

## Interfacing Basler GigE Cameras With Cognex VisionPro 7.2

This Application Note explains how to interface a Basler camera with GigE interface with the Cognex VisionPro 7.2 software package using a standard Gigabit Ethernet card.

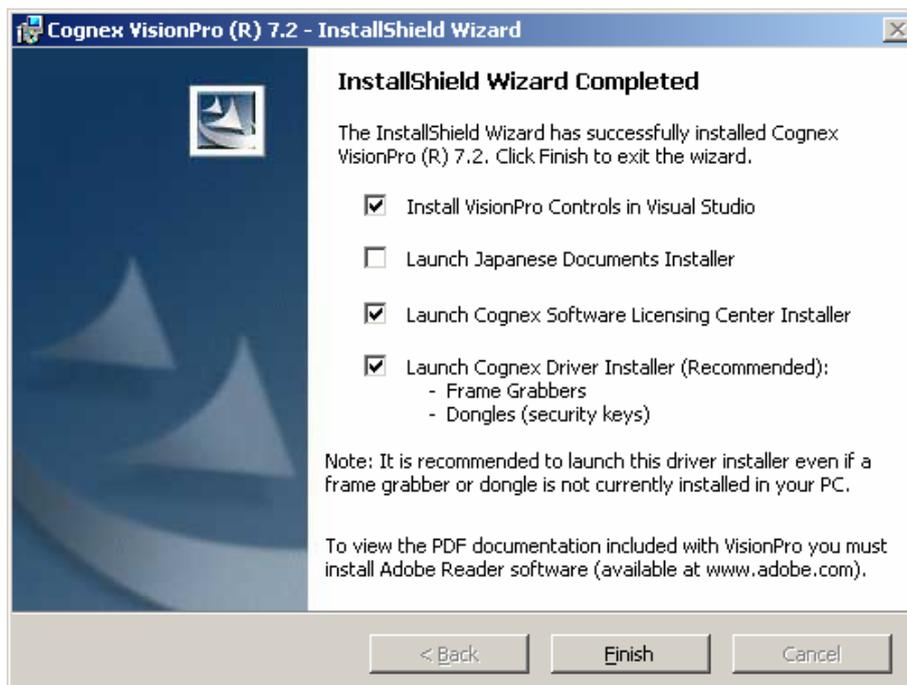
### A.) Hardware Requirements:

Beside the camera and its power supply itself, you still need an Ethernet cable (Cat 6 or higher) and your PC must be equipped with a Gigabit Ethernet card (Network Interface Connector = NIC). We recommend using a NIC with Intel PRO/1000 chipset.

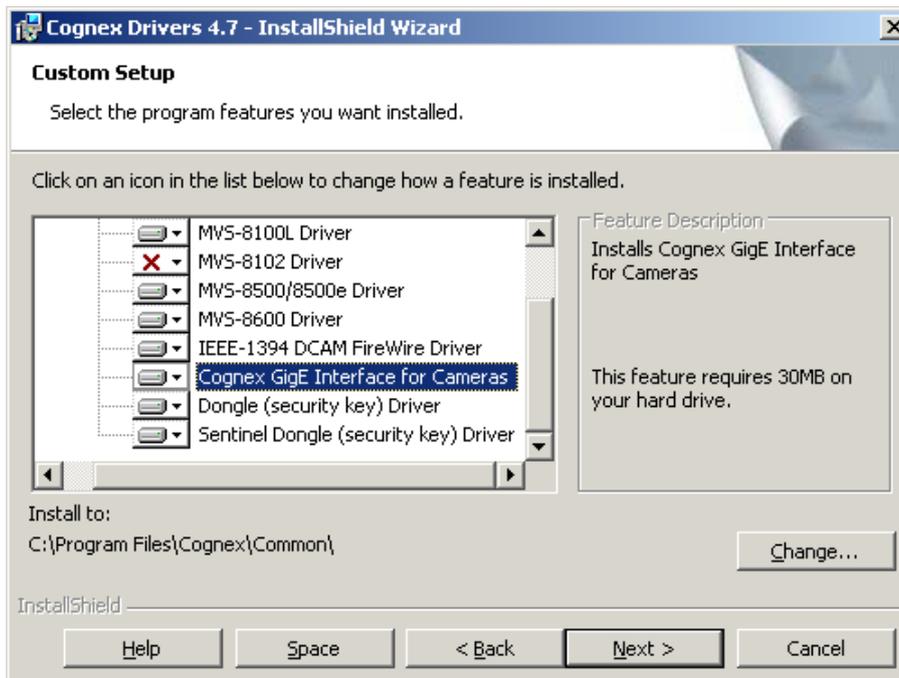
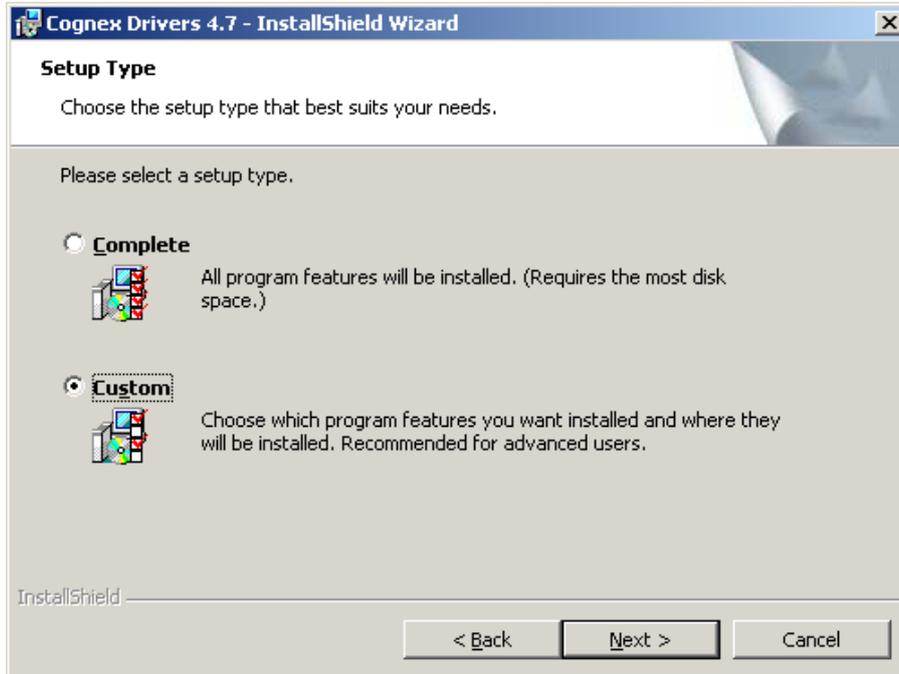
The drivers for your NIC must have been installed properly before starting with the installation of your Cognex VisionPro software package.

### B.) Software Installation Requirements:

After the installation of the Cognex VisionPro software package the installation process for the Cognex Drivers must be launched:

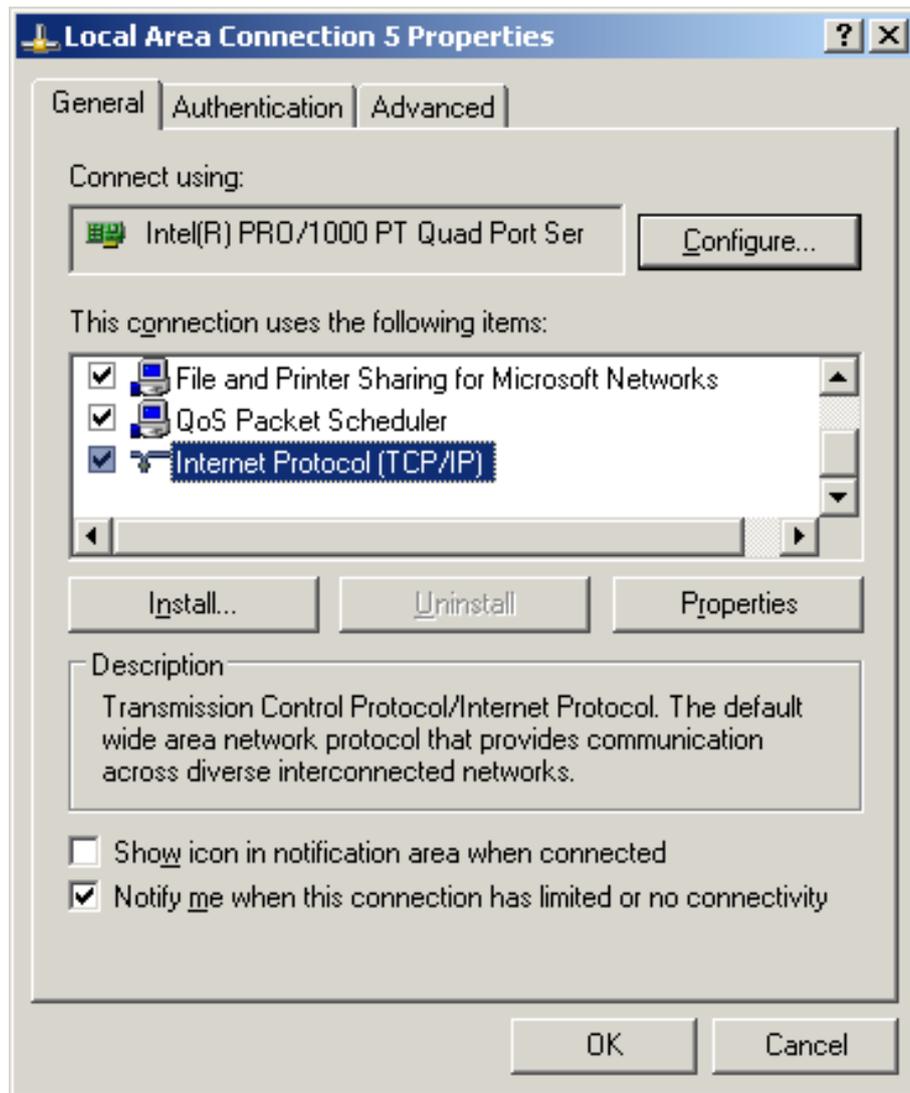


If you decide to select “Custom” as the setup type, as shown in the following dialog, make sure that the “Cognex GigE Interface for Cameras” driver is selected to be installed:

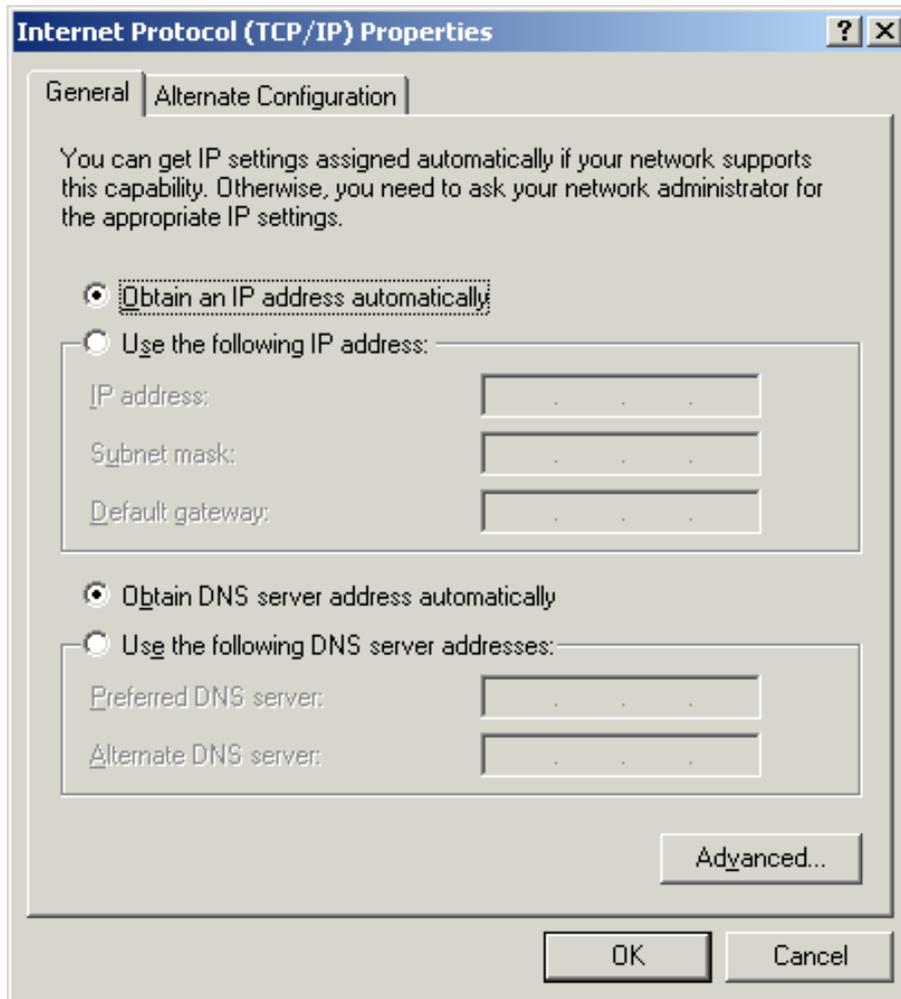


C.) Configuring the Local Area Connection (LAN):

By default, Basler GigE cameras are not configured for a static IP address. We recommend configuring the NIC for obtaining an IP address automatically too. In the “Properties” dialog box of the LAN connection you want to configure, select “Internet Protocol (TCP/IP)” and then press the “Properties” button:



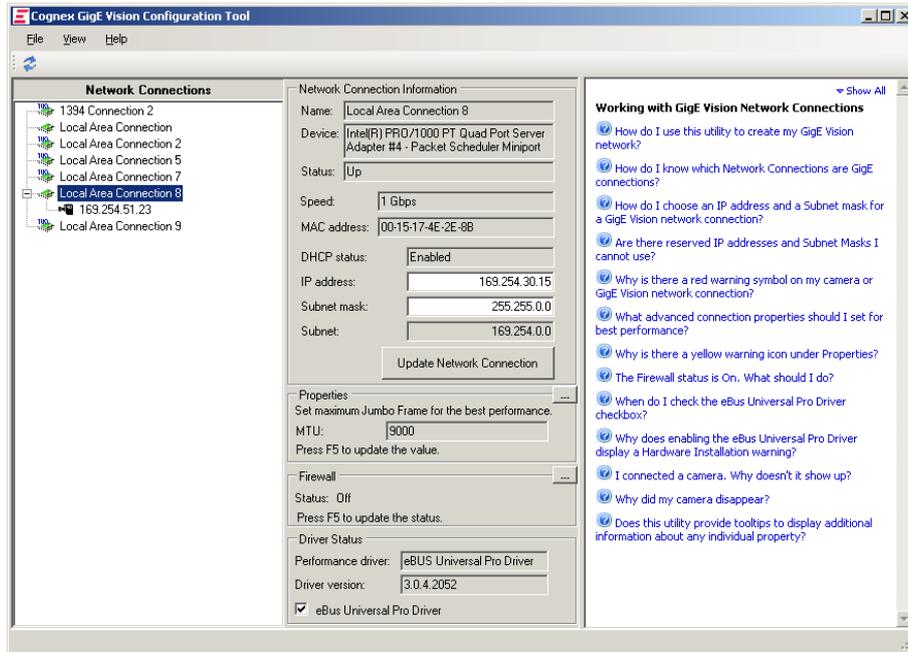
In the “Internet Protocol (TCP/IP) Properties” dialog box, select “Obtain an IP address automatically” and press the “OK” button:



Of course, if your camera should be configured for a static IP address and if you know this address, you may also configure the LAN connection for a static IP address in the same subnet which is used by the camera.

### D.) The Cognex GigE Vision Configuration Tool

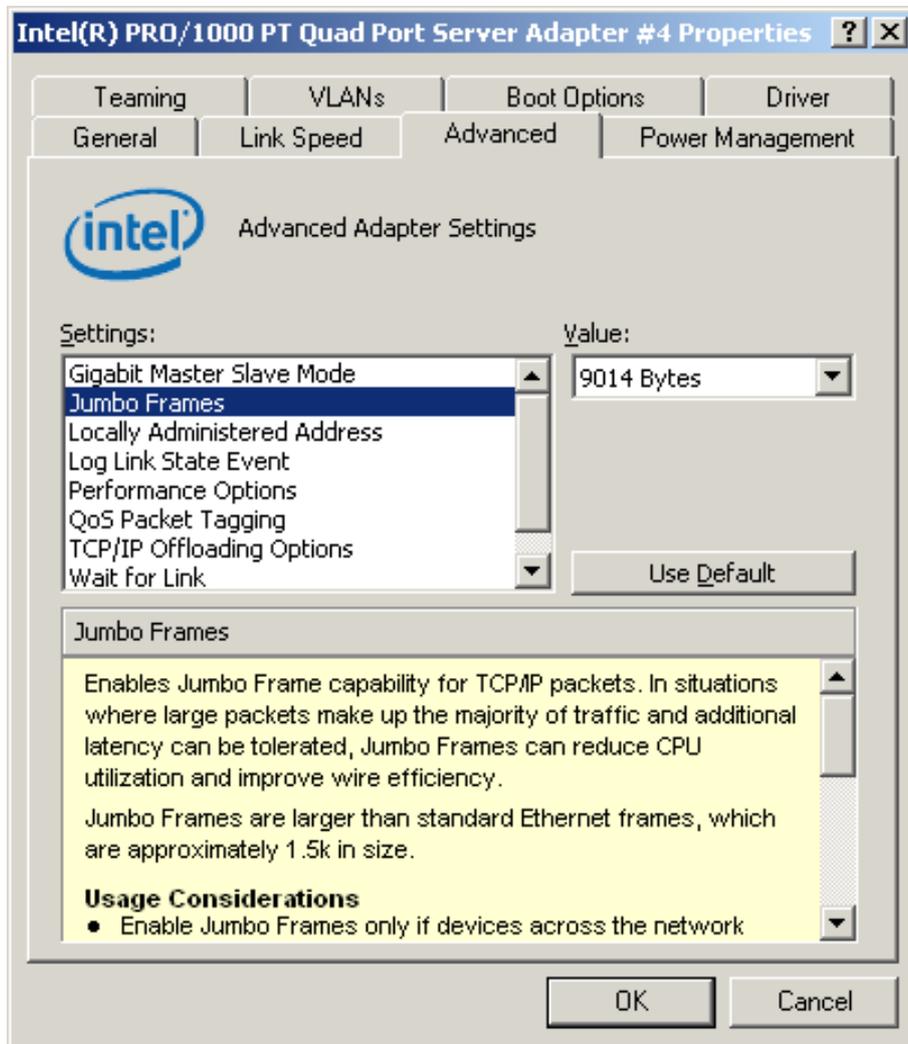
Once you have connected your camera to your PC, please run the “Cognex GigE Vision Configuration Tool”. You will find a list of all of your LAN connections displayed. Select the network connection (LAN) you like to configure. You’ll see the following dialog:



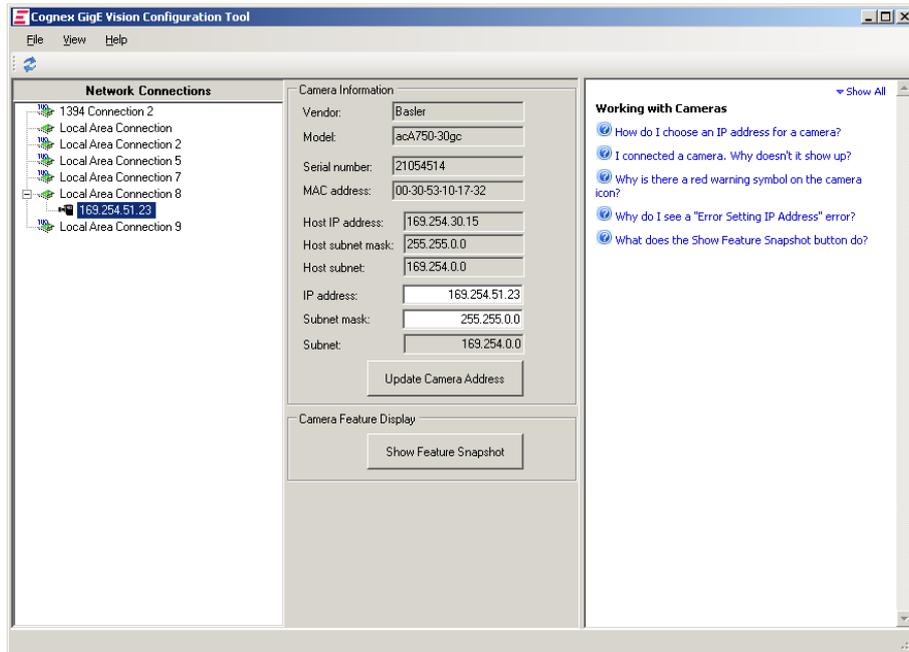
You can change the adapter’s IP address and Subnet mask here, if needed.

Also, you will see the status of your firewall, which should be “Off” in order to be able to receive image data from your camera. As an alternative, you can configure your firewall to unblock certain ports, see “E.) Firewall Configuration” for details.

If your NIC supports Jumbo Frames you should configure your adapter to use the maximum Jumbo Frame size (MTU) for best performance. For an Intel PRO/1000 adapter you will find the “Jumbo Frames” setting in the “Advanced” tab in the adapter’s “Properties” dialog:



Selecting your camera device enables you to change the IP address and Subnet mask of your camera. Please keep in mind that the IP address of your camera must be in the same address range as the IP address of the LAN connection to which the camera is connected to. The Subnet mask of your camera device needs to be the same as the Subnet mask of your LAN connection. The following dialog shows the configuration of a connected camera:



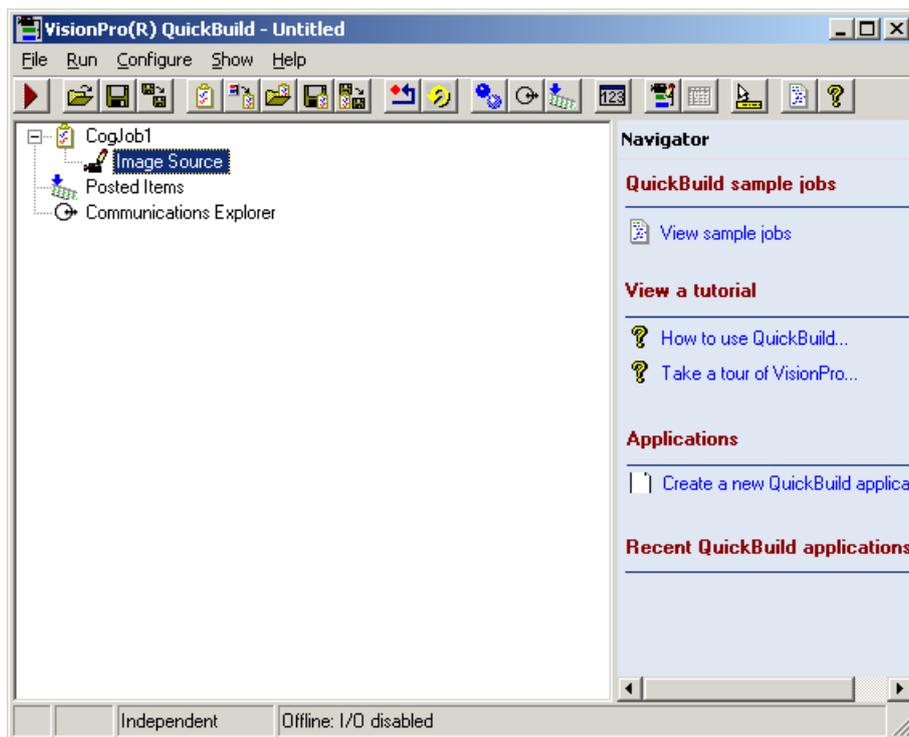
### E.) Firewall Configuration

Any application using the GigE Vision network protocol must be able to accept data from the camera on UDP port 3956. On systems with the Windows firewall enabled, this can be achieved by selecting “Unblock” when the operating system notifies the user that the VisionPro application needs to accept connections from the network. To ensure optimal performance, UDP ports 49153 through 49169 should also be unblocked. If you are using the Windows firewall, you can unblock these ports by clicking on the “Windows Firewall” icon in the control panel, switching to the “Exceptions” tab, and clicking the “Add Port” button to unblock UDP ports between 49153 and 49169.

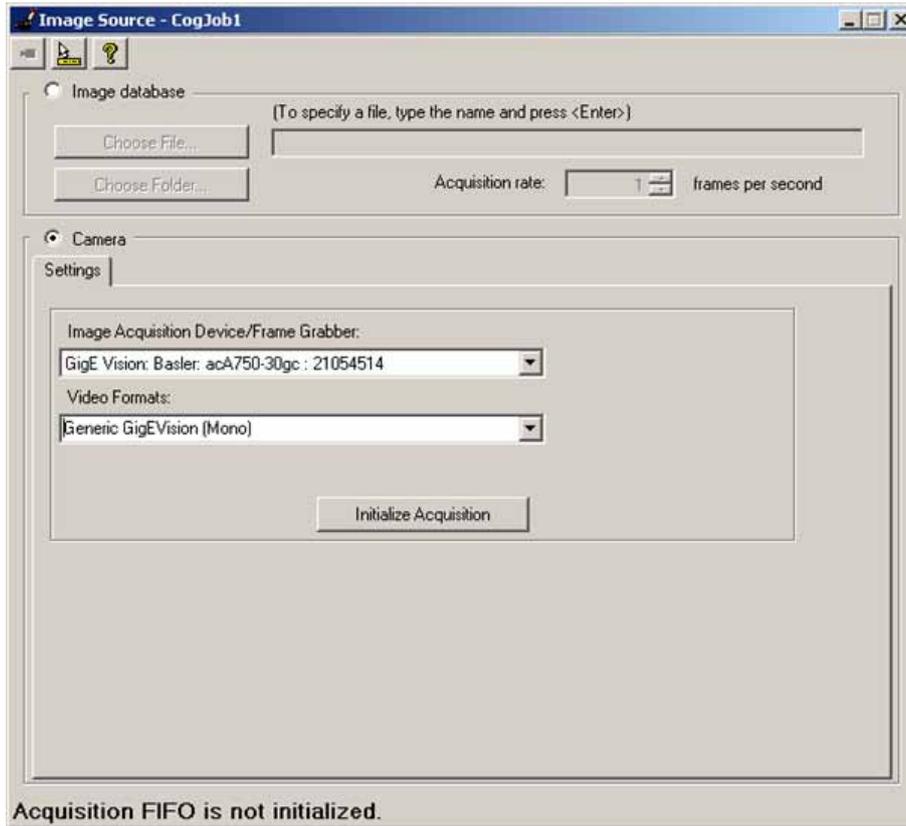
### F.) Configuring the Camera / Grabbing Images with VisionPro Quickbuild

An easy test for successful interfacing between VisionPro and a Basler GigE camera can be performed using the VisionPro Quickbuild application.

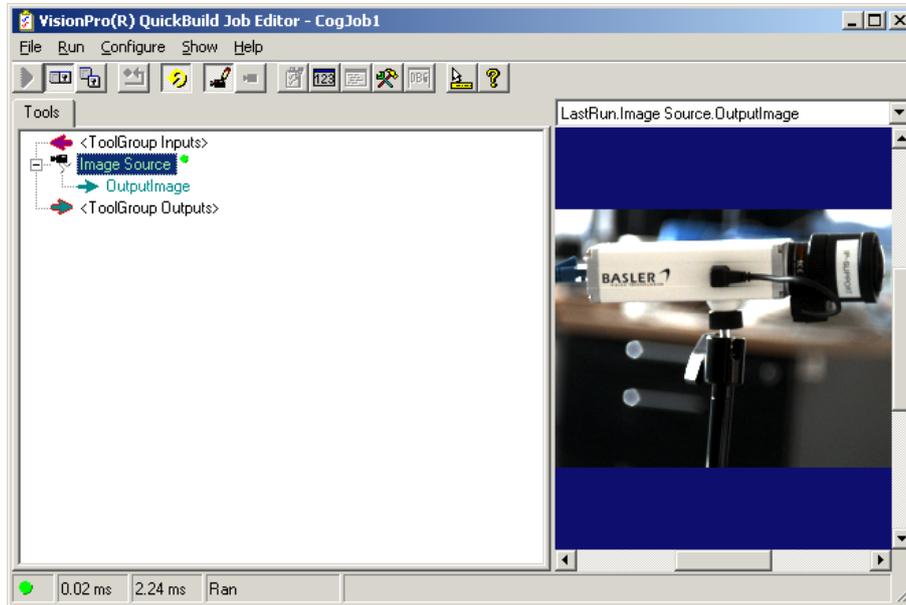
After starting the VisionPro Quickbuild application, double click on the Image Source item:



The Image Source dialog box will show up. As source, select Camera and then select your camera device from the Image Acquisition Device dropdown box. If you click on the arrow of the Video Formats dropdown box, a context menu will show up, listing the available video formats, which might be Bayer Color and/or Mono for Generic GigE Vision devices. Finally, press the Initialize Acquisition button. Once the acquisition is initialized, you can close the Image Source dialog box (it can be opened again by double clicking Image Source):



Back in the QuickBuild dialog box press the “Run Job Continuously” button. You should now see a live image, as shown in the screenshot below:



VisionPro provides you with a lot of programming samples. Samples showing how to configure a GenICam compliant GigE Vision camera can be found in the GigEVisionProperties folder within the Cognex programming samples folder:

