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Using an Apple TV in a Control4 Multiroom System

To help you design multiroom Control4 systems using an Apple TV as the source of digital music we've compiled this short guide. This provides three sample scenarios, a classic multiroom system with a central amplifier and component video distribution, a more sophisticated multiroom system with HDMI video and a simpler system which only features multi-room audio.

These scenarios are designed as a guide only. They and their associated schematics are not intended as a full wiring diagram or kit list. They should however help you design a system that will meet your client's needs.

The Apple TV in a multiroom system

The main purpose of the Apple TV in most Control4 multiroom systems will be as a replacement for Control4's built in digital music system. It also brings the added benefits of the video content available through You Tube or the iTunes store.

In most situations you will be replacing Control4's music system because your client already has a digital music collection stored in Apple's AAC format or with DRM protection when purchased from iTunes. Control4 is currently unable to play these music formats.

So in most instances you would not connect the audio outputs of the Control4 controllers to the system and Control4's digital music would not appear on any of the user interfaces.

Apple TV capabilities/limitations

Each Apple TV can play one media item at a time. If you wish to be able to play four different tracks of music simultaneously around the home you will need four Apple TVs. However remember our Apple TV driver is licensed per project, so you would only need one license in this scenario.

You should also remember that the Apple TV can either output Component Video or HDMI video. It cannot output both simultaneously. You should also be aware that it does not have Composite video outputs. You will therefore need to design your system to use a consistent video format throughout.

Multiple Apple TVs can connect to the same iTunes library but an Apple TV can only connect to one iTunes Library.

Scenario 1 – Classic Multiroom System

This is a classic audio and video multiroom system. All of the source equipment is installed centrally and the property has a home theater, various other rooms with TV screens and further rooms which are audio only.

Outside of the Home Theater the client expects to listen to their music from the ceiling speakers in the property. When watching video content from cable, satellite or from their Apple TV they expect the audio to come from the TV speakers.

All of this is possible with our driver and the associated equipment you would expect to find in this kind of installation.

When you set up the Apple TV you will need to make sure that you select the video output to be component video and at a resolution that all the TVs in the property are capable of displaying. This Component video output you will need to split as it needs to connect both to the Cinema Amplifier and the Component Video matrix. Depending on your setup you may be able to do this with simple passive splitters or you may need to use a Component Video Distribution Amplifier.

You will connect the digital optical output from the Apple TV to the cinema amplifier and split the analog audio. One connection is made to the Component Video Matrix and the other to the Multichannel Audio Matrix/Amp. Again you can use either a passive splitter or use a distribution amplifier.

We have shown a single HC200/300 controller to provide the on-screen display to the property and connected its Component Video output to the matrix switch. In larger properties you may install multiple HC200s – one per TV screen. Also remember that in larger properties you may need an HC1000 (not shown) as your central controller.

You will need to connect the Apple TV to the client's home network and set it up to synchronise with the iTunes library on their computer. This is quick and simple to do and is explained in the Apple TV user manual.

This system now achieves all that your client wants.

Home Theater

In the Home Theatre Dad likes to listen to music. He can pick up the Control4 wireless touch panel and select Music. Here he will find the option for the Apple TV. From there he can select music either by Album, Artist or Genre or select any of the iTunes user created Playlists. The music will play through the surround sound system in the room. If he wants to play a movie they have rented via the Apple TV he selects Videos on the touchpanel and then Apple TV. This will switch the screen on in the Theater and then can select the Movie using the Apple TV's on screen menu system.

Other Rooms with TVs

All other rooms with TVs have full access to the content on the Apple TV.

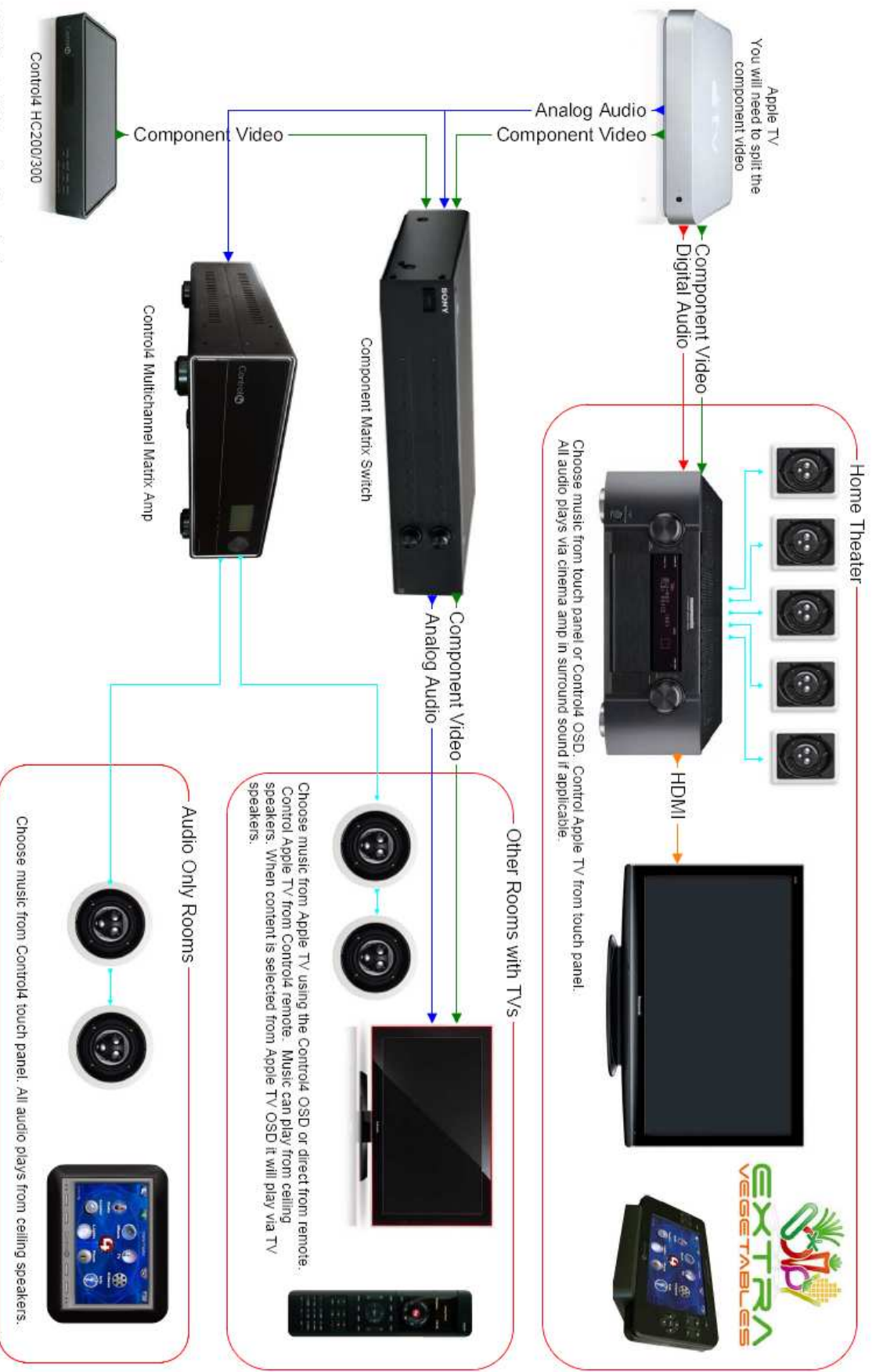
Mum likes to use the Control4 on screen navigator. She can press the '4' button on the remote and navigate to the music option. Here she can select any of the music from the Apple TV by Album, Artist or Genre or select a playlist. The music starts playing through the ceiling speakers.

If she wants to catch up on the TV series she rented on iTunes she simply presses the '4' button again, navigates to Videos and selects the Apple TV. The TV switches to the Apple TV and she uses its on-screen menu to start playing the episode she wants to watch – all controlled from the Control4 remote. The audio now plays from the TV speakers.

Her son likes to think of himself as an 'expert' user. When he wants to listen to music he simply picks up the remote control and uses the List navigator to select the Apple TV. He can then quickly jump to his favorite Album or Artist using the Control4 remote. No need to switch on the TV and the music plays (probably too loudly) from the ceiling speakers.

Audio Only Rooms

The daughter likes to prepare for an evening out with a long soak in the bath. In the bathroom she can use the touch panel in the wall to select the ideal music to prepare for the evening ahead. Again music can be selected by Album, Artist or Genre. Alternatively she can select from one of her iTunes playlists.



Apple TV/Control4 Integration Scenario 1

This set up allows music from the Apple TV to be selected and played in all rooms using the Control4 interfaces. Where TVs are installed video content from the Apple TV can also be viewed.

All music in system is stored on Apple TV which synchronizes with iTunes on the client's computer. System consists of a Home Theater, other rooms with TV screens and some audio only rooms. Video distribution is Component Video. This schematic is not a full wiring diagram!



Scenario 2 – HDMI Multiroom System

This is more sophisticated version of Scenario 1 featuring the latest HDMI video switching. As we are assuming this is a larger and more expensive installation we have assumed that an HC200 controller will be installed with each TV screen. Remember you will also need one for the Theater and an HC1000 as the central controller. These are not shown on the accompanying schematic.

Using HDMI as the video format presents a number of additional technical considerations.

Apart from the question of transmission distances you also need to be aware of how an HDMI matrix handles the audio part of the signal. One of the fundamental concepts of HDMI is that the screen tells the source what its capabilities are and then the source sends the appropriate signal. In video terms this means that all of the screens in an installation need to be capable of displaying the same resolution. If you have one screen in the installation that can only display 720p then you will need to reduce the resolution throughout the installation to 720p.

A similar concept applies to audio. The regular TV screens in most of the rooms are only able to decode stereo signals. If they are sent multichannel audio the results will be unpredictable. Some screens may produce no audio, some may only produce the left and right channels and some may produce a rather nasty screech! Of course you will want to send multichannel audio to the Home Theater.

Our scenario shows the HDMI output from the Apple TV being sent to the HDMI matrix. This matrix would be configured to request stereo audio from the Apple TV. Most are by default but check the manual. This takes care of all of the screens around the property except the Home Theatre. For this room you also make an optical digital audio connection from the Apple TV to the cinema amp. This is connected to the same input as the output from the HDMI matrix feeding this room. In order to get surround sound you will need to set up the cinema amplifier so that when this input is selected the audio is taken from the optical input NOT the HDMI signal.

If you have multiple Apple TVs then you will need to make digital audio connections from each Apple TV to the cinema amp. In this case you will need to make sure that your cinema amp is capable of sharing an HDMI input between two of its source inputs. You only want to use one output from the HDMI matrix to input into the cinema amp but you need two inputs for the different audio from each Apple TV.

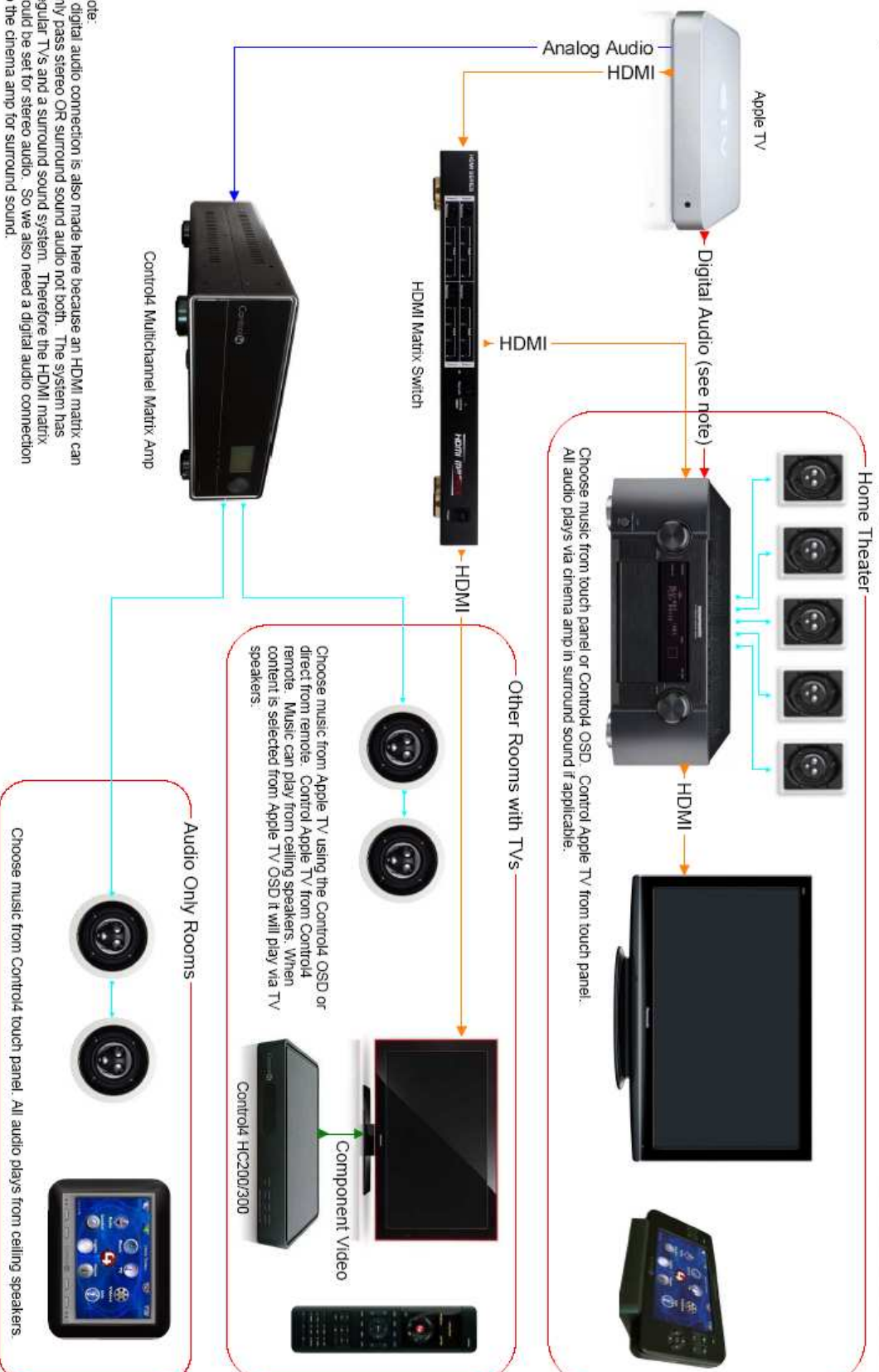
For example let's assume that you have two Apple TVs with their digital audio outputs connected to the CD and VCR inputs on the cinema amplifier. Both of the Apple TV HDMI outputs are connected to the HDMI matrix and one of its outputs is connected to say HDMI 1 in on the cinema amplifier. In order for the system to operate correctly you will need to ensure that you can set up your cinema amplifier so that input CD can use the CD digital audio input and the HDMI 1 video input **and** that the VCR input can also use the HDMI 1 video input with the VCR digital audio input. Some, but not all, cinema amps can do this. You must check this in advance to avoid problems!

The rest of the system is set up as per Scenario 1 and the user experience is almost the same. However now the magical letters HDMI appear on the TV screens in every room in the home when you watch Apple TV.

Apple TV/Control4 Integration Scenario 2

This set up allows music from the Apple TV to be selected and played in all rooms using the Control4 interfaces. In rooms where TVs are installed video content from the Apple TV can be chosen and viewed using the Apple TV's on screen display.

All music in system is stored on Apple TV which synchronizes with iTunes on the client's computer. System consists of a Home Theater, other rooms with TV screens and some audio only rooms. Video distribution is HDMI. This schematic is not a full wiring diagram or kit list!



Note:
A digital audio connection is also made here because an HDMI matrix can only pass stereo. OR surround sound audio not both. The system has regular TVs and a surround sound system. Therefore the HDMI matrix would be set for stereo audio. So we also need a digital audio connection to the cinema amp for surround sound.

Scenario 3 – Home Theater with Multiroom Audio

This is a much simpler system featuring a Home Theater and a number of other rooms around the home which have multiroom audio.

The design makes use of three features of the Control4 system: The ability of the Control4 controllers to digitise audio, the ability of Control4 touch panels to decode this audio stream and the potential of using a wireless network.

The connections between the Apple TV and the Home Theater can either be made via Component video or more likely HDMI. You would also make a component video connection from the HC200 to the cinema amplifier (not shown) to provide the Control4 onscreen navigator in the Home Theater.

You will then connect the analog audio from the Apple TV and connect this to the Audio IN connections on the HC200 or HC300. The Control4 controller will turn audio on this connection into a format that can be sent around a data network.

Each controller can digitise one input. This means that if you want to be able to listen to more than one Apple TV around the home then you will need to have an equal number of controllers. When using multiple controllers the master controller cannot be an HC200.

This means in other rooms where you want to play music all that is needed is a network connection. If you can run a data cable it will always be more reliable but you can use a wireless data network. In the UK we supply Control4's recommended high power wireless booster system from Luxul which can dramatically extend the range of a wireless network in a property.

In each room where you want audio you need some means of decoding the audio.

The HC200 and HC300 have audio line level out(s) – so you could run cables directly from these to a power amplifier for a room. This might be an option if the room is nearby.

More likely though is that you will use either Speaker Points or Touch Screens.

A Speaker Point either has a connection to the data network or a built in wireless receiver. This enables it to receive the Apple TV audio that has been digitised by the Control4 controller. This it turns back into audio and amplifies. It is then connected to speakers. As well as this digital input the Speaker Point also has a direct audio input which could be connected to a local source in the room. The music from the Apple TV can be selected from a Control4 remote.

Control4 touch screens also have a volume controlled audio output. They can decode the digital audio stream from the controller. If these outputs are connected to a small power amplifier concealed adjacent to the ceiling speakers you can create a simple and elegant music system for the room.

Apple TV/Control4 Integration Scenario 3

This is a simple set up with a Home Theater and other audio only rooms. In the Theater all audio and video content from the Apple TV can be viewed and played. In the other rooms audio content from the Apple TV can be chosen from Control4 remotes or touch panels. If wireless coverage is good no cables need be run between the rooms.

All music in system is stored on Apple TV which synchronizes with iTunes on the client's computer. This schematic is not a full wiring diagram or kit list!

