



**SPECIAL
REPORT**



HOW TO BUILD A HOME AUDIO SYSTEM

**Choosing High-Performance
Audio Speakers, Home
Audio Receiver, and Other
Audiophile Equipment**

Installation Options for **WHOLE-HOUSE AUDIO**

IF YOU LIKE TO LISTEN TO MUSIC, all day long, in every room of your house, you're a prime candidate for a whole-house music system. Systems designed to distribute audio signals over cabling to multiple loudspeakers are widely available, and in configurations to handle any number of components. A custom electronics professional (CE pro) can recommend the best system for the job. He may also offer a few installation options.

In a traditional setup, all of the components including satellite receivers, media servers, and others are installed in a closet or utility room along with the distribution equipment. Cabling is run from this distribution hub to each loudspeaker or audio zone (a zone can be one room or multiple rooms) on the network. One of the biggest benefits of this type of installation is that it eliminates the need for each entertainment area to have its own stack of components. This type of hub will also usually include components for home control operations, lighting control, thermostats and more, as well as networking gear.

However, there are other installation options that might actually work better for your particular needs. If your house is large and sprawling, often it's better to have more than one distribution hub. One hub could serve the main floor, for example, while a second hub distributes audio to the zones on the second level. This setup allows your CE pro to run shorter lengths of cabling than had there been just one distribution hub. This not only minimizes the labor involved in fishing cabling, but is often better for overall system performance. The less distance a signal has to



travel, the less chance it will pick up interference or lose strength.

A third option combines a distribution hub with local components. Although stowing your equipment away in a closet or utility room eliminates much of the tech clutter in your entertainment rooms, it may be inconvenient if you still like to pop a disc into a player now and again without running to the basement gear rack. For this reason, a CE pro might suggest that you keep a Blu-ray player, for example, in your main rooms, while the rest of the gear goes into the equipment rack at the distribution hub. Local Bluetooth access points are also useful if you want the ability to play music from your smartphone or tablet.

Finally, there is the option of going wireless. Wireless transmission technologies, such as mesh networking, have become more robust and reliable over the years, making it a viable option for owners of existing homes in which fishing cabling may be difficult and/or expensive. This setup offers the benefit of being the most versatile, as you are able to move the equipment around the house, or even take it with you should you buy a new house. Configuration usually takes a lot less time, although the wireless network in your home must be robust enough to handle all the data traffic of multiple independent music streams.



KEY FEATURES in a MUSIC MANAGER



TODAY WE ENJOY A GLUT of music sources, devices and delivery methods. It's almost too easy to acquire a vast library of music in high-quality formats. Despite the wealth of content, many people still have trouble accessing it all in a convenient manner. Our content is scattered over a variety of devices including smartphones, computers, external drives and cloud storage—not to mention outdated shelves full of dust-covered discs.

A good media management system needs to be able to collect, organize and deliver all your music and make it available in the places you most want to enjoy it—this may be in your home theater, media room or all over your house.

Media management is more of a strategy than a product. As you decide what solutions will work for you, here are seven top features to consider:

1) File Compatibility: Music is available in a wide variety of file formats and quality levels, and if you've been collecting for a number of years, you probably have more than one file type on your hard drives or computers. In fact, you may even have multiple copies of the same music in different file formats. That MP3 you thought sounded good in 2003 is nothing compared to the FLAC version of the same music in 2013. Look for a system that is compatible with all the possible files you own. Be especially conscious of playback systems that work with high-resolution files so you're getting the best possible quality out of your collection.

2) GUI: The Graphic User Interface is how you find and access your music and videos. Most devices now include apps with GUIs for smartphones and tablets. Some are easier to use than others. Look for one that sorts and displays your content in a way that makes sense to you. Do you like looking at album art or are you more interested in creating playlists on the fly? Some devices include deep metadata on artists in the GUI, and those can be fun for people who enjoy learning trivia while listening to music.

3) Easy Integration: A good media manager shouldn't just be an island unto itself, especially if you've already got a home automation or control system you're comfortable with. Many of the best media managers are easily compatible with the best-known home control systems, and your CE pro will know how to add the proper drivers to make it work seamlessly. If you've got a control system already and want to add a media management device, check with your CE pro first to see which products will work best with the system you already have. Ease of use also refers to how easily and quickly you can add more content. Some devices require multiple steps to add and sync new content, which may not suit you.

4) Distributable: Gone are the days when an entertainment system was restricted to one room. The best media management systems permit content to be distributed to multiple rooms when integrated with a multiroom audio or video system. If you want to listen to your music or watch your movies in more than one room, don't settle for a system that supports only a single zone output or that can't be used in a distribution system.

5) Dedicated. Today's gaming systems, laptops, streaming devices and even NAS drives can all function, at limited levels, as media management devices. This doesn't mean that an Xbox or Apple TV is the best choice for holding entertainment content. If you take your music seriously, look for a device that's dedicated to the task, not one that adds media file management as a bonus feature. Dedicated devices also tend to have superior DACs (digital to analog converters) and file management systems.

6) Easy to Use: This should go without saying, but the easier a system is to use, the more you're going to use it and the better you'll feel about the money you spent buying it and having it integrated. Test a couple of different systems at your CE pro's showroom. If you can pick up the remote, touchpad or tablet app and immediately navigate through the features, then you know your family and guests will likely be able to as well.

7) Expandable: Your music and video collection has probably grown quite a bit over the last few years. There's no reason to believe this will end. Look for a system that can be expanded, either by adding additional components, hard drives, cloud backup or even streaming services. Some systems can be expanded by do-it-yourselfers; others require the skills of a CE pro.



SOUNDBARS & SOUNDBASES

When, Where and What to Look For



SOUNDBAR AND SOUNDBASES can be audio saviors for living rooms, bedrooms and dens. They can be the answer to a homeowner's home audio prayers, but there's no one-size-fits-all solution.

First, what's the difference between a soundbar and a soundbase?

At its most basic, a soundbar is a small tube or long box outfitted with a variety of drivers, digital amplifiers, crossover circuits and inputs designed to give you better sound than the array of speakers wedged into your half-inch-thick flat-panel TV. Soundbars basically sound better because they're bigger. They usually have bigger (and often more) drivers than a TV's built-in audio system. They have a cabinet that was designed for sound rather than designed to keep a big glass panel from falling on the floor, and they offer some placement flexibility.

Soundbars (not counting the LFE—low-frequency effects—channel) are usually offered as 2-channel or 3-channel systems, although 5- and 7-channel soundbars are also available, and wireless subwoofers are often a packaged option. You should consider a 3-channel system (right, center and left fronts) as the minimum because it will deliver the best dialog performance. The more channels also usually means the soundbar will do a better job at simulating a surround-sound experience.

A soundbase is very similar to a soundbar, except that it's shaped more like a clothing box than a tube. A soundbase is designed to sit under the TV—you put your TV right on top of it rather than hang the speaker on the wall, the way a soundbar is meant to be displayed. There are two main benefits of this format. First, the larger cabinet of a soundbase means there's usually room for larger amps and drivers than what a soundbar can hold. They often contain large down-firing base drivers on the bottom, and therefore don't require a separate subwoofer; and they look better with TVs that aren't mounted to a wall.

Why Use a Soundbar/base?

Like traditional speaker form factors, soundbars/bases vary widely in design and performance. Shopping for a soundbar isn't as simple as picking the one that's the same length as your TV (although that helps and looks nice, too). Future soundbar owners need to consider where they plan to put them and how they plan to use them.

People choose soundbars over receiver/speaker combinations for a variety of reasons, including space and budget. "If a soundbar is the right fit [for the client] we recommend them," says Mark Fienberg, vice president of sales for The Source Home Theater Advisers (a division of The Source Home Theater). "But if they want it for their main viewing/listening room, or if music is important to them, we will have a serious discussion about it."

Is a soundbar/base user sacrificing much performance compared to a traditional speaker system user? This depends on the system and the user. "New soundbars have 80 percent of what a full surround-sound arrangement has," says Ryan Herd, CEO of One Sound Choice. "They're also a great alternative for a kids' gaming room or the bedroom where the client would like to keep costs under control."

Noah Stein of Smart Homes Chattanooga encourages the products to clients who are wary of the space that amplifiers and separate speakers take up, especially when in-wall speakers are not an option. "They are really great, and our customers are happy with them. We feel that the tradeoff of sound vs. aesthetics is well worth it."

Connection Issues

Most, but not all, soundbars offer one or two digital audio connections (usually an optical input), as well as a set of analog inputs. When hooking up, you connect all your audio sources to your TV (ideally via HDMI) and then use your TV's digital audio return channel (ARC) output (usually an optical output) to connect to the soundbar. Then all of the audio going into the TV will come out of the soundbar. Unfortunately, many TVs downconvert an incoming surround-sound signal to stereo when sending out via ARC, which means the 5.1 audio from your Blu-ray player or DVR may be turned to stereo by the time your soundbar gets it. This may not matter a whole lot depending on how your soundbar creates its soundstage, but it's worth considering if you hope to get a simulated surround-sound experience.

A few soundbars/bases include HDMI inputs, which will usually preserve the full multichannel audio signal. Some are even able to decode Dolby and DTS formats properly.

While most people select a soundbar to play back TV and movie soundtracks, a great benefit of many models is their smartphone and tablet connections. Bluetooth is the most common wire-



less connection you'll find on a soundbar because nearly every cellphone and tablet includes the technology. With a Bluetooth connection you can play back your stored music as well as streaming apps such as Pandora or Spotify. This feature extends the soundbar's functionality beyond just a TV accessory.

Remote Options

Most soundbars/bases operate as a separate product in your A/V system, rather than like a speaker (passive soundbars need to be connected to a receiver/amplifier). The system will likely come with a remote, but most users will be happier either configuring the soundbar to be controlled from their DVR or TV remote, or will want to integrate the soundbar control with a separate universal remote or third-party control system. Better-designed soundbars will automatically turn on when an audio signal is detected in the input. Some soundbars also include an IR pass-through to make control easier.

Mounting Issues

Mounting a soundbase is easy. You put it on your TV stand and then place the TV on top of the soundbase (make sure the soundbase can handle the weight of your TV). But where do you put a soundbar? The most obvious place is on the wall directly under the TV, but the truth is that most people don't put their TVs (at least not all of them) on a wall.



If you're not going to mount the TV on the wall, make sure the TV's base doesn't get in the way of the placement of the soundbar, and likewise make sure the soundbar doesn't get in the way of the TV or its IR sensor. Sometimes a soundbar resting on a low table can benefit from the addition of small wedge feet to help angle the sound up toward listeners.

Some soundbars also don't sound well when placed inside a TV cabinet, so make sure you talk to your dealer or integrator about proper placement.

Standard on-wall installation, for the most part, is fairly straightforward, and many soundbars come with mounting hardware. The main concerns are hiding the connection wires and AC cable (an Insta Outlet can be useful here), and making sure the wall can support the system.

Fireplaces can pose the same problems for soundbar mounting as they do for TV mounting. "Most people like to tilt their TV down [to improve the viewing angle], so we have to mount the soundbar to the TV instead of the wall," says Dan Hong of Global Custom Integration. Stein notes that if the wall above the fireplace is stone, placing the soundbar on the fireplace mantel can be a good option. Otherwise, he attaches the soundbar to the TV.

Articulating mounts are attractive options for people who want to be able to move their TV into different positions, but this poses a problem for soundbar mounting. How do you hang a soundbar on the wall when the TV swings away from the wall? As with tilted TVs over fireplaces, the best option

is to attach the soundbar to the TV with a mounting device such as the OmniMount OCSBA universal soundbar mount or the Sanus VMA202.

Subwoofers

While soundbars are big improvements over a TV's built-in speaker system, their slim profiles and small drivers make them ill-suited for bass playback. Some soundbars today come with separate active subwoofers. Often these subwoofers are wirelessly connected to the system, which makes them very flexible in terms of placement. When hooking one up, it's a good idea to test it out in a number of locations to determine where it sounds best, because things like corners or floor material can affect performance. Usually the subwoofer in a soundbar system has a higher crossover than a typical home theater setup.

Feinberg says that he usually incorporates a wireless subwoofer into systems because they're flexible and less expensive to install. "We always suggest a subwoofer with a soundbar to give the customer more bass," says Stein. Hong adds that he usually suggests an in-wall subwoofer, so there's nothing else to clutter up the room.

25 TERMS & TIPS for Choosing and Using Speakers

YOUR HOME THEATER WILL ONLY SOUND as good as your speakers, no matter how solid your other audio components are. Bad speakers will produce bad sound, period. And when you have bad sound, you won't want to listen to your home theater as much.

There is a type of speaker to fit nearly every need. There are large freestanding or floorstanding loudspeakers, bookshelf-size models, in-wall and in-ceiling models, newer on-wall ones, subwoofers and even a new family of speakers called audio transducers. Some units are simply functional, like a good car that gets you from point A to point B. Others are sculptural art, like exotic sports cars or classic roadsters. And many are somewhere in between. What you don't want is something that looks fancy but underperforms.



1. Freestanding, floorstanding, cabinet-style or box speakers are just what their names suggest: speakers that stand alone on the floor or are housed in their own cabinets. Included in this category are traditional boxy wooden speakers. Freestanding speakers typically provide the best sound, whether for music or home theater. Freestanding speakers are often used in particular rooms, such as a media room where there's enough space and where you may want the best quality of music, movies and more. But they can be used anywhere.
2. Large freestanding speakers can take up a lot of space and generally be a nightmare for the aesthetic-minded homeowner. However, freestanding speakers no longer have to be drab boxes. Some models are slender tower speakers that can add a unique design element to your space. Some cabinet-style speakers feature beautiful wood veneers, while others come in high-gloss finishes

such as piano black. Many freestanding models need to be placed a couple of feet from the walls, or a “boomy” sound will result. You can also place some freestanding speakers in home entertainment cabinets, concealing them behind fabric grilles, but you’ll likely sacrifice some of the product’s performance.

3. Some freestanding speakers use technologies other than traditional round speaker woofers, tweeters and midrange drivers. Electrostatic and planar (or ribbon) speakers produce sound from electrical charges created along thin films or ribbons. These tower speakers are well suited to reproduce classical music and vocals. They often appear as beautiful sculptures and include woofers in their bases to reproduce the lower audio frequencies.
4. Small bookshelf speakers can be very effective when placed on speaker stands. And with today’s technology, many bookshelf speakers perform on par with some floorstanding behemoths. So don’t disregard them because of their diminutive size. They are a great way to get the sound quality of freestanding speakers without sacrificing much space.
5. Left and right freestanding speakers often need to be toed in, or angled toward the listen area, for the stereo image to properly blend and sound best.
6. In-wall and in-ceiling speakers are often a good choice when you don’t want the devices to be visible or don’t have the space for freestanding speakers. These thin units are placed in a wall or ceiling (as you might expect), with their grilles flush mounted to the surface. They sometimes can be ordered in a custom color or can be painted to match the wall. In-wall speakers are generally rectangular in shape, while in-ceiling speakers are almost always round to blend better with lighting receptacles and other ceiling fixtures.
7. Many models of in-wall or in-ceiling speakers may look alike, but they are not all created equal. In-wall and in-ceiling speakers may have two or three speaker drivers and may come with “back boxes,” enclosures to which the speaker drivers are specifically tuned for the best performance.
8. Because of their small size, in-ceiling speakers are often compromised when it comes to producing high-quality audio. Directionality of the sound, especially in surround-sound setups, can be a problem, as well. Seek an in-ceiling speaker that has a moveable or pivoting tweeter, which allows the sound to be directed toward a particular area of the room.
9. On-wall speakers are designed to be attached to the wall and are often sold to complement a flat-panel TV. Soundbars usually are used as on-wall speakers.
10. Be sure an on-wall speaker sounds right to you. The thin enclosures can limit the sound and performance of these speakers, although some manufacturers have overcome this technical hurdle quite well.
11. Subwoofers produce the low-bass sounds you hear in music and movie soundtracks and are re-



sponsible for shaking you up with explosions and the like. They add a visceral element to your enjoyment of different media. There are active subwoofers, which include built-in amplifiers to power the woofers, and passive subwoofers, which draw power from an outside source such as a power amplifier or audio/video receiver.

12. Subwoofers typically come in square, boxy cabinets that can be placed in a corner on the floor, behind a piece of furniture or inside a large basket, for example. These days, however, you can find in-wall subwoofers, although definitely check for back box enclosures and dampening features. Some subwoofers are now as thin as a few inches.
13. Subwoofers produce their low sounds by moving air, so the bigger the woofer, the more air it will move. Subwoofer drivers range in size from about 5 to 18 inches in diameter, with the majority falling in the 12-inch range. Some of the enclosures are ported, meaning they have a hole on the side or the bottom of the cabinet for air intake. The port helps add thump to the bass.
14. On the other hand, don't base your subwoofer selection on size alone. Some newer technologies allow very small subwoofers to produce extremely deep and accurate bass.
15. Where one subwoofer is good, two is often better. Subwoofers can create peaks and nulls in a room, resulting in uneven distribution of the sound. Adding a second subwoofer will help even out the sound across the room.
16. Wireless speakers are untethered to your audio/video rack and free you from dealing with unsightly wires or difficult speaker cable routing. Wireless speakers are powered and need to be plugged into a wall socket, although some also operate on batteries. Keep performance in mind, however, as wireless technologies are prone to pick up interference.
17. Loudspeakers tend to come in two-way or three-way configurations. Two-way speakers use both tweeters for the high treble sounds and woofers for the low bass sounds, while three-way speakers use tweeters, woofers and midrange drivers (for sounds in the middle).
18. A three-way speaker with a woofer, midrange driver and tweeter is not necessarily better than a two-way speaker. Be wary of this if the speakers are comparable in price. Chances are the two-way speaker uses better drivers than the three-way model. So don't be seduced by multiple drivers.
19. Contrary to popular belief, most speakers don't "blow" because they are overpowered. Rather, they can be damaged because they don't receive enough power from the amplifier, causing the amp to overwork and "clip," or produce spikes of power that can cause the speakers to fail.
20. Speaker frequency response is the range of sounds a speaker can reproduce, from low to high.
21. Match the power requirements of your speakers to your audio/video receiver or power amplifiers. It's more dangerous to underpower your speakers than to overpower them.
22. Internal bracing in a speaker helps reduce vibration from the soundwaves.
23. Match the impedance rating, which is usually 4, 6 or 8 ohms.
24. Remember that sensitivity is more important than power in a speaker.
25. After your speakers are hooked up to your audio system, it's important to balance them. Use your receivers built-in test tones (if it has them) or a test disc or download, and balance the speaker volume by measuring the output with an SPL meter or SLP meter app (there are several available).

10 Features

— for Your Next —

SURROUND-SOUND RECEIVER

YOU ALREADY KNOW THAT YOUR NEXT home theater receiver needs sufficient wattage and speaker channels to fill your room with awesome surround sound. You know that it needs to decode the latest Dolby Digital and DTS for your movies. You also know you need a whole bunch of HDMI 1.4 inputs and maybe a few legacy analog inputs for that Wii game console or something else you refuse to throw away. But beyond that, what are some of the newest features to consider? Here's a rundown of some of the must-haves for your next AVR (audio/video receiver).



1. Bluetooth

Bluetooth is becoming the less-expensive and more ubiquitous (and in some cases more practical) answer to AirPlay in many receivers (as well as soundbars and other home audio components). It allows you to easily and wirelessly connect any smartphone (Android users aren't left out) to your receiver for playing stored or streamed music. It's simple and works. To some ears it might not sound as good as AirPlay, but the new apt-X version of Bluetooth is quite good. Many receiver manufacturers implement this technology rather than AirPlay, because AirPlay costs more.

2. AirPlay

Yes, I said Bluetooth apt-X is good, frequently good enough, and cheaper, but since when do you settle for that. If you use an iPhone, iPad or iPod for your portable music and want to play that music over your home theater sound system, then get a receiver with AirPlay. Docks are so 2009.

3. Ethernet Switch

We've only seen this feature so far in a small number of receivers, but we love it and want to see it in more products. Today many of our home entertainment sources are dependent on a broadband network, but hardwired connections can be limited. Integrating an Ethernet hub into the receiver allows you to plug one wire into the receiver then spider out to all your other Internet-dependent components (Blu-ray player, game console, FireTV Roku, Apple TV, etc.). A wired connection will be more reliable and robust than a Wi-Fi connection.

4. Wi-Fi

OK, we just told you to use a wired connection, but we're also realistic. We can't always get what we want, and in those cases, Wi-Fi will do. Built-in Wi-Fi is easy to use and for most music streaming it's good enough. Most AVRs these days include an assortment of music services like Pandora, Spotify or TuneIn Radio, and for those Wi-Fi works just fine, assuming your network is sound and your kids aren't hogging up the bandwidth by Skyping their friends.

5. 4K Scaling

This year all the best TVs will be 4K (Ultra HD) TVs. As TVs and projectors add resolution, your AVR will need to be able to upscale all incoming content so that the picture looks good with the extra pixels. Just as with 1080p scaling on current TVs, not all 4K scaling will be created equal.

6. MHL

MHL (mobile high-definition link) is a relatively new connection port that enables an HDMI-quality connection between a receiver and a compatible smartphone. The standard supports video of 1080p/60 and audio in a 7.1 format. It's built into a few TVs and receivers now, and we expect more manufacturers to adopt it. Not only is it useful for connecting your phone (to watch streamed or recorded video), but it also is the connection for the Roku Stick.

7. Room Correction/Speaker Calibration

Audio setup used to be an arduous task involving the use of sound pressure meters, measuring tapes and a calculator. It's why many people skipped it altogether. Thanks to built-in software, now all you need is the included microphone and less than 10 minutes of quiet time to make your room and speakers sound much better. If you're doing the setup yourself, and you're not an experienced audio professional, don't buy a receiver that doesn't include some kind of auto calibration feature.

8. High Resolution USB DAC

Audiophiles know the importance of higher sampling rates in digital music. That's why they pay a lot of money for external DACs from companies like Wadia or Peachtree. Now AVRs are coming with better-quality DACs built in so you can play high-resolution WAV and FLAC files off portable hard drives. Look for DACs capable of playing 96kHz at the minimum, but sampling rates up to 32bit/192kHz are even better.

9. Second Zone

Most mid-to high-end receivers include multi-zone and multi-source functionality, which enables music to be distributed to other rooms. Some AVRs even offer three zones of audio and support the distribution of video. This means that one receiver can be the hub for your main home theater plus feed content to a second HDTV in another part of the house (usually with only 2-channel audio). You can use an RF remote, control system or phone/tablet app to control the receiver remotely.

10. App Control

While your primary method of operating your next receiver will probably be either the receiver's own remote or a universal remote, a smartphone or tablet app can be very useful as a backup or secondary control interface. Apps have two main benefits: First, they're connected via Wi-Fi so you won't need an unobstructed IR (infrared) signal path from the remote to the receiver. We find AVR apps useful for turning down the volume from another room where the kids are watching TV. Second, apps may offer a control menu that's easier to see and navigate. Most receiver remotes are wastelands of tiny buttons. We like the larger, multi-page view of an app for many features, like selecting Internet radio stations. It's like getting a second remote for free.

Bonus: Phono Input

Here's your 11th "bonus" feature. While many audiophiles will tell you to set up a separate 2-channel system with its own amplifier to listen to vinyl, for people who simply want to spin the occasional record left over from their college days, a built-in phono-stage input on a receiver is a good option. You may have to explain to your kids what those extra-large discs are, though.

AUDIO

Inside & Out

Niles Audio speakers and Elan g! control add to family's listening enjoyment

NEW YORK RESIDENT GINO LAVERGHETTA wanted both a great indoor and outdoor audio system for his new home. Unfortunately, his past experience with outdoor sound systems was disappointing.

It's true that outdoor sound can be a bigger challenge to get right than indoor sound, and LaVerghetta wasn't willing to compromise this time in his backyard. This is why he hired a professional audio/video installer who had a lot of experience designing and installing outdoor audio systems. Dave Febbraio of Structured Home Solutions suggested a Niles GS Garden Speaker system for the home's patio and pool area.

The installation consists of a number of ground-mounted GS4 satellite outdoor speakers, all driven by an indoor amp, plus a Niles GS10 10-inch outdoor subwoofer to ensure the audio would have the full, three-dimensional quality the homeowner wanted. A 46-inch weatherproof SunBriteTV also helps keep patio guests entertained. One of the owner's favorite things about the outdoor music system, aside from the sound quality, is its discreet appearance. "I'm especially impressed with the in-ground subwoofer because it helps deliver the full soundscape of my favorite music without putting a big box in the yard."

Inside the house, Structured Home Solutions installed a home theater sound system consisting of five Niles HD Series in-wall speakers and a Sunfire HRS8 subwoofer. Altogether, the home features 16 audio zones.



The tech additions to LaVerghetta's new home didn't stop with the speakers, though. With a house that measures approximately 9,000 square feet, the family needed easy smart home controls for all of the home's subsystems, such as HVAC, lighting, security and the pool/spa. Febbraio installed an Elan g! home automation system that connects these various systems and allows the family to access anything via their iPads, in-wall touchpanels or handheld remotes.

LaVerghetta especially likes the convenience the home automation system offers him and his family. "I love sitting down to dinner with my family and then using my iPhone to turn on some music without getting up from the table," he says.

"And with the ability to dim and set timers for our lights, the kids never have to wander around in the dark to find the bathroom at night. The system offers so many conveniences that I'm still finding new ways to make my home easier to use every day."



Niles in-ground subwoofer

For more on speakers, audio components, wireless music systems and more for your Electronic House check out these resources:

Electronic House [Learning Center](#)

Electronic House [Audio Channel](#) for news, reviews and updates.

Focus Series: [Wireless Speakers and Wireless Audio Systems](#)

Focus Series: [Home Security and Monitoring](#)

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