

Audio - Job Aids



Myths of Audio Explained

Myths	Facts
General	
I want an audio system for my music and another one for movies.	Of course you can do that! Two systems will be more expensive than one but you may want the extra flexibility. But why not consider the following? <ul style="list-style-type: none"> ▪ Most multi-channel receivers and processors have a stereo-only mode so you can enjoy your current music collection in two-channel mode. ▪ Many two-channel recordings reveal extra depth and complexity when played back through a Dolby Pro Logic II or DTS Neo: 6 decoder. ▪ Many music artists and producers are moving to discrete multi-channel so why not get ready now?
I hate buying consumer electronics because I know that whatever I buy now will be obsolete in a year or two.	Not true today, especially in audio! “Backwards compatibility” means that new technologies benefit <i>all</i> sources. For example, DVD players play CDs. And Dolby Pro Logic II or DTS Neo: 6 decoders do a great job with your older two-channel sources, even cassettes! On the video side, today’s DVD will be with us for many, many years to come. We DO see some advances in video display technology as we move closer to HDTV but there are already plenty of products that will meet those needs today. So you can buy with confidence.
Sources	
The analog outputs on a CD player sound much better than the digital outputs.	<ul style="list-style-type: none"> • No way you can make a general statement here! • All CDs carry musical information in digital form and those “0s” and “1s” have to be converted to analog waveforms somewhere – in the CD player itself, a separate D/A converter, or in a receiver or processor. The important thing is the real-world quality of the conversion and the analog stage that follows. And that can be judged only on a case-by-case basis.
Dolby Digital and DTS are always 5.1 channel surround formats.	<ul style="list-style-type: none"> • Not true. Both Dolby Digital and DTS <i>can</i> carry up to a 5.1 channel soundtrack but don’t <i>have</i> to. So a Dolby Digital or DTS soundtrack may be mono. Or stereo. Or three-channel (left and right front channels and a single surround channel). Or anything up to 5.1 channels. You’ll have to check your DVD to make sure just how many channels are on the soundtrack. • Dolby Digital EX and DTS ES encoded discs, on the other hand, usually carry a 6.1 channel soundtrack. And generally do. (The extra channel is a “center back” channel.)
I want a DVD player and a CD player.	OK, but remember that all DVD players <i>must</i> play CDs. It’s part of the DVD spec. True, some 1st generation DVD players wouldn’t play CD-R and CD-RW discs (that fact may be important to you!) but almost all current DVD players handle recordable CDs with no trouble. So, unless you already have a treasured CD player, use your DVD player for both CDs and DVDs and simplify your life!
THX is better than Dolby Digital or DTS.	Lots of people are confused by this one. THX is nothing like Dolby Digital or DTS. Both Dolby and DTS provide the pipeline to get up to 5.1 channels (or 6.1 if you’re talking “EX” or “ES”) of information into your system. Once a THX-certified receiver or processor sorts out the channels with either Dolby or DTS decoding, it sends those signals through <i>additional THX-developed circuitry</i> to make home theater reproduction closer to a real theater experience.
MP3 is fine for headphones, but for my audio system, I don’t think so.	MP3 certainly isn’t what some audio snobs would call “high fidelity.” In fact, some MP3-encoded tracks are really foul sounding. But most, particularly those tracks encoded at one of MP3’s higher bit rates, aren’t bad at all. And MP3-encoded song tracks give you something you won’t find in more traditional hi-fi sources – the ability to put lots of music on a CD or any number of increasingly popular solid-state memory devices so you can enjoy your music almost anywhere.

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Command and Control	
The most important component in an audio video system is the receiver.	B-Z-Z-Z-Z-T! This is VERY wrong! The single most important component in any system is the loudspeaker. The LOUDSPEAKER, get it? And the second most important component (the one we can't really replace either) is the <i>room</i> we put those loudspeakers into. That being said, a receiver (or a processor/power amp combination) is pretty important. Fortunately for all of us, electronics are all surprisingly good these days. But the sonic signature of loudspeakers varies all over the place so spend some time and choose carefully.
If you buy a 100-watt per channel receiver, you need to match it to 100-watt speakers.	<ul style="list-style-type: none"> • Nope. First, speakers don't have any watts at all! They're passive and the best we can hope for is that they can <i>handle</i> the power from an amplifier. • That brings up the second problem: there's no standard for measuring a speaker's power handling capability! None. So a speaker from company Y rated at "100 watts power handling" may be able to deal with more power than a speaker from company X with a 200-watt rating. How's that for confusion? • So, what's the practical answer to the question? Generally, try to select speakers with a bit more power handling capacity than your receiver's power per channel rating. It's no guarantee, but at least you'll be on the right track.
If I want my music to be twice as loud I need a receiver that is double the power.	<ul style="list-style-type: none"> • Not true. At all. All else being equal, you'll need a receiver with <i>ten times</i> the power of your current model to play twice as loud! If your current unit produces 100 watts/channel, you'd need a receiver that kicked out 1,000 watts (one <i>kilowatt</i>!) per channel to play twice as loud. But there are no 1,000 watt/channel receivers, are there? • And remember speaker limitations, too. Even if you could find a <i>kilowatt</i>/channel receiver, how long would your speaker stand up to it? And how much distortion would your speaker produce when you hit it with that much power? • A better answer than more power might be to substitute speakers with a higher sensitivity rating. That will increase volume without the need for a larger amp. Your speakers and your ears will thank you.
The more settings I have on my receiver, the better my system will sound.	<ul style="list-style-type: none"> • Let's look at this from another perspective: "The more settings I have, the quicker I can screw up the sound." Hm-m-m-m. <i>That</i> could be a problem, couldn't it? • The point is that more settings simply give you more flexibility in altering the sound from your sources. If that's something you enjoy doing, then go ahead and knock your socks off. If that ability doesn't float your boat, then you can do with fewer settings.
Speakers	
Too much power blows speakers.	<ul style="list-style-type: none"> • Rarely true. Sure, a humongous power amp connected to a pair of tiny computer speakers will give you about a microsecond of raspy sound before burned voice coils give you eons of dead silence. But this happens about as often as a root canal without Novocain. • Now if you said "Too much <i>distortion</i> blows speakers," we'd agree far more readily. Don't try to fill a good-sized room with sound with an underpowered amp (or amp section of a receiver). You'll probably end up driving that amp into something called "clipping" – when you ask the amp to produce more power than it was designed to. When that happens, distortion really takes off and those distortion products might well take out the tweeters before you can turn the volume down. • Moral: always aim for a bit more power than you think you'll need and avoid the stress!

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You don't need to have matched speakers in a home theater system.	<ul style="list-style-type: none">• In the strictest sense, this is true. But from the performance viewpoint, you're doing yourself a huge disservice if you choose your home theater speakers with the same "one from column A and one from column B" approach that's so successful at your local Chinese restaurant.• That's because speakers have a certain "sonic signature." That poses a real problem for home theater systems because you often hear the same sound from different speakers. Imagine how disconcerting it would be to hear that same sound (a car racing from left to right, for example) change in quality as it panned from the left speaker through the center channel speaker to the right speaker! Nobody wants that kind of distraction.• And don't forget about the surround speakers either. You need the same sonic continuity to handle those "front to rear" pans also.• The best approach? Make sure all your home theater speakers are from the same manufacturer and are intended to be used as a "system."
Higher frequencies and harmonics don't matter because humans can't hear them.	<ul style="list-style-type: none">• Whoa! You can so hear higher frequencies and harmonics. In fact, this is often the information that allows you to almost instantly tell the difference between live and "canned" music – or between a clear and a muffled soundtrack! Good high frequency reproduction allows you to hear:<ul style="list-style-type: none">▪ All the instruments, even the piccolo, evenly.<ul style="list-style-type: none">▪ The differences between similar instruments – the different tonal qualities of a rosewood and a mahogany acoustic guitar, for example, or a Strat and a Telecaster!▪ The best imaging and sound staging (all those spatial clues that tell you where things are!)▪ All the dialog clearly. Even when everyone's whispering! .• So look – and listen – for the best high frequency reproduction you can get.
Big speakers sound better than small ones.	<ul style="list-style-type: none">• Did a passing dinosaur tell you this? In the early days of high fidelity, small speakers just couldn't produce decent bass. That all changed over 40 years ago when the acoustic suspension speaker proved otherwise. Of course, these early acoustic suspension designs generally required more amplifier power to sound their best and some folks just found it easier to complain than to invest in a more powerful amp.• And subwoofers simply didn't exist when this nasty "big speaker" myth got started.• So now you've got two answers: 1) the myth simply isn't true today, and 2) even if it still had some factual base, who cares? The bass you want comes out of the subwoofer anyway!• This myth also ignores the fact that small speakers often image (project a convincing sense of "the instruments are there") far better than larger speakers do. And smaller speakers take up much less room – and that's particularly important when a consumer is considering a home theater system!
Shielded loudspeakers keep the TV from interfering with the sound quality of a speaker.	<ul style="list-style-type: none">• Oops, someone put their brain in reverse when they mentioned this one!• Actually, the opposite is true, especially for conventional TVs with picture tubes (called CRTs or cathode ray tubes).• Putting an unshielded speaker, particularly one with substantial magnets, close to a CRT-based TV will first distort the picture, then add strange blobs of unusual colors, and eventually magnetize the tube so thoroughly that you'll need to use a degaussing ("demagnetizing" to most of us) coil on it before you can watch it again.• With flat screen TVs (LCD, plasma, LCos, and DLP), the situation is more benign. These technologies are (in theory, anyway) not influenced by nearby magnetic fields. But, to be on the safe side, we'd still recommend a shielded center channel speaker.

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The bigger the magnet a speaker has the louder it gets.	<ul style="list-style-type: none"> • This is simply untrue. The magnet is only one part of the speaker's "motor." The other part is the voice coil and it is the interaction between the magnet and voice coil that moves the speaker cones and domes. • A speaker's efficiency (an indirect measure of how loud it plays) and its power handling capacity is based on several things: <ul style="list-style-type: none"> ▪ The type of enclosure. ▪ The material the magnet is made of. ▪ The magnet's ability to "focus" its energy on the gap in which the voice coil sits (This is far more important than sheer size). ▪ The construction of the voice coil and its ability to resist potential damage from heat. ▪ The physical mass of the drivers themselves. • We could go on. But why? Now you know.
The best position for a subwoofer is in the corner of a room.	<p>Maybe. You might get the most bass from a subwoofer in a corner but that doesn't mean it's going to be the <i>best</i> – or most even – bass response. Sometimes the bass is more pleasing and more accurate when the subwoofer is freestanding in a room; sometimes it's better when the sub is close to a wall (but not in a corner). You simply have to experiment to find the best subwoofer placement.</p>
A 4-ohm speaker is louder than an 8-ohm speaker.	<p>A speaker's impedance (or electrical resistance) has so little to do with loudness that we can almost totally discount it. This myth probably came into being because someone thought that lower impedance meant that a speaker would draw more current from an amp. (That's true.) But what that extra current has to do with loudness is beyond us!</p>
Customers should select the speaker that sounds best to them. There are no standards.	<ul style="list-style-type: none"> • Well, sort of true. Consumers should remember that it's their money buying things to go into their home to make their lives more enjoyable. That gives them the right to choose whatever they want. But there are objective performance standards – frequency response, distortion, etc. – and some speakers simply do a better job of reaching them than others. • Where things get trickier is when a consumer has a choice between two well-designed and well-made speakers that simply sound different. Then personal choice takes over. But getting to that point is sometimes harder than you'd think it is.
Surround speakers are more important than a center channel speaker.	<ul style="list-style-type: none"> • If anything, the center channel speaker may be the <i>most</i> important speaker in the whole home theater system! That's because it has to handle all the elements of a movie's soundtrack – background music, dialog that ranges from screams to whispers, explosions, rustling grass, and everything else. • Surround speakers, in contrast, are usually less stressed. Sometimes they convey only ambient sounds – rainfall, crickets, footsteps, etc. But surround speakers are important. Multi-channel music can put as much strain on them as it does on the front speakers. So don't "wimp out" on the surrounds.
How many watts are in this speaker?	<ul style="list-style-type: none"> • Brief answer: "None!" Speakers don't have watts. Period. Instead, they have the ability to <i>handle</i> a certain amount of amplifier power. • "But what about powered speakers?" you ask. The answer to that is simple – the potential to develop power lies in the amplifier or amplifiers inside the enclosure – not in the speakers themselves.
I need more power because I like music really loud.	<p>OK, this one <i>might</i> be true. As we've explained, if you want loud, be prepared to go for many, many more watts than you have. And prepare yourself for the fact that the speakers you have now might not be able to handle that increase. A better answer to the "loud dilemma" might be to investigate speakers that are more efficient, that play louder with the same amount of power.</p>
What brand of speaker sounds best for rock?	<ul style="list-style-type: none"> • Wrong question! A good speaker, a <i>truly</i> good speaker, will let you hear what's on the source. Nothing more. Nothing less. So a good speaker will be as accurate with classical music as it is with jazz. • What about personal choice? You may <i>like</i> a certain speaker for rock (or for classical, etc.) but the chances are that the speaker you choose will have an inaccuracy that you find pleasing. Nothing wrong with that, but the fact is that this won't be a great speaker for everything. And that's going to be a problem eventually as your taste evolves and you listen to more and more different kinds of music or soundtracks. • In short, you want a speaker that lets you hear the <i>source</i> – not <i>itself</i>!

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Powered subwoofers are only for car audio systems.	<ul style="list-style-type: none">• Does anyone believe this anymore? Powered subs have really jumped in popularity in this Age of Home Theater – and for good reason! Having the amplifier in the subwoofer itself means you don't have to an external amplifier to power the sub. And <i>that</i> means a surround sound receiver, for example, doesn't have to have yet another amplifier inside an already crowded chassis to pump out the bass. That makes the receivers more affordable. And more reliable.• So get with it – powered subs are almost everywhere today. They make sense. And can sound great.
Accessories	
There is a big difference in sound quality between optical and digital cables and connections.	<ul style="list-style-type: none">• This is sort of like arguing about how many angels can dance on the head of a pin. First, it's gonna be dang near impossible to come to any answer. Second, who really cares?• The important thing is that both coaxial and optical digital cables are very good in getting those "0s" and "1s" from one place to another without losing any in the process.• So the question here isn't which connection scheme is better but what happens to those bits of information as they get converted to analog and sent out to our ears. <i>That's</i> where some of us might hear a difference.
Different lengths of speaker cable for all speakers don't affect a system's performance.	<ul style="list-style-type: none">• Surprise! This is true! But lots of people disagree. They argue that the "propagation speed" of analog audio information varies with cable length, that it takes longer for a signal to get from the amplifier to a speaker through 100' of cable than it does through 50' of cable. Sounds reasonable, right?• But these arguments are based on very high frequency signals – in fact, signals so high that they're called RF – for radio frequency! At this extreme, capacitance and inductance (two characteristics of a speaker cable) <i>do</i> have an effect and <i>can</i> delay the signal by a miniscule amount. But with audio signals, even those high definition signals we expect from DVD-A and SA-CD sources, there's so little effect that we can't accurately measure any differences in arrival time at all! And that means that imaging, sound staging, etc., are all <i>unaffected</i> by cable length.• So go ahead – use the amount of cable you need. You won't hear the difference even when every speaker in your system is connected by a different length!