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Tom Curnin ▾ · Dec 11, 2020 · 5 min read

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Smart Home Structured Wiring

Smart Home Structure



Complete Structured Wiring Guide For A Smart Home

An easy way to understand the design of your smart home is to view it as the construction of a house. First, builders must lay a solid foundation. In an interconnected home, that foundation is the mixture of three components: cabling infrastructure, power conditioning, and network (internet) accessibility. This foundation supports the two pillars that support the ground floor of the house: entertainment and environmental/security needs. The roof over your smart home is the control system, which allows you to interface with all these systems. This article's goal is to articulate why it's important to think about your interconnected home through this analogy and how each of these components is essential to your smart home's overall functionality.

Foundation

When we look at what goes into making a smart home, there are three foundational blocks on which the Entertainment and Environmental & Security elements must be built. Building a strong foundation allows more flexibility for the homeowner. These three foundational areas are:

- Cabling infrastructure
- Power conditioning/surge protection and uninterruptible power supply (UPS)
- Network

Cabling

The 21st century has brought about the world of data. Your home transfers data from room to room using cabling. Though wireless technologies have made great strides in speed and reliability, wired systems will always be the best wireless systems in those capabilities. In high-quality audio/video systems, cabling plays an important role. Bad cabling can seriously degrade signals that even very high-end amplifiers or sources can output, rendering your investment in expensive electronics useless. At Bravo AV, we have years of experience and technical expertise that helps us determine the commensurate cabling to connect the equipment you want in your system. Some important considerations we bring up to our clients when discussing cabling:



Structured Wiring Cable

- Do not skimp on cabling; spend the most your budget will allow. Once cables are in the wall, it will quickly become a big expense and painful to get back in there and change them.
- Run spare cables to give you future flexibility.
- Run cables from the head end to key areas in the house, even if you don't plan on having any equipment that needs it in that room/area at this time.
- Strongly consider placing fiber optic cable as a means to future-proof your house.

Power Conditioning, Surge Protection, and Uninterruptible Power Supplies (UPS)

A power conditioner is an electrical device that provides "clean" AC power to sensitive electrical equipment, removing unwanted and detrimental "noise." A clean signal means your electronics get clean power, allowing them to work at their best. "Noise" refers to deviations from that ideal AC power supply and can cause electronics to degrade their performance. Household systems are imperfect and allow larger electronic appliances to create noise on top of the noise that enters your household from the power grid.

A surge protector is a different device that protects against large deviations from the ideal AC power supply. Surges occur when power grids cut out or when a storm introduces a jolt of lightning into the grid or even at your home. While power conditioners allow electronics to work at their best, a surge protector may save them from being destroyed by an introduction of an electrical energy spike.

UPS are backups that provide power in the event of power loss. Double-conversion UPS designs provide an additional benefit by supplying a constant 120 volts. These are helpful for systems that have volatile memory and would otherwise lose all stored data in a power loss event. UPS systems are critical for providing power between the time the grid goes down and the generator kicks in. While this process typically only takes a few minutes, the voltage fluctuations can be detrimental to your electronics during this time.

Best Practices:

- Always use power conditioning at all AV and network locations.
- Where possible, use a two-layer approach and install power conditioning at the electrical panel and the point of use.

Network Access

"Smart Home" is the term commonly used to define a residence that has appliances, lighting, heating, air conditioning, TVs, computers, entertainment audio and video systems, security, and camera systems that are capable of communicating with one another and can be controlled remotely from any room in the house. Connectivity to the internet provides heightened functionality and convenience to users.



Providing strong, reliable internet signals to these devices and around your entire home is essential in building a smart home that will not become quickly outdated. Bravo AV has constructed hybrid wired and wireless networks for large homes and small businesses and can help you anticipate future networking needs so you don't have to constantly play catch-up. We always encourage our clients to choose wired internet connections in areas where they anticipate working or streaming video, as wired connections will provide the best speed and reliability.

Best Practices:

- Build for today's needs and leave room to meet tomorrow's demands.

Ground Floor Entertainment

An important part of your smart home is your audio/video entertainment. All the media in your smart home will rely on the clean power and network access provided by the foundation components, not to mention the cabling to get it there. Here at Bravo AV, we can design and build TV setups, home theaters, whole-home audio systems, and outdoor AV spaces that fit your lifestyle.

Our expertise in the whole-house audio realm is unrivaled. We were one of the early adopters of Sonos, which is now wildly popular. The Sonos app's current generation makes whole-home audio control incredibly easy and intuitive, and it has all the popular streaming services you may desire, such as Pandora, Spotify, and Tidal.

Environmental and Security Features

Smart homes allow you to take more control over your home's environment. Lighting, shades, temperature control, etc., can all be controlled by your smartphone or a central control interface, communicating with each other and you. Security cameras and alarm systems keep you, your loved ones, and your property safe even if you are away from home, sending alerts right to your phone should you choose.

Roof Control System

At Bravo AV, we understand that our clients want simplicity, which is why that is our number one goal when fitting your smart home devices with a control system you will understand and enjoy. One of the major benefits of investing in a smart home system is being able to utilize a more centralized control system for many of your connected devices. Imagine being able to control your thermostat, shades, and lighting all from your phone! Get rid of the five remotes you use to control your TV components; we can find you a remote that can interact with all of your electronics, including streaming platforms such as Apple TV and TiVo, giving you a simple interface through which you can control all your media. We recommend Savant control systems.

For additional resources, please visit our page on [Smart Home Wiring and Speaker Wire](#) with articles like this on everything you need to know.

Bravo AV is proud to be an HTA (Home Technology Association) Certified Installation Firm and professional A/V experts. Tom Curnin, the owner of Bravo AV, is a CEDIA Professional Designer, a certified THX Level 1 home theater professional and a member of the Home Acoustic Alliance trained to Level II. You can contact Tom directly at (908) 953-0555 or through email at Tom@BravoAV.com.

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