Getting Started with FlyCapture2 and Linux

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Applicable Products

- All FLIR machine vision cameras

- FlyCapture® SDK Version 2.x

Application Note Description

With the release of version 2.0 of the FlyCapture SDK, you can program and operate FLIR machine vision cameras in a Linux environment. This application note explains the components and steps that are necessary to get started with FlyCapture2 and Linux.

For specific details about using FlyCapture and Linux with a USB 3.1 camera, see TAN2012007 Using Linux with USB 3.1.

Preparing for Use

Before you use your camera, we recommend that you are aware of the following resources available from our downloads page:

- ***Getting Started Manual* for the camera**—provides information on installing components and software needed to run the camera.

- ***Technical Reference* for the camera**—provides information on the camera's specifications, features and operations, as well as imaging and acquisition controls.

- **Firmware updates**—ensure you are using the most up-to-date firmware for the camera to take advantage of improvements and fixes.

- **Tech Insights**—Subscribe to our monthly email updates containing information on new knowledge base articles, new firmware and software releases, and Product Change Notices (PCN).

Supported Operating System

FlyCapture2 is tested with Ubuntu 12.04, 14.04, and 16.04. Other versions of Ubuntu may also be compatible but have not been officially tested.

Configuring the Operating System and Installing the Required Libraries

To run FlyCapture2 on a Linux Ubuntu system, install the following dependencies:

- libraw1394-8

- libgtkmm-2.4-dev

- libglademm-2.4-dev

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■ libgtkglextmm-x11-dev (libgtkglextmm-x11-1.2-dev in Ubuntu 8.10 and newer)

■ libusb-1.0 (in Ubuntu 9.04 and newer)

> **Note:** Dependencies cannot be installed on Ubuntu 14.04.2 release due to an Ubuntu bug that prevents dev packages from installing. Users of Ubuntu 14.04.2 need to install Ubuntu 14.04.1 first and then update to 14.04.2.

These libraries are usually packaged with Ubuntu distributions or updates. If they are not pre-installed, use the `apt-get` console command, as in the following examples:

Ubuntu 16.04

```
user$: sudo apt-get install libraw1394-11 libgtkmm-2.4-1v5 libglademm-2.4-1v5
libgtkglextmm-x11-1.2-dev libgtkglextmm-x11-1.2 libusb-1.0-0
```

Ubuntu 14.04

```
user$: sudo apt-get install libraw1394-11 libgtkmm-2.4-1c2a libglademm-2.4-1c2a
libgtkglextmm-x11-1.2-dev libgtkglextmm-x11-1.2 libusb-1.0-0
```

Ubuntu 12.04

```
user$: sudo apt-get install libraw1394-11 libgtk2.0-0 libgtkmm-2.4-dev libglademm-
2.4-dev libgtkglextmm-x11-1.2-dev libusb-1.0-0
```

> **Note:** The raw1394 module that is installed with the libraw1394-8 package may not load after a reboot, causing a FlyCapture bus event error and failure to start an application. To fix this, add raw1394 to the /etc/modules file. If problems persist, add video1394 as well.

Installing the FlyCapture SDK

To install the FlyCapture SDK, install the FlyCapture2 .deb files included with the SDK distribution. We provide an easy-to-use install script, named 'install_flycapture.sh'. You can run the script in the same directory in which you have unpacked the software, as in the following example:

```
user$ sudo sh install_flycapture.sh
```

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This script installs all the flycapture libraries, example code, sample applications and documentation. Additionally, the install script prompts you to configure udev so that 1394 and usb devices can be used by a particular user. If you choose to configure 1394 and usb devices, the script changes permissions on the nodes by overwriting the default Ubuntu permissions and giving the user full read and write access to the device nodes. After running this script, everything is installed and set up for use.

Restart the machine for user permissions to take effect.

Running the FlyCap Demo Program

The FlyCap demo program is run from the Ubuntu applications menu:

Applications -> Point Grey Research -> FlyCapture

The recording window is not implemented on FlyCap2 for Linux. Users who wish to implement recording with the FlyCapture2 SDK can refer to the SaveImageToAviEx SDK sample.

Compiling the Examples

The FlyCapture SDK includes a number of example applications to help get you started in programming common API tasks. Example files are installed under /usr/src/flycapture. Normal users do not have write access to this location, so copy this folder and sub-folders to a location on your home directory. For example:

```
user$ cp -R /usr/src/flycapture ~
```

In order for the example binaries to copy to the correct location, create a 'lib' folder and a 'bin' folder within the flycapture directory.

To compile the examples, install the GNU C++ (g++) compiler that is included with the build-essential package:

```
user$ sudo apt-get install build-essential
```

Some of the examples are GUI-based. The gtk and glade libraries are required to build these examples. These libraries should already be installed during the installation of FlyCapture2. Note that the FlyCaptureGUI example must be built before the FlyCap2 or FlyCapture2GUITest examples can be built.

To compile a specific example, run the makefile located in the example directory. Binaries are copied to the bin directory, and libraries are copied to the lib directory. For example:

```
user$ cd ~/flycapture/src/FlyCapture2Test
user$ make
```

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Viewing Images and Videos

We suggest the following tools for image and video viewing. FLIR does not officially endorse these tools.

For image viewing:

- gimp
- ImageJ

For video viewing:

- VLC media player

For working with Glade files:

- Glade

Removing FlyCapture

Use the uninstall script provided to remove the FlyCapture SDK, as in the following example:

```
user$: sudo sh remove flycapture
```

Downloads and Support

FLIR endeavors to provide the highest level of technical support possible to our customers. Most support resources can be accessed through the Support section of our website.

The first step in accessing our technical support resources is to obtain a Customer Login Account. This requires a valid name and email address. To apply for a Customer Login Account go to our Downloads page.

Customers with a Customer Login Account can access the latest **software** and **firmware** for their cameras from our website. We encourage our customers to keep their software and firmware up-to-date by downloading and installing the latest versions.

Finding Information

FlyCapture SDK—The FlyCapture SDK provides API examples and the FlyCap camera evaluation application. Available from our Downloads page.

API Documentation—The installation of the FlyCapture SDK comes with API references for C++, C#, and C code. Available from Start Menu→All Programs→Point Grey FlyCapture2 SDK→Documentation

Product Documentation—The camera's *Getting Started Manual* provides information on installing components and software needed to run the camera. The *Technical Reference* provides information on the camera's specifications, features and operations, as well as imaging and acquisition controls. They are available from the Downloads page.

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Knowledge Base—A database of articles and application notes with answers to common questions as well as articles and tutorials about hardware and software systems. Available from our Knowledge Base.

Learning Center—Our Learning Center contains links to many resources including videos, case studies, popular topics, other application notes, and information on sensor technology.

Contacting Technical Support

Before contacting Technical Support, have you:

1. Read the product documentation?

2. Searched the Knowledge Base?

3. Downloaded and installed the latest version of software and/or firmware?

If you have done all the above and still can't find an answer to your question, contact our Technical Support team.

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