Basler Components

Interfacing Basler GigE Vision Cameras with Matrox MIL 8.0 Software

APPLICATION NOTES

Document Number: AW000648
Version: 04 Language: 000 (English)
Release Date: 15 January 2009

BASLER
VISION TECHNOLOGIES

Contacting Basler Support Worldwide

Europe:

Basler AG
An der Strusbek 60 - 62
22926 Ahrensburg
Germany
Tel.: +49-4102-463-500
Fax.: +49-4102-463-599
bc.support.europe@baslerweb.com

Americas:

Basler, Inc.
855 Springdale Drive, Suite 160
Exton, PA 19341
U.S.A.
Tel.: +1-877-934-8472
Fax.: +1-610-280-7608
bc.support.usa@baslerweb.com

Asia:

Basler Asia Pte. Ltd
8 Boon Lay Way
03 - 03 Tradehub 21
Singapore 609964
Tel.: +65-6425-0472
Fax.: +65-6425-0473
bc.support.asia@baslerweb.com

www.baslerweb.com

1 Introduction

This document explains how to interface a Basler GigE Vision camera with Matrox MIL 8.0 Software using a standard Gigabit Ethernet card.

For information about interfacing Basler cameras with the Matrox Solios GigE board, please contact Matrox technical support or visit the Matrox Imaging website:

http://www.matrox.com/imaging/products/solios_gige/home.cfm

2 Steps

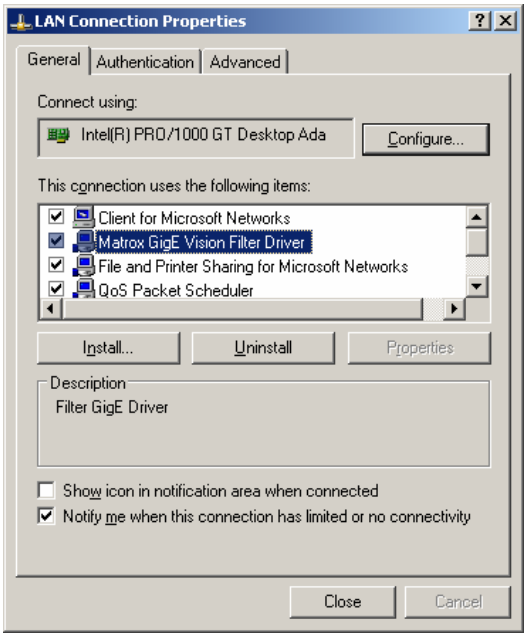
Step 1: Hardware requirements

In addition to the Basler camera and its power supply, you will need an Ethernet cable (Cat 6 or higher) and your PC must be equipped with a Gigabit Ethernet network adapter card (also called a Network Interface Controller or NIC).

We strongly recommend using a network adapter from the Intel Pro 1000 family or an adapter with a comparable chipset. When the GigE driver tries to optimize some of the GigE relevant camera settings, it relies on the characteristics of the chipset used on the Intel Pro 1000 adapters. With other adapters, this optimization may fail and may result in a situation where images can’t be grabbed without corruption.

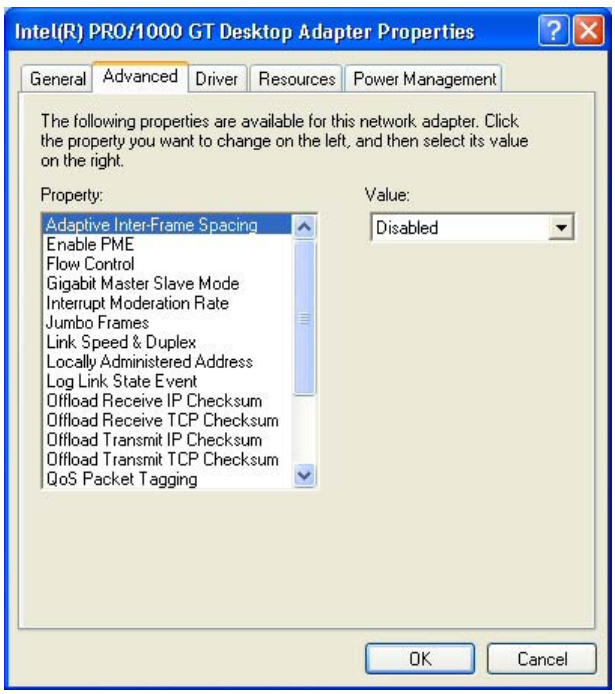
Step 2: Configuring the network adapter

Open a **Network Connections** window, right click on the name of the network adapter you want to configure, and select **Properties** from the drop down menu that appears. You'll see the following **Properties** window:

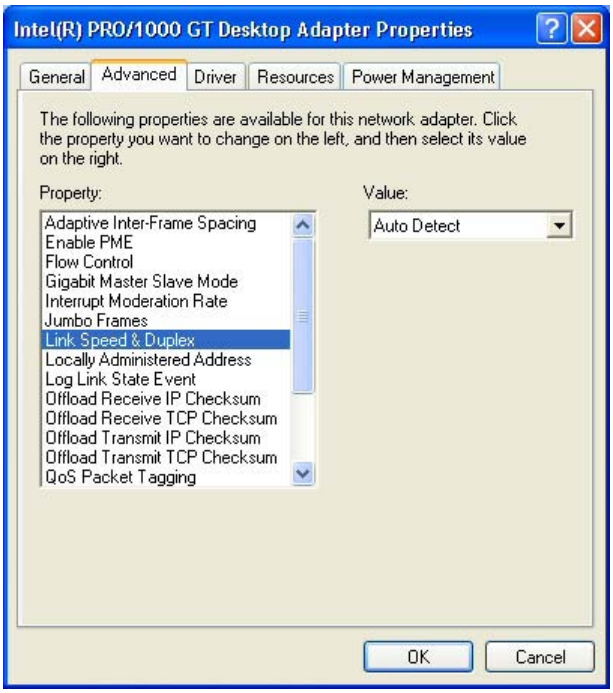


Make sure that **Matrox GigE Vision Filter Driver** appears in the item list and that it is checked as shown above.

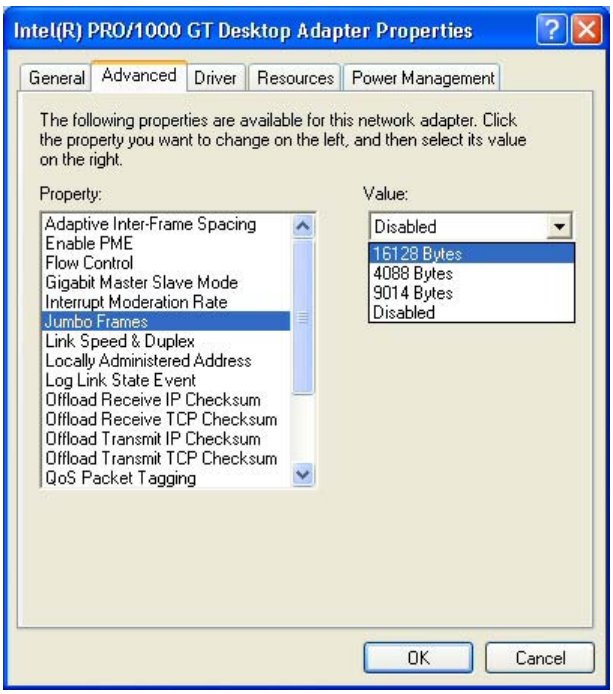
Click on the **Configure** button and a properties window for the adapter will open. Select the **Advanced** tab:



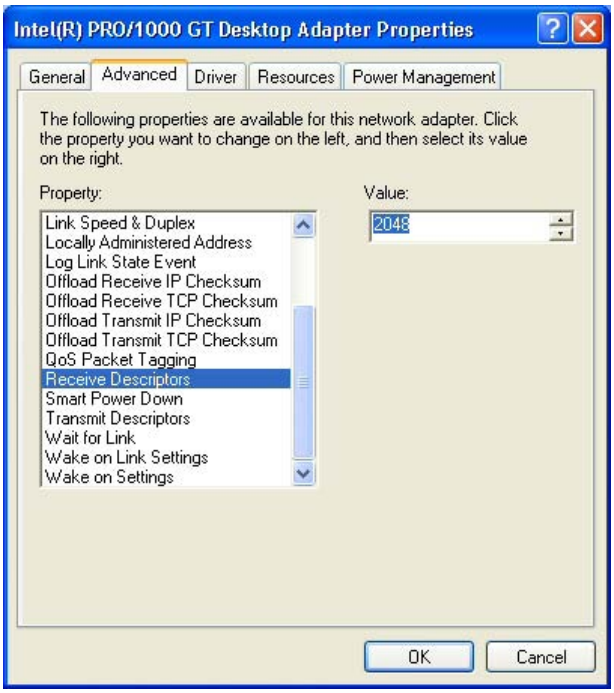
Find the parameter that sets the adapter's speed and duplex mode and set it for auto detection:



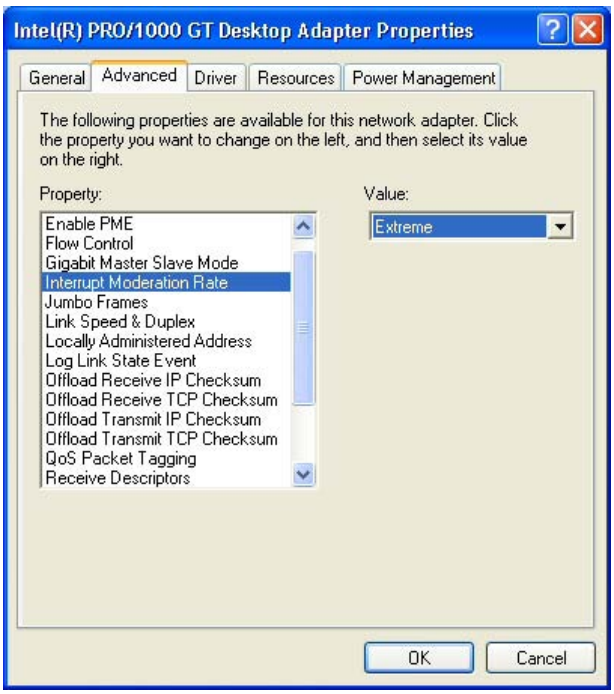
Find the parameter that determines the maximum size of an IP packet (typically called "Jumbo Frames") and set it to the maximum:



Find the parameter that sets the receive descriptors and set it to the maximum:



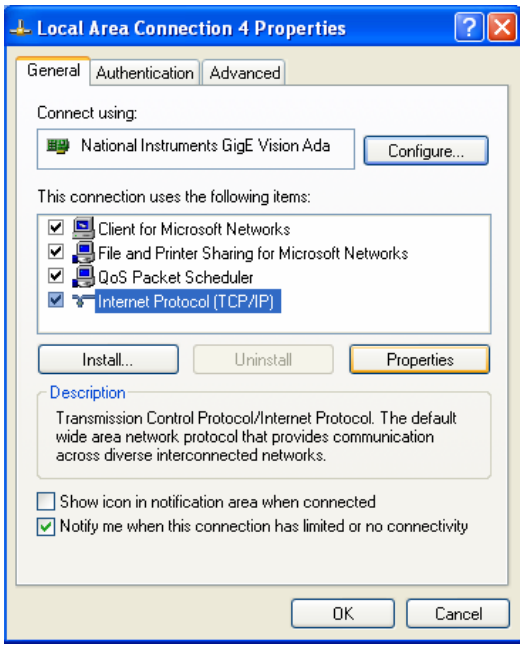
Configure the adapter so that it generates fewer CPU interrupts. With the Intel Pro 1000 adapter, for example, you would set the "Interrupt Moderation Rate" to Extreme instead of Adaptive":



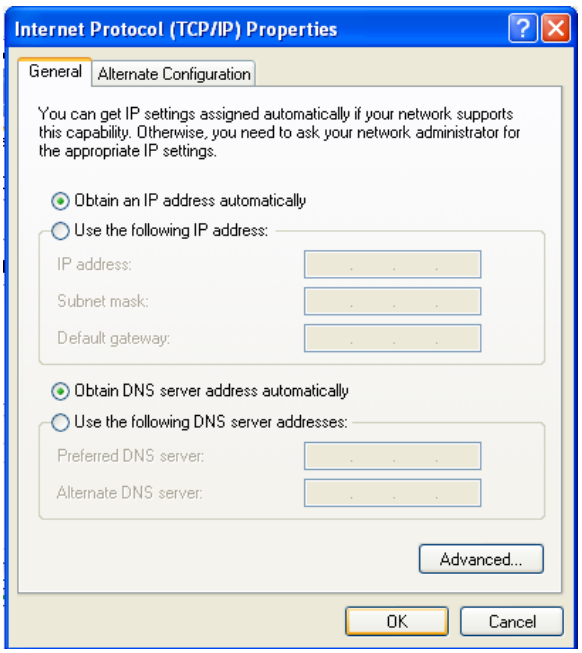
Click the **OK** button to save the changes you made.

By default, Basler GigE Vision cameras are configured to obtain an IP address automatically (i.e., not for a static IP address). We recommend that you also configure the network adapter to obtain an IP address automatically. To do this, open a **Network Connections** window, right click on the name of the network adapter, and select **Properties** from the drop down menu that appears.

Select **Internet Protocol (TCP/IP)** from the item list (you may need to scroll down to see it) and click the **Properties** button:



Select **Obtain an IP address automatically** as shown below and click the **OK** button to confirm:



Step 3: Setting the camera's IP configuration

In step two, the Basler camera and the network adapter card were set so that they would each obtain an IP address automatically. This is the default configuration, and it will work well if your camera does not need to be configured for a static (persistent) IP address. If you so desire, your camera can be configured for a static IP address. Remember that if you set the camera for a static IP address, you must also configure the network adapter card for a static address in the same subnet used by the camera.

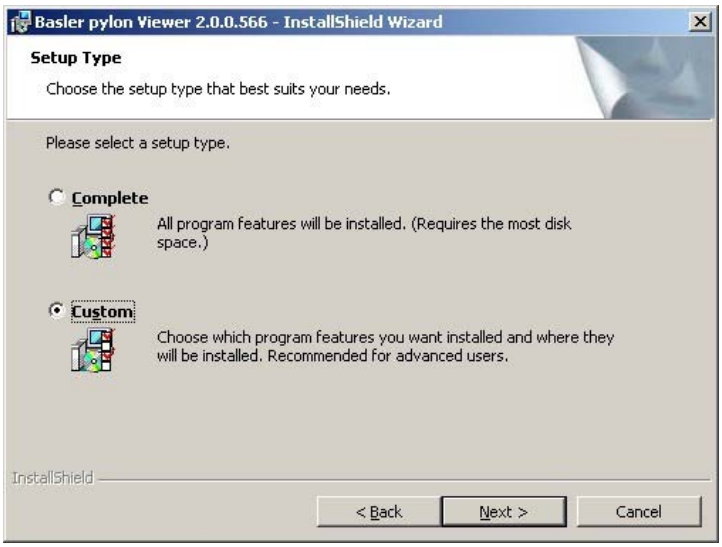
The Matrox GigE Vision Filter Driver and the MIL tools only provide limited access to the Basler camera's IP configuration settings. For example, the software will not find your camera if the camera's IP address range does not match the IP address range of the network adapter.

It could be useful for you to have full manual control over camera's IP address, subnet mask, usage of persistent/automatic IP addresses etc. In this case, we recommend that you download and install the latest version of Basler's pylon Runtime Package. You will find the package at this location on our website:

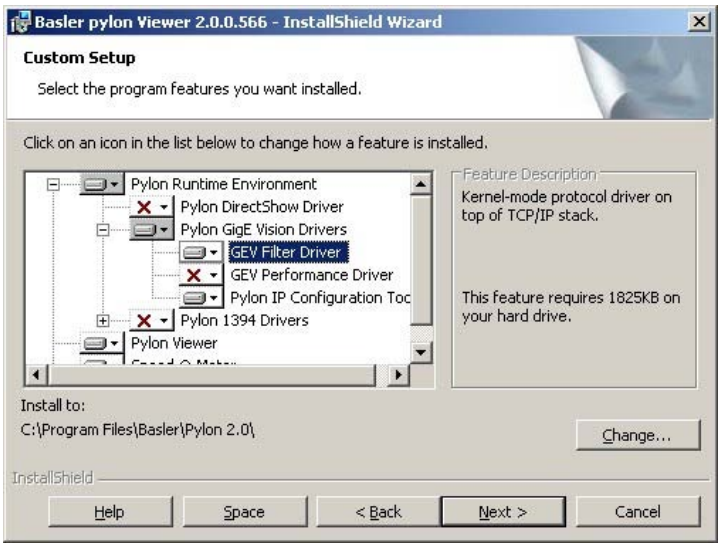
http://www.baslerweb.com/beitraege/beitrag_en_71708.html

The pylon runtime package can be installed side-by-side with the Matrox software. The pylon package contains an IP configuration tool that lets you determine a Basler camera's current IP configuration and lets you set the configuration manually.

When you install the Basler pylon Runtime Package, you should select the **Custom** setup rather than a **Complete** setup in order to have the Matrox and the pylon software installed side-by-side:



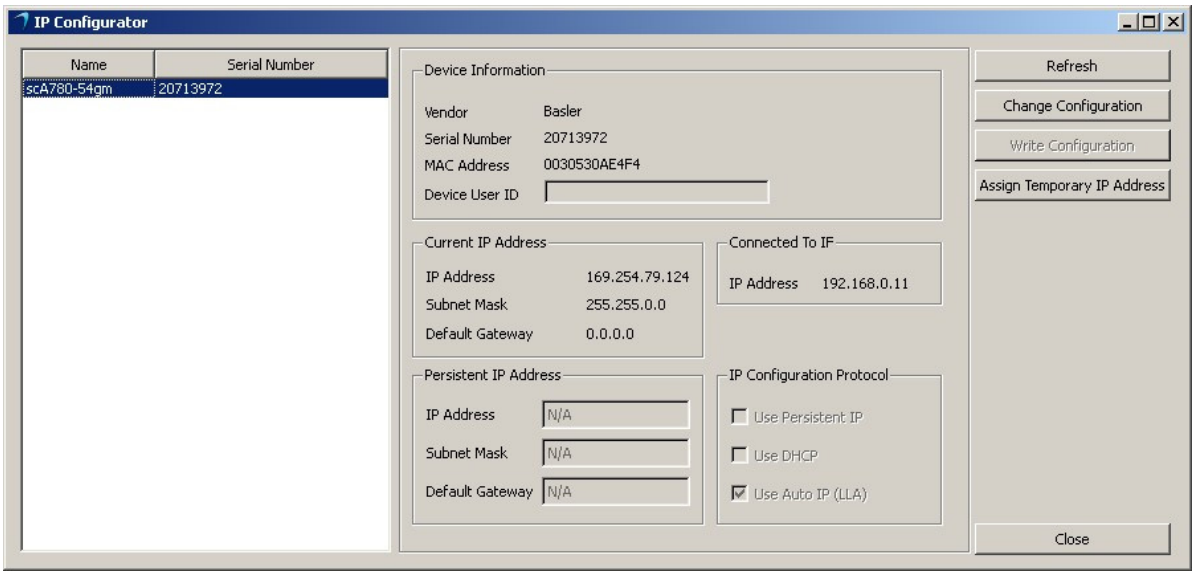
In the **Custom Setup** window's feature list, de-select the Pylon DirectShow Driver, the GEV Performance Driver, and the Pylon 1394 Drivers, as shown below:



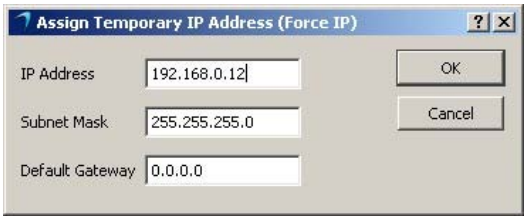
Once you have installed the Pylon software, you can use the Pylon IP Configuration Tool to configure the IP settings of your camera. The following images illustrate how to use the tool to change the camera's IP configuration from Auto IP addressing to a persistent (fixed) IP address.

Double click the **Pylon IP Configuration Tool** icon on your desktop to open the tool.

When the tool opens, select the camera you want to work with from the list on the left side of the tool and then click the **Change Configuration** button:

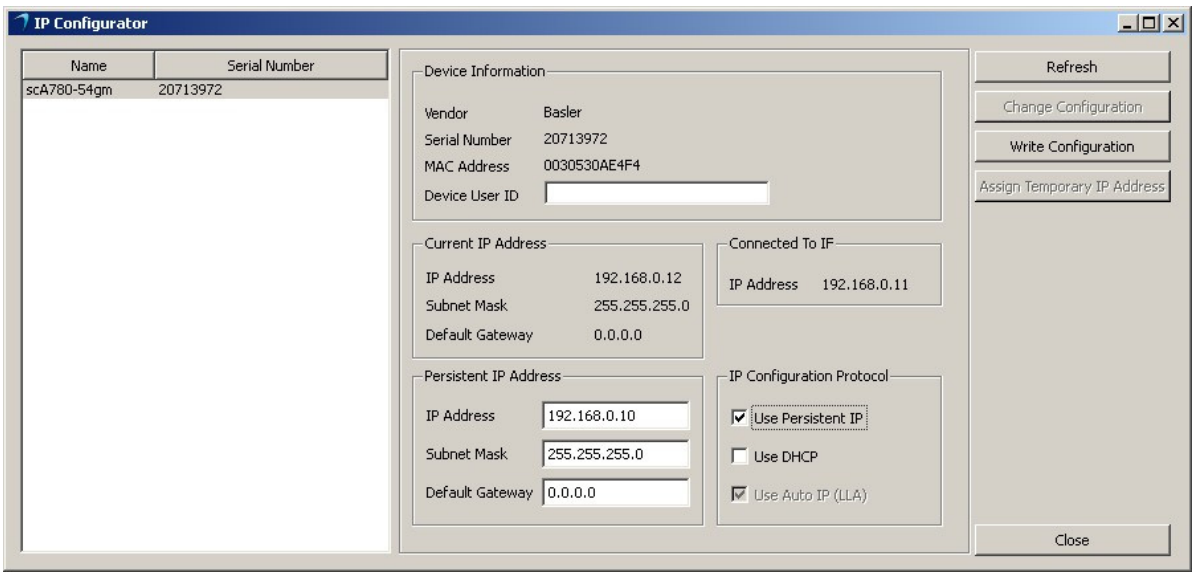


A dialog box may open asking you to enter an IP address to be temporarily assigned to the camera as shown below. The temporary IP address must be within the same IP address range and have the same subnet mask as the network adapter card to which the camera is connected.



Once a temporary IP address has been assigned to the camera, you can check the **Use Persistent IP** box as shown below. You can then change or enter values for the camera's persistent IP address and subnet mask.

After you have entered the IP settings, click the **Write Configuration** button to write the settings to the camera:



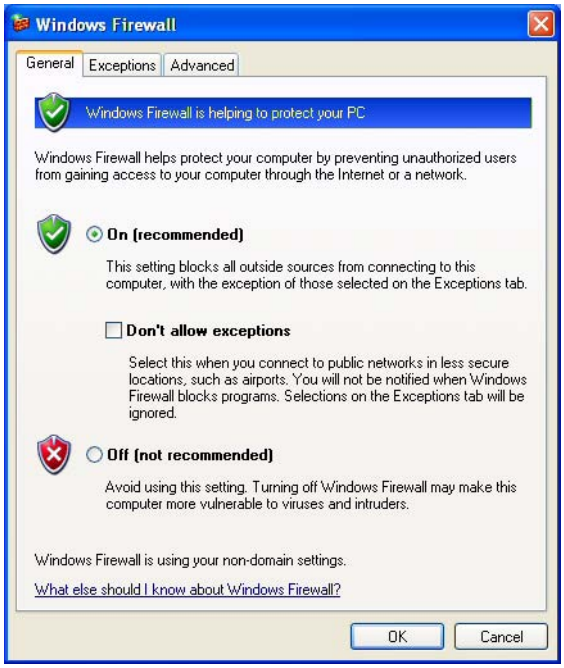
Step 4: Firewall configuration

Any application using the GigE Vision network protocol must be able to accept data from the camera on several different UDP ports. On systems equipped with a firewall, you should disable the firewall for the network adapter to which your camera is connected.

If you are using the Windows Firewall on your system, you can disable the firewall on a specific network adapter by doing the following:

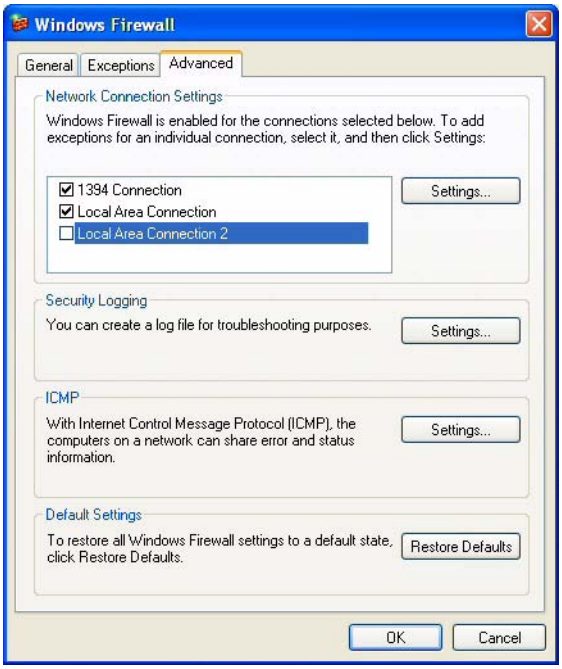
Click **Start**, click **Control Panel**, and double click **Windows Firewall**.

A **Windows Firewall** window will open as shown below. Click the **Advanced** tab.



A list of network adapter names will appear in the **Advanced** tab. Find the adapter to which your camera is connected and uncheck the box next to the adapter name.

For example, if your camera is connected to a network adapter named "Local Area Connection 2", you would uncheck the box next to this name as shown below.

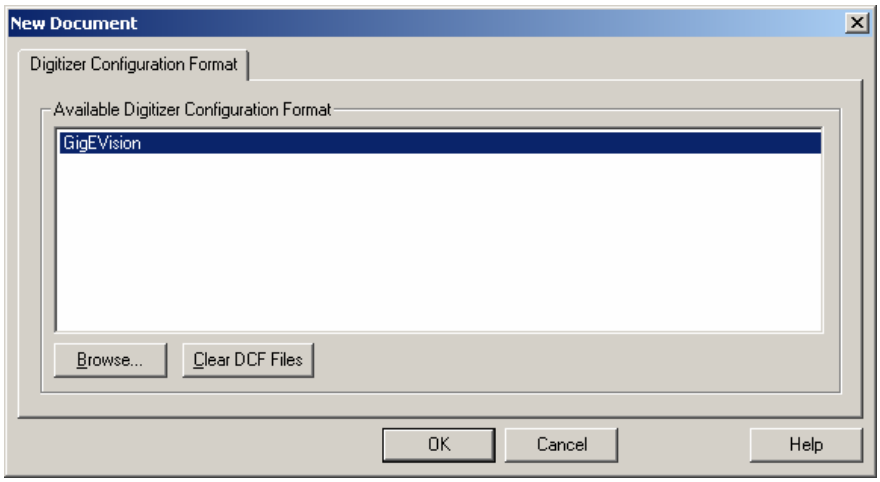


Click the **OK** button.

Step 5: Configuring the camera and grabbing images with Intellicam

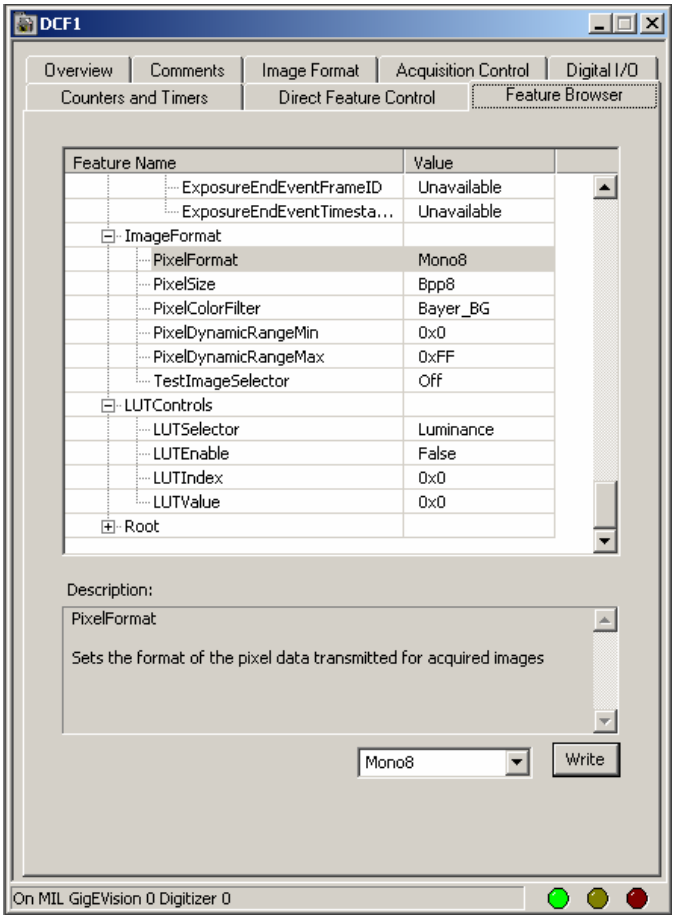
An easy test for successful interfacing between MIL and a Basler GigE Vision camera can be performed using MIL's Intellicam.

Start the Intellicam software, in the **Digitizer** menu, select **Single Grab** or **Continuous Grab**. A dialog appears that lets you select a Matrox Digitizer Configuration Format (DCF). If you have not already created a DCF file for a Basler GigE Vision camera, you should select the default GigE Vision DCF:



Click the **OK** button and you will see an image grabbed from the camera.

You will also notice a configuration window. This window lets you configure the camera (e.g., image format, area of interest ,etc.). The window also provides a GenICam compliant **Feature Browser** that provides access to all of the camera's features:



Revision History

Doc. ID Number	Date	Changes
AW00064801000	8 Apr 2008	Initial release of this document.
AW00064802000	24 Jul 2008	Modified step two to describe a custom pylon installation.
AW00064803000	30 Jul 2008	Updated contact addresses and phone numbers.
AW00064804000	15 Jan 2009	Updated the firewall configuration information starting on page 9.