Integrating Dahua IP Cameras with Control4

July 25, 2016

Overview

This application note guides you through the integration of Dahua IP Cameras in a Control4 system and best practices for installation.

Minimum Control4 Specification

Due to lack of support for RTSP and H.264 in HC series controllers and touchscreens the minimum specification for system components is as follows:

Directors: EA Series
Touch Screens: T3 Series
(Higher performance can be obtained from flow7 or iPort SM with iPad devices)

Recommended Utilities

Before configuring and integrating Cameras it is recommended that you have downloaded and installed the following utilities to test and configure streams:

<table>
<thead>
<tr>
<th>Utility</th>
<th>Version</th>
<th>Platform</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VLC</td>
<td>2.23+</td>
<td>Win/Mac/Linux</td>
<td>open-source, cross-platform media player written by the VideoLAN project.</td>
</tr>
<tr>
<td>Dahua General ConfigTool</td>
<td>3.20+</td>
<td>Win/Mac</td>
<td>Camera/NVR Configuration Tool</td>
</tr>
<tr>
<td>Dahua SmartPSS</td>
<td>1.13.0+</td>
<td>Win/Mac</td>
<td>Camera/NVR Viewer and Management Tool</td>
</tr>
</tbody>
</table>
System Layout

Due to limitations in Control4 with concurrent network connections to a singular device you **should not use the PoE ports** (if available) on the NVR for camera connections. Instead use a suitable PoE switch dedicated to the NVR and wired as per the diagram below. Use the uplink ports on the switch (where available) to connect the NVR and Router, and separate network switches for other network devices, which will stop unnecessary network traffic.

![Diagram showing network layout](image)

Resolution and Performance

The security application in Control4 is designed for older VGA (640x480px) cameras. This means that, when the security option is selected, snapshot image sizes larger than VGA have to be resized by the Touch Panel which can cause delays in the thumbnails appearing. Image resolutions from Dahua cameras are as follows:

- **Snapshot**: a snapshot image from the primary stream of the camera
- **H.264**: an RTSP stream from the Extra/Secondary Stream of the camera
- **NVR**: NVRs are preset to record the primary stream of the camera

For this reason the recommended resolutions for any camera to be used with the Control4 security app. are in Table 1 below.
Table 1 - Recommended camera resolution settings for Control4 Integration

<table>
<thead>
<tr>
<th></th>
<th>Primary Stream</th>
<th>Sub Stream (1)</th>
<th>Sub Stream 2 (if available)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code Stream Type</td>
<td>General</td>
<td>General</td>
<td>General</td>
</tr>
<tr>
<td>Encode Mode</td>
<td>H.264</td>
<td>H.264</td>
<td>H.264</td>
</tr>
<tr>
<td>Resolution</td>
<td>1080P</td>
<td>D1</td>
<td>720P</td>
</tr>
<tr>
<td>Frame Rate</td>
<td>15-25</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Bit Rate Type</td>
<td>CBR or VBR</td>
<td>CBR</td>
<td>CBR</td>
</tr>
<tr>
<td>Bitrate</td>
<td>8192</td>
<td>1792</td>
<td>4096</td>
</tr>
<tr>
<td>I Frame Interval</td>
<td>15-25</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

Configuring the Driver (Composer)

Before the Dahua Drivers are used for the first time they need to be installed in Composer. To do this open your project in Composer and from the top **Driver** menu choose “Add or Update Driver”.

![Composer interface](image)
Locate the Dahua Driver .c4i files and install them, repeating the procedure until all the drivers have been installed.

Next, in the **System Design** pane, choose the area in the project where you wish to install the driver, then click the search button in the items pane on the right and type **Dahua** in the search box (enter).

![Image](73x512 to 216x642)

Double click the appropriate driver and it will populate in the project.

Choose the connections pane from the bottom-left menu and then **Network** at the top left. Look for the camera in the **IP Network Connections** pane, double-click it and type in it’s IP Address.

Back in **System Design** click the camera and make sure that the username and password credentials are correct. We recommend that you setup a dedicated username for Control4 when you configure the camera. **Rename** the camera as appropriate and double-click it to test the snapshot and H.264 streams (and PTZ control if the camera has this feature). **Repeat** the process for all cameras in the system.

![Image](73x118 to 354x311)
Using Cameras in Programming (Composer)

The Dahua Drivers provide motion detection based events for programming in Control4. These can be either Motion Start or Motion Stop. To use either of these features in programming you need to enable motion detection in the camera itself and adjust the Motion setting in the Advanced properties pane to the interval (in seconds) that the driver should check for motion detection with the camera.

A motion start or stop event can be used in programming to trigger an action:
Additionally the following functions are available as actions from other triggers in programming (dependent on camera model):

- MIRROR/UNMIRROR IMAGE
- REBOOT_CAMERA
- DAY_NIGHT
- NOISE_REDUCTION_3D
- WHITEBALANCE
- BRIGHTNESS
- CONTRAST
- SATURATION
- SHARPNESS

**Troubleshooting**

If the resolution settings are followed in table 1 then there should be no issue with population of cameras in the security menu or a camera stream once it is selected. Note that due to the requirement for a full IFRAME to assemble a video stream it is normal for a camera stream to take 1 or 2 seconds to start.

Slow population of cameras is indicative of significant processor or touchscreen load. A good test is to compare the security screen on a Touchscreen with an iPad or Android device running the C4 App.

Most importantly **avoid** using the main admin username and password for the cameras in Control4. Incorrect use of username and password can cause the admin account to lock out and require the camera to be reset.

Further assistance:

Contact our workshop:

01256 638500 **Option 3**

or workshop@habitech.co.uk