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Vision Technologies

**Application Note:**

# Multicasting with AVT GigE cameras

# Description

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

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.

**www**

See AVT hardware selection for GigE cameras:

http://www.alliedvisiontec.com/fileadmin/
content/PDF/Support/Application_Notes/
Hardware_Selection_for_AVT_GigE_Cameras.pdf

- For a multi-computer system, Internet Group Management Protocol (IGMP) v2-capable Gigabit Ethernet switch.
- An AVT 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 AVT GigE camera. See figure 1 below.
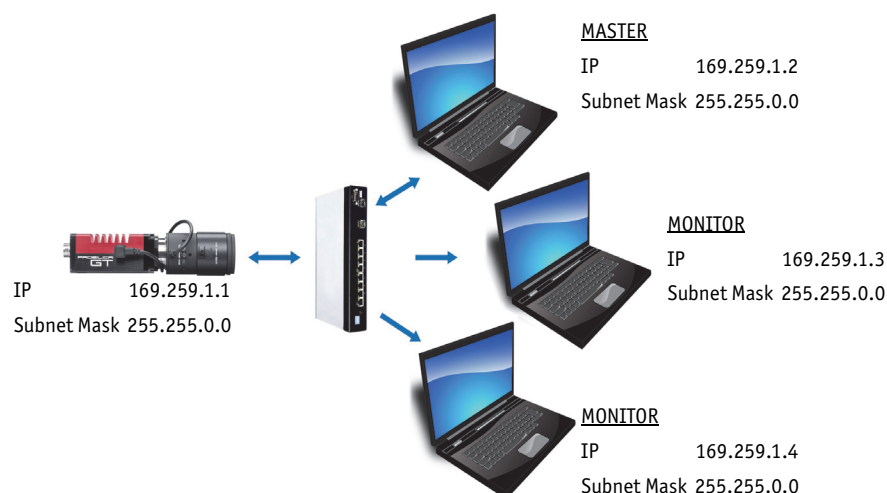


Figure 1: A single camera multicast system with two monitor and one master computer. All components configured using the link-local IP address range

"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.

**Note** 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.

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

http://www.alliedvisiontec.com/fileadmin/content/PDF/Products/Technical_Manual/GigE_Install_Manual/AVT_GigE_Installation_Manual.pdf

# Enabling multicasting with AVT GigE SampleViewer

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

**www** AVT GigE SampleViewer download:

http://www.alliedvisiontec.com/us/products/legacy.html

1.  Connect your AVT 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.
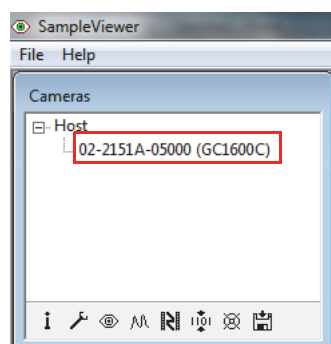


**Note** The first opened GigE SampleViewer is the master control application. The master controls camera parameters and attributes. Subsequent instances of SampleViewer are opened as monitor, and can only receive image data.

Figure 2: SampleViewer camera list

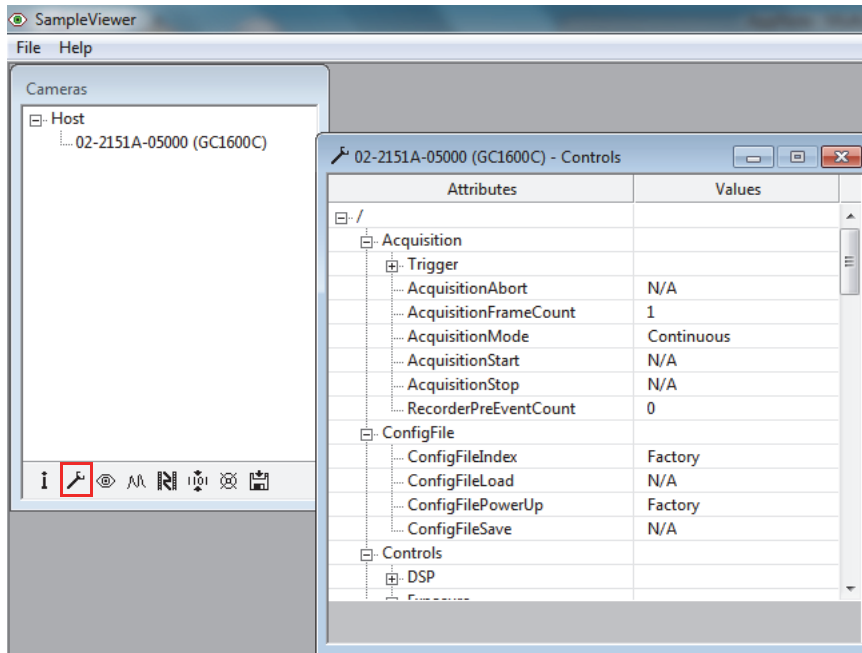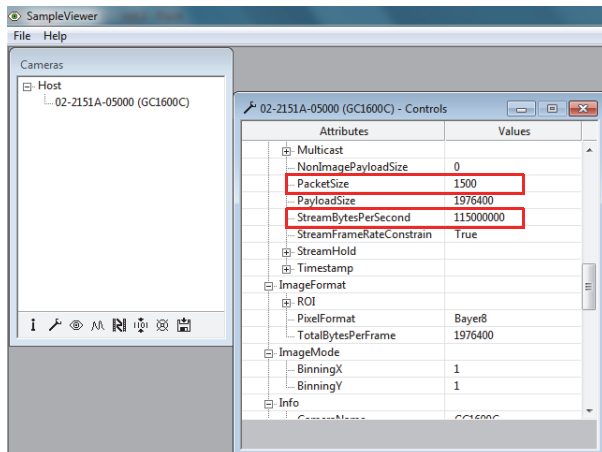3. Open the camera control window by selecting the **Wrench** icon.



Figure 3: GigE SampleViewer camera control window

4. Configure your AVT 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

**Note**

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

**Linux Note**

**Linux**

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
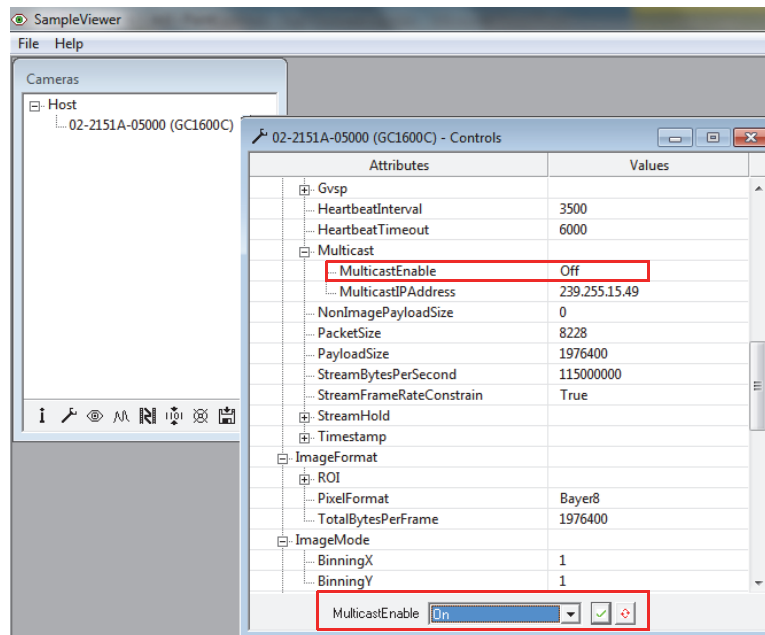
5.   Enable multicasting in the camera control window



Figure 5: Camera control window illustrating **MulticastEnable**

**Note**

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

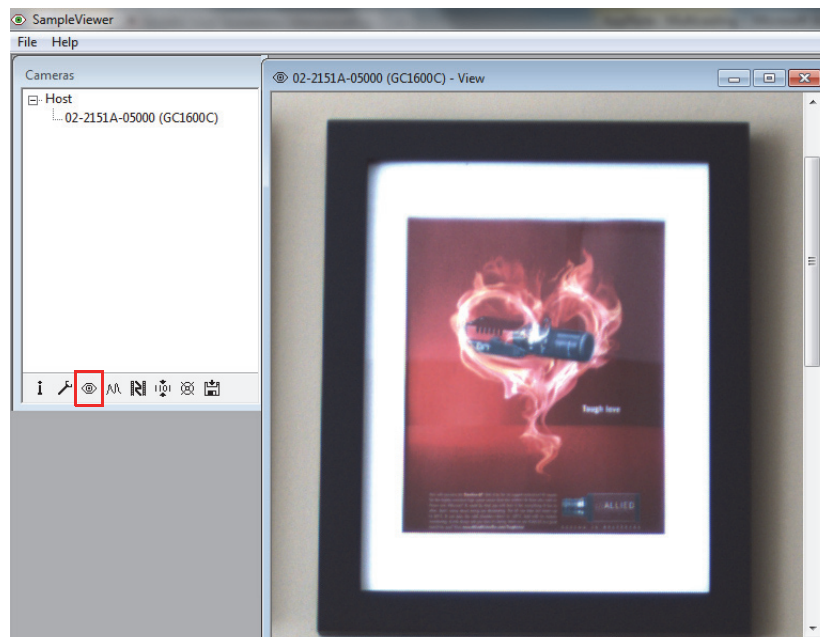6.   Start streaming from the camera by selecting the **Eyeball** icon.



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 **Eyeball** icon to begin streaming.
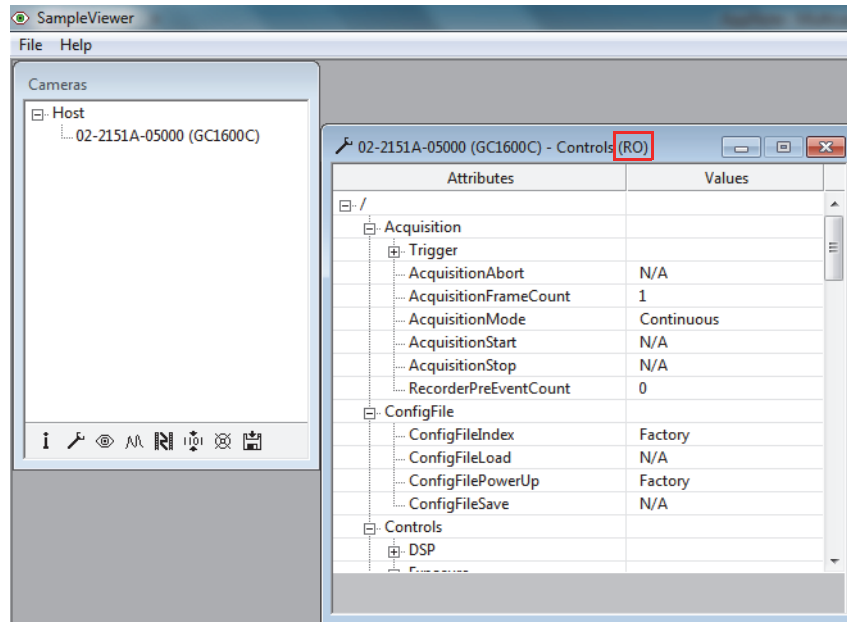


Figure 7: Note that a control window on a monitor system is marked as **RO** – Read Only. You cannot change the camera attributes from this window

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

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