

APPLE TV IP REMOTE V3 FOR CRESTRON CUSTOM AND CRESTRON HOME

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SUMMARY

This datasheet relates to the third evolution of Ultamation's Apple TV IP control modules for Crestron control systems. This is a completely new driver, using a different protocol from the earlier v1.xx and v2.xx drivers and there are no overlaps whatsoever. It provides the essential information for integration between an Apple TV and the Crestron control processor (both custom and Crestron Home), and for programming of the module with a host Crestron program or configuration with Crestron Home.

This module is compatible with 3-Series and 4-series Crestron systems and has been tested with Apple TVs of generation 4 and 5 (4K), using tvOS13 upwards.



MODULE OVERVIEW

The latest integration module for Crestron systems provides the following functionality:

- ✿ Navigation (up, down, left, right)
- ✿ Select
- ✿ Menu
- ✿ "TV" (can be configured as Home or Watch in the Apple TV)
- ✿ Play/Pause
- ✿ Sleep/Wake
- ✿ App List
- ✿ Direct App Launching

It does NOT currently support:

- ✿ Text entry
- ✿ Content feedback

The module is available for both custom Crestron systems and Crestron Home – the commissioning process describe later in this document is the same for both, but the programming/configuration is very different and described in section specific to each platform.

For the most up to date information and answers to frequently asked questions, please refer to the following document (requires login to the Ultamation Help Centre)

<https://ultamation.atlassian.net/servicedesk/customer/portal/1/topic/856f5ca0-1464-40af-95ba-d473aadc4f29/article/64978945>

WHERE CAN I OBTAIN THE MODULE?

The latest version of the module is always posted to the Ultamation shop product pages.

For Custom Crestron please refer to:

<https://shop.ultamation.com/index.php/product/169-apple-tv-ip-control-companion-link-protocol>

For Crestron Home please refer to:

<https://shop.ultamation.com/index.php/product/170-apple-tv-ip-control-for-crestron-home>

The Crestron Home module is also available from the Crestron Home Driver Portal and within the Crestron Home configuration app itself.

WHERE CAN I HEAR ABOUT UPDATES?

Please follow @Ultamation and @UltamationTech on Twitter for news and updates.

COMMISSIONING APPLE TVS

The Crestron system communicates with the Apple TV directly via an IP connection. No special wiring or configuration is required outside of that needed for a standalone Apple TV installation.

Because Apple TVs must be “paired” with a controller and this process requires interaction with the Apple TV, we have update the commissioning tool – now called the “Ultamation Licence Manager” – and streamlined the process of creating and uploading pairing & licence files. This avoids the need for integrators to implement pairing logic within their programs.

ULTAMATON LICENCE MANAGER

Please download and install the licence manager tool. This can be obtained from the product pages linked above.

Program Features

The licence manager provides the following features:

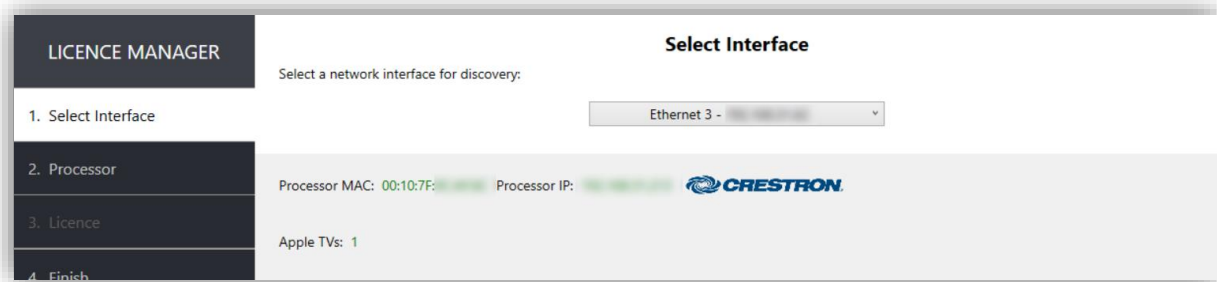
- ✿ Create a new pairing identity (for the Crestron processor)
- ✿ Load an existing pairing/licence file
- ✿ Retrieve an existing pairing/licence file from a Crestron processor (requires SSH)
- ✿ Discover Crestron processors on the local network
- ✿ Discover Apple TVs on the local network
- ✿ Pairing process with Apple TVs
- ✿ Verify pairing with Apple TVs (confirm correct pairing)
- ✿ Save the pairing/licence file
- ✿ Upload the pairing/licence file to a Crestron processor (requires SSH)

The tool detects whether the processor is custom Crestron or Crestron Home and places the file in the appropriate location.

The licence manager is designed to guide you through the process as much as possible. This flow is described now, in detail.

Automatic Step 1 – Select a network interface

The first step is carried out automatically so you will only need to go back to step 1 if the default network adapter selected by the tool is incorrect.

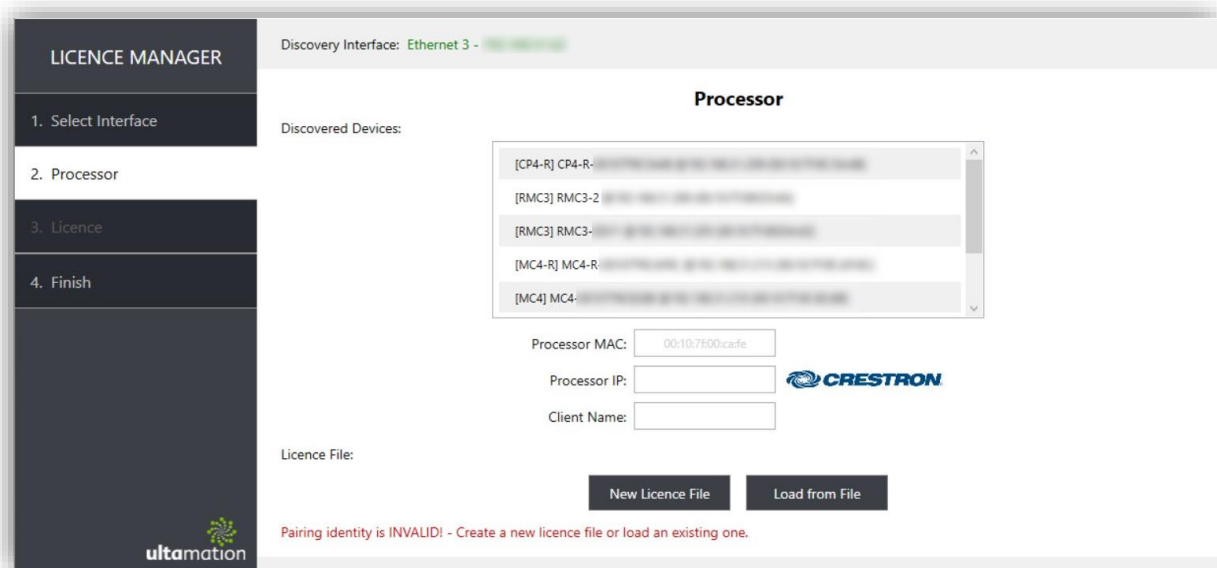


The tool uses a network interface to discover Crestron processors and Apple TVs on the network. If you have a machine with multiple NICs you may need to specifically select the appropriate one to have the tool discover devices correctly.

IMPORTANT: Ensure that your machine's firewall includes exceptions for the UltamationLicenceManager tool to ensure you receive discovery packets for both Crestron and Apple devices.

Step 2 – Processor Identity

Each licence file needs a processor identity so that the Apple TV knows where a connection is coming from. The pairing identity can be created from scratch, or loaded from an existing file.



LICENCE MANAGER

Discovery Interface: Ethernet 3 - 192.168.1.10

1. Select Interface

2. Processor

3. Licence

4. Finish

Processor

Discovered Devices:

- [CP4-R] CP4-R-
- [RMC3] RMC3-2
- [RMC3] RMC3-
- [MC4-R] MC4-R-
- [MC4] MC4-

Processor MAC: 00-10-71-00-cafe

Processor IP:

Client Name:

Licence File:

Pairing identity is INVALID! - Create a new licence file or load an existing one.

When starting from scratch, select the "New Licence File" option.

If you are creating a commissioning file without the Crestron processor available, please ensure that you enter the Crestron processor's MAC address carefully in the appropriate place. You can also enter a friendly name for the Crestron integration remote in the "Client Name" field.

If you have already carried out commissioning and wish to modify or add new Apple TVs, you can either load a backup of the licence file or pull an existing file from a processor.

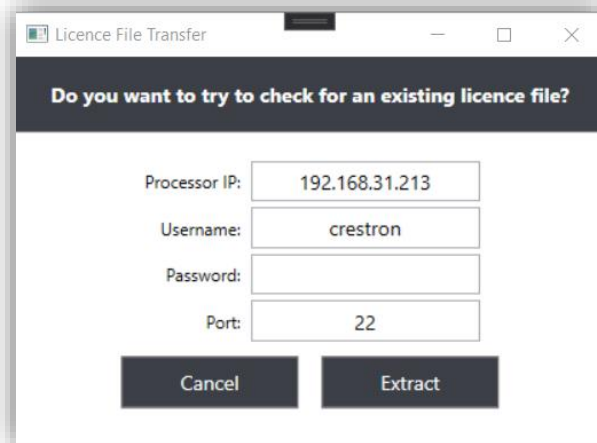
If you are on the same network as your Crestron processor, it will be discovered and shown in the processor list. When you select a processor from the list, the following will happen:

- ✿ The MAC address will be entered
- ✿ The processor IP address will be entered
- ✿ The Client Name label (what appears in the Apple TV remote list) will be auto generated
- ✿ The tool will ask you if you want to try to retrieve an existing licence file.

When manually entering a valid MAC address, the tool will automatically switch to the licence management step.

When manually entering an IP address, the tool will ask you if you want to try to retrieve an existing licence file.

To connect to a processor, you must know the SSH username and password.



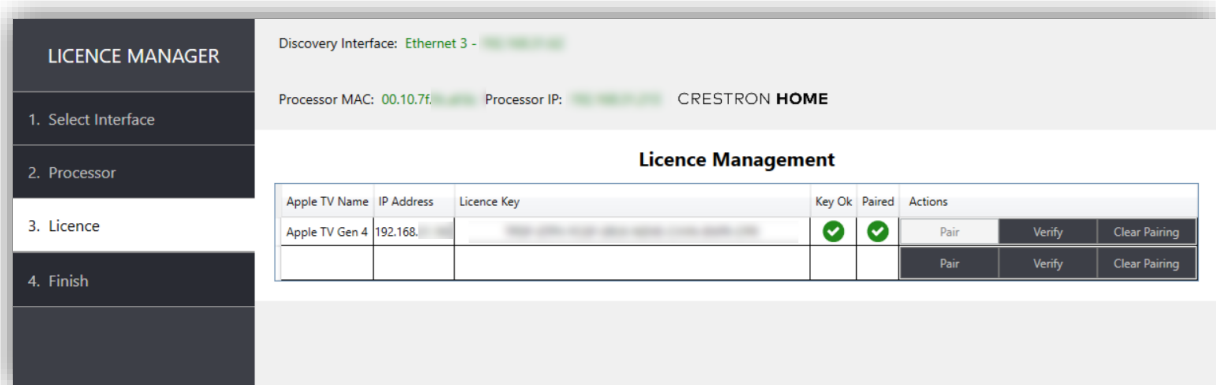
A dialog box titled "Licence File Transfer" with a dark header bar containing the question "Do you want to try to check for an existing licence file?". Below the header, there are four input fields: "Processor IP:" with the value "192.168.31.213", "Username:" with the value "crestron", "Password:" (empty), and "Port:" with the value "22". At the bottom, there are two buttons: "Cancel" and "Extract".

BEWARE: Too many incorrect attempts will lock you out of the Crestron process for a time (default 24 hours). This can be cleared using a different machine from Crestron Toolbox.

Step 3 – Pairing & Licence Management

The next step will display all of the Apple TVs that have been discovered on the local network. If you do not see the Apple TVs as expected, please ensure you do not have any firewall running on your machine.

Each Apple TV discovered on the network will appear in the list.

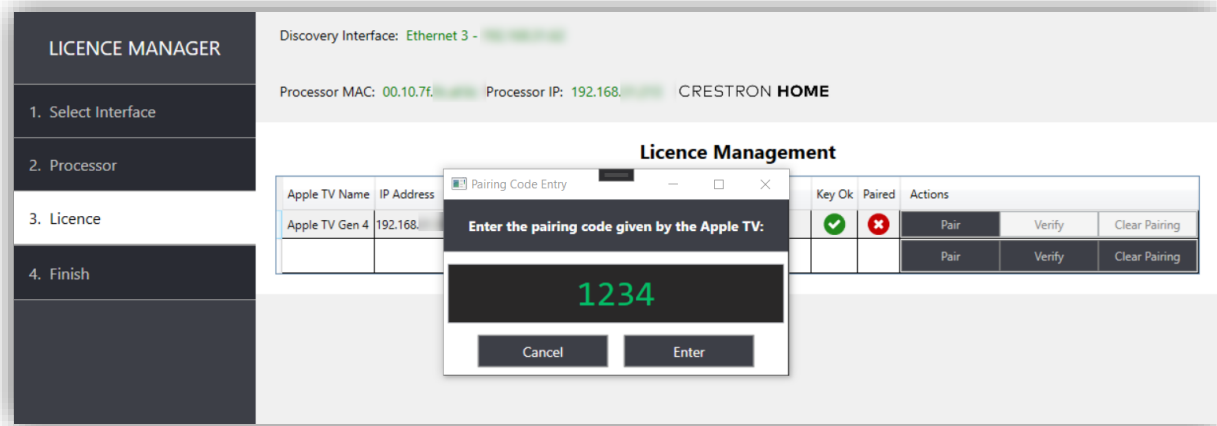


The "Licence Manager" interface shows a sidebar with four steps: "1. Select Interface", "2. Processor", "3. Licence", and "4. Finish". The main area displays the "Discovery Interface" as "Ethernet 3" and the "Processor MAC" as "00:10:7f:00:00:00". The "Processor IP" is "192.168.31.213" and the "CRESTRON HOME" status is shown. Below this, the "Licence Management" section contains a table with columns: "Apple TV Name", "IP Address", "Licence Key", "Key Ok", "Paired", and "Actions".

Apple TV Name	IP Address	Licence Key	Key Ok	Paired	Actions
Apple TV Gen 4	192.168.31.213	00000000000000000000000000000000	✓	✓	Pair Verify Clear Pairing
					Pair Verify Clear Pairing

Each entry will show the Apple TV's name, current IP Address (view only) and a field where you can add the licence key provided when purchasing a licence from the Ultamation shop, start pairing with the Apple TV or verify an existing pairing is correct.

When you select the “Pair with Apple TV” option, the Apple TV will display a 4-digit code on the display. At the same time, the licence manager will ask you to enter the 4-digit code. Carefully type the code shown on-screen into the code entry box.



If successful, the pairing indicator will turn green.

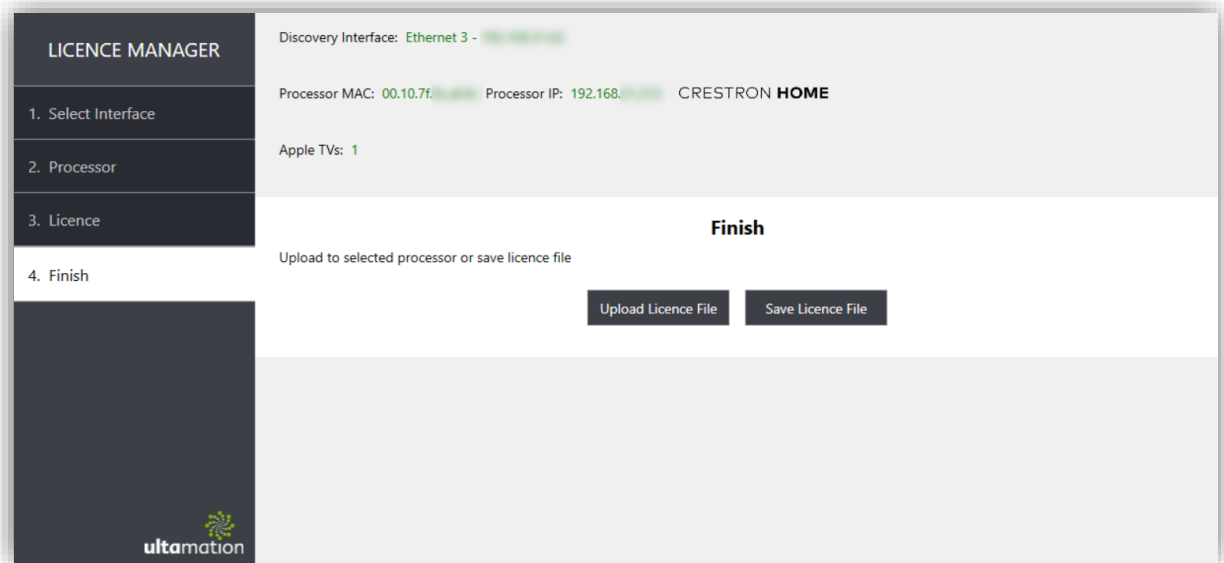
If you wish to repeat the pairing process for a specific Apple TV, you should first “Forget” the remote from the Apple TV under SETTINGS > REMOTES AND DEVICES > REMOTE APP AND DEVICES, and also unpair from the licence manager.

When an Apple TV entry has a valid licence key (based on the Apple TV name, and the processor’s MAC address) the key column will show a green checkmark.

Similarly, when the pairing process has been completed successfully, a green checkmark will appear in the paired column. Note – this does not reflect an ACTIVE connection to the Apple TV, but simply that pairing has been completed. To verify that the pairing is still valid, use the VERIFY action.

Step 4 – Uploading and Backup

Once the pairing has been completed, the file must be transferred to the correct Crestron processor (as specified in by the MAC address field).



The Upload function will transfer the file via SFTP to the processor on the given IP address. This process also determines if the processor is custom Crestron or Crestron Home and places the file in the appropriate location (creating the directory path in the process).

For custom Crestron the path is: \NVRAM\Ultamation\licence.json

For Crestron Home the path is: \user\Data\ProgData\Ultamation\licence.json

We strongly recommend that you make a backup of the licence.json file for each deployment, just in case the Crestron processor fails. Although licence keys will need to be updated, you will NOT need to re-pair the Apple TVs if you move a licence file between different processors.

When transferring a licence file to a processor, the modules will periodically check the licence file for changes and update the licences. This means you can go from unlicensed trial mode to fully licensed without even rebooting the processor.

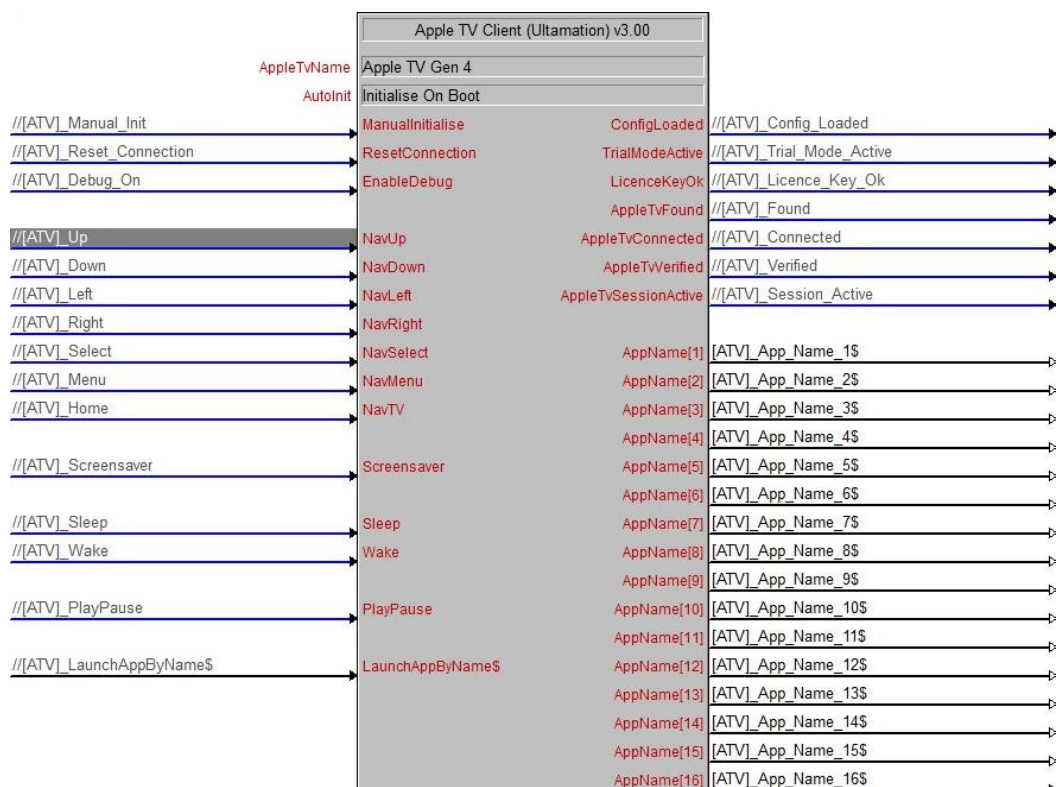
SIMPL PROGRAMMING

To use the Apple TV control module, simply drop an instances of the Apple TV Client (Ultamation) v3.xx module into your SIMPL Windows program for each Apple TV you have commissioned (see the first part of the manual).

Ensure you have used EXACTLY the same AppleTVName as is defined in the pairing configuration file.

The module includes one other parameter – “AutoInit” – this can be left at the default of “Initialise on Boot” which will attempt to start the module as soon as the program starts. Alternatively, you can select “Manual Initialisation” and you MUST initialise the module using the “ManualInitialise” signal. This should be pulsed once.

If you trigger this signal a second time (or after an AutoInit), an error will be reported in the logs.



The “ResetConnection” signal should not normally be required as the module will attempt to reconnect to an Apple TV periodically (an inactive connection is checked once every 10 seconds) – however, if you must, you can drop the connection and reconnect by pulsing this signal.

The “EnableDebug” signal should be held high while you wish to receive extended debug information. This is only required for diagnosing issues. Before contacting support@ultamation.com, please enable this signal and capture the output as this will help troubleshooting.

The remaining signals are used to control the Apple TV and are level sensitive – e.g. if you hold NavRight high it will automatically scroll through the currently playing content. Some apps require you to then explicitly STOP the scrolling with the NavSelect command, though others will stop on release. NOTE: This is Apple TV app dependant behaviour.

The Apple TV can be woken by pulsing the Wake signal – NOTE: It can take some seconds for the Apple TV to wake from sleep. Commands will not function when the Apple TV is waking from sleep.

The LaunchAppByName\$ signal allows you to launch a specific app directly using a serial string. The app names available are provided on the AppName outputs of the module and this list is retrieved when the Apple TV module first connects. The string used to launch the apps is not case sensitive and will match the first app that is a match. For example, if you send “netf” this will match “Netflix”.

The Status signals are have the following meaning:

- ✿ ConfigLoaded – A pairing/licence configuration file has been loaded and read correctly. This does NOT mean it contains the valid information for this Apple TV however!
- ✿ TrialModeActive – This will be high when the config file does not include a valid licence (matching the Apple TV name and Crestron processor MAC address). IT will be high while trial mode is active and go low when the trial mode expires after 1 hour.
- ✿ LicenceKeyOk – This will be high when the config file has a valid licence (matching the Apple TV name and Crestron processor MAC address). You will never see BOTH LicenceKeyOk and TrialModeActive high at the same time.
- ✿ AppleTvFound – Will go high when the named Apple TV advertises itself on the LAN. This indicates that Bonjour discovery is working. An Apple TV cannot be controlled until this goes high.
- ✿ AppleTvConnected – Will be high when the module has a TCP connection to the named Apple TV – this demonstrates connectivity, but does not indicate valid pairing.
- ✿ AppleTvVerified – Will be high when the module has both connected AND verified its pairing keys with the Apple TV.
- ✿ AppleTvSessionActive – When this is high, it's all-systems-go! You have a verified, encrypted session with the Apple TV and then next thing to happen will be the App list will be populated.

Ultamation will continue to explore adding new features to the Companion Link driver.

Module updates will be announced through Twitter @UltamationTech

Multiple Program Slots – 3-Series Only

Running Apple TV module instances across program slots in 3-Series is not supported because of limitations with the MDNS listener. This is not a limitation in 4-Series.

CONFIGURING THE APPLE TV DRIVER IN CRESTRON HOME

There are two modules for controlling the Apple TV in Crestron Home.

- 🌿 Apple TV IP Control module
This provides remote control of the Apple TV, and presents itself as a video server source in Crestron Home.
- 🌿 Apple TV App Launcher module
This module can ONLY be used alongside the main Apple TV module, and is an extension device that provides a list of apps available, buttons to launch the app, and programmatic hooks to allow you to launch the apps from sequences/quick actions.

The modules can be side-loaded (please refer to supplementary documents available from the product page) or downloaded directly from the Crestron portal, within the Crestron Home setup app.

Once installed, the modules can be added to a room as normal.

Both modules are found under **Devices > Streaming Player > Apple**

When adding the modules, you will be asked for a name. This is the name displayed in Crestron Home and is NOT coupled to the Apple TV name, though it makes sense to use the same name for the home owner's benefit.

Next, you will be asked to enter an IP address and Port number. Crestron Home requires these, but the module DOES NOT USE THEM. Enter any dummy data you wish here.

SIDE NOTE: Although there is an appropriate setting to remove these unnecessary fields in Crestron Home, the typical design issues and bugs do not allow us to use it.

Pair Devices

CRESTRON HOME

Enter a descriptive name for Apple TV (4K) (A1842)

Apple TV Name For Home

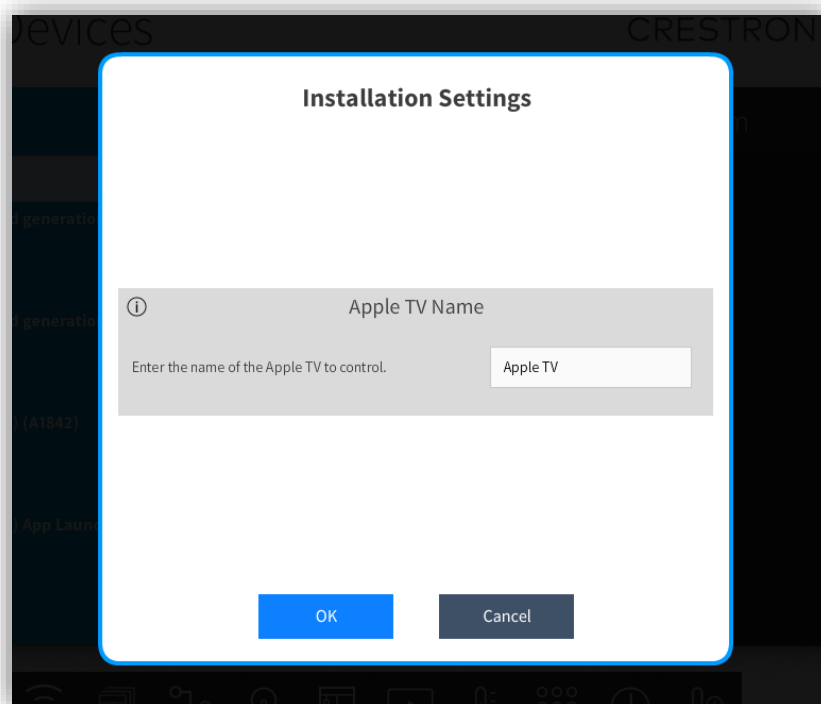
Please enter TCP/IP settings:

TCP/IP settings	Value
IP Address / Host Name	1.2.3.4
IP Port	9999

Requires Authentication: ☐

OK Cancel

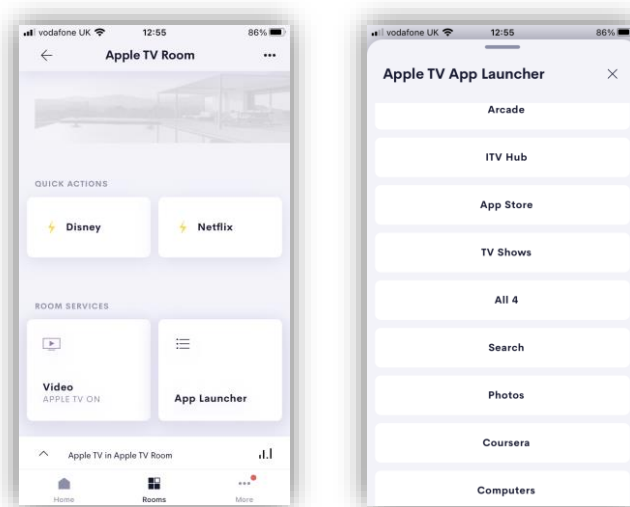
The next page asks for the name of the Apple TV to be controlled. This MUST match the name of the physical Apple TV and as used during commissioning.



Crestron Home does not expose the name of the device given in the previous step to the driver, which is why we need this piece of information.

For the Apple TV IP Control, you will now be able to route the Apple TV HDMI output to a display or video distribution and operate the source like any other video source.

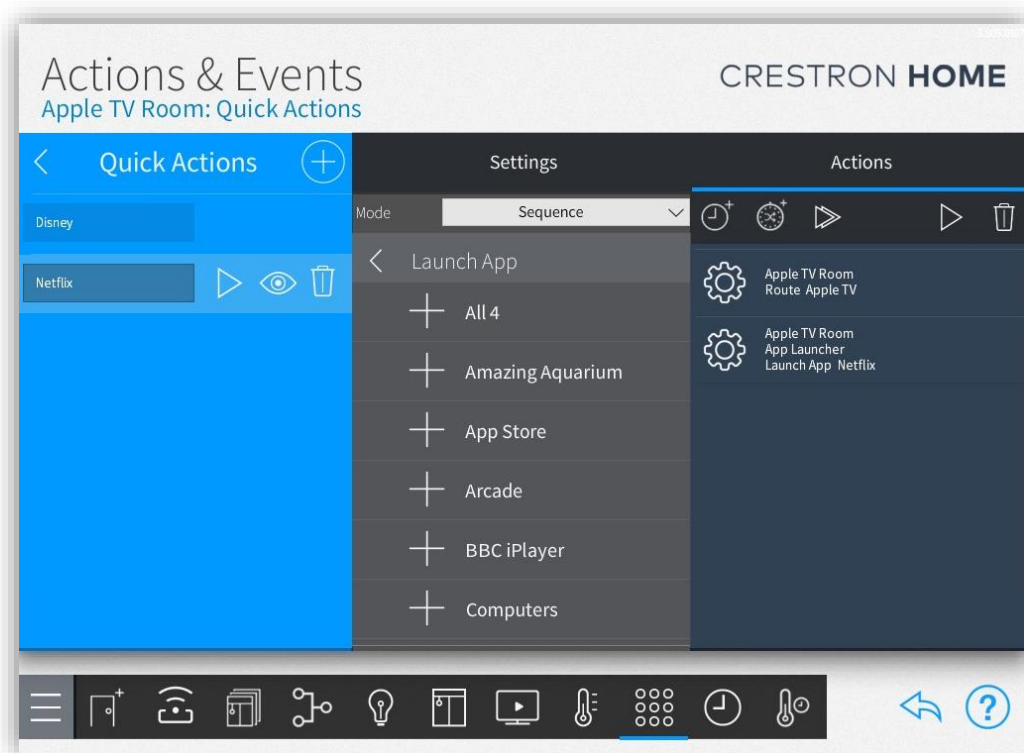
For the App Launcher, you will now have a new tile – open the tile and you will be presented with a list of applications that can be launched at the touch of a button. The order of the list is determined by the Apple TV's response.



A "Refresh App List" button will be found at the bottom of the App List to allow the home owner to update the App List without restarting Crestron Home.

NOTE: The App Launcher is dependent upon a matching Apple TV instance – if you do not load the Apple TV driver or if the names do not match, then App Launcher will say "OFFLINE". Please also ensure that both drivers are updated to the same version whenever upgrading.

The apps can also be launched programmatically:



The quick action shown above selects the Apple TV as the source, and then selects the Netflix App on the Apple TV.

SUPPORT

Please direct support issues to support@ultamation.com and we will respond as quickly as possible.

LICENCE

This module (including software, images and any and all other associated assets distributed as part of the purchased download package) is licenced on a PER DEVICE basis.

A licence key is generated at the point of purchase and is linked at that time to specific information that MUST be provided at the time of purchase. A purchase should not be completed without correct information as refunds cannot be issued for errors or changes made to details following purchase.

The licence key for each device will be delivered via email along with links to download the module. There is no physical delivery.

The module is provided without any warranty with respect to Apple's protocols or authentication mechanism. We will endeavour, through best efforts, to maintain the module's functionality and any bug fixes will be provided free-of-charge. Additional functionality may be released as a variation of this module and this will be a separate, purchasable, product.