INSTALLATION RECOMMENDATIONS

10Gb Ethernet Solutions for Phantom® Cameras and Accessories

Vision Research offers products with both optical fiber-based 'X2SR' and copper10GBASE-T Ethernet solutions to transfer data faster than ever before. When properly configured, 10Gb Ethernet can achieve speeds up to 6x greater than standard 1Gb Ethernet, saving valuable time when downloading large files. Regardless of the type of 10Gb Ethernet connection you are working with, the entire system must be optimized for maximum throughput in order to get the most out of the 10Gb Ethernet interface.

Step 1 - Ensure all system components are available.

Those components will vary based on the item being installed.

Phantom® CineStation-X2SR and CineStream-X2SR

VRI-P65-CineStream-X2SR comes with an X2SR fiber port

Included in the purchase of these products is a 10 meter multimode fiber optic SC-LC cable. Please note that the end user is required to source the "back end" of the system, which would normally include a high-performance PC with a 10Gb PCI Express card, transceiver and some sort of RAID storage. Vision Research will recommend components that have been tested and qualified, however due to the array of computers and operating systems available, the Computer, PCI-e card and storage cannot be considered standard items.

ITEMS REQUIRED FOR PHANTOM CINESTATION-X2SR AND CINESTREAM-X2SR INSTALLATION

Item	Vision Research Provides	Customer Provides
Multimode SC-LC cable	√	
XFPSR transceiver		√
PCI-e 10GbE Adapter card*		√
PC		√
RAID storage system		√

*** Vision Research has qualified the following components for use with X2SR products:**

- **PCI-Express 10GBE Cards**
  - Myricom Ethernet Card, Part# 10G-PCIE-8A-R, qualified with Windows XP and Win7 32-bit
  - Intel EN Server Adapter, Part# X520-SR2, qualified with Win7 32 and 64-bit
- **XFPSR Transceiver**
  - Finisar FTLX8511D3, qualified with all operating systems

Phantom® v1610 and v1210

These products ship standard with an active 10Gb Ethernet connection, known as 10GBASE-T. This connection is available via the RJ45 port and is compatible with common Cat 6a (or better) cables. A ruggedized adapter for the RJ45

V1210 comes with 10Gb Ethernet Standard, available via a standard RJ45 port

Ruggedized Ethernet Connector installed on Cat 6a cable in Phantom V1610's RJ45 port

port is included with the shipment of a V1610 or V1210, and is recommended to re-enforce that connection.

10GBASE-T adapter cards are not considered standard items, as the drivers and hardware will vary depending on the computer and operating system that is in use.

ITEMS REQUIRED FOR PHANTOM V1610 AND V1210		
Item	**Vision Research Provides**	**Customer Provides**
On-camera RJ45 port	√	
Cat 6a (or better) cable		√
PC		√
10GBASE-T adapter card*		√
RAID storage system		√

*** Vision Research has qualified the following PCI-Express card models for use with copper-based 10GBASE-T products:**

- **Intel AT2 Server Adapter card**, Part# E10G41AT2, qualified with Win7 32 and 64-bit.

Important: This card is not compatible with Windows XP.

Once the correct system components are acquired, please install the Network Interface card and latest drivers per the manufacturer's instructions. After the correct components are acquired and network adapters installed, the installation procedure for both X2SR and 10GBASE-T solutions are identical.

Step 2 - Software Requirements

- For best performance, the latest release of Phantom PCC software should be used, or a minimum of PCC 2.0.717. The latest software release can always be found in the support section of the Vision Research website:

http://www.phantomhighspeed.com/Service--Support/Downloads/Software/

- During installation, be sure to check the corresponding box that installs the WinPCap driver. WinPCap is necessary for optimum performance.
- If you need to install the WinPCap driver separately, download the latest version at: http://www.winpcap.org

Step 3 - Firmware Requirements

- For best performance, all equipment should be running on the latest firmware. This can be referenced at the support section of the Vision Research website, at:

http://www.phantomhighspeed.com/Service--Support/Downloads/Firmware/

Step 4 - Network Configuration

WINDOWS XP

- Open the Windows Control Panel and select 'Network Connections'
- Right-click on the network adapter that corresponds to the 10Gb Ethernet connection, and select 'Properties'
- In the 'General' tab, uncheck all the items under "This connection uses the following items" list, except: *(see figure 1)*:
  √ - QoS Packet Scheduler
  √ - Internet Protocol (TCP/IP)

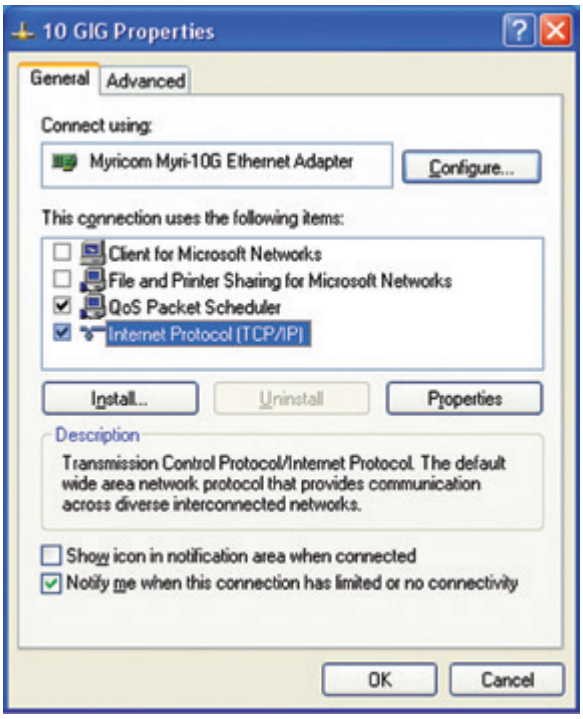

Figure 1 10GIG Adapter Properties

- Select/highlight the 'Internet Protocol (TCP/IP)' item, and click 'Properties'
- In the 'General' tab, click the radio button for 'Use the following IP address'
- Manually assign the following settings (see figure 2)
  - IP: 172.16.0.1
  - Subnet Mask: 255.255.0.0
  - Leave the other fields blank
  - Click the 'OK' button for 'IP Properties', and 'OK' for '10 Gig Properties' menus
- Ensure all Windows firewalls and virus protection software is off and/or configured to allow access by Phantom software

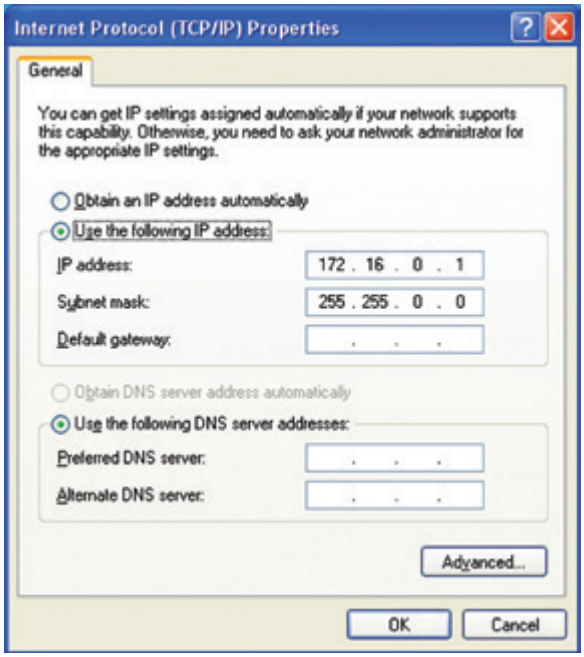

Figure 2 IP Properties

***NOTE:** When checking the 'status' of the 10Gb connection, there is a bug in Windows XP that incorrectly reports the speed as 1.4Gbps. The device will still perform as advertised.*

WINDOWS 7

- Open the Control Panel and select 'Network and Sharing Center'
- From the left menu options, select 'Change adapter settings'
- Right-click on the network connection/adapter that corresponds to the 10Gb Network interface, and select 'Properties'
- In the 'Networking' tab, uncheck all the items under "This connection uses the following items" list, except: *(see figure 3)*
  √ - QoS Packet Scheduler
  √ - nternet Protocol Version 4 (TCP/IPv4)
- Select/highlight the 'Internet Protocol Version 4 (TCP/IP4)' item, and click 'Properties'
- In the 'General' tab, click the radio button for 'Use the following IP address'
- Manually assign the following settings *(see figure 4)*
  - IP: 172.16.0.2
  - Subnet Mask: 255.255.0.0
  - Leave the other fields blank
  - Click the 'OK' button for 'IPv4 Properties', and 'OK' for Local Area Connection' menus
- Ensure all Windows firewalls and virus protection software is off and/or configured to allow access by Phantom software

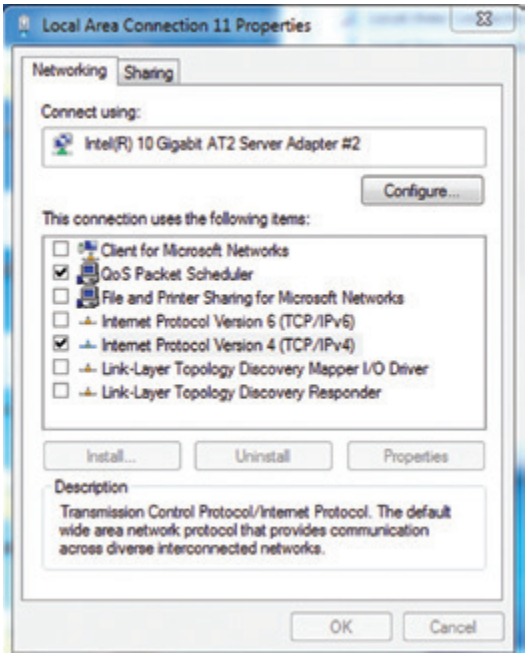

Figure 3 10 GIG Adapter Properties

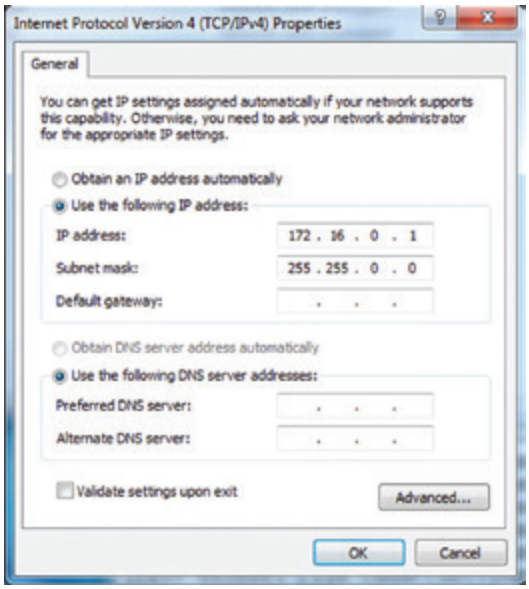

Figure 4 IPv4 Properties

Step 5 - Cable Connection

- Note: On systems using optical fiber connection, please note the Receive RxD & Transmit TxD lines should be crossed between the Transceiver (PC end) and Camera/CineStation interface.

- On systems using copper Cat6a (or better) cable, connect either end of the cable to either end of the system (both sides are interchangeable)
- If you are using a CineStream-X2SR, be sure to mount the CineStream onto the camera's interface prior to powering up the camera.
- Power up the camera and/or CineStation, and wait about 30-45 seconds for the link to establish. Ethernet connectivity lights on the device will start flashing.
- Open the Phantom software (minimum version PCC 2.0.717).
- The camera should be detected.

FAQ's:

General

- The Phantom camera and/or CineStation will still work with the computer's 1Gb Network, as configured for a Phantom camera with the appropriate cables
- Both 1Gb and 10Gb Ethernet cannot be connected at the same time
- The CineStream-X2SR is not compatible with the Phantom V1610 or V1210
- Handle all fiber optic cables with care and do not misplace dust caps, as any contaminants on the cable ends can cause errors

Maximum cable lengths

- Copper-based 10GBASE-T 10Gb Ethernet is specified to work up to 100 meters
- Fiber-based X2SR 10Gb Ethernet is specified to work up to 400 meters

How to Maximize download speed

- Ensure there are no bottlenecks in the system. A high-performance PC should be used along with RAID storage with a fast connection
- SAS or Ultra 320 SCSI connection is recommended
- Solid-State drives are recommended for any RAID configuration
- Multiple RAID drives in a striped configuration is recommended, the more drives the faster the download

Verified Configurations:

The following system configurations have been tested by Vision Research:

System 1 (CineStream-X2SR)

- PC
  - Base System: Dell Precision T3500
  - CPU: Intel Quad Core® Xeon W3530 2.80GHz, 8M L3, 4.8GT/s
  - RAM: 4GB
  - RAID controller: RS2BL080 8-port SAS RAID Controller PCIE2.0x8
  - RAID 0 Disks (x2): Crucial C300 256GB Solid State Drives
  - Network Adapter: Myricom Myri-10G PCI-e Ethernet Card (driver:1.1.5.0)
  - XFPSR Transceiver: Finisar FTLX8511D3
  - Fiber Connection: Multimode SC-LC fiber
- OS: Windows7ProfessionalEdition
- Throughput: 380-420 MB/s

System 2 (Phantom V1610)

- PC:
  - Base System: Dell Precision T5500
  - CPU: Dual Core ® Xeon E5630 2.53GHz,
  - RAM: 12GB
  - RAID controller: RS2BL080 8-port SAS RAID Controller PCIE2.0x8
  - RAID 0 Disks (x2): Crucial C300 256GB Solid State Drives
  - Network Adapter: Intel 10 Gigabit AT2 Server adapter
  - Copper Connection: Cat6a cable
- OS: Windows 7 64-bit
- Throughput: 350-400 MB/s

Another option would be to use a computer with built-in RAID system that supports at least 4 SATA Drives. Install Windows OS on one drive and use the remaining 3 as an on-board striped RAID, which can write to removable SATA drives.

For more information or technical support, please visit and subscribe to the Phantom Zone, a valuable tool where you can post questions and learn from the Phantom community & support team:

*http://www.**phantom**highspeed.com/phantomzone*

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