Subject: Re: what is "resolution" in sound?
Posted by Wayne Parham on Sun, 19 Jun 2005 17:27:59 GMT
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Resolution is granularity. If you look at a picture on your computer screen, it is made from a series of dots, maybe 1024 across and 768 down. That's higher resolution than a screen of 640 by 480. There's also a resolution of shades of color. A high resolution image has 16 or 24 million colors, whereas a low resolution image may have only 256.Same thing in audio. If you have a sound recorded digitally, it might be sampled 44,100 or 96,000 times per second or it might only be sampled 11,000 times a second. Each sample may have 65,536 levels of amplitude (16 bit) or it may have only 256 (8 bit). Or it might be a 24 bit sample, having 16 million units of dynamic resolution.Now look at analog. In one sense, it has infinite resolution since there is no sample, no smallest unit of information. But in reality, there is a smallest unit of resolution, which is determined by the media and the machinery.Using pictures again, think of a camera loaded with 400 ASA film and another with 100 ASA film. The slow speed prints look crystal clear, like there are no dots but the high speed film prints show a little bit of grain. That's because the film has grain, and the high speed stuff is larger. It's still higher resolution than most digital images, but the point is that even though it is an analog media, there is a resolution limit too, in this case, imposed by the media.All analog formats have limits imposed by the equipment or by the media. This sets the resolution, like the bit density does for a digital system. The higher limit is set by the maximum amplitude and frequency the system can pass. The lower limit is set by the noise floor and by the lower frequency the system can pass. Analog formats tend to hit their limits smoothly, and the edge blurs. Digital formats tend to hit like a wall, because they have a well-defined limit.