



**ViewCast<sup>®</sup>**

*Niagara<sup>®</sup> 9100 Series User Guide*



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ViewCast USA Support: Monday through Friday: 9 a.m. – 5 p.m. Central Time. Typical response time is within one business day for customers without a Priority Support Agreement.

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## Before You Begin

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Thank you for purchasing the ViewCast Niagara 9100 series streaming media system. The Niagara 9100 is a high-density/high-performing multiple encoder platform for service providers, broadcasters, and enterprises. The Niagara 9100 can be configured for a variety of video and audio inputs including HD SDI, component, Y/C, composite video with balanced, unbalanced, embedded, and AES/EBU audio.

For the latest ViewCast product information and news, visit [www.viewcast.com](http://www.viewcast.com).

## Product description

Depending on your model, encoding formats include:

- Adobe® Flash® H.264
- Adobe Flash dynamic streaming
- Apple® HTTP live streaming (HLS)
- Microsoft® Live IIS Smooth Streaming
- Microsoft Windows Media® (Silverlight®) SD and HD\*
- MPEG-4, H.264, H.263
- Transport stream
- 3GPP/3GPP2, MP4 container support

\* Output streams tested up to 1080p at 30 fps using Flash H.264 and Windows Media

You can configure your system by attaching a monitor, keyboard, and mouse to the system (see *Easy Setup*). To control your system from another networked computer, use the client interface for remote management software. The web interface allows you to set many other system parameters for your Niagara system.

**Figure 1. ViewCast Niagara 9100 series**



## Audience

The audience for this publication includes anyone who uses or administers the Niagara 9100. They should have a basic technical understanding of streaming media. This user guide provides information on the Niagara 9100 series only.

## Conventions for this guide

This guide uses the following document conventions to help you identify different types of information.

Convention	Description	Example
<b>Bold text</b>	Characters to enter when referenced in a procedure. The name of fields or keys to press.	In the example, enter <b>DTMF</b> as the group type. Press <b>Enter</b> to save your changes.
<i>Note:</i>	Provides supplemental information.	<i>Note: The prompt may not display if ...</i>
<b>IMPORTANT!</b>	Provides important data that affects how the system or software responds.	<b>IMPORTANT!</b> You must install Niagara SCX prior to configuring SCX options...
<b>CAUTION!</b>	Provides information to help avoid possible damage to hardware or a system crash (without data loss).	<b>CAUTION!</b> Use case sensitive commands to keep from destroying...
<b>WARNING!</b>	Provides information to ensure you avoid potential injury, death, or permanent system damage.	<b>WARNING!</b> Do not touch exposed wires.

# Rack mount safety instructions

- Operating Temperature** The operating ambient temperature of a rack environment may be greater than room ambient if installed in a closed or multi-unit rack assembly. Therefore, you should install the equipment in an environment compatible with the maximum ambient temperature of 40° C.
- Reduced Air Flow** You must not compromise the airflow required for safe equipment operation when you install the equipment in a rack.
- Mechanical Loading** Mounting of the equipment in the rack should be such that you do not cause a hazard due to uneven mechanical loading.
- Circuit Overloading** Consider the connection of the equipment to the supply circuit and the effect that the overloading of the circuits might have on current protection and supply wiring. You must also consider and use the equipment nameplate ratings when you address this concern.
- Reliable Grounding** You must maintain reliable earth grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (such as using power strips).

## FCC notice

*WARNING! You must connect this device and peripherals using shielded cables to comply with FCC radio emission limits.*

*WARNING! Modifications to this device not approved by ViewCast Corporation could void the FCC-granted authority for you to operate the device.*

*WARNING! The Niagara 9100 series complies with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits provide reasonable protection against harmful interference when you operate the equipment in a commercial environment. This equipment generates, uses, and may radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area will likely cause harmful interference. In this case you must correct the interference at your own expense.*

*Note to CATV Installer: Pay special attention to Section 820-40 of the NEC that provides guidelines for proper grounding. It particularly specifies that you must connect the cable ground to the grounding system of the building as close to the point of cable entry as practical.*

*WARNING! Equipment installation must comply with local and national electrical codes.*

## Installing additional software

Niagara systems run an embedded version of the Microsoft Windows 7 operating system (OS), which is a sub-set of the normal retail version. The Microsoft License agreement limits the use of the system to what the machine is designed to do.

The Microsoft Update process is turned off by default to prevent interruptions during live streaming events. It is also not advised to use a Windows 7 installation CD to add features to the system or the system may fail.

You may load additional software on the system; however, ViewCast does not support this additional software. You also need to ensure the primary drive is not full or the system will fail. In the event of a problem, you may need to perform a Factory Restore, which returns the system to the original software load. You may save the current encoder profiles and reload them when the Factory Restore is complete.

You can perform a Factory Restore at any time. This process returns the system to the software load that came with the system. Perform a Factory Restore if the system becomes unstable due to installed applications, viruses, etc. Please refer to the user guide for instructions.

ViewCast Support can provide assistance should the system fail to start. In most cases, you can restore a system to operation without returning it to ViewCast. There is a fee in the event a user returns a system due to applications the user installed or if the system failed because the primary partition (drive C) is full.

## Connecting to the Internet

Never connect a Niagara system directly to the Internet. ViewCast recommends taking precautions against unwanted access such as installing Niagara systems behind a router or firewall. The speed of the router or switch should match or exceed the speed of the system's network card. See your network administrator for recommendations.

## Environmental notices

**Product Disposal  
Information:**

Dispose of this product in accordance with local and national disposal regulations (if any) including those regulations governing the recovery and recycling of Waste Electrical and Electronic Equipment (WEEE).

**RoHS Compliant:**



ViewCast Corporation commits to compliance with the European directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, Directive 2002/95/EC, the RoHS directive.

This product supplied to the European Union does comply with the RoHS directive. ViewCast certifies that this equipment shipped to the European Union conforms to the 2002/95/EC directive.

For current RoHS statement, see [www.viewcast.com](http://www.viewcast.com).

# Warnings

Only trained and qualified personnel should install, replace, or service this system.

Do not attempt to open the case of the system. If you do so, you incur a high risk of electrical shock that may cause damage to the system or personal physical injury or death to you and/or others. No user-serviceable parts exist inside the system. If you open the system case or make unauthorized changes to the case, ViewCast voids your warranty.

Install the system away from any heat sources. This remains vital to the safety of the product users. Do not install the system near any heat sources such as:

- Radiators
- Heat registers
- Stoves
- Other heat-producing equipment

*WARNING! Installing the system near heat sources could result in personal injury or death.*

*WARNING! Never insert objects of any kind into the system through any system openings, as the objects may touch dangerous voltage points, short out parts, and result in a risk of fire or electrical shock.*

Do not stack the system atop or below other electronic devices as this can cause heat build-up and vibration of the system. These conditions can damage the system thereby voiding the limited warranty.

Do not install the system in any area where the temperature is less than 5°C or more than 40°C. Transfer from temperature extremes may cause condensation. Let the system remain unplugged at room temperature for at least 45 minutes before connecting it.

Use an outlet with surge suppression or ground fault protection when using the system. Unplug the power cord from the wall outlet, disconnect the network connection, and disconnect the lines between the system and the video source for added protection:

- During a lightning storm
- During dangerous weather conditions
- When the encoder remains unattended or unused for long periods

Reduce the risk of fire or electric shock. Do *not* expose the system to any rain or moisture. Exposing the system to rain or other types of moisture could result in system damages. Do not place any liquids on or near the system. If you place liquids in any form on or near the system, do so at your own risk, for you incur a high risk of electrical shock that could occur and cause damage to the system.

*WARNING! Exposing the system to rain or other types of moisture could result in physical injury or death. Any liquids on or near the system may result in electrical shock and personal injury or death.*

## *Before You Begin*

Refer all servicing to authorized service personnel. You must have authorized personnel only service any damaged system. Relevant damage may occur with but is not limited to the following:

- An unplugged or damaged power supply cord
- Spilled liquid on the system
- Fallen objects in or on the system
- System exposure to rain or other moisture or liquid
- Failure to perform as described in the User Guide
- A dropped system

ViewCast assumes no liability or responsibility for any damaged system that clients continue using.

Use only attachments, accessories, or equipment specified by the manufacturer with the system. Using accessories or attachments not recommended by the encoder manufacturer voids the Limited Warranty.

Do not attempt to service the system yourself. If you open or remove covers, you may be exposed to dangerous voltage. Such action voids the Limited Warranty. Refer all servicing issues to authorized service personnel only.

The plug-socket combination that serves as the main disconnecting device must be accessible at all times.

Protect the power cord from anyone walking on it and being strained or pinched particularly at plugs, electrical receptacles, and the point where the power cord exits the system.

Do not use adapter plugs or remove the grounding prong from the power cable.

Use only the type of power source indicated on the marking label on the back panel of the unit to operate the system. Unplug the system power cord by gripping the plug and removing it from the power source. Do not pull the cord to remove the power source from the system.

Do not plug the system into a wall outlet that contains an overload of electrical cords or power strips/extension cords. This type of overload may result in fire or electrical shock risks.

Always handle the system carefully. Always avoid excessive shock and vibration to the system. Excessive shock or vibration can damage the system.

*WARNING! Excessive shock or vibration to the system may result in electrical shock and personal injury or death.*

# Overview

---

Before you can use your Niagara 9100 series streaming media system, you first need to set up and configure it. This chapter is dedicated to providing you with the details and step-by-step instructions you need to make your installation as quick-and-easy as possible.

All you need to get started are the four following requirements:

- AC power source (100 - 240 V)
- Your audio and video source (such as a camera, video player, or other audiovisual output device)
- A streaming media server or hosting provider
- IP connection and/or Internet connection

The Niagara 9100 series are easy-to-use streaming systems that allow you to:

- Connect to a compatible browser on a dynamic host configuration protocol/domain name server (DHCP/DNS) network.
- Configure and connect your audio and video source to the Niagara system.
- Select your output formats and streaming settings.
- Enter your streaming server information.
- Start streaming your media.

Use the web interface for setting options and controlling your Niagara system from another networked computer, as well as options that are more advanced.

*Note: Read the information in this section before connecting the system to the power source.*

## Media system functions

Although it has many features and capabilities, the Niagara series streaming media systems perform the following functions:

- Supports both Multi-Program Transport Stream (MPTS) and Single Program Transport Stream (SPTS).
- Accepts digital standard definition (SD) or high definition (HD) SDI video and a variety of digital and analog audio inputs depending on the configuration of your system
- Encodes the signals into digital IP video formats
- Delivers the IP audio and video content over an IP network and can save an archival copy

## Install overview

You must complete the following primary tasks to install the Niagara system:

1. Address and comply with all prerequisites.
2. Connect the Niagara system using its power source.
3. Connect the video source (camera or video recorder) to the system.
4. Connect the system to an IP network.
5. Configure the Niagara system.

## Prerequisites

Before installing and connecting the Niagara system, ensure you comply with the following prerequisites:

- All packaged items are undamaged and in working order.
- Your environment meets all system requirements.
- Safety instructions, notices, and warnings detailed in *Before You Begin* including:
  - *Rack Mount Safety Instructions*
  - *FCC Notice*
  - *Environmental Notices*
  - *Warnings*

## Package contents

Completely unpack all contents from the box and inspect each item for damage. Ensure that you have all the components listed below:

- |                     |   |
|---------------------|---|
| <b>System</b>       | • Niagara streaming media system  |
| <b>Power Cables</b> | • One of the following: <ul style="list-style-type: none"><li>○ <i>North America power cable (110 vac)</i></li><li>○ <i>International power cable (220 vac)</i></li><li>○ <i>UK power cable (220 vac)</i></li></ul> |
| <b>Hardware</b>     | • 1 pair rack slide rails   |
| <b>Guides</b>       | • Package insert (end-user license agreement)<br>• User guide (on CD in PDF format)   |
| <b>Software</b>     | • Niagara product CD  |

If any components are missing or damaged, do not continue with the installation. Contact the ViewCast reseller from which you purchased your Niagara system for assistance in obtaining any missing parts or for parts replacement.

# System requirements

Ensure your computer meets the following system requirements.

- **Browser interface** – Any Firefox or Internet Explorer (IE)-based computer, workstation, or laptop that interfaces to a dynamic host configuration protocol/domain name server (DHCP/DNS)-compatible network
- **User Interface** – High-speed Internet and dial-up users

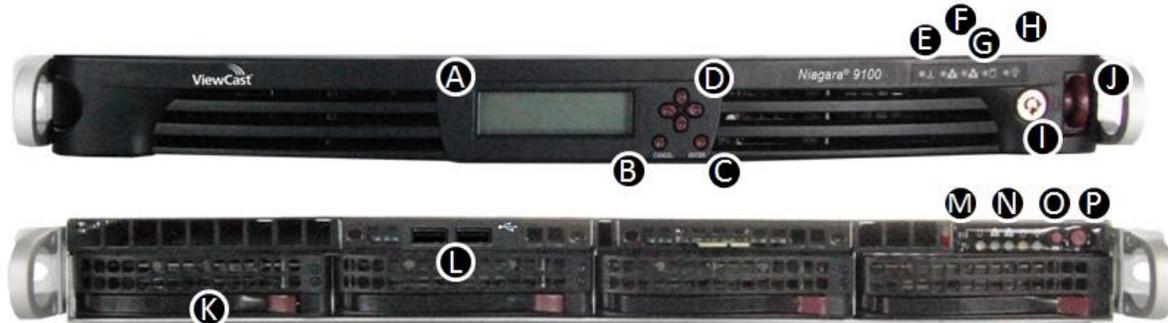
## Specifications

- Multi-core processors
- 500 GB SATA HDD
- 1U rack mount system (1RU x 17" W x 25.6" D)
- 41 lbs (18.6 Kgs)
- 560 W power supply

## Niagara 9100 series front panel

You should familiarize yourself with the front panel controls for the Niagara 9100 series. Remove the front panel to access additional functionality such as USB ports and the power button. Figure 2 and the table below illustrate the buttons and lights that constitute the front panel functions.

Figure 2. Niagara 9100 series front panel



- A. The LCD display shows the system menu and allows you to perform basic functions.
- B. Press this button to **Cancel** a system menu action.
- C. Press this button to **Enter** or accept a system menu action.
- D. Directional buttons enable you to maneuver through the system menu (see *Niagara 9100 series* ).
- E. LED light illuminates when you press the UID (unit identifier) button on the rear of the chassis. This function is for easy system location in large stack configurations.
- F. Indicator light flashes when there is network activity on LAN1 or LAN2.
- G. Indicator light flashes when there is SATA and/or USB port activity.
- H. Light indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.
- I. Locks the cover on the Niagara 9100. (Key is included.)
- J. Press this button to release the front cover from the Niagara 9100.
 

*Note: If you remove the front cover and then place it back, the LCD display will no longer show the system menu. To restart the LCD display, you can reboot the system or using a monitor connected to the system:*

  1. Click the Windows start icon.
  2. Click **All Programs** ➤ **Startup** ➤ **LCDMainUI.bat**. The system menu displays.
- K. Hard-drive bays. Pull the lever to release the bay.
 

**WARNING!** The hard drives are not hot swappable. Trying to hot swap can damage the system.
- L. Dual USB ports allow the export of files to USB storage devices, installing updates or firmware, or connecting USB devices.
- M. Press this unit identifier (UID) button to illuminate the LED on both the front and rear of the machine. The LED remains lit until you push the button a second time.
- N. Universal information LED light:

- Fast blinking red – fan failure
  - Slow blinking red – power failure
  - Solid red – CPU overheat
  - Solid blue – Local UID button depressed
  - Blinking blue – IPMI-activated UID
- O.** Press the reset button to reboot the system.
- P.** The main power button is used to turn off the power supply to the server system. Turning off system power removes the main power but keeps standby power supplied to the system.

## Niagara 9100 series back panel

Figure 3 illustrates all connectors and other components of the Niagara 9100 series back panel. The connectors vary depending on the Osprey capture card installed. Figure 3 depicts the Niagara 9100-2D model.

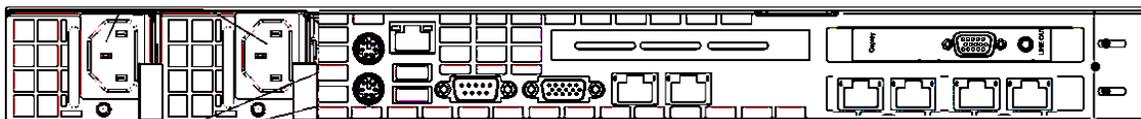
**Figure 3. Niagara 9100 series back panel**



- A. Provides system power.
- B. Use this port to connect a PS/2 mouse.
- C. Use this port to connect a PS/2 keyboard.
- D. Use these ports to connect USB control devices, such as a USB memory device, keyboard, and mouse.
- E. Use this port for an IPMI LAN connection.
- F. A COM1 RS232
- G. Use this auxiliary VGA output port to connect an external VGA monitor so you can view the operating system interface.
- H. Dual Ethernet ports provide redundant connections to your network.
- I. Press this unit identifier (UID) button to illuminate the LED on both the front and rear of the machine. The LED remains lit until you push the button a second time.
- J. Connect the video and audio.

Depending on the Niagara 9100 series model, the back may have additional components. For example, Figure 4 depicts the Niagara 9100-4IPR with redundant power supply and IP connectors.

**Figure 4. Niagara 9100-4IPR**



# Connecting the system

The following steps refer to a direct connection to the Niagara 9100 series systems only.

*Note: The redundant models include hot swappable power supply modules.*

**To connect the system:**

1. Connect the appropriate video and audio connectors (item J on Figure 3).
2. Connect the power AC adaptor (item A on Figure 3). For redundant models, two AC power connectors are available (Figure 4).
3. Attach the system to the network input (item H on Figure 3).
4. Press **Power** (item P on Figure 2).

## Niagara 9100 series directional buttons

The Niagara 9100 series directional buttons (Figure 5) are located on front panel. The buttons direct the system menu that is also on the front panel. The menu allows you to view the status of the system and monitor. The system menu displays automatically when the Niagara 9100 is booted up. See *Appendix D: System Menu (LCD Display)* for a complete reference guide to the functions available through the system menu.

**Figure 5. Directional buttons**



**To use the directional buttons:**

1. Press any of the four-directional buttons until the desired status menu displays.
2. Press **Enter**. The status displays.

*Note: Press **Cancel** to return to the main menu.*

## Niagara 9100 series home page

The home page (Figure 6) is the first page presented after you log into the Niagara SCX remote management software. From this page, you can access the different windows for configuring, controlling, and monitoring the activities and alerts of the Niagara system.

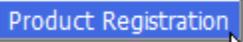
Figure 6. Series home page



## Menu bar commands

The home page menu bar allows you to use the commands described in the table below.

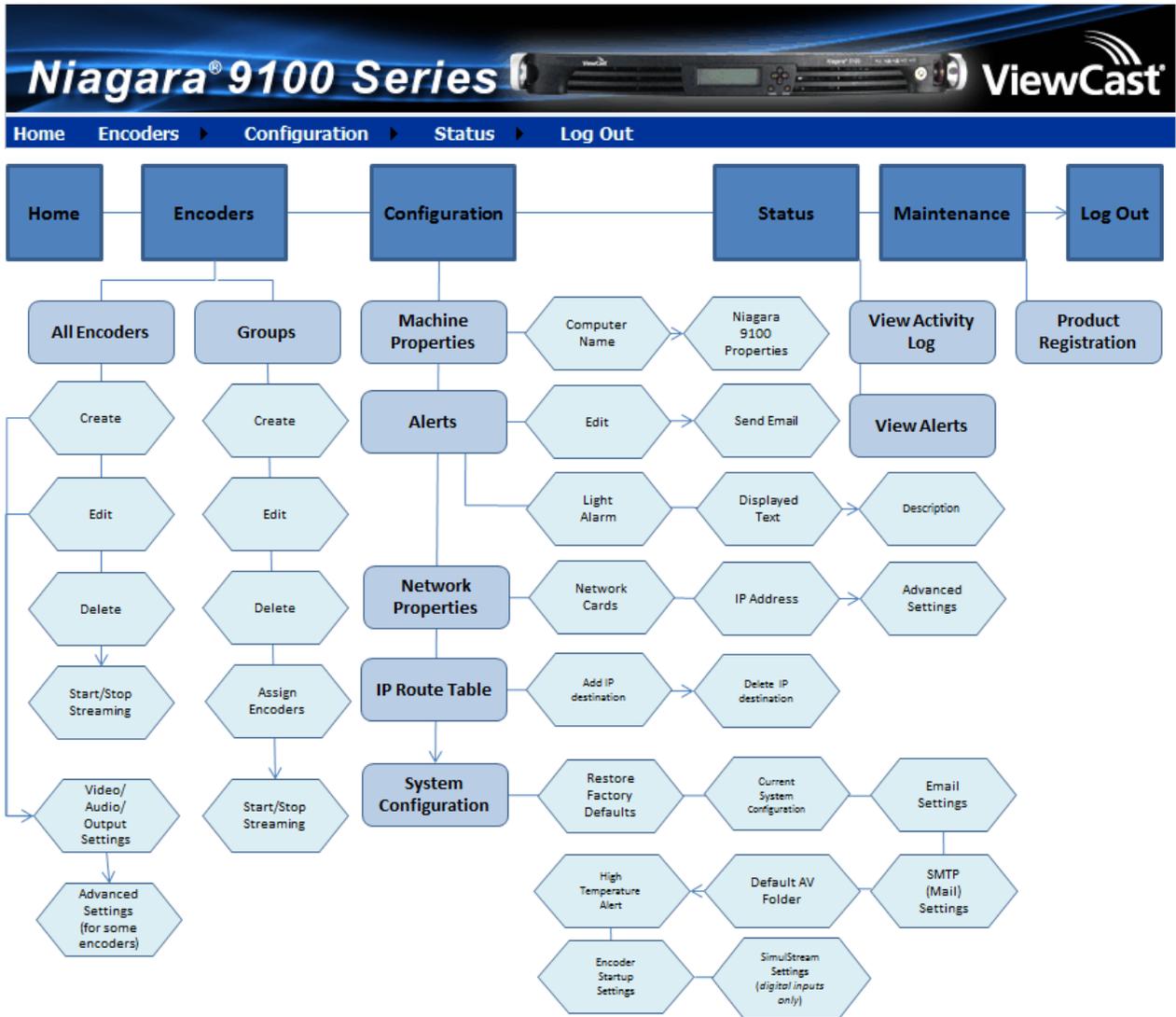
Menu	Command	Function
Home		<ul style="list-style-type: none"> <li>View general administrative information about the Niagara system.</li> <li>Use the menu bar commands.</li> </ul>
Encoders	All Encoders Groups	<ul style="list-style-type: none"> <li><b>All Encoders</b> – View the encoder profiles.</li> <li><b>Groups</b> – Manage specific encoder groups that have one or more encoders assigned.</li> </ul>
Configuration	Machine Properties Alerts Network Properties IP Route Table System Configuration	<ul style="list-style-type: none"> <li><b>Machine Properties</b> – View details on the machine properties including the network name, serial number, and all software versions installed.</li> <li><b>Alerts</b> – Modify the settings to control how the system manages application alerts that occur during normal operations or streaming.</li> <li><b>Network Properties</b> – View information on the network properties and addresses for both NIC ports and modify these properties.</li> <li><b>IP Route Table</b> – Add or delete IP destinations.</li> <li><b>System Configuration</b> – Modify the system configuration including setup for email alerts from the Niagara system whenever it</li> </ul>

Menu	Command	Function
		encounters an operation error.
<b>Status</b>		<ul style="list-style-type: none"> <li>● <b>View Activity Log</b> – View all system activities including the time and date of each event.</li> <li>● <b>View Alerts</b> – View all alerts including the time and date of each alert.</li> </ul>
<b>Maintenance</b>		<ul style="list-style-type: none"> <li>● <b>Product Registration</b> – Register your Niagara system to protect your investment.</li> </ul>
<b>Log Out</b>		<ul style="list-style-type: none"> <li>● Log out of the system and return to the login screen.</li> </ul>

# Niagara 9100 series browser windows flow

Figure 7 shows the interrelationship and flow of the available configuration windows you may use to configure the Niagara 9100 system.

Figure 7. Niagara 9100 series browser windows





# Easy Setup

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You should perform most setup and operations by accessing the web interface from a computer that resides on the same network as your Niagara system.

The web interface provides the ability to control your Niagara system remotely from a computer that can be rooms or continents away from the system if both your Niagara system and the computer have Internet access to communicate with each other.

The easy setup option explores the optimal configurations for the novice user to set up the Niagara system easily and quickly. Easy set up includes actions you can perform on your Niagara system using the web interface to include configuring the following:

- Encoder settings
- Groups
- Network properties
- Machine properties
- System properties
- System alerts

## Web interface

The web interface presents a logical flow of configuration information for the encoding system. Refer to Figure 7 for a diagram and menu bar commands, which include:

- Home
- Encoders
  - *All Encoders including Encoder Properties*
  - *Groups*
- Configuration
  - *Niagara Properties*
  - *Alerts including Settings*
  - *Network Properties*
  - *IP Route*
  - *System Configuration*
- Status
  - *Activity Log*
  - *Alerts*
- Maintenance
  - *Product Registration*
- Log Out

## Easy first time set up

You should read all instructions, notices, and warnings in the *Before You Begin* section before getting started with your new Niagara system for the first time. Also, ensure you have all required parts and meet all system requirements before installing this product.

Do not continue with the installation if you find any components missing or damaged. Contact the ViewCast reseller where you purchased your Niagara system for assistance in obtaining any missing or replacement parts.

## Connecting to an electrical power source

Niagara system ships with one of the following power cables:

- North America power cable
- International power cable
- UK power cable

### **To connect the power source:**

1. Attach the block end to the power input located next to the fan on the rear panel of the system.
2. Plug the other end of the cable into a wall outlet or surge protection enabled power strip connected to a wall outlet or other common power source.

***WARNING!** The plug-socket combination must remain accessible at all times as it serves as the main disconnecting device.*

***WARNING!** Do not work on the system, connect, or disconnect cables during periods of lightning activity.*

## Performing the initial startup

The steps in the following table refer to a *direct* connection to the Niagara 9100 series systems only.

### To perform the initial startup:

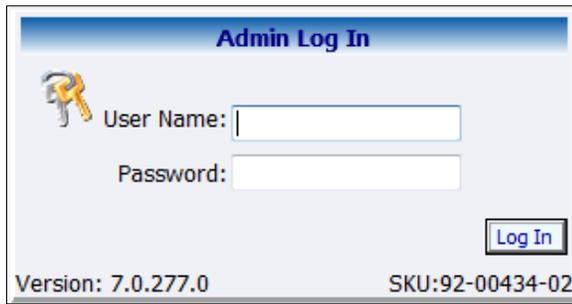
1. Ensure that you connect all devices (power cords, cables, audio/video sources, etc.) to the system.
2. Remove the front panel by pressing the release button and gently pulling the cover toward you.
3. Press **Power** on the front panel to start the system. Allow the system to boot.
4. From another computer on the same DHCP/DNS network as the Niagara 9100, launch Internet Explorer and enter **http://** and the serial number of your system.

*Note: The serial is on the top of the system in the format fxxxxxxx.*

*Note: If you do not have a DHCP network or you cannot connect to the Niagara 9100 through its DNS name, connect a monitor, mouse, and keyboard directly to the Niagara 9100 to obtain or change the IP address. Connect a standard VGA monitor to the service connector and the mouse/keyboard to USB ports. The Niagara 9100 will have a Microsoft 7 desktop. From the desktop, launch Internet Explorer or Firefox.*

5. Enter **admin** as the user name and **admin** as the password and click **Log In** when the Admin Log In window displays (Figure 8).

**Figure 8. Log In window**



*Note: The version and SKU fields display the current numbers for your system.*

6. The first time you start the Niagara 9100 and log in, the system prompts you for the date, time, and video standard. You may accept the default date, time, and video standard or enter your desired date, time, and video standard (Figure 9).

*Note: The Video Standard options in the drop-down list will vary depending on the configuration of your system.*

**Figure 9. Date and time settings**



The screenshot shows the Niagara 9100 Series configuration interface. At the top, it says "Welcome to Niagara 9100 Series" and "Please confirm your system configuration". The "Computer Name" field is set to "FE11430008". Below it, a note states: "Note: Changing the computer name will require a system reboot." The "Current Time" is set to "Hour 3", "Minutes 31", and "PM". A calendar is displayed for "October 2011", with the current date "10/28/2011" highlighted. The "Video Standard" is set to "AUTO" for all Encoders. A "Submit" button is located at the bottom right.

7. Click **Submit**.
8. The Admin Log In window may reappear once you submit the date, time, and video standard fields. You must enter **admin** as the user name and **admin** as the password again. This time when you enter your valid user name and password, the system displays the Welcome window and Niagara 9100 main menu (Figure 10).

**Figure 10. Welcome window**



The screenshot shows the Niagara 9100 Series main menu for an admin user. At the top, it says "Welcome admin to Niagara 9100 Series". Below this, there is a navigation bar with links: "Home", "Encoders", "Configuration", "Status", "Maintenance", and "Log Out". The main content area lists the capabilities of the web interface:

- View or modify the Encoder settings
- View and modify the Appliance settings
- Configure System Alerts
- View and modify Network Properties
- Change the System Configuration settings
- Manage Encoder Groups

At the bottom, there is a warning icon and the text: "Please register to activate product."

## Registering your product

You have 30 days to register your product when you first activate the system. A reminder displays at the bottom of the Home and Encoders pages. You can register your system using three different methods:

- Product Registration page
- ViewCast website
- ViewCast Support help desk (Call 972-488-7157 and provide the serial number and SKU.)

### To register online:

1. Access the Product Registration page:  
Click **Maintenance** ➤ **Product Registration**. The Product Registration page displays (Figure 11).

**Figure 11. Product Registration**

**Product Registration**  
Register your ViewCast product today and protect your investment.  
**By providing a valid e-mail address, you will stay better informed by receiving updates/notices about product upgrades.**  
You also have the option to register the product offline and import the registration key manually.

**Registration Options:**

Register the product online       Register the product on another computer or over the phone

**Online Registration:**

First Name:       Last Name:   
Email:       Phone:   
Company:   
Address:       Address 2:   
City:       State/Province:   
Country:  Select Country      Postal Code:   
Serial Number: **FE12240010**      Software SKU: **92-00434-02**

*Note: The default is **Register the product online**.*

2. Enter your name and contact information in the spaces provided.
3. Click **Submit**. After a few seconds, a confirmation message displays.

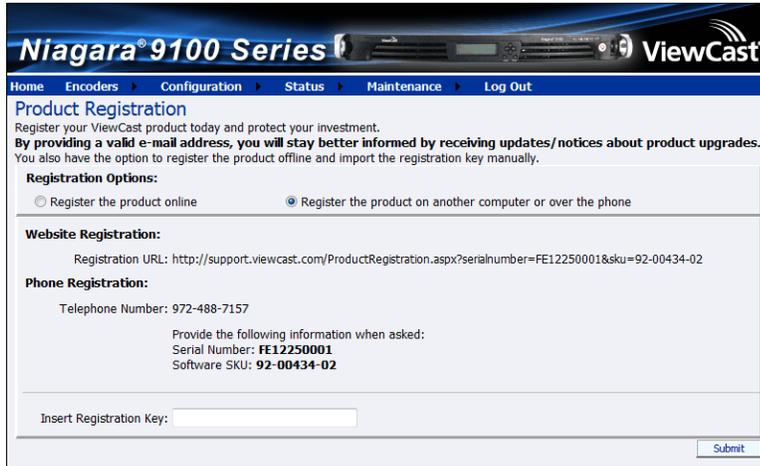
**To register at viewcast.com:**

1. Access the Product Registration page:  
Click **Maintenance** ➤ **Product Registration**. The Product Registration page displays (Figure 11).

*Note: The default is **Register the product online**.*

2. Click **Register the product on another computer or over the phone**.

**Figure 12. Product registration**



The screenshot shows the 'Product Registration' page for the Niagara 9100 Series. The page has a blue header with the product name and the ViewCast logo. Below the header is a navigation menu with links for Home, Encoders, Configuration, Status, Maintenance, and Log Out. The main content area is titled 'Product Registration' and includes the following text: 'Register your ViewCast product today and protect your investment. By providing a valid e-mail address, you will stay better informed by receiving updates/notices about product upgrades. You also have the option to register the product offline and import the registration key manually.' Under 'Registration Options', there are two radio buttons: 'Register the product online' (unselected) and 'Register the product on another computer or over the phone' (selected). Below this, the 'Website Registration' section shows the URL: 'http://support.viewcast.com/ProductRegistration.aspx?serialnumber=FE12250001&sku=92-00434-02'. The 'Phone Registration' section shows the telephone number: '972-488-7157'. A note says 'Provide the following information when asked: Serial Number: FE12250001 Software SKU: 92-00434-02'. At the bottom, there is a text input field labeled 'Insert Registration Key:' and a 'Submit' button.

3. Copy the registration URL.
4. From another computer, open a browser and paste the URL into the address bar.

5. Enter your name and contact information in the spaces provided.

**Figure 13. Contact information**



The screenshot shows a form titled "Information" with the following fields:

- First Name: \*
- Last Name: \*
- Email: \*
- Company:
- Phone:
- Fax:
- Address:
- Address2:
- City:
- State/Province: \*
- Country: - None - (dropdown menu)
- Zipcode:

6. Select the type of product. The serial number and SKU are automatically populated.

**Figure 14. Product information**



The screenshot shows a form titled "Product Information" with the following fields and a button:

- Product: \* (dropdown menu showing "Please Select...")
- Serial Number: \* (text field containing "FE12250001")
- SKU: (text field containing "92-00434-02")
- Submit button

7. Click **Submit**. After a few seconds, a confirmation message displays.

## Connecting to an IP network

Some Niagara 9100 series systems have two 1 Gbit network interface ports and some have redundant IP connections. The network settings for these ports default to dynamically obtain an IP address from a DHCP server on the network. If a DHCP server is not available or is not found on the network, the system assigns its own IP address.

*Note: If you are not familiar with network protocols, contact your network administrator for assistance. If you are not able to browse to the unit with a DHCP network, you may connect a monitor, keyboard, and mouse to the system to determine and set the network connections.*



# Basic Operations

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Basic operations include but are not limited to the following:

- Creating an encoder
- Viewing all encoder
- Starting an encoder
- Editing an encoder
- Stopping an encoder

## Logging in

To log in:

1. Locate the serial number on the side or bottom of the system (in the format **fe11430001**).
2. Open the web browser on your computer.
3. You can either:
  - Type the Niagara 9100 serial number in the address bar (Figure 15).

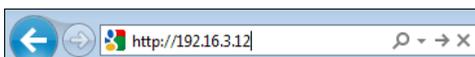
**Figure 15. Serial number**



Or

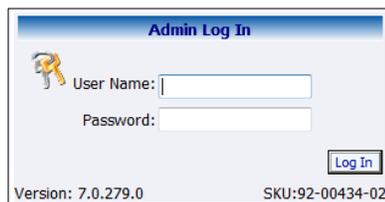
- Type the IP address in the address bar (Figure 16).

**Figure 16. IP address**



4. Press **Enter**. The Admin Log In window displays (Figure 17).

**Figure 17. Admin Log In window**



*Note: The version and SKU fields display the current numbers for your system.*

5. Type the User Name and Password.  
*IMPORTANT! The setting to log in for the first time, defaults to the user name **admin** and password **admin**.*

6. Press **Log In**. The Niagara 9100 Welcome window and menu bar appear (Figure 18).

**Figure 18. Welcome window**



# Creating an encoder

The Niagara 9100 does not have any default encoders. You must create an encoder before you start streaming. To create an encoder, click **Encoders** ➤ **All Encoders**. The Encoders window displays (Figure 19).

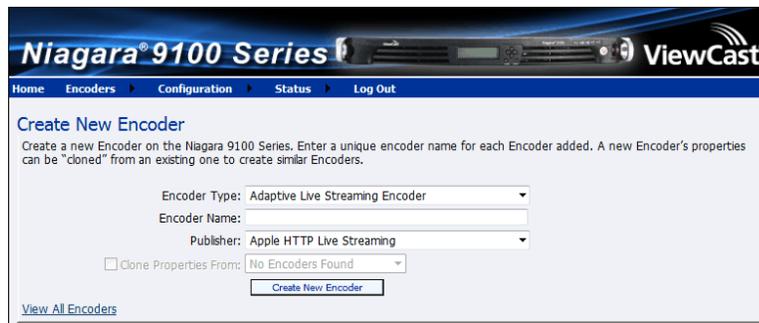
Figure 19. Encoders window



## To create an encoder:

1. Click the **Create New Encoder** link. The Create New Encoder window displays (Figure 20).

Figure 20. Create New Encoder window



2. Select the **Encoder Type** from the drop-down list.
3. Enter the name of the encoder.  
*Note: Valid characters are alphanumeric, space, dash, and dot.*
4. If you create an Adaptive Live Streaming encoder, you need to select a **Publisher** from the drop-down list.
5. To use the same properties from another encoder, enable **Clone Properties From**.
6. Select the **Encoder Name** from the drop-down list.
7. Click **Create New Encoder**.
8. The steps for configuring the encoder vary according to the inputs. Follow the steps for the desired inputs referring to the information for that encoder.

# Viewing all encoders

The Encoders window provides a list of the encoders loaded on the Niagara 9100 series system. On the home page, click **Encoders** ➤ **All Encoders**.

Figure 21. Encoders window



A.	Click this link to edit the encoder properties, streaming settings, and advanced streaming settings.
B.	Click this link to delete an encoder from the list.
C.	Displays the encoder type (for example the Flash icon  ).
D.	Displays the name you assigned to the encoder.
E.	Displays the status of the last action.
F.	Displays the result of the last operation.
G.	Click this link to create a new encoder.
H.	Displays the amount of CPU usage.
I.	Displays as either a blue circle icon (started) or a red circle icon (stopped) as the options for streaming this encoder. You can start or stop the encoder by clicking the icons.
J.	Click this link to view and edit encoder groups.
K.	Click this link to stop all encoders
L.	Displays the total number of encoders.

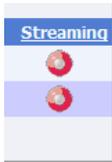
# Starting an encoder

To start an encoder, on the home page click **Encoders** > **All Encoders**.

**To start an encoder:**

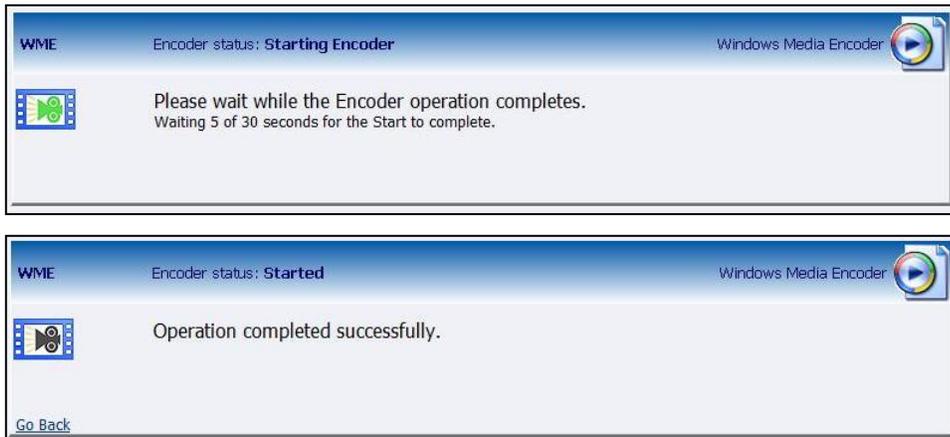
1. Click the red circle (stopped) icon (Figure 22) in the **Streaming** column for the encoder you want to start streaming.

**Figure 22. Stopped icon**



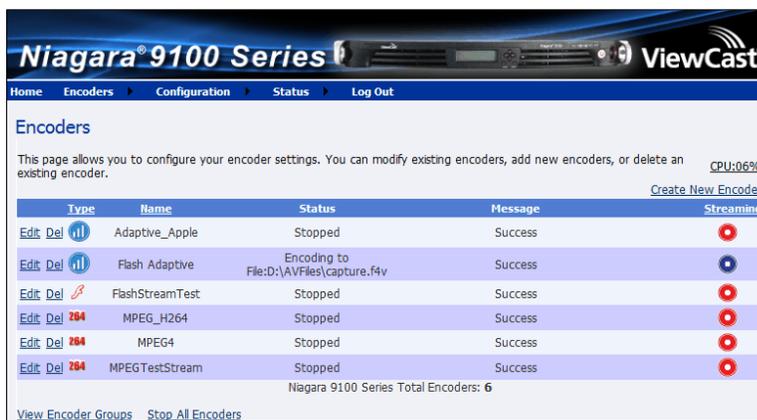
Messages appear detailing the encoder start progress (Figure 23).

**Figure 23. Encoder status**



2. The Encoders window appears with the encoder status updated and the streaming indicator changes to a blue circle **Started** icon (Figure 24).

**Figure 24. Encoders window**



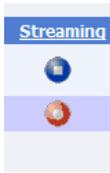
# Stopping an encoder

To stop an encoder, on the home page click **Encoders** > **All Encoders**.

**To stop an encoder:**

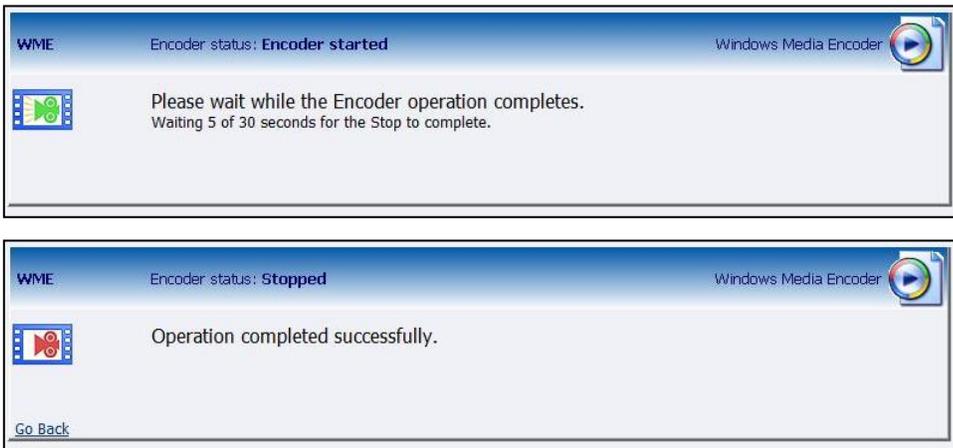
1. Click the blue circle (started) icon of the encoder you wish to stop streaming (Figure 25).

**Figure 25. Started icon**



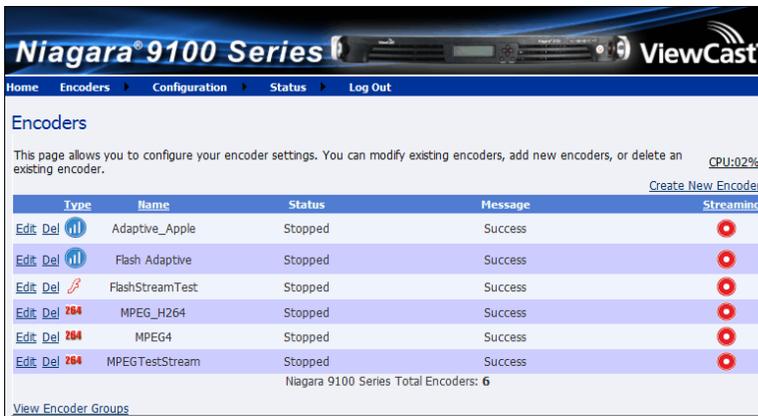
Messages appear detailing the encoder stop progress (Figure 26).

**Figure 26. Encoder status**



The Encoders window appears with the encoder status updated to reflect the **Stopped** mode and the streaming indicator changes to a red circle **Stopped** icon (Figure 27).

**Figure 27. Encoders window**



## Connecting an external storage device

The Niagara 9100 series systems have two USB ports on the front panel and two on the back panel. You can connect almost any standard USB device to one or both of these ports. You can then export any audiovisual files you may have created on the system's local storage drive. The local storage drive is drive D when you use the **Save to File setting** from the web interface.

When you insert a USB storage device in one of the USB ports, the system automatically detects the removable storage device, and assigns a drive letter to the device.



## ***Analog Inputs***

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The Niagara system includes a web interface, which allows you to access the advanced system settings. The web interface also provides detailed settings and controls over the encoder profiles installed on the Niagara system.

The web interface works with any computer that has a current web browser (Internet Explorer and Firefox), including Windows®, Macintosh®, and Linux® machines. For the best user experience, ViewCast recommends Internet Explorer. The system must reside either on a shared IP network with the computer or directly connected to a Microsoft® Windows computer using an Ethernet cable (RJ45).

# Adaptive Apple HTTP Live streaming encoder with analog inputs

To create an adaptive encoder, **Encoders** > **All Encoders** > **Create New Encoder** link > **Encoder Name** field > **Publisher** drop-down list.

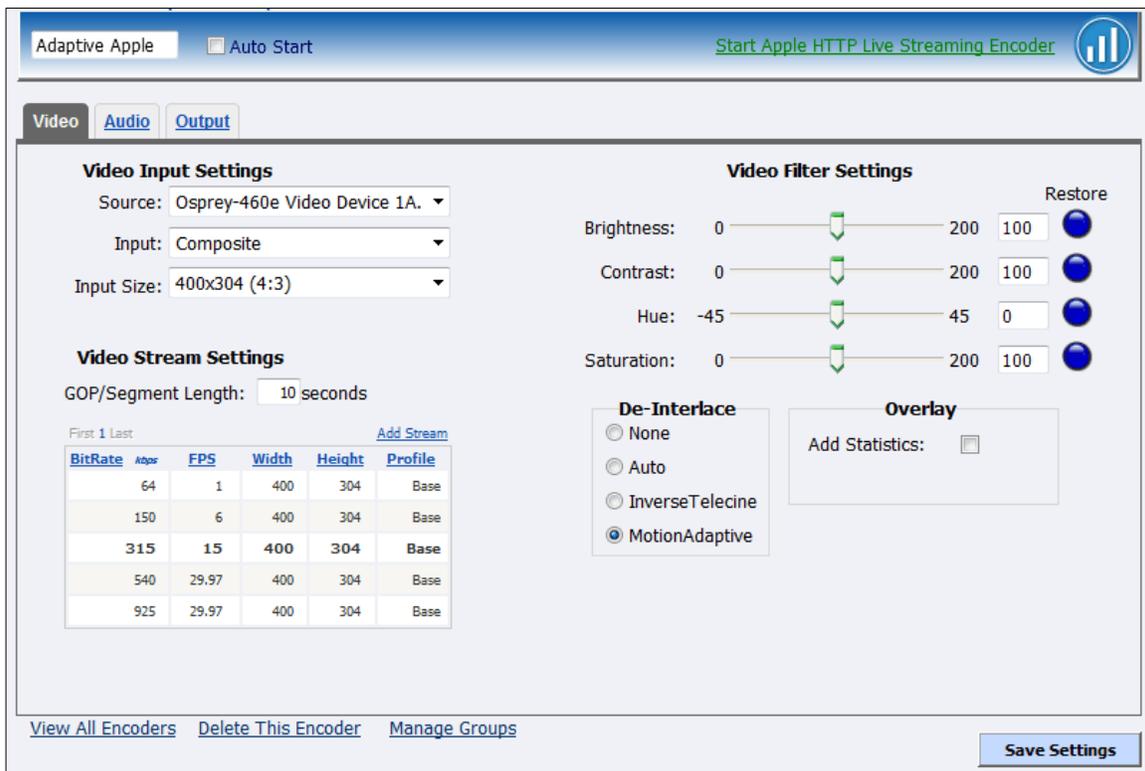
When you create a new encoder, the Encoder Properties window appears. The steps for editing a new encoder or an existing encoder are identical. You must configure the video and audio settings for each encoder type.

Use the Video, Audio, and Output tabs to edit the settings. Begin with configuring the video and audio settings, then the server and destination settings. The server and destination settings are different for each type of encoder.

From the Encoder Properties window (Figure 28), you can set the encoder to start streaming automatically by selecting the **Auto Start** check box. You can also start an encoder from this window by clicking the **Start Apple HTTP Live Streaming Encoder** link in the top right corner of the window.

*IMPORTANT! If you make any changes to the Encoder Properties window, you must click **Save Settings**. Otherwise, all your changes will be lost.*

**Figure 28. Adaptive Apple HTTP Live streaming encoder**



## Video tab

Use the following table to configure the video analog input settings for an Adaptive Apple HTTP live streaming encoder.

*Note: The choices in the drop-down lists may vary.*

**Figure 29. Video tab**

**Video Input Settings**

Source: Osprey-460e Video Device 1A

Input: Composite

Input Size: 400x304 (4:3)

**Video Stream Settings**

GOP/Segment Length: 10 seconds

BitRate	Asps	FPS	Width	Height	Profile
64		1	400	304	Base
150		6	400	304	Base
315		15	400	304	Base
540		29.97	400	304	Base
925		29.97	400	304	Base

**Video Filter Settings**

Brightness: 0 to 200 (100)

Contrast: 0 to 200 (100)

Hue: -45 to 45 (0)

Saturation: 0 to 200 (100)

**De-Interlace**

None

Auto

InverseTelecine

MotionAdaptive

**Overlay**

Add Statistics:

View All Encoders | Delete This Encoder | Manage Groups | Save Settings

### To configure video settings:

1. Select the video input **Source** from the drop-down list.

*Note: When SimulStream is enabled, you may use the same input source in another encoding profile. This lets you encode the same audio and video at multiple data rates and multiple formats to provide the best user experience for different viewing audiences.*

2. In the **Input** field, select the video input.

**IMPORTANT!** The video input must match the connectors on the back of the system and your video source.

3. In the **Input Size** field, select the pre-determined size of the encoded video from the drop-down list.

You can also specify a custom size for your video. This customization is useful when you are capturing video to be played on a mobile video-device that requires a non-standard size for compatibility.

When you click **Custom**, two additional fields appear so you can enter the exact size you want the resulting video to be (Figure 30).

*Note: The size in the **Width** and **Height** fields must be divisible by 2.*

**Figure 30. Custom fields**

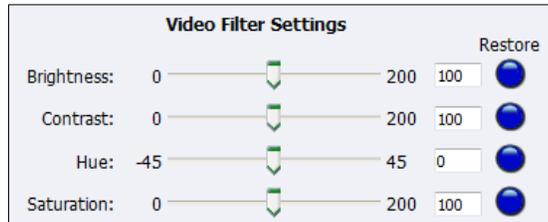
Input Size: CUSTOM

Width:  Height:

4. Enter the seconds for the **GOP/Segment Length**.

5. In the adaptive encoder video stream table, indicate which stream the player will use first (see *Adaptive encoder video stream table*).
6. Drag the sliders to adjust the **Brightness**, **Contrast**, **Hue**, and **Saturation** (Figure 31).

**Figure 31. Video Filter Settings**



*Note: Click **Restore** to the right of the filter to reset the settings to the default.*

7. Click the **De-Interlace** setting you want to apply (Figure 32). Options include:
  - **None**
    - Performs no de-interlacing of any kind.
  - **Auto**
    - Applies inverse telecine de-interlacing to all telecine video.
    - Applies motion adaptive de-interlacing to all video that is not telecine.
    - Switches dynamically between the two modes as the content changes.
    - Available for NTSC video only.
  - **InverseTelecine**
    - Drops the redundant fields and reassembles the video in a 24 fps progressive format.
    - Applies inverse telecine de-interlacing to all telecine video.
    - Performs no de-interlacing of video that is not telecine.
    - Available for NTSC video only.
  - **MotionAdaptive**
    - Is an algorithm for de-interlacing pure video (non-telecine) content.
    - Applies motion adaptive interlacing to all video. It detects which portions of the image are still and which portions are in motion then applies different processing to each scenario.

**Figure 32. De-Interlace settings**



*Note: Telecine and inverse telecine only apply to NTSC video. They are not used for PAL and SECAM video. The system disables **Auto** and **Inverse Telecine** choices when you select either **PAL** or **SECAM** as the video standard.*

8. Select **Add Statistics** to overlay video statistics within the video stream for diagnostic purposes.
9. Click **Save Settings**.

## Adaptive encoder video stream table

The adaptive encoder video stream table (Figure 33) contains five default streams. You can add a new stream, edit, delete, disable, and set which stream the player will use first. You can sort each column by clicking on the column heading.

The system validates the stream settings according to the capabilities of your Niagara system.

**Figure 33. Adaptive encoder video stream table**

BitRate	FPS	Width	Height	Profile
64	1	400	304	Base
150	5	400	304	Base
315	12.5	400	304	Base
540	25	400	304	Base
925	25	400	304	Base

<b>A.</b>	The table displays five streams at a time. Additional streams display on additional pages. Click the page number to display the streams on that page. You can also click <b>First</b> to go to the first page or click <b>Last</b> to go to the last page.
<b>B.</b>	Click this link to add a stream. <i>Note: If you click <b>Custom</b> as the Input Size, the system will automatically adjust the width and height of subsequent streams according to the custom settings.</i>
<b>C.</b>	The bit rate displays in kilobits per second. This field can only contain whole numbers. <i>Note: Two streams at the same bit rate cannot run simultaneously.</i>
<b>D.</b>	Displays the frames per second. You can enter up to two decimal places.
<b>E.</b>	Displays the width of the picture frame in the stream.
<b>F.</b>	Displays the height of the picture frame in the stream.
<b>G.</b>	The profile field has two settings: <ul style="list-style-type: none"> <li>• Base – This profile is typically for video conferencing and mobile applications and has the lowest demands on CPU load and memory usage, but lowest resulting quality.</li> <li>• Main – This profile is targeted at standard-definition TV. This profile is not acceptable for streaming to iPhone mobile devices.</li> </ul>

When you hover your cursor over a stream setting, additional functions display (Figure 34).

**Figure 34. Additional functions**

		First	Last				<a href="#">Add Stream</a>
		<a href="#">BitRate</a>	<i>Kbps</i>	<a href="#">FPS</a>	<a href="#">Width</a>	<a href="#">Height</a>	<a href="#">Profile</a>
		925		25	400	304	Base
<a href="#">Edit</a> <a href="#">Del</a> <a href="#">Disable</a> <a href="#">Initial</a>		540		25	400	304	Base
		<b>315</b>		<b>12.5</b>	<b>400</b>	<b>304</b>	<b>Base</b>
		150		5	400	304	Base
		64		1	400	304	Base

<b>Edit</b>	Click this link to change the settings for a particular stream. Click <b>Update</b> to accept the changes. <i>Note: Click <b>Cancel</b> to stop this action.</i>
<b>Del</b>	Click this link to delete the stream.
<b>Disable</b>	Click this link to disable this stream. The settings are still visible but appear to be “crossed out.”
<b>Initial</b>	Click this link to have the player use this stream first. The settings for the initial stream appear in bold.

## Audio tab

Use the following table to configure the audio analog input settings for an Adaptive Apple encoder.

*Note: The choices in the drop-down lists may vary.*

**Figure 35. Audio tab**

### To configure audio settings:

1. In the **Source** field, select an audio source from the drop-down list.  
*IMPORTANT! The audio input must match the connectors on the back of the system and your audio source.*
2. Select the **Overlay Closed Caption** check box to enable overlay closed captions. Field 1 CC 1 is the default setting.
3. Drag the slider to adjust the **Left Volume** and **Right Volume**.
4. (Optional) Select **Mute Audio** to silence the audio.
5. Click **Save Settings**.

## Output tab

Use the following table to configure the output analog input settings for an Adaptive Apple encoder.

*Note: The choices in the drop-down lists may vary.*

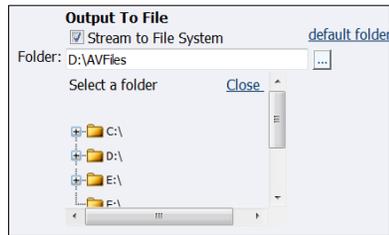
**Figure 36. Output tab**

### To configure output settings:

1. Select **Stream to Network Host**.  
*CAUTION! Simultaneously publishing to server and file system increases CPU usage.*
2. Select the **Host Address**.  
*Note: When you select **ftp://**, the Passive FTP Mode displays. Select this field to use passive FTP mode or clear this field to use active FTP mode.*
3. Enter the address in the next field.
4. Indicate the maximum **HTTP Cache** by dragging the slider for the number of files to maintain.  
*Note: The **Stream Path** that displays is a combination of the Host Address, Subfolder, and Filename.*
5. Select **Create unique folder** to create a file that the system does not overwrite.  
*Note: The format is Subfolder\_YYMMDD\_HHMMSS.*
6. Enter the name of the **Subfolder** used in the network destination and/or the local file system full filename.
7. Enter the name of the variant playlist file in the **Filename** field.
8. Enter the Number of Segments Per Folder.
9. Select **Stream to File System** to enable archiving content to the file system.
10. Accept the default location that displays in the **Folder** field or choose your own location for the file. To choose your own personal location, select the link (horizontal ellipses or ... ) to the right of the **Folder** field to display the options.

*Note: By default, the system sets this folder to D:\AVFiles.*

**Figure 37. Select a folder**



**WARNING!** You can only save media files to drive D. check drive properties for available free space to determine your storage capacity.

*A better practice would be to use the streaming server to save a file or to save it to a remote drive. If you fill all available space, you risk losing your stream during a streaming event.*

*Note: The **File System** that displays is a combination of the Folder, Subfolder, and Filename.*

11. Select **Allow client to cache content**.
12. Select **Encrypt Media Segment Files** to protect the content.
13. Select the **Key File**.

*Note: **http://** is currently the only choice.*

14. Enter the **URL**.
15. Enter the user authentication **Type**. If the host address is:
  - **http://** the selections are None and Akamai

*Note: If you select Akamai, you must set the time zone according to where the Niagara 9100 is located. To change the time zone:*

1. Right click on the time in the system tray.
2. Click on **Adjust Date/Time**.
3. In the Date and Time window, click **Change time zone**
4. Click on the appropriate time zone from the drop-down list and click **OK**.
5. Click **Change date and time**.
6. In the Date and Time Settings window, enter the current time and click **OK**. The time must be as exact as possible.

- **ftp://** the selections are None or ftp.
16. Enter the **Username**.
  17. Enter the **Password**.
  18. Click **Save Settings**.

# Adaptive Adobe Flash Dynamic streaming encoder with analog inputs

To create an adaptive encoder, **Encoders** > **All Encoders** > **Create New Encoder** link > **Encoder Name** field > **Publisher** drop-down list.

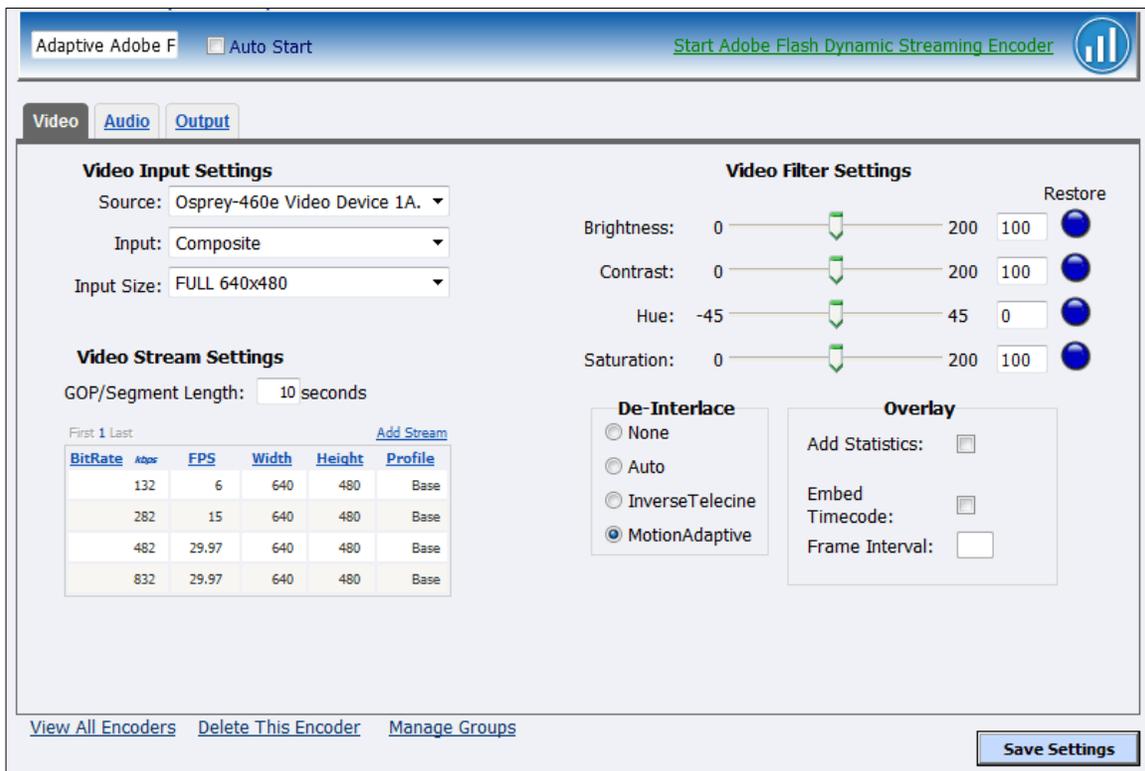
When you create a new encoder, the Encoder Properties window appears. The steps for editing a new encoder or an existing encoder are identical. You must configure the video and audio settings for each encoder type.

Use the Video, Audio, and Output tabs to edit the settings. Begin with configuring the video and audio settings, then the server and destination settings. The server and destination settings are different for each type of encoder.

From the Encoder Properties window (Figure 38), you can set the encoder to start streaming automatically by selecting the **Auto Start** check box. You can also start an encoder from this window by clicking the **Start Adobe Flash Dynamic Streaming Encoder** link in the top right corner of the window.

***IMPORTANT!** If you make any changes to the Encoder Properties window, you must click **Save Settings**. Otherwise, all your changes will be lost.*

**Figure 38. Adaptive Flash Dynamic streaming encoder**



## Video tab

Use the following table to configure the video analog input settings for an Adaptive Adobe Flash dynamic streaming encoder.

*Note: The choices in the drop-down lists may vary.*

**Figure 39. Video tab**

The screenshot shows the 'Video' tab configuration interface. It is divided into three main sections: Video Input Settings, Video Stream Settings, and Video Filter Settings.

**Video Input Settings:**

- Source: Osprey-460e Video Device 1A
- Input: Composite
- Input Size: FULL 640x480

**Video Stream Settings:**

- GOP/Segment Length: 10 seconds
- Buttons: First, Last, Add Stream
- Table:

BitRate	Asps	FPS	Width	Height	Profile
132		6	640	480	Base
282		15	640	480	Base
482		29.97	640	480	Base
832		29.97	640	480	Base

**Video Filter Settings:**

- Brightness: 0 to 200 (slider), 100 (input), Restore button
- Contrast: 0 to 200 (slider), 100 (input), Restore button
- Hue: -45 to 45 (slider), 0 (input), Restore button
- Saturation: 0 to 200 (slider), 100 (input), Restore button
- De-Interlace:
  - None
  - Auto
  - InverseTelecine
  - MotionAdaptive
- Overlay:
  - Add Statistics:
  - Embed Timecode:
  - Frame Interval:

At the bottom, there are links for 'View All Encoders', 'Delete This Encoder', and 'Manage Groups', and a 'Save Settings' button.

### To configure video settings:

- Select the video input **Source** from the drop-down list.  
*Note: When SimulStream is enabled, you may use the same input source in another encoding profile. This lets you encode the same audio and video at multiple data rates and multiple formats to provide the best user experience for different viewing audiences.*
- In the **Input** field, select the video input.  
*IMPORTANT! The video input must match the connectors on the back of the system and your video source.*
- In the **Input Size** field, select the pre-determined size of the encoded video from the drop-down list.  
You can also specify a custom size for your video. This customization is useful when you are capturing video to be played on a mobile video-device that requires a non-standard size for compatibility.  
When you click **Custom**, two additional fields appear so you can enter the exact size you want the resulting video to be (Figure 40).  
*Note: The size in the **Width** and **Height** fields must be divisible by 2.*

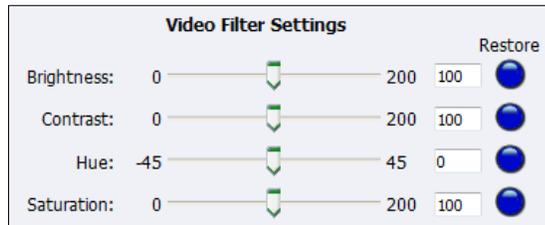
**Figure 40. Custom fields**

The screenshot shows the 'Input Size' dropdown menu set to 'CUSTOM'. Below it, there are two input fields labeled 'Width:' and 'Height:' for entering custom dimensions.

- Enter the seconds for the **GOP/Segment Length**.

6. Drag the sliders to adjust the **Brightness, Contrast, Hue, and Saturation** (Figure 41).

**Figure 41. Video Filter Settings**



*Note: Click **Restore** to the right of the filter to reset the settings to the default.*

7. Click the **De-Interlace** setting you want to apply (Figure 42). Options include:
  - **None**
    - Performs no de-interlacing of any kind.
  - **Auto**
    - Applies inverse telecine de-interlacing to all telecine video.
    - Applies motion adaptive de-interlacing to all video that is not telecine.
    - Switches dynamically between the two modes as the content changes.
    - Available for NTSC video only.
  - **InverseTelecine**
    - Drops the redundant fields and reassembles the video in a 24 fps progressive format.
    - Applies inverse telecine de-interlacing to all telecine video.
    - Performs no de-interlacing of video that is not telecine.
    - Available for NTSC video only.
  - **MotionAdaptive**
    - Is an algorithm for de-interlacing pure video (non-telecine) content.
    - Applies motion adaptive interlacing to all video. It detects which portions of the image are still and which portions are in motion then applies different processing to each scenario.

**Figure 42. De-Interlace settings**



*Note: Telecine and inverse telecine only apply to NTSC video. They are not used for PAL and SECAM video. The system disables **Auto** and **Inverse Telecine** choices when you select either **PAL** or **SECAM** as the video standard.*

8. Select **Add Statistics** to overlay video statistics within the video stream for diagnostic purposes.
9. Select **Embed Timecode** to enable embed system time as timecode. This action tags individual video frames with timecode data. This feature should be used if embedded timecode is required but your capture device cannot generate it.
10. Specify the **Frame Interval** at which timecode should be embedded into the video stream in

the Frame Interval field.

0=disabled

The range is 1 to 30 frames.

11. Click **Save Settings**.

## Encoder video stream table

The adaptive encoder video stream table (Figure 43) contains five default streams. You can add a new stream, edit, delete, disable, and set which stream the player will use first. You can sort each column by clicking on the column heading.

The system validates the stream settings according to the capabilities of your Niagara system.

**Figure 43. Encoder video stream table**

BitRate	Kbps	FPS	Width	Height	Profile
51	1	400	304	Base	
132	5	400	304	Base	
282	12.5	400	304	Base	
482	25	400	304	Base	
832	25	400	304	Base	

<b>A.</b>	The table displays five streams at a time. Additional streams display on additional pages. Click the page number to display the streams on that page. You can also click <b>First</b> to go to the first page or click <b>Last</b> to go to the last page.
<b>B.</b>	Click this link to add a stream. <i>Note: If you click <b>Custom</b> as the Input Size, the system will automatically adjust the width and height of subsequent streams according to the custom settings.</i>
<b>C.</b>	The bit rate displays in kilobits per second. This field can only contain whole numbers. <i>Note: Two streams at the same bit rate cannot run simultaneously.</i>
<b>D.</b>	Displays the frames per second. You can enter up to two decimal places.
<b>E.</b>	Displays the width of the picture frame in the stream.
<b>F.</b>	Displays the height of the picture frame in the stream.
<b>G.</b>	The profile field has two settings: <ul style="list-style-type: none"> <li>• Base – This profile is typically for video conferencing and mobile applications and has the lowest demands on CPU load and memory usage, but lowest resulting quality.</li> <li>• Main – This profile is targeted at standard-definition TV. This profile is not acceptable for streaming to iPhone mobile devices.</li> </ul>

When you hover your cursor over a stream setting, additional functions display (Figure 44).

**Figure 44. Additional functions**

		First	Last	<a href="#">Add Stream</a>				
<a href="#">Edit</a>	<a href="#">Del</a>	<a href="#">Disable</a>	<a href="#">BitRate</a>	<a href="#">Kbps</a>	<a href="#">FPS</a>	<a href="#">Width</a>	<a href="#">Height</a>	<a href="#">Profile</a>
			51	1	400	304	Base	
			132	5	400	304	Base	
			282	12.5	400	304	Base	
			482	25	400	304	Base	
			832	25	400	304	Base	

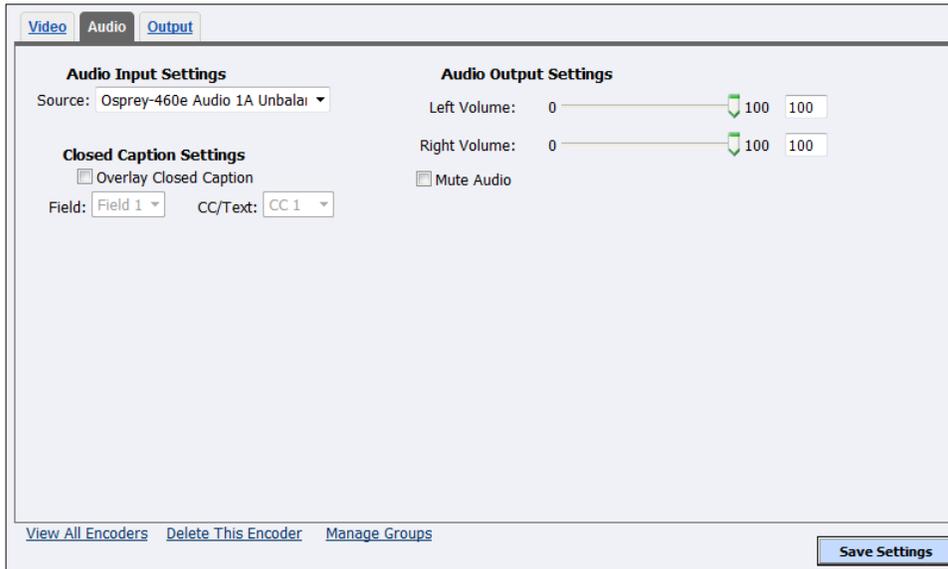
<b>Edit</b>	Click this link to change the settings for a particular stream. Click <b>Update</b> to accept the changes. <i>Note: Click <b>Cancel</b> to stop this action.</i>
<b>Del</b>	Click this link to delete the stream.
<b>Disable</b>	Click this link to disable this stream. The settings are still visible but appear to be “crossed out.”

## Audio tab

Use the following table to configure the audio analog input settings for an Adaptive Adobe Flash dynamic streaming encoder.

*Note: The choices in the drop-down lists may vary.*

**Figure 45. Audio tab**



### To configure audio settings:

1. In the **Source** field, select an audio source from the drop-down list.  
*IMPORTANT! The audio input must match the connectors on the back of the system and your audio source.*
2. Select the **Overlay Closed Caption** check box to enable overlay closed captions. Field 1 CC 1 is the default setting.
3. Drag the slider to adjust the **Left Volume** and **Right Volume**.
4. (Optional) Select **Mute Audio** to silence the audio.
5. Click **Save Settings**.

## Output tab

Use the following table to configure the output analog input settings for an Adaptive Adobe Flash dynamic streaming encoder.

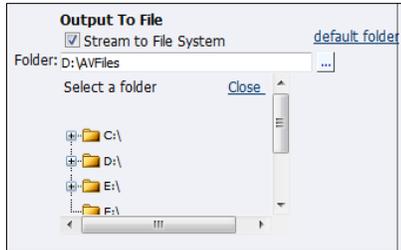
*Note: The choices in the drop-down lists may vary.*

**Figure 46. Output tab**

### To configure output settings:

1. Select **Stream to Flash Media Server**.  
*CAUTION! Simultaneously publishing to server and file system increases CPU usage.*
2. Enter the destination **FMS Address**.  
*Note: The **Stream Path** that displays is a combination of the FMS (Flash media Server) address and the stream name.*
3. Enter the **Stream Name**.  
*Note: The system accepts the %v parameter for video bitrate, %i for indexing, and %b for overall bitrate, which is compatible with Adobe Flash media encoder.*
4. Select **Stream to File System** to enable archiving content to the file system.
5. Accept the default location that displays in the Folder field or choose your own location for the file. To choose your own personal location, select the link (horizontal ellipses or ... ) to the right of the Folder field and display the options (Figure 47).  
*Note: By default, the system sets this folder to D:\AVFiles. See Connecting an external storage device for instructions on saving video files to a USB storage device.*

**Figure 47. Select a folder**



***WARNING!** You can only save media files to drive D. Check drive properties for available free space to determine your storage capacity.*

*A better practice would be to use a Flash Media server to save a file or to save it to a remote drive. If you fill all available space, you risk losing your stream during a streaming event.*

6. Select **Create unique folder** to create a file that the system does not overwrite.
7. Enter the user authentication **Type**. If the host address is:
  - None
  - Adobe
  - Akamai
  - Limelight
8. Enter the **Username**.
9. Enter the **Password**.
10. Click **Save Settings**.

# Adaptive Microsoft Smooth Streaming encoder with analog inputs

To create an adaptive encoder, **Encoders** > **All Encoders** > **Create New Encoder** link > **Encoder Name** field > **Publisher** drop-down list.

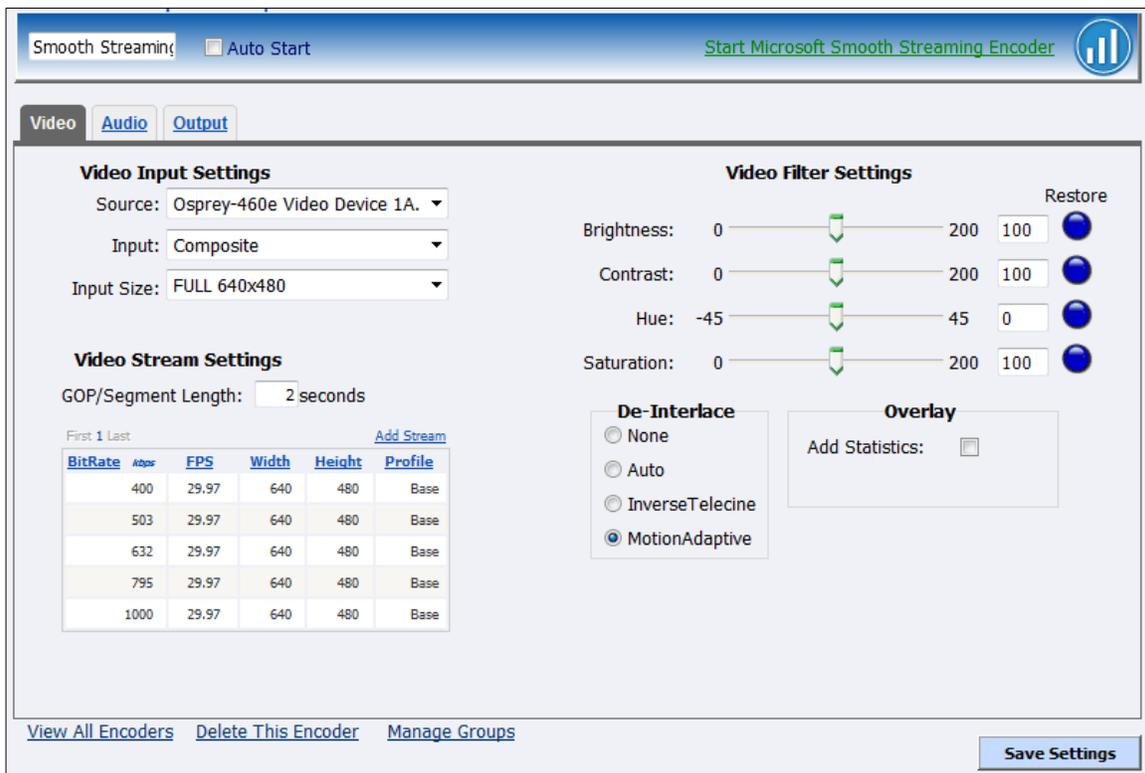
When you create a new encoder, the Encoder Properties window appears. The steps for editing a new encoder or an existing encoder are identical. You must configure the video and audio settings for each encoder type.

Use the Video, Audio, and Output tabs to edit the settings. Begin with configuring the video and audio settings, then the server and destination settings. The server and destination settings are different for each type of encoder.

From the Encoder Properties window (Figure 48), you can set the encoder to start streaming automatically by selecting the **Auto Start** check box. You can also start an encoder from this window by clicking the **Start Microsoft Smooth Streaming Encoder** link in the top right corner of the window.

***IMPORTANT!** If you make any changes to the Encoder Properties window, you must click **Save Settings**. Otherwise, all your changes will be lost.*

**Figure 48. Microsoft Smooth Streaming encoder**



## Video tab

Use the following table to configure the video analog input settings for an Adaptive Microsoft Smooth Streaming encoder.

*Note: The choices in the drop-down lists may vary.*

**Figure 49. Video tab**

**Video Input Settings**

Source: Osprey-460e Video Device 1A

Input: Composite

Input Size: FULL 640x480

**Video Stream Settings**

GOP/Segment Length: 2 seconds

BitRate	Asps	FPS	Width	Height	Profile
400	29.97	640	480	Base	
503	29.97	640	480	Base	
632	29.97	640	480	Base	
795	29.97	640	480	Base	
1000	29.97	640	480	Base	

**Video Filter Settings**

Brightness: 0 to 200 (100)

Contrast: 0 to 200 (100)

Hue: -45 to 45 (0)

Saturation: 0 to 200 (100)

**De-Interface**

None

Auto

InverseTelecine

MotionAdaptive

**Overlay**

Add Statistics:

View All Encoders Delete This Encoder Manage Groups Save Settings

### To configure video settings:

1. Select the video input **Source** from the drop-down list.  
*Note: When SimulStream is enabled, you may use the same input source in another encoding profile. This lets you encode the same audio and video at multiple data rates and multiple formats to provide the best user experience for different viewing audiences.*
2. In the **Input** field, select the video input.  
*IMPORTANT! The video input must match the connectors on the back of the system and your video source.*
3. In the **Input Size** field, select the pre-determined size of the encoded video from the drop-down list.

You can also specify a custom size for your video. This customization is useful when you are capturing video to be played on a mobile video-device that requires a non-standard size for compatibility.

When you click **Custom**, two additional fields appear so you can enter the exact size you want the resulting video to be (Figure 50).

*Note: The size in the **Width** and **Height** fields must be divisible by 2.*

**Figure 50. Custom fields**

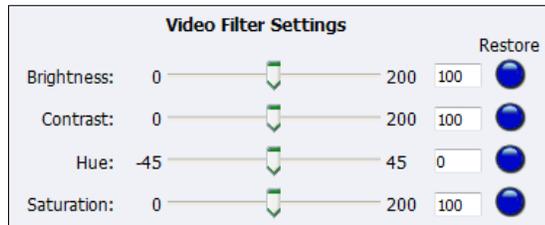
Input Size: CUSTOM

Width:  Height:

4. Enter the seconds for the **GOP/Segment Length**.

5. Drag the sliders to adjust the **Brightness**, **Contrast**, **Hue**, and **Saturation** (Figure 51).

**Figure 51. Video Filter Settings**



*Note: Click **Restore** to the right of the filter to reset the settings to the default.*

6. Click the **De-Interlace** setting you want to apply (Figure 52). Options include:
  - **None**
    - Performs no de-interlacing of any kind.
  - **Auto**
    - Applies inverse telecine de-interlacing to all telecine video.
    - Applies motion adaptive de-interlacing to all video that is not telecine.
    - Switches dynamically between the two modes as the content changes.
    - Available for NTSC video only.
  - **InverseTelecine**
    - Drops the redundant fields and reassembles the video in a 24 fps progressive format.
    - Applies inverse telecine de-interlacing to all telecine video.
    - Performs no de-interlacing of video that is not telecine.
    - Available for NTSC video only.
  - **MotionAdaptive**
    - Is an algorithm for de-interlacing pure video (non-telecine) content.
    - Applies motion adaptive interlacing to all video. It detects which portions of the image are still and which portions are in motion then applies different processing to each scenario.

**Figure 52. De-Interlace settings**



*Note: Telecine and inverse telecine only apply to NTSC video. They are not used for PAL and SECAM video. The system disables **Auto** and **Inverse Telecine** choices when you select either **PAL** or **SECAM** as the video standard.*

7. Select **Add Statistics** to overlay video statistics within the video stream for diagnostic purposes.
8. Click **Save Settings**.

## Adaptive encoder video stream table

The adaptive encoder video stream table (Figure 53) contains five default streams. You can add a new stream, edit, delete, disable, and set which stream the player will use first. You can sort each column by clicking on the column heading.

The system validates the stream settings according to the capabilities of your Niagara system.

**Figure 53. Adaptive encoder video stream table**

BitRate	kpbs	FPS	Width	Height	Profile
400	25	960	540	Base	
503	25	960	540	Base	
632	25	960	540	Base	
795	25	960	540	Base	
1000	25	960	540	Base	

<b>A.</b>	The table displays five streams at a time. Additional streams display on additional pages. Click the page number to display the streams on that page. You can also click <b>First</b> to go to the first page or click <b>Last</b> to go to the last page.
<b>B.</b>	Click this link to add a stream. <i>Note: If you click <b>Custom</b> as the Input Size, the system will automatically adjust the width and height of subsequent streams according to the custom settings.</i>
<b>C.</b>	The bit rate displays in kilobits per second. This field can only contain whole numbers. <i>Note: Two streams at the same bit rate cannot run simultaneously.</i>
<b>D.</b>	Displays the frames per second. You can enter up to two decimal places.
<b>E.</b>	Displays the width of the picture frame in the stream.
<b>F.</b>	Displays the height of the picture frame in the stream.
<b>G.</b>	The profile field has two settings: <ul style="list-style-type: none"> <li>Base – This profile is typically for video conferencing and mobile applications and has the lowest demands on CPU load and memory usage, but lowest resulting quality.</li> <li>Main – This profile is targeted at standard-definition TV. This profile is not acceptable for streaming to iPhone mobile devices.</li> </ul>

When you hover your cursor over a stream setting, additional functions display (Figure 54).

**Figure 54. Additional functions**

		First 1 Last	<a href="#">Add Stream</a>				
		<a href="#">BitRate</a>	<i>Kbps</i>	<a href="#">FPS</a>	<a href="#">Width</a>	<a href="#">Height</a>	<a href="#">Profile</a>
		400	25	960	540	Base	
<a href="#">Edit</a>	<a href="#">Del</a>	503	25	960	540	Base	
<a href="#">Disable</a>		632	25	960	540	Base	
		795	25	960	540	Base	
		1000	25	960	540	Base	

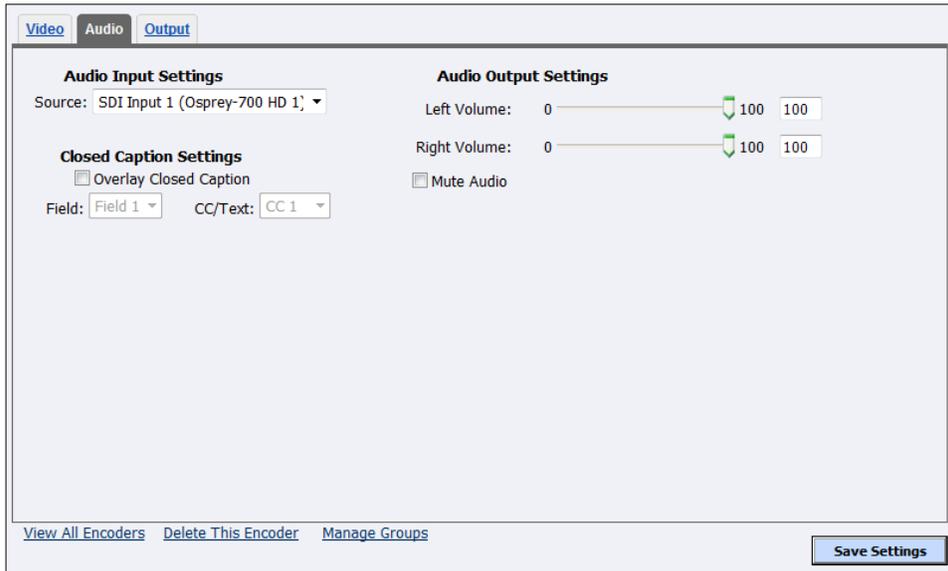
<b>Edit</b>	Click this link to change the settings for a particular stream. Click <b>Update</b> to accept the changes. <i>Note: Click <b>Cancel</b> to stop this action.</i>
<b>Del</b>	Click this link to delete the stream.
<b>Disable</b>	Click this link to disable this stream. The settings are still visible but appear to be "crossed out."

## Audio tab

Use the following table to configure the audio analog input settings for an Adaptive Microsoft Smooth Streaming encoder.

*Note: The choices in the drop-down lists may vary.*

**Figure 55. Audio tab**



### To configure audio settings:

1. In the **Source** field, select an audio source from the drop-down list.

*IMPORTANT! The audio input must match the connectors on the back of the system and your audio source.*

2. Select the **Overlay Closed Caption** check box to enable overlay closed captions. Field 1 CC 1 is the default setting.
3. Drag the sliders to adjust the **Left Volume** and **Right Volume**.
4. (Optional) Select **Mute Audio** to silence the audio.
5. Click **Save Settings**.

## Output tab

Use the following table to configure the output analog input settings for an Adaptive Microsoft Smooth Streaming encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 56. Output tab**

The screenshot shows the 'Output' tab of a configuration window. It contains the following sections:

- Server Settings:** Includes a checkbox for 'Publish to IIS Host', a 'Host Address' field with a dropdown set to 'http://' and the value 'www.mystream.com', and a 'Stream Path' field.
- Destination Settings:** Includes a 'Publish Point' field with the value 'myEvent' and a '.ismv' extension.
- PlayReady Settings:** Includes a checkbox for 'PlayReady DRM', a 'Key URL' field with a dropdown set to 'http://', a 'Key ID' field with a 'Create' button, and a 'Key Seed' field.
- Output To File:** Includes a checked checkbox for 'Stream to File System', a 'Folder' field with the value 'D:\AVFiles' and a 'default folder' link, a 'Filename' field with the value 'capture' and a '.ismv' extension, and a 'File System' field with the value 'D:\AVFiles\capture\_<streamrate>.ismv'.
- User Authentication:** Includes 'Username' and 'Password' fields.

At the bottom of the window, there are links for 'View All Encoders', 'Delete This Encoder', and 'Manage Groups', and a 'Save Settings' button.

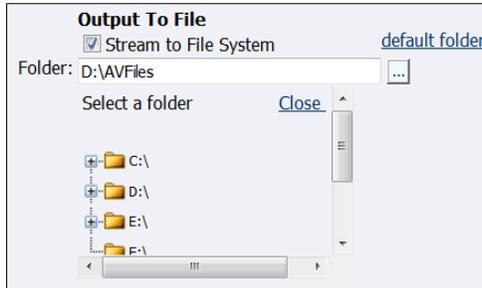
### To configure output settings:

1. Select **Publish to IIS Host**.
2. Enter the destination **Host Address**.  
*Note: The **Stream Path** that displays is a combination of the host address and the publish point.*
3. Enter the Publish Point.
4. Select **PlayReady DRM** to enable Digital Rights Management support. PlayReady requires external License Server provider support. The URL and the seed must be acquired from the license hosting provider.
5. Select the **Key URL**:
  - http://
  - https://
6. Enter the PlayReady key **URL**.
7. Click **Create** to generate a unique **Key ID**.
8. Enter the **Key Seed**.
9. Click **Stream to File System**.
10. Accept the default location that displays in the **Folder** field or choose your own location for the file. To choose your own personal location select the link (horizontal ellipses or ...) to the

right of the Folder field and display the options (Figure 57).

*Note: By default, the system sets this folder to D:\AVFiles. See Connecting an external storage device for instructions on saving video files to a USB storage device.*

**Figure 57. Select a folder**



**WARNING!** *You can only save media files to drive D. Check drive properties for available free space to determine your storage capacity.*

*A better practice would be to use a remote file server to save a file or to save it to a remote drive. If you fill all available space, you risk losing your stream during a streaming event.*

*Smooth Streaming files created when you enable Output to File are not designed to be played locally by a media player but should be hosted on an IIS server for Video On Demand services.*

11. Enter the **Username**.

*Note: You can enter a maximum of 80 characters.*

*IIS authentication types supported are Basic and Digest.*

12. Enter the **Password**.

*Note: You can enter a maximum of 20 characters.*

13. Click **Save Settings**.

# Adobe Flash H.264 encoder with analog inputs

To create an encoder, [Encoders](#) > [All Encoders](#) > [Create New Encoder](#) link > [Encoder Name](#) field.

When you create a new encoder, the Encoder Properties window appears. The steps for editing a new encoder or an existing encoder are identical. You must configure the video and audio settings for each encoder type.

Use the Video, Audio, Output, and H.264 Presets tabs to edit the settings. Begin with configuring the video and audio settings, then the server and destination settings. The server and destination settings are different for each type of encoder.

From the Encoder Properties window (Figure 58), you can set the encoder to start streaming automatically by selecting the **Auto Start** check box. You can also start an encoder from this window by clicking the **Start Flash Encoder** link in the top right corner of the window.

***IMPORTANT!** If you make any changes to the Encoder Properties window, you must click **Save Settings**. Otherwise, all your changes will be lost.*

**Figure 58. Flash encoder**

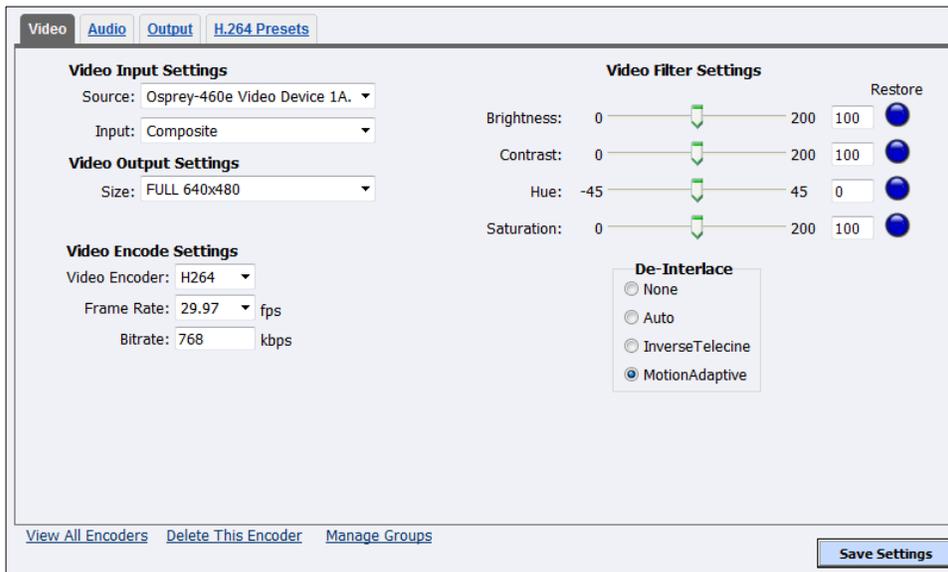


## Video tab

Use the following table to configure the video analog input settings for a Flash encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 59. Video tab**



### To configure video settings:

1. Select the video input **Source** from the drop-down list.

*Note: When SimulStream is enabled, you may use the same input source in another encoding profile. This lets you encode the same audio and video at multiple data rates and multiple formats to provide the best user experience for different viewing audiences.*

2. In the **Input** field, select the video input.

*IMPORTANT! The video input must match the connectors on the back of the system and your video source.*

3. In the **Size** field, select the pre-determined size of the encoded video from the drop-down list. You can also specify a custom size for your video. This customization is useful when you are capturing video to be played on a mobile video-device that requires a non-standard size for compatibility.

When you click **Custom**, two additional fields appear so you can enter the exact size you want the resulting video to be (Figure 60).

*Note: The size in the **Width** and **Height** fields must be divisible by 2.*

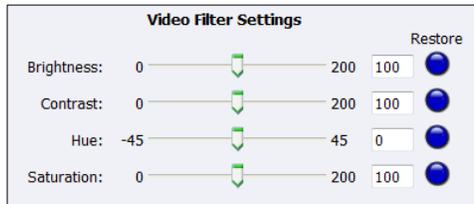
**Figure 60. Custom fields**



4. Select the **Video Encoder** from the drop-down list.
5. Enter the frames per second in the **Frame Rate** field.

6. Enter the **Bitrate**.
7. Drag the sliders to adjust the **Brightness, Contrast, Hue, and Saturation** (Figure 61).

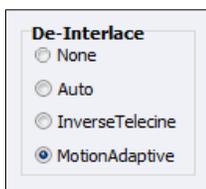
**Figure 61. Video Filter Settings**



*Note: Click the **Restore** button to the right of the filter to reset the settings to the default.*

8. Click the **De-Interlace** setting you want to apply (Figure 62). Options include:
  - **None**
    - Performs no de-interlacing of any kind.
  - **Auto**
    - Applies inverse telecine de-interlacing to all telecine video.
    - Applies motion adaptive de-interlacing to all video that is not telecine.
    - Switches dynamically between the two modes as the content changes.
    - Available for NTSC video only.
  - **InverseTelecine**
    - Drops the redundant fields and reassembles the video in a 24 fps progressive format.
    - Applies inverse telecine de-interlacing to all telecine video.
    - Performs no de-interlacing of video that is not telecine.
    - Available for NTSC video only.
  - **Motion Adaptive**
    - Is an algorithm for de-interlacing pure video (non-telecine) content.
    - Applies motion adaptive interlacing to all video. It detects which portions of the image are still and which portions are in motion then applies different processing to each scenario.

**Figure 62. De-Interlace Settings**



*Note: Telecine and inverse telecine only apply to NTSC video. They are not used for PAL and SECAM video. The system disables **Auto** and **Inverse Telecine** choices when you select either **PAL** or **SECAM** as the video standard.*

9. Click **Save Settings**.

## Audio tab

Use the following table to configure the audio analog input settings for a Flash encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 63. Audio tab**

### To configure audio settings:

1. In the **Source** field, select an audio source from the drop-down list.  
*IMPORTANT! The audio input must match the source connected on the back of the system and your audio source.*
2. Select the **Overlay Closed Caption** check box to enable overlay closed captions. Field 1 CC 1 is the default setting.
3. Click the audio **Format** from the drop-down list.
4. Click the **Audio Type** from the drop-down list.
5. Click the **Bitrate** from the drop-down list.
6. The **Audio Encoder** setting is AAC.
7. Drag the sliders to adjust the **Left Volume** and **Right Volume**.
8. (Optional) Select **Mute Audio** to silence audio.
9. Click **Save Settings**.

## Output tab

Use the following table to configure the output analog input settings for a Flash encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 64. Output tab**

### To configure output settings:

1. Select **Enable Streaming** to enable live Flash streaming.
2. Enter the proper IP address in the **Server Address** field.
3. Enter the **Stream Name**.
4. Select the **Authentication Type** from the drop-down list. Options are available for streaming directly to Adobe, Akamai, and Limelight CDNs.
5. Enter the **User Name** and **Password**.
6. Select the **Embed System Time as Timecode**.
7. Click the **Frame Interval** from the drop-down list.
8. Enable **Save to File** to save the encoded content to a file. Each time you start this encoder, the system overwrites the previous file.

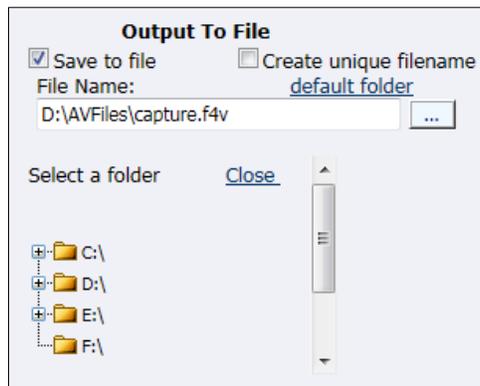
*Note: You must enable either **Enable Streaming** or **Save to File**. If both **Enable Streaming** and **Save to File** are disabled, the encoder will not start and an error is generated.*

9. Select **Create unique file** to create a file that the system does not overwrite.
10. Accept the default location that displays in the **File Name** field or choose your own location for the file. To choose your own personal location select the link (horizontal ellipses or ... ) to the right of the **File Name** field and display the options (Figure 65).

*Note: By default, the system sets this folder to D:\AVFiles with a default file name of*

*capture.f4v.*

**Figure 65. Select a folder**



*WARNING! You can only save media files to drive D. Check drive properties for available free space to determine your storage capacity.*

*A better practice would be to use the streaming server to save a file or to save it to a remote drive. If you fill all available space, you risk losing your stream during a streaming event.*

11. Click **Save Settings**.

## H.264 Presets

These advanced presets affect the way the encoder performs and if set incorrectly may lead to abnormal encoder operations (Figure 66). Each preset contains properties that you can modify. Refer to *Appendix B* for suggested values for the type of video you are streaming.

Use the following table to configure the H.264 analog presets for a Flash encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 66. H.264 Presets tab**

**Advanced Encoder Settings**

Use this form to optimize the encoder's settings, or select a Custom Preset to use typical settings for your audience.

Custom Presets: Main Profile Default

Property	Value	Min	Max
<a href="#">Edit</a> BFramesMax		0	4
<a href="#">Edit</a> GopSize		1	4000
<a href="#">Edit</a> GOPSizeMin		1	4000
<a href="#">Edit</a> InLoopDeblockingFilterAlpha		-6	6
<a href="#">Edit</a> InLoopDeblockingFilterBeta		-6	6
<a href="#">Edit</a> LookaheadFrames		0	200
<a href="#">Edit</a> NoiseReduction		0	1500
<a href="#">Edit</a> QuantizerMax		1	51
<a href="#">Edit</a> QuantizerMin		1	51
<a href="#">Edit</a> ReferenceFrames		0	16
<a href="#">Edit</a> SceneChangeDetectThreshold		0	4000
<a href="#">Edit</a> TrellisRDQuantization		0	2

**Note:** Advanced settings affect the Encoder performance and if set incorrectly may lead to abnormal operations. [Restore Defaults](#)

[View All Encoders](#) [Delete This Encoder](#) [Manage Groups](#) [Save Settings](#)

### To configure H.264 presets:

1. Click **Edit** next to the property you want to modify.

*IMPORTANT! These advanced presets affect the way the encoder performs and if set incorrectly may lead to abnormal encoder operations. Refer to the H.264 Presets section for suggested values for the type of video you are streaming.*

2. Change the value.
3. Click **Update**.
4. Click the **Restore Defaults** link at the bottom of the window to return the settings to the defaults.

*Note: The database has multiple properties for each preset. Clicking **Restore Defaults** for one property will change all properties to the default settings.*

5. Click **Save Settings**.

## AVI encoder with analog inputs

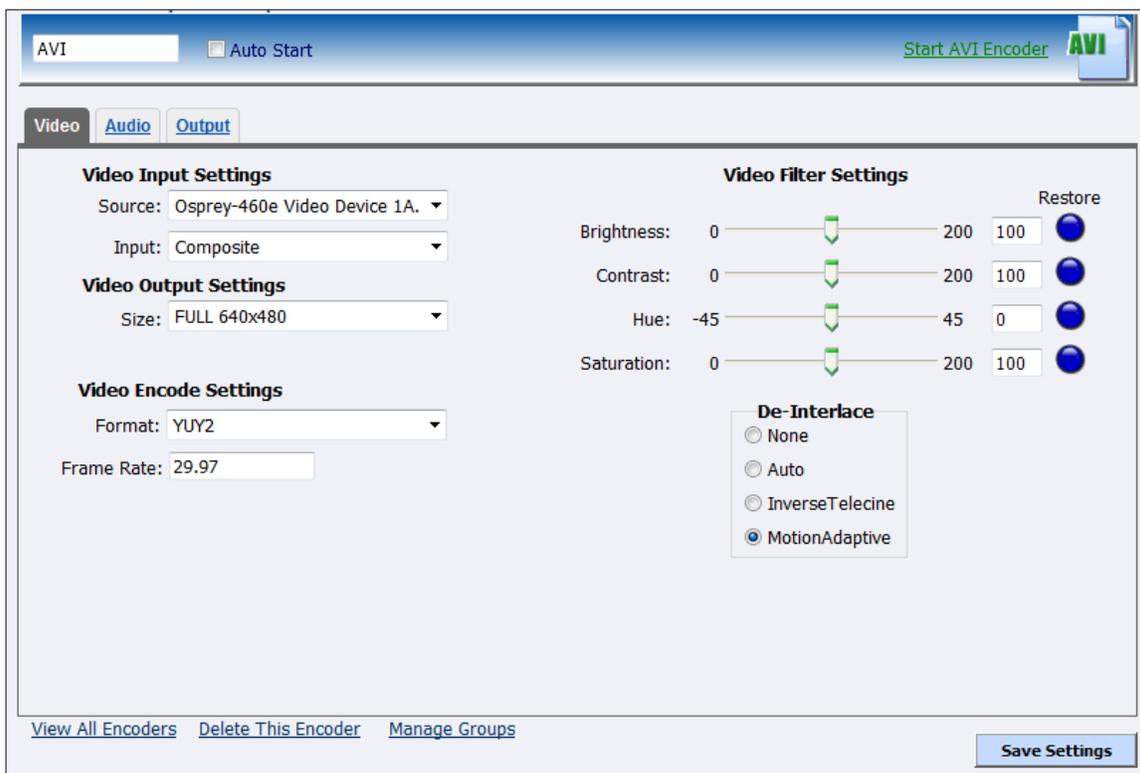
To create an encoder, [Encoders](#) > [All Encoders](#) > [Create New Encoder](#) link > **Encoder Name** field.

When you create a new encoder, the Encoder Properties window appears. The steps for editing a new encoder or an existing encoder are identical. You must configure the video and audio settings for each encoder type. Use the Video, Audio, and Output tabs to edit the settings.

From the Encoder Properties window (Figure 67), you can set the encoder to start streaming automatically by selecting the **Auto Start** check box. You can also start an encoder from this window by clicking the **Start AVI Encoder** link in the top right corner of the window.

***IMPORTANT!** If you make any changes to the Encoder Properties window, you must click **Save Settings**. Otherwise, all your changes will be lost.*

**Figure 67. AVI encoder**

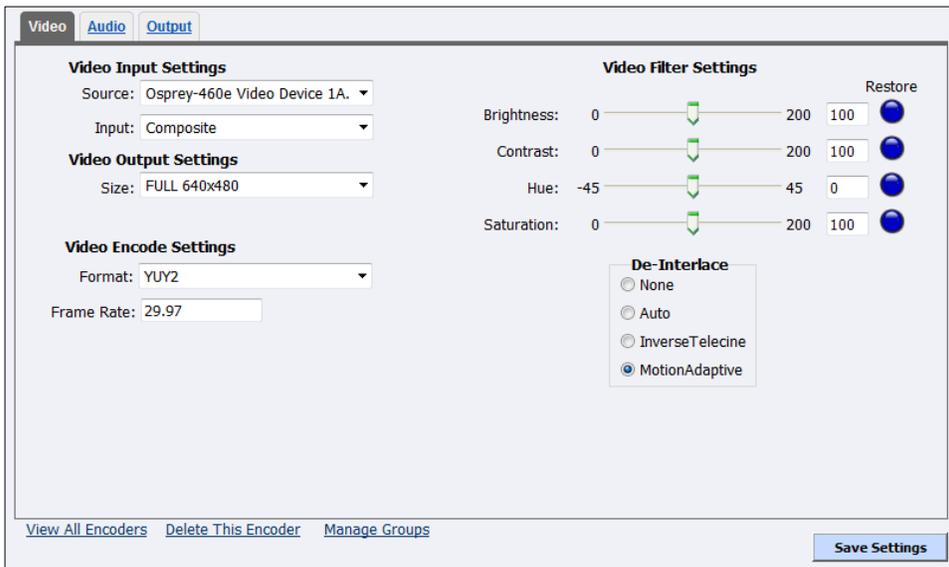


## Video tab

Use the following table to configure the video analog input settings for an AVI encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 68. Video tab**



### To configure video settings:

1. Select the video input **Source** from the drop-down list.

*Note: When SimulStream is enabled, you may use the same input source in another encoding profile. This lets you encode the same audio and video at multiple data rates and multiple formats to provide the best user experience for different viewing audiences.*

2. In the **Input** field, select the video input.

**IMPORTANT!** *The video input must match the connectors on the back of the system and your video source.*

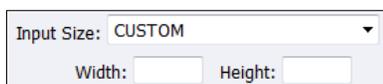
3. In the **Size** field, select the pixel size of the encoded video from the pre-determined sizes in the drop-down list.

You can also specify a custom size for your video. This customization is useful when you are capturing video to be played on a mobile video-device that requires a non-standard size for compatibility.

When you click **Custom**, two additional fields appear so you can enter the exact size you want the resulting video to be (Figure 69).

*Note: The size in the **Width** and **Height** fields must be divisible by 2.*

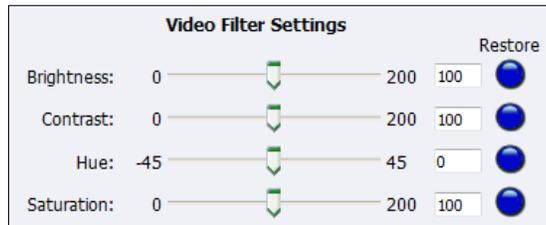
**Figure 69. Custom fields**



4. Select the **Format** from the drop-down list.
5. Enter the **Frame Rate**.

6. Drag the sliders to adjust the **Brightness**, **Contrast**, **Hue**, and **Saturation** (Figure 70).

**Figure 70. Video Filter Settings**



*Note: Click **Restore** to the right of the filter to reset the settings to the default.*

7. Click the De-Interlace setting you want to apply (Figure 71). Options include:
- **None**
    - Performs no de-interlacing of any kind.
  - **Auto**
    - Applies inverse telecine de-interlacing to all telecine video.
    - Applies motion adaptive de-interlacing to all video that is not telecine.
    - Switches dynamically between the two modes as the content changes.
    - Available for NTSC video only.
  - **InverseTelecine**
    - Drops the redundant fields and reassembles the video in a 24 fps progressive format.
    - Applies inverse telecine de-interlacing to all telecine video.
    - Performs no de-interlacing of video that is not telecine.
    - Available for NTSC video only.
  - **MotionAdaptive**
    - Is an algorithm for de-interlacing pure video (non-telecine) content.
    - Applies motion adaptive interlacing to all video. It detects which portions of the image are still and which portions are in motion then applies different processing to each scenario.

**Figure 71. De-Interlace settings**



*Note: Telecine and inverse telecine only apply to NTSC video. They are not used for PAL and SECAM video. The system disables **Auto** and **Inverse Telecine** choices when you select either **PAL** or **SECAM** as the video standard.*

8. Click **Save Settings**.

## Audio tab

Use the following table to configure the audio analog input settings for an AVI encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 72. Audio tab**

The screenshot shows the 'Audio' tab of a configuration interface. It features two main sections: 'Audio Input Settings' and 'Audio Output Settings'. The 'Audio Input Settings' section includes a 'Source' dropdown menu currently set to 'Osprey-460e Audio 1A Unbalai'. Below this is the 'Closed Caption Settings' section, which has an 'Overlay Closed Caption' checkbox that is checked, a 'Field' dropdown set to 'Field 1', and a 'CC/Text' dropdown set to 'CC 1'. The 'Audio Output Settings' section includes an 'Audio Format' dropdown set to '48.000 kHz, 16 bit, Stereo', two volume sliders for 'Left Volume' and 'Right Volume' both set to 100, and a 'Mute Audio' checkbox that is unchecked. At the bottom of the interface, there are three links: 'View All Encoders', 'Delete This Encoder', and 'Manage Groups', and a 'Save Settings' button.

### To configure audio settings:

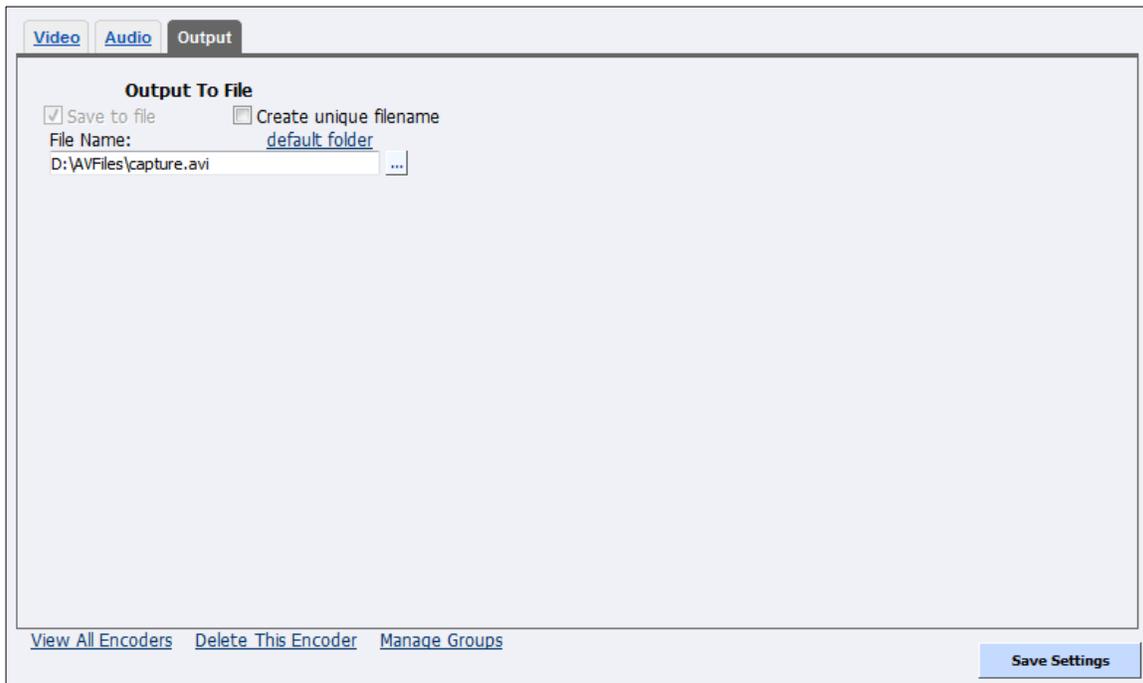
1. In the **Source** field, select an audio source from the drop-down list.  
*IMPORTANT! The audio input must match the connectors on the back of the system and your video source.*
2. Select the **Overlay Closed Caption** check box to enable overlay closed captions. Field 1 CC 1 is the default setting.
3. Click the **Audio Format** from the drop-down list.
4. Drag the sliders to adjust the **Left Volume** and **Right Volume**.
5. (Optional) Select **Mute Audio** to silence audio.
6. Click **Save Settings**.

## Output tab

Use the following table to configure the output analog input settings for an AVI encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 73. Output tab**



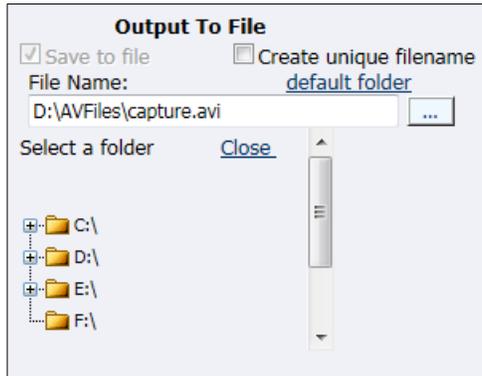
### To configure output settings:

1. You can:
  - Use the default setting, **Save to File**, to save the encoded content to a file. Each time you start this encoder, the system overwrites the previous file.
  - Click **Create unique file** to create a file that the system does not overwrite.
2. Accept the default location that displays in the **File Name** field or choose your own location for the file. To choose your own personal location select the link (horizontal ellipses or ... ) to the right of the **File Name** field and display the options (Figure 74).

*Note: By default, the system sets this folder to **D:\AVFiles** with a default file name of **capture.avi**.*

*See Connecting an external storage device section for instructions on saving video files to a USB device.*

**Figure 74. Select a folder**



***WARNING!** You can only save media files to drive D. Check drive properties for available free space to determine your storage capacity.*

*A better practice would be to use the streaming server to save a file or to save it to a remote drive. If you fill all available space, you risk losing your stream during a streaming event.*

3. Click **Save Settings**.

## MPEG4 encoder with analog inputs

To create an encoder, [Encoders](#) > [All Encoders](#) > [Create New Encoder](#) link > **Encoder Name** field.

When you create a new encoder, the Encoder Properties window appears. The steps for editing a new encoder or an existing encoder are identical. You must configure the video and audio settings for each encoder type.

Use the Video, Audio, and Output tabs to edit the settings. Begin with configuring the video and audio settings, then the server and destination settings. The server and destination settings are different for each type of encoder.

From the Encoder Properties window (Figure 75), you can set the encoder to start streaming automatically by selecting the **Auto Start** check box. You can also start an encoder from this window by clicking the **Start MPEG4 Encoder** link in the top right corner of the window.

***IMPORTANT!** If you make any changes to the Encoder Properties window, you must click **Save Settings**. Otherwise, all your changes will be lost.*

**Figure 75. MPEG4 encoder**

MPEG4  Auto Start [Start MPEG4 Encoder](#) **H.264**

**Video** [Audio](#) [Output](#) [H.264 Presets](#)

**Video Input Settings**  
 Source: Osprey-460e Video Device 1A. ▾  
 Input: Composite ▾

**Video Output Settings**  
 Size: FULL 640x480 ▾

**Video Encode Settings**  
 Video Encoder: H264 ▾  
 Frame Rate: 29.97 ▾ fps  
 Bitrate: 768 kbps  
 Format: I420 ▾

**Video Filter Settings** Restore

Brightness: 0 ————— 200 100 ●

Contrast: 0 ————— 200 100 ●

Hue: -45 ————— 45 0 ●

Saturation: 0 ————— 200 100 ●

**De-Interlace**

None  
 Auto  
 InverseTelecine  
 MotionAdaptive

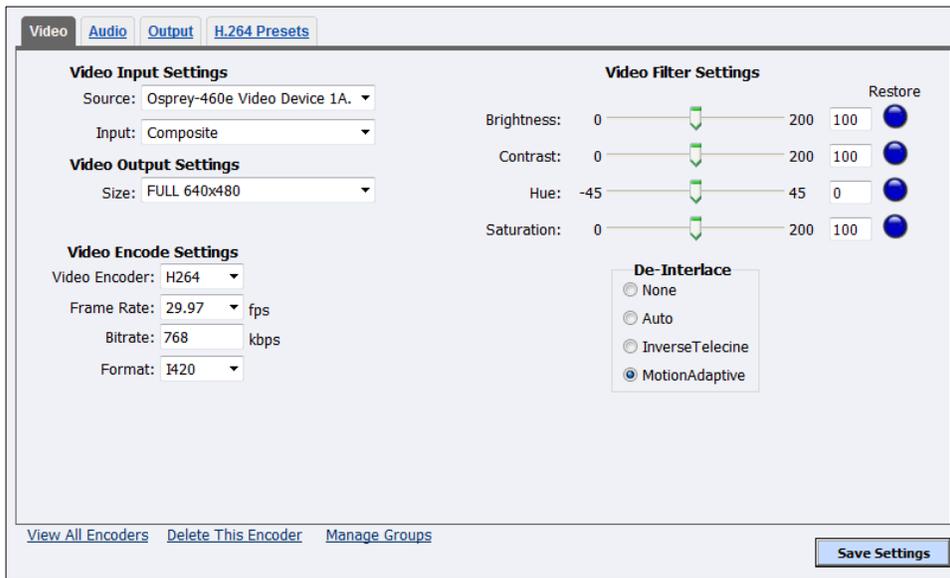
[View All Encoders](#) [Delete This Encoder](#) [Manage Groups](#) [Save Settings](#)

## Video tab

Use the following table to configure the video analog input settings for an MPEG4 encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 76. Video tab**



### To configure video settings:

1. Select the video input **Source** from the drop-down list.

*Note: When SimulStream is enabled, you may use the same input source in another encoding profile. This lets you encode the same audio and video at multiple data rates and multiple formats to provide the best user experience for different viewing audiences.*

2. In the **Input** field, select the video input.

**IMPORTANT!** The video input must match the connectors on the back of the system and your video source.

3. In the **Size** field, select the pre-determined size of the encoded video from the drop-down list. You can also specify a custom size for your video. This customization is useful when you are capturing video to be played on a mobile video-device that requires a non-standard size for compatibility.

When you click **Custom**, two additional fields (Figure 77) appear so you can enter the exact size you want the resulting video to be.

*Note: The size in the **Width** and **Height** fields must be divisible by 2.*

**Figure 77. Custom fields**



**IMPORTANT!** Ensure all of the encoders using the same video Proportion and Size settings also use the same Video and Audio Source settings. For example, all encoders capturing at

*Standard proportion and CIF size are set to Video Device 1.1 while encoders capturing at Standard proportion but QCIF resolution are set to Video Device 1.2.*

- Click the type of **Video Encoder** for Internet video, mobile phones, set top boxes, and create media files for other MPEG-4 compatible devices such as iPods according to the Motion Picture Expert Group (MPEG) types (refer to Table 1 and Table 2).

*IMPORTANT! Choose the container type (MP4, TS, 3GP, and 3G2) on the Output tab.*

If you select MPEG4 from the drop-down list, the MPEG-4 Presets tab displays (see *MPEG-4 Presets tab*). The fields on the Video, Audio, and Output tabs will change depending on the type of video encoder you select.

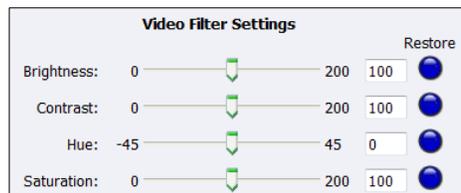
See *TS Container* for steps on streaming to a TS container.

- Enter the frames per second in the **Frame Rate** field.
- Enter the kilobits per second in the **Bitrate** field.
- In the **Format** field, indicate the color space format.

*IMPORTANT! If you specify a video size incompatible with the color space of your source video, the system will automatically correct the size to the closest compatible setting when you click **Save Settings**.*

- Drag the sliders to adjust the **Brightness**, **Contrast**, **Hue**, and **Saturation** (Figure 78).

**Figure 78. Video filter settings**



*Note: Click **Restore** to the right of the filter to reset the settings to the default.*

- Click the **De-Interlace** setting you want to apply (Figure 79). Options include:
  - **None**
    - Performs no de-interlacing of any kind.
  - **Auto**
    - Applies inverse telecine de-interlacing to all telecine video.
    - Applies motion adaptive de-interlacing to all video that is not telecine.
    - Switches dynamically between the two modes as the content changes.
    - Available for NTSC video only.
  - **Inverse Telecine**
    - Drops the redundant fields and reassembles the video in a 24 fps progressive format.
    - Applies inverse telecine de-interlacing to all telecine video.
    - Performs no de-interlacing of video that is not telecine.
    - Available for NTSC video only.
  - **Motion Adaptive**
    - Is an algorithm for de-interlacing pure video (non-telecine) content.
    - Applies motion adaptive interlacing to all video. It detects which portions of the image

are still and which portions are in motion then applies different processing to each scenario.

**Figure 79. De-Interlace settings**



*Note: Telecine and inverse telecine only apply to NTSC video. They are not used for PAL and SECAM video. The system disables **Auto** and **Inverse Telecine** choices when you select either **PAL** or **SECAM** as the video standard.*

11. Click **Save Settings**.

**Table 1. MPEG encoder and container descriptions**

<b>MPEG4 – MP4</b>	MPEG-4 Part 2 is for situations where low bit rate and low resolution are mandated by other conditions of the applications, such as network bandwidth or device size. Examples of video applications for MPEG-4 are cell phones, some low-end video conferencing systems, and surveillance systems. MPEG-4 is important for legacy handheld devices that do not support H.264.
<b>H264 – MP4</b>	H.264, MPEG-4 Part 10, or AVC (Advanced Video Coding) was designed for high data compression while maintaining better quality than its predecessor, H.263. It also addresses a broad range of applications from low bit rate to high bit rate and from low resolution such as cell phones to high resolution such as broadcast.
<b>MPEG-TS</b>	MPEG transport stream is a standard format for transmission and storage of audio, video, and Program and System Information Protocol (PSIP) data. It is used in broadcast systems such as DVB, ATSC and IPTV.
<b>H.264-TS</b>	H.264 encoding provided a MPEG-2 transport stream (TS) container.
<p>The Third Generation Partnership Project (3GPP) defined 3GP as a multimedia container format for use on 3G mobile phones. It stores video streams such as MPEG-4 or H.264 and audio streams such as AAC.</p> <p>This format has two defined standards:</p> <ul style="list-style-type: none"> <li>● 3GPP for GSM-based mobile phones</li> <li>● 3GPP2 for CDMA-based mobile phones</li> </ul> <p>This setting creates an H.263 stream stored in a 3GPP container.</p>	
<b>H264 – 3GP</b>	This setting creates an H.264 stream stored in a 3GP container.
<b>H264 – 3G2</b>	This setting creates an H.264 stream stored in a 3G2 container.
<b>MPEG4 – 3GP</b>	This setting creates an MPEG-4 stream stored in a 3GP container.
<b>MPEG4 – 3G2</b>	This setting creates an MPEG-4 stream stored in a 3G2 container.
<b>H263 – 3GP</b>	This setting creates an H.263 stream stored in a 3GP container.

<b>H263 – 3G2</b>	This setting creates an H.263 stream stored in a 3G2 container.
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**Table 2. Valid output container selections for video encoder types**

Container	H.263 Video	MPEG-4 Video	H.264 Video	MPEG-2
MP4	N/A	✓	✓	
3GP	✓	✓	✓	
3G2	✓	✓	✓	
TS			✓	✓

*IMPORTANT! You must select container type 3GP or 3G2 on the Output tab before video encoder H263 will appear on the Video tab.*

## Audio tab

Use the following table to configure the audio analog input settings for an MPEG4 encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 80. Audio tab**

### To configure audio settings:

1. In the **Source** field, select an audio source from the drop-down list.
2. Select the **Overlay Closed Caption** check box to enable overlay closed captions. Field 1 CC 1 is the default setting.
3. Click the **Audio Format**.
4. Click the **Audio Type**. The drop-down list box provides two choices:
  - **Main** – The same as Low Complexity, but adds backward prediction.
  - **Low Complexity** – The simplest and most widely used and supports AAC audio format.
  - **HE-AAC VI** – Uses spectral band replication (SBR) to enhance the compression efficiency in the frequency domain.
  - **HE-AAC V2** – Enhances the compression efficiency of stereo signals.

*Note: Depending on the player on which the resulting stream will be heard, either choice will use a specific set of tools to encode the audio stream. Make your choice based on the requirement of the playback software or device. The most widely supported format is the Low Complexity profile.*

5. The default **Audio Encoder** is AAC (Advanced Audio Coding) – a standardized, lossy compression and encoding scheme for digital audio. AAC achieves better audio quality than MP3. AAC and MP3 are MPEG standards.
6. Click the **Bitrate**.
7. Drag the sliders to adjust the **Left Volume** and **Right Volume**.
8. (Optional) Select **Mute Audio** to silence audio.
9. Click **Save Settings**.

## Output tab

Use the following table to configure the output analog input settings for an MPEG4 encoder.

*Note: This tab is dynamic depending upon which encoder you select on the Video tab. The choices in the drop-down list may vary.*

**Figure 81. Output tab**

### To configure output settings:

1. Select **Enable Streaming** to stream your audiovisual content via RTSP.
2. Set the appropriate streaming properties.

*Note: The default settings will enable multicast streaming. If you do not want this setting, change the IP address for Group to the IP address of the server to which you want to stream from the encoder.*

3. In the **SDP File** field, enter a name and a destination path for the resulting SDP file created when you start the stream. If you are streaming to a Helix, a QuickTime, or a Darwin server, refer to its respective documentation or online message boards for setup details specific for the individual streaming server.

*Note: You can stream point-to-point by selecting a share destination directory for the saved SDP file. Remember to disable multicasting by entering in the IP address of the PC to which you want to stream.*

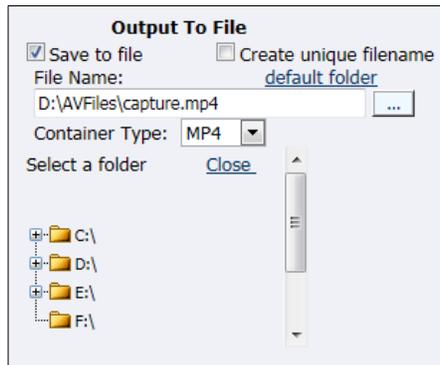
*For example, if you want another PC to view the stream, save the SDP file to a share folder on the local drive. The other PC can open the SDP file and the stream can be played in a QuickTime or other MPEG-4 compatible streaming player. Since MPEG-4 encoding can be CPU intensive, it is not recommended that you view the stream on the same system as the Niagara SCX encoder unless you have a powerful system (dual-core processors or better). Doing so may overtax the host CPU, which will cause video*

*quality degradation and encode session failure.*

4. Select **Save to File** to save the encoded content to a file. Each time you start this encoder, the system overwrites the previous file.
5. Select **Create unique file** to create a file that the system does not overwrite.
6. Accept the default location that displays in the **File Name** field or choose your own location for the file (Figure 82). To choose your own personal location select the link (horizontal ellipses or ... ) to the right of the **File Name** field and display the options.

*Note: By default, the system sets this folder to **D:\AVFiles** with a default file name of **capture.mp4**.*

**Figure 82. Select a folder**



**WARNING!** You can only media files to drive D. Check drive properties for available free space to determine your storage capacity.

*A better practice would be to use the streaming server to save a file or to save it to a remote drive. If you fill all available space, you risk losing your stream during a streaming event.*

7. Click the **Container Type**.
8. Select **Enable Injection** to inject an SDP file onto your server.
9. Enter the username and password.
10. Enter the **Server SDP File Name**.
11. Enter the **Server Port Number**.
12. Click **Save Settings**.

## H.264 Presets tab

Each preset contains properties that you can modify. Use the following table to configure the H.264 presets analog input settings for an MPEG4 encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 83. H.264 Presets tab**

Advanced Encoder Settings

Use this form to optimize the encoder's settings, or select a Custom Preset to use typical settings for your audience.

Custom Presets  
Main Profile Default

Property	Value	Min	Max
<a href="#">Edit</a> BFramesMax		0	4
<a href="#">Edit</a> GopSize		1	4000
<a href="#">Edit</a> GOPSizeMin		1	4000
<a href="#">Edit</a> InLoopDeblockingFilterAlpha		-6	6
<a href="#">Edit</a> InLoopDeblockingFilterBeta		-6	6
<a href="#">Edit</a> LookaheadFrames		0	200
<a href="#">Edit</a> NoiseReduction		0	1500
<a href="#">Edit</a> QuantizerMax		1	51
<a href="#">Edit</a> QuantizerMin		1	51
<a href="#">Edit</a> ReferenceFrames		0	16
<a href="#">Edit</a> SceneChangeDetectThreshold		0	4000
<a href="#">Edit</a> TrellisRDQuantization		0	2

**Note:** Advanced settings affect the Encoder performance and if set incorrectly may lead to abnormal operations. [Restore Defaults](#)

[View All Encoders](#) [Delete This Encoder](#) [Manage Groups](#) [Save Settings](#)

### To configure H.264 presets:

1. Click **Edit** next to the property you want to modify.

*IMPORTANT! These advanced presets affect the way the encoder performs and if set incorrectly may lead to abnormal encoder operations. Refer to the H.264 Presets section for suggested values for the type of video you are streaming.*

2. Change the **Value**.
3. Click **Update**.
4. Click the **Restore Defaults** link at the bottom of the window to return the settings to the default.

*Note: The database has multiple properties for each preset. Clicking **Restore Defaults** for one property will change all properties to the default settings.*

## MPEG-4 Presets tab

Each preset contains properties that you can modify. Use the following table to configure the MPEG-4 presets analog input settings for an MPEG4 encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 84. MPEG-4 Presets tab**

**Advanced Encoder Settings**

Use this form to optimize the encoder's settings, or select a Custom Preset to use typical settings for your audience.

Custom Presets  
Main Profile Default

Property	Value	Min	Max
<a href="#">Edit</a> BFramesMax	0	0	4
<a href="#">Edit</a> GopSize	85	1	4000
<a href="#">Edit</a> GOPSizeMin	25	1	4000
<a href="#">Edit</a> InterlacedDCTComparison	8	0	14
<a href="#">Edit</a> LookaheadFrames	30	0	200
<a href="#">Edit</a> MotionEstimationComparison	0	0	256
<a href="#">Edit</a> MotionEstimationMethod	5	5	10
<a href="#">Edit</a> MotionEstimationPenaltyCompensation	256	0	256
<a href="#">Edit</a> MotionEstimationSubPixelComparison	0	0	256
<a href="#">Edit</a> MpegQuant	0	0	1
<a href="#">Edit</a> QuantizerMax	31	1	51
<a href="#">Edit</a> QuantizerMin	2	1	51

1 2

**Note:** Advanced settings affect the Encoder performance and if set incorrectly may lead to abnormal operations. [Restore Defaults](#)

[View All Encoders](#) [Delete This Encoder](#) [Manage Groups](#)

**Save Settings**

### To configure MPEG-4 presets:

1. Click **Edit** next to the property you want to modify.

*IMPORTANT! These advanced presets affect the way the encoder performs and if set incorrectly may lead to abnormal encoder operations. Refer to the H.264 Presets section for suggested values for the type of video you are streaming.*

2. Change the **Value**.
3. Click **Update**.
4. Click the **Restore Defaults** link at the bottom of the window to return the settings to the default.

*Note: The database has multiple properties for each preset. Clicking **Restore Defaults** for one property will change all properties to the default settings.*

## MPEG-2 Presets tab

Each preset contains properties that you can modify. Use the following table to configure the MPEG-2 presets analog input settings for an MPEG2 encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 85. MPEG-2 Presets tab**

**Advanced Encoder Settings**  
Use this form to optimize the encoder's settings, or select a Custom Preset to use typical settings for your audience. Custom Presets: Main Profile Default

Property	Value	Min	Max
<a href="#">Edit</a> BFramesMax	0	0	4
<a href="#">Edit</a> GopSize	45	1	4000
<a href="#">Edit</a> GOPSizeMin	25	1	4000
<a href="#">Edit</a> InterlacedDCTComparison	8	0	14
<a href="#">Edit</a> LookaheadFrames	30	0	200
<a href="#">Edit</a> MotionEstimationComparison	0	0	256
<a href="#">Edit</a> MotionEstimationMethod	5	5	10
<a href="#">Edit</a> MotionEstimationPenaltyCompensation	256	0	256
<a href="#">Edit</a> MotionEstimationSubPixelComparison	0	0	256
<a href="#">Edit</a> MpegQuant	0	0	1
<a href="#">Edit</a> QuantizerMax	31	1	51
<a href="#">Edit</a> QuantizerMin	2	1	51

1 2

**Note:** Advanced settings affect the Encoder performance and if set incorrectly may lead to abnormal operations. [Restore Defaults](#)

[View All Encoders](#) [Delete This Encoder](#) [Manage Groups](#) [Save Settings](#)

### To configure MPEG-2 presets:

5. Click **Edit** next to the property you want to modify.

*IMPORTANT! These advanced presets affect the way the encoder performs and if set incorrectly may lead to abnormal encoder operations. Refer to the H.264 Presets section for suggested values for the type of video you are streaming.*

6. Change the **Value**.
7. Click **Update**.
8. Click the **Restore Defaults** link at the bottom of the window to return the settings to the default.

*Note: The database has multiple properties for each preset. Clicking **Restore Defaults** for one property will change all properties to the default settings.*

# Microsoft Windows Media encoder with analog inputs

To create an encoder, [Encoders](#) > [All Encoders](#) > [Create New Encoder](#) link > **Encoder Name** field.

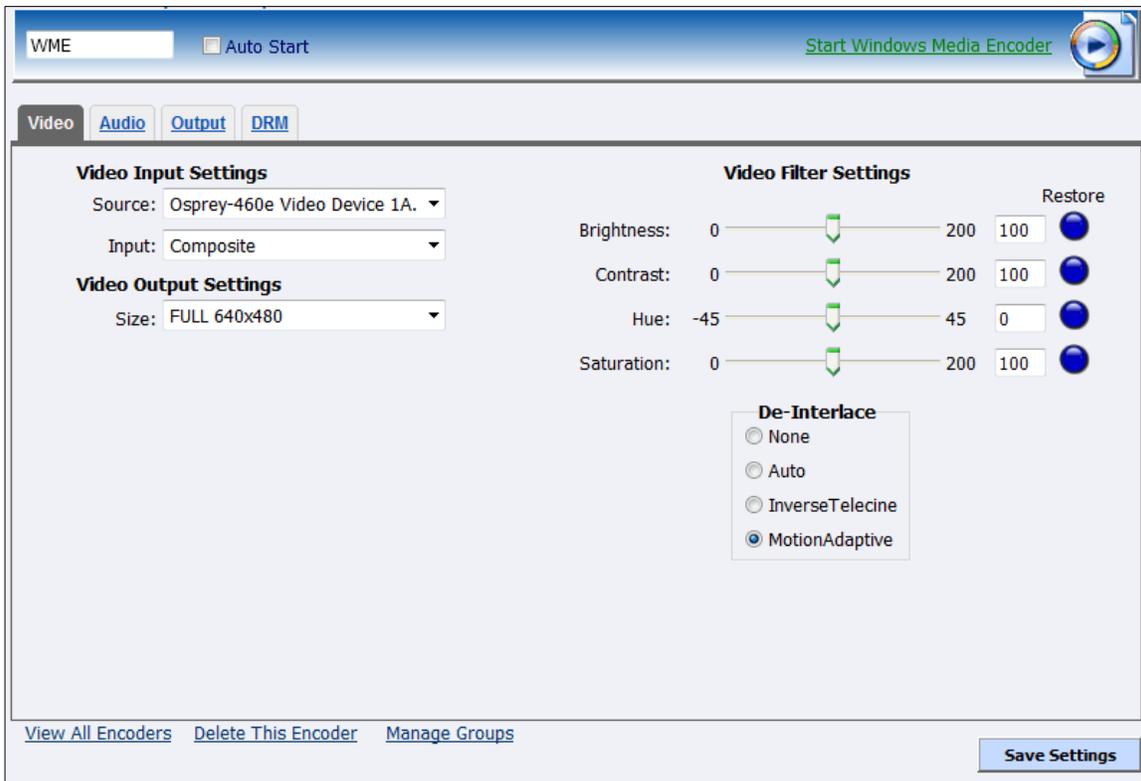
When you create a new encoder, the Encoder Properties window appears. The steps for editing a new encoder or an existing encoder are identical. You must configure the video and audio settings for each encoder type.

Use the Video, Audio, Output, and DRM tabs to edit the settings. Begin with configuring the video and audio settings, then the server and destination settings. The server and destination settings are different for each type of encoder.

From the Encoder Properties window (Figure 86), you can set the encoder to start streaming automatically by selecting the **Auto Start** check box. You can also start an encoder from this window by clicking the **Start Windows Media Encoder** link in the top right corner of the window.

***IMPORTANT!** If you make any changes to the Encoder Properties window, you must click **Save Settings**. Otherwise, all your changes will be lost.*

**Figure 86. Windows Media encoder**

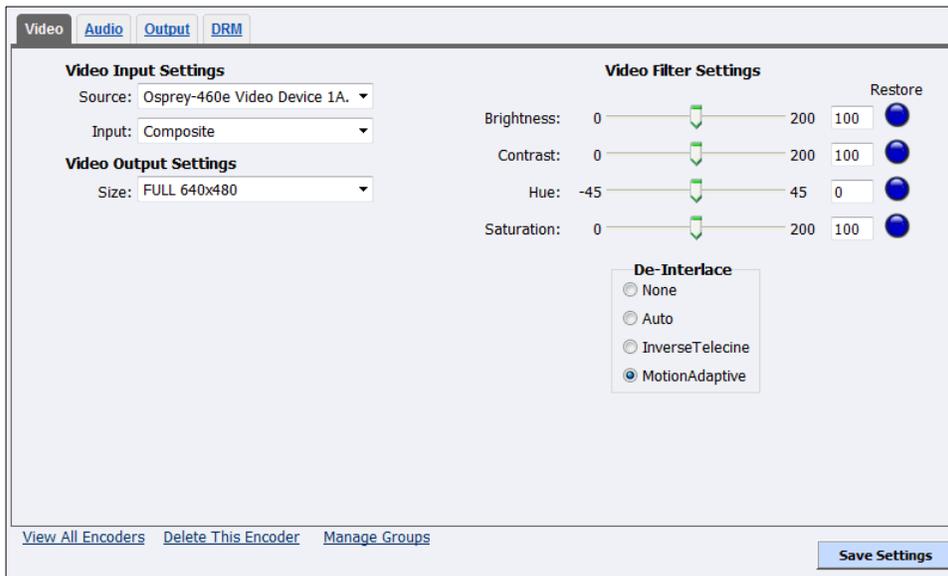


## Video tab

Use the following table to configure the video analog input settings for a Windows Media encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 87. Video tab**



### To configure video settings:

1. Select the video input **Source** from the drop-down list.

*Note: When SimulStream is enabled, you may use the same input source in another encoding profile. This lets you encode the same audio and video at multiple data rates and multiple formats to provide the best user experience for different viewing audiences.*

2. In the **Input** field, select the video input.

**IMPORTANT!** *The video input must match the connectors on the back of the system and your video source.*

3. In the **Size** field, select the pre-determined size of the encoded video from the drop-down list.

You can also specify a custom size for your video. This customization is useful when you are capturing video to be played on a mobile video-device that requires a non-standard size for compatibility.

When you click **Custom**, two additional fields appear so you can enter the exact size you want the resulting video to be (Figure 88).

*Note: The size in the **Width** and **Height** fields must be divisible by 2.*

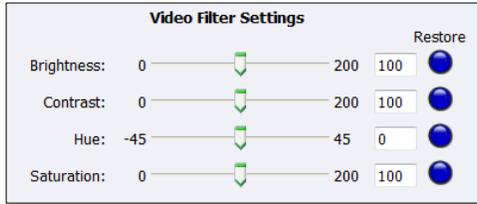
**Figure 88. Custom fields**

**IMPORTANT!** *Ensure all of the encoders using the same video Proportion and Size settings*

also use the same Video and Audio Source settings.

4. Drag the sliders to adjust the **Brightness, Contrast, Hue, and Saturation.**

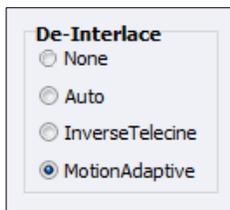
**Figure 89. Video Filter Settings**



*Note: Click **Restore** to the right of each filter to return the setting to the default.*

5. Click the **De-Interlace** settings you want to apply (Figure 90). Options include:
  - **None**
    - Performs no de-interlacing of any kind.
  - **Auto**
    - Applies inverse telecine de-interlacing to all telecine video.
    - Applies motion adaptive de-interlacing to all video that is not telecine.
    - Switches dynamically between the two modes as the content changes.
    - Available for NTSC video only.
  - **InverseTelecine**
    - Drops the redundant fields and reassembles the video in a 24 fps progressive format.
    - Applies inverse telecine de-interlacing to all telecine video.
    - Performs no de-interlacing of video that is not telecine.
    - Available for NTSC video only.
  - **Motion Adaptive**
    - Is an algorithm for de-interlacing pure video (non-telecine) content.
    - Applies motion adaptive interlacing to all video. It detects which portions of the image are still and which portions are in motion then applies different processing to each scenario.

**Figure 90. De-Interlace settings**



*Note: Telecine and inverse telecine only apply to NTSC video. They are not used for PAL and SECAM video. The system disables **Auto** and **Inverse Telecine** choices when you select either **PAL** or **SECAM** as the video standard.*

6. Click **Save Settings.**

## Audio tab

Use the following table to configure the audio analog input settings for a Windows Media encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 91. Audio tab**

### To configure audio settings:

1. In the **Source** field, select an audio source from the drop-down list.
2. Select the **Overlay Closed Caption** check box to enable overlay closed captions. Field 1 CC 1 is the default setting.
3. Select the **Embedded Closed Caption** to embed the closed captions.
4. Drag the slider to adjust the **Left Volume** and **Right Volume**.
5. (Optional) Select **Mute Audio** to silence audio.
6. Click **Save Settings**.

## Output tab

Windows Media is both a storage format and a streaming format. In addition to the ability to output to a file, the Windows Media encoder can stream to a Windows Media Server. The settings for Windows Media encoder include the ability to set parameters for connecting and streaming to the server.

Some Windows Media Capture Profiles have pre-defined video resolutions and input selections. When you select a Windows Media Capture Profile, verify your current video and audio settings have not been modified. If they have been modified, simply change these settings back to their previous settings and click **Save Settings**.

When streaming audio and video, the two methods are pull and push.

### Pull method

In the pull method, the system begins to generate broadcast packets as soon as you start as soon as you start the encoding. However, it does not deliver the broadcast stream until Windows Media Server requests the stream. This method does not provide a secure connection to the server and should only be used if the encoder and server reside within the same network firewall.

To enable clients to pull the stream from the Niagara system, set up a session and begin broadcasting directly from the system. Clients (Windows Media servers or players) can connect to the stream at any time. You can use mms or http scheme with either the IP address or DNS host name. For example:

http://encoding\_computer\_name:port

### Push method

With the push method, the system maintains a secure connection to Windows Media Server. This connection allows it to pass a user name and password to authenticate access to the server.

http://IP\_address:port/publishing point

By default, the system supports up to 50 direct connections during a broadcast, but if you're sending to a lot of clients push to Windows Media Server. Use the pull method for testing. Use the push method for a wide distribution.

*Note: The more direct connections to the system, the more system resources are required. ViewCast does not recommend directly connecting players to the system. Streaming servers should connect to the system and, in turn, players should connect to the servers.*

Use the following table to configure the output analog input settings for a Windows Media encoder.

*Note: The choices in the drop-down list may vary.*

Figure 92. Output tab

**To configure output settings:**

1. Click on a **Windows Media Capture Profile** from the drop-down list.

*Note: When you select **ATT UVERSE PEG** from the drop-down list, the **Pixel Aspect Ratio** field displays (Figure 93). Select the **Pixel Aspect Ratio** from the drop-down list.*

**Figure 93. Pixel Aspect Ratio field**

2. Select **Enable Pull**.
3. Enter a port number that the server will use to pull the stream from the Niagara system.
4. Select **Enable Push**.

*IMPORTANT! Be sure to enter a port number not already assigned to another encoder. If two encoders attempt to use the same port number, one or both encoders will fail to start.*

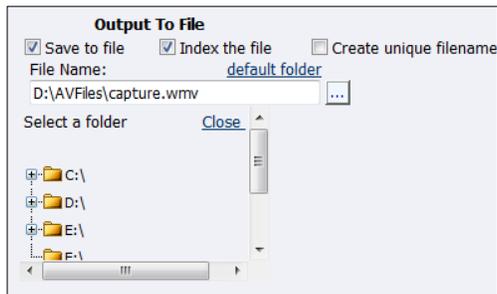
5. Enter a port number that the server will use to push the stream from the Niagara system.
6. Enter the **Server** name or IP address.
7. Enter the **Alias**.

*Note: This field is optional.*

8. Enter the **User Name**.

9. Enter the **Password**.
10. Select **Enable Scripting** to embed closed captions.  
*Note: If closed captions is enabled through the Osprey driver, you cannot enable scripting.*
11. You can either:
  - Select **Save to File** to save the encoded content to a file. Each time you start this encoder, the system overwrites the previous file.
  - Select **Index the file** to drag the slider to any point in your video capture.
  - Select **Create unique file** to create a file that the system does not overwrite.
12. Accept the default location that displays in the **File Name** field or choose your own location for the file. To choose your own personal location select the link (horizontal ellipses or ... ) to the right of the **File Name** field and display the options (Figure 94).  
*Note: By default, the system sets this folder to D:\AVFiles with a default file name of capture.wmv.*

**Figure 94. Select a folder**



**WARNING!** You can only save media files to drive D. Check drive properties for available free space to determine your storage capacity.

*A better practice would be to use the streaming server to save a file or to save it to a remote drive. If you fill all available space, you risk losing your stream during a streaming event.*

13. Click **Save Settings**.

## DRM tab

You can protect your content using a technology called Digital Rights Management (DRM). Niagara SCX allows you to encrypt your content with DRM technology while you are encoding. You can apply DRM while encoding to a file and when broadcasting a stream. Users are required to obtain a license to play to content. This license contains the key to unlock the content and the rights that govern its use (Figure 95).

Refer to *Appendix A: DRM for Windows Media* on how to set up and import a DRM profile.

Use the following table to configure the DRM analog input settings for a Windows Media encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 95. DRM tab**

The screenshot shows the DRM Settings interface. At the top, there are four tabs: Video, Audio, Output, and DRM. The DRM tab is selected. Below the tabs, the 'DRM Settings' section includes an 'Enable DRM' checkbox, a 'Profile' dropdown menu (currently set to 'None'), and fields for 'Description' (None) and 'Key' (N/A). A note below these fields reads: 'Note: Changing the capture profile may change the current video height/width settings as well as the audio/video input capture selection.' At the bottom of the interface, there are three links: 'View All Encoders', 'Delete This Encoder', and 'Manage Groups', and a 'Save Settings' button.

### To configure DRM settings:

1. Select **Enable DRM**.
2. Click the **DRM Profile** you wish to apply from the drop-down list.

*Note: When you enable DRM, Niagara SCX automatically changes the **Windows Media Capture Profile** setting to a **DRM-compatible Windows Media 9** setting. You may need to adjust this setting after you enable DRM.*

3. Click **Save Settings**.



## ***Digital Inputs***

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The Niagara system includes a web interface, which allows you to access the advanced system settings. The web interface also provides detailed settings and controls over the encoder profiles installed on the Niagara system.

The web interface works with any computer that has a current web browser (Internet Explorer and Firefox), including Windows®, Macintosh®, and Linux® machines. For the best user experience, ViewCast recommends Internet Explorer. The system must reside either on a shared IP network with the computer or directly connected to a Microsoft® Windows computer using an Ethernet cable (RJ45).

# Adaptive Apple HTTP encoder with digital inputs

To create an adaptive encoder, **Encoders** > **All Encoders** > **Create New Encoder** link > **Encoder Name** field > **Publisher** drop-down list.

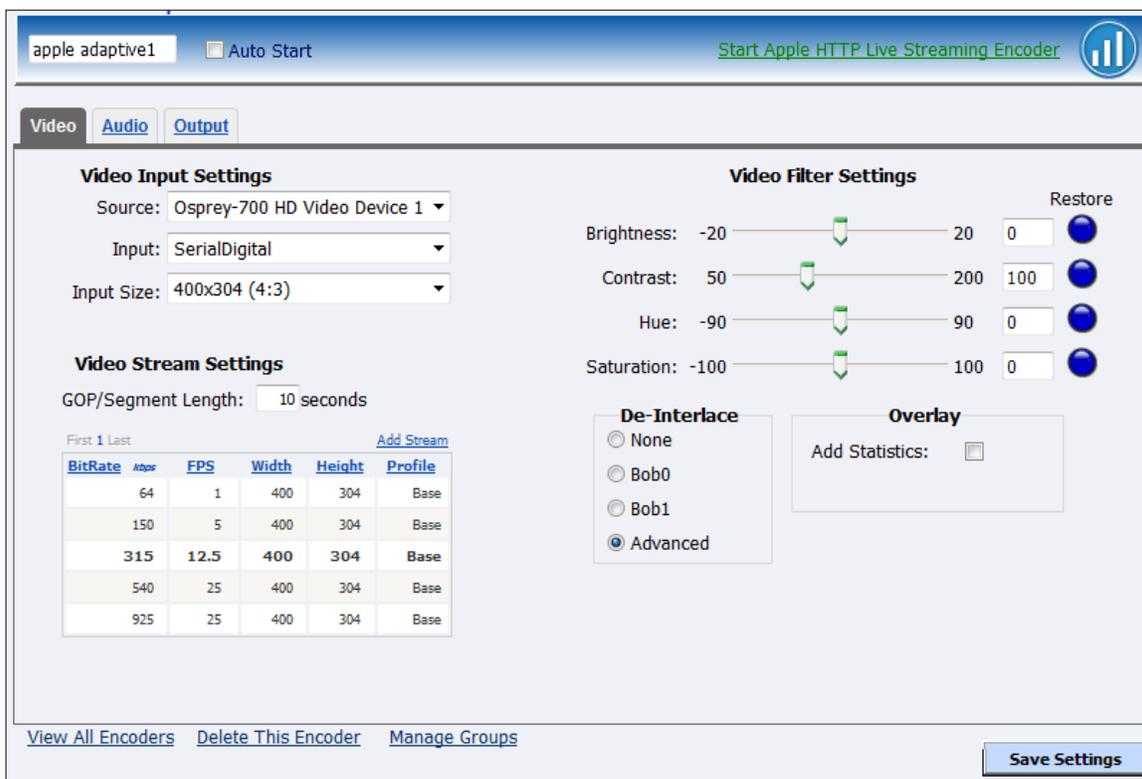
When you create a new encoder, the Encoder Properties window appears. The steps for editing a new encoder or an existing encoder are identical. You must configure the video and audio settings for each encoder type.

Use the Video, Audio, and Output tabs to edit the settings. Begin with configuring the video and audio settings, then the server and destination settings. The server and destination settings are different for each type of encoder.

From the Adaptive Encoder Properties window (Figure 96), you can set the encoder to start streaming automatically by selecting the **Auto Start** check box. You can also start an encoder from this window by clicking the **Start Apple HTTP Live Streaming Encoder** link in the top right corner of the window.

***IMPORTANT!** If you make any changes to the Encoder Properties window, you must click **Save Settings**. Otherwise, all your changes will be lost.*

**Figure 96. Adaptive Apple HTTP Live streaming encoder**

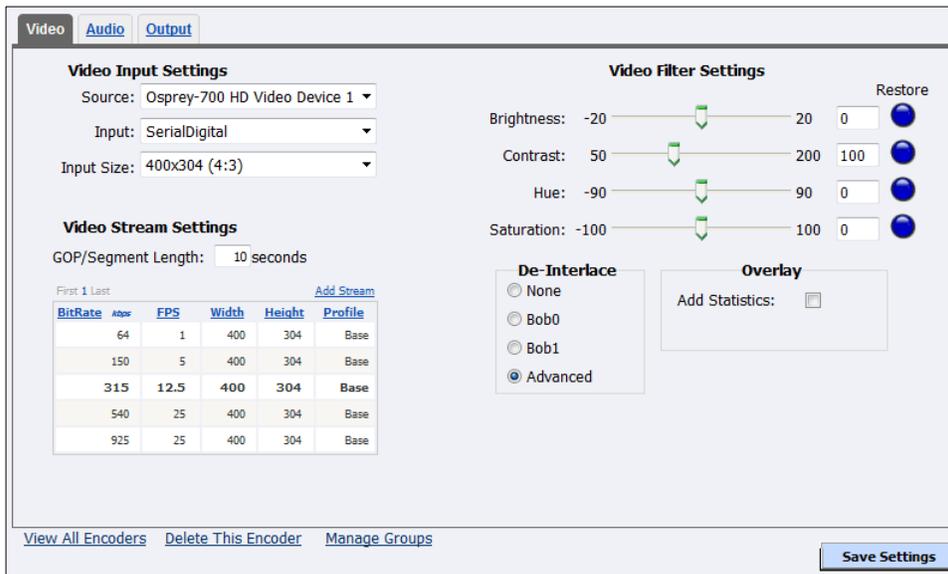


## Video tab

Use the following table to configure the video digital input settings for an Adaptive Apple HTTP encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 97. Video tab**



### To configure video settings:

1. Select the video input **Source** from the drop-down list.
2. The Input field setting is **SerialDigital**.

*IMPORTANT! The video input must match the connectors on the back of the system and your video source.*

3. In the **Input Size** field, select the pixel size of the encoded video from the pre-determined sizes in the drop-down list.

You can also specify a custom size for your video. This customization is useful when you are capturing video to be played on a mobile video device that requires a non-standard size for compatibility.

When you click **Custom**, two additional fields appear so you can enter the exact size you want the resulting video to be (Figure 98).

*Note: The size in the **Width** and **Height** fields must be divisible by 2.*

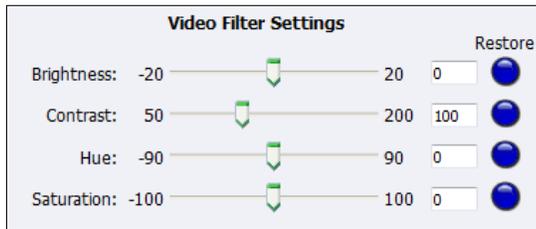
**Figure 98. Custom fields**

The screenshot shows the 'Input Size' dropdown menu with 'CUSTOM' selected. Below the dropdown are two input fields: 'Width:' and 'Height:'.

4. Enter the seconds for the **GOP/Segment Length**.
5. In the adaptive encoder video stream table, indicate which stream the player will use first (see *Adaptive encoder video stream table*).

6. Drag the sliders to adjust the **Brightness**, **Contrast**, **Hue**, and **Saturation** (Figure 99).

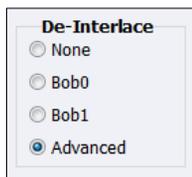
**Figure 99. Video Filter Settings**



*Note: Click **Restore** to the right of the filter to reset the settings to the default.*

7. Click the **De-Interlace** setting you want to apply (Figure 100). Options include:
  - **None**
    - Performs no de-interlacing of any kind.
  - **Bob0**
    - Applies inverse telecine de-interlacing to all telecine video.
    - Applies motion adaptive de-interlacing to all video that is not telecine.
    - Switches dynamically between the two modes as the content changes.
    - Available for NTSC video only.
  - **Bob1**
    - Drops the redundant fields and reassembles the video in a 24 fps progressive format.
    - Applies inverse telecine de-interlacing to all telecine video.
    - Performs no de-interlacing of video that is not telecine.
    - Available for NTSC video only.
  - **Advanced**
    - Is an algorithm for de-interlacing pure video (non-telecine) content.
    - Applies motion adaptive interlacing to all video. It detects which portions of the image are still and which portions are in motion then applies different processing to each scenario.

**Figure 100. De-Interlace settings**



*Note: Telecine and inverse telecine only apply to NTSC video. They are not used for PAL and SECAM video. The system disables **Bob0** and **Bob1** choices when you select either **PAL** or **SECAM** as the video standard.*

8. Select **Add Statistics** to overlay video statistics within the video stream for diagnostic purposes.
9. Click **Save Settings**.

## Adaptive encoder video stream table

The adaptive encoder video stream table (Figure 101) contains five default streams. You can add a new stream, edit, delete, disable, and set which stream the player will use first. You can sort each column by clicking on the column heading.

The system validates the stream settings according to the capabilities of your Niagara system.

**Figure 101. Adaptive encoder video stream table**

BitRate	FPS	Width	Height	Profile
64	1	400	304	Base
150	5	400	304	Base
315	12.5	400	304	Base
540	25	400	304	Base
925	25	400	304	Base

<b>A.</b>	The table displays five streams at a time. Additional streams display on additional pages. Click the page number to display the streams on that page. You can also click <b>First</b> to go to the first page or click <b>Last</b> to go to the last page.
<b>B.</b>	Click this link to add a stream. <i>Note: All streams must have a width less than or equal to 0. All streams must have a height less than or equal to 0.</i>
<b>C.</b>	The bit rate displays in kilobits per second. This field can only contain whole numbers. <i>Note: Two streams at the same bit rate cannot run simultaneously.</i>
<b>D.</b>	Displays the frames per second. You can enter up to two decimal places.
<b>E.</b>	Displays the width of the picture frame in the stream.
<b>F.</b>	Displays the height of the picture frame in the stream.
<b>G.</b>	The profile field has two settings: <ul style="list-style-type: none"> <li>• Base – This profile is typically for video conferencing and mobile applications and has the lowest demands on CPU load and memory usage, but lowest resulting quality.</li> <li>• Main – This profile is targeted at standard-definition TV. This profile is not acceptable for streaming to iPhone mobile devices.</li> </ul>

When you hover your cursor over a stream setting, additional functions display (Figure 102).

**Figure 102. Additional functions**

The screenshot shows a table with the following data:

BitRate	FPS	Width	Height	Profile
64	1	400	304	Base
150	5	400	304	Base
<b>315</b>	<b>12.5</b>	<b>400</b>	<b>304</b>	<b>Base</b>
540	25	400	304	Base
925	25	400	304	Base

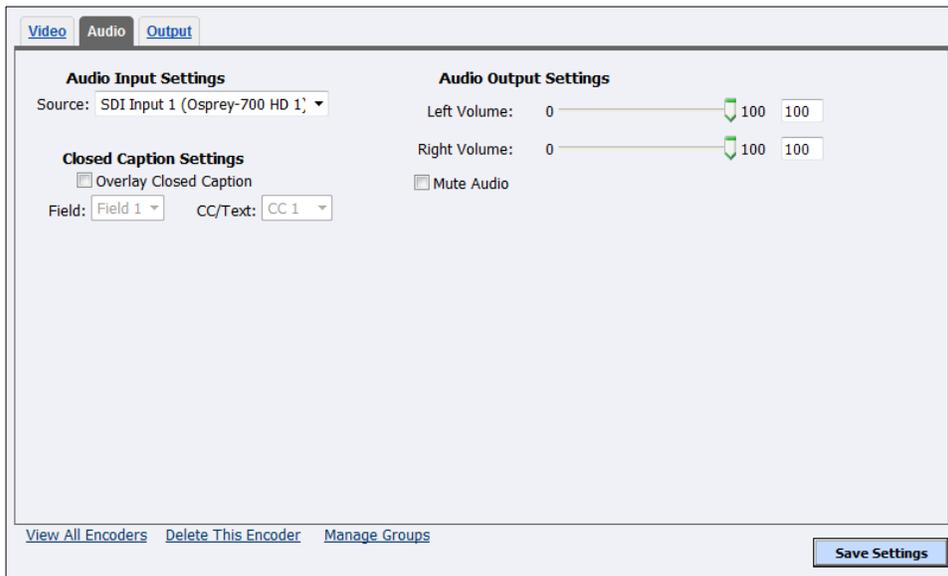
<b>Edit</b>	Click this link to change the settings for a particular stream. Click <b>Update</b> to accept the changes. <i>Note: Click <b>Cancel</b> to stop this action.</i>
<b>Del</b>	Click this link to delete the stream.
<b>Disable</b>	Click this link to disable this stream. The settings are still visible but appear to be “crossed out.”
<b>Initial</b>	Click this link to have the player use this stream first. The settings for the initial stream appear in bold.

## Audio tab

Use the following table to configure the audio digital input settings for an Adaptive Apple HTTP encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 103. Audio tab**



### To configure audio settings:

1. Select the video input **Source** from the drop-down list.
2. Select the **Overlay Closed Caption** check box to enable overlay closed captions. Field 1 CC1 is the default.
2. Drag the sliders to adjust the **Left Volume** and **Right Volume**.
3. (Optional) Select **Mute Audio** to silence the audio.
4. Click **Save Settings**.

## Output tab

Use the following table to configure the output digital input settings for an Adaptive Apple encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 104. Output tab**

### To configure output settings:

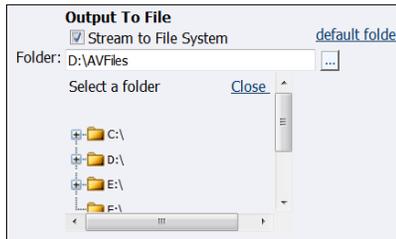
1. Select **Stream to Network Host**.  
*CAUTION! Simultaneously publishing to server and file system increases CPU usage.*
2. Select the **Host Address**:
  - http://
  - ftp://

*Note: When you select **ftp://**, the **Passive FTP Mode** displays. Select this field to use passive FTP mode or clear this field to use active FTP mode.*
3. Enter the address in the next field.
4. Indicate the maximum **HTTP Cache** by dragging the slider for the number of files to maintain.  
*Note: The **Stream Path** that displays is a combination of the Host Address, Subfolder, and Filename.*
5. Select **Create unique folder** to create a file that the system does not overwrite.  
*Note: The format is Subfolder\_YYMMDD\_HHMMSS.*
6. Enter the name of the **Subfolder** used in the network destination and/or the local file system full filename.
7. Enter the name of the variant playlist file in the **Filename** field.
8. Enter the **Number of Segments Per Folder**.
9. Select **Stream to File System** to enable archiving content to the file system.

10. Accept the default location that displays in the **Folder** field or choose your own location for the file (Figure 105). To choose your own personal location select the link (horizontal ellipses or ...) to the right of the **Folder** field to display the options.

*Note: By default, the system sets this folder to D:\AVFiles. See Connecting an external storage device for instructions on saving video files to a USB storage device.*

**Figure 105. Select a folder**



**WARNING!** You can only save media files to drive D. Check drive properties for available free space to determine your storage capacity.

*A better practice would be to use the streaming server to save a file or to save it to a remote drive. If you fill all available space, you risk losing your stream during a streaming event.*

*Note: The **File System** that displays is a combination of the **Folder**, **Subfolder**, and **Filename**.*

11. Select Allow client to cache content.
12. Select **Encrypt Media Segment Files** to protect the content.
13. Select the **Key File**.

*Note: **http://** is currently the only choice.*

14. Enter the **URL**.
15. Enter the user authentication **Type**. If the host address is:

- **http://** the selections are None and Akamai.

*Note: If you select Akamai, you must set the time zone according to where the Niagara 9100 is located. To change the time zone:*

1. Right click on the time in the system tray.
2. Click on **Adjust Date/Time**.
3. In the Date and Time window, click **Change time zone**
4. Click on the appropriate time zone from the drop-down list and click **OK**.
5. Click **Change date and time**.
6. In the Date and Time Settings window, enter the current time and click **OK**. The time must be as exact as possible.

- **ftp://** the selections are None or ftp.

16. Enter the **Username**.
17. Enter the **Password**.
18. Click **Save Settings**.

# Adaptive Adobe Flash encoder with digital inputs

To create an adaptive encoder, **Encoders** > **All Encoders** > **Create New Encoder** link > **Encoder Name** field > **Publisher** drop-down list.

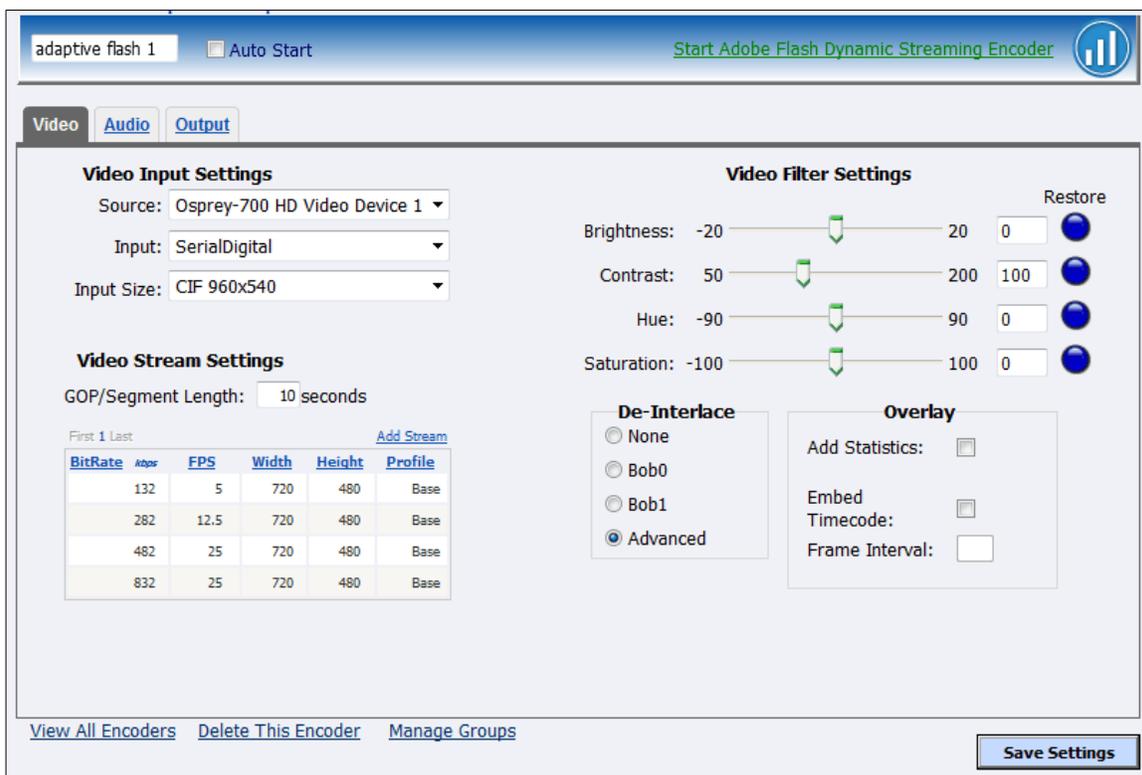
When you create a new encoder, the Encoder Properties window appears. The steps for editing a new encoder or an existing encoder are identical. You must configure the audio and video settings for each encoder type.

Use the Video, Audio, and Output tabs to edit the settings. Begin with configuring the video and audio settings, then the streaming properties. The server settings are different for each type of encoder.

From the Adaptive Adobe Flash Encoder Properties window (Figure 106), you can set the encoder to start streaming automatically by clicking the **Auto Start** check box. You can also start the encoder from this window by clicking the **Start Adobe Flash Dynamic Streaming Encoder** link in the top right corner of the window.

***IMPORTANT!** If you make any changes to the Encoder Properties window, you must click **Save Settings**. Otherwise, all your changes will be lost.*

**Figure 106. Adaptive Flash encoder**

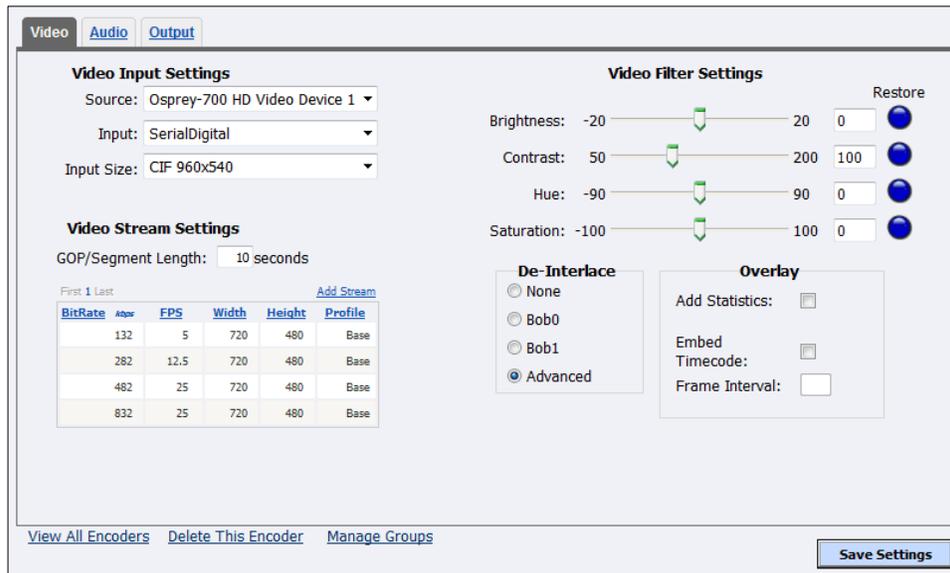


## Video tab

Use the following table to configure the video digital input settings for an Adaptive Adobe Flash encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 107. Video tab**



### To configure video settings:

1. Select the video input **Source** from the drop-down list.
2. In the **Input** field, the video input is **SerialDigital**.
3. In the **Input Size** field, select the pixel size of the encoded video from the pre-determined sizes in the drop-down list.

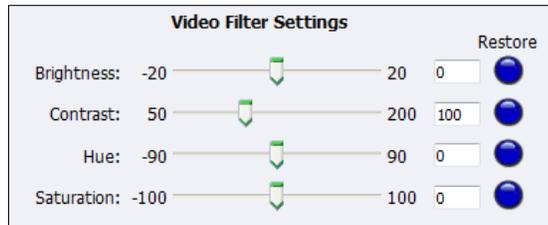
You can also specify a custom size for your video. This customization is useful when you are capturing video to be played on a mobile video-device that requires a non-standard size for compatibility.

When you click **Custom**, two additional fields appear so you can enter the exact size you want the resulting video to be (Figure 108).

**Figure 108. Custom fields**

4. Select the **Frame Rate** from the drop-down list.
5. Drag the sliders to adjust the **Brightness**, **Contrast**, **Hue**, and **Saturation** (Figure 109).

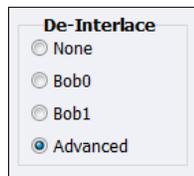
**Figure 109. Video Filter Settings**



*Note: Click the **Restore** button to the right of the filter to reset the settings to the default.*

6. Click the **De-Interlace** setting you want to apply (Figure 110). Options include:
  - **None**
    - Performs no de-interlacing of any kind.
  - **Bob0**
    - Applies inverse telecine de-interlacing to all telecine video.
    - Applies motion adaptive de-interlacing to all video that is not telecine.
    - Switches dynamically between the two modes as the content changes.
    - Available for NTSC video only.
  - **Bob1**
    - Drops the redundant fields and reassembles the video in a 24 fps progressive format.
    - Applies inverse telecine de-interlacing to all telecine video.
    - Performs no de-interlacing of video that is not telecine.
    - Available for NTSC video only.
  - **MotionAdaptive**
    - Is an algorithm for de-interlacing pure video (non-telecine) content.
    - Applies motion adaptive interlacing to all video. It detects which portions of the image are still and which portions are in motion. It then applies different processing to each scenario.

**Figure 110. De-Interlace settings**



*Note: Telecine and inverse telecine only apply to NTSC video. They are not used for PAL and SECAM video. The system disables **Bob0** and **Bob1** choices when you select either PAL or SECAM as the video standard.*

7. Click **Save Settings**.

## Adaptive encoder video stream table

The adaptive encoder video stream table (Figure 111) contains four default streams. You can add a new stream, edit, delete, and disable. You can sort each column by clicking on the column heading.

The system validates the stream settings according to the capabilities of your Niagara system.

**Figure 111. Adaptive encoder video stream table**

BitRate	FPS	Width	Height	Profile
132	5	720	480	Base
282	12.5	720	480	Base
482	25	720	480	Base
832	25	720	480	Base

<b>A.</b>	The table displays five streams at a time. Additional streams display on additional pages. Click the page number to display the streams on that page. You can also click <b>First</b> to go to the first page or click <b>Last</b> to go to the last page.
<b>B.</b>	Click this link to add a stream.
<b>C.</b>	The bit rate displays in kilobits per second. This field can only contain whole numbers. <i>Note: Two streams at the same bit rate cannot run simultaneously.</i>
<b>D.</b>	Displays the frames per second. You can enter up to two decimal places.
<b>E.</b>	Displays the width of the picture frame in the stream.
<b>F.</b>	Displays the height of the picture frame in the stream.
<b>G.</b>	The profile field has two settings: <ul style="list-style-type: none"> <li>• Base – This profile is typically for video conferencing and mobile applications and has the lowest demands on CPU load and memory usage, but lowest resulting quality.</li> <li>• Main – This profile is targeted at standard-definition TV.</li> </ul>

When you hover your cursor over a stream setting, additional functions display (Figure 112).

**Figure 112. Additional functions**

First 1 Last		<a href="#">Add Stream</a>		
<a href="#">Edit</a>	<a href="#">Del</a>	<a href="#">Disable</a>		
BitRate	FPS	Width	Height	Profile
132	5	720	480	Base
282	12.5	720	480	Base
482	25	720	480	Base
832	25	720	480	Base

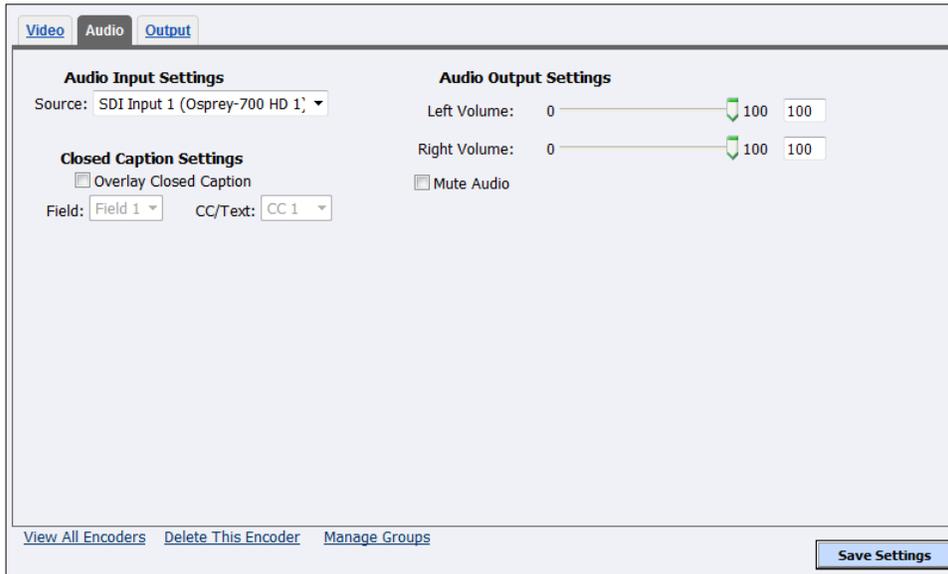
<b>Edit</b>	Click this link to change the settings for a particular stream. Click <b>Update</b> to accept the changes. <i>Note: Click <b>Cancel</b> to stop this action.</i>
<b>Del</b>	Click this link to delete the stream.
<b>Disable</b>	Click this link to disable this stream. The settings are still visible but appear to be “crossed out.”

## Audio tab

Use the following table to configure the audio digital input settings for an Adaptive Adobe Flash encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 113. Audio tab**



### To configure audio settings:

1. In the **Source** field, select an audio source from the drop-down list.

*IMPORTANT! The audio input must match the connectors on the back of the system and your audio source.*

2. Select the **Overlay Closed Caption** check box to enable overlay closed captions. Field 1 CC 1 is the default setting.
3. Drag the slider to adjust the **Left Volume** and **Right Volume**.
4. (Optional) Select **Mute Audio** to silence the audio.
5. Click **Save Settings**.

## Output tab

Use the following table to configure the output digital input settings for an Adaptive Adobe Flash encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 114. Output tab**

### To configure output settings:

1. Select **Stream to Flash Media Server**.
2. Enter the destination **FMS Address**.

*Note: The Stream Path that displays is a combination of the FMS (Flash Media Server) address and the stream name.*

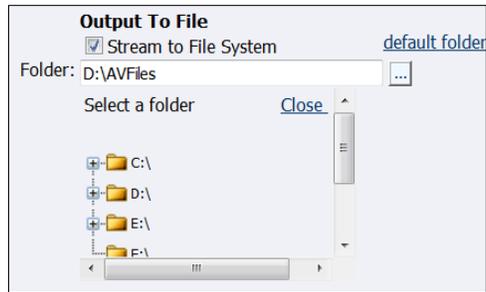
3. Enter the **Stream Name**.

*Note: The system accepts the %v parameter for video bitrate, %i for indexing, and %b for overall bitrate, which is compatible with Adobe Flash media encoder.*

4. Select **Stream to File System** to enable archiving content to the file system.
5. Accept the default location that displays in the **Folder** field or choose your own location for the file. To choose your own personal location select the link (horizontal ellipses or ...) to the right of the Folder field and display the options (Figure 115).

*Note: By default, the system sets this folder to D:\AVFiles. See Connecting an external storage device for instructions on saving video files to a USB storage device.*

**Figure 115. Select a folder**



**WARNING!** You can only save media files to drive D. Check drive properties for available free space to determine your storage capacity.

*A better practice would be to use a Flash Media server to save a file or to save it to a remote drive. If you fill all available space, you risk losing your stream during a streaming event.*

6. Select **Create Unique file**.

7. Enter the **Filename**.

*Note: The File System that displays is a combination of the Folder and Filename.*

8. Select the user authentication **Type**:

- None
- Adobe
- Akamai
- Limelight

9. Enter the **Username**.

*Note: You can enter a maximum of 80 characters.*

10. Enter the **Password**.

*Note: You can enter a maximum of 20 characters.*

11. Click **Save Settings**.

# Adaptive Microsoft Smooth Streaming encoder with digital inputs

To create an adaptive encoder, **Encoders** > **All Encoders** > **Create New Encoder** link > **Encoder Name** field > **Publisher** drop-down list.

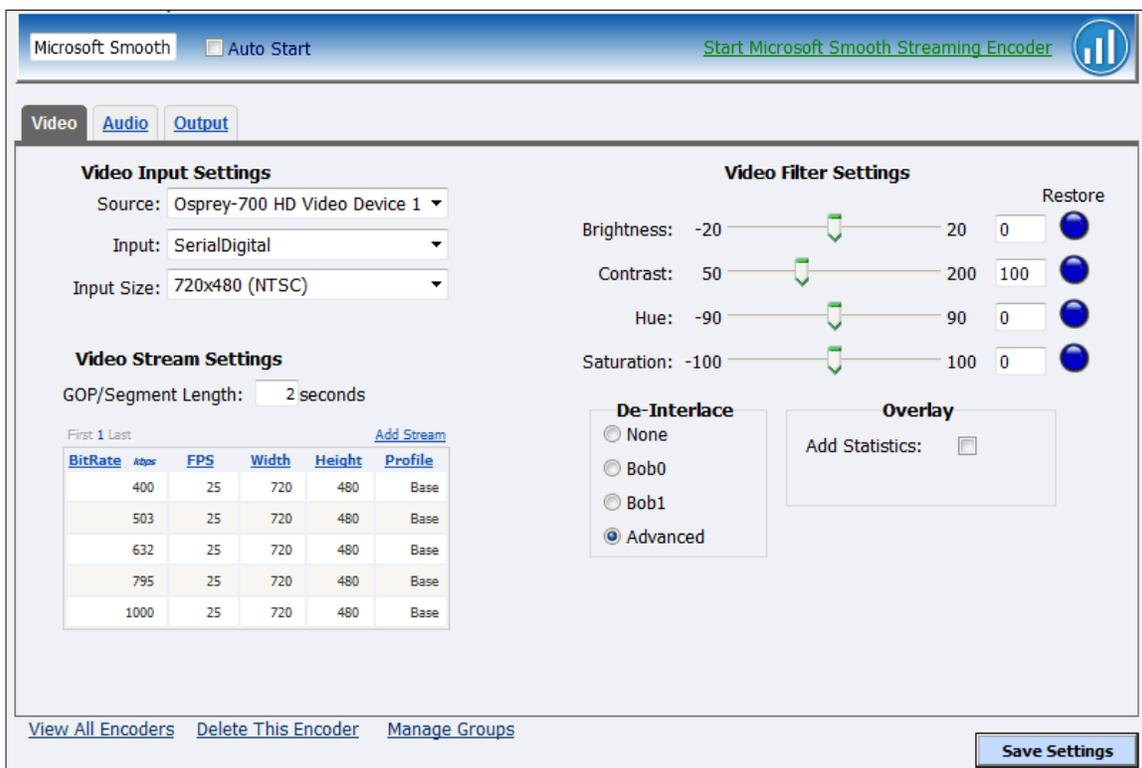
When you create a new encoder, the Encoder Properties window appears. The steps for editing a new encoder or an existing encoder are identical. You must configure the video and audio settings for each encoder type.

Use the Video, Audio, and Output tabs to edit the settings. Begin with configuring the video and audio settings, then the server and destination settings. The server and destination settings are different for each type of encoder.

From the Encoder Properties window (Figure 116), you can set the encoder to start streaming automatically by selecting the **Auto Start** check box. You can also start an encoder from this window by clicking the **Start Microsoft Smooth Streaming Encoder** link in the top right corner of the window.

*IMPORTANT! If you make any changes to the Encoder Properties window, you must click **Save Settings**. Otherwise, all your changes will be lost.*

**Figure 116. Smooth Streaming encoder**



## Video tab

Use the following table to configure the video digital input settings for an Adaptive Microsoft Smooth Streaming encoder.

*Note: The choices in the drop-down lists may vary.*

**Figure 117. Video tab**

The screenshot shows the 'Video' tab of a configuration interface. It is divided into several sections:

- Video Input Settings:** Source: Osprey-700 HD Video Device 1, Input: SerialDigital, Input Size: 720x480 (NTSC).
- Video Filter Settings:** Brightness: -20 to 20, Contrast: 50 to 200, Hue: -90 to 90, Saturation: -100 to 100. Includes a 'Restore' button.
- Video Stream Settings:** GOP/Segment Length: 2 seconds. A table with columns: BitRate, FPS, Width, Height, Profile.
- De-Interlace:** Radio buttons for None, Bob0, Bob1, and Advanced (selected).
- Overlay:** Add Statistics checkbox.

BitRate	FPS	Width	Height	Profile
400	25	720	480	Base
503	25	720	480	Base
632	25	720	480	Base
795	25	720	480	Base
1000	25	720	480	Base

### To configure video settings:

1. Select the video input **Source** from the drop-down list.
2. In the **Input** field, select the video input.

*IMPORTANT! The video input must match the connectors on the back of the system and your video source.*

3. In the **Input Size** field, select the pixel size of the encoded video from the pre-determined sizes.

You can specify a custom size for your video. When you click **Custom**, two additional fields appear so you can enter the exact size you want the resulting video to be (Figure 118).

*Note: The size in the **Width** and **Height** fields must be divisible by 2.*

**Figure 118. Custom fields**

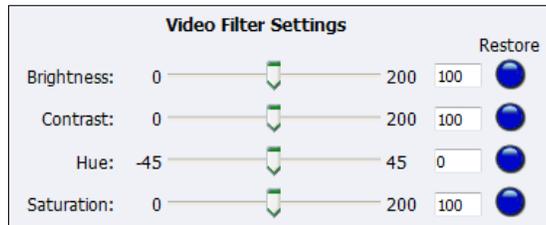
The screenshot shows the 'Input Size' dropdown menu set to 'CUSTOM'. Below it are two input fields labeled 'Width:' and 'Height:'.

4. Enter the seconds for the **GOP/Segment Length**.
5. In the adaptive encoder video stream table, indicate which stream the player will use first (see

Adaptive encoder video stream table Adaptive encoder video stream table).

6. Drag the sliders to adjust the **Brightness**, **Contrast**, **Hue**, and **Saturation** (Figure 119).

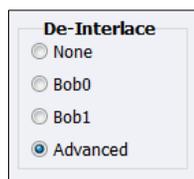
**Figure 119. Video Filter Settings**



*Note: Click **Restore** to the right of the filter to reset the settings to the default.*

7. Click the **De-Interlace** setting you want to apply (Figure 120). Options include:
  - **None**
    - Performs no de-interlacing of any kind.
  - **Bob0**
    - Applies inverse telecine de-interlacing to all telecine video.
    - Applies motion adaptive de-interlacing to all video that is not telecine.
    - Switches dynamically between the two modes as the content changes.
    - Available for NTSC video only.
  - **Bob1**
    - Drops the redundant fields and reassembles the video in a 24 fps progressive format.
    - Applies inverse telecine de-interlacing to all telecine video.
    - Performs no de-interlacing of video that is not telecine.
    - Available for NTSC video only.
  - **Advanced**
    - Is an algorithm for de-interlacing pure video (non-telecine) content.
    - Applies motion adaptive interlacing to all video. It detects which portions of the image are still and which portions are in motion then applies different processing to each scenario.

**Figure 120. De-Interlace settings**



*Note: Telecine and inverse telecine only apply to NTSC video. They are not used for PAL and SECAM video. The system disables **Bob0** and **Bob1** choices when you select either **PAL** or **SECAM** as the video standard.*

8. Select **Add Statistics** to overlay video statistics within the video stream for diagnostic purposes.
9. Click **Save Settings**.

## Adaptive encoder video stream table

The adaptive encoder video stream table (Figure 121) contains five default streams. You can add a new stream, edit, delete, disable, and set which stream the player will use first. You can sort each column by clicking on the column heading.

The system validates the stream settings according to the capabilities of your Niagara system.

**Figure 121. Adaptive encoder video stream table**

BitRate	FPS	Width	Height	Profile
400	25	720	480	Base
503	25	720	480	Base
632	25	720	480	Base
795	25	720	480	Base
1000	25	720	480	Base

<b>A.</b>	The table displays five streams at a time. Additional streams display on additional pages. Click the page number to display the streams on that page. You can also click <b>First</b> to go to the first page or click <b>Last</b> to go to the last page.
<b>B.</b>	Click this link to add a stream.
<b>C.</b>	The bit rate displays in kilobits per second. This field can only contain whole numbers. <i>Note: Two streams at the same bit rate cannot run simultaneously.</i>
<b>D.</b>	Displays the frames per second. You can enter up to two decimal places.
<b>E.</b>	Displays the width of the picture frame in the stream.
<b>F.</b>	Displays the height of the picture frame in the stream.
<b>G.</b>	The profile field has two settings: <ul style="list-style-type: none"> <li>• Base – This profile is typically for video conferencing and mobile applications and has the lowest demands on CPU load and memory usage, but lowest resulting quality.</li> <li>• Main – This profile is targeted at standard-definition TV.</li> </ul>

When you hover your cursor over a stream setting, additional functions display (Figure 122).

**Figure 122. Additional functions**

		First	1	Last			<a href="#">Add Stream</a>	
<a href="#">Edit</a>	<a href="#">Del</a>	<a href="#">Disable</a>	<a href="#">BitRate</a>	<a href="#">Kbps</a>	<a href="#">FPS</a>	<a href="#">Width</a>	<a href="#">Height</a>	<a href="#">Profile</a>
			400	25	960	540	Base	
			503	25	960	540	Base	
			632	25	960	540	Base	
			795	25	960	540	Base	
			1000	25	960	540	Base	

<b>Edit</b>	Click this link to change the settings for a particular stream. Click <b>Update</b> to accept the changes. <i>Note: Click <b>Cancel</b> to stop this action.</i>
<b>Del</b>	Click this link to delete the stream.
<b>Disable</b>	Click this link to disable this stream. The settings are still visible but appear to be "crossed out."

## Audio tab

Use the following table to configure the audio digital input settings for an Adaptive Microsoft Smooth Streaming encoder.

*Note: The choices in the drop-down lists may vary.*

**Figure 123. Audio tab**

### To configure audio settings:

1. In the **Source** field, select an audio source from the drop-down list.

*IMPORTANT! The audio input must match the connectors on the back of the system and your audio source.*

2. Select the **Overlay Closed Caption** check box to enable overlay closed captions. Field 1 CC 1 is the default setting.
3. Drag the sliders to adjust the **Left Volume** and **Right Volume**.
4. (Optional) Select **Mute Audio** to silence the audio.
5. Click **Save Settings**.

## Output tab

Use the following table to configure the output digital input settings for an Adaptive Microsoft Smooth Streaming encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 124. Output tab**

### To configure output settings:

1. Select **Publish to IIS Host**.
2. Enter the destination **Host Address**.  
*Note: The **Stream Path** that displays is a combination of the host address and the publish point.*
3. Enter the **Publish Point**.
4. Select **PlayReady DRM** to enable Digital Rights Management support. PlayReady requires external License Server provider support. The URL and the seed must be acquired from the license hosting provider.

5. Select the **Key URL**:

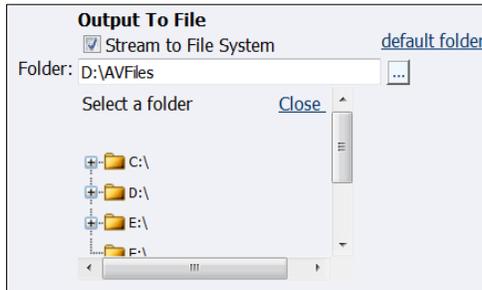
- http://
- https://

6. Enter the PlayReady key **URL**.
7. Click **Create** to generate a unique key ID.
8. Enter the **Key Seed**.
9. Click **Stream to File System**.
10. Accept the default location that displays in the **Folder** field or choose your own location for the file. To choose your own personal location select the link (horizontal ellipses or ...) to the right of the Folder field and display the options (Figure 125).

*Note: By default, the system sets this folder to D:\AVFiles. See Connecting an external*

storage device *for instructions on saving video files to a USB storage device.*

**Figure 125. Select a folder**



**WARNING!** You can only save media files to drive D. Check drive properties for available free space to determine your storage capacity.

*A better practice would be to use a remote file server to save a file or to save it to a remote drive. If you fill all available space, you risk losing your stream during a streaming event.*

*Smooth Streaming files created when you enable Output to File are not designed to be played locally by a media player but should be hosted on an IIS server for Video On Demand services.*

11. Enter the **Username**.

*Note: You can enter a maximum of 80 characters.*

*IIS authentication types supported are Basic and Digest.*

12. Enter the **Password**.

*Note: You can enter a maximum of 20 characters.*

13. Click **Save Settings**.

# Adobe Flash H.264 encoder with digital inputs

To create an encoder, [Encoders](#) > [All Encoders](#) > [Create New Encoder](#) link > **Encoder Name** field.

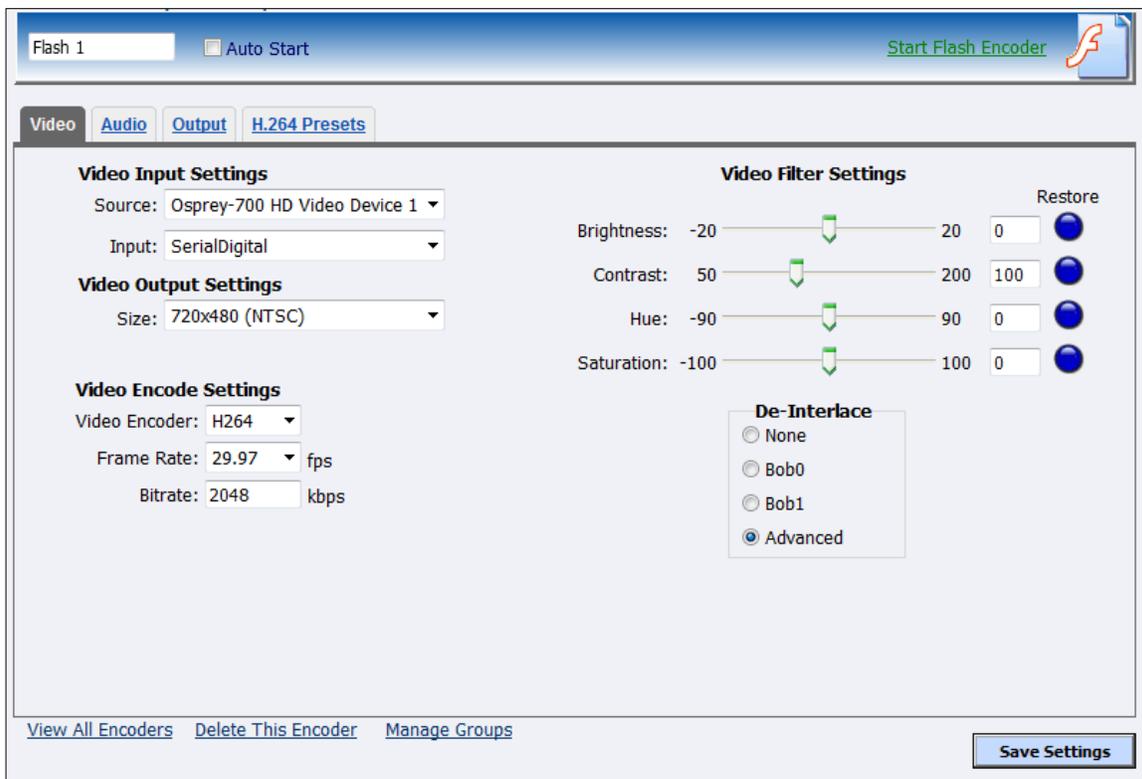
When you create a new encoder, the Encoder Properties window appears. The steps for editing a new encoder or an existing encoder are identical. You must configure the video and audio settings for each encoder type.

Use the Video, Audio, Output, and H.264 Presets tabs to edit the settings. Begin with configuring the video and audio settings, then the server and destination settings. The server and destination settings are different for each type of encoder.

From the Encoder Properties window (Figure 126), you can set the encoder to start streaming automatically by selecting the **Auto Start** check box. You can also start an encoder from this window by clicking the **Start Flash Encoder** link in the top right corner of the window.

***IMPORTANT!** If you make any changes to the Encoder Properties window, you must click **Save Settings**. Otherwise, all your changes will be lost.*

**Figure 126. Flash encoder**

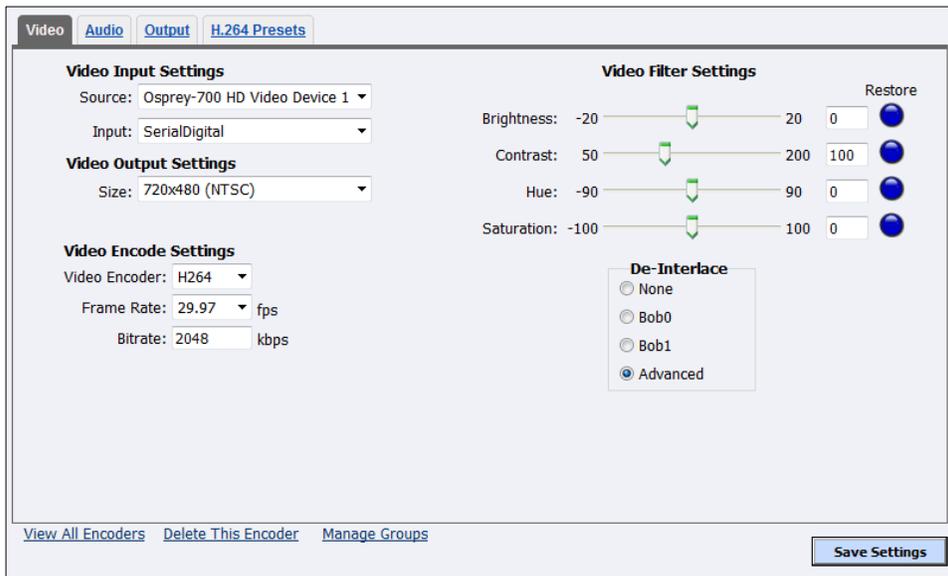


## Video tab

Use the following table to configure the video digital input settings for a Flash encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 127. Video tab**



### To configure video settings:

1. Select the video input **Source** from the drop-down list.
2. In the **Input** field, select the video input.

*IMPORTANT! The video input must match the connectors on the back of the Niagara 9100 and your video source.*

3. In the **Size** field, click the pixel size of the encoded video from the drop-down list.

You can also specify a custom size for your video. This customization is useful when you are capturing video to be played on a mobile video-device that requires a non-standard size for compatibility.

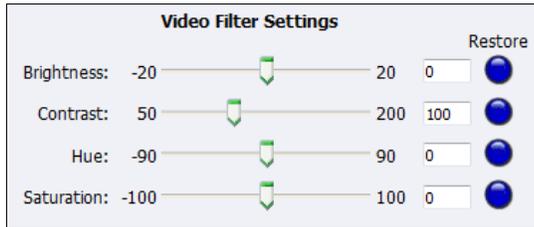
When you click **Custom**, two additional fields appear so you can enter the exact size you want the resulting video to be (Figure 128).

*Note: The size in the **Width** and **Height** fields must be divisible by 2.*

**Figure 128. Custom fields**

4. Select the **Video Encoder** from the drop-down list.
5. Enter the frames per second in the **Frame Rate** field.
6. Enter the **Bitrate**.
7. Drag the sliders to adjust the **Brightness**, **Contrast**, **Hue**, and **Saturation** (Figure 129).

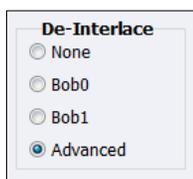
**Figure 129. Video Filter Settings**



*Note: Click **Restore** to the right of the filter to reset the settings to the default.*

8. Click the **De-Interlace** setting you want to apply (Figure 130). Options include:
  - **None**
    - Performs no de-interlacing of any kind.
  - **Bob0**
    - Applies inverse telecine de-interlacing to all telecine video.
    - Applies motion adaptive de-interlacing to all video that is not telecine.
    - Switches dynamically between the two modes as the content changes.
    - Available for NTSC video only.
  - **Bob1**
    - Drops the redundant fields and reassembles the video in a 24 fps progressive format.
    - Applies inverse telecine de-interlacing to all telecine video.
    - Performs no de-interlacing of video that is not telecine.
    - Available for NTSC video only.
  - **Advanced**
    - Is an algorithm for de-interlacing pure video (non-telecine) content.
    - Applies motion adaptive interlacing to all video. It detects which portions of the image are still and which portions are in motion then applies different processing to each scenario.

**Figure 130. De-Interlace settings**



*Note: Telecine and inverse telecine only apply to NTSC video. They are not used for PAL and SECAM video. The system disables **Bob0** and **Bob1** choices when you select either PAL or SECAM as the video standard.*

9. Click **Save Settings**.

## Audio tab

Use the following table to configure the audio digital input settings for a Flash encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 131. Audio tab**

The screenshot shows the 'Audio' tab in a software interface. It features two main columns of settings. The left column, 'Audio Input Settings', includes a 'Source' dropdown menu currently showing 'SDI Input 1 (Osprey-700 HD 1)'. Below it is the 'Closed Caption Settings' section, which has an unchecked 'Overlay Closed Caption' checkbox and two dropdown menus: 'Field' set to 'Field 1' and 'CC/Text' set to 'CC 1'. The right column, 'Audio Output Settings', contains several dropdown menus: 'Format' (48.000 kHz, 16 bit, Stereo), 'Audio Type' (Low Complexity), 'Bitrate' (128 kbps), and 'Audio Encoder' (AAC). Below these are two volume sliders, 'Left Volume' and 'Right Volume', both with green indicators at the 100 mark. A 'Mute Audio' checkbox is located at the bottom of the right column and is unchecked. At the very bottom of the window, there are three links: 'View All Encoders', 'Delete This Encoder', and 'Manage Groups', followed by a 'Save Settings' button.

### To configure audio settings:

1. In the **Source** field, select an audio source from the drop-down list.
 

*IMPORTANT! The audio input must match the source connected on the back of the system and your audio source.*
2. Select the **Overlay Closed Caption** check box to enable overlay closed captions. Field 1 CC1 is the default setting.
3. Click the audio **Format** from the drop-down list.
4. Click the **Audio Type** from the drop-down list.
5. Click the **Bitrate** from the drop-down list.
6. Click the **Audio Encoder** from the drop-down list.
7. Grab and drag the slider to adjust the **Left Volume** and **Right Volume**.
8. (Optional) Select the **Mute Audio** check box to silence audio.
9. Click **Save Settings**.

## Output tab

Use the following table to configure the output digital input settings for a Flash encoder.

*Note: The choices in the drop-down list may vary.*

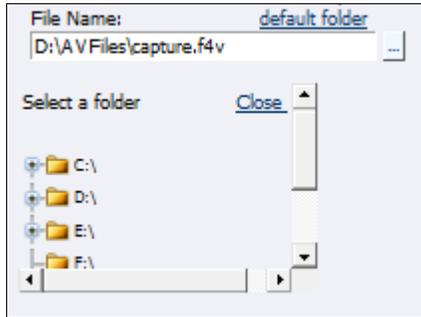
**Figure 132. Output tab**

### To configure output settings:

1. Select **Enable Streaming** to enable live Flash streaming.
2. Enter the proper IP address in the **Server Address** field.
3. Enter the **Stream Name**.
4. Select the **Authentication Type** from the drop-down list. Options are available for streaming directly to Akamai, Limelight CDNs, and Adobe.
5. Enter the **User Name** and **Password**.
6. Select **Embed System Time as Timecode**.
7. (Optional) Click the **Frame Interval** from the drop-down list.
8. Enable **Save to File** to save the encoded content to a file. Each time you start this encoder, the system overwrites the previous file.
9. Enable **Create unique file** to create a file that the system does not overwrite.
10. Accept the default location that displays in the **File Name** field or choose your own location for the file. To choose your own personal location select the link (horizontal ellipses or ... ) to the right of the File Name field and display the options (Figure 133).

*Note: By default, the system sets this folder to D:\AVFiles\ with a default filename of capture.f4v.*

**Figure 133. Select a folder**



***WARNING!** You can only save media files to drive D. Check drive properties for available free space to determine your storage capacity.*

*A better practice would be to use the Flash Media server to save a file or to save it to a remote drive. If you fill all available space, you risk losing your stream during a streaming event.*

11. Click **Save Settings**.

## H.264 Presets tab

Each preset has multiple properties that you can edit. These advanced presets affect the way the encoder performs and if set incorrectly may lead to abnormal encoder operations. See *Appendix B: H.264 Advanced Settings* for a complete list of typical settings.

Use the following table to configure the H.264 digital presets for a Flash encoder.

**Figure 134. H.264 Presets tab**

**Advanced Encoder Settings**  
Use this form to optimize the encoder's settings, or select a Custom Preset to use typical settings for your audience.

Custom Presets: Main Profile Default

Property	Value	Min	Max
<a href="#">Edit</a> BFramesMax		0	4
<a href="#">Edit</a> GopSize		1	4000
<a href="#">Edit</a> GOPSizeMin		1	4000
<a href="#">Edit</a> InLoopDeblockingFilterAlpha		-6	6
<a href="#">Edit</a> InLoopDeblockingFilterBeta		-6	6
<a href="#">Edit</a> LookaheadFrames		0	200
<a href="#">Edit</a> NoiseReduction		0	1500
<a href="#">Edit</a> QuantizerMax		1	51
<a href="#">Edit</a> QuantizerMin		1	51
<a href="#">Edit</a> ReferenceFrames		0	16
<a href="#">Edit</a> SceneChangeDetectThreshold		0	4000
<a href="#">Edit</a> TrellisRDQuantization		0	2

**Note:** Advanced settings affect the Encoder performance and if set incorrectly may lead to abnormal operations. [Restore Defaults](#)

[View All Encoders](#) [Delete This Encoder](#) [Manage Groups](#) [Save Settings](#)

### To configure H.264 settings:

1. Click **Edit** next to the property you want to modify.  
*IMPORTANT! These advanced settings affect the way the encoder performs and if set incorrectly may lead to abnormal encoder operations. Refer to Appendix B: H.264 Advanced Settings for suggested values for the type of video you are streaming.*
2. Change the value.
3. Click **Update**.
4. Click the **Restore Defaults** link at the bottom of the window to return the settings to the defaults.

*Note: Each preset has multiple properties. Clicking **Restore Defaults** for one property will change all properties to the default settings.*

5. Click **Save Settings**.

## AVI encoder with digital inputs

To create an encoder, **Encoders** > **All Encoders** > **Create New Encoder** link > **Encoder Name** field.

When you create a new encoder, the Encoder Properties window appears. The steps for editing a new encoder or an existing encoder are identical. You must configure the video and audio settings for each encoder type. Use the Video, Audio, and Output tabs to edit the settings.

From the Encoder Properties window (Figure 135), you can set the encoder to start streaming automatically by selecting the **Auto Start** check box. You can also start an encoder from this window by clicking the **Start AVI Encoder** link in the top right corner of the window.

***IMPORTANT!** If you make any changes to the Encoder Properties window, you must click **Save Settings**. Otherwise, all your changes will be lost.*

**Figure 135. AVI encoder**

The screenshot shows the AVI encoder configuration window. At the top, there is a header bar with the encoder name 'AVI 1', an 'Auto Start' checkbox, and a 'Start AVI Encoder' link with an AVI icon. Below the header are three tabs: 'Video', 'Audio', and 'Output'. The 'Video' tab is active, displaying the following settings:

- Video Input Settings:** Source: Osprey-700 HD Video Device 1, Input: SerialDigital
- Video Output Settings:** Size: 720x480 (NTSC)
- Video Encode Settings:** Format: I420, Frame Rate: 29.970000
- Video Filter Settings:** Brightness: -20 to 20 (set to 0), Contrast: 50 to 200 (set to 100), Hue: -90 to 90 (set to 0), Saturation: -100 to 100 (set to 0). Each slider has a 'Restore' button.
- De-Interlace:** Radio buttons for None, Bob0, Bob1, and Advanced (selected).

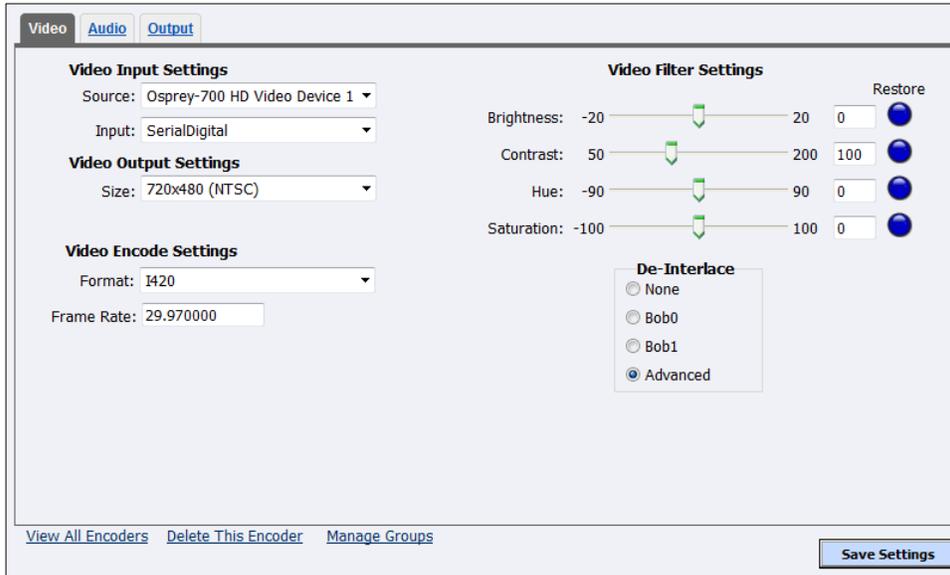
At the bottom of the window, there are links for 'View All Encoders', 'Delete This Encoder', and 'Manage Groups', along with a 'Save Settings' button.

## Video tab

Use the following table to configure the video digital input settings for an AVI encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 136. Video tab**



### To configure video settings:

1. Select the video input **Source** from the drop-down list.
2. In the **Input** field, select the video input.

*IMPORTANT! The video input must match the connectors on the back of the system and your video source.*

3. In the **Size** field, select the pixel size of the encoded video from the pre-determined sizes in the drop-down list.

You can also specify a custom size for your video. This customization is useful when you are capturing video to be played on a mobile video-device that requires a non-standard size for compatibility.

When you click **Custom**, two additional fields appear so you can enter the exact size you want the resulting video to be (Figure 137).

*Note: The size in the **Width** and **Height** fields must be divisible by 2.*

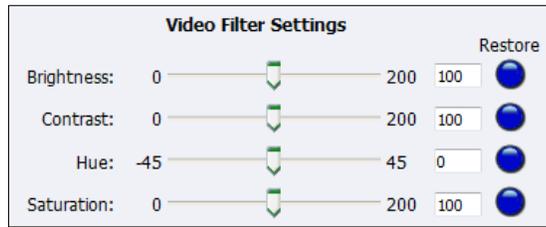
**Figure 137. Custom fields**



4. Select the **Format** from the drop-down list.
5. Enter the **Frame Rate**.

6. Drag the sliders to adjust the **Brightness**, **Contrast**, **Hue**, and **Saturation** (Figure 138).

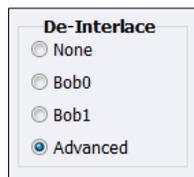
**Figure 138. Video Filter Settings**



*Note: Click **Restore** to the right of the filter to reset the settings to the default.*

7. Click the **De-Interlace** setting you want to apply (Figure 139). Options include:
- **None**
    - Performs no de-interlacing of any kind.
  - **Bob0**
    - Applies inverse telecine de-interlacing to all telecine video.
    - Applies motion adaptive de-interlacing to all video that is not telecine.
    - Switches dynamically between the two modes as the content changes.
    - Available for NTSC video only.
  - **Bob1**
    - Drops the redundant fields and reassembles the video in a 24 fps progressive format.
    - Applies inverse telecine de-interlacing to all telecine video.
    - Performs no de-interlacing of video that is not telecine.
    - Available for NTSC video only.
  - **Advanced**
    - Is an algorithm for de-interlacing pure video (non-telecine) content.
    - Applies motion adaptive interlacing to all video. It detects which portions of the image are still and which portions are in motion then applies different processing to each scenario.

**Figure 139. De-Interlace settings**



*Note: Telecine and inverse telecine only apply to NTSC video. They are not used for PAL and SECAM video. The system disables **Bob0** and **Bob1** choices when you select either **PAL** or **SECAM** as the video standard.*

8. Click **Save Settings**.

## Audio tab

Use the following table to configure the audio digital input settings for an AVI encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 140. Audio tab**

The screenshot shows the 'Audio' tab of an AVI encoder configuration interface. It features three main sections: 'Audio Input Settings' with a 'Source' dropdown set to 'SDI Input 1 (Osprey-700 HD 1)'; 'Closed Caption Settings' with an unchecked 'Overlay Closed Caption' checkbox, a 'Field' dropdown set to 'Field 1', and a 'CC/Text' dropdown set to 'CC 1'; and 'Audio Output Settings' with an 'Audio Format' dropdown set to '48.000 kHz, 16 bit, Stereo', two volume sliders for 'Left Volume' and 'Right Volume' both at 100, and an unchecked 'Mute Audio' checkbox. At the bottom, there are links for 'View All Encoders', 'Delete This Encoder', and 'Manage Groups', and a 'Save Settings' button.

### To configure audio settings:

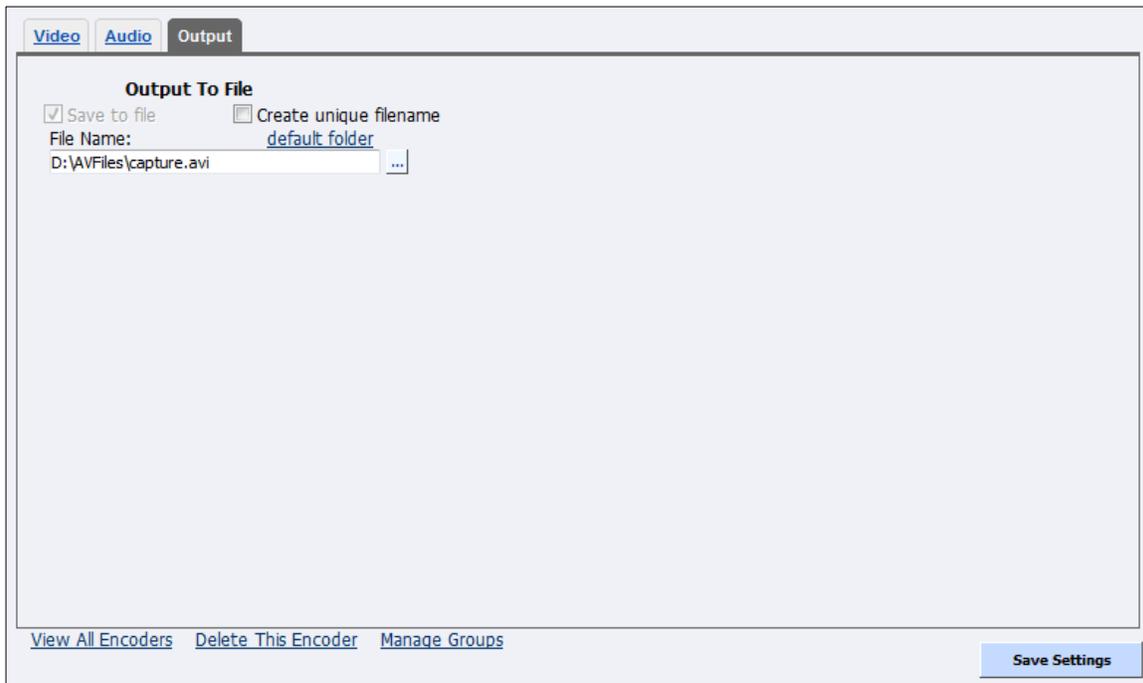
1. In the **Source** field, select an audio source from the drop-down list.  
*IMPORTANT! The audio input must match the connectors on the back of the system and your audio source.*
2. Select the **Overlay Closed Caption** check box to enable overlay closed captions. Field 1 CC 1 is the default setting.
3. Click the **Audio Format** from the drop-down list.
4. Drag the sliders to adjust the **Left Volume** and **Right Volume**.
5. (Optional) Select **Mute Audio** to silence audio.
6. Click **Save Settings**.

## Output tab

Use the following table to configure the output digital input settings for an AVI encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 141. Output tab**



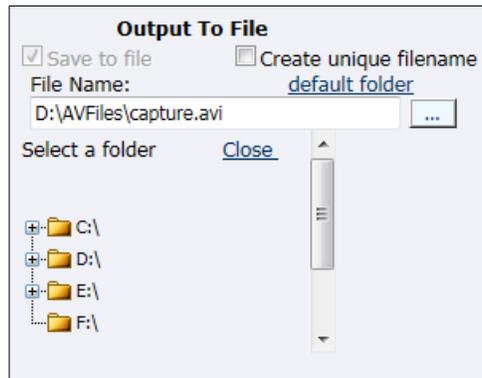
### To configure output settings:

1. You can:
  - Use the default setting, **Save to File**, to save the encoded content to a file. Each time you start this encoder, the system overwrites the previous file.
  - Click **Create unique file** to create a file that the system does not overwrite.
2. Accept the default location that displays in the **File Name** field or choose your own location for the file. To choose your own personal location select the link (horizontal ellipses or ... ) to the right of the **File Name** field and display the options (Figure 142).

*Note: By default, the system sets this folder to **D:\AVFiles** with a default file name of **capture.avi**.*

*See Connecting an external storage device section for instructions on saving video files to a USB device.*

**Figure 142. Select a folder**



*WARNING! You can only save media files to drive D. Check drive properties for available free space to determine your storage capacity.*

*A better practice would be to use the streaming server to save a file or to save it to a remote drive. If you fill all available space, you risk losing your stream during a streaming event.*

3. Click **Save Settings**.

## MPEG4 encoder with digital inputs

To create an encoder, [Encoders](#) > [All Encoders](#) > [Create New Encoder](#) link > **Encoder Name** field.

When you create a new encoder, the Encoder Properties window appears. The steps for editing a new encoder or an existing encoder are identical. You must configure the video and audio settings for each encoder type.

Use the Video, Audio, Output, and H.264 Presets tabs to edit the settings. Begin with configuring the video and audio settings, then the streaming properties. The streaming properties and advanced streaming settings are different for each type of encoder.

From the MPEG4 Encoder Properties window (Figure 143), you can set the encoder to start streaming automatically by selecting the **Auto Start** check box. You can also start an encoder from this window by clicking the **Start MPEG4 Encoder Driver** link in the top right corner of the window.

***IMPORTANT!** If you make any changes to the Encoder Properties window, you must click **Save Settings**. Otherwise, all your changes will be lost.*

**Figure 143. MPEG4 encoder**

The screenshot displays the 'MPEG4' Encoder Properties window. At the top, there is a title bar with 'MPEG4' and an 'Auto Start' checkbox. A 'Start MPEG4 Encoder' link and an 'H.264' icon are visible in the top right. Below the title bar are four tabs: 'Video', 'Audio', 'Output', and 'H.264 Presets'. The 'Video' tab is active, showing the following settings:

- Video Input Settings:** Source: Osprey-700 HD Video Device 1, Input: SerialDigital.
- Video Output Settings:** Size: 720x480 (NTSC).
- Video Encode Settings:** Video Encoder: H264, Frame Rate: 29.97 fps, Bitrate: 2048 kbps, Format: I420.
- Video Filter Settings:** Brightness: -20 to 20 (0), Contrast: 50 to 200 (100), Hue: -90 to 90 (0), Saturation: -100 to 100 (0). Each slider has a 'Restore' button.
- De-Interlace:** Radio buttons for None, Bob0, Bob1, and Advanced (selected).

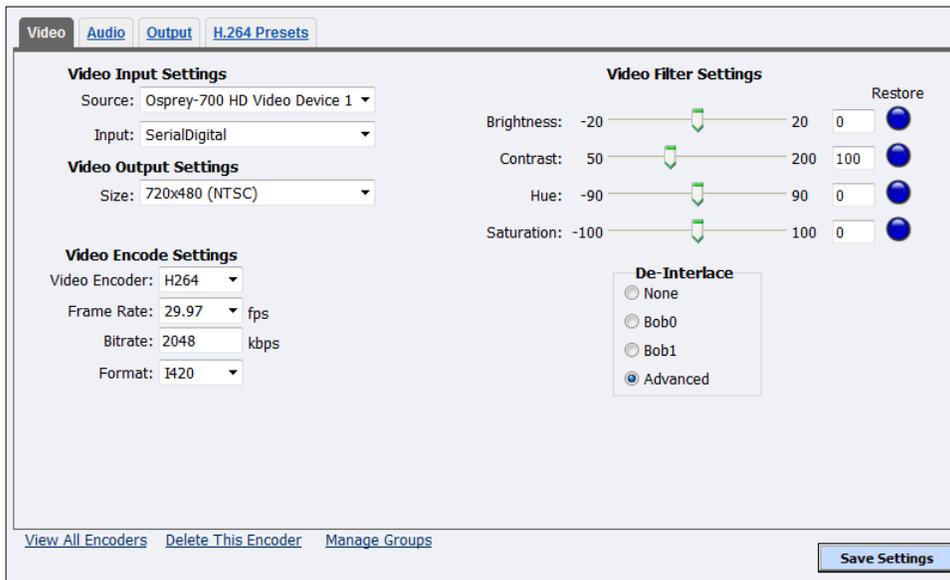
At the bottom of the window, there are links for 'View All Encoders', 'Delete This Encoder', and 'Manage Groups', along with a 'Save Settings' button.

## Video tab

Use the following table to configure the video digital input settings for an MPEG encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 144. Video tab**



### To configure video settings:

1. Select the video input **Source** from the drop-down list.
2. In the **Size** field, select the pixel size of the encoded video from the pre-determined sizes in the drop-down list.

You can also specify a custom size for your video. This customization is useful when you are capturing video to be played on a mobile video-device that requires a non-standard size for compatibility.

When you click **Custom**, two additional fields (Figure 145) appear so you can enter the exact size you want the resulting video to be.

*Note: The size in the **Width** and **Height** fields must be divisible by 2.*

**Figure 145. Custom fields**



*Note: CIF and QCIF are proportional to the HD video resolution input.*

3. Select the type of **Video Encoder** for Internet video, mobile phones, set top boxes, and create media files for other MPEG-4 compatible devices according to the Motion Picture Expert Group (MPEG) types (refer to Table 3 and Table 4).

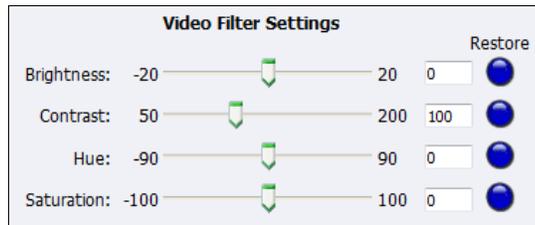
**IMPORTANT:** Choose the container type (MP4, 3G2, TS, and 3GP) on the Output tab.

If you select MPEG4 from the drop-down list, the MPEG-4 Presets tab displays (see *MPEG4 Presets tab*). The fields on the Video, Audio, and Output tabs will change depending on the type of video encoder you select.

See *TS Container* for steps on streaming to a TS container.

4. Enter the frames per second in the **Frame Rate** field.
5. Enter the kilobits per second in the **Bitrate** field.
6. In the **Format** field, indicate the color space format.
7. Drag the sliders to adjust the **Brightness**, **Contrast**, **Hue**, and **Saturation** (Figure 146).

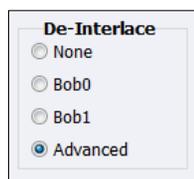
**Figure 146. Video Filter Settings**



*Note: Click **Restore** to the right of the filter to reset the settings to the default.*

8. Click the **De-Interlace** setting you want to apply (Figure 147). Options include:
  - **None**
    - Performs no de-interlacing of any kind.
  - **Bob0**
    - Applies inverse telecine de-interlacing to all telecine video.
    - Applies motion adaptive de-interlacing to all video that is not telecine.
    - Switches dynamically between the two modes as the content changes.
    - Available for NTSC video only.
  - **Bob1**
    - Drops the redundant fields and reassembles the video in a 24 fps progressive format.
    - Applies inverse telecine de-interlacing to all telecine video.
    - Performs no de-interlacing of video that is not telecine.
    - Available for NTSC video only.
  - **Advanced**
    - Is an algorithm for de-interlacing pure video (non-telecine) content.
    - Applies motion adaptive interlacing to all video. It detects which portions of the image are still and which portions are in motion. It then applies different processing to each scenario.

**Figure 147. De-Interlace settings**



*Note: Telecine and inverse telecine only apply to NTSC video. They are not used for PAL and SECAM video. The system disables **Bob0** and **Bob1** choices when you select either PAL or SECAM as the video standard.*

9. Click **Save Settings**.

**Table 3. MPEG encoder and container descriptions**

<b>MPEG4 – MP4</b>	MPEG-4 Part 2 is for situations where low bit rate and low resolution are mandated by other conditions of the applications, such as network bandwidth or device size. Examples of video applications for MPEG-4 are cell phones, some low-end video conferencing systems, and surveillance systems. MPEG-4 is important for legacy handheld devices that do not support H.264.
<b>H264 – MP4</b>	H.264, MPEG-4 Part 10, or AVC (Advanced Video Coding) was designed for high data compression while maintaining better quality than its predecessor, H.263. It also addresses a broad range of applications from low bit rate to high bit rate and from low resolution such as cell phones to high resolution such as broadcast.  Niagara SCX’s H.264 is Baseline, Main, and High.
<b>MPEG-TS</b>	MPEG transport stream is a standard format for transmission and storage of audio, video, and Program and System Information Protocol (PSIP) data. It is used in broadcast systems such as DVB, ATSC and IPTV.
<b>H.264-TS</b>	H.264 encoding provided a MPEG-2 transport stream (TS) container.
<p>The Third Generation Partnership Project (3GPP) defined 3GP as a multimedia container format for use on 3G mobile phones. It stores video streams such as MPEG-4 or H.264 and audio streams such as AAC.</p> <p>This format has two defined standards:</p> <ul style="list-style-type: none"> <li>● 3GPP for GSM-based mobile phones</li> <li>● 3GPP2 for CDMA-based mobile phones</li> </ul> <p>This setting creates an H.263 stream stored in a 3GPP container.</p>	
<b>H264 – 3GP</b>	This setting creates an H.264 stream stored in a 3GP container.
<b>H264 – 3G2</b>	This setting creates an H.264 stream stored in a 3G2 container.
<b>MPEG4 – 3GP</b>	This setting creates an MPEG-4 stream stored in a 3GP container.
<b>MPEG4 – 3G2</b>	This setting creates an MPEG-4 stream stored in a 3G2 container.
<b>H263 – 3GP</b>	This setting creates an H.263 stream stored in a 3GP container.
<b>H263 – 3G2</b>	This setting creates an H.263 stream stored in a 3G2 container.

**Table 4. Valid output container selections for video encoder types**

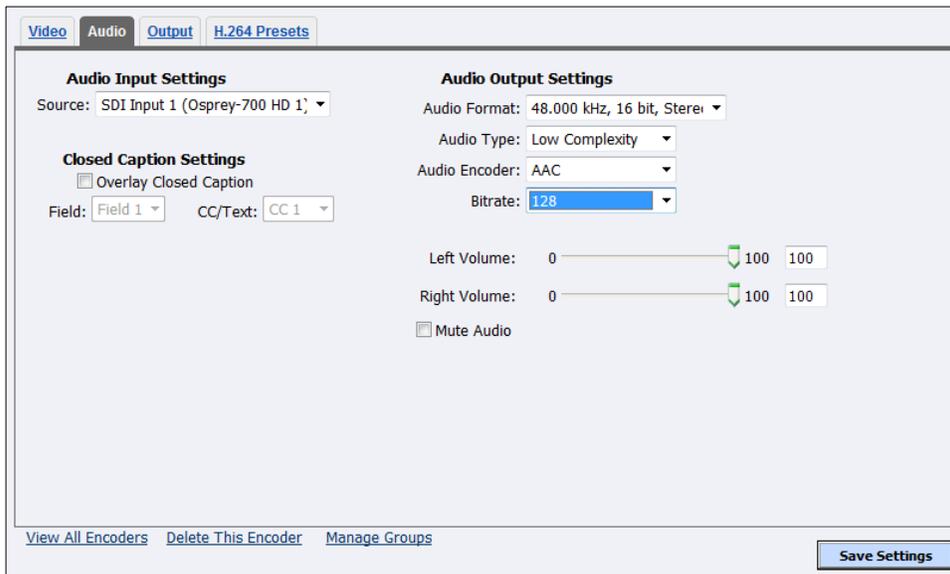
<b>Container</b>	<b>H.263 Video</b>	<b>MPEG-4 Video</b>	<b>H.264 Video</b>	<b>MPEG-2</b>
MP4	N/A	✓	✓	
3GP	✓	✓	✓	
3G2	✓	✓	✓	
TS			✓	✓

## Audio tab

Use the following table to configure the audio digital input settings for an MPEG4 encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 148. Audio tab**



### To configure audio settings:

1. In the **Source** field, select an audio source from the drop-down list.
 

*IMPORTANT! The audio input must match the connectors on the back of the Niagara system and your audio source.*
2. Select the **Overlay closed Caption** check box to enable overlay closed captions. Field 1 CC 1 is the default setting.
3. Click the **Audio Format**.
4. Click the **Audio Type**. The drop-down list box provides two choices:
  - **Main** – The same as Low Complexity, but adds backward prediction.
  - **Low Complexity** – The simplest and most widely used AAC audio format type.
  - **HE-AAC VI** – Uses spectral band replication (SBR) to enhance the compression efficiency in the frequency domain.
  - **HE-AAC V2** – Enhances the compression efficiency of stereo signals.

*Note: Depending on the player on which the resulting stream will be rendered, either choice will use a specific set of tools to encode the audio stream. Make your choice based on the requirement of the playback software or device. The most widely supported format is the Low Complexity profile.*
5. The default **Audio Encoder** is AAC (Advanced Audio Coding) – a standardized, lossy compression and encoding scheme for digital audio. AAC achieves better audio quality than MP3. AAC and MP3 are MPEG standards.
6. Click the **Bitrate** from the drop-down list.

7. Drag the slider to adjust the **Volume**.
8. (Optional) Select **Mute Audio** to silence audio.
9. Click **Save Settings**.

## Output tab

Use the following table to configure the output analog digital settings for an MPEG4 encoder.

*Note: This tab is dynamic depending upon which encoder you select on the Video tab. The choices in the drop-down list may vary.*

**Figure 149. Output tab**

### To configure output settings:

1. Select **Enable Streaming** to stream your audiovisual content via RTSP.
2. Set the appropriate streaming properties.

*Note: The default settings will enable multicast streaming. If you do not want this type of streaming, change the IP address for Group to the IP address of the server to which you want to stream from the encoder.*

3. In the **SDP File** field, enter a name and a destination path for the resulting SDP file created when you start the stream. If you are streaming to a Helix, a QuickTime, or a Darwin server, refer to its respective documentation or online message boards for setup details specific for the individual streaming server.

*Note: You can stream point-to-point by selecting a share destination directory for the saved SDP file. Remember to disable multicasting by entering in the IP address of the PC to which you want to stream.*

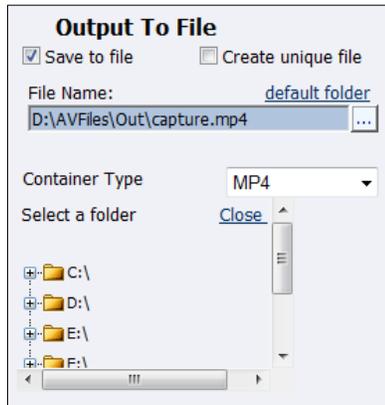
*For example, if you want another PC to view the stream, save the SDP file to a share folder on the local drive. The other PC can open the SDP file and the stream can be played in a QuickTime or other MPEG-4 compatible streaming player. Since MPEG-4 encoding can be CPU intensive, it is not recommended that you view the stream on the Niagara encoder. Doing so may overtax the host CPU, which will cause video quality degradation and encode session failure.*

4. Select **Save to File** to save the encoded content to a file. Each time you start this encoder, the system overwrites the previous file.

5. Select **Create unique file** to create a file that the system does not overwrite.
6. Accept the default location that displays in the **File Name** field or choose your own location for the file (Figure 150). To choose your own personal location select the link (horizontal ellipses or ... ) to the right of the **File Name** field and display the options.

*Note: By default, the system sets this folder to D:\AVFiles\ with a default file name of capture.mp4.*

**Figure 150. Select a Folder**



**WARNING!** You can only save media files to drive D. Check drive properties for available free space to determine your storage capacity.

*A better practice would be to use the streaming server to save a file or to save it to a remote drive. If you fill all available space, you risk losing your stream during a streaming event.*

7. Select the **Container Type** (Table 4).
8. Click the **Enable Injection** checkbox to inject an SDP file onto your server.
9. Enter the username and password.
10. Enter the **Server SDP File Name**.
11. Enter the **Server Port Number**.
12. Click **Save Settings**.

## H.264 Presets tab

Each preset contains properties that you can modify. Use the following table to configure the H.264 presets digital input settings for an MPEG4 encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 151. H.264 Presets tab**

**Advanced Encoder Settings**  
Use this form to optimize the encoder's settings, or select a Custom Preset to use typical settings for your audience.

Custom Presets  
Main Profile Default

Property	Value	Min	Max
BFramesMax	0	0	4
GopSize	180	1	4000
GOPSizeMin	25	1	4000
InLoopDeblockingFilterAlpha	0	-6	6
InLoopDeblockingFilterBeta	0	-6	6
LookaheadFrames	40	0	200
NoiseReduction	0	0	1500
QuantizerMax	51	1	51
QuantizerMin	10	1	51
ReferenceFrames	3	0	16
SceneChangeDetectThreshold	60	0	4000
TrellisRDQuantization	0	0	2

**Note:** Advanced settings affect the Encoder performance and if set incorrectly may lead to abnormal operations. [Restore Defaults](#)

[View All Encoders](#) [Delete This Encoder](#) [Manage Groups](#) [Save Settings](#)

### To configure H.264 presets:

1. Click **Edit** next to the property you want to modify.

*IMPORTANT! These advanced settings affect the way the encoder performs and if set incorrectly may lead to abnormal encoder operations. Refer to Appendix B: H.264 Advanced Settings for suggested values for the type of video you are streaming.*

2. Change the **Value**.
3. Click **Update**.
4. Click the **Restore Defaults** link at the bottom of the window to return the settings to the default.

*Note: Each preset has multiple properties. Clicking **Restore Defaults** for one property will change all properties to the default settings.*

## MPEG4 Presets tab

Each preset contains properties that you can modify. Use the following table to configure the MPEG-4 presets analog input settings for an MPEG4 encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 152. MPEG-4 Presets tab**

Property	Value	Min	Max
<a href="#">Edit</a> BFramesMax	0	0	4
<a href="#">Edit</a> GopSize	85	1	4000
<a href="#">Edit</a> GOPSizeMin	25	1	4000
<a href="#">Edit</a> InterlacedDCTComparison	8	0	14
<a href="#">Edit</a> LookaheadFrames	30	0	200
<a href="#">Edit</a> MotionEstimationComparison	0	0	256
<a href="#">Edit</a> MotionEstimationMethod	5	5	10
<a href="#">Edit</a> MotionEstimationPenaltyCompensation	256	0	256
<a href="#">Edit</a> MotionEstimationSubPixelComparison	0	0	256
<a href="#">Edit</a> MpegQuant	0	0	1
<a href="#">Edit</a> QuantizerMax	31	1	51
<a href="#">Edit</a> QuantizerMin	2	1	51

**Note:** Advanced settings affect the Encoder performance and if set incorrectly may lead to abnormal operations. [Restore Defaults](#)

[View All Encoders](#) [Delete This Encoder](#) [Manage Groups](#) [Save Settings](#)

### To configure MPEG-4 presets:

1. Click **Edit** next to the property you want to modify.

*IMPORTANT! These advanced settings affect the way the encoder performs and if set incorrectly may lead to abnormal encoder operations. Refer to Appendix B: H.264 Advanced Settings for suggested values for the type of video you are streaming.*

2. Change the **Value**.
3. Click **Update**.
4. Click the **Restore Defaults** link at the bottom of the window to return the settings to the default.

*Note: Each preset has multiple properties. Clicking **Restore Defaults** for one property will change all properties to the default settings.*

## MPEG2 Presets tab

Each preset contains properties that you can modify. Use the following table to configure the MPEG-2 presets analog input settings for an MPEG2 encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 153. MPEG-2 Presets tab**

**Advanced Encoder Settings**  
Use this form to optimize the encoder's settings, or select a Custom Preset to use typical settings for your audience. Custom Presets: Main Profile Default

Property	Value	Min	Max
<a href="#">Edit</a> BFramesMax	0	0	4
<a href="#">Edit</a> GopSize	45	1	4000
<a href="#">Edit</a> GOPSizeMin	25	1	4000
<a href="#">Edit</a> InterlacedDCTComparison	8	0	14
<a href="#">Edit</a> LookaheadFrames	30	0	200
<a href="#">Edit</a> MotionEstimationComparison	0	0	256
<a href="#">Edit</a> MotionEstimationMethod	5	5	10
<a href="#">Edit</a> MotionEstimationPenaltyCompensation	256	0	256
<a href="#">Edit</a> MotionEstimationSubPixelComparison	0	0	256
<a href="#">Edit</a> MpegQuant	0	0	1
<a href="#">Edit</a> QuantizerMax	31	1	51
<a href="#">Edit</a> QuantizerMin	2	1	51

1 2

**Note:** Advanced settings affect the Encoder performance and if set incorrectly may lead to abnormal operations. [Restore Defaults](#)

[View All Encoders](#) [Delete This Encoder](#) [Manage Groups](#) [Save Settings](#)

### To configure MPEG-2 presets:

1. Click **Edit** next to the property you want to modify.

*IMPORTANT! These advanced settings affect the way the encoder performs and if set incorrectly may lead to abnormal encoder operations. Refer to Appendix B: H.264 Advanced Settings for suggested values for the type of video you are streaming.*

2. Change the **Value**.
3. Click **Update**.
4. Click the **Restore Defaults** link at the bottom of the window to return the settings to the default.

*Note: Each preset has multiple properties. Clicking **Restore Defaults** for one property will change all properties to the default settings.*

## Windows Media encoder with digital inputs

To create an encoder, [Encoders](#) > [All Encoders](#) > [Create New Encoder](#) link > [Encoder Name](#) field.

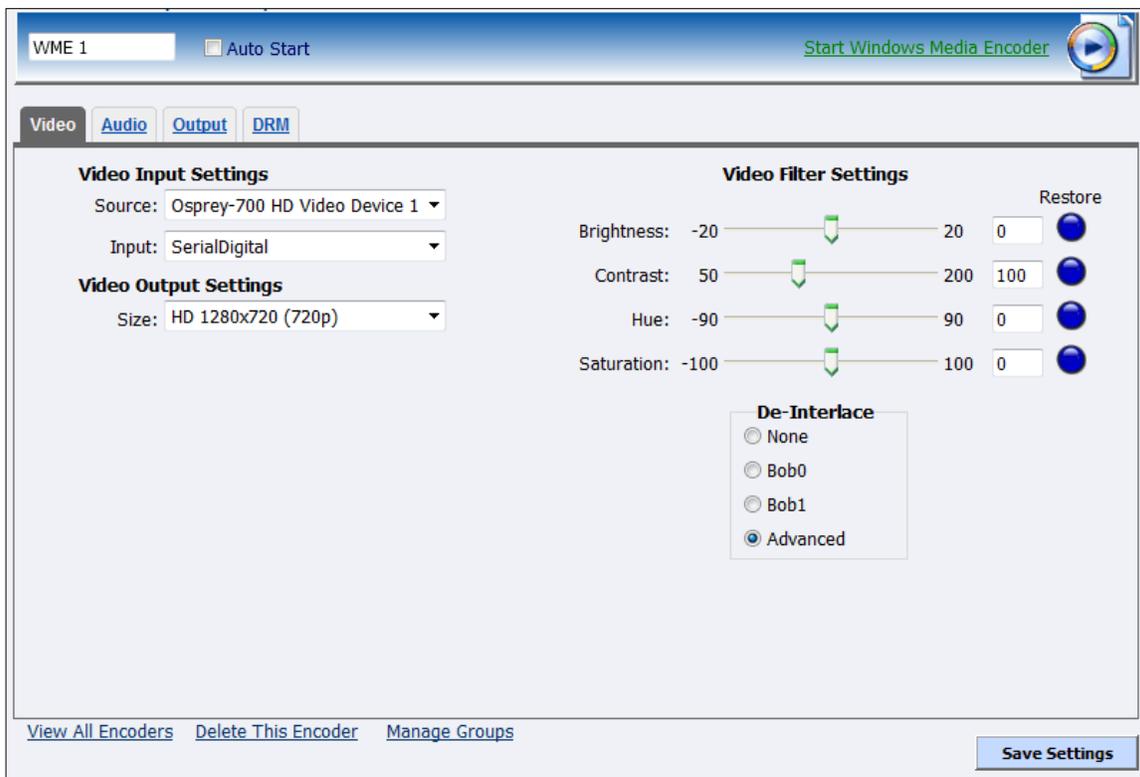
When you create a new encoder, the Encoder Properties window appears. The steps for editing a new encoder or an existing encoder are identical. You must configure the video and audio settings for each encoder type.

Use the Video, Audio, Output, and DRM tabs to edit the settings. Begin with configuring the video and audio settings then the streaming properties. The streaming properties and advanced streaming settings are different for each type of encoder.

From the Windows Media Encoder Properties window (Figure 154), you can set the encoder to start streaming automatically by selecting **Auto Start**. You can also start this encoder from this window by clicking the **Start Windows Media Encoder** link at the top right corner of the window.

***IMPORTANT!** If you make any changes to the Encoder Properties window, you must click **Save Settings**. Otherwise, all your changes will be lost.*

**Figure 154. Windows Media Encoder Properties**

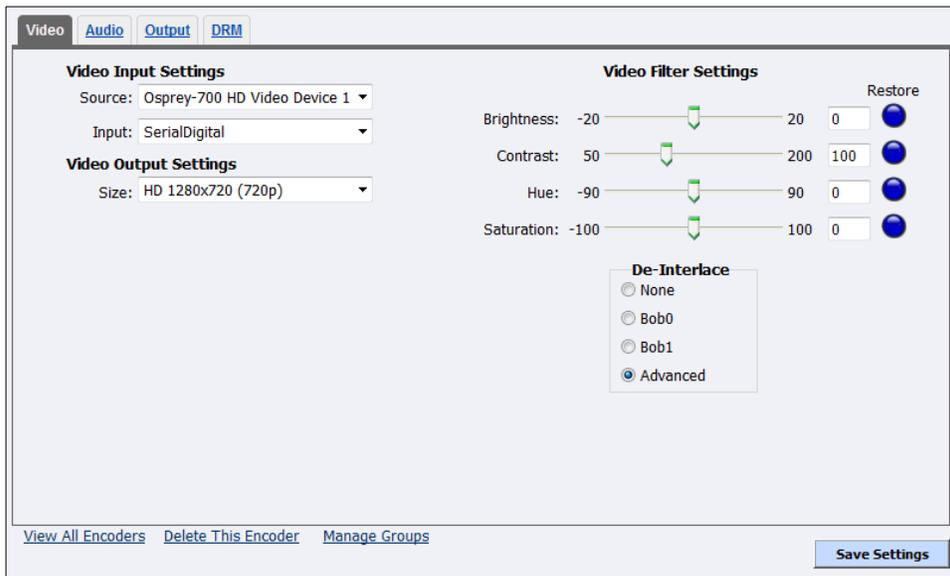


## Video tab

Use the following table to configure the video digital input settings for a Windows Media encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 155. Video tab**



### To configure video settings:

1. Select the video input **Source** from the drop-down list.
2. In the **Size** field, click the pre-determined size of the encoded video from the drop-down list. You can also specify a custom size for your video. This customization is useful when you are capturing video to be played on a mobile video-device that requires a non-standard size for compatibility.

*When you click **Custom**, two additional fields appear so you can enter the exact size you want the resulting video to be (Figure 156).*

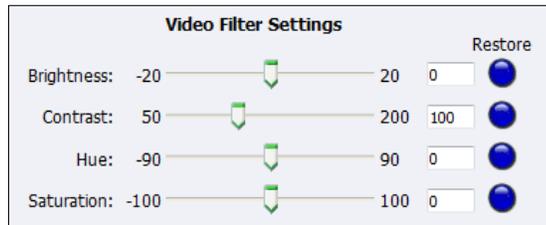
*Note: The size in the **Width** and **Height** fields must be divisible by 2.*

**Figure 156. Custom fields**

**WARNING!** *Ensure all of the encoders using the same video Proportion and Size settings also use the same Video and Audio Source settings.*

3. Drag the sliders to adjust the **Brightness**, **Contrast**, **Hue**, and **Saturation**.

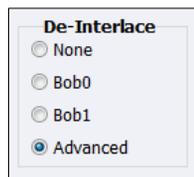
**Figure 157. Video Filter Settings**



*Note: Click **Restore** to the right of each field to return the setting to the default.*

4. Click the **De-Interlace** settings you want to apply (Figure 158). Options include:
  - **None**
    - Performs no de-interlacing of any kind.
  - **Bob0**
    - Applies inverse telecine de-interlacing to all telecine video.
    - Applies motion adaptive de-interlacing to all video that is not telecine.
    - Switches dynamically between the two modes as the content changes.
    - Available for NTSC video only.
  - **Bob1**
    - Drops the redundant fields and reassembles the video in a 24 fps progressive format.
    - Applies inverse telecine de-interlacing to all telecine video.
    - Performs no de-interlacing of video that is not telecine.
    - Available for NTSC video only.
  - **Advanced**
    - Is an algorithm for de-interlacing pure video (non-telecine) content.
    - Applies motion adaptive interlacing to all video. It detects which portions of the image are still and which portions are in motion. It then applies different processing to each scenario.

**Figure 158. De-Interlace settings**



*Note: Telecine and inverse telecine only apply to NTSC video. They are not used for PAL and SECAM video. The system disables **Bob0** and **Bob1** choices when you select either PAL or SECAM as the video standard.*

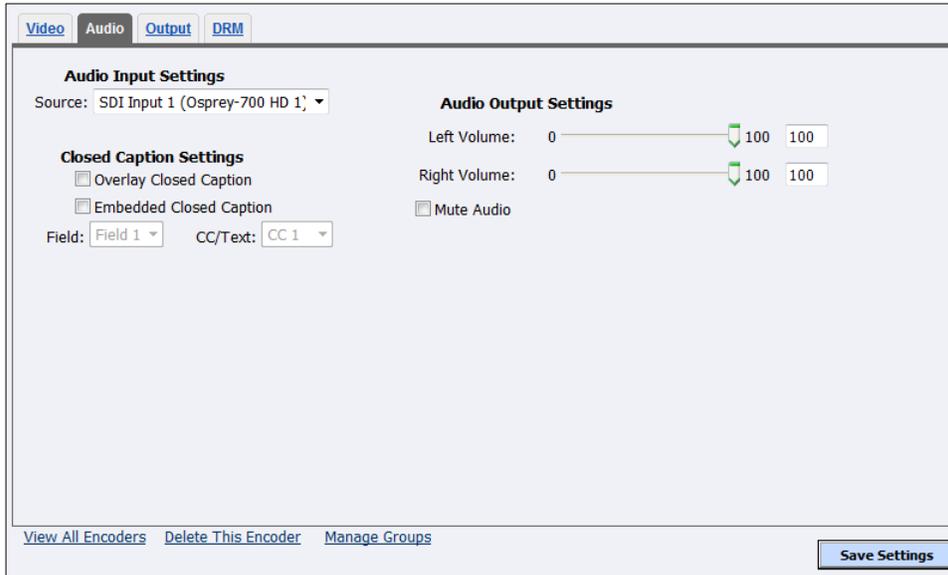
5. Click **Save Settings**.

## Audio tab

Use the following table to configure the audio digital input settings for a Windows Media encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 159. Audio tab**



### To configure audio settings:

1. In the **Source** field, select an audio source from the drop-down list.

*IMPORTANT! The audio input must match the source connected on the back of the Niagara system and your audio source.*

2. Select the **Overlay Closed Caption** check box to enable overlay closed captions.
3. Select the **Embedded Closed Caption** check box to embed the closed captions. Field 1 CC 1 is the default setting.
4. Drag the slider to adjust the **Left Volume** and **Right Volume**.
5. (Optional) Select **Mute Audio** to silence audio.
6. Click **Save Settings**.

## Output tab

Microsoft® Windows Media is both a storage format and a streaming format. In addition to the ability to output to a file, the Windows Media encoder can stream to a Windows Media Server. The settings for Windows Media encoder include the ability to set parameters for connecting and streaming to the server.

Some Windows Media Capture Profiles have pre-defined video resolutions and input selections. When you select a Windows Media Capture Profile, verify your current video and audio settings have not been modified. If they have been modified, simply change these settings back to their previous settings and click **Save Settings**.

When streaming audio and video, the two methods are pull and push.

### Pull method

In the pull method, the system begins to generate broadcast packets as soon as you start as soon as you start the encoding. However, it does not deliver the broadcast stream until Windows Media Server requests the stream. This method does not provide a secure connection to the server and should only be used if the encoder and server reside within the same network firewall.

To enable clients to pull the stream from the Niagara system, set up a session and begin broadcasting directly from the system. Clients (Windows Media servers or players) can connect to the stream at any time. You can use mms or http scheme with either the IP address of DNS host name. For example:

`http://encoding_computer_name:port`

### Push method

With the push method, the system maintains a secure connection to Windows Media Server. This connection allows it to pass a user name and password to authenticate access to the server.

`http://IP_address:port/publishing point`

By default, the system supports up to 50 direct connections during a broadcast, but if you're sending to a lot of clients push to Windows Media Server. Use the pull method for testing. Use the push method for a wide distribution.

*Note: The more direct connections to the system, the more system resources are required. ViewCast does not recommend directly connecting players to the system. Streaming servers should connect to the system and, in turn, players should connect to the servers.*

Use the following table to configure the output digital input settings for a Windows Media encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 160. Output tab**

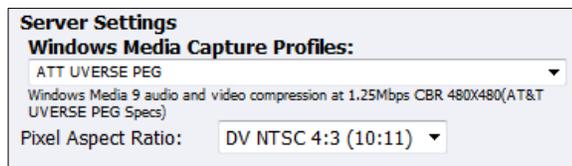


**To configure output settings:**

1. Click on a **Windows Media Capture Profile** from the drop-down list.

*Note: When you select **ATT UVERSE PEG** from the drop-down list, the **Pixel Aspect Ratio** field displays (Figure 161). Select the Pixel Aspect Ratio from the drop-down list.*

**Figure 161. Pixel Aspect Ratio field**

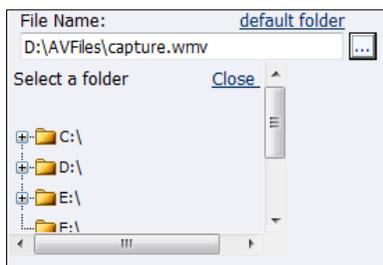


2. Select **Enable Pull**.
3. Enter a port number that the server will use to pull the stream.
4. Select **Enable Push**.  
*IMPORTANT! Be sure to enter a port number not already assigned to another encoder. If two encoders attempt to use the same port number, one or both encoders will fail to start.*
5. Enter a port number that the server will use to push the stream.
6. Enter the **Server** name or IP address.
7. Enter the **Publishing Point**.  
*Note: This field is optional.*
8. Enter the **User Name**.
9. Enter the **Password**.
10. Select **Enable Scripting** to embed closed captions.  
*Note: If you enable closed captions through the Osprey driver, you cannot enable scripting.*

11. You can either:
  - Click the **Save to File** check box to save the encoded content to a file. Each time you start this encoder, the system overwrites the previous file.
  - Click the **Index the file** to drag the slider to any point in your video capture.
  - Click **Create unique file** to create a file that the system does not overwrite.
12. Accept the default location that displays in the **File Name** field or choose your own location for the file. To choose your own personal location select the link (horizontal ellipses or ... ) to the right of the **File Name** field and display the options (Figure 162).

*Note: By default, the system sets this folder to D:\AVFiles\ with a default filename of capture.wmv.*

**Figure 162. Select a folder**



**WARNING!** You can only save media files to drive D. Check drive properties for available free space to determine your storage capacity.

*A better practice would be to use the streaming server to save a file or to save it to a remote drive. If you fill all available space, you risk losing your stream during a streaming event.*

13. Click **Save Settings**.

## DRM tab

You can protect your content using a technology called Digital Rights Management (DRM). Niagara SCX allows you to encrypt your content with DRM technology while you are encoding. You can apply DRM while encoding to a file and when broadcasting a stream. Users are required to obtain a license to play to content. This license contains the key to unlock the content and the rights that govern its use (Figure 163).

Refer to *Appendix A* on how to set up and import a DRM profile.

Use the following table to configure the DRM digital input settings for a Windows Media encoder.

*Note: The choices in the drop-down list may vary.*

**Figure 163. DRM tab**

The screenshot shows the DRM Settings tab in the Niagara SCX interface. At the top, there are four tabs: Video, Audio, Output, and DRM, with DRM being the active tab. Below the tabs is a section titled "DRM Settings". It contains a checkbox labeled "Enable DRM" which is currently unchecked. Below the checkbox is a "Profile:" label followed by a drop-down menu showing "None". Underneath the drop-down are two lines of text: "Description: None" and "Key: N/A". A "Note:" follows, stating: "Changing the capture profile may change the current video height/width settings as well as the audio/video input capture selection." At the bottom of the settings area, there are three links: "View All Encoders", "Delete This Encoder", and "Manage Groups". In the bottom right corner of the interface, there is a blue button labeled "Save Settings".

**To configure DRM settings:**

1. Select **Enable DRM**.
2. Click the DRM **Profile** you wish to apply from the drop-down list.

*Note: When you enable DRM, Niagara SCX automatically changes the Windows Media Capture Profile setting to a DRM-compatible Windows Media 9 setting. You may need to adjust this setting after you enable DRM.*

3. Click **Save Settings**.

# IP Inputs

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The current version of Niagara SCX adds the ability to accept Multi-Program Transport Stream (MPTS) and Single Program Transport Stream (SPTS) for all Niagara models via the Ethernet ports.

## IP ingest

To enable IP ingest as the video source, you must either create a new encoder or edit an existing encoder.

When you create a new encoder, the Encoder Properties window appears. The steps for editing a new encoder or an existing encoder are identical. Configure the IP inputs on the video and audio tabs for each encoder type. This section explains the steps for configuring the IP inputs. Configure the rest of the settings as you normally would.

***IMPORTANT!** If you make any changes to the Encoder Properties window, you must click **Save Settings**. Otherwise, all your changes will be lost.*

## Video tab

Use the following table to configure the video IP input settings.

**Figure 164. Video tab**

The screenshot shows the 'Video' tab configuration interface. It is divided into several sections:

- Video Input Settings:** Source is set to 'IP Ingest'. Address is 'udp://' with IP '224.0.0.20' and port '2020'. PID is 'H264 (PID 256 @ i)'. A 'Detect' button is present.
- Video Output Settings:** Size is '1280x720 (Detected Ingest Siz)'.
- Video Encode Settings:** Video Encoder is 'H264', Frame Rate is '29.97 fps', and Bitrate is '3500 kbps'.
- Video Filter Settings:** Includes sliders for Brightness (-256 to 256), Contrast (0 to 256), Hue (-180 to 180), and Saturation (0 to 128). A 'Restore' button is located at the top right of this section.
- De-Interlace:** Radio buttons for 'None', 'Bob' (selected), 'Linear', and 'YADIF'.

At the bottom, there are links for 'View All Encoders', 'Delete This Encoder', and 'Manage Groups', along with a 'Save Settings' button.

### To configure IP ingest video settings:

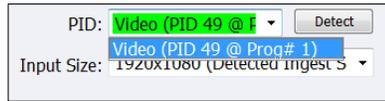
1. Select **IP Ingest** from the drop-down list.
2. The Address and PID fields display under the Source field (Figure 165). Select the desired protocol from the drop-down list in the **Address** field.

**Figure 165. Address and PID fields**

This close-up shows the 'Video Input Settings' section. The Source is 'IP Ingest'. The Address field has a protocol dropdown set to 'udp://' and two textboxes for IP and port. The PID field has a dropdown menu and a 'Detect' button. The Input Size is '400x304 (4:3)'.

*Note: UDP and RTP are currently the only two protocols supported.*

3. Enter a valid IPv4 address in the textbox to the right of the **Address** field.
4. Enter a valid port in the far right text box. The port should be between 2- 65535 including 2 and 65535. The IP source streams to this port. Once entered, the **Detect** button is enabled.
5. Click **Detect**. While the system is detecting the IP stream, all of the IP Ingest controls are disabled (**Address** and **PID** fields). The Detect button displays Detecting and a red working icon spins to show that detection is occurring. This process may take as long as 30 seconds. During this time, the UI is unresponsive. When the detection is complete, if an IP source was detected at the provided IP address and port, it displays in the PID dropdown list (Figure 166).

**Figure 166. PID field**

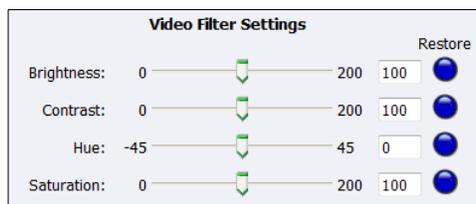
The PID displays in the format: Encode Type (PID X @ Prog# Y). X is the PID number and Y is the Program number. The PID appears green if the detect is successful.

*Note: The Size drop-down list defaults to the detected Input Video Size. You may change this value if you want to stream this video at a different size.*

6. Select a PID from the Input Size drop-down list.
7. If you update a control or you save and reload this encoder, then the PIDs appear yellow. Yellow signifies the PID may or may not be valid or “stale.” IP sources can change over time. The host may stop streaming, or the host may restart the stream and the PIDs and/or the Progs#s may change even for the same content. The PID appears yellow on the Video and Audio tabs.

*Note: Because of the inherent volatility, run a detect on the stream before starting the encoder to ensure that the stream PID is still valid (see PID Example ).*

8. Drag the sliders to adjust the **Brightness, Contrast, Hue, and Saturation** (Figure 167).

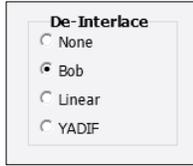
**Figure 167. Video Filter Settings**

*Note: Click **Restore** to the right of the filter to reset the settings to the default.*

9. Click the De-Interlace setting you want to apply (Figure 168). Options include:
  - **None**
    - Performs no de-interlacing of any kind.
  - **Bob**
    - Frame doubler.
    - Displays each half-picture as a full picture by displaying each line twice which preserves temporal resolution of interlaced video.
    - Uses kernel approach (less motion blur by applying additional de-interlacing method only to moving parts leaving static parts of the frame intact).
  - **Linear**
    - Frame doubler.
    - Bob with linear interpolation. Instead of displaying each line twice, line 2 is created as the average of line 1 and 3, etc.
  - **YADIF (Yet Another De-Interlacing Filter)**
    - Frame doubler (Bob).
    - Best general purpose de-interlacing filter. Offers fast and consistent high quality of

interlaced image blending with very little artifacts.  
 – Uses bobbing, but it attempts to recover additional spatial information by looking forward and backward in the video stream (uses previous, current, and future frames).

**Figure 168. De-Interlace settings**



10. Select **Add Statistics** to overlay video statistics within the video stream for diagnostic purposes.
11. Click **Save Settings**.

*Note: If you save an encoder with a PID entered in the PID combination then edit that encoder and press Detect, the saved PID appears green if it is detected, if undetected it appears red. The PID on the Audio tab reflects the same color.*

## PID Example

If you detect three PIDs: 1, 2, and 3 and select 2 and click **Save Settings**, when you edit that encoder you should still see 1, 2, and 3. PIDs 1 and 3 are cached in memory and PID 2 is saved. If you reboot the system, the cache is lost and only PID 2 (which was saved) remains. When the detect occurs, the cache is rebuilt with the current valid options, however, the drop-down list still contains the saved option even if it is no longer valid. For instance, if PID 2 is saved and PIDs 1 and 3 are removed from the cache and replaced with options 5 and 6. The drop-down list shows PID 2 in red, since it is the saved option and no longer valid, and option 5 and 6 in green because they are valid options.

*Note: If you change the IP address and/or the port, the options in the PID drop-down list change to reflect what is in the cache for that combination. If you have not run a detect on that combination, then the PID drop-down list is empty and disabled. The Audio tab updates accordingly.*

## PID color chart

Before you can use the IP ingest function, you should verify whether the audio/video PIDs are valid. After you click **Detect**, the color of the PID field changes to reflect the status of the PID at this time. The following chart explains the colors and the status.

Color	Status
Green	PID is detected.
Yellow	<ul style="list-style-type: none"> <li>● You updated a control.</li> <li>● You saved and reloaded the encoder.</li> <li>● PID is stale.</li> </ul>
Red	PID is not detected at this time.

## Audio tab

Use the following table to configure the audio IP input settings.

**Figure 169. Video tab**

The screenshot displays the 'Audio' configuration tab within a software interface. At the top, there are three tabs: 'Video', 'Audio' (which is selected), and 'Output'. Below the tabs, the 'Audio Input Settings' section contains a 'Source' dropdown menu set to 'IP Ingest' and a 'PID' dropdown menu set to 'AC3 (PID 53 @ Pr)'. Underneath, the 'Closed Caption Settings' section has an unchecked checkbox for 'Overlay Closed Caption'. The 'Audio Output Settings' section features two volume sliders: 'Left Volume' and 'Right Volume', both currently set to 0. To the right of each slider is a speaker icon and a numerical value of 100. A 'Mute Audio' checkbox is also present and unchecked. At the bottom of the interface, there are three links: 'View All Encoders', 'Delete This Encoder', and 'Manage Groups', along with a 'Save Settings' button.

### To configure audio settings:

1. The PID drop-down list is updated from the detect function on the Video tab. Make sure the Video Prog# and the Audio Prog# match. Select the PID.

*Note: The PIDs will not match. It is possible to have several Audio PIDs for a given Prog#.*

2. Select the **Overlay Closed Caption** check box to enable overlay closed captions.
3. Drag the slider to adjust the **Left Volume** and **Right Volume**.
4. (Optional) Select **Mute Audio** to silence the audio.
5. Click **Save Settings**.



# TS Container

You can configure an MPEG encoder to stream to a TS container. To create an encoder, **Encoder** ➤ **All Encoders** ➤ **Create New Encoder** link ➤ **Encoder Name** field. You can also modify an existing MPEG encoder.

*Note: The **Type** on the Encoders page (Encoders ➤ All Encoders) displays as 264.*

## Streaming to a TS container

Figure 170. MPEG4 encoder

The screenshot shows the 'Encoder Properties' window for an H264\_2 encoder. The 'Video' tab is selected. The 'Video Input Settings' section shows 'Source: IP Ingest' and 'Address: udp://'. The 'Video Output Settings' section shows 'Size: 640x480 (480p 4:3)'. The 'Video Encode Settings' section shows 'Video Encoder: H264', 'Frame Rate: 29.97 fps', and 'Bitrate: 768 kbps'. The 'Video Filter Settings' section includes sliders for Brightness, Contrast, Hue, and Saturation, each with a 'Restore' button. The 'De-Interlace' section has radio buttons for 'None', 'Bob', 'Linear', and 'YADIF'. At the bottom, there are links for 'View All Encoders', 'Delete This Encoder', and 'Manage Groups', and a 'Save Settings' button.

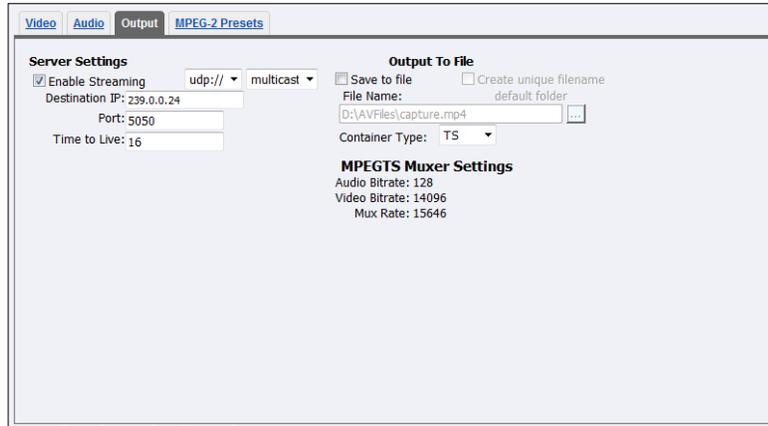
### To configure TS container settings:

1. In the Video Encoder field on the Video tab, select either **MPEG2** or **H264**.

*Note: H.264 and MPEG2 are the only currently accepted video encoder types that will output with the TS container.*

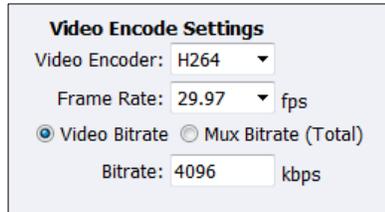
2. On the Output tab, Select **TS** as the Container Type.

**Figure 171. MPEG4 Output tab**



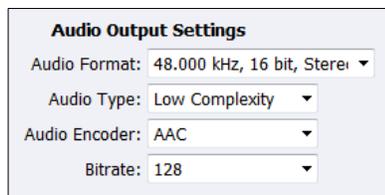
3. Click on the Video tab. Two additional fields display: **Video Bitrate** and **Mux Bitrate**.
4. Select either:
  - Video Bitrate and enter how much bandwidth to use for the video in the Bitrate field.
  - Mux Bitrate and enter the total bitrate the stream will consume (video and audio) in the Bitrate field on the Audio tab.

**Figure 172. New Video Encode Settings**



5. Click on the Audio tab.

**Figure 173. Audio Output Settings**

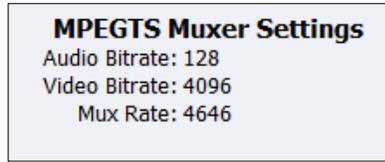


*Note: For MPEG2, the **Audio Type** field is disabled and MP2 is the setting in the **Audio Encoder** field.*

6. Select the **Bitrate** from the drop-down list.

7. View all the bitrates on the Output tab in the MPEGTS Muxer Settings.

**Figure 174. MPEGTS Muxer Settings**



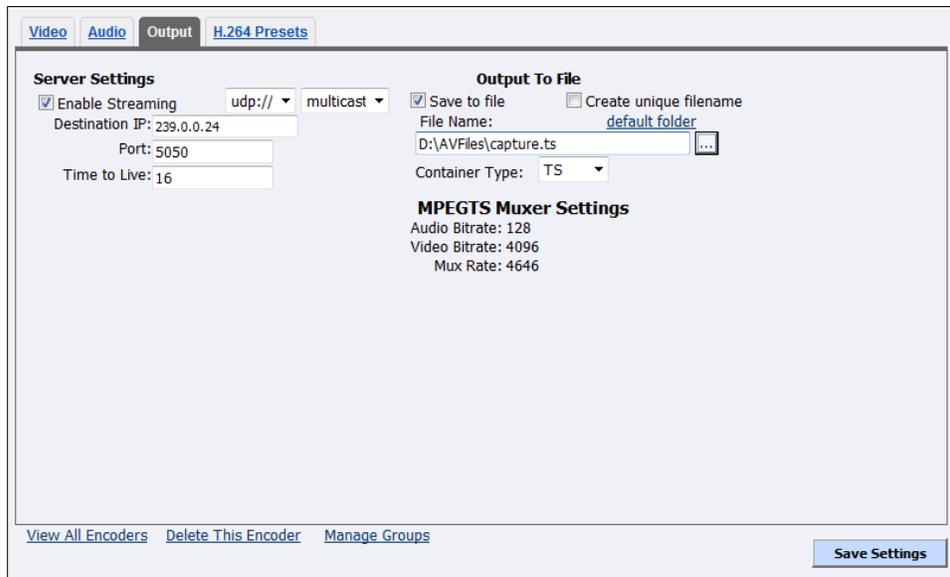
*Note: The total isn't simply Audio Bitrate + Video Bitrate. A small amount of overhead is built in ~10% of the Mux.*

# Streaming

Streaming to a file with the TS container is the same for the other containers. Streaming is slightly different.

## Output tab

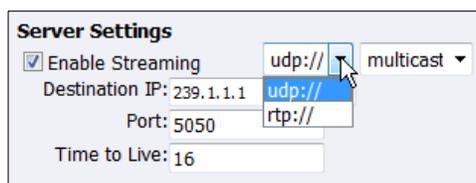
Figure 175. Output tab > Enable Streaming



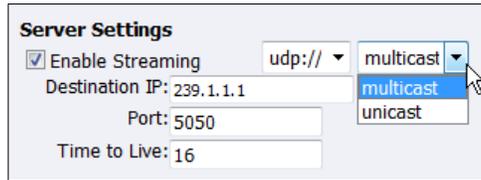
### To configure streaming:

1. Select **Enable Streaming** on the Output tab.
2. Select the protocol. Currently only UDP and RTP are supported.

Figure 176. Server Settings > Scheme



3. Select either:
  - Unicast – To stream to a single computer or device.
  - Multicast – To stream to many computers and/or devices.

**Figure 177. Server Settings**

**Server Settings**

Enable Streaming    udp://    multicast

Destination IP: 239.1.1.1

Port: 5050

Time to Live: 16

multicast  
unicast

4. Enter the **Destination IP** (must be an IPv4 address). If you select Unicast, then the IP address can *not* be in the 224.0.0.0 – 239.255.255 range. If you select Multicast, then the IP address *must* be in the 224.0.0.0 – 239.255.255.255 range.
5. Enter a valid **Port**.
6. Enter a **Time to Live**.
7. Click **Save Settings**.



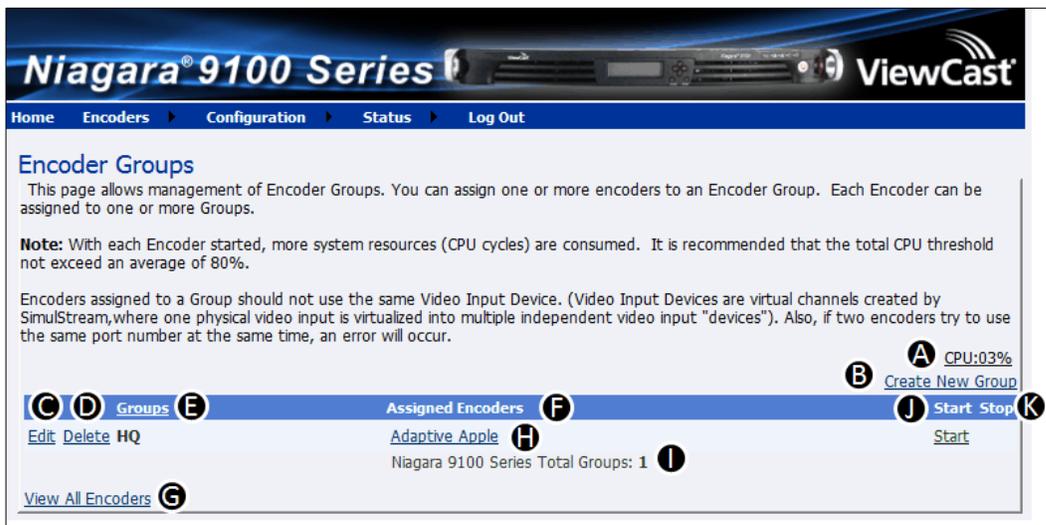
# Encoder Groups

## Viewing encoder groups

Encoder groups represent the cornerstone for streaming on the Niagara system.

The **Encoder Groups** window (Figure 178), a subset of **Encoders** (on the Encoders window), allows you to view the list of encoder groups available for assignment to the Niagara system. Click **Encoders** > **Groups** from the menu bar on the home page.

**Figure 178. Encoder Groups window**



A.	Indicates the CPU usage.
B.	Click this link to create a new group.
C.	Click this link to edit a group.
D.	Click this link to delete a group.
E.	Displays the name of the group.
F.	Indicates the encoders assigned to this group.
G.	Click this link to view the Encoders window.
H.	Click the name of the encoder to view the Encoder Properties window for this encoder.
I.	Indicates the total number of groups on the system.
J.	Click this link to start this group.
K.	Click this link to stop this group.

## Creating encoder groups

If two encoders try to use the same port number at the same time, an error will occur.

Select the **Create New Group** link on the **Encoder Groups** window. The encoder groups fields display (Figure 179).

**Figure 179. Encoder Groups fields**



The screenshot shows the configuration interface for the Niagara 9100 Series ViewCast encoder. The page title is "Encoder Groups" and the breadcrumb navigation is "Home > Encoders > Configuration > Status > Log Out". The main content area contains the following fields:

- Group Name:** A text input field containing "New Group".
- Assigned Encoders:** A list of encoders with checkboxes. The first visible option is "Adaptive Apple" with an unchecked checkbox.
- Submit:** A blue button to save the configuration.

### To create encoder groups:

1. Enter the name of the group.
2. Click on the encoders you want to assign to the group.
3. Click **Submit**.

*Note: It is possible to assign an encoder to two different encoder groups.*

## Starting an encoder group

To start an encoder group, click the **Start** link to the right in the **Start** column of the group you want to start. The encoder group will start in a few seconds. The system displays any errors on the Starting window while the group starts.

*Note: With each encoder started, more system resources (CPU cycles) are consumed. It is recommended that the total CPU threshold not exceed an average of 80 %. Refer to the Setting CPU thresholds section.*

## Stopping an encoder group

To stop an encoder group, click the **Stop** link to the right in the **Stop** column of the group you want to stop. The encoder group will stop in a few seconds. The system displays any errors on the Stopping window while the group stops.

## Editing encoder groups

Select the **Edit** link on the **Encoder Groups** window. The encoder group fields display (Figure 180).

**Figure 180. Encoder Groups field**



The screenshot shows a web form titled "Encoder Groups". Below the title is a subtitle: "Enter a new group name then select the encoders you would like included in your new group." The form contains two main sections: "Group Name:" with a text input field containing "New Group", and "Assigned Encoders:" with a checkbox labeled "Adaptive Apple". At the bottom of the form is a "Submit" button.

**To create encoder groups:**

1. Enter the name of the group.
2. Click on the encoders you want to assign to the group.
3. Click **Submit**.

# Additional Settings and Features

Additional settings and features include:

- Machine properties
- Alerts
- Network properties
- System configuration settings
- Activity log
- Alerts
- External storage device

## Configuring machine properties

The **Machine Properties** window (Figure 181) provides details on software versions, network name, serial number, and hard drive configurations. Click **Configuration** > **Machine Properties** from the menu bar on the home page.

Figure 181. Machine Properties window



Most of the data on this window provides information only and users cannot alter it. However, you can modify two fields:

- Computer Name
- Admin password

## Changing the computer name

The **Computer Name** field contains the current network name for the Niagara system. This name is the same name you typed into the web browser to access the Niagara SCX web interface.

### To change computer name:

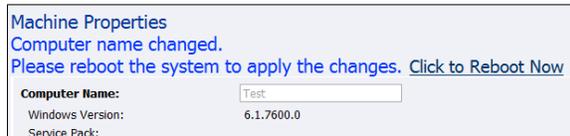
1. Click the **Edit** link next to the Computer Name field (Figure 182).

**Figure 182. Computer Name field**



2. The screen refreshes and the Computer Name field becomes an editable text field. Type in a new name for the Niagara system.
3. Click **Submit** at the bottom of the page.

**Figure 183. Reboot Message**



*Note: The page refreshes, and the system prompts you to reboot the system. Your changes do not take effect until the system restarts.*

4. Click the **Click to Reboot Now** link to restart the system and apply the Computer Name change.
5. *Note: The restart process takes several minutes to complete.*

*When the system restarts, use the new system name in the IE browser URL to return to the **Login** window.*

*If you close your web browser and later want to log into the web interface, you must use the new computer name you created or the IP address of the system to access it.*

## Changing the login password from the factory default

The Niagara 9100 Properties section has two fields: **User Name** and **Serial Number**. Only the **User Name** field can be changed, which changes the **User Password** from the factory default (Figure 184).

**Figure 184. Properties section**

Niagara 9100 Series Properties:	
User Name:	<a href="#">admin</a>
Serial Number:	FE11450001

### To change the login password:

1. Click the [admin](#) link in the **User Name** field.

*Note: The system displays a new window (Figure 185) that allows you to change your login password for the web interface.*

**Figure 185. Password Change window**

Change your Password

Passwords are case sensitive

User Name:

Password:

New Password:

Confirm New Password:

[Back to home page](#)

*Note: You cannot change the **User Name** for the web interface from this window.*

2. Type your current password in the **Password** field.
3. Type your new password in both the **New Password** and **Confirm New Password** fields.

*Note: The web interface password is case sensitive.*

4. Click **Change Password**. The system confirms the change is successful.

*Note: You must log back into the web interface with your password.*

# Configuring alerts

Click **Configuration** > **Alerts** from the menu bar on the home page. The Alerts Window (Figure 186) allows you to configure alerts for different situations that may occur during streaming or other operations.

Figure 186. Alerts window



<b>A.</b>	Click this link to configure email settings on the <b>System Configuration Settings</b> window.
<b>B.</b>	Click the <b>Edit</b> link next to the alert you want to change settings on.
<b>C.</b>	Enable <b>Send Email</b> to send an email to multiple recipients should an alarm occur. <i>Note: You can optionally send an email alert to specific email address in the event of an application alarm. You must specify the email address where you want an alert sent, along with your email server user name, password, and server name..</i>
<b>D.</b>	Enable <b>Light Alarm</b> . The View Alerts window will display a list of the alerts.
<b>E.</b>	Displays the type of alert.
<b>F.</b>	Provides a description of the type of alert.

# Configuring network properties

The **Network Properties** window (Figure 187) provides detailed information on the current network settings for the Network Card. Click **Configuration** > **Network Properties** from the menu bar on the home page.

**Figure 187. Network Properties window**

## Configuring network cards

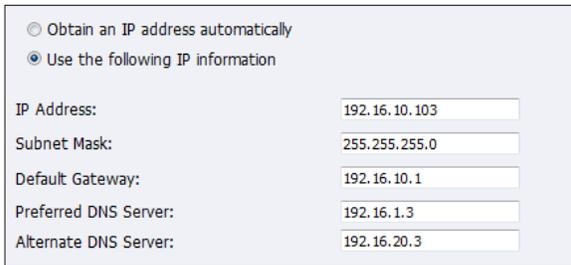
Each Niagara 9100 series system has two 1 Gbit network connections available on the Network Properties window, **Network Card(s)** field. Select the card you wish to view from the drop-down list in the **Network Card(s)** field (Figure 188) to view the current properties for each card.

**Figure 188. Network card options**

## Configuring IP address

Depending on your system configuration, you may need to configure the **IP Address** (Figure 189).

**Figure 189. IP address**



The screenshot shows a configuration window with two radio buttons at the top: "Obtain an IP address automatically" (unselected) and "Use the following IP information" (selected). Below are five text input fields:

- IP Address: 192.16.10.103
- Subnet Mask: 255.255.255.0
- Default Gateway: 192.16.10.1
- Preferred DNS Server: 192.16.1.3
- Alternate DNS Server: 192.16.20.3

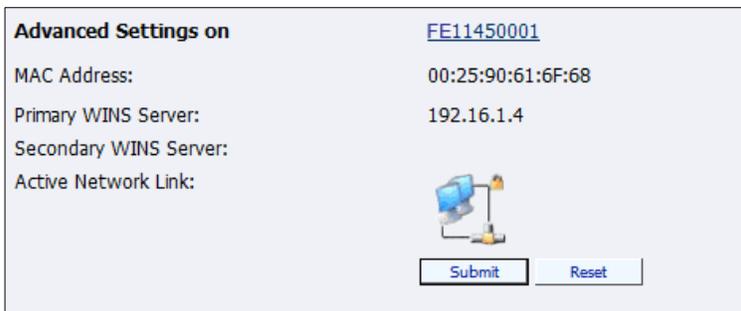
### To configure IP address:

1. Enable Use the following IP information.
2. Enter the appropriate information in the IP Address, Subnet Mask, Default Gateway, Preferred DNS Server and Alternate DNS Server fields.
3. Click **Submit**.

## Configuring advanced network settings

**Advanced Settings** (Figure 190) provides the network name, MAC Address, and server IP address settings.

**Figure 190. Advanced Settings**



The screenshot shows the "Advanced Settings" window with the following fields:

- Advanced Settings on: [FE11450001](#)
- MAC Address: 00:25:90:61:6F:68
- Primary WINS Server: 192.16.1.4
- Secondary WINS Server:
- Active Network Link: 

At the bottom are "Submit" and "Reset" buttons.

The network name (**FE11450001** in Figure 190) is a link. If you click this link, the system transfers you to the Machine Properties window. From this window, you can change the name of the system.

The **Active Network Link** field uses one of two icons to indicate whether the network interface card selected has a network connected.

	The system detects the network link.
	The system does <i>not</i> detect the network link.

# IP Route table

This window enables you to change the IP destination. Only experienced professionals should adjust these settings.

**Figure 191. IP Route Table**

The screenshot shows the 'IP Route Table' configuration page in the ViewCast web interface. The page header includes the 'Niagara 9100 Series' logo and the 'ViewCast' logo. The navigation menu contains 'Home', 'Encoders', 'Configuration', 'Status', 'Maintenance', and 'Log Out'. The main content area is titled 'IP Route Table' and features a tab for 'IPv4'. Below the tab is a table with the following data:

Destination	Netmask	Gateway	Interface	Metric	
0.0.0.0	0.0.0.0	172.16.3.1	Local Area Connection 3	0	<a href="#">Delete</a>
172.16.3.0	255.255.255.0		Local Area Connection 3	256	<a href="#">Delete</a>
224.0.0.0	240.0.0.0		Local Area Connection 3	256	<a href="#">Delete</a>
224.0.0.0	240.0.0.0		Local Area Connection 4	256	<a href="#">Delete</a>

Below the table is an 'Add Route' section with the following form fields:

Destination:  **and** Netmask/Bitmask:   
 Gateway:  **and/or** Interface:   
 Metric:  (Optional)

## System configuration settings

The **System Configuration Settings** window (Figure 192) allows you to modify your default system settings. You can configure email settings to enable the system to send an email to predefined email addresses any time the system encounters an alert condition. You can also customize the information the system displays on the touch panel when the system runs in idle mode.

This window also allows you to restore your system to its original factory disk image and return all the system settings to their original states. The **Restore Factory defaults** option removes all custom settings. It takes approximately 15 to 40 minutes to complete.

Click **Configuration** > **System Configuration** from the menu bar on the home page.

*Note: The selections in the drop-down lists will vary depending on the configuration of your system.*

**Figure 192. System Configuration Settings window**

**Niagara 9100 Series ViewCast**

Home Encoders Configuration Status Log Out

### System Configuration Settings

This page allows you to modify your Niagara 9100 Series default system settings.  
Enter valid email settings to have Niagara 9100 Series send emails for [alert conditions](#).

[Restore Niagara 9100 Series Factory defaults](#)

**Current System Configuration:**

Current Time: Hour 5 Minutes 25 PM [Change Date:11/7/2011](#)

Video Standard: PAL for all Encoders.

**Email Settings:**

Send Emails To:

Email From:

Subject: System Status Report on FE11450001

**SMTP (Mail) Settings:**

User Name:

Password:

SMTP Host:  [Save and Send Test Email](#)

**Default AV Folder:** D:\AVFiles  Apply folder to all encoders.

**High Temperature Alert:** 60 degrees Celsius. ([View Alert Configuration](#)) [Generate Test Alert](#)

**Encoder Startup Settings:**

CPU Threshold: Start an Encoder when the CPU is below Disabled % Optional settings

CPU Threshold Timeout: Wait 5 seconds for the CPU to fall below the threshold before starting encoders.

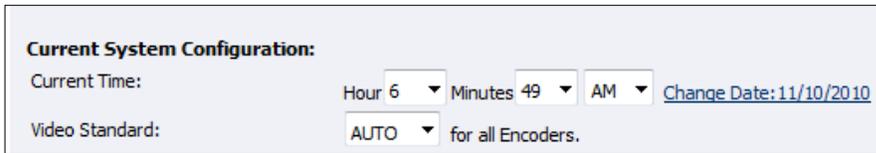
**SimulStream Settings:** Show 5 filters per video device.

*Note: The SimulStream Settings field is only on analog systems.*

## Setting current system configuration

You can set the current time, date, and the video standard for all encoders (Figure 193).

**Figure 193. Current System Configuration**



The screenshot shows a configuration panel titled "Current System Configuration:". It contains two rows of settings. The first row is labeled "Current Time:" and includes three dropdown menus: "Hour" set to "6", "Minutes" set to "49", and "AM/PM" set to "AM". To the right of these is a blue hyperlink labeled "Change Date: 11/10/2010". The second row is labeled "Video Standard:" and includes a dropdown menu set to "AUTO" followed by the text "for all Encoders."

### To set current system configuration settings:

1. Click the **Hour** in the drop-down list.
2. Click the **Minutes** in the drop-down list.
3. Click **AM** or **PM** in the drop-down list.
4. Click the **Change Date** link. A calendar appears.
5. Click the date on the calendar.
6. Click the **Video Standard** from the drop-down list.

*Note: Video Standard is only available on a system with analog configurations.*

7. Click **Submit**.

## Configuring email/SMTP settings

Figure 194. Email/SMTP Setting fields



The screenshot shows a dialog box with the following fields and options:

- Email Settings:**
  - Send Emails To:
  - Email From:
  - Subject:
- SMTP (Mail) Settings:**
  - User Name:
  - Password:
  - SMTP Host:

At the bottom right of the dialog box, there is a button labeled [Save and Send Test Email](#).

### To configure email settings:

1. Enter the email address you want the system to send the email. Separate multiple email addresses with a comma.
2. Enter a valid originating email address.
3. Enter a subject line for your email alert.

### To configure SMTP (mail settings):

1. Enter the SMTP user name for server access.

*Note: If you are unfamiliar with setting up an SMTP Email account for sending email, contact your network administrator for assistance.*

2. Enter the password if required.

*Note: For security purposes, the **password** for your account does not display once the system enters it into the system's settings. Although this field appears blank after you click **Submit**, the system retains the password information.*

*If you change any information in this dialog box, you need to re-enter your **SMTP password** before clicking **Submit**. Not doing so overwrites the previously entered password with a blank entry.*

3. Enter the name of the SMTP server.
4. Click the **Save** and **Send Test Email** to test your settings. The resulting window reports the email as successful or it sends information that a send failure occurred.
5. Click **Submit**.

## Configuring default directory setting

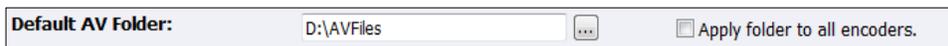
The system stores audiovisual files when you select the **Save to File** option in the encoder profile in the Default AV folder. Refer to the **Save to File** option under the Flash Encoder Properties (Figure 195) sections for information on setting an encoder profile to create an audiovisual file.

*Note: ViewCast strongly recommends you do not alter the default directory setting unless you understand the risk of saving your files to a directory not located on drive D. If you save your files to another drive on the Niagara system, the system could delete the files when you use the Restore to Factory Defaults feature.*

*Only drive D on the Niagara system has available storage to save your files. Check the drive properties for available free space to determine your storage capacity.*

*Use drives C, E, and F strictly for the Niagara operational programs. Any modifications to these drives can permanently damage your system and void your warranty.*

**Figure 195. Default AV Folder field**



The screenshot shows a user interface element for setting the default AV folder. It consists of a label "Default AV Folder:" followed by a text input field containing "D:\AVFiles". To the right of the input field is a small icon with three dots. Further to the right is a checkbox labeled "Apply folder to all encoders." which is currently unchecked.

## Setting CPU thresholds

You may set the **CPU Threshold** field (Figure 196) to accommodate optimal encoding capabilities. You also may set the time between repetitive intervals for checking the CPU threshold.

**Figure 196. Encoder Startup Settings**

The screenshot displays the 'Encoder Startup Settings' section of a configuration interface. A dropdown menu is open over the 'CPU Threshold' field, showing a list of percentage values from 1 to 99, with 'Disabled' selected at the top. The interface includes various other settings such as 'Current Time', 'Video Standard', 'Email Settings', 'SMTP (Mail) Settings', 'Default AV Folder', and 'High Temperature Alert'. The 'CPU Threshold Timeout' is set to 5 seconds.

**Encoder Startup Settings:**  
CPU Threshold: Start an Encoder when the CPU is below Disabled % Optional settings  
CPU Threshold Timeout: Wait 5 seconds for the CPU to fall below the threshold before starting encoders.

Current Time: Hour 1 Minutes 46 PM Cha Disabled /2011  
Video Standard: PAL for all Encoders.  
**Email Settings:**  
Send Emails To:  
Email From:  
Subject: System Status Report on FE11450001  
**SMTP (Mail) Settings:**  
User Name:  
Password:  
SMTP Host: Save Email  
**Default AV Folder:** D:\AVFiles ... folder to all encoders.  
**High Temperature Alert:** 60 degrees Celsius. (View Al ... n) Generate Test Alert  
**Encoder Startup Settings:**  
CPU Threshold: Start an Encoder when the CPU is below Disabled % Optional settings  
CPU Threshold Timeout: Wait 5 seconds for the CPU to fall below the threshold before starting encoders.

*Note: ViewCast recommends a CPU threshold setting of 80% or lower.*

## Restore Niagara factory defaults

Restore to Factory Defaults allows you to restore drive C to its original factory system defaults. This action removes all data (including stored files) on the primary drive and reinstalls the original factory image.

*Note: Select this option only if you wish to return your system to its factory defaults. Selecting this option erases all data currently stored on drive C and stops all currently running programs. Remove any USB storage device before performing a Factory Restore.*

This operation takes approximately 15 to 45 minutes to complete. Do not power off or interrupt the system restore once it starts. All services automatically restart when the system restore completes. You may then use the Niagara system's web interface tool to reset the time, date, and video format.

Click the **Restore Niagara 9100 Factory defaults** link on the **Configuration** > **System Configuration** Settings window (Figure 192) to start the process. The resulting window (Figure 197) allows you to return to the Home Page, thereby cancelling this action, or continue with the restore action.

When you select **Check this box to save the existing Encoder profiles during Factory Restore**, the settings for all your encoder profiles are retained and will display after the factory restore is complete.

**Figure 197. Restore Factory Defaults**

**Restore Factory Defaults**

Restore to Factory Defaults will fully restore the primary drive (C:) to the original factory system defaults. This operation will remove all data (including stored files) on the primary drive and will reinstall the original factory image.

This operation should only be selected if you wish to return to the factory defaults. SELECTING THIS OPERATION WILL ERASE ALL DATA CURRENTLY STORED ON THE C: DRIVE AND WILL STOP ALL RUNNING PROGRAMS. Completing this operation will take approximately 40 minutes.

Do not power off or interrupt the system restore once it has started. All services will automatically restart when the system restore has completed. You may then reset the time, date, and video format using the Web interface tool.

**Check this box to save the existing Encoder profiles during Factory Restore**

[Restore to Factory Defaults](#) [Back to Home Page](#)

The window provides you details regarding the process you are about to execute and allows you the opportunity to once again cancel the process by clicking **Back to Home Page**.

*Note: **Restore to Factory Defaults** rebuilds the primary disk drive C with the original system image. You lose all custom settings and any files saved to drive C. You cannot reverse this process. However, you can manually re-enter your custom settings once the restore process is complete.*

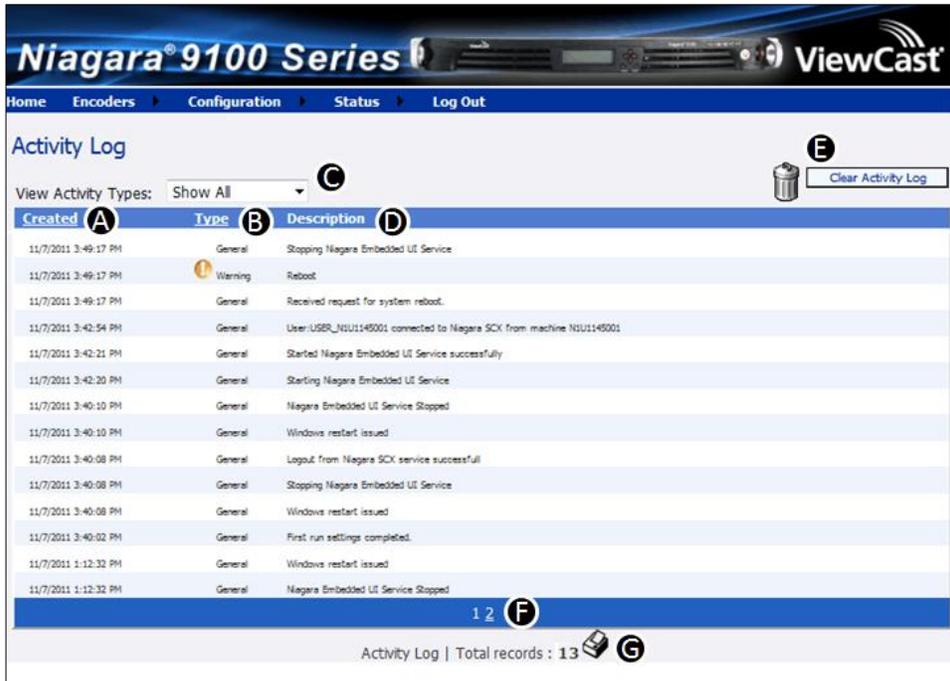
*Use the default directory, D:\AV Files\ for saving your audio and video files. The system only re-images drive C when you use the **Restore to Factory Defaults** option. It preserves all files and folders on drive D. Always use the default directory – drive D – for storage of personal files to ensure the system does not remove your personal files.*

**IMPORTANT!** Remember that the system deletes all previously stored encoder profiles and groups when you restore it to its factory defaults.

# Viewing the activity log

The Activity Log records the encoder Start and Stop events (Figure 198). The system updates the log for every event including the date and time. To view the activity log, on the home page click **Status** ➤ **View Activity Log**.

Figure 198. Activity Log window



- A. Displays the system date and time stamps for each event.
- B. Indicates the type of activity.
- C. Select the types of activity you wish to view. Options include:
  - Show All
  - General
  - Errors
  - Warnings
- D. Displays a description of the activity.
- E. Click this link to clear all logged activities.
- F. Click to view multiple pages of activity log.
- G. Displays the total number of records for the selected view type. Click the printer icon for a printer friendly view of activity log. When the print friendly view appears, click **File** ➤ **Print** to print a hard copy or save a soft copy of the Activity Log.

## Viewing alerts

Click **Status** ➤ **View Alerts** (Figure 199) from the home page. The system records the encoder events that register as alerts. The Alerts Window updates with every alert event on the Niagara system. The alerts include any specific alert events for the encoder.

Figure 199. Alerts window



- A. Displays the date and time that the alert occurred.
- B. Displays the message ID number for the alert and the description.
- C. Indicates the number of alerts.
- D. Click this icon to clear all alerts.

## Connecting an external storage device

Each Niagara 9100 series systems provide two USB ports on the rear panel and two on the front panel. You can connect almost any standard USB storage device to these ports. This allows you to export any audiovisual files you created on the local storage drive of the Niagara system. The encoder defaults to set the local storage drive D when you use the **Save to File** setting with the Niagara system's web interface.

When you insert a USB storage device in one of the USB ports on the system, it automatically detects the removable storage device, and assigns a drive letter to the device. Use standard Windows methods to transfer audiovisual files from drive D to the attached USB storage device.

## Using the Niagara SCX web interface

You may wish to perform even more advanced setup and operations. To do so, you may choose to access the Niagara SCX interface. You may access the Niagara SCX interface through a remote desktop by connecting a monitor, keyboard, and mouse to the Niagara system. Use the *Niagara SCX User Guide* for specific information on how to use the Niagara SCX and the Niagara SCX Explorer software.

# SNMP

---

This section provides installation and setup information for the ViewCast SNMP agent service. This release supports SNMP v1 and SNMP v2c. SNMP v3 will be supported in future releases.

The native Windows SNMP service implements standard MIB functions such as those defined in RFC1213-MIB, HOST-RESOURCES-MIB including IP address table, interface table (MAC addresses) and traps of cold start, interface link up, link down, etc.

The SuperMicro SNMP agent service is a third-party SNMP agent provided by Super Micro Computer to monitor the health of system devices in the system, such as fan speed, CPU temperature, system temperature, etc.

The ViewCast SNMP agent service will run as the master SNMP agent in the system. It will not only implement ViewCast private MIBs as listed below, but also provide proxy functions to relay SNMP requests/responses associated with those objects managed by other SNMP sub-agents.

- The private MIBs include VIEWCAST-AVENCODER-MIB and VIEWCAST-AVENCODER-TRAP-MIB, etc.

## External SNMP Manager

With ViewCast SNMP agent enabled in each Niagara system, you can start a single SNMP manager at a central location to manage one or multiple systems at the same time.

The external SNMP manager could be a GUI-based commercial or free application tool or an SNMP scripting tool. Which SNMP manager to use is your choice.

# SNMP UDP Ports Used by SNMP Manager and SNMP Agents

## UDP Port for SNMP Requests

SNMP request messages are sent from SNMP manager to SNMP agent. When the external SNMP manager expects to “talk” to the ViewCast SNMP agent, it sends SNMP requests to the ViewCast SNMP agent over the default SNMP UDP port 161 with the following parameters:

- Correct IP address of the encoder system
- Other parameters such as an appropriate community name
- Configure the corresponding community name

*Note: For SNMP v1/v2c version, a community name is treated as a password to access the resources managed by the SNMP agent. Different community names can have different access rights such as NOTIFY ONLY, READ ONLY, WRITE ONLY, READ WRITE and READ CREATE etc.*

You can configure the ViewCast SNMP agent to receive SNMP requests over a different UDP port other than 161. You also have the option to configure the ViewCast SNMP agent to receive SNMP requests over a different UDP port other than 161. Refer to information in this section on how to make these changes.

*Note: Once the SNMP UDP port is configured, you don't have to manually enable it in the firewall setting. Instead, it is automatically enabled when the ViewCast SNMP agent is started.*

## UDP Port for SNMP Traps

SNMP traps are sent from the SNMP agent to the SNMP trap listener. You can monitor and receive SNMP traps over UDP port 162 from one or multiple SNMP-enabled Niagara systems. Perform the following to monitor and receive SNMP traps:

- Configure the IP address where the SNMP trap listener runs as one of the trap destinations for each affected ViewCast SNMP agent.
- Configure the corresponding community name.
- Keep running an SNMP trap listener application to monitor traps over SNMP UDP port 162 with an appropriate community name.
- Allow the trap listener to pass through the firewall on UDP port 162.

*Note: Choosing a trap listener is up to you. The trap listener doesn't have to run on the system. Instead, it runs in a centralized location.*

# Configure ViewCast SNMP Agent Service

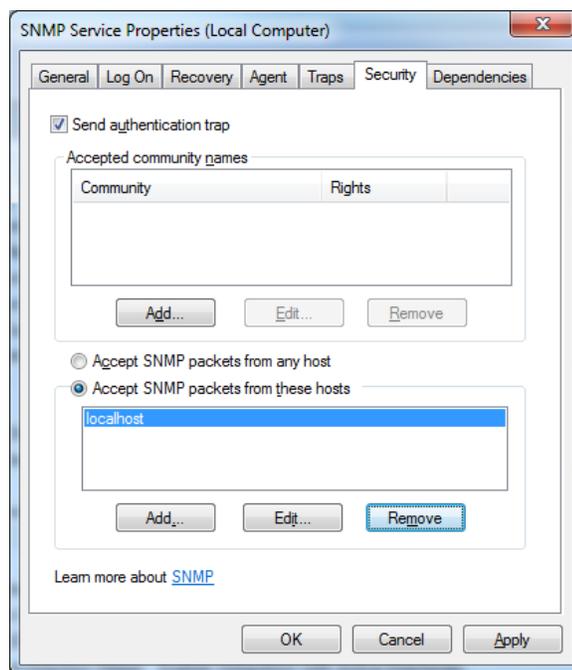
Complete the steps in the following tables to configure ViewCast SNMP Agent service. When the configuration is complete, restart the system.

## Configuring community names

### To configure community names:

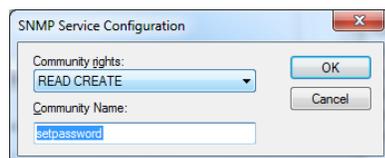
1. Run Windows service management tool services.msc
2. Right click on **SNMP Service** then click **Properties**.
3. Click on the Security tab.

**Figure 200. Security tab**



4. Click **Add** to add community names. For SNMP v1/v2c versions, treat each community name as a password for access control of the SNMP-enabled systems.

**Figure 201. Community Name field**



- You can define multiple community names with different community rights such as NOTIFY, READ ONLY, READ WRITE and READ CREATE.
- You can use these community names to access objects as defined in the standard MIBs (such as RFC1213-MIB) and ViewCast private MIBs (such as VIEWCAST-AVENCODER-MIB and VIEWCAST-AVENCODER-TRAP-MIB).

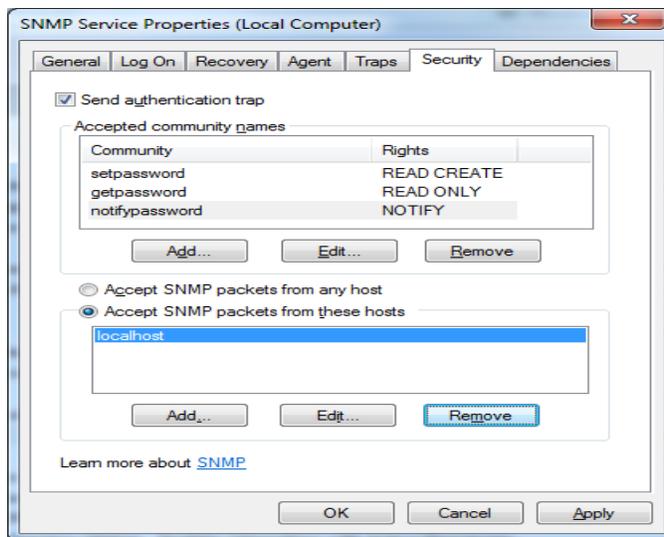
- READ CREATE has the maximum access right while the NOTIFY has the minimum right.
- Community names with NOTIFY permission can be used to monitor traps only, READ ONLY community names can be used to retrieve data only while READ CREATE ones can perform SNMP SET as well as GET requests, etc.

## Configuring permitted SNMP managers

To configure permitted SNMP managers:

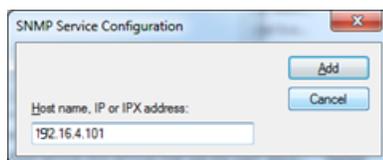
1. Run Windows service management tool services.msc ➤ right click on **SNMP Service**.
2. Click on **Properties**.
3. Click the **Security** tab.

**Figure 202. SNMP Service Properties – Security tab**



4. Select **Accept SNMP packets from these hosts**.
5. Click **Add**.
6. Enter the IP addresses of the permitted SNMP managers in the following window.

**Figure 203. SNMP Service Configuration**

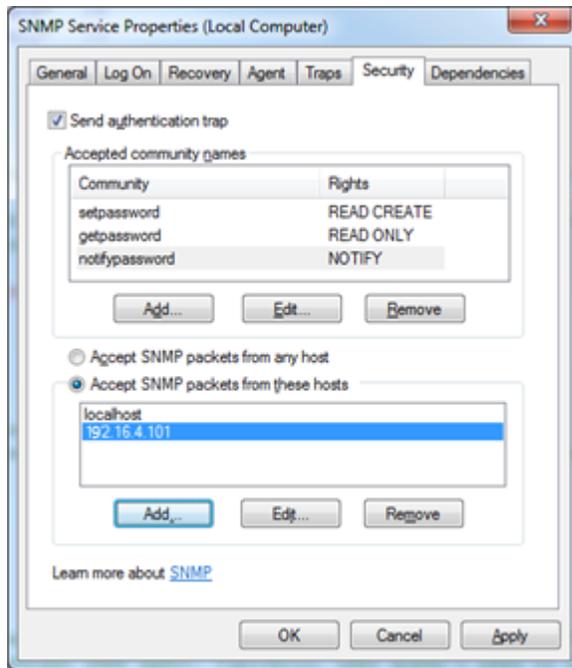


7. Click **Add**.

*Note: The IP address shown above is just an example. It shall be the IP address of the external SNMP manager.*

8. Add all the IP addresses at which external SNMP manager may run.

**Figure 204. IP Addresses**

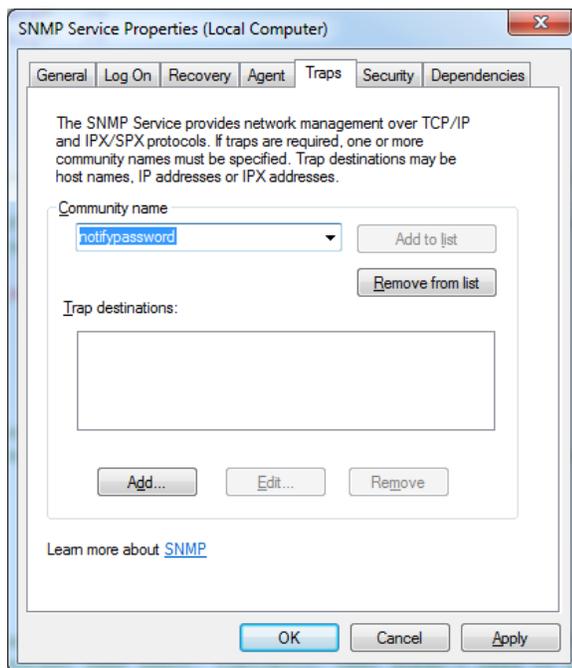


## Configuring trap destinations

### To configure trap destinations:

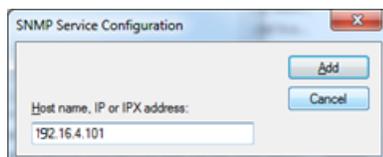
1. Run Windows service management tool services.msc
2. Right click on **SNMP Service** then click on **Properties**.
3. Click on the **Traps** tab.
4. In the Community Name section, enter one of the community names that are defined through the Security tab, for example, **notifypassword**.
5. Click **Add to list**.

**Figure 205. Traps tab**



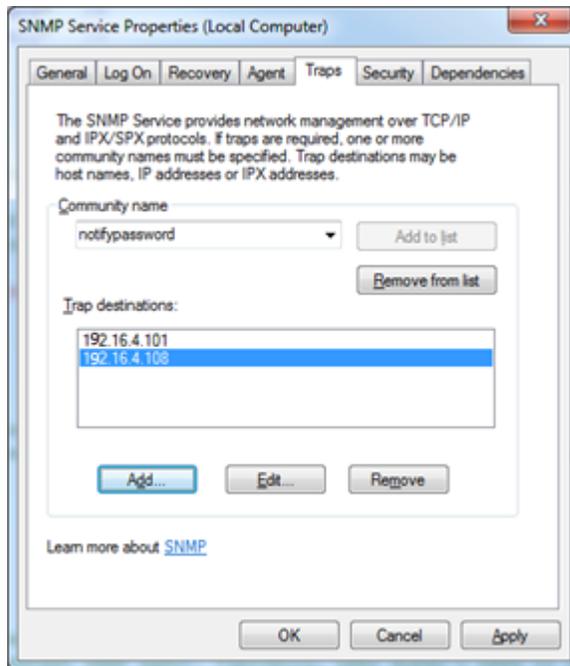
6. In the Trap destinations section, enter the IP address of each trap destination at which the trap listener may run.

**Figure 206. SNMP Service Configuration**



7. After all the IP addresses under the trap destination section are added, click **Apply**.

**Figure 207. Trap destinations**



## Configuring SNMP agent contact and location (optional)

After community names, permitted SNMP managers and trap destinations are configured, you may configure the contact and location information for the associated SNMP agent.

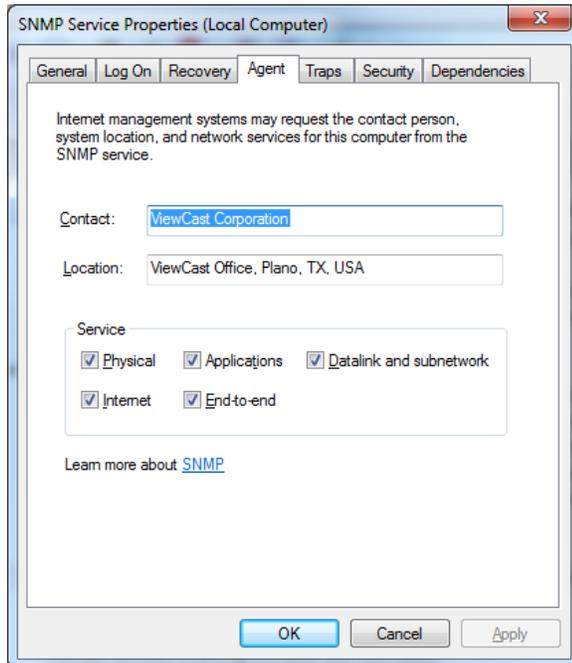
### To configure SNMP Agent contact and location:

1. Run Windows service management tool services.msc
2. Right click on **SNMP Service** then click on **Properties**.
3. Click on the Agent tab.
4. Enter appropriate **Contact** and **Location** information.

*Notes: You may retrieve the system contact information through SNMP query on .iso.org.dod.internet.mgmt.mib-2.system.sysContact as defined in RFC1213-MIB.*

*You may retrieve the system location information through SNMP query on .iso.org.dod.internet.mgmt.mib-2.system.sysLocation as defined in RFC1213-MIB.*

**Figure 208. Agent tab**



# Use UDP Port Other Than 161 for SNMP Requests

The default UDP port used for SNMP requests sent from SNMP manager to SNMP agent is 161. The ViewCast SNMP agent supports the use of a different UDP port. To make this change, perform the following steps:

## To use UDP port other than 161 for SNMP requests

1. Access the default installation directory C:\Program Files (x86)\ViewCast\ViewCast SNMP Agent\
2. Make a copy of file `vcst_snmp_agent_cfg_example.xml` and save it to `vcst_snmp_agent_cfg.xml`.
3. In `vcst_snmp_agent_cfg.xml`, keep the default setting unchanged as shown below.
 

```
<snmp_setting_flags>
  <permitted_managers_option use_win_snmp_settings = "true" />
  <valid_communities_option use_win_snmp_settings = "true" />
  <trap_configuration_option use_win_snmp_settings = "true" />
</snmp_setting_flags>
```
4. In `vcst_snmp_agent_cfg.xml`, for element `udp_port_to_snmp_manager`, set the port attribute to the desired port other than 161, for example 4071 as shown below:
 

```
<udp_port_to_snmp_manager port = "4071" />
```
5. In `vcst_snmp_agent_cfg.xml`, keep all the other settings unchanged and save.
6. Restart (or stop then start) ViewCast SNMP agent service by running Windows service management tool `services.msc`
7. Right click on **ViewCast SNMP Agent**.
8. Click **Restart** or **Stop** then **Start**.
9. Configure the SNMP manager to use the same UDP port for SNMP requests. To revert to the use of UDP port 161, simply rename the file `vcst_snmp_agent_cfg.xml` or remove it or set the above port to 161.
10. Save and then restart the ViewCast SNMP agent.

## ViewCast SNMP Agent MIB Files

By default, all standard MIB files and ViewCast private MIB files that come with the installation package will be installed into the following directory:

C:\Program Files (x86)\ViewCast\ViewCast SNMP Agent\

You may load the following MIB files into the SNMP manager tool.

- VIEWCAST-AVENCODER-MIB.txt (ViewCast private MIB)
- VIEWCAST-AVENCODER-TRAP-MIB.txt (ViewCast private)
- SUPERMICRO-HEALTH-MIB.txt ( 3rd-party MIB from SuperMicro Computer )
- RFC1213-MIB.txt (Standard SNMP MIB)
- SNMP-COMMUNITY-MIB.txt (Standard SNMP MIB)

# Retrieving IP and MAC Addresses of the Encoder System

The IP address and interface table are part of standard MIB functions as defined in RFC1213-MIB. It is implemented by the native Windows SNMP service.

- The IP address per interface or NIC can be retrieved through .iso.org.dod.internet.mgmt.mib-2.ipAddrTable as defined in RFC1213-MIB.
- The MAC address per interface or NIC can be retrieved through .iso.org.dod.internet.mgmt.mib-2.interfaces.ifTable.ifEntry.ifPhysAddress as defined in RFC1213-MIB

## SNMP Examples

### Query system information (SNMP GET Example)

#### To query system information:

1. Locate the VIEWCAST-AVENCODER-MIB.txt under C:\Program Files (x86)\ViewCast\ViewCast SNMP Agent\.
2. Load the VIEWCAST-AVENCODER-MIB.txt into the SNMP manager.
3. Set object ID to .iso.org.dod.internet.private.enterprises.viewcast.avencoder.avencoderMIB.systemInfo.
4. Specify correct IP address of the targeted ViewCast SNMP agent: **xx.xx.xx.xx**
5. Verify the Port field is set to **161**.
6. Set SNMP version to **v1**.
7. Specify community such as **getpassword** with at least community right of **READ ONLY**.
8. Send **SNMP GET** request message to the targeted ViewCast SNMP agent.

## Start/stop an encoder through SNMP

Use the same steps to load and expand VIEWCAST-AVENCODER-MIB until  
 .iso.org.dod.internet.private.enterprises.viewcast.avencoder.avencoderMIB.avencoderObjects.avencoderTable.avencoderEntry.avencoderCommand.

### To start/stop an encoder through SNMP:

1. Use the same method to load and expand VIEWCAST-AVENCODER-MIB until  
 iso.org.dod.internet.private.enterprises.viewcast.avencoder.avencoderMIB.avencoderObjects.avancoderTable.avencoderEntry.avencoderCommand.
2. Set object ID to something like:  
 .iso.org.dod.internet.private.enterprises.viewcast.avencoder.avencoderMIB.avencoderObjects.avencoderTable.avencoderEntry.avencoderCommand.77.80.69.71 where  
 77.80.69.71 is the ID of the associated encoder.

*Note: With ViewCast SNMP agent V2.0, the index to the encoder table is no longer the encoder name but an integer ID. Therefore, in this command, set it to something like:*

*.iso.org.dod.internet.private.enterprises.viewcast.avencoder.avencoderMIB.avencoderObjects.avencoderTable.avencoderEntry.avencoderCommand.10 where  
 '10' is the ID of the associated encoder.*

3. Specify correct IP address of the targeted ViewCast SNMP agent: **xx.xx.xx.xx**
4. Verify the Port field is set to **161**.
5. Set SNMP version to **v1**.
6. Specify community such as **setpassword** with community right of **READ CREATE**.
7. Specify Set Value to **start** or **stop**.
8. Send SNMP SET request message to the targeted ViewCast SNMP agent.

## Start/stop all encoders per group through SNMP

Use the same steps to load and expand VIEWCAST-AVENCODER-MIB until  
 .iso.org.dod.internet.private.enterprises.viewcast.avencoder.avencoderMIB.avencoderObjects.avencoderGroupTable.avencoderGroupEntry.groupCommand.

### To start/stop all encoders per group through SNMP:

1. Set object ID to something like  
 .iso.org.dod.internet.private.enterprises.viewcast.avencoder.avencoderMIB.avencoderObjects.avencoderGroupTable.avencoderGroupEntry.groupCommand.71.114.111.117.112.49 where **71.114.111.117.112.49** is the ID of the associated encoder group.

*Note: With ViewCast SNMP agent V2.0, the index to the encoder table is no longer the encoder name but an integer ID. Therefore, in this command, set it to something like:*

*.iso.org.dod.internet.private.enterprises.viewcast.avencoder.avencoderMIB.avencoderObjects.avencoderTable.avencoderEntry.avencoderCommand.20 where 20 is the ID of the associated encoder group.*

2. Specify correct IP address of the targeted ViewCast SNMP agent: **xx.xx.xx.xx**

3. Verify the Port field is set to **161**.
4. Set SNMP version to **v1**.
5. Specify community such as **setpassword** with community right of **READ CREATE**.
6. Specify Set Value to **start** or **stop**.
7. Send SNMP SET request message to the targeted ViewCast SNMP agent.

## Start/stop all encoders in the system through SNMP

Use the same steps to load and expand VIEWCAST-AVENCODER-MIB until .iso.org.dod.internet.private.enterprises.viewcast.avencoder.avencoderMIB.systemCommand.sysComm and.

### To start/stop all encoders in the system through SNMP:

1. Set object ID to .iso.org.dod.internet.private.enterprises.viewcast.avencoder.avencoderMIB.systemCommand.sysCommand.
2. Specify correct IP address of the targeted ViewCast SNMP agent: **xx.xx.xx.xx**
3. Verify the Port field is set to **161**.
4. Set SNMP version to **v1**.
5. Specify community such as **setpassword** with community right of **READ CREATE**.
6. Select Set Value to start\_all\_encoders or stop\_all\_encoders.
7. Send SNMP SET request message to the targeted ViewCast SNMP agent.

## Start SNMP trap listener

### To start SNMP trap listener:

1. Locate the VIEWCAST-AVENCODER-TRAP-MIB.txt under C:\Program Files (x86)\ViewCast\ViewCast SNMP Agent\.
2. Load the VIEWCAST-AVENCODER-TRAP-MIB.txt into the SNMP manager.
3. Verify the Port field is set to **162**.
4. Specify community such as **notifypassword** with at least community right of **NOTIFY**.
5. Select **Authenticate v1/v2c traps** to match community name.
6. Start the Trap Listener.

## Appendix A: DRM for Windows Media

---

You can protect your content using a technology called Digital Rights Management (DRM). Niagara SCX allows you to encrypt your content with DRM technology while you are encoding. You can apply DRM while encoding to a file and when broadcasting a stream. Users will be required to obtain a license to play the content. This license contains the key to unlock the content and the rights that govern its use.

*Note: A third-party license provider issues licenses, so you must set up an account with a third-party license provider to protect your content.*

Niagara SCX automatically detects any available DRM profiles imported on the encoding system. If no DRM profiles are installed, the DRM functions in Niagara SCX are disabled.

### To enable the DRM function in Niagara SCX:

1. Set up an account with a third-party license provider and create a DRM profile.
2. Import the DRM profile using the Microsoft® Windows Media Encoder application included with Niagara streaming media systems or available as a free download from Microsoft Corporation (<http://www.microsoft.com>).
3. Restart the unit on which Niagara SCX is installed, allowing the software to auto-detect and enable its DRM functions.

## Importing a DRM profile

If you have not already done so, set up an account with a licensed provider and create a DRM profile. Once you create the DRM profile, you must use Windows Media Encoder to import the profile on the encoding system.

Windows Media Encoder is included in Niagara streaming media systems that have Niagara SCX version 5.0 or later installed. To access the desktop of the Niagara system, attach a keyboard, a mouse, and a monitor to the system. If the system is installed in a location that does not provide physical access, you can use Windows Remote Desktop Connection to access the desktop.

***IMPORTANT!** When connecting to a Niagara 9100 series system using a remote desktop connection, it is extremely important you set the Local Resources to **Leave at remote computer** before connecting to the system.*

**To open a remote desktop connection:**

1. Open the **Remote Desktop Connection** (Figure 209).

**Figure 209. Remote Desktop Connection**



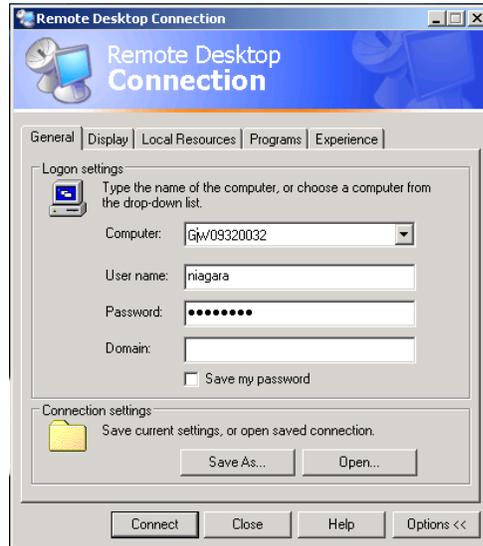
2. Click **Options**. The setting tabs display.
3. Click the **Local Resources** tab.
4. Under **Remote computer sound**, click **Leave at remote computer** option from the drop-down list (Figure 210).

**Figure 210. Local Resources tab**



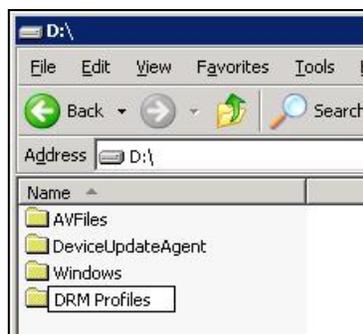
- Click the **General** tab (Figure 211).

**Figure 211. General tab**



- In the **User Name** field, type **scxuser**.
- In the **Password** field, type **viewcast** to connect the system using remote desktop.  
*WARNING! When exiting from Remote Desktop Connection, do not log off. Instead, exit/close the session from the system. This step allows its internal programs to continue running.*
- Go into Windows Explorer and change the folder settings to show all files and show protected files.
- Copy the DRM profiles to a protected location on the encoding system to ensure they are not removed or erased accidentally (Figure 212).  
*Note: ViewCast recommends you create a new directory on drive D on the Niagara system and use this directory to store your DRM profiles.*

**Figure 212. DRM Profiles**



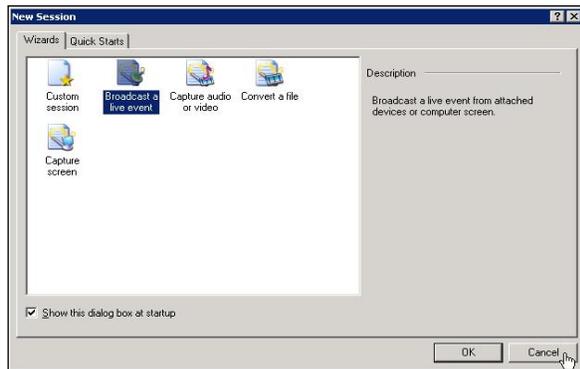
10. Start the Windows Media Encoder application on the system (Figure 213).

**Figure 213. Starting Windows Media Encoder**



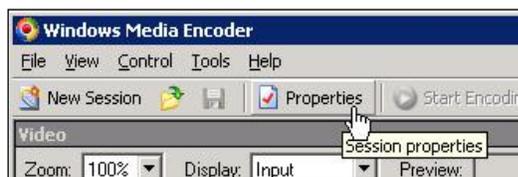
11. When the New Session Wizard displays, click **Cancel** (Figure 214).

**Figure 214. New Session Wizard**



12. Click **Properties** under the top menu bar (Figure 215).

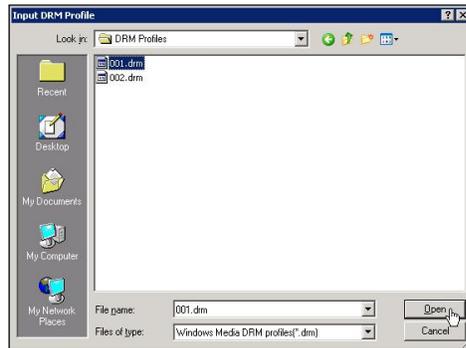
**Figure 215. Properties tab**



13. Click the **Security** tab.
14. Click **Import** and browse to the location of the DRM profiles on the system's hard drive.

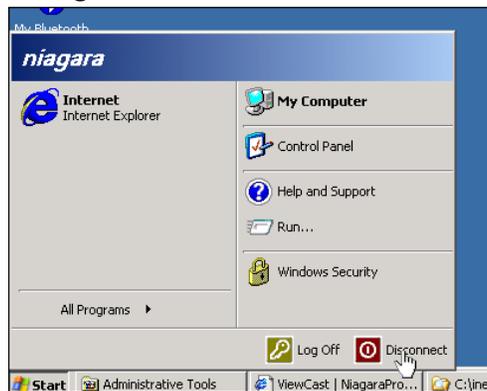
15. Select the DRM profile you wish to import and click **Open** (Figure 216).

**Figure 216. DRM Profile**



16. Repeat this process for each DRM profile you wish to import.
17. Exit from the Windows Media Encoder application when finished.  
*Note: If the system prompts if you want to save your encoding session, click **No option**.*
18. Disconnect Remote Desktop Connection from the system (Figure 217). *Do not log out.*

**Figure 217. Disconnect Remote Desktop**



19. Restart the system.



## Appendix B: H.264 Advanced Settings

### H.264 Presets

In general, the Main Profile Default presets for the H.264 encoder Custom Presets will meet your streaming requirements. For devices with restricted bandwidths and under certain conditions such as low bit rates, motion specific, or constant bit rate applications, you may need to adjust the Advanced Encoder Settings values in each line. This section includes some information to help you select Advanced Encoder Settings. These examples are suggestions. You should understand and select the appropriate values for your streaming application. See *Settings* for explanations of each setting variable.

Setting	Value Range
BFramesMax	0 to 4
GOPSize	1 to 4000
GOPSizeMin	1 to 4000
InLoopDeblockingFilterAlpha	-6 to 6
InLoopDeblockingFilterBeta	-6 to 6
LookaheadFrames	0 to 200
NoiseReduction	0 to 1500
QuantizerMax	1 to 51
QuantizerMin	1 to 51
ReferenceFrames	0 to 16
SceneChangeDetectThreshold	0 to 4000
TrellisRDQuantization	0 to 2

The following Custom Presets are available for the H.264 Advanced Encoder Settings:

- Baseline Profile
- Baseline Profile - Minimal CPU
- Main Profile Default
- Main Profile – Minimal CPU
- High Profile
- High Profile – Minimal CPU

You can adjust all of the Custom Presets above. The preset titles are only a suggestion that the last three be used for end-user custom modifications, while the first three could remain unmodified if you want to compare the defaults to their own settings. You may also select the **Restore Defaults** link on the lower right-hand corner of the table to set all values for all Custom Presets to the default settings.

Baseline profile is for video conferencing and mobile applications and has the lowest demands on CPU load and memory usage, but the lowest resulting quality. Main profile is for standard-definition TV, while high profile is best for HD video.

*Note: You can use each profile for any resolution video with expected increases in video encode quality and corresponding impacts to CPU and memory. Finally, you may use additional changes to the Advanced Encoder Settings to further refine the video encoding.*

## Settings

Setting	Explanation
BFramesMax	This value sets the maximum number of concurrent B-frames you can use. More B-frames improve video quality but also increase CPU load, in some cases considerably. Only Main or High Profile support B-frames. Changing this value when Baseline Profile is selected has no effect.
GOPSize	This value sets the maximum interval between IDR (also called reference) frames. Theoretically, higher values improve compression because I-frames have more data but it can also increase the appearance of fluctuating quality because more P- or B-frames (partial) are used. If you see “pulsing” or “strobing” in the encoded video, this value may be too low.
GOPSizeMin	This value sets the minimum length between IDR (reference) frames. This setting limits the minimum length after each I-frame before another can be placed. The suggested default is 1 x the frame rate.
InLoopDeblockingFilterAlpha	This value affects the overall amount of deblocking applied to the video. Higher values remove blocky appearance more efficiently, but retain less detail causing the image to appear softened. This value is the most important parameter in determining the overall sharpness of your encode. To make a low bit rate encode look smoother, set this to a positive number. The default value is <b>0</b> and should be sufficient to eliminate most blocking. In general, values lower than <b>-3</b> and higher than <b>3</b> are usually not used, but could be if so desired.
InLoopDeblockingFilterBeta	This value determines whether something in a block is a detail or not when deblocking is applied to it. Lower values apply less deblocking to more flat blocks with detail present and more deblocking to blocks without detail. Higher values cause more deblocking to be applied to less flat blocks with details present. Raising the value of Beta deblocking is a good way to get rid of ringing artifacts by applying more aggressive filtering to blocks that are not very flat. Lowering the value of Beta deblocking is a good way to reduce the amount of DCT blocks without blurring the entire picture. Again, the default value of <b>0</b> usually is good enough. Set this to a positive

Setting	Explanation
	number to smooth out low bit rate video encodes. In general, values lower than <b>-3</b> and higher than <b>3</b> are usually not used, but could be if so desired.
LookaheadFrames	This value is the amount of frames the encoder keeps in its buffers to perform various calculations. The higher this value, the better the quality and the closer to a constant bit rate the encoded video will be; however the CPU load is higher and the latency from the source through the encoder is also higher. Setting this to <b>0</b> , depending on the encoder, will provide the lowest latency possible.
NoiseReduction	This value performs adaptive noise reduction, estimates film noise based on the value and attempts to remove the noise by dropping small details before quantization ( <b>100</b> to <b>1000</b> for de-noising). As a result, using Noise Reduction can make the encoded video look smoother, but with much less detail.
QuantizerMax	This value sets the maximum for the quantizer. The range is 1 to <b>51</b> with <b>51</b> being the highest and least complex quantizer available. The value <b>51</b> provides the most encoding, thus making the picture quality farthest away from the original. However, lowering this value increases CPU load, in some cases considerably. Also, this value affects the bit rate with <b>51</b> keeping closer to a constant bit rate, while lower values cause the bit rate to vary.
QuantizerMin	This value sets the minimum quantizer ever used in the encoder. The lower the quantizer, the closer the encoded video is to the original. For most video, any value below <b>10</b> appears almost the same as the original video.
ReferenceFrames	This value is the number of previous frames each P-frame can use as a reference. More reference frames increase the quality of the encoded video but increases the CPU load. Each increase, however has reduced benefit and takes longer to encode.
SceneChangeDetectThreshold	Higher values of this setting cause the encoder to detect more scene changes. For example, a fast action movie that has many scenes can have this value set lower than a newscast, but the newscast video quality may suffer a bit at the same value. <b>60</b> is a good default for most applications. <b>0</b> turns off scene change detection, but this is not recommended. Higher values also increase CPU usage.
TrellisRDQuantization	This value performs Trellis quantization to increase the visual quality of the encoded video: the higher the value, the better the qualities of the video, but the higher the CPU load. This value can also improve visual quality at lower bit rates. However, settings above <b>0</b> are applicable for Main or High Profile in the Custom Presets.

## MPEG-4 Presets

In general, the Main Profile Default presets for the H.264 encoder Custom Presets will meet your streaming requirements. For devices with restricted bandwidths and under certain conditions such as low bit rates, motion specific, or constant bit rate applications, you may need to adjust the Advanced Encoder Settings values in each line. This section includes some information to help you select those Advanced Encoder Settings. These examples are suggestions and you should understand and select the appropriate values for your streaming application. See *Settings* for explanations of each setting variable.

Setting	Value Range
BFramesMax	0 to 4
GOPSize	1 to 4000
GOPSizeMin	1 to 4000
InterlacedDCTComparison	0 to 14
LookaheadFrames	0 to 200
MotionEstimationComparison	0 to 256
MotionEstimationMethod	5 to 10
MotionEstimationPenaltyCompensation	0 to 256
MotionEstimationSubPixelComparison	0 to 256
MpegQuant	0 to 1
QuantizerMax	1 to 51
QuantizerMin	1 to 51
SceneChangeDetectThreshold	0 to 4000
TrellisRDQuantization	0 to 2

# Settings

Setting	Explanation
BFramesMax	This value sets the maximum number of concurrent B-frames that you can use. More B-frames improve video quality but also increase CPU load, in some cases considerably. Setting B-frames to a value more than 0 changes the video encoding format from Simple Profile to Advanced Simple Profile.
GOPSize	This value sets the maximum interval between key frames. Theoretically, higher values improve compression because I-frames have more data but it can also increase the appearance of fluctuating quality because more P- or B-frames (partial) are used.
GOPSizeMin	This value sets the minimum length between key frames. It limits the minimum length after each I-frame before another can be placed. The suggested default is 1 x the frame rate.
InterlacedDCTComparison	This value optimizes processing of interlaced video input. It is not usually used, but it may help the encoding quality of interlaced video.
LookaheadFrames	This value is the amount of frames the encoder keeps in its buffers to perform various calculations. The higher this value, the better the quality and the closer to a constant bit rate the encoded video will be, however the CPU load is higher and the latency from the source through the encoder is also higher. Setting this to <b>0</b> , depending on the encoder will provide the lowest latency possible.
MotionEstimationComparison	Setting this value causes the encoder to select what motion estimation comparison to use. <b>0</b> is the default for MPEG4 encoding. You can use higher values but they can increase CPU and memory usage, sometimes with minimal significant gain in quality. <i>Note: The correct range is 0 to 14, but a value of 256 that affects the color portion of the video only is available. Use this value only when you completely understand the encoding needs. All other values are ignored.</i>
MotionEstimationMethod	Setting this value causes the encoder to select what motion estimation method to use. <b>5</b> is the default for MPEG4 encoding. You can use higher values but they can increase CPU and memory usage, sometimes with no significant gain in quality.
MotionEstimationPenaltyCompensation	Setting this value causes the encoder to apply a

Setting	Explanation
	compensation for any errors that arise in the motion estimation while encoding the video. The actual value of <b>256</b> corresponds to a value of 1.0 and is set to maximum as the default.
MotionEstimationSubPixelComparison	<p>Setting this value causes the encoder to select the sub-pixel motion estimation comparison. <b>0</b> is the default for MPEG4 Simple Profile encoding because only Advanced Simple Profile allows for sub-pixel motion estimation. You can use higher values but they can increase CPU and memory usage, sometimes with minimal significant gain in quality.</p> <p><i>Note: The correct range is <b>0</b> to <b>14</b>, but a value of <b>256</b> that affects the color portion of the video only is available. Only use this value when you completely understand the encoding needs. All other values are ignored.</i></p>
MpegQuant	Setting the value of this to <b>0</b> will use quantizers for Simple Profile MPEG4 encoding while using <b>1</b> will use quantizers for Advanced Simple Profile and for high bit rate encoding more detail from the original video will be preserved. For lower bit rate encoding, using <b>0</b> smooths out the video appearance.
QuantizerMax	This value sets the maximum for the quantizer in use. The range is 1 to <b>51</b> with <b>51</b> being the highest and least complex quantizer available. The value <b>31</b> is a good default. However lowering this value increases the CPU load, in some cases considerably. Values above <b>31</b> are available, but could significantly affect video quality negatively.
QuantizerMin	This value sets the minimum quantizer used in the encoder. The lower the quantizer, the closer the encoded video is to the original. For most video, any value below <b>10</b> appears almost the same as the original video.
SceneChangeDetectThreshold	Higher values of this setting cause the encoder to detect more scene changes and insert extra I-frames as needed. For example, a fast-action movie with many scenes could have this value set lower than a newscast, but the newscast video quality may suffer a little at the same value. <b>45</b> is a good default for most applications using MPEG4 encoding. <b>0</b> turns off scene change detection, but is not recommended. Higher values also increase CPU usage.
TrellisRDQuantization	This value performs Trellis quantization to increase the visual quality of the encoded video by determining the

Setting	Explanation
	optimal encoding: the higher the value, the better the video quality but the higher the CPU usage. This value can also improve visual quality at lower bit rates.

## MPEG-2 Presets

In general, the Main Profile Default presets for the H.264 encoder Custom Presets will meet your streaming requirements. For devices with restricted bandwidths and under certain conditions such as low bit rates, motion specific, or constant bit rate applications, you may need to adjust the Advanced Encoder Settings values in each line. This section includes some information to help you select those Advanced Encoder Settings. These examples are suggestions and you should understand and select the appropriate values for your streaming application. See *Settings* for explanations of each setting variable.

Setting	Value Range
BFramesMax	0 to 4
GOPSize	1 to 4000
GOPSizeMin	1 to 4000
InterlacedDCTComparison	0 to 14
LookaheadFrames	0 to 200
MotionEstimationComparison	0 to 256
MotionEstimationMethod	5 to 10
MotionEstimationPenaltyCompensation	0 to 256
MotionEstimationSubPixelComparison	0 to 256
MpegQuant	0 to 1
QuantizerMax	1 to 51
QuantizerMin	1 to 51
SceneChangeDetectThreshold	0 to 4000
TrellisRDQuantization	0 to 2

# Settings

Setting	Explanation
BFramesMax	This value sets the maximum number of concurrent B-frames that you can use. More B-frames improve video quality but also increase CPU load, in some cases considerably. Setting B-frames to a value more than 0 changes the video encoding format from Simple Profile to Advanced Simple Profile.
GOPSize	This value sets the maximum interval between key frames. Theoretically, higher values improve compression because I-frames have more data but it can also increase the appearance of fluctuating quality because more P- or B-frames (partial) are used.
GOPSizeMin	This value sets the minimum length between key frames. It limits the minimum length after each I-frame before another can be placed. The suggested default is 1 x the frame rate.
InterlacedDCTComparison	This value optimizes processing of interlaced video input. It is not usually used, but it may help the encoding quality of interlaced video.
LookaheadFrames	This value is the amount of frames the encoder keeps in its buffers to perform various calculations. The higher this value, the better the quality and the closer to a constant bit rate the encoded video will be, however the CPU load is higher and the latency from the source through the encoder is also higher. Setting this to <b>0</b> , depending on the encoder will provide the lowest latency possible.
MotionEstimationComparison	Setting this value causes the encoder to select what motion estimation comparison to use. <b>0</b> is the default for MPEG2 encoding. You can use higher values but they can increase CPU and memory usage, sometimes with minimal significant gain in quality. <i>Note: The correct range is 0 to 14, but a value of 256 that affects the color portion of the video only is available. Use this value only when you completely understand the encoding needs. All other values are ignored.</i>
MotionEstimationMethod	Setting this value causes the encoder to select what motion estimation method to use. <b>5</b> is the default for MPEG2 encoding. You can use higher values but they can increase CPU and memory usage, sometimes with no significant gain in quality.
MotionEstimationPenaltyCompensation	Setting this value causes the encoder to apply a

Setting	Explanation
	compensation for any errors that arise in the motion estimation while encoding the video. The actual value of <b>256</b> corresponds to a value of 1.0 and is set to maximum as the default.
MotionEstimationSubPixelComparison	<p>Setting this value causes the encoder to select the sub-pixel motion estimation comparison. <b>0</b> is the default for MPEG2 Simple Profile encoding because only Advanced Simple Profile allows for sub-pixel motion estimation. You can use higher values but they can increase CPU and memory usage, sometimes with minimal significant gain in quality.</p> <p><i>Note: The correct range is <b>0</b> to <b>14</b>, but a value of <b>256</b> that affects the color portion of the video only is available. Only use this value when you completely understand the encoding needs. All other values are ignored.</i></p>
MpegQuant	Setting the value of this to <b>0</b> will use quantizers for Simple Profile MPEG2 encoding while using <b>1</b> will use quantizers for Advanced Simple Profile and for high bit rate encoding more detail from the original video will be preserved. For lower bit rate encoding, using <b>0</b> smooths out the video appearance.
QuantizerMax	This value sets the maximum for the quantizer in use. The range is 1 to <b>51</b> with <b>51</b> being the highest and least complex quantizer available. The value <b>31</b> is a good default. However lowering this value increases the CPU load, in some cases considerably. Values above <b>31</b> are available, but could significantly affect video quality negatively.
QuantizerMin	This value sets the minimum quantizer used in the encoder. The lower the quantizer, the closer the encoded video is to the original. For most video, any value below <b>10</b> appears almost the same as the original video.
SceneChangeDetectThreshold	Higher values of this setting cause the encoder to detect more scene changes and insert extra I-frames as needed. For example, a fast-action movie with many scenes could have this value set lower than a newscast, but the newscast video quality may suffer a little at the same value. <b>45</b> is a good default for most applications using MPEG2 encoding. <b>0</b> turns off scene change detection, but is not recommended. Higher values also increase CPU usage.
TrellisRDQuantization	This value performs Trellis quantization to increase the visual quality of the encoded video by determining the

<b>Setting</b>	<b>Explanation</b>
	optimal encoding: the higher the value, the better the video quality but the higher the CPU usage. This value can also improve visual quality at lower bit rates.



## Appendix C: Mapped Network Drive Setup

---

Setting up the network drive for a Niagara system to export files, requires setting up two administrator accounts on a remote PC where the shared folder will be located:

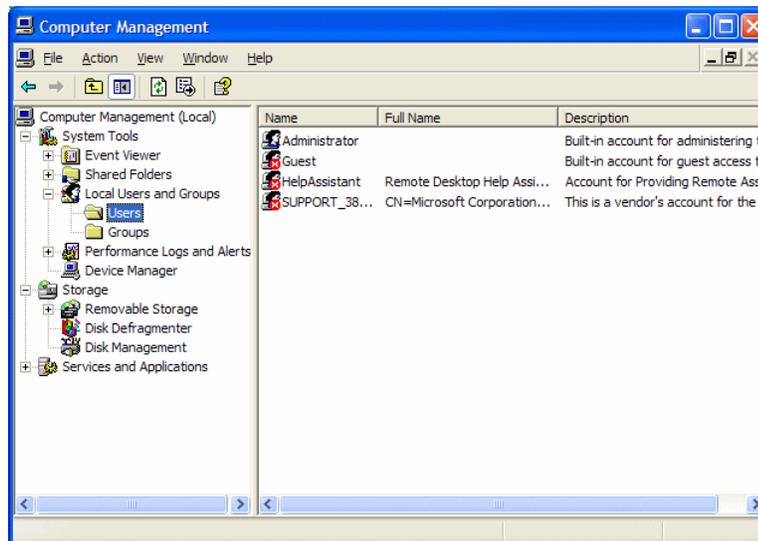
- One account for the username (for example, N9100)
- One account for the username SCXUser

The shared folder is created on the remote PC with full access for both the Niagara system and the SCXUser. On the system, the mapped network drive is created to reconnect at logon using the SCXUser username.

### To set up user accounts on a remote PC:

1. Click on Start ➤ Control Panel.
2. Double-click on Administrative Tools.
3. Double-click on Computer Management.
4. Expand Local Users and Groups. Click on **Users**.

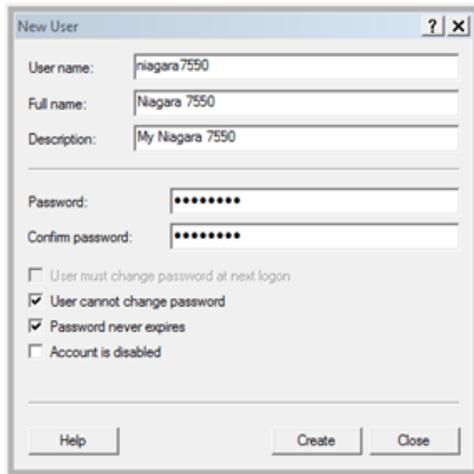
**Figure 218. Users**



5. Under **Action**, select **New User**.
6. Enter the name of the system (for example, **niagara9100**) for the **User name**.
7. Full name and Description are optional.
8. Enter **viewcast** for the **Password**.
9. Enter **viewcast** for the Confirm password.
10. Clear User must change password at next logon.
11. Select User cannot change password.

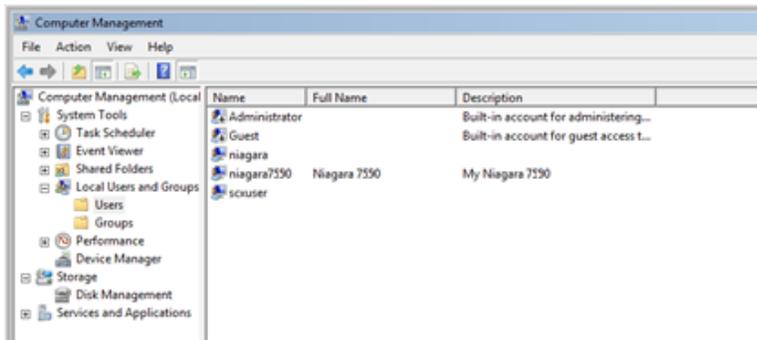
12. Enable Password never expires.

**Figure 219. New User window**



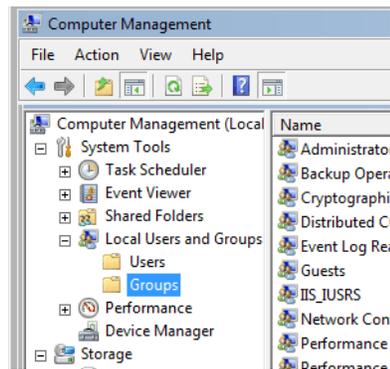
13. Click **Create**.
14. Repeat steps 5 through 13 to create the user **SCXUser** using the password **viewcast**.
15. Click **Close**.
16. The two new users appear in the users list.

**Figure 220. Added Users**



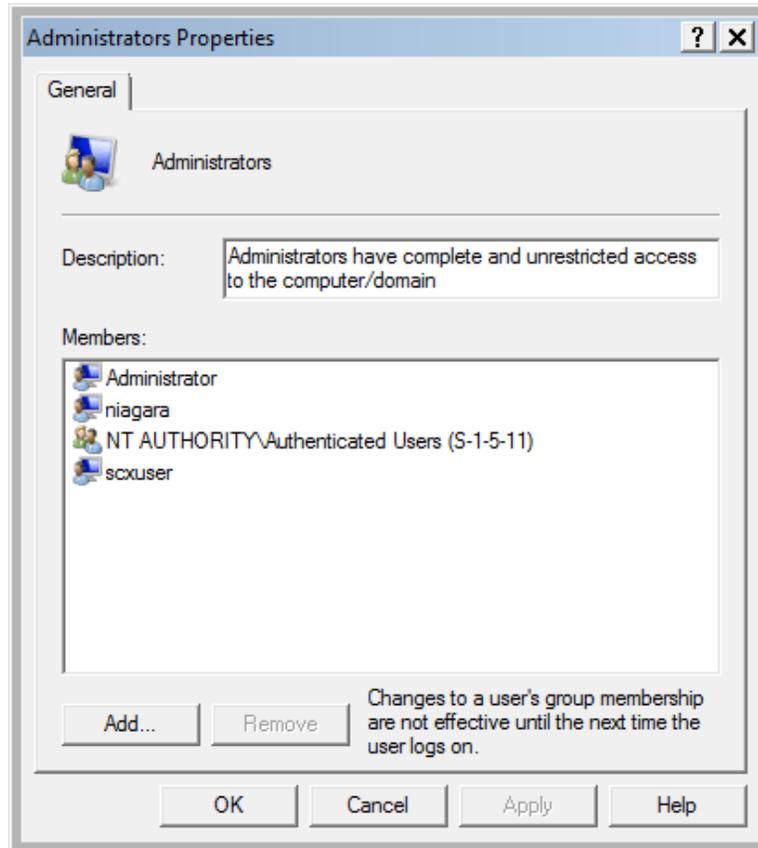
17. In Computer Management, click **Groups**.

**Figure 221. Groups**



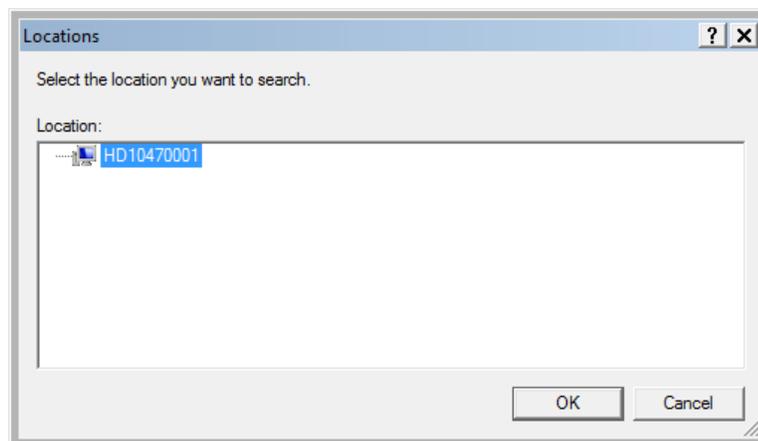
18. Double-click on **Administrators**.
19. Click **Add**.

**Figure 222. Administrators Properties window**



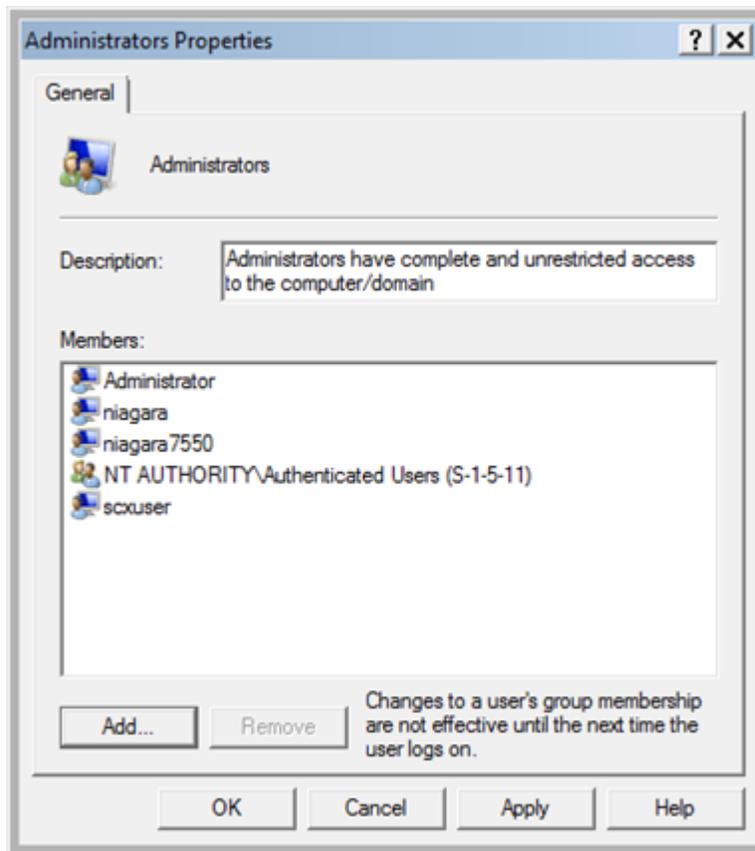
20. Click **Add**. The Select Users window displays.
21. Click Locations.
22. Select the PC, then click **OK**.

**Figure 223. Locations window**



23. Enter the name of the system (for example, **niagara 9100**) for the object name, and then click **OK**.
24. The user name you entered in step 6 appears in the list of Administrators.

**Figure 224. Administrators Properties**

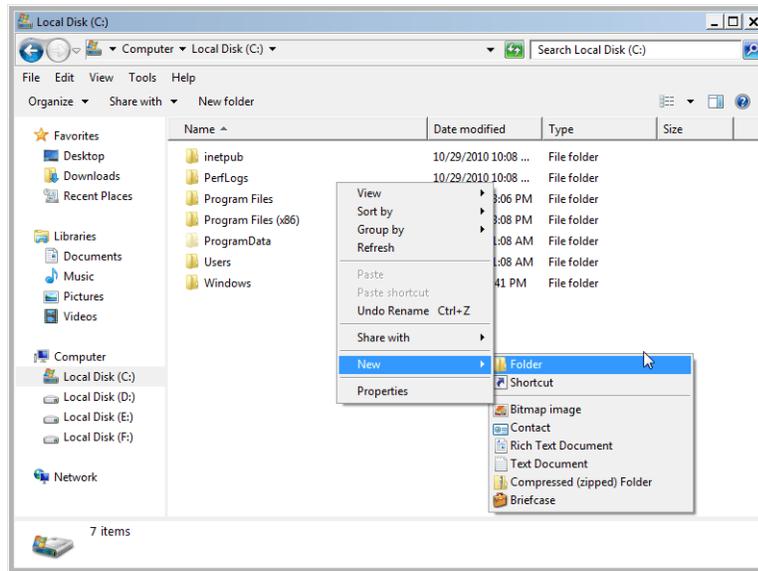


25. Repeat steps 19 through 22 to add SCXUser as an administrator.

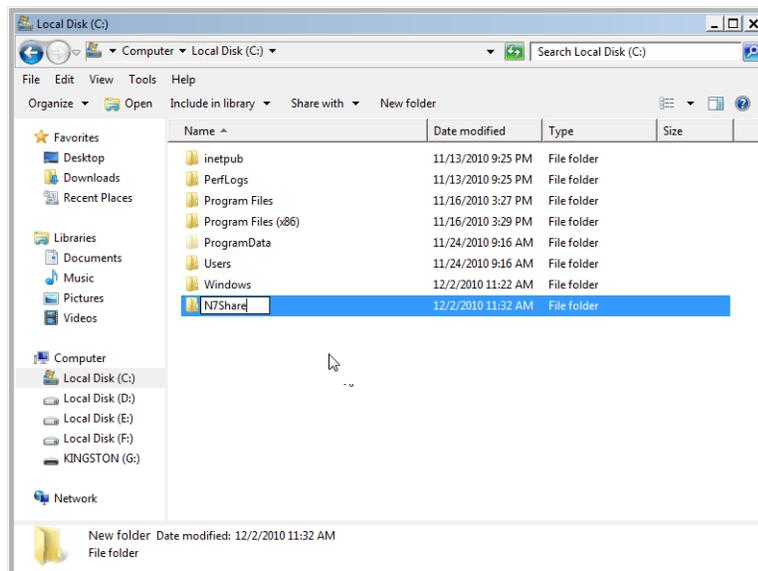
**To create the shared folder:**

*Note: The shared folder(s) must be created on the remote PC.*

1. Open Computer.
2. Open the drive where the shared folder will be created.
3. Right click, select **New**, then **Folder**.

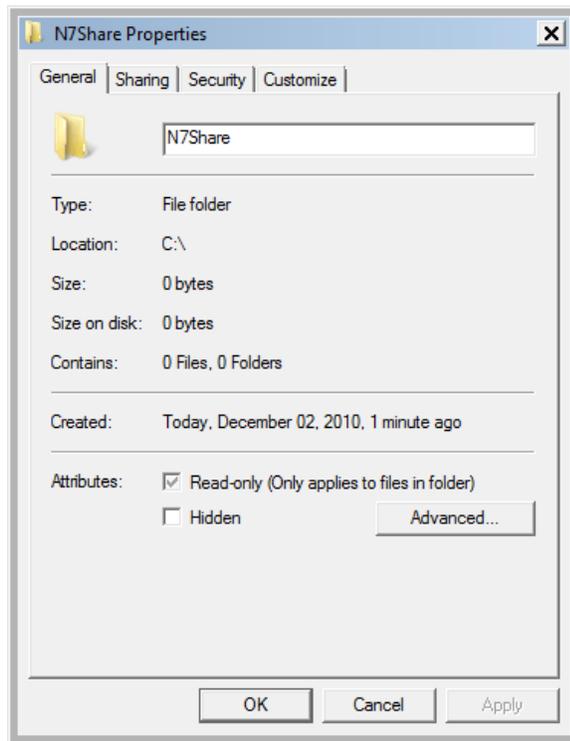
**Figure 225. Create new folder**

4. Enter a name for the folder (for example, N7Share).

**Figure 226. Folder name**

5. Right click on the folder, and then select **Properties**.

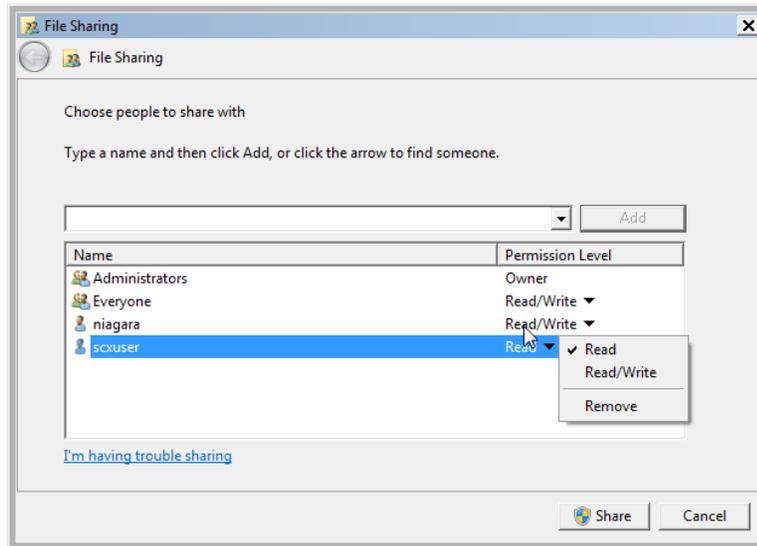
**Figure 227. Folder Properties window**



6. Click on the **Sharing** tab.
7. Click **Share**. The File Sharing window displays.
8. Type a name and then click **Add**, or click the arrow to select someone from the drop-down list.

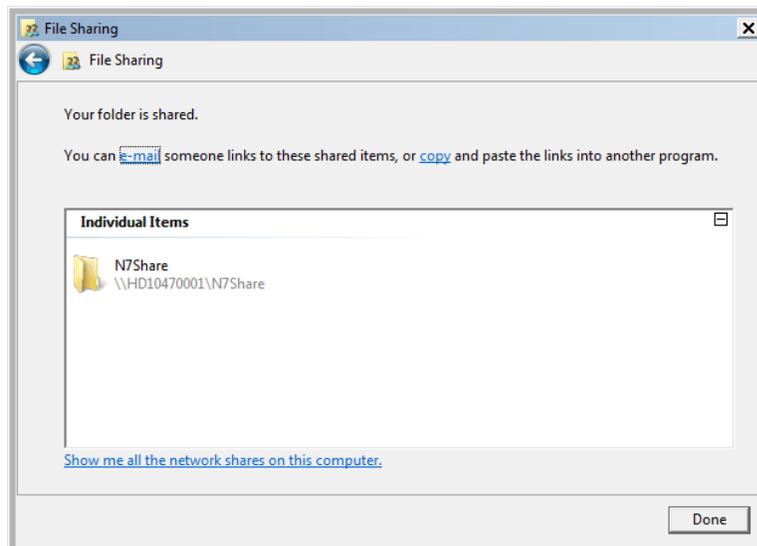
- Use the drop-down list under permission level for this user and select **Read/Write**.

**Figure 228. Read/Write permissions**



- Click **Share**.
- Repeat steps 2 through 9 to add SCXUser to the Share Permissions.
- Click **Done**.

**Figure 229. File Sharing window**



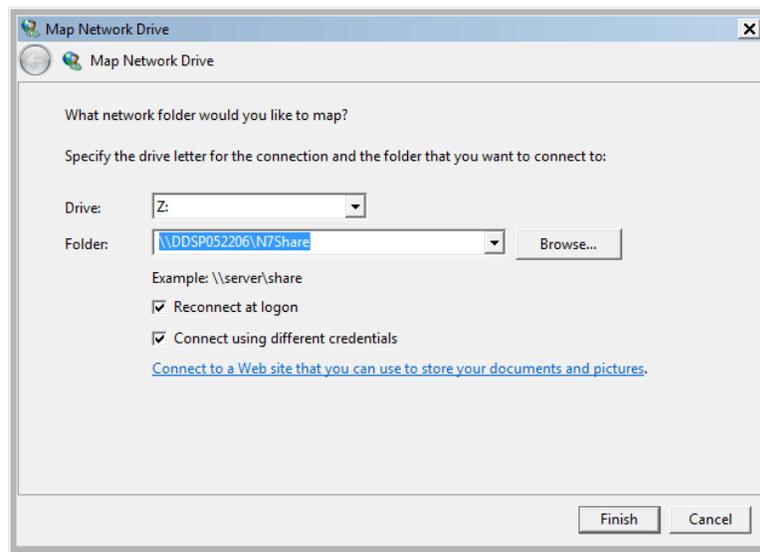
- Click **Close** to close the share properties.

**To map the network drive:**

*Note: Create a mapped network drive to the remote shared folder that will reconnect at logon. Once the mapped drive is created and the Niagara system is rebooted, you will be able to export to the network drive.*

1. On the Niagara system, open **Computer**.
2. Under Tools, select **Map Network Drive**.
3. Select a drive.
4. In the text box for folder, enter the network path to the shared folder on the remote PC (for example, [\\DDSP052206\N7Share](#)).
5. Make sure **Reconnect at logon** is enabled.
6. Select Connect using different credentials.
7. Click **Finish**.

**Figure 230. Map Network Drive window**



8. Enter **SCXUser** as the User name and **viewcast** as the Password.
9. Click **OK**.
10. Click **Finish**. After a few moments, the network share will open.
11. Close the window. The mapped drive will now appear in My Computer under Network Drives.
12. Reboot the Niagara system.

## Appendix D: System Menu (LCD Display)

This section provides information on the front panel LCD display. The display is informational only. You cannot perform any functions from the display.

### System status menu

#### CPU

Displays CPU information.



#### Memory

Displays memory information.



#### HDD

Displays HDD information including the HDDs in the system and network.



#### Operating System

Displays OS information.



#### Network I/F

Displays LAN information including IP and MAC for the available network adaptor.



## Monitor status menu

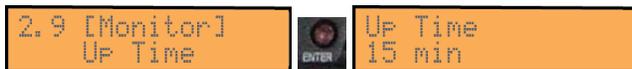
### CPU&Mem Used

Monitors the usage of CPU and memory.



### Up Time

Monitors the up time since the last boot.



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