Camera introduction

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1. Introduction

In DA614A (Connected systems & devices), you will work with network (surveillance) cameras provided by Axis Communications AB. In particular, you will work with the following three camera models:

- P1353/1354[1]
- Q1604[2]
- Q6045-E[3]

P1353/1354 and Q1604 are fixed spot cameras with slightly different functionality, whereas Q6045-E is a dome camera with optical zoom and PTZ (pan-tilt-zoom) functionality. In the current version of this document, only P1353/1354 and Q1604 are discussed; it will later on be updated in order to also discuss Q6045-E.

This document provides a brief overview on how to work with the cameras. More detailed information is available in the camera user manuals and the ACAP documentation.

2. Accessing the cameras

In the course da614a you will access the cameras in three ways:

1. Webpage of the camera (https://camera-ip-address)
2. File transfer protocol (ftp)
3. Secure shell (ssh)

You can login to the cameras using the account 'root' with password 'pass'.

The cameras act as web servers, and the first way that you will access the camera is via the homepage of the camera. To access the webpage of a camera, you just type https://<ip-address> of the camera you want to access in the address field of a web browser running on a computer with access to the camera[4].

Secure shell (SSH) is perfect if you want to access the file system of a camera, for example, if you want to look at a log files. It should be noted that the cameras do not enable SSH access by default. You enable SSH by following the below series of actions:

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[1] http://www.axis.com/global/en/products/axis-p1353/ and
[2] http://www.axis.com/global/en/products/axis-q1604
[3] http://www.axis.com/global/en/products/axis-q6045-e
[4] That is, firefox

1. Access the ssh file by using this link:
   http://camera-ip-address/admin-bin/editcgi.cgi?file=/etc/conf.d/ssh
   (where 'camera-ip-address' is the product's IP address)
2. Enable SSH by setting SSHD_ENABLED="yes"
3. **Save** the ssh file.
4. Restart the camera

3. Building, installing, and running ACAP applications

Axis provides cameras using different hardware platforms, for which you need to compile your ACAP applications using different compilers. All the cameras that we use in DA614A use the ARTPEC-4 chip, which is a MIPS bases chip.

3.1. Building an application

Preferably, you create a folder for each application you develop. Inside that folder you need to put a makefile[5], which specifies how your application should be built. By looking at the makefiles included in the example applications that are included in the ACAP SDK[6], you can get inspiration on how to make your own makefiles.

Compiling instructions:

Run the create_package.sh script for the ARPTEC-4 chip (i.e., the hardware platform used by all of the cameras used in DA614A). This is done by executing one of the following commands:

> create_package.sh mipsisa32r2el
> create_package arptec-4

This will create an application package with an .eap file extension.

3.2. Install, start, stop, remove application

The script eap-install.sh script is used to install (upload) an application package to a camera, as well as to start, stop, and remove an application.

Install (upload) application package

You install (upload) an application package by typing the following command in the folder containing your application package (file with an eap extension)

> eap_install.sh <target_ip> <password> install

Start application

You start an application, which has previously been installed on a camera, by typing the following command:

> eap_install.sh <target_ip> <password> start

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[5] Documentation on GNU Make is available on https://www.gnu.org/doc/doc.html
[6] Found in /home/da614a/axis/apps

Stop application

You can stop an application currently running on a camera by typing:

> eap_install.sh <target_ip> <password> stop

Remove application

You remove an application from a camera using the following command:

> eap_install.sh <target_ip> <password> remove

If you run eap_install without ip address and password, you will be asked to supply these the first time you run the script. After that, you will not have to provide this information. It is also possible to install, start, stop, and remove applications via the webpage of the camera.

4. Factory reset

It might happen that you will have to factory reset the cameras, for example, if you write a program with a severe memory error.

In order to factory reset the P1353/1354 and Q1604 cameras, you use the following sequence of instructions:

1. Disconnect the power from the camera. Then press and hold the control button while you reconnect the power.
   The control button is the small button about 1 cm below the PWR and NET indicators on the backside of the cameras.
2. Keep the control button pressed until the status LED indicator is flashing green. Note that this procedure might take quite some time.
3. Release the control button. The process is complete when the status LED indicator turns green. The camera has been reset to the factory default settings.

After factory resetting the cameras will have to make some initial configuration of the camera, which includes:

- Choosing a root password for the camera. The root password should be “pass” (without quotation marks.
- Set update frequency (50 Hz)
- Choose PTZ mode
- Enable ssh (see instructions above)