

# hiddenwires

## **Five Challenges of Configuring an HD Interactive Coaxial Network**

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There has been much debate and deliberation over the last ten years concerning the most advanced distribution infrastructure for in-home networking. An ever-increasing user demand to access entertainment media anywhere inside or outside a home has exacerbated concerns and fuelled friction among industry leaders.

Since 2005, a growing number of service providers, equipment manufacturers and content developers agree existing coaxial cabling installed within the average home or business is capable of supporting high-performance, high-capacity transport of HD media and interactive data. Coaxial cable has withstood the test of time and continues to be the most robust, dependable and available communication medium for in-home entertainment.

The introduction of the Multimedia over Coax Alliance (MoCA) home entertainment network standard has made it possible for the average person to enjoy the latest entertainment technology in TVs, DVRs, console games, network-stored photos and video and other advanced electronic devices. MoCA home networks enable on-demand access to entertainment media to and from any MoCA-compliant device within the home.

Although existing in-home coaxial networks are capable of great things, they do require the installation of upgraded MoCA-compliant components to efficiently distribute HD media and data throughout the home.

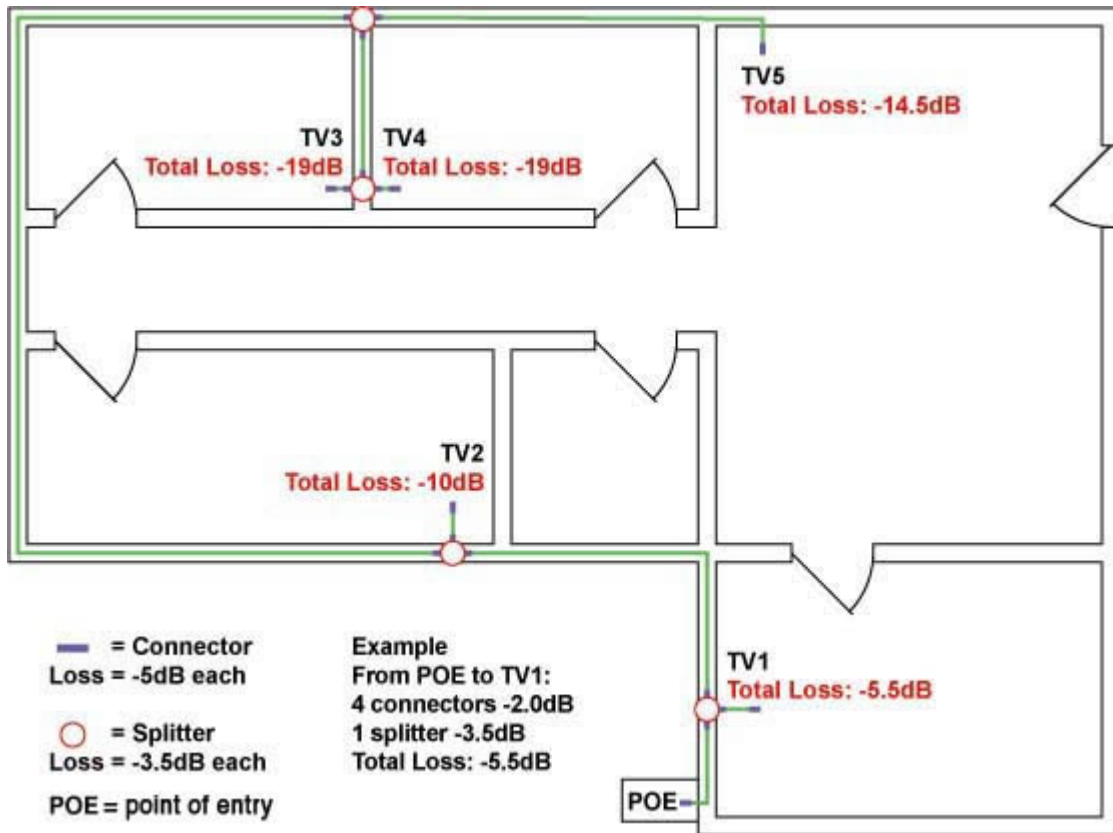
### **The challenges**

While the use of Wi-Fi and Ethernet have a place in a home data network, video transport across coaxial cable is more efficient than other seemingly easier alternatives. A MoCA-enabled home entertainment coaxial network is the preferred transport for entertainment media, but in order to ensure the best performance for their customers, installers should be aware of the practicalities involved.

The following are the top five challenges installers face when configuring a MoCA-compliant home entertainment network:

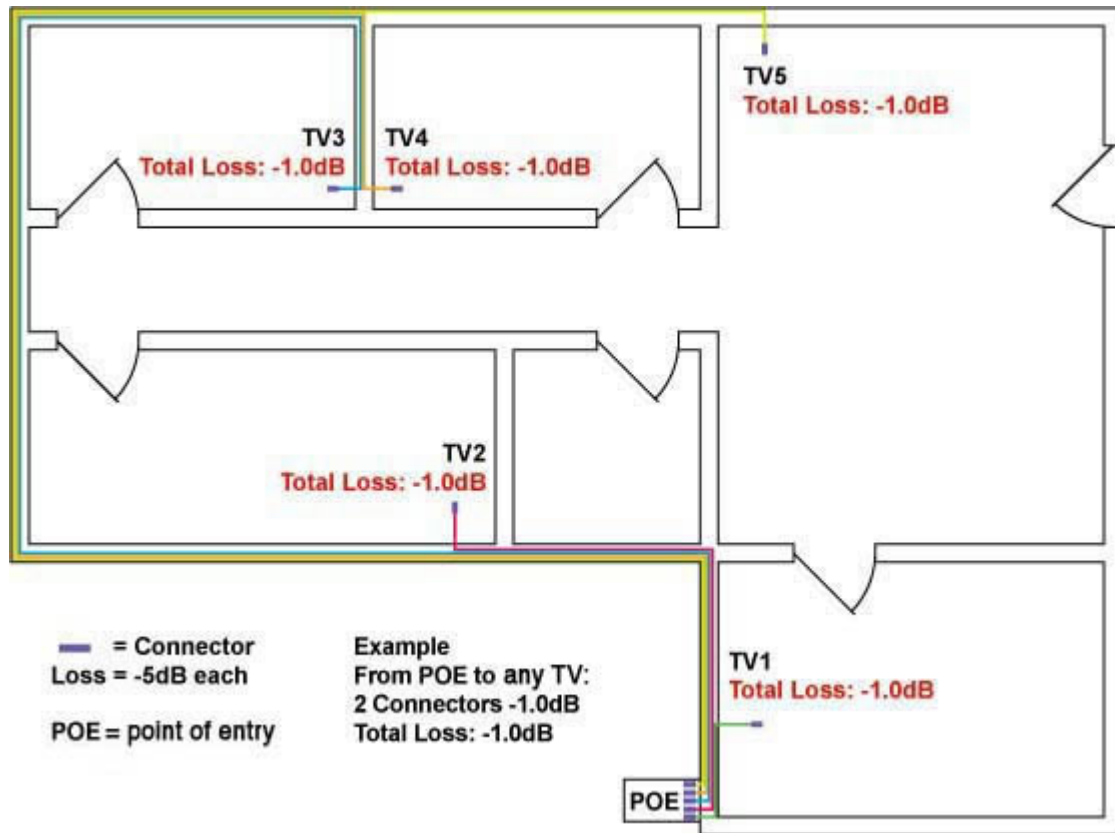
1. No central distribution point (cables are not home-run to a central location).

In an optimal MoCA network, all coaxial cables are home-run from a central distribution (splitter) point. The deployment of multiple end points branched (split or tapped) from a single cable will degrade communication signals among MoCA-enabled devices, resulting in poor quality of service (QoS) and other service-related problems.



*Daisy-chained coax network installation.*

An installer must ensure each end-point connection (e.g. to a TV or set-top box) is through a dedicated, home-run coaxial cable.



Home-run coax network installation.

2. Improperly-configured network (incorrect use of RF distribution components).

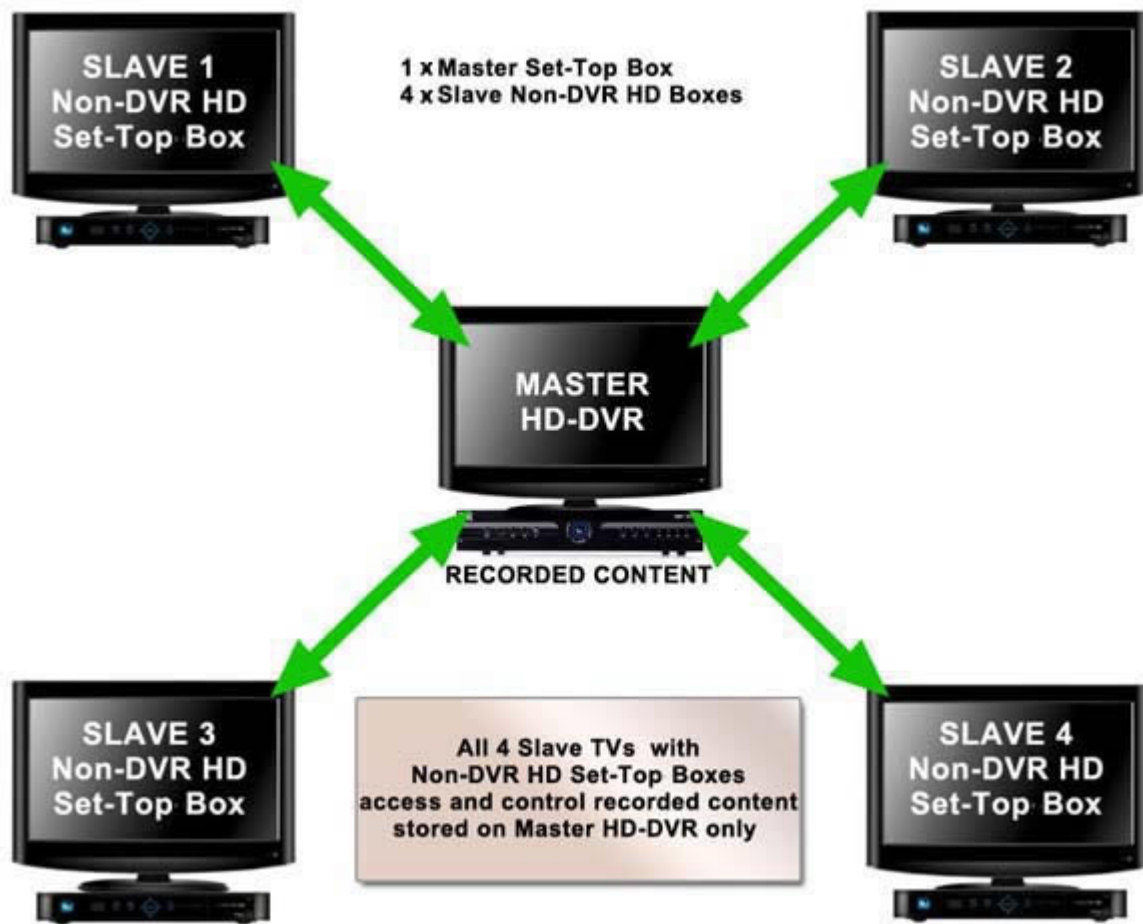
In a properly-designed home network, passive and active distribution devices are used to ensure high signal quality. The mismatch of components (parts not designed for the signal source being distributed) will impede communication signals throughout the network. It is recommended to quantify all sources of signal to be distributed, thereby creating a balanced network of matched signal levels and frequencies. It is also important to use quality devices that adhere to SCTE (Society of Cable Telecommunications Engineers) specifications. Poor-quality devices may create additional QoS problems.

3. Hardware incompatibility (all devices are not necessarily MoCA-enabled).

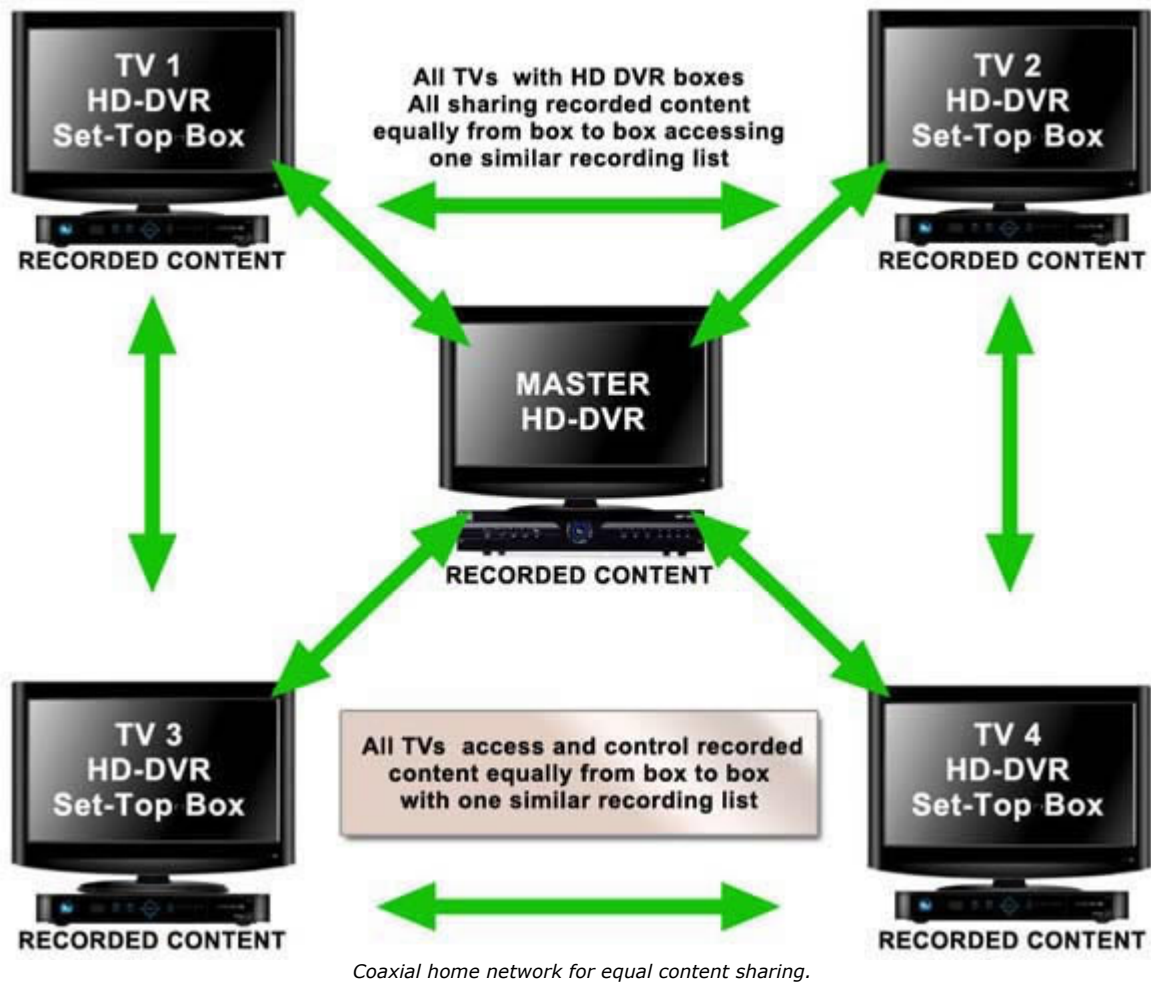
In most cases, a MoCA-enabled network will support a number of legacy electronic devices such as old TVs, set-top boxes and cable modems. However, MoCA signals across a home network will affect the operation of attached legacy devices. Therefore, the use of specially-tuned filters are needed to stop the ingress of these signals at each legacy end point, allowing only acceptable signals to pass.

4. New cable runs (resist shortcuts).

Maintaining network integrity requires home runs from a central source. New coaxial cable runs can be difficult, however there are coaxial cable alternatives to traditional RG-6 or RG-59 for in-home distribution. New, high-tension flat cables can traverse window and door jams without signal degradation. Mini-coaxial cables can squeeze through small holes and conduit runs, providing minimal signal loss at sizes 50% smaller than RG-6 for runs of up to 250 feet. SCTE-compliant high-tension flat and mini coaxial cable options are available from preferred manufacturers.



*Coaxial home network for single-source content access.*



5. Signal leakage creates problems for everyone (connections and containment).

Signal leakage equates to signal loss which results in poor quality. There are two primary signal loss problems affecting a MoCA-enabled home entertainment network. The first sounds simple: make sure every connector is tight. Loose connectors account for a significant amount of signal loss, thereby degrading communication signals and entertainment media QoS. High-end home network installers use spring-loaded connectors that maintain signal continuity even if a connector is loosened by two or three turns.

The second leakage problem concerns containment of MoCA communication signals within the home network and is the responsibility of a service provider (e.g. cable TV). A point-of-entry (POE) filter is used at the primary interface point into a home to ensure interactive MoCA control signals don't interfere with other home networks. MoCA control signals should emanate and terminate within a local home network. An RF signal meter/leakage detector can be used to identify rogue MoCA signals migrating from devices outside a home network.

### Conclusion

Advancements in home electronics, content availability and personal infotainment devices will continue to drive the demand for the delivery of high-quality entertainment media. The development and continued advancement of MoCA components allow the average individual to utilise their existing home coaxial cabling to get what they

want where they want it. However, it is important for installation and integration professionals to MoCA-tize existing coaxial networks in order to ensure optimal performance. These professionals need to identify potential network problems prior to implementation, so it is advisable to conduct a site evaluation in advance, plan properly, and use high-quality, SCTE-compliant components.

While the above list may not solve your ever-growing need for continued education to keep up with evolving technologies, we hope that you can use some of these tips to help you on your next project.

No matter what new technologies are introduced, there will always be growing pains for manufacturers, consumers and professionals adopting these technologies. These growing pains enable companies like us to be the pain relievers for the integration professionals, providing the products to simplify the interface of the new with the old. One thing is for certain, there is never a dull day at the forefront of emerging technologies!

Tom Robinson is Marketing Director and Brad Niems is OEM Division Manager of Holland Electronics LLC. Holland Electronics is a leading provider of MoCA, HPNA and G.hn components for cable television, satellite television and telecommunications companies, and is an active member of the Multimedia over Coax Alliance, Home PNA Alliance and Home Grid Forum.

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