Allied Vision

APPLICATION NOTE

Multicasting with Allied Vision GigE cameras

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Description

All Allied Vision GigE cameras support multicasting. This feature can be controlled with the GigE SampleViewer and can be added to an application using PvAPI SDK. Multicasting is supported under all operating systems supported by the PvAPI SDK except Mac OS.

When multicasting is enabled, the camera broadcasts image data to a multicast address. Any device on the same network as the camera can receive multicast image data. Example applications include:

- Assigning a different image processing task to different system and increasing functionality by adding more processing power.
- System monitoring.

Prerequisites

The following items are required:

- A computer with Windows 7, Vista, XP, Linux, or QNX operating system.
- A GigE network card and GigE cable.

For hardware selection for GigE cameras, see application note *Hardware Selection for Allied Vision GigE Cameras*:

https://www.alliedvision.com/en/support/technical-papers-knowledge-base

- For a multi-computer system, Internet Group Management Protocol (IGMP) v2-capable Gigabit Ethernet switch.
- An Allied Vision GigE camera.

Network Configuration

Achieving multicasting between devices requires that all devices be on the same GigE network. A typical system is composed of multiple computers with dedicated GigE network cards connected into a IGMP-capable GigE switch, along with the Allied Vision GigE camera. See figure 1 below.

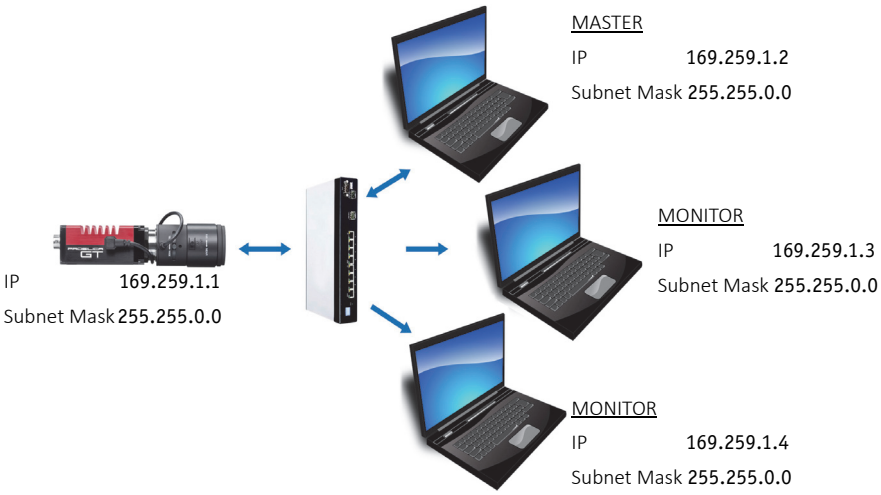

Figure 1: *A single camera multicast system with two monitors and one master computer. All components are configured using the link-local IP address range.*

Master configures the GigE Vision camera to send an image stream to an IGMP-capable Gigabit Ethernet switch. IGMP-capable switch uses IGMP snooping to determine which network segments have monitors for the multicast group and transmits the images to those network segments only. This avoids unnecessary traffic and server load.

It is recommended to ensure that IGMP snooping is **enabled** on the switch for the multicast packets to be limited to the network segments with multicast group members. Otherwise, multicast packets will traverse all network segments.

IP configuration on the network cards and cameras can be set to *DHCP/Obtain an IP address Automatically*, or optimized to the link-local address range.

For camera and network card settings, and configuring the link-local address range, see the *Modify Ethernet adapter IP address* section of the *GigE Installation Manual*:

https://www.alliedvision.com/fileadmin/content/documents/products/cameras/various/installation-manual/GigE_Installation_Manual.pdf

Enabling multicasting with GigE SampleViewer

Multicasting is a camera feature. As such it can be enabled/disabled using any GigE Vision compliant third party software, GigE SampleViewer, or directly through the PvAPI. For the purposes of this application note, we control multicasting through the GigE SampleViewer.

GigE SampleViewer download:

https://www.alliedvision.com/en/support/software-downloads

If you are not using the GigE filter driver on your NIC, you must **Disable Windows Firewall** in order for multicast to work.

1. Connect your Allied Vision GigE camera and computers to the GigE network, as outlined in the above Network Configuration section.
2. On the computer you wish to act as the master/control computer, start the GigE SampleViewer application. Wait until the camera is listed. This may take a few seconds. Click on the camera serial number.

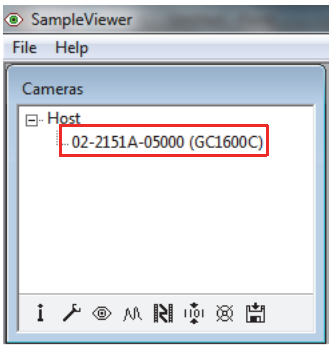

Figure 2: *SampleViewer camera list*

The first opened GigE SampleViewer is the master control application. The master controls camera parameters and attributes. Subsequent instances of SampleViewer are opened as monitor, and can only receive image data.

3. Open the camera control window by selecting the **wrench** icon.

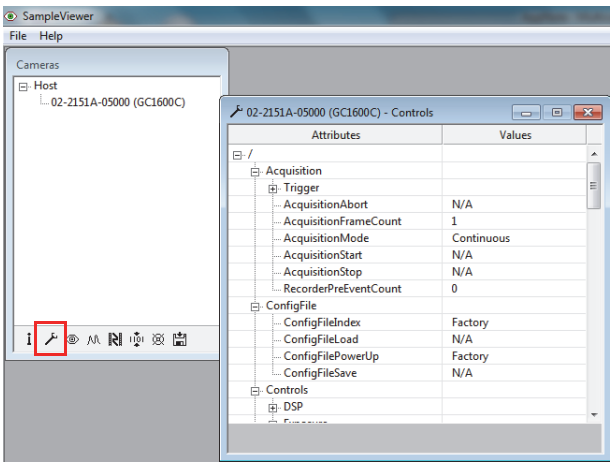

Figure 3: *GigE SampleViewer camera control window*

4. Configure your Allied Vision GigE camera to the maximum bandwidth and packet size supported by your network. Do not begin streaming from the camera.

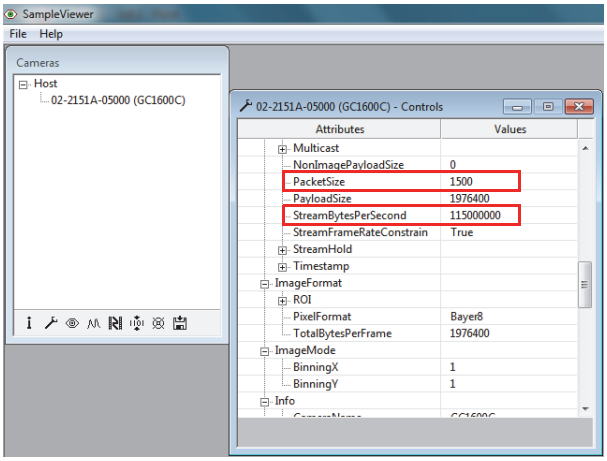

Figure 4: *Camera attributes in camera control window*

Multicast packet size for switches may be lower than the rated size for standard data transfer. Allied Vision testing has determined most switches support a maximum **PacketSize = 1500** in multicast mode.

QNX and Linux operating systems require an entry to the routing table to allow multicast packets to be received. Run the following command (as root) on your system:

```
Route -n add -net 224.0.0.0 169.254.100.66 -netmask 240.0.0.0
```

Replace **`169.254.100.66`** with the IP address of your GigE adapter.

5. Enable multicasting in the camera control window.

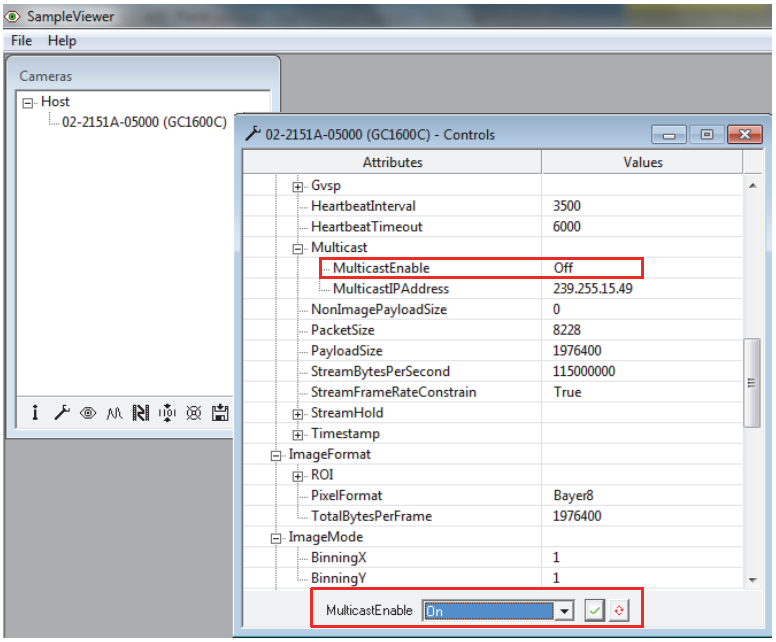

Figure 5: *Camera control window illustrating MulticastEnable*

Users employing camera **ConfigFiles** note that **MulticastEnable = ON** cannot be saved to the **ConfigFile**. It must be set manually.

6. Start streaming from the camera by selecting the **eye** icon.

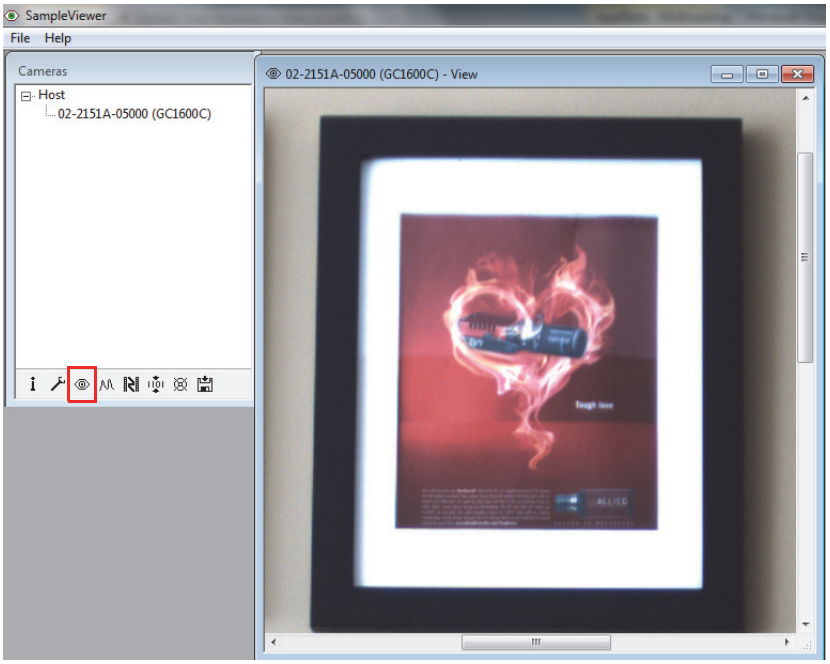

Figure 6: *The live camera stream*

7. Open additional SampleViewer applications on the remaining monitor system computers. Click on the **camera serial number**, then the **eye** icon to begin streaming.

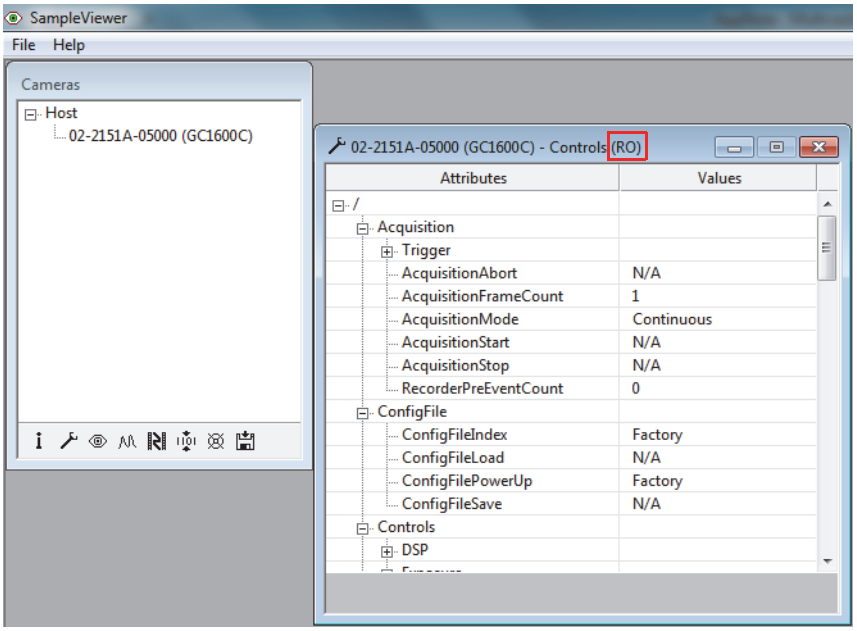

Figure 7: *Note that a control window on a monitor system is marked as RO – Read Only. You cannot change the camera attributes from this window.*

For technical support, please contact support@alliedvision.com.
For comments or suggestions regarding this document, please contact info@alliedvision.com.

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