has three attributes:

- `url`: the URL of the MP3
- `length`: the size, in bytes, of the file
- `type`: the MIME type, "audio/mpeg" for MP3 files

Example

Listing 1 is an excerpt from Declencheur RSS feed. Note the use of the `enclosure` tag to point to the MP3 file.

Pay attention to the difference between `link` and `enclosure`. `link` is the URL of a Web site, `enclosure` points to media content such as audio or video.

Listing 1. RSS feed with enclosure

```
<rss version="2.0">
  <channel>
    <title>Declencheur</title>
    <link>http://www.declencheur.com/</link>
    <description>Le podcast qui parle
photos.</description>
    <docs>http://blogs.law.harvard.edu/tech/rss</docs>
    <language>fr</language>
    <copyright>© 2006, Benoit Marchal. Tous droits
reserves.</copyright>
    <pubDate>Mon, 15 May 2006 00:35:40 +0200</pubDate>
    <item>
      <title>Histogramme</title>
      <link>http://www.declencheur.com/clic/archives/2006/05/histogramme</link>
      <description><![CDATA[<p>A mes yeux,
  l'histogramme est un des progrès les plus
remarquables de la photographie sur
  les dix dernières années. Un progrès dans la
précision de l'exposition au moins
  aussi important que la mesure matricielle en son
temps.</p>
  <p>Les trois segments de l'épisode sont (entre
parenthèses, le début du
  segment concerné) :</p>
  <ol><li>(01:34) Elinchrom D-Lite, je suis
particulièrement enthousiaste
  par l'arrivée de ces flashes électroniques de
studio. Mes premières
  impressions.</li>
  <li>(07:40) Histogramme, le thème principal de
l'épisode. Un <a target="_blank"
href="http://www.declencheur.com/clic/medias/2006/decl-2006-05-13.pdf">complément
visuel</a> est disponible.</li>
  <li>(27:03) Vos commentaires, mes réactions :
conseils pour la sauvegarde
  et précisions sur l'impression jet d'encre. Merci
de votre
  soutien !</li></ol>
  <p>Les liens présentés dans l'épisode :</p>
  <ul><li><a href="http://www.elinchrom.com/"
target="_blank">Elinchrom</a></li>
  <li><a href="http://www.foto-mueller.at/"
target="_blank">Foto
Mueller</a><br clear="right"
/></li></ul>]]</description>
  <pubDate>Mon, 15 May 2006 00:21:13 +0200</pubDate>
  <category>numerique</category>
  <category>technique</category>
  <enclosure
url="http://www.declencheur.com/clic/medias/2006/decl-2006-05-14.mp3"
  length="34722926" type="audio/mpeg"/>
  <guid isPermaLink="false">histogramme</guid>
</item>
</channel>
</rss>

```

Section 12. iTunes extensions

Making yourself heard

Congratulations, you've made your MP3 episode available through an RSS feed! Now you can call yourself a podcaster. That was hard work but it was fun, wasn't it?

What's next? Making yourself heard, of course. You want listeners to flock to your podcast and subscribe to your RSS feed. To enable them to find you, you must add

your feed to podcast directories. Amongst the podcast directories, the most popular one is the iTunes Music Store, which uses a twist on the RSS.

The *RSS specification* is a minimalist framework that you can extend through namespaces. Anyone is free to add XML elements to an RSS file as long as the elements are in a specific namespace. Apple has used the extension feature to add tags specific to the iTunes Music Store. If you want to be listed in iTunes, consider using at least some of their tags.

The new tags define information that helps blend podcasts with the rest of the iTunes Music Store:

- `itunes:category` selects a category for the feed.
- `itunes:image` is the podcast logo following the iTunes specification (300x300 pixels).
- `itunes:author` is shown in the Artist column.
- `itunes:duration` is the length of the podcast in minutes (information that is more useful than the `length` attribute on the `enclosure` tag).
- `itunes:explicit` marks explicit episodes. Explicit content is indicated with an explicit icon (parental advisory).

Look 'ma, a Web service

When the feed is ready, log into the iTunes Music Store, navigate to the podcast section, and follow the link to add a podcast. Provide only one piece of information: the URL of your RSS feed.

All interaction with the iTunes Music Store happens through the feed. When you post new episodes, iTunes retrieves them through the feed, but it does not stop there. Your feed description, categorization, language, and just about any other parameter can be changed simply by updating the feed. There are no forms to fill in at any time after submission; you use the feed to update the directory exclusively.

Two RSS extensions are particularly worth noting in this respect:

- `itunes:block` lets you temporarily remove the feed or an episode from the directory
- `itunes:new-feed-url` informs the directory that the feed has moved to a new location. Set up your server to return a 301 (permanent move) instead of using this extension because the iTunes client does not recognize the extension.

A word of warning: when moving to a new host, do not submit the new URL of the feed. Use the 301 response code or the `itunes:new-feed-url` element. Duplicate submissions are considered *spam* and can result in the removal of both feeds.

Tips and tricks

Here are a few tips and tricks to give your listener a better experience on iTunes. The iTunes Music Store associates a URL to your podcast. Navigate to your podcast in the directory and right-click (or ctrl-click on Macs) on the podcast name to copy its URL. The URL offers 1-click access to your podcast for iTunes users.

iTunes only downloads episodes if the path portion of the URL (before the `?`) ends in `.mp3`, `.m4v`, `.m4a`, `.mp4`, `.mov`, or `.pdf`. It ignores every other enclosure.

It looks at the path portion of the URL, that is, excluding a query string. Therefore:

```
http://www.declencheur.com/clic/medias/2006/decl-2006-05-14.mp3?from=iTunes
```

is recognized, but the following does not work:

```
http://www.declencheur.com/clic/medias/2006/download.php?file=decl-2006-05-14.mp3
```

Example

Listing 2 is an excerpt from the Declencheur RSS feed with some iTunes extensions. Note the declaration of the iTunes namespace (`http://www.itunes.com/dtds/podcast-1.0.dtd`).

Listing 2. Excerpt from an RSS feed with iTunes extensions

```
<rss version="2.0"><rss
xmlns:itunes="http://www.itunes.com/dtds/podcast-1.0.dtd"
version="2.0">
  <channel>
    <title>Declencheur</title>
    <link>http://www.declencheur.com/</link>
    <description>Le podcast qui parle photos</description>
    <docs>http://blogs.law.harvard.edu/tech/rss</docs>
    <language>fr</language>
    <copyright>© 2006, Benoît Marchal. Tous droits
réservés.</copyright>
    <pubDate>Wed, 24 May 2006 16:19:39 +0200</pubDate>
    <itunes:author>Benoît Marchal</itunes:author>
    <itunes:image
href="http://www.declencheur.com/clic/medias/2006/dsc_7478.jpg" />
    <itunes:category text="Arts & Entertainment">
      <itunes:category text="Photography" />
    </itunes:category>
```

```

<itunes:category text="International">
  <itunes:category text="French"/>
  <itunes:category text="Belgian"/>
</itunes:category>
<item>
  <title>Histogramme</title>
  <link>http://www.declencheur.com/clic/archives/2006/05/histogramme-visuel</link>
  <description><![CDATA[<p>A mes yeux,
  l'histogramme est un des progrès les plus
remarquables de la photographie sur
  les dix dernières années. Un progrès dans la
précision de l'exposition au moins
  aussi important que la mesure matricielle en son
temps.</p>
  <p>Les trois segments de l'épisode sont (entre
parenthèses, le début du
segment concerné) :</p>
  <ol><li>(01:34) Elinchrom D-Lite, je suis
particulièrement enthousiaste
par l'arrivée de ces flashes électroniques de
studio. Mes premières
impressions.</li>
  <li>(07:40) Histogramme, le thème principal de
l'épisode. Un
  <a
href="http://www.declencheur.com/clic/medias/2006/decl-2006-05-13.pdf"
target="_blank">complément visuel</a> est
disponible.</li>
  <li>(27:03) Vos commentaires, mes réactions :
conseils pour la sauvegarde
et précisions sur l'impression jet d'encre. Merci
de votre
soutien !</li></ol>
  <p>Les liens présentés dans l'épisode :</p>
  <ul><li><a href="http://www.elinchrom.com"
target="_blank">Elinchrom</a></li>
  <li><a href="http://www.foto-mueller.at"
target="_blank">Foto
Mueller</a><br clear="right"
/></li></ul>]]></description>
  <pubDate>Mon, 15 May 2006 00:21:13 +0200</pubDate>
  <category>numerique</category>
  <category>technique</category>
  <enclosure length="34722926" type="audio/mpeg"
url="http://www.declencheur.com/clic/medias/2006/decl-2006-05-14.mp3"
/>
  <guid isPermaLink="false">histogramme</guid>
  <itunes:duration>36:08</itunes:duration>
</item>
</channel>
</rss>

```

Section 13. Hosting considerations

Do you need a Web site?

Is a podcast a Web site? It is clear that podcasting uses HTTP hosting so it needs a Web server. Strictly speaking, though, you don't need an HTML site to podcast. Assuming they find you through a podcast directory and subscribe directly with a podcasting client to your RSS feed, listeners might never see your site.

Server setup

Still it's a good idea to provide a Web site, if only to offer a description of the podcast and instructions to subscribe. Many podcasters also offer an option to listen to the podcast and to collect comments on their site.

Many podcasters maintain a blog as a companion to their podcast. Indeed, with their support for RSS, comments, and archiving, blogs are the most natural platform to support a podcast.

Using a blog, you do not need to write the RSS feed manually. Another option is to use an RSS editor or blogging software to manage your feed.

If you're not using a blog, or if you set up a new server, make sure you configure the content type correctly. The official content type for RSS feed is `application/rss+xml`, but it is not well supported by browsers. Until browsers improve, serve RSS feeds as `text/xml`.

Bandwidth and longevity

Podcasts consume more than their share of bandwidth, so plan to grow the hosting from the start. Some hosts have specialized in podcasting and offer good deals for podcasters.

You do not need to host your MP3 file on the same machine as the RSS feed. You can even host the MP3 files on several machines! There is no restriction on the `enclosure` element in RSS. It can point to any host.

Some podcasters take advantage of this to publish their MP3 under a creative commons license and benefit from the Internet Archive's free hosting of creative commons files. Others use several free hosting accounts to share the load. Hosting everything on a solid Web server remains the most reliable solution.

Regardless of where you decide to host your podcast, publish the URL under a domain name that you own. This is not e-mail. The feed is the entry point to your podcast. Lose it and you'll lose subscribers. So don't take any chances -- make sure you control the URL to your podcast.

You do not have to pay hosting fees to use a domain name. Most registrars offer

free redirection and every serious podcasting client honors the 302 redirection, meaning you can publish your feed under your domain and redirect to a free or cheap hosting site.

I cannot stress enough the importance of owning the domain for your feed. Since I joined podcasting forums, it seems almost every week, I hear from a podcaster who has lost a large chunk of his/her audience, is discouraged, and quit. In every single instance, the problem would never have occurred had they owned the domain name.

As a podcaster, you consume a lot of bandwidth and, if the podcast is successful, your needs grow. It is not uncommon for a podcaster to be kicked out of a host because the bandwidth consumption is too high or to want to change hosts to save money or improve hosting. When that happens, unless you control the domain for your feed, you lose subscribers.

Example

I chose to host Declencheur with the same reliable host I have been using (for other projects) since the end of last century. Still, I registered a domain name (as discussed above, the availability of a domain was one of my criteria for the name), not only to retain control over the feed, but because I wanted a memorable address.

I edit the RSS feed with an RSS editor. I have written a simple PHP script to generate a Web site from the RSS feed. Comments are managed and stored in a database. I chose a custom PHP script primarily because I had the code base already. XSLT would have been an alternative.

Much success

If you made it this far, congratulations. Podcasting is still new so the field is wide open with possibilities. I wish you much success with your project.

Special Thanks

Special thanks to Sebastien Stomarcq for taking the time walk me through recording options when I launched my podcast

Downloads

Description	Name	Size	Download method
Samples of typical audio setup	AudioHardwareSample.mp3	150KB	HTTP

[Information about download methods](#)

More downloads

- Product: [Audacity, an open source recording and mixing software](#)

Resources

Learn

- To get started with RSS, read [Introduction to Syndication](#) by Vincent Lauria (developerWorks, June 2006)
- Try the [RSS specification](#); it's surprisingly readable.
- Listen to [developerWorks Podcasts](#).
- As an alternative to RSS, you might want to consider Atom. Learn about Atom with [An overview of the Atom 1.0 Syndication Format](#) by James Snell (developerWorks, June 2005)
- MP3 files have a sophisticated tagging mechanism. Read more about it in [Cultured Perl: Fun with MP3 and Perl](#)
- To listen to podcasts, visit the following directories [iTunes Music Store](#), [PodcastAlley](#), [Yahoo! Podcasts](#), and [Odeo](#).
- For a technical discussion of microphones, read [A brief Guide to Microphones](#).
- For more options on connecting quality microphones to computer sound cards, read [interfacing professional microphones to computer sound cards](#).
- Learn the basics of audio compression with the [Compression 101](#) white paper (PDF file).
- Like most good things in life, you should not overuse compression. Read about the effects of overcompressing in [Pump up the volume](#).
- To learn how to place your voice and record more freely, read [The broadcast voice](#) by Jenni Mills (Focal Press, 2004), ISBN 0-240-51939-6.
- For a more comprehensive coverage of podcast production, read [Podcast Solutions](#) by Michael Geoghegan, Dan Klass (friends of ED, 2005), ISBN 1-5905-9554-8.
- To submit your feed to the iTunes Music Store, be sure to check their [RSS extensions](#).

Get products and technologies

- Download a [sample of recording gears](#).
- Build your next development project with [IBM trial software](#), available for download directly from developerWorks.

About the author

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Benoît Marchal is a consultant and writer based in Namur, Belgium. He is the author of *XML by Example*, *Applied XML Solutions*, and *XML and the Enterprise*. He produces the [Declencheur](#) podcast on photography.