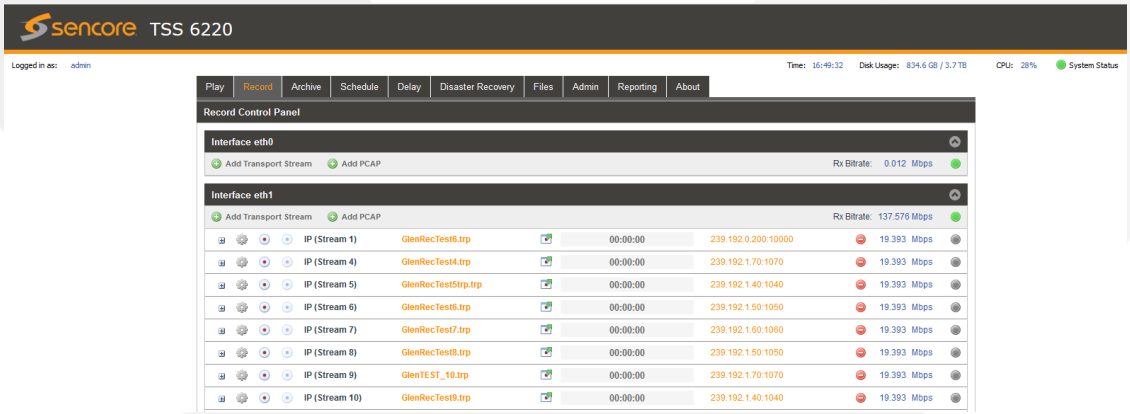
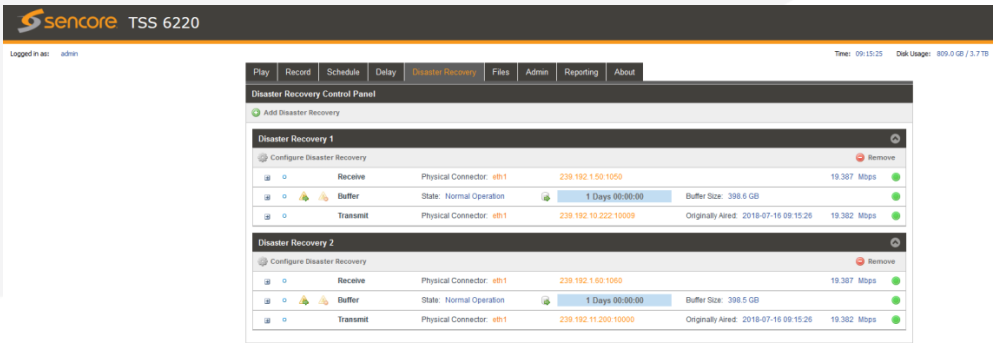
TSS 6220

Transport Stream Server

User Manual





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www.sencore.com

About Sencore

Sencore is an engineering leader in the development of high-quality signal transmission solutions for the broadcast, cable, satellite, IPTV, and telecommunications markets. The company's world-class portfolio includes video delivery products, system monitoring and analysis solutions, and test and measurement equipment, all designed to support system interoperability and backed by best-in-class customer support. Sencore products meet the rapidly changing needs of modern media by ensuring the efficient delivery of high-quality video from the source to the home. More information about Sencore is available at the company's website, www.sencore.com.

Revision History

Date	Version	Description	Author
2017/10/31	1.0	Manual for the Sencore TSS 6220	GAK
2018/01/05	1.2	Add Play, Record, Licensing, features to the TSS 6220 Manual	GAK
2018/07/20	1.3	Add Disaster Recovery and Time Delay Features	GAK
2019/03/13	1.4	Add ASI I/0 Features	GAK
2020/01/27	1.5	Add Archive and Impairment features. Add licensing and alarming updates.	GAK

Safety Instructions

- Read these instructions
- Keep these instructions
- Heed all warnings
- Follow all instructions
- Do not use this apparatus near water
- Clean only with dry cloth
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- Do not expose this apparatus to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the apparatus.
- To completely disconnect this apparatus from the AC Mains, disconnect the power supply cord plug from the AC receptacle.
- The mains plug of the power supply cord shall remain readily operable.
- **Damage Requiring Service**: Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
    - When the power-supply cord or plug is damaged.
    - If liquid has been spilled, or objects have fallen into the product.
    - If the product has been exposed to rain or water.
    - If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of the controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
    - If the product has been dropped or damaged in any way.
    - The product exhibits a distinct change in performance.
- **Replacement Parts**: When replacement parts are required, be sure the service technician uses replacement parts specified by Sencore, or parts having the same operating characteristics as the original parts. Unauthorized part substitutions made may result in fire, electric shock or other hazards.

SAFETY PRECAUTIONS

There is always a danger present when using electronic equipment.
Unexpected high voltages can be present at unusual locations in defective equipment and signal distribution systems. Become familiar with the equipment that you are working with and observe the following safety precautions.

- Every precaution has been taken in the design of your TSS 6220 to ensure that it is as safe as possible. However, safe operation depends on you the operator.
- Always be sure your equipment is in good working order. Ensure that all points of connection are secure to the chassis and that protective covers are in place and secured with fasteners.
- Never work alone when working in hazardous conditions. Always have another person close by in case of an accident.
- Always refer to the manual for safe operation. If you have a question about the application or operation call Sencore for assistance.
- WARNING – To reduce the risk of fire or electrical shock never allow your equipment to be exposed to water, rain or high moisture environments. If exposed to a liquid, remove power safely (at the breaker) and send your equipment to be serviced by a qualified technician.
- To reduce the risk of shock the TSS 6220 must be connected to a mains socket outlet with a protective earth ground connection.
- For the TSS 6220 the mains plug is the main disconnect and should remain readily accessible and operable at all times.
- To reduce the risk of shock and damage to equipment, it is recommended that the chassis grounding screw located on the rear of the TSS 6220 – be connected to the installation's rack, the vehicle's chassis, the battery's negative terminal, and/or earth ground.

Table of Contents

1 Introduction

The TSS 6220 Transport Stream Server provides robust streaming capabilities for customers looking for a simple solution to creating automated playout of media files into multiple channels. With the onboard, redundant storage and FTP & SMB file upload, the unit can take stored media files and play them out according to user-supplied schedules. Up to 16 independent schedules and corresponding MPEG over IP outputs can be maintained simultaneously.

The TSS 6220 provides an easy to use and cost-effective solution for schedule playout of media files for a variety of applications. An optional record feature provides TS stream and PCAP recording capabilities. Recording capabilities may be extended to provide TS archiving functionality with appropriate storage configurations. An optional play feature is also available to provide individual TS stream and PCAP outputs.

The TSS 6220 further offers a time-delay option for a single stream or multiple output streams simultaneously. A unique disaster-recovery option provides a cost-effective backup of primary broadcast systems. These intuitive time-shifting and long-term storage /replay capabilities come with incredibly simple setup, configuration and status monitoring. Enhanced features like multiple delays from the same buffer and automated disaster-mode activation make the TSS 6220 usable in a huge variety of applications.

Finally, the TSS 62220 can be configured to provide archive recording of TS or PCAP streams. Incoming content is captured 24/7 into segmented files. Segments can be easily retrieved and investigated for regulatory compliance or reviewed for broadcast errors or events.

The intuitive web UI and full SNMP or web API remote control allows the TSS 6220 to offer users simple, reliable and powerful solution for operational and lab environments. The TSS 6220 comes in a rack mountable 1-RU chassis with multiple output ports and has numerous expansion options available. A 2-RU or 3-RU chassis is required for some configurations.

This manual provides startup and operational information. It is written for professional operators of video distribution systems and assumes a prerequisite level of technical knowledge.

2 Specifications

INTERFACES PHYSICAL

Included IP Ports:	2x RJ45 1Gbps (Each port can be used for streaming and/or management)
Optional IP Ports:	Additional 2x RJ45 1Gbps, Fiber 2x SFP 1/10Gbps
ASI I/O:	2x ASI input ports (75ohm BNC), 2x ASI output ports (75 ohm BNC)

IP FORMATS INPUT AND OUTPUT

IP Input Formats:	UDP or RTP - RTP Header Extensions Supported
IP Output Formats:	UDP or RTP
IP Encapsulation:	1 to 7 TS Packets per IP Packet
IP Addressing:	Unicast or Multicast
IGMP Compatibility:	Version 1, 2 & 3
IP Bitrates:	250 Kbps to 200 Mbps
File Types:	Transport streams (.ts, .trp) PCAP Ethernet capture (.pcap)

MANAGEMENT

Protocols:	HTTP and SNMP
User Interfaces:	Full control via web GUI
Automation Interfaces:	Full status and control via SNMP, Configurable SNMP traps, Web services API available, Syslog message logging
Firmware Updates:	Via web GUI

POWER

Voltage:	100-240V
Frequency:	50-60Hz
Power Redundancy:	Dual, hot-swappable supplies on TSS 62221/62222

CHASSIS OPTIONS

TSS 62220: 1RU chassis suitable for streaming, scheduled playlists and simple recording
TSS 62221: 1RU chassis suitable for time-delay, disaster-recovery and extended recording.
TSS 62222: 2RU chassis suitable for time-delay, disaster-recovery and extended recording.
TSS 62225: 1 RU economical chassis suitable for time-delay, disaster recovery and archive recording up to 150 Mbps throughput.

Size: Rack-mount 1 RU chassis (2 RU for the TSS 62222 option)
1RU Chassis Depth: 20 inches (507 mm)

Physical chassis dimensions and operating conditions vary depending on chassis and storage selection

STORAGE OPTIONS

SSD Hard Drives:

Intended Use: Streaming and playlists High-performance recording
Cumulative Performance: 1Gbps+ for streaming or 300-400Mbps for time-delay and disaster-recovery
Redundancy Configuration: RAID-5 for time-delay and disaster-recovery

SAS Hard Drives:

Intended Use: Long-term storage for time-delay disaster-recovery and recording
Cumulative Performance: 200-250Mbps for time-delay and disaster-recovery
Redundancy Configuration: RAID-6 for time-delay and disaster-recovery

Specifications are subject to change without notice.

3 Getting Started

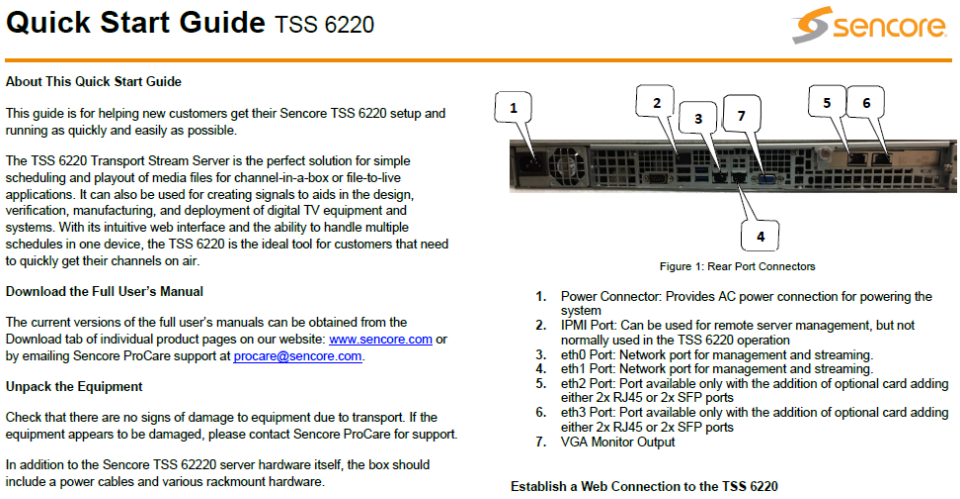
3.1 Introduction

This section provides an overview of what is included with your TSS 6220. It provides critical information on obtaining the unit's IP address in which to gain access to the unit's web interface GUI. It provides front/rear panel descriptions and information on getting the unit mounted in a standard rack.

3.2 Package Contents

The following is a list of the items that are included with the TSS 6220 unit:

1. Startup Guide
2. AC Power Cord
3. Rackmount Rails



Quick Start Guide TSS 6220

sencore

About This Quick Start Guide

This guide is for helping new customers get their Sencore TSS 6220 setup and running as quickly and easily as possible.

The TSS 6220 Transport Stream Server is the perfect solution for simple scheduling and playout of media files for channel-in-a-box or file-to-live applications. It can also be used for creating signals to aids in the design, verification, manufacturing, and deployment of digital TV equipment and systems. With its intuitive web interface and the ability to handle multiple schedules in one device, the TSS 6220 is the ideal tool for customers that need to quickly get their channels on air.

Download the Full User's Manual

The current versions of the full user's manuals can be obtained from the Download tab of individual product pages on our website: www.sencore.com or by emailing Sencore ProCare support at procare@sencore.com.

Unpack the Equipment

Check that there are no signs of damage to equipment due to transport. If the equipment appears to be damaged, please contact Sencore ProCare for support.

In addition to the Sencore TSS 62220 server hardware itself, the box should include a power cables and various rackmount hardware.

Figure 1: Rear Port Connectors

1. Power Connector: Provides AC power connection for powering the system
2. IPMI Port: Can be used for remote server management, but not normally used in the TSS 6220 operation
3. eth0 Port: Network port for management and streaming.
4. eth1 Port: Network port for management and streaming.
5. eth2 Port: Port available only with the addition of optional card adding either 2x RJ45 or 2x SFP ports
6. eth3 Port: Port available only with the addition of optional card adding either 2x RJ45 or 2x SFP ports
7. VGA Monitor Output

Establish a Web Connection to the TSS 6220

If any of these items were omitted from the packaging of your unit, please call 1-605-978-4600 to obtain a replacement.

3.3 Installation

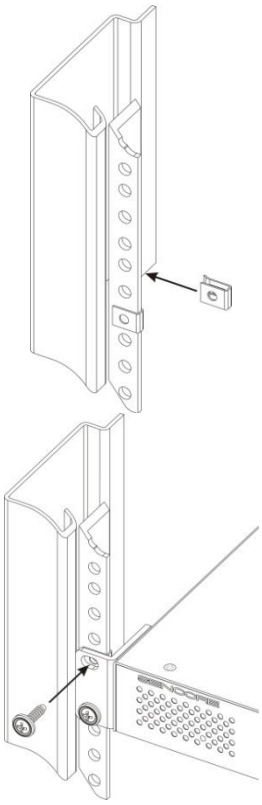
The TSS 6220 rackmount chassis is a 1 RU or 2 RU enclosure that is designed to be mounted in a standard 19" equipment rack. The unit is shipped with the mounting hardware necessary to safely secure the chassis in the rack. This includes rackmount ears and screws for the front along with rails to support the sides. The user is advised to always use the included rails for mounting.

The TSS 6220 is designed for front-to-back ventilation. Care must be taken to ensure that this ventilation is not impeded in any way.

To install the TSS 6220 into a rack use the following steps:

1. Determine the desired position in the rack for the TSS 6220 making sure that the air intake on the front of the unit and the exhausts on the rear of the unit will not be obstructed.
2. Insert the rack mount clips into place over the mounting holes in the rack.
3. Slide the TSS 6220 into position in the rack.
4. Secure the TSS 6220 to the rack by installing the four screws through the front mounting holes and tightening.

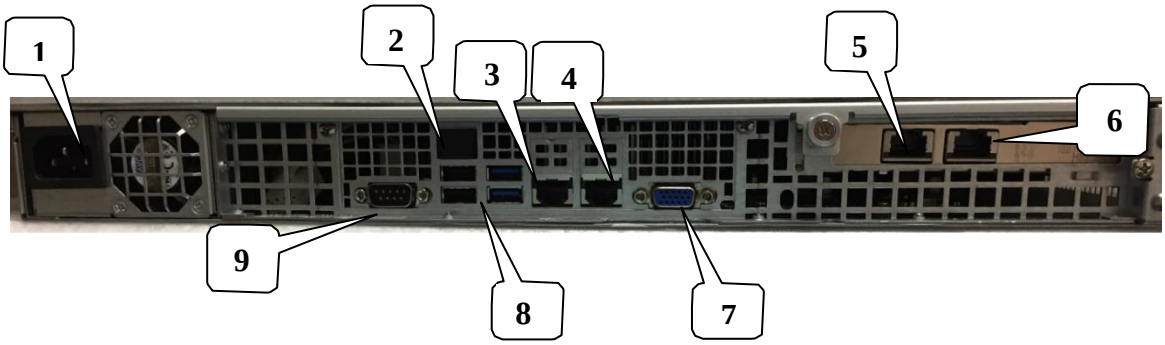
WARNING: To prevent injury, the apparatus must be securely attached to the floor/wall in accordance with the installation instructions.



The TSS 6220 is designed for front-to-back ventilation. Care must be taken to ensure that this ventilation is not impeded in any way.

3.4 Rear Panel Connections

All of the external connections for the TSS 6220 are located on the rear of the unit. These connections include standard computer I/O (Monitor, USB, parallel, serial, audio, and LAN ports) and the TSS 6220 IP output connections. The power connection is also located on the rear of the unit. The following provides an overview description of the rear panel connections and features.



Descriptions:

1. Power Connector: Provides AC power connection for powering the system
2. IPMI Port: Can be used for remote server management, but not normally used in the TSS 6220 application for operation
3. eth0 Port: Network port for management and streaming/recording
4. eth1 Port: Network port for management and streaming/recording
5. eth2 Port: Port available only with the addition of optional card adding either 2x RJ45 or 2x SFP ports
6. eth3 Port: Port available only with the addition of optional card adding either 2x RJ45 or 2x SFP ports
7. VGA Monitor Output
8. USB Interface Ports
9. RS-232 Port

The TS6220 may require a 2RU chassis if your hardware requirements include the need for an ASI input/output interface and/or added Raid Drive configurations. Below is an example of the 2 RU TSS 6220 with added ASI input/output hardware.

Added Descriptions:

1. ASI input/output interface board/ports: Optional hardware providing input and output ASI ports. The ports are configurable as inputs or outputs in the application software.

3.5 Power Connections - Installation

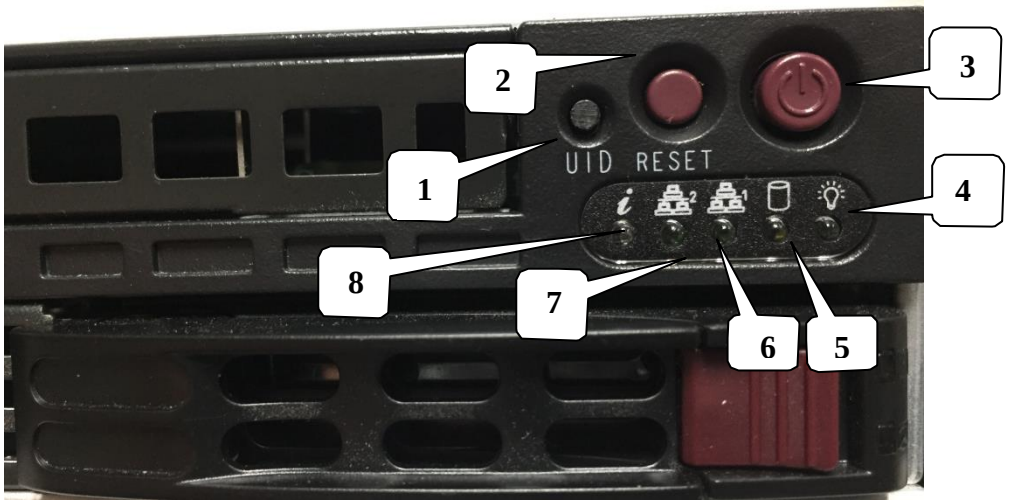
Using the proper power connections is vital to the safe operation of the TSS 6220. Only use the supplied 3-prong power connectors or those with equal specifications. NEVER tamper with or remove the 3rd – prong grounding pin on any cord. This could cause damage to the unit, personnel, or property.

The TSS 6220 is intended for use on either 120V or 240V systems. The power supply will automatically detect the voltage to which it is connected. There is one power supply and one AC power cord on 1 RU chassis TSS 6220 models. 2RU or 3RU units may have dual AC power supplies. To connect AC power, perform the following:

1. Locate the proper AC power cord(s).
2. Plug the female end of the power cord (end with no prongs) into the back of the unit.
3. Plug the male end of the power cord into a proper protected AC outlet.
4. Repeat above for units equipped with dual AC supplies.

3.6 Front Panel Features

The front panel contains some pushbuttons and indicator lights. This section provides an overview of these features.



NOTE: Some design modifications may occur in which features shown in this image and described below may not be found on your TSS 6220.

Front Panel Descriptions:

1. UID: Pushbutton: This pushbutton provides identification light at the rear of the unit. Press the UID pushbutton to turn on a blue light at the rear of the unit. This makes it easy to identify the unit when viewing from the back of the equipment rack. The “I” light on the front panel (#8) indicates when the UID is switched on.

2. Reset Pushbutton: This pushbutton provides a reset of the system. Press and release to initiate a reset operation of the operating system.

3. Power Pushbutton: Turns the unit AC power on and off. Hold down for 3 seconds and release to power the unit on or off.

4. Power Light: Indicates when the unit is powered on for normal operation.

5. Hard Disc Drive Light: Indicates normal OS unit disc drive activity.

6. Network Port Indicator Light: Indicates normal unit network port data activity.

7. Network Port Indicator Light: Indicates normal unit network port data activity.

8. i Information LED: This LED provides information regarding system status. When solid red an overheat condition is indicated. When blinking red (1Hz) a fan failure is indicated. When blinking red (0.25Hz) a power supply failure is indicated. When blinking blue the remote UID is on identifying the server.

3.7 Obtaining the TSS 6220 IP Address

Operating the TSS 6220 depends on gaining access to the unit's network GUI as there is no front panel interface. Connecting to the unit's web GUI using a web browser requires knowledge of the IP address of the port in which to enter into the address field of a web browser. To acquire and or to change the port's IP address from the factory default requires viewing a computer monitor connected to the unit along with the use of a keypad to navigate the provided menus.

To obtain or make changes to the port's IP address:

1. Connect a computer monitor to the VGA connector and power it on. Reference Section 3.4 in this manual – (#7) rear panel port.

2. Connect a PC keyboard (USB type) to the rear panel USB connectors. Reference Section 3.4 in this manual – (#8) rear panel USB connection ports.

3. With power properly connected to the TSS 6220, push and release the front panel power button. Allow some time for boot up. The system starts up with no user or password entry required. A Main Menu screen appears on the monitor
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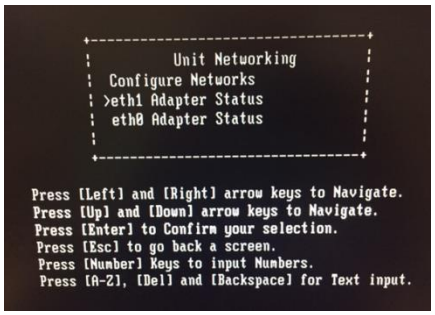


4. The Ethernet port 0 (eth0) and Ethernet port 1 (eth1) IP addresses are shown on the initial Main Menu. Enter the IP address of the port you are using into your web browser. See the next sections (3.7, 3.8) of this manual for more details on changing the IP address and using the web GUI.

5. If the IP addresses are not shown, press the ENTER key on the keyboard to advance to the next menu. Press the Up or Down arrow keys on the keyboard to select the eth1 or eth0 Adapter Status listing by Moving the cursor in front of the selection. *Note: If no cursor is seen, press ENTER a second time.*

6. Press Enter on the keyboard to advance to the configuration menu if you wish to change the IP mode (static or DHCP) or to change IP Address, Subnet, or Gateway addresses. See the next section in this manual for additional information.

In some instances, you may be able to use the factory default IP addresses to gain web access. The following default IP addresses are used.

Factory Default Settings:

eth0: DHCP
eth1: 10.0.0.61
eth2: 10.0.0.62 (with added optional ports)

3.8 Unit Networking and DNS Configuration

The TSS 6220 network configuration is managed with setup menus visible by connecting a computer monitor and USB keypad to the system. The configuration menus provide entry of host names, gateway and DNS server addresses. Setup of the unit's Ethernet ports including if they are static or DHCP configured. If static, entry of the ports IP address, gateway and subnet may be entered. This section shows the typical setup menu features and describes how to setup the network settings.

Viewing the setup utility screens provided by the TSS 6220 requires connecting a computer monitor to the VGA video output connector on the rear of the unit. It requires the use of an USB keypad. View the monitor screen and use the keypad for navigation and entry. The following navigation and entry rules are used and included as a reminder on each setup screen.

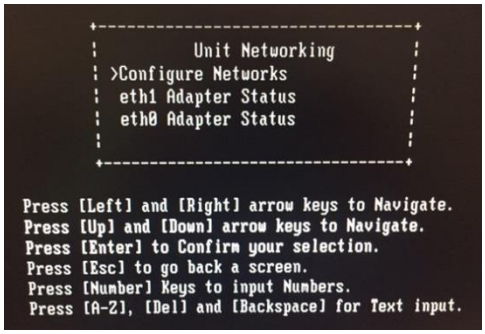
Press [Enter] to confirm a selection – advance to next menu/selection
Press [Esc] to go back to previous menu and accept entries
Press [Left] and [Right] arrow keys to navigate
Press [Up] and [Down] arrow keys to navigate
Press number and letter keys for field input values
Press [Del] and [Backspace] as needed for text entry

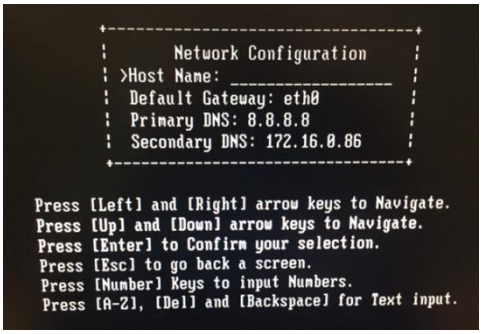
Configure Networks Settings

Network configuration settings are available to enter a unit host name, define a gateway and enter primary & secondary DNS addresses. These selections are available in the "Configuration Networks" menu.

1. From the opening menu – press the ENTER key.

2. Position the cursor in front of Configure Networks selection as in illustration below. Press the ENTER key to advance to the Network Configuration Menu.





3. To enter a Host Name: Position the cursor in front of the Host Name row using the up and down arrow keys. Press ENTER. The first field is selected for letter or number entry. Enter the number or letter. Press left or right arrow key to move to the next digit. Press ENTER key.

4. To enter a Default Gateway: Position the cursor in front of the Default Gateway row. Press Enter. Enter the desired gateway. Press ENTER.

5. To enter a Primary and/or Secondary DNS: Position the cursor in front of the Primary DNS and/or Secondary DNS row to be changed or entered. Press the ENTER key. Enter the address using number keys while navigating with the arrow keys. Press ENTER.

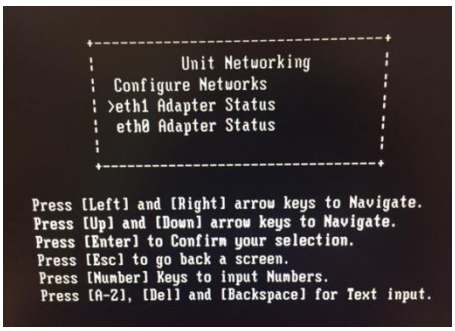
Ethernet 0 and Ethernet 1 Port Configuration Changes

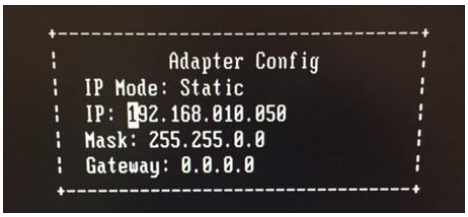
Network configuration settings are available to enter a static IP address, gateway address and subnet mask for Ethernet port 0 (eth0) and Ethernet port 1 (eth1). These selections are available in the respective “eth1 Adapter Status” menu and “eth0 Adapter Status” menus. The following describes the steps to enter or change a port’s static IP address.

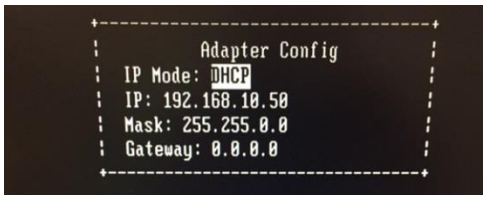
1. From the start menu, press the ENTER key to advance to the Unit Networking screen.

2. Press the Up or Down arrow key as needed to move the cursor position in front of the eth0 or eth1 row. Press the Enter key to advance to the Adapter Eth Status menu.

3. Use the up and down arrow keys to position the cursor in front of the IP Mode row. If it shows DHCP - Press the ENTER key to select the setting field. Click the up or down arrow key to increment setting to “Static.” Press ENTER.







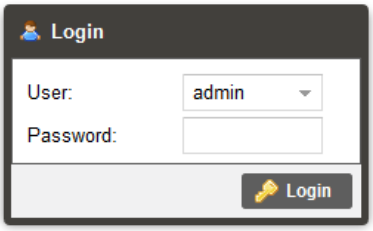
4. Use the up and down key to position the cursor in front of the IP Mode row. Press ENTER to enter the field. Enter number values to define the desired static IP address. Use the left and right arrow keys to move to different digits. Press ENTER when complete.

5. Change Mask and Gateway settings using the same technique as in step 4. Press the ENTER key when finished to accept entries and return to the menu.

3.9 Controlling the TSS 6220 Using the Web GUI

Controlling the TSS 6220 is done by a network connection to either the eth0 or eth1 ports and the use of the web interface or GUI. From any PC that is connected to the same network as the TSS 6220, open a web browser application and type the IP address of the unit in the address field. You must obtain the unit IP address with the procedure in the Startup section 3.7 on page 17.

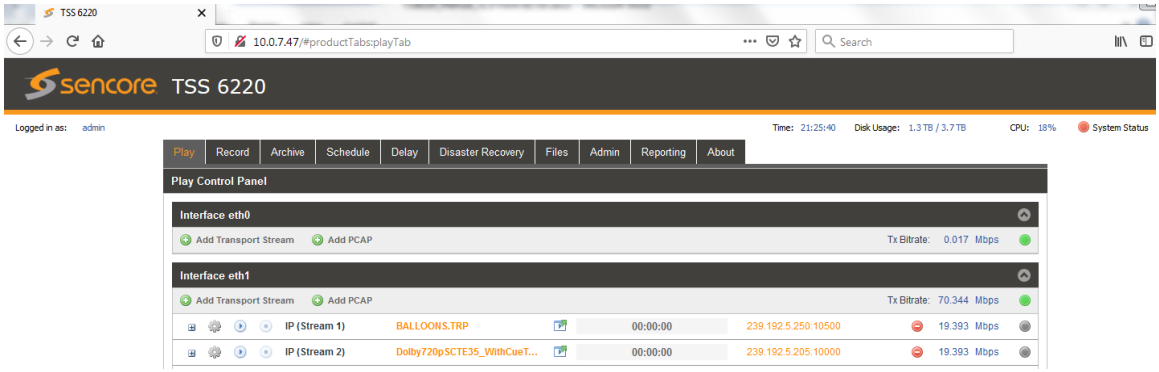
When connecting to the web GUI, you are greeted with a Login screen as shown below. The default user field entry is admin and the default password field is left blank or no entry. Press the login button in order to login to the web interface. The User and Password can be changed for improved security in the Admin section of the GUI. Please see section 11.1 in this manual.



When connected you are greeted with the home or start page of the web GUI as shown below. Depending on the options and licensing some variations in the screen may be seen.

To open the TSS 6220 web interface use one of the following supported browsers.

- Internet Explorer version 9 or newer
- Firefox
- Google Chrome
- Microsoft Edge



The user is capable of configuring parameters from this page by clicking on the (cog) which represents a settings configuration is available for the listed item. Each section contains a dropdown icon which is used to collapse or expand a section to see additional details. Further details of the common fields in the web GUI of the TSS 6220 are described

The top section or fields of the TSS 6220 web GUI includes login and operational information of the system. Below is a reference to the information provided by each field.

1. **Logged in as:** This field indicates the logged in user. This field may not be selected or changed. The User and Password may be set in the Admin tab. See section 11.1.
2. **Selection Tabs:** Provides operational control of the TSS 6220. Click on a tab to select. The tabs shown and available for selection depend on unit licensing.
3. **Storage Disk Usage**: Indicates actual disk size that is currently in use
4. **Storage Disk Usage:** Indicates total disk size available for use
5. **CPU:** Indicates the percentage of CPU usage
6. **Logout:** Provides quick logout, click to log out from the MIP GUI.

Field		Button/Selections	Description
1.	**Logged in as:**	Admin (Default)	Shows the logged in user name. A view only field.
2.	**Selection Tabs**	Play	Provides control for playing stream and PCAP files
		Files	Provides viewing of media disc play files
		Record	Provides record captures of TS streams or PCAP
		Archive	Provides long term recording via segment files
		Schedule	Provides for schedule playout of TS streams
		Delay	Provides buffer and delayed output of TS stream
		Disaster Recovery	Provides buffer delayed output and disaster recovery playout
		Admin	Provides administrative tasks
		Reporting	Provides reporting and logging
		About	Provides unit information
3.	**Disk Usage**	Example shown: 63.0 GB	Indicates the disc drive memory space that is currently being used by the system
4.	**Disk Usage**	Example shown: 3.7.TB	Indicates the total disc drive memory space available for TS and PCAP stream storage
5.	**CPU**	Example shown: 13%	Indicates percentage of CPU processing capacity that is in use.
6.	**Logout**	Logout Click on icon	Click to log out of the web GUI connection to the TSS 6220

3.10 Simplified Startup - Getting a Stream Playing

This section provides a quick start process to assist you in getting an output stream playing to the Ethernet 1 port. This section provides only enough information to get you outputting a TS stream. It is not intended to completely summarize all the information contained in this manual. Please reference other portions of the manual to answer questions and become familiar with the TSS 6220 and its features.

Get Unit Powered & Network Connected:

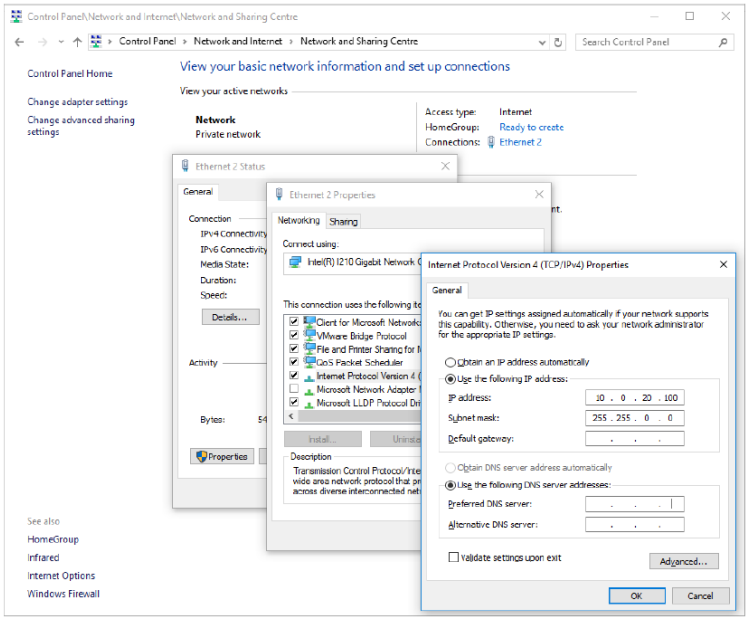
1. Locate the TSS 6220 in a convenient location or mount in an equipment rack in which AC power and a connection to the network is closely available. Connect an AC cord from the rear of the unit to the AC outlet.
2. Connect a network cable between the Ethernet port 1 (Port nearest the VGA video connector on rear panel) and to your network.
3. Momentarily press the Power button on the unit front panel. You will observe and hear normal PC startup activities. The front panel power light should illuminate and drive light activity indicated. Wait while the unit boots up.

Establishing a Web Connection with the Pre-Set Management IP Address

To access the TSS 6220 web user interface, it is necessary to establish an Ethernet connection to the device. There are two alternative ways to connect to the TSS 6220's management IP address: 1.) Use the pre-set management IP address or 2.) Connect a monitor and keyboard to the server to retrieve the IP address. The following steps describe how to use a pre-set management IP address on a PC via a connection to the Eth1 port.

The TSS 6220 is shipped with the following factory settings for the Eth1 network ports.

Eth1 Default IP address:
10.0.0.61



You can connect to the web UI of the TSS 6220 using a PC and connecting directly from the PC's network port to the Eth1 port with an Ethernet cable. Configure the PC's network port settings to permit a direct connection.

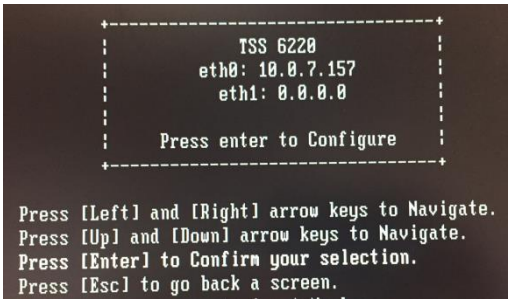
For Windows, the network parameters are set in the **Control Panel — Network and Internet — Network and Sharing Center — Network Connection — Properties — Internet Protocol Version 4 Properties** viewing menu. Select the user defined address, and set the PC's IP address to 10.0.0.60 and the subnet mask to 255.255.0.0.

When the IP address of the PC has been set in the same subnet as the TSS 6220's factory setting, a web browser can be used to access the web user interface at 10.0.0.61.

Retrieve and/or Configure the Unit IP address

You can determine the TSS 6220's IP address of both Eth0 and Eth1 ports by connecting a monitor and keyboard to the server. All configuration of the TSS 6220 is done via a PC and web. The Ethernet port 1 can serve both as a management port for web browser access and as the streamer IP/PCAP network port. The following section describes how to connect a monitor and keyboard to the server to retrieve and/or change the unit's IP address on both ports. To connect to the unit's web browser:

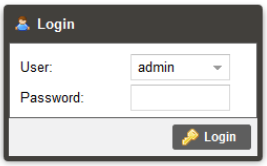
1. Connect a computer monitor to the TSS 6220. Connect a VGA video cable from the VGA connector at the rear of the TSS 6220 to the computer monitor. Power up the computer monitor. Connect a PC USB keyboard to one of the USB ports at the rear of the TSS 6220. The display screen on the monitor will indicate the current IP address for the Ethernet 1 port (eth1). It also shows the IP address for the other Ethernet 0 port (eth0)



2. If you do not have a computer monitor you may try to access the web GUI as described in the previous page using the factory default IP settings shown below:
   Ethernet port 0 (eth0): 10.0.0.61
   Ethernet port 1 (eth1): 10.0.0.62

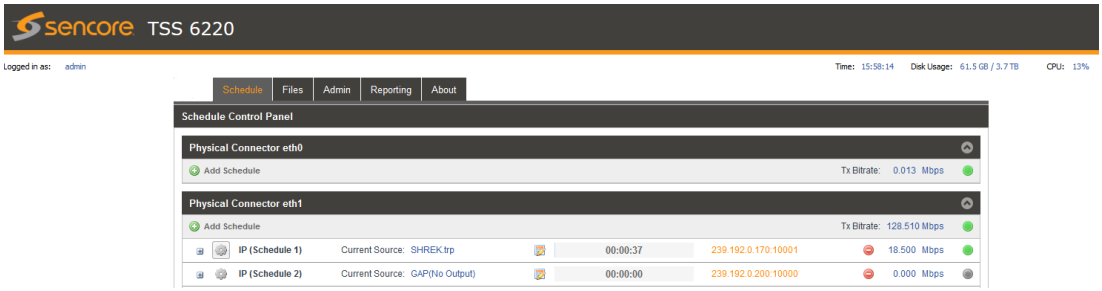
Use PC Web Browser to Connect to the TSS 6220's Web GUI

1. Connect a PC to the same network as the TSS 6220. Open a web browser application on the PC and in the top address field enter the IP address of the eth1 port as found in the previous step.



2. The Login screen appears with a successful connection. The default User name is admin and the default password is blank or no entry. Click on the Login field.

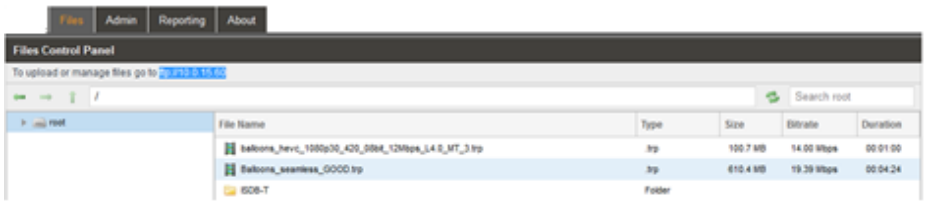
When successfully logged in the web connection to the GUI produces a Schedule Control Panel. A Play Control and/or Record Panel may be shown depending on unit licensing.



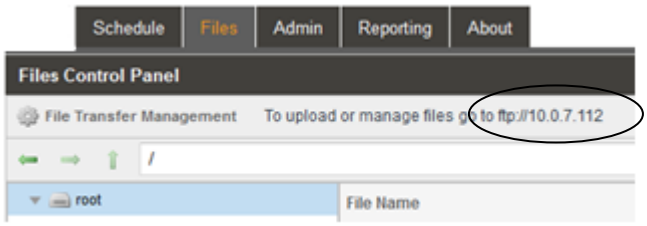
Use FTP or SMB to Load Stream/PCAP Files to Media Storage Drives

The TSS 6220's media drives are available to store files used for playout in a schedule. Click on the "Files" tab at the top of the GUI to view available files. If a file is available for selection, click on the Schedule tab and skip to the instructions "**Creating a Play/Event Schedule**" instruction section.

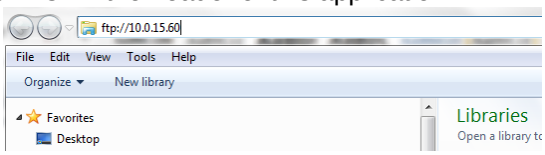
If no files are available you will need to access and use FTP or SMB to load files to the media drive. Read on in this section for details on accessing FTP and loading files/folders. Using FTP requires starting an instance of Windows Explorer on your PC and entering the address of the FTP server. Follow the instructions below.



The FTP server address is located in the File Viewing Panel (Files tab) in the TSS 6220's web GUI. Look near the top of the page under the Files Control Panel header. (See circle in illustration) Click at the end of the field and drag the mouse to highlight the ftp address. Copy the address – (Keyboard Ctrl-C key sequence).

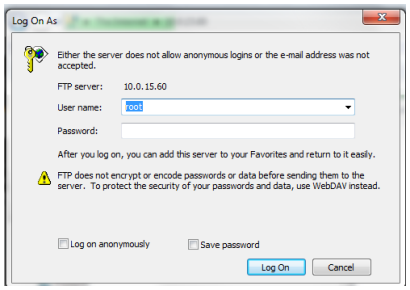


Open a Windows Explorer application window on your PC. In the header of this application – paste in the ftp address listed in the TSS 6220's File menu on the second line below the Files Control Panel heading. Paste the ftp address – (Ctrl-V) as shown in the example figure.
Example shown: ftp://10.0.15.60.
Press the Enter key on your keyboard.



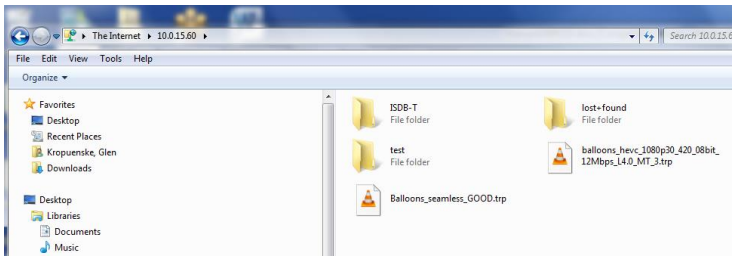
Upon connection to the ftp server you will be prompted for a username and password: Below is the default User and Password. *The Username/Password can be set - see section 8.2 for instructions.*

User: root
Password:
Note: The Password field is left blank or no entry as shown.



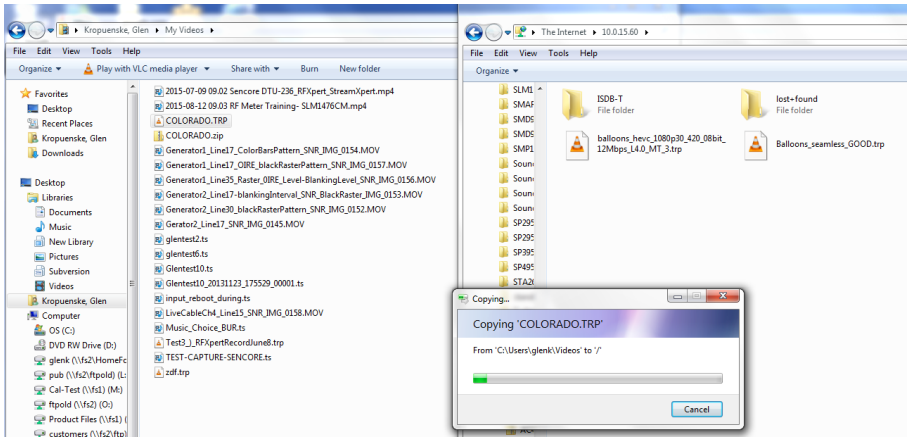
Click on the Log On field to access the FTP server.

Upon connection to the ftp server you can view the current folders and play files in the TSS 6220.



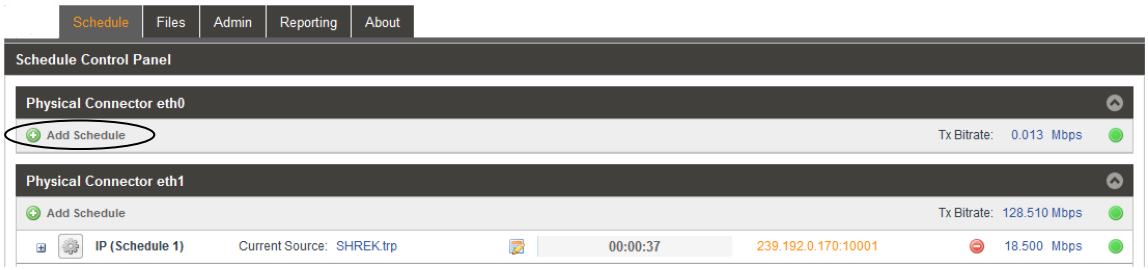
To transfer files to the ftp server, you may use common Window's-based file copy and paste techniques or drag and drop techniques. For example, open a 2nd version of Windows Explorer application. (Right mouse click on the Windows Explorer icon at the bottom system tray – click on Windows Explorer) You now have both the FTP server window and the Windows Explorer application running. Position both the FTP window and the Windows Explorer windows beside each other on your PC screen. See example below. Click on a file or

folder in the Windows Explorer window and drag it into the right side of the FTP server window. The folder or file is transferred as illustrated below.

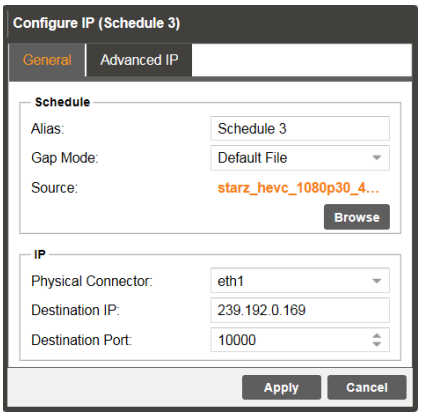


Creating a Play/Event Schedule

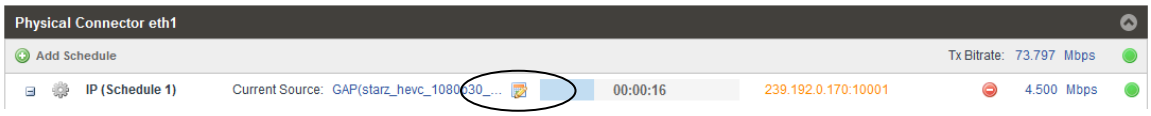
If licensed for the Schedule playout capability, you can create a play schedule to produce a playout stream. To create a schedule click on the Schedule tab and then click on the Add Schedule icon. Note that this selection is available for each of the Ethernet ports.



A Configure IP menu opens to a General configuration menu. You may enter an alias name or use the default name. Select a Gap Mode using the dropdown selections in this field. The Gap Mode defines what you want to happen in the output between scheduled stream playout events. If you choose “Default File,” click the Browse field and select a TS file to playout during gap periods. Define the IP Ethernet port, Destination IP address and port. Click the Apply field at the bottom to create the schedule.

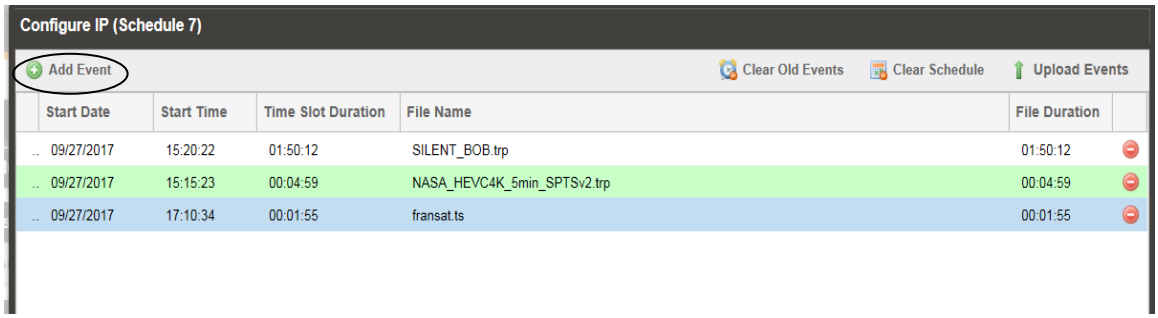


The created schedule is shown as a listing or row. There can be up to 16 different schedules or rows. To define the playout streams, dates, and times in a schedule, click on the icon to select the Scheduling Configuration Panel.



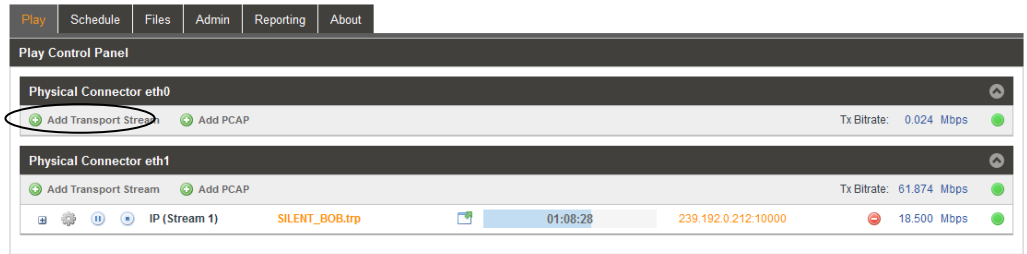
Click the Add Event icon to add a timed event or stream to the playlist. Browse and select the TS file you wish to create as a playout event. The file loads as a row into the schedule and default times and dates are generated. Click in the Start Date, Start Time, or Time Slot Duration fields to change these default values. Listings are show according to date and times in the schedule. See Section 5 in this manual for more details.

To start a file or event playing out immediately in a schedule, click on the Start Date field and enter the current date. Click on the Start Time field and enter a start time that is only a few seconds from the current time. You may need to check and/or adjust the current time of the Server. The current date/time is shown and set under the Admin tab in the Date/Time section. See the Admin section of this manual for more details. Once the start time is reached, the event begins playout on the specified Ethernet port.



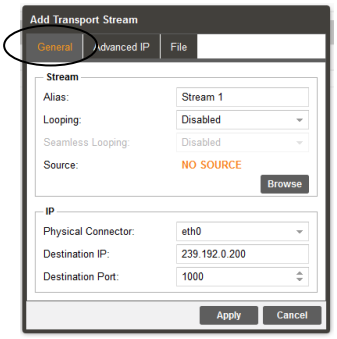
In Play Control Panel Add a Transport Stream

The TSS 6220 web GUI may include a Play tab, if licensed for the Play out feature. To create or add a playing stream to the IP output on the Ethernet 1 port, click on the Add Transport Stream icon below the Physical Connector eth1 heading. An Add Transport Stream menu opens and defaults to the General tab.



Configure the Output Stream

The General configuration menu provides selections defining the output IP stream and IP destination address and ports. Select a source file for playout. Click on the Browse field and navigate to the file you wish to select for playout. Open the file. It will populate the Source listing with your file name.



Define the IP parameters. The Physical Connector field should indicate eth1. If not, select the dropdown and select eth1. Click on the Destination IP field and enter the destination address. Enter a Destination Port in the Destination Port field. Click on the Apply box at the bottom of the menu to add the stream to the Ethernet port 1 (eth1) output.

Start the Output Stream Playing

After the stream is added you will see the stream listed in the Physical Connector eth1 section of the Play Control Panel. If you don't see the listing click on the Show/Hide icon . Click on the Play icon to begin producing the stream output. The light at the far right turns green and the bit rate field beside it begins to show the output transport stream bitrate. The stream time begins to increment and the blue highlight advances from the left (start) to the right (end) in the center progress window.

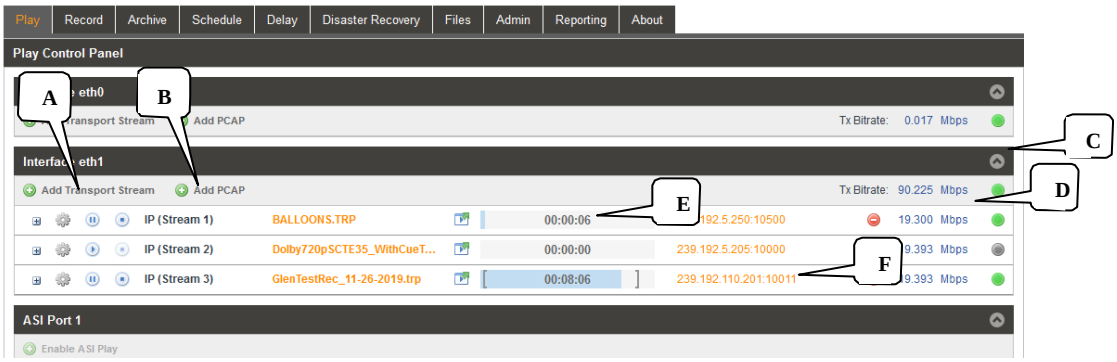
Your selected stream is now outputting to the network. Click on the cog wheel icon to make changes to the stream output configuration. You may also click on the icon to bring up a configuration and monitoring panel. It provides a shortcut to improve viewing and playout statistics while offering some convenient control options.

4 Play Control Panel

The play feature is a licensed feature of the TSS 6220. When licensed, the Play tab is shown and available to select. Selecting or clicking on the Play tab advances the GUI to the Play Control Panel. The Play Control panel provides management of TS stream files and PCAP files that are manually configured for playout from the TSS 6220. This panel manages each of the available Ethernet streaming ports defining which TS streams and PCAP files are sourced to each port. This panel further defines the criteria of each of the streams and PCAPs added to the output in the Play feature. A TS 6220 chassis may be optionally configured to support the addition of an added hardware card which provides multiple ASI input/output ports. The following sections in this chapter of the manual provide an overview of the features and menus associated with the Play feature of the TSS6220.

4.1 Play Control Panel Overview

The Play Control Panel includes a section for each available Ethernet output port. The sections are identified by headers indicating the physical connector port. For example, the Ethernet port 0 is shown as “Interface eth0.” If you have added the optional Ethernet ports to the TSS 6220, then two additional sections are included for Interface eth2 and eth3. If you have the optional ASI card, additional sections are shown for these physical output ports. See section 4.7 for configuration of an ASI output transport stream.



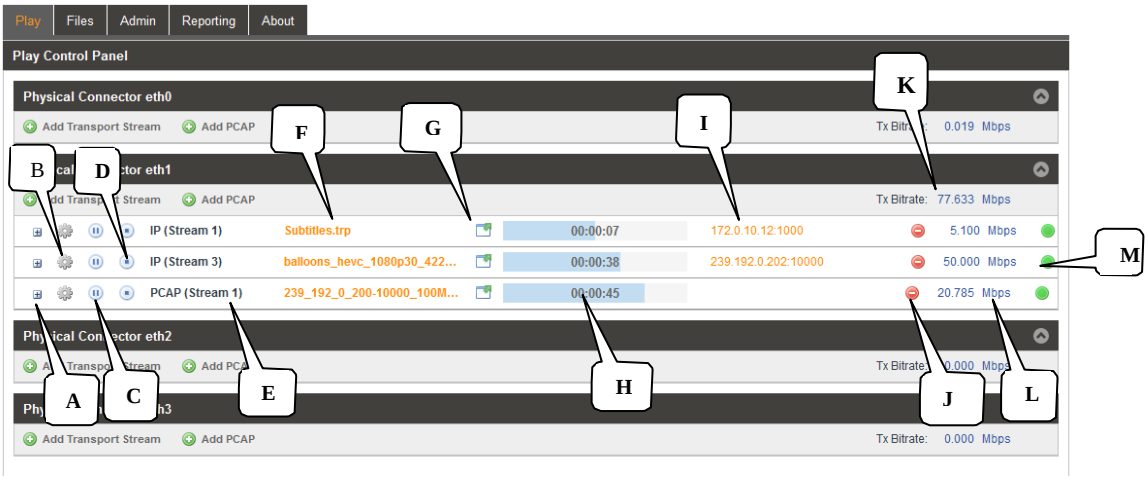
Each Ethernet port section includes some common control fields. The following table provides an overview of the common fields in the Play Control Panel.

Item or Field	Button/Action	Description
A. Add an IP Transport Stream Output	Add Click on this icon to add a TS file to stream to the output	Provides menu to select a file and define stream output characteristics adding the output to the Ethernet port. See section 4.3 for details
B. Add PCAP stream output	Add Click on this icon to add a PCAP to the output	Provides a menu to select a PCAP file and criteria to define it adding it to the Ethernet output port 0. See section 4.4 for details
C. Show/Hide port info	Selectable, click on the icon	Hides all the stream and PCAP listings, click to hide or click to show all streams/PCAPs

D.	**TX Bitrate**	Not a selectable field	Shows the total output bitrate of all the streams and PCAP to the Ethernet port
E.	**TS Stream**	See next section	Row defining a stream output to Ethernet 1 port (eth1)
F.	**PCAP stream**	See next section	Row defining a PCAP output to the Ethernet 1 port

4.2 Stream/PCAP Information Overview

The Play Control Panel shows all the playout IP streams and PCAPs. Each playback transport stream and PCAP file output has a row of information and control functions. Depending on licensing, up to 100 play listings are currently available. There are common data fields for each stream/PCAP listing forming columns of information in the panel. This section provides a brief definition of the information provided in each column.



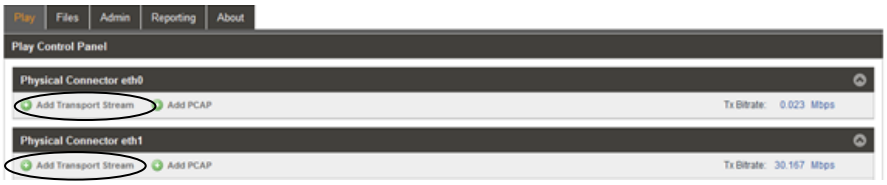
Overview of the informational fields in the Play Control main panel.

Item or Field Name	Button/Action	Description
A. Status & Configuration	Click on this icon	Provides a window showing IP stream/PCAP status and configuration information
B. Configuration Menu Select	Click on this icon	Provides a menu with configuration settings to define the output IP/PCAP stream and IP address
C. Output Control	Pause -click on icon to Pause Play – click on icon to start output	Indicates IP/PCAP stream as playing or paused. Click on icon to pause or play. When paused, the current location of the stream or PCAP is maintained.
D. Stop Control	Click on icon to stop IP/PCAP output	Stops a playing or looping IP/PCAP output. Click on play icon to restart – restarts at file starting point.
E. Stream name or alias	Not selectable, No action	Shows a default output IP/PCAP stream name. See section xx for naming streams.
F. TS/PCAP File name	Double click to browse/select different file	Indicates the current selected play file.
G. Stream configuration	Click on icon to open configuration	Provides convenient overview of stream playout status, some critical settings, and provides some

		menu	control features. See section 4.6 for details.
H.	**Play Status**	Not selectable	Indicates a stream is playing or active. Indicates play position/time within the start-to-end duration time span. Visual blue highlight indicates stream progress.
I.	**IP Address/Port**	Not selectable	Indicates the destination IP address and port with MPEG-IP output. Indicates Null Stuffing status as Enabled or Disabled when using an ASI output
J.	**Delete icon**	Click to delete stream or PCAP	Removes a IP/PCAP stream from the play listings and Ethernet output
K.	**Total Port Bitrate Indication**	Not selectable, view only	Indicates accumulative Ethernet port bitrate of the addition of all playing TS streams and PCAP files
L.	**Bitrate Indication**	Not selectable, view only	Indicates bitrate of the individual stream to the Ethernet port
M.	**Status Indicator**	Not selectable, view only	Indicates status of output: Gray: Inactive – stopped or paused Green: Good playback output condition Red: Fault condition

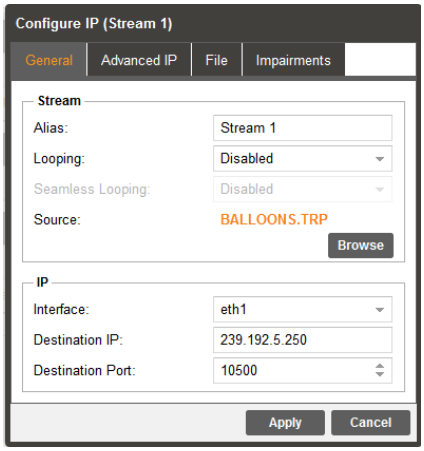
4.3 Player - Adding a Transport Stream - IP

To create a new IP stream output requires that you select a play file and define its output parameters. To create or add a playing stream, click on the Add Transport Stream icon. Note that this selection is available for each of the Physical Connector Ethernet ports of your TSS 6220. Select the Add Transport Stream icon in the section corresponding to the Ethernet port in which you want the output to stream.



The Play Control Panel is simplified for viewing with a Hide/Show streams feature for each Physical Connector eth section. To show all the streams outputting to an Ethernet port click on the Show/Hide icon .

4.3.1 Add Transport Stream - IP - General Configuration



Upon clicking on the Add Transport Stream icon, the Add Transport Stream menu opens. This menu contains 3 selection tabs which provide menus for defining the transport IP stream. By default, the General tab is selected providing some common selections to configure the output. The General configuration menu provides selections defining the output IP stream and IP destination address and ports. This section provides an overview of the configuration fields.

The first step is to select a source file for playout. Click on the Browse field and navigate to the file you wish to select for playout. Select the file and open it. It will populate the Source listing with your file name. In the Stream section of the menu, click on the Alias field and enter an alias name, if desired. This is not required as the application automatically assigns a name as an incrementing stream number.

If you want the playing stream upon reaching the ending point to loop back to the start and continue playing out, click on the dropdown arrow in the Looping field. Select “Enabled” if you want the looping feature active. When looping is enabled the Seamless Looping field becomes available to configure. Set this field to “Enabled” if you want the TSS 6220 to properly seam the ending point with the beginning point of the stream. With this enabled the TSS 6220 corrects PCR discontinuities and continuity count values.

Define the IP parameters in the IP section. Verify that the Physical Connector field indicates the desired Ethernet port. If not, select the Ethernet port you wish to output the stream. Enter the Destination IP and the Destination Port values. Click on the Destination IP field and enter the destination address. Click on the Destination Port field and enter a Destination Port. Click on the Apply box to add the stream to the Playout Control Panel under the respective Ethernet port.

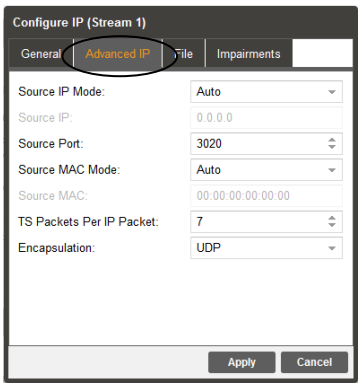
Add Transport Stream – Summary of General Tab Settings

Setting	Range	Description
Stream - Alias	Value and or Letter Entry	Provides entry to name or assign alias to identify a stream. If no name is entered, the TSS 6220 assigns an incrementing stream number
Stream - Looping	Enabled Disabled	Turns on the looping function in which the file plays to the end and then loops back and starts playing from the start again. When disabled, the stream stops when it reaches the end of the file
Seamless Looping	Enabled Disabled	Enabled: Provides corrections to PCR values and PAT/PMT table continuity counts so as to appear to the receiver as a continuous uninterrupted stream.
Source	Not selectable	Indicates “No Source” when no file has been selected. Indicates the selected file name when a file is opened.
Browse	Click on Browse field to access stream files in	Provides navigation to browse to available stream and PCAP files for selection.

	library	
IP – Physical Connector	Selects eth0 or eth1, the standard Ethernet ports, eth2 and eth3 available if TSS 6220 has added optional ports	Entry selects which of the available Ethernet ports on the TSS 6220 that the stream output is assigned
Destination IP	224.0.0.0 – 239.255.255.255	This address is the IP address the source device is sending to for a multi-cast. A unicast would use an IP address less than 224.0.0.0.
Destination Port	0 – 65535	This is the UDP port the source device is sending to.

4.3.2 Add Transport Stream - Advanced IP Configuration

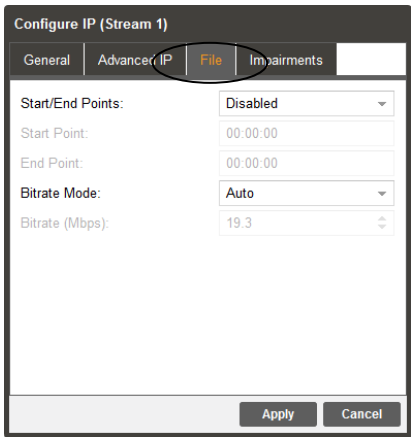
The Add Transport Stream Advanced IP tab includes settings to define the TSS 6220 as a specific source device for IGMPv3. This feature allows each steam to be seen by the network as a unique source device with a unique IP address, and/or source port, and/or MAC address. This section provides descriptions of the settings in the Advanced IP menu.



Setting	Range	Description
Source IP Mode	Settings: Select Auto or Manual	In Auto, the TSS 6220 simulates a source device and creates and communicates a unique source IP address. In Manual, a user entered source IP address can be entered.
Source IP	Available for entry when Source IP Mode is set to Manual.	Provides entry of a Source IP address for the stream that is communicated by the TSS 6220
Source Port	Click up or down arrows to increment value shown. Click in field and enter value. Range: 1030 to 65535	Specifies a value for the source port associated with the stream.
Source MAC Mode	Auto, Manual	In Auto, the TSS 6220 simulates a source device and creates and communicates a unique source MAC address for the stream. In Manual, a user Source MAC address can be entered.

Source MAC	In “Manual Mode” enter MAC address,	Provides entry of a MAC address you want to specify as the Source MAC for the stream
TS Packets Per IP Packet	Enter value 1 to 7, Default is 7	This setting determines the number of TS stream packets that are inserted into IP packets. 7 being the maximum and the typical setting. Lesser packets may be selected.

4.3.3 Add Transport Stream – IP - File Configuration



The File tab within the Add Transport Stream menu provides selection to define starting and ending points when playing out an IP stream file. It further provides a selection to automatically or manually control the output IP stream bitrate. To access this configuration menu, click on the File header tab

You can enter starting and ending times within the play duration time of the IP play file. You can enable or disable the playout to conform to these entered start point and end point times. Set the Start/End Point field to “Enabled” and enter the Start Point and End Point.

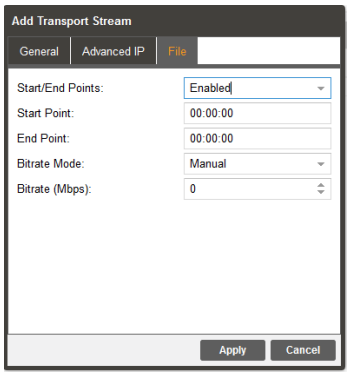
The Bitrate Mode provides an automatic setting in which the TSS 6220 automatically determines the ideal playout stream rate. You can set the Bitrate mode to Manual when you wish to increase the output bitrate. In the manual mode, click on the up and/or down arrows in the bitrate field to increase or decrease the bitrate in Mbps.

The following chart provides an overview of the configuration settings in the File menu.

Setting	Range	Description
Start/End Points	Enabled Disabled	Adds control of the output defining a starting and stopping point within the play duration of the selected stream or PCAP play file
Start Point	Range of play file duration but prior to End Point	This setting establishes a point/time in the play file duration which defines the starting point of the stream or PCAP file when it is streaming to the output port
End Point	Range of play file duration but after the start point	This setting establishes a point/time in the play file duration which defines the ending point of the stream or PCAP file when it is streaming to the output port
Bitrate Mode	Auto Manual	In Auto the TSS 6220 determines the playout rate automatically. In Manual, the user may modify or enter a playout bitrate.
Bitrate (Manual)	Enter Bitrate	Provides user entry to manually enter a desired output bitrate

The Bitrate Mode provides an automatic setting in which the TSS 6220 automatically determines the ideal playout stream rate. You can set the Bitrate Mode to Manual to increase the output bitrate. In the manual mode, click on the up and/or down arrows in the bitrate field to enter a bitrate in Mbps.

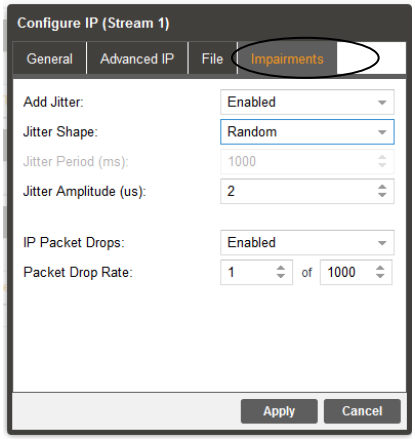
PCR timestamps are integrated into transport streams which correlate to the stream's native bitrate. Changes from the stream's native bitrate will impact PCR accuracy.



4.3.4 Add Transport Stream – IP - Impairments Configuration

The Impairments tab within the Configure IP menu provides selections to add IP impairments to the IP TS stream output. You can add and define jitter events to occur in the output IP stream. You can add and define IP packet drops to the IP stream output. Impairments can be used for testing IP analysis equipment or testing robustness of IP receive devices.

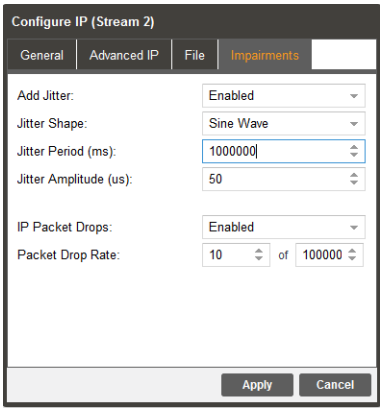
The Impairments feature of the TSS 6220 is a licensed feature. The tab only appears in the network GUI screen when the feature is licensed for use. This section defines the configuration options provided by the Impairments section. To access this configuration menu, click on the Impairments header tab in the Configuration IP menu.



To add jitter to the output click in the Add Jitter dropdown arrow field and select "Enabled." To disable jitter in the output, return this field to the "Disabled" selection. When jitter is enabled, the jitter event(s) which occur in the output stream occur at a rate and severity determined by the Jitter Shape, Jitter Period (mS), and Jitter Amplitude (uS) settings.

When the Jitter Shape is set to "Random", a change occurs in the IP stream which changes the IPT (Inter Packet Time). IPT is the time between arrival of the 1st byte of a frame and the arrival time of the 1st byte of the next frame. The time is randomly shortened or lengthened by the amount entered in the Jitter Amplitude (uS) field. The jitter amplitude of the random jitter event is selectable from 1 uS to 10 seconds. For example, a random setting with a Jitter Amplitude setting of "5" means the IPT of the output TS over IP stream would randomly change by + or - 5 uS.

The Jitter Shape provides settings in which the jitter element added to the IP output has a rate of change or delta. The jitter is caused to change within a period of time (rate) and the variation or rate of change associated with the jitter within this period is sinusoidal or square wave in nature. This rate variation to the jitter element can be defined as a sinewave or a square delta. The Jitter Period (ms) entry field defines the period or rate of the jitter variation. The Jitter Amplitude (uS) defines the magnitude or amplitude of the jitter variation. For example, a sinewave shape with a Jitter Period of 1000 mS and Jitter Amplitude of 20 uS would create a sinusoidal rate of

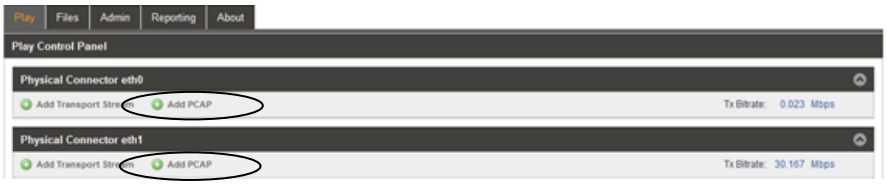


jitter variation reaching + and – 20 uS through the 1 sec period.
The following chart provides an overview of the configuration settings in the Impairments menu.

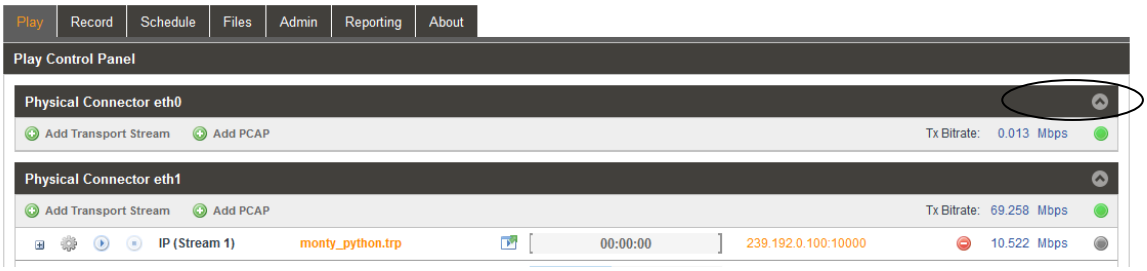
Setting	Range	Description
Add Jitter	Enabled Disabled	Controls if jitter is added to the output. Enabled: Jitter is added to the IP output. Disabled: Jitter is not added to the IP output
Jitter Shape	Random, Sinewave, Square wave dropdown menu selections	This selection establishes the occurrence pattern in which jitter is present or added to the IP output. It defines the delta or rate-of-change to the jitter through a period of time selected in the Jitter Period field. Random: Jitter event is random and reaches amplitude entered in the Jitter Amplitude field. Sinewave: Jitter varies amplitude with sinusoidal rate of change through the define period entered in the Jitter Period field and reaching + and – amplitudes entered in the Jitter Amplitude field Square wave: Jitter varies amplitude with square wave rate of changes through the define period entered in the Jitter Period field and reaching + and – amplitudes entered in the Jitter Amplitude field
Jitter Period (ms)	Enter or increment value. Range 1000 to 10000000 mS	This setting establishes the duration in mS of the sinusoidal or square wave jitter event.
Jitter Amplitude (uS)	Enter or increment value. Range 1 to 1000000 uS	This setting establishes the amount of the jitter variation uS that occurs in the jitter period
IP Packet Drops	Enabled, Disabled selection	Controls if IP Packet Drops occur in the IP output. Enabled: Packet Drops will be produced as IP impairments on the IP output. Disabled: Packet Drops will not occur as impairments to the IP output
Packet Drop Rate	Enter values in fields: Min (left field): 1 to 100000 Max (right field): 1 to 1000000	Defines the rate of IP packet drops on the IP output. Enter a total number of packets at the right entry field. Enter how many drop packets you want to occur during the total packets entered at the left value field.

4.4 Adding a PCAP Play File

To create a new PCAP output file test stream requires that you select a PCAP file and define its output parameters. To create or add a PCAP stream, click on the Add PCAP icon. Note that this selection is available for each of the Physical Connector Ethernet ports of your TSS 6220. Select the Add PCAP icon in the section corresponding to the Ethernet port in which you want the output to stream. This section describes how to select, add and configure a PCAP file to playout one of the TSS 6220's Ethernet port outputs.



The Play Control Panel is simplified for viewing with a Hide/Show streams feature for each Physical Connector eth section. To show all the streams outputting to an Ethernet port click on the Show/Hide icon .



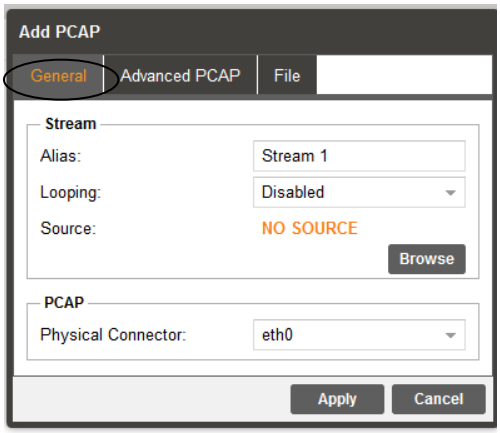
4.4.1 Add PCAP - General PCAP Play Settings

When adding a PCAP file to play on the TSS 6220 use the configuration settings in the General, Advanced PCAP, and File tabs to configure the output.

Click on the Add PCAP icon to add a PCAP file to the play list. Upon clicking the icon, the Add Transport Stream menu opens. This menu contains 3 selection tabs which provide menus for defining the transport PCAP stream. By default, the General tab is selected providing some common selections to configure the output. The General configuration menu provides selections defining the output PCAP stream and its destination address and ports. This section provides an overview of the configuration fields.

The first step is to select a source PCAP file for playout. Click on the Browse field and navigate to the PCAP file you wish to select for playout. Select the file and open it. It will populate the Source listing with the file name. In the Stream section of the menu click in the Alias field and enter an alias name as desired. This is not required as the application automatically assigns a name as an incrementing stream number.

If you want the playing PCAP stream upon reaching the ending point to loop back to the start and continue playing out, click on the dropdown arrow in the Looping field. Select “Enabled” if you want the looping feature active.



Define the PCAP parameters in the PCAP section. Verify that the Physical Connector field indicates the desired Ethernet port. If not, select the Ethernet port you wish to output the stream. Enter the Destination IP and the Destination Port values.

The PCAP file contains within it the destination and port addresses so these parameters cannot be entered in the same manner as with a TS stream. When finished with the configuration, click on the Apply box to add the stream to the Playout Control Panel under the respective Ethernet port.

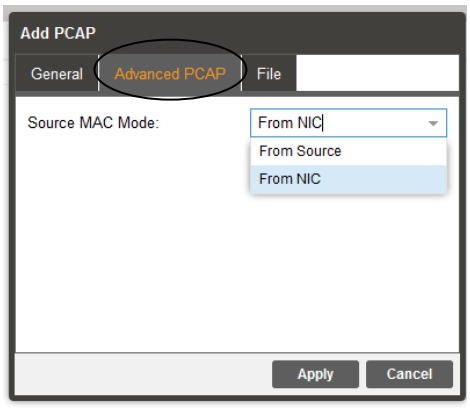
Add PCAP menu – Summary of General Tab Settings

Setting	Range	Description
Stream - Alias	Value and or Letter Entry	Enter name you want to identify stream. If no name is entered, the TSS 6220 assigns an incrementing stream number
Looping	Enabled Disabled	Enabled: Turns on the looping function in which the PCAP file plays to the end and then loops back and starts playing from the start again. Disabled: After the file is started it plays to the end of the file and stops.
Source	Not selectable	Indicates “No Source” when no file has been selected. Indicates the selected file name when a file is opened.
Browse	Click on Browse field to access PCAP files in	Provides navigation to browse to available PCAP files for selection.

	library	
IP – Physical Connector	Selects eth0 or eth1, the standard Ethernet ports, eth2 and eth3 available if TSS 6220 has added optional ports	Entry selects which of the available Ethernet ports on the TSS 6220 that the PCAP output is assigned

4.4.2 Add PCAP - Advanced PCAP Settings

The Advanced PCAP selection tab provides a menu to define the Source MAC Mode. The MAC address indicated by the PCAP play output may be configured to match the MAC address of the NIC or be IP Source criteria. The following provides descriptions of the settings included.



Source MAC Mode: From NIC

When the MAC address source is set to “From NIC” the MAC address for all the Ethernet frames transmitted during PCAP play output shall be the same as the MAC address of the selected output NIC.

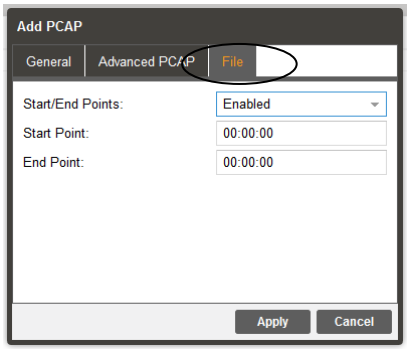
Source MAC Mode: From Source

When the MAC address source is set to “From Source” the MAC address for all Ethernet frames transmitted during a PCAP play output shall be the same as captured in the selected PCAP file.

Setting	Range	Description
Source MAC Mode	From NIC From Source	Determines the MAC address transmitted with all Ethernet frames during PCAP output. From NIC: MAC is the same as MAC of selected NIC From Source: MAC address is the same as MAC captured in the selected PCAP file.

4.4.3 Add PCAP - File Play Settings

The File tab within the Add PCAP menu provides selection to define starting and ending points when playing out a PCAP file. You can enter starting and ending times within the play duration time of the PCAP file. You can enable or disable the playout to conform to these entered start point and end point times that you specified. To access this configuration menu, click on the File header tab. The following section provides an overview of this menu.



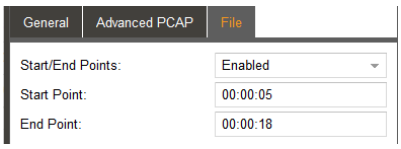
Keep in mind some general rules. You cannot set an End Point time that is after the normal End Play time of the selected file. You cannot set an End Point that is prior to the Start Point time. You can set a Start

Point and End Point in the File Menu, but you must set the Start/End Points to “Enabled” to playout only the part of the PCAP specified by the Start/End Point times.

Add PCAP – File Tab Settings Summary

Setting	Range	Description
Start/End Points	Enabled Disabled	Adds control of the output defining a starting and stopping point within the play duration of the selected stream or PCAP play file. Enabled: Directs output to follow the defined start and ending time references entered. Disabled: Output PCAP does not follow start or ending time entries. Playout is from the beginning of the file to the end of the file
Start Point	Range of play file duration but prior to End Point	This setting establishes a point/time in the play file duration which defines the starting point of the stream or PCAP file when it is streaming to the output port
End Point	Range of play file duration but after the start point	This setting establishes a point/time in the play file duration which defines the ending point of the stream or PCAP file when it is streaming to the output port

To setup starting and ending playback points for a PCAP file. Note the duration of the file in the Play Control Panel prior to specifying the starting and ending points as the times selected must be within the duration offered by the file.

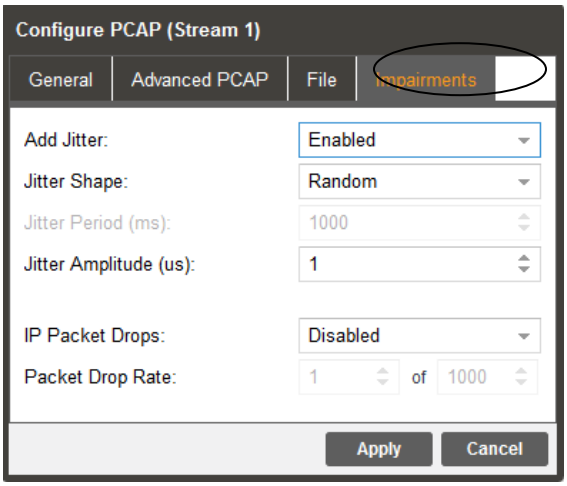


Select the cog wheel for the PCAP file to be specified. Click on the File tab to select the File Menu containing the starting and end points settings. Click the dropdown arrow in the Start/End Points field and select “Enabled.” The Start Point and Ending Point fields become available for entry. Click on the appropriate hour, minute, seconds field and modify to the desired start time. Repeat to enter the desired end time. Note the total duration when setting the Start Point and End Point values.

When starting and ending points are specified and enabled, the playback windows observed in the Playback Control Panel change to indicate the start/end limits that are specified. Brackets indicate the starting and ending points.

4.4.4 Add PCAP - Impairment Settings

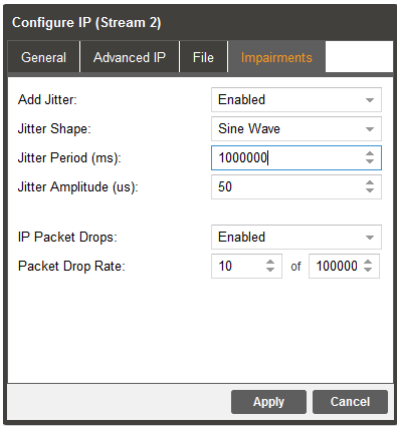
The Impairments tab within the Configure IP menu provides selections to add IP impairments to the PCAP stream output. You can add and define jitter events to occur in the output PCAP stream. You can add and define IP packet drops to the PCAP stream output. Impairments can be used for testing IP analysis equipment or testing robustness of IP receive devices.



The Impairments feature of the TSS 6220 is a licensed feature. The tab only appears in the network GUI screen when the feature is licensed for use. This section defines the configuration options provided by the Impairments section. To access this configuration menu, click on the Impairments header tab in the Configuration IP menu.

To add jitter to the output, click in the Add Jitter dropdown arrow field and select “Enabled.” To disable jitter in the output, return this field to the “Disabled” selection. When jitter is enabled, the jitter event(s) which occur in the output stream occur at a rate and severity determined by the Jitter Shape, Jitter Period (mS), and Jitter Amplitude (uS) settings.

When the Jitter Shape is set to “Random”, a change occurs in the IP stream which changes the IPT (Inter Packet Time). IPT is the time between arrival of the 1st byte of a frame and the arrival time of the 1st byte of the next frame. The time is randomly shortened or lengthened by the amount entered in the Jitter Amplitude (uS) field. The jitter amplitude of the random jitter event is selectable from 1 uS to 10 seconds. For example, a random setting with a Jitter Amplitude setting of “5” means the IPT of the output TS over IP stream would randomly change by + or - 5 uS.



The Jitter Shape provides settings in which the jitter element added to the IP output has a rate of change or delta. The jitter is caused to change within a period of time (rate) and the variation or rate of change associated with the jitter within this period is sinusoidal or square wave in nature. This rate variation to the jitter element can be defined as a sinewave or a square delta. The Jitter Period (ms) entry field defines the period or rate of the jitter variation. The Jitter Amplitude (uS) defines the magnitude or amplitude of the jitter variation. For example, a sinewave shape with a Jitter Period of 1000 mS and Jitter Amplitude of 20 uS would create a sinusoidal rate of jitter variation reaching + and – 20 uS through the 1 sec period.

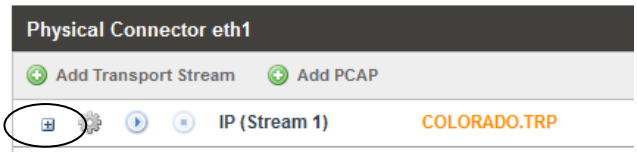
The following chart provides an overview of the configuration settings in the Impairments menu.

Setting	Range	Description
Add Jitter	Enabled Disabled	Controls if jitter is added to the output. Enabled: Jitter is added to the IP PCAP output. Disabled: Jitter is not added to the PCAP IP output
Jitter Shape	Random, Sinewave, Square wave	This selection establishes the occurrence pattern in which jitter is present or added to the IP output. It

	dropdown menu selections	defines the delta or rate-of-change to the jitter through a period of time selected in the Jitter Period field. Random: Jitter event is random and reaches amplitude entered in the Jitter Amplitude field. Sinewave: Jitter varies amplitude with sinusoidal rate of change through the define period entered in the Jitter Period field and reaching + and – amplitudes entered in the Jitter Amplitude field Square wave: Jitter varies amplitude with square wave rate of changes through the define period entered in the Jitter Period field and reaching + and – amplitudes entered in the Jitter Amplitude field
Jitter Period (ms)	Enter or increment value. Range 1000 to 10000000 mS	This setting establishes the duration in mS of the sinusoidal or square wave jitter event.
Jitter Amplitude (uS)	Enter or increment value. Range 1 to 1000000 uS	This setting establishes the amount of the jitter variation uS that occurs in the jitter period
IP Packet Drops	Enabled, Disabled selection	Controls Packet Drops occur in the PCAP output. Enabled: Packet Drops will be produced as IP impairments on the PCAP output. Disabled: Packet Drops will not occur as impairments to the IP output
Packet Drop Rate	Enter values in fields: Min (left field): 1 to 100000 Max (right field): 1 to 1000000	Defines the rate of IP packet drops on the IP output. Enter a total number of packets at the right entry field. Enter how many drop packets you want to occur during the total packets entered at the left value field.

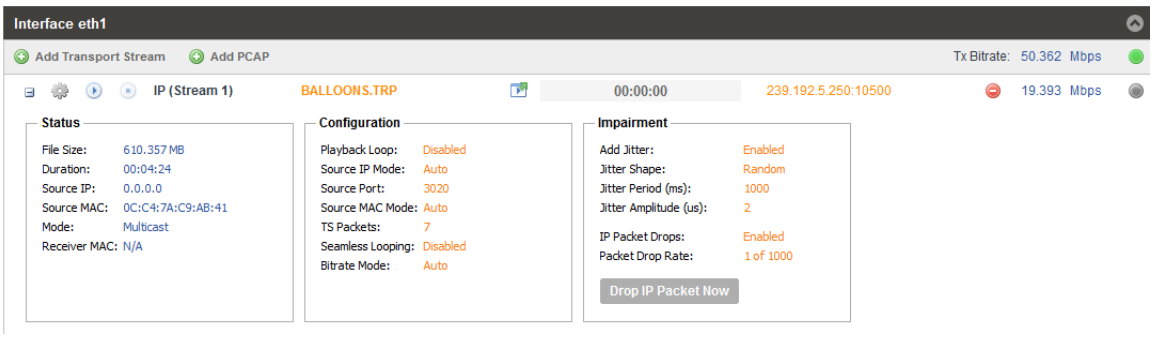
4.5 IP Stream and PCAP Status & Configuration Information

For each of the IP streams or PCAP files that are listed in the Play Control Panel a Status and Configuration window is available. To access this window and add it to the panel, click on the icon at the left of the row containing the IP stream or PCAP listing. The Status and Configuration boxes are added to the Play Control Panel providing status and configuration details. Click on the icon at the same location to hide the status and configuration information.



IP Stream - Status and Configuration Windows

This section summarizes the status and configuration information provided for an IP playout stream.



Summary of the listings and descriptions of the Status section.

Status Listing	Description
File Size:	Indicates the total memory size of the play file
Duration:	Indicates the total playtime or duration of the selected file or PCAP
Source IP:	Indicates the source IP address
Source MAC:	Indicates the source MAC address
Mode:	Indicates the current streaming Mode, Multicast, Unicast,
Receiver MAC:	Indicates the MAC address of the receiver, when available or communicated by the receiver

Summary of the listings and descriptions of the Configuration section.

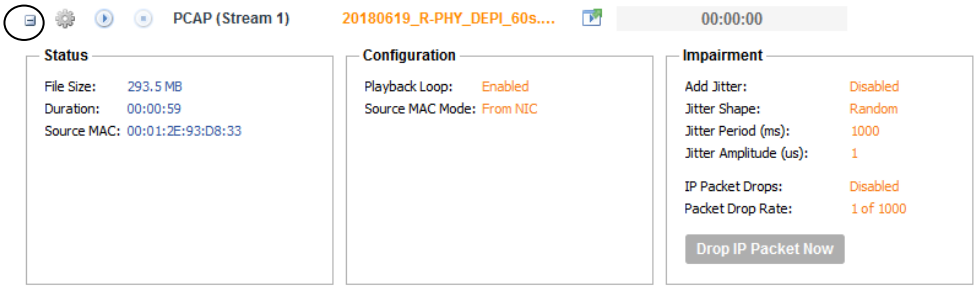
Configuration Listing	Description
Playback Loop:	Indicates the Playback Loop setting as Enabled or Disabled. Indicates if the Playback Loop feature is active for stream playout
Source IP Mode:	Indicates the Source IP Mode setting as Auto or Manual. Auto indicates the IP automatically selected by the TSS 6220. Manual provides user entry of the source IP address.
Source Port:	Indicates the Source Port value setting
Source MAC Mode:	Indicates the Source MAC Mode setting as Auto or Manual. Auto indicates the MAC address is automatically selected and communicated by the TSS 6220. Manual provides user entry of the MAC address communicated as the Source
TS Packets:	Indicates the number of TS packets per IP packet setting
Seamless Looping:	Indicates the Seamless Looping Setting as Enabled or Disabled
Bitrate Mode:	Indicates the Bitrate Mode setting as Auto or Manual.

Summary of the listings and descriptions of the Impairment section.

Configuration Listing	Description
Add Jitter	Indicates if the impairment feature to add jitter to the output is enabled or disabled. When enabled, the output will have jitter introduced at the rate and magnitude of the Jitter Shape, Period and Amplitude settings
Jitter Shape	Indicates the jitter setting of random, sinewave, or square wave
Jitter Period (mS)	Indicates the jitter period in the sine ware or square wave shape
Jitter Amplitude (mS)	Indicates the magnitude of the jitter variation through the jitter period at the shape selected
IP Packet Drops	Indicates the current count of the number of packet drops produced in the active output of the play event
Packet Drop Rate	Indicates the rate of the packet drops
Drop IP Packet Now icon	Click on icon to drop an IP packet in the play event's output

PCAP File - Status and Configuration Windows

Click on the icon at the left of the row containing a PCAP stream adds the Status and Configuration windows to the Play Control Panel. There is less status and configuration information for a PCAP file compared to an IP stream file. The following describes the information provided in the Status and Configuration windows. Click on the icon at the same location to hide the Status and Configuration windows.



Summary of the listings and descriptions of the Status section.

Status Listing	Description
File Size:	Indicates the total memory size of the PCAP file
Duration:	Indicates the total playtime or duration of the selected PCAP file
Source MAC:	Indicates the source MAC address

Summary of the listings and descriptions of the Configuration section.

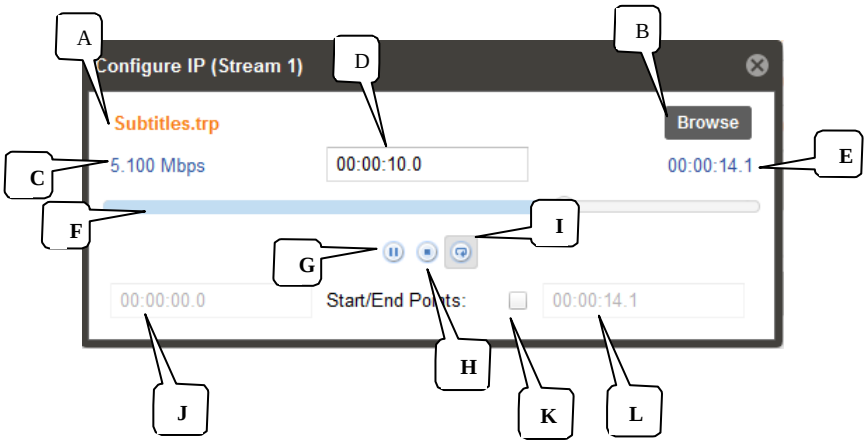
Configuration Listing	Description
Playback Loop:	Indicates the Playback Loop setting as Enabled or Disabled. Indicates if the Playback Loop feature is active for PCAP playout. When Enabled, the PCAP output upon playing to the end of the file loops back and restarts
Source MAC Mode:	Indicates the Source MAC Mode setting as From NIC or From Source. Setting determines the Source MAC transmitted with Ethernet frames. From Source: MAC address is the same as MAC captured in the selected PCAP file.

Summary of the listings and descriptions of the Impairment section.

Impairment Listing	Description
Add Jitter	Indicates if the impairment feature to add jitter to the output is enabled or disabled. When enabled, the output will have jitter introduced at the rate and magnitude of the Jitter Shape, Period and Amplitude settings
Jitter Shape	Indicates the jitter setting of random, sinewave, or squarewave
Jitter Period (mS)	Indicates the jitter period in the sineware or square wave shape
Jitter Amplitude (mS)	Indicates the magnitude of the jitter variation through the jitter period at the shape selected
IP Packet Drops	Indicates the current count of the number of packet drops produced in the active output of the play event
Packet Drop Rate	Indicates the rate of the packet drops
Drop IP Packet Now icon	Click on icon to drop an IP packet in the play event's output

4.6 IP and PCAP Monitor Panel

For each listed transport stream or PCAP row in the Play Control panel you will find a icon. Clicking on this icon provides a monitoring panel for that transport stream or PCAP output. This panel provides a convenient shortcut to improve viewing of the playout statistics and provides several convenient control options. The following descriptions provide an overview of the features provided.



Configure IP/PCAP Panel Descriptions

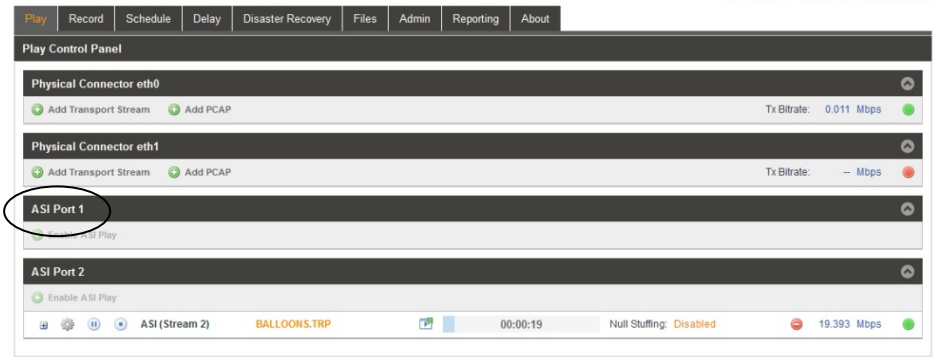
Item or Field Name	Button/Action	Description
A. File name	Not a selectable field	Indicates the current source file for the transport stream or PCAP file that is playing.
B. Browse	Click to browse or view available files	Provides quick access to view files, to locate current play file or search for files. Files cannot be selected in this menu to replace the existing play file.
C. Bitrate	Not selectable	Indicates the bitrate of IP or PCAP stream
D. Play location time indicator	Not selectable	Indicates the current play position or time within the duration or total play time of the IP or PCAP stream
E. Stream End Time	Not selectable	Indicates the total time duration or the ending time of the IP or PCAP stream.
F. Play Bar Progress Indicator	Not selectable	Provides visual indicator that the stream output is active and progressing. Indicates the current play position or time relative to the start and end points.
G. Play/Pause Control	Pause,Click on icon to pause output Play – click on icon to start output	Indicates IP/PCAP stream as playing or paused. Click on icon to pause or play. When paused, the current location of the stream or PCAP is maintained.
H. Stop Control	Click on icon to stop IP/PCAP output	Stops a playing or looping IP/PCAP output. Click on play icon to restart – restarts at file starting point.
I. Loop Control	Click on icon to enable loop mode. Enable or Disable	Indicates the loop mode is enabled. The stream plays to the end and loops to the starting point and continues to play out. Indicates the loop mode is disabled. The stream plays to the end and stops.

J.	**Start Point Time**	Value cannot be changed in this menu	Indicates a specified stream starting point time.
K.	**Start/End Time Play Enable**	Click box – adds check in box (Enabled), click box removes check mark (Disabled)	Provides Enable/Disable control of start/end points of the playout stream. Enabled (Box checked) stream plays from entered start to end points. Disabled (box not checked) the stream plays from beginning to end of the file
L.	**End Point Time**	Value cannot be changed in this menu	Indicates a specified stream End Point time.

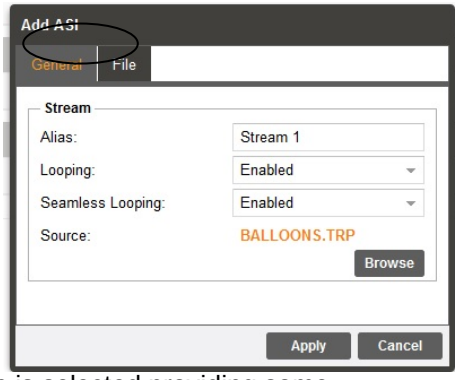
4.7 Play Control Panel - ASI Output

A TS 6220 chassis may be optionally configured to support the addition of an added hardware card which provides multiple ASI output ports. The following sections in this chapter provide an overview of the features and menus associated with the Play feature of the TSS 6220 when configuring and using an ASI output port.

When the hardware supports ASI output playout, the Play Panel contains sections which indicate available ASI ports. When configured for ASI output, the sections include the configuration information and status of the playout streaming.



4.7.1 Add Transport Stream - ASI - General Configuration



To create and add a playout of a transport stream to an ASI output port, click on the Enable ASI Play icon in one of the ASI Port sections of the main Play Panel. If the Enable ASI Play icon is grayed out, it indicates that the listed ASI port is in use and not available to select and configure for an output. The ASI output ports can only be used by one application. The ASI port can be used by the Play, Record, Schedule, Delay and Disaster Recovery features.

When you click on the Enable ASI Play icon, in which the port is available (not grayed out), the Add ASI menu opens. This menu contains 2 selection tabs which provide menus for defining the ASI output stream. By default, the General tab is selected providing some common selections to configure the output. The General configuration menu provides selections

to create an alias name, select from available source streams in the library to playout, and control the looping of the output stream. This section provides an overview of the configuration fields.

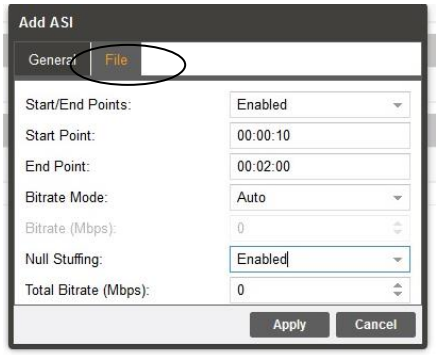
The first step is to select a source file for playout. Click on the Browse field and navigate to the file you wish to select for playout. Select the file and open it. It will populate the Source listing with your file name. In the Stream section of the menu, click on the Alias field and enter an alias name, if desired. This is not required as the application automatically assigns a name as an incrementing stream number.

If you want the playing stream upon reaching the ending point to loop back to the start and continue playing out, click on the dropdown arrow in the Looping field. Select “Enabled” if you want the looping feature active. When looping is enabled the Seamless Looping field becomes available to configure. Set this field to “Enabled” if you want the TSS 6220 to properly seam the ending point with the beginning point of the stream. With this enabled the TSS 6220 corrects PCR discontinuities and continuity count values.

Add ASI Menu – Summary of General Tab Settings

Setting	Range	Description
Stream - Alias	Value and or Letter Entry	Provides entry to name or assign alias to identify a stream. If no name is entered, the TSS 6220 assigns an incrementing stream number.
Stream - Looping	Enabled Disabled	Turns on the looping function in which the file plays to the end and then loops back and starts playing from the start again. When disabled, the stream stops when it reaches the end of the file.
Seamless Looping	Enabled Disabled	Enabled: Provides corrections to PCR values and PAT/PMT table continuity counts so as to appear to the receiver as a continuous uninterrupted stream.
Source	Not selectable	Indicates “No Source” when no file has been selected. Indicates the selected file name when a file is selected and opened for ASI playout.
Browse	Click on Browse field to access stream files in library	Provides navigation to browse to available stream and PCAP files for selection.

4.7.2 Add Transport Stream - File - Configuration



The File tab within the Add ASI menu provides selection to define starting and ending points when playing out an ASI stream file. It further provides a selection to automatically or manually control the output stream bitrate. Also, there is a capability to add null stuffing to the output transport stream to increase the total output bit rate. To access this configuration menu, click on the File header tab.

You can enter starting and ending times within the play duration time of the ASI play file. You can enable or disable the playout to conform to these entered start point and end

point times. Set the Start/End Point field to “Enabled” and enter the Start Point and End Point.

The Bitrate Mode provides an automatic setting in which the TSS 6220 automatically determines the ideal playout stream rate. You can set the Bitrate mode to Manual when you wish to increase the output bitrate. In the manual mode, click on the up and/or down arrows in the bitrate field to increase or decrease the bitrate in Mbps. Keep in mind that increasing or decreasing the bit rate from its automatic or normal PCR determined rate by the TSS 6220, may cause undesired changes with TS receive devices as PCR timing is no longer maintained.

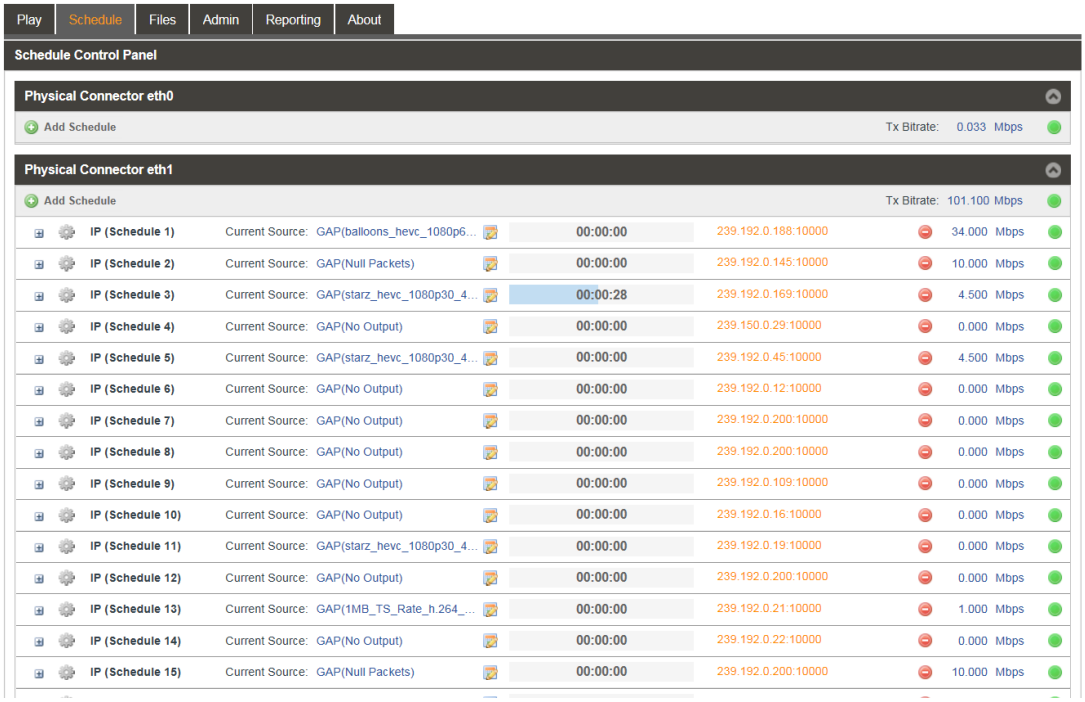
The Null Stuffing feature of the Add ASI menu, provides the ability to add Null stuffing to the output stream. Click on the dropdown arrow field and enable the feature. Enter the desired total bitrate (Mbps) or use the up and/or down arrows in the Total Bitrate (Mbps) field to select the desired total bitrate.

The following chart provides an overview of the configuration settings in the File menu.

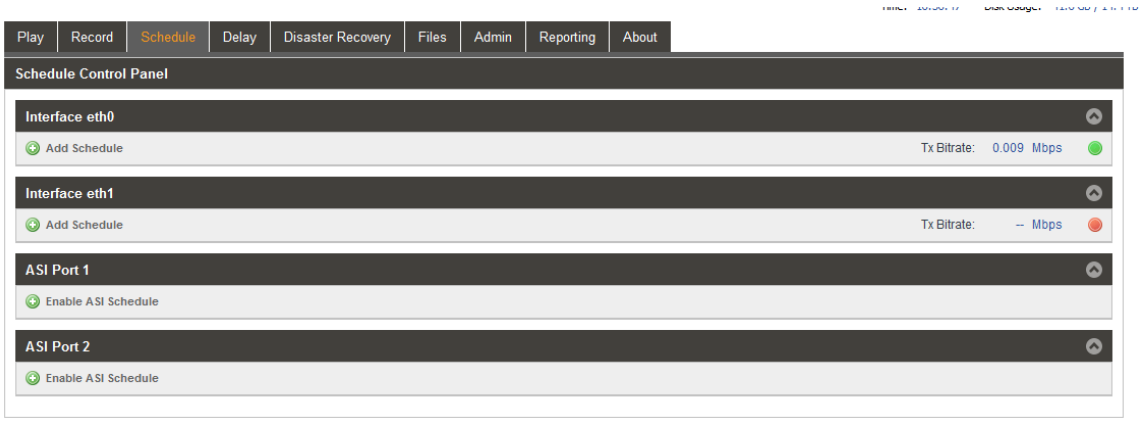
Setting	Range	Description
Start/End Points	Enabled Disabled	Adds control of the output defining a starting and stopping point within the play duration of the selected stream or PCAP play file
Start Point	Range of play file duration but prior to End Point	This setting establishes a point/time in the play file duration which defines the starting point of the stream or PCAP file when it is streaming to the output port
End Point	Range of play file duration but after the start point	This setting establishes a point/time in the play file duration which defines the ending point of the stream or PCAP file when it is streaming to the output port
Bitrate Mode	Auto Manual	In Auto the TSS 6220 determines the playout rate automatically. In Manual, the user may modify or enter a playout bitrate.
Bitrate (Manual)	Enter Bitrate	Provides user entry to manually enter a desired output bitrate

5 Schedule Panel

The Schedule Panel provides the capability to control output streams over an IP network according to a timed schedule. You must create a schedule defining the IP output parameters, the transport streams to playout, the start and end times for each streaming event within the schedule, and what you wish to output during gaps or times between scheduled events. Up to 16 schedules can be created/listed for playout. Optional hardware is available to provide a scheduled output via an ASI output port(s). This section describes how to create, save, play, and manage schedules within the TSS 6220.

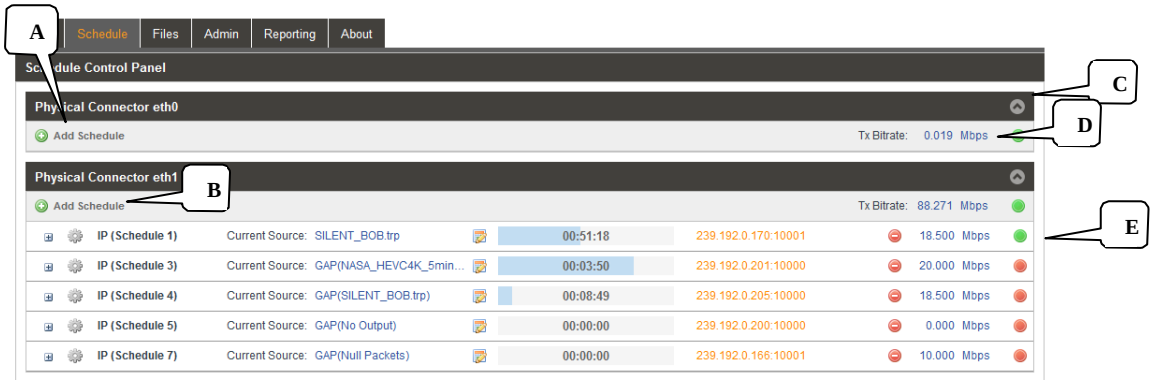


Schedule Panel showing ASI ports when optional ASI input/output hardware is included in the TSS6220 configuration.



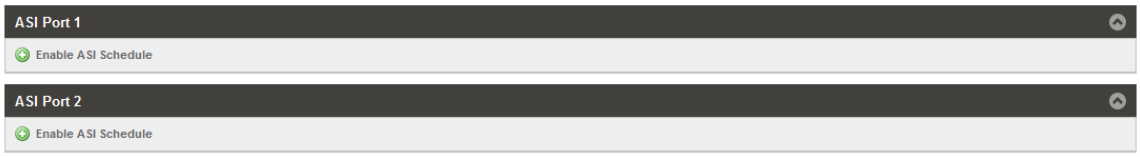
5.1 Schedule Panel Overview

The Schedule Panel includes a section for each available ethernet output port. The sections are identified by headers indicating the physical connector – Ethernet port. For example, the ethernet port 0 is shown as “Interface eth0.” If you have added the optional Ethernet ports to the TSS 6220, then two additional sections are included for physical connector eth2 and eth3. If optional ASI hardware is included with the TSS 6220 the panel includes sections for each ASI port.



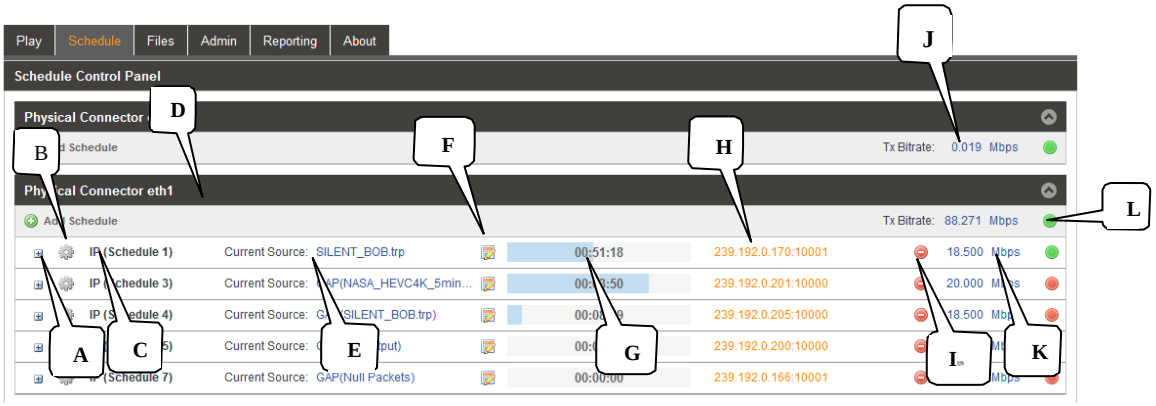
Each Ethernet port section includes some common control fields. The following is a general overview of items in the Schedule Control Panel and description of some common fields. The remainder of this chapter describes definition of the fields and configuration menus.

Item or Field	Button/Action	Description
A. Add Schedule to eth0 port	Add Click on this icon to add a schedule to eth 0	Provides menus to select files and define a schedule to stream to the output
B. Add Schedule to eth1 port	Add Click this icon to add a schedule to stream to eth 1	Provides a menu to select files and define a schedule to stream to the output
C. Show/Hide port info	Selectable, click on the icon	Hides or shows all the schedule listings, click to hide or click to show all schedules
D. TX Bitrate	Not a selectable field	Shows the total output bitrate of all the streams and PCAP to the Ethernet port
E. Schedule	See next section	Row showing a created schedule and information regarding the schedule’s current status and output to Ethernet 1 port (eth1)



5.2 Schedule - Information Fields

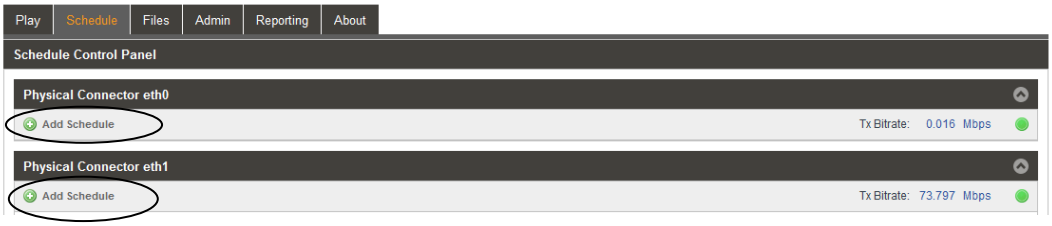
The Schedule Control Panel lists all the playout schedules. There can be up to a total of 16 schedules. Each schedule has a row of information and related control functions. There are common data fields for each listed schedule forming columns of information in the panel. This section provides a brief definition of the information provided in each column.



Item or Field Name	Button/Action	Description
A. Status & Configuration	Click on this icon	Provides a window showing IP stream/PCAP status and configuration information. See section 5.4 for details.
B. Configuration Menu Select	Click on this icon	Provides a menu with configuration settings to define the output IP/PCAP stream and IP address
C. Stream name or alias	Not selectable, No action	Shows a default output IP/PCAP stream name. See section xx for naming streams.
D. Physical Connector/port	Not Selectable	Indicates the Physical Ethernet port which the streams in the listed schedule will playout
E. Current Source	Not Selectable	Indicates the current file actively streaming out within the schedule. Or, indicate a gap or time between scheduled playout streams and how the gap is filled.
F. Schedule configuration	Click on icon to open the configuration menu	Provides overview of schedule playout events and status. Provides indications of time conflicts, Provides scheduling additions, edits and control features. See section 5.5 for details.
G. Play Status	Not Selectable	Indicates a stream is playing or active. Indicates play position/time within the start-to-end duration time span. Blue highlight indicates stream progress.
H. IP Address/Port	Not Selectable	Indicates the destination IP address and port
I. Delete icon	Click to delete the schedule	Removes a schedule from the listed schedules
J. Total Port Bitrate Indication	Not selectable, view only	Indicates accumulative Ethernet port bitrate of the addition of all playing TS streams and PCAP files
K. Bitrate Indication	Not selectable, view only	Indicates bitrate of the individual stream to the Ethernet port
L. Status Indicator	Not Selectable	Indicates status of output: Gray: Inactive – output stopped, Green: Good active playout, Red: Playout fault or time conflict

5.3 Adding or Creating a Schedule Configuration - General

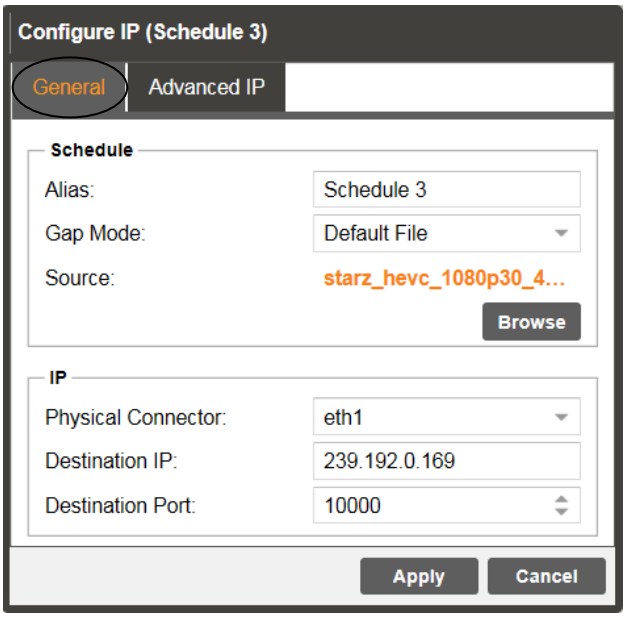
To create a new IP schedule requires that you select files and configure the output parameters. To create a schedule click on the Add Schedule icon. Note that this selection is available for each of the Physical connector Ethernet ports of your TSS 6220. Select the Add Schedule icon in the section corresponding to the Ethernet port in which you want to output the created schedule.



The Schedule Panel is simplified for viewing with a Hide/Show streams feature for each Physical Connector eth section. To show all the streams outputting to an Ethernet port click on the Show/Hide icon .

5.3.1 Add Schedule - General Configuration

Upon clicking on the Add Schedule icon, the Configure IP menu opens to a General configuration menu. By default, the General tab is selected providing some common selections to configure the schedule. The General configuration menu provides selections defining the output IP stream and IP destination address and ports. This section provides an overview of the configuration fields.



The Schedule section provides alias naming and definition of the Gap Mode. Click on the Alias field and enter an alias name, if desired. This is not required as the application automatically assigns a name as an incrementing schedule number.

The Gap Mode defines what the output is when there is a time delay between when a file ends and another is scheduled to begin. The Gap Mode provides selections to provide no output, null packet output, and output of a default TS file specified. When the gap mode is set to the “Default File” mode, the Source field defines the TS transport stream that plays out during a gap. Click on the Browse tab and choose the stream to be the default file.

Define the IP parameters in the IP section. Verify that the Physical Connector field indicates the desired Ethernet port. If not, select the Ethernet port you wish to output the stream. Enter the Destination IP and the Destination Port values. Click on the Destination IP field and enter the destination address. Click on the Destination Port field and enter a Destination Port. Click on the Apply box to add the schedule to the Schedule Control Panel under the respective Ethernet port.

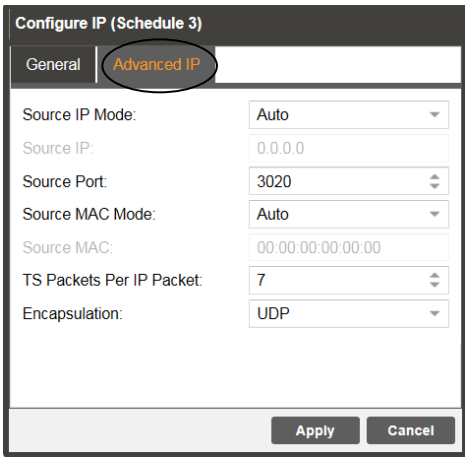
Add Schedule – General Tab Settings

Setting	Range/Selections	Description
Stream - Alias	Value and or Letter Entry	Provides entry to name or assign alias to identify a schedule. If no name is entered, the TSS 6220 assigns an incrementing schedule number. There is a limit of 16 schedules
GAP Mode	Click Dropdown – select from listed	Determines the output when a gap of time exists in the scheduled playout times between streams Default File: Outputs choose TS file No Output: Outputs no output stream Null Packets: Outputs TS stream with null packets
Source	Not selectable	Indicates “No Source” when no file has been selected. Indicates the selected file name when a file is selected - opened.
Browse	Click on Browse field to access stream files in library	Provides navigation to browse to available stream and PCAP files for selection.
IP – Physical Connector	Selects eth0 or eth1, the standard Ethernet ports, eth2 and eth3 available if TSS 6220 has added optional ports	Entry selects which of the available Ethernet ports on the TSS 6220 that the stream output is assigned
Destination IP	224.0.0.0 – 239.255.255.255	This address is the IP address the source device is sending to for a multi-cast. A unicast would use an IP address less than 224.0.0.0.
Destination Port	0 – 65535	This is the UDP port the source device is sending to.

5.3.2 Add Schedule - Advanced IP Configuration

When adding a schedule requiring the configuration of the IP port as a source specific device for IGMPv3 use the Advanced IP Configuration menu. Click on the Add Schedule icon and click on the Advanced IP tab.

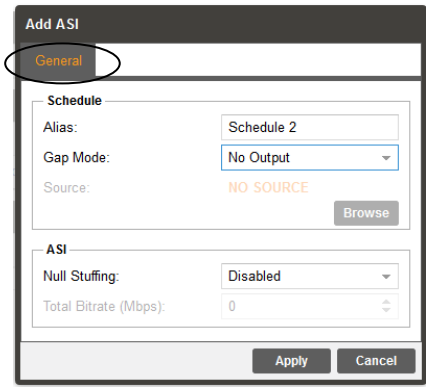
The Advanced IP tab includes settings to define the TSS 6220 as a specific source device for IGMPv3. This feature allows each steam to be seen by the network as a unique source device with a unique IP address, and/or source port, and/or MAC address. The chart below provides descriptions of the settings provided in the Advanced IP menu.



Setting	Range	Description
Source IP Mode	Settings: Select Auto or Manual	In Auto, the TSS 6220 simulates a source device and creates and communicates a unique source IP address. In Manual, a user entered source IP address can be entered.
Source IP	Available for entry when Source IP Mode is set to Manual.	Provides entry of a Source IP address for the stream that is communicated by the TSS 6220
Source Port	Click up or down arrows to increment value shown. Click in field and enter value. Range: 1030 to 65535	Specifies a value for the source port associated with the stream.
Source MAC Mode	Auto, Manual	In Auto, the TSS 6220 simulates a source device and creates and communicates a unique source MAC address for the stream. In Manual, a user Source MAC address can be entered.
Source MAC	In “Manual Mode” enter MAC address,	Provides entry of a MAC address you want to specify as the Source MAC for the stream
TS Packets Per IP Packet	Enter value 1 to 7, Default is 7	This setting determines the number of TS stream packets that are inserted into IP packets. 7 being the maximum and the typical setting. Lesser packets may be selected.

5.3.3 Add Schedule – ASI - General Configuration

Upon clicking on the Enable ASI Schedule icon, the Add ASI menu opens to a General configuration menu. The General configuration menu provides selections defining the output ASI stream. This section provides an overview of the configuration fields



The Schedule section provides alias naming and definition of the Gap Mode. Click on the Alias field and enter an alias name, if desired. This is not required as the application automatically assigns an incrementing schedule name.

The Gap Mode defines what the output is when there is a time delay between when a file ends and another is scheduled to begin. The Gap Mode provides selections to provide no output, null packet output, and output of a default TS file specified. When the gap mode is set to the “Default File” mode, the Source field defines the TS transport stream that plays out during a gap. Click on the Browse tab and choose the stream to be the default file.

The bottom ASI section provides a Null Stuffing feature. Select the dropdown arrow and select Enabled to make the Null Stuffing feature active. When active the Total Bitrate (Mbps) row becomes available for changing the output bitrate. Use the up and/or down arrows to select a desired bitrate or enter the desired bitrate. Modifying the normal bit rate of the stream deletes available null packets or adds null packets. Keep in mind changing the native bit rate alters normal PCR timing of the stream. When selections are complete, clicking on the Apply box adds the schedule event to the Schedule Control Panel under the respective ASI port.

Add Schedule – ASI - General Tab Settings

Setting	Range/Selections	Description
Stream - Alias	Value and or Letter Entry	Provides entry to name or assign alias to identify a schedule. If no name is entered, an incrementing schedule number is assigned.
GAP Mode	Click Dropdown – select from listed	Determines the output when a gap of time exists in the scheduled playout times between streams Default File: Outputs choose TS fileNo Output: Outputs no output streamNull Packets: Outputs TS stream with null packets
Source	Not selectable	Indicates “No Source” when no file has been selected. Indicates the selected file name when a file is selected - opened.
Browse	Click on Browse field to access stream files in library	Provides navigation to browse to available stream and PCAP files for selection.
ASI Null Stuffing	Select Enabled or Disabled with drop down field	Disabled (Default): Leaves output bitrate unchanged. Enabled: Increase or Decreased output bitrate by deleting or adding null packets
Total Bitrate (Mbps)	Up/Down arrows increment field value. Direct Enter rate value	Modifies the native bit rate of the scheduled stream on the output by adding or deleting null packets in the TS stream.

5.4 Schedule Configuration & Information Window

For each of the listed schedules in the Schedule Panel, a configuration & status window is available. Click on the icon at the left of the row containing the schedule. The Configuration box and the schedule's start/date and file information is listed. Click on the icon at the same location to hide the status and configuration information to simplify the Schedule panel.

This section summarizes the data shown in the Configuration & Information details window.

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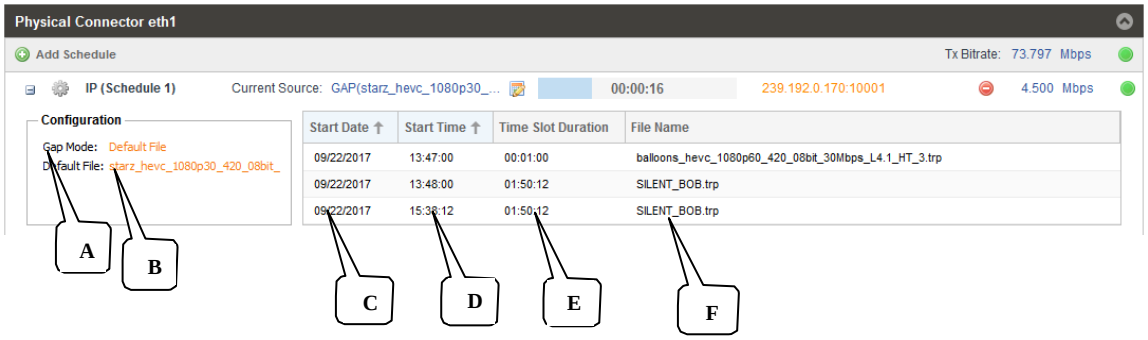
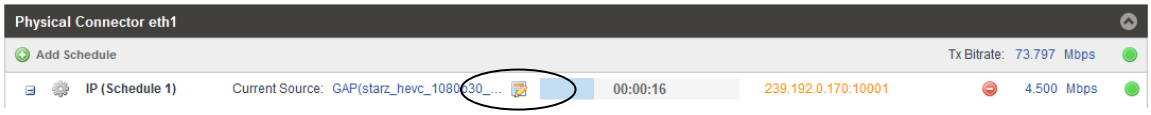


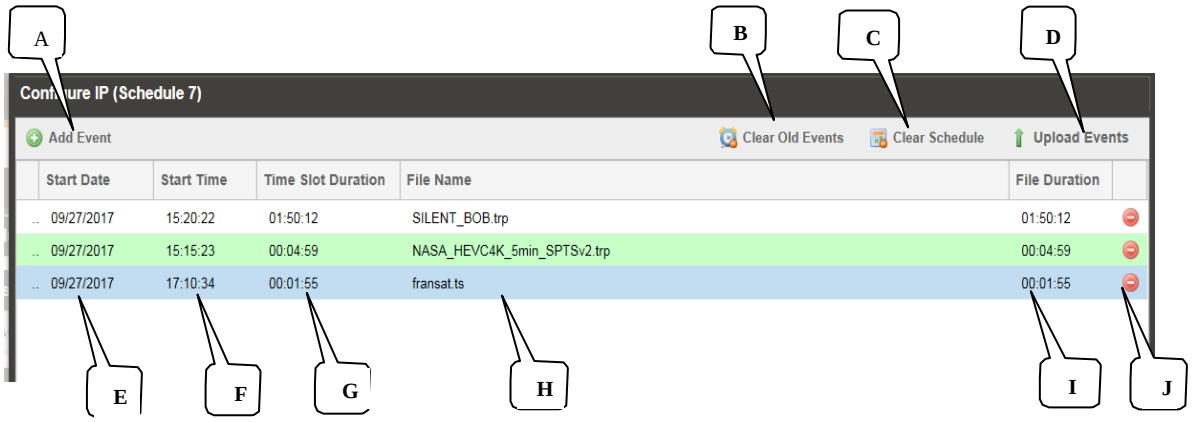
Item or Field Name	Button/Action	Description
A. Gap Mode	Not Selectable	Indicates the Gap Mode defined for the stream in the schedule. No output, Null Packets, or Default file
B. Default File	Not Selectable	Indicates the Default File to be used in the gap if the gap mode is set to Default File.
C. Start Date	Not selectable	Indicates the Start Date as to when the file within the schedule begins to playout.
D. Start Time	Not Selectable	Indicates the Start Time during the Start Date as to when the file within the schedule begins to playout.
E. Time Slot Duration	Not Selectable	Indicates the time slot or duration of time that the playout of the file requires once it begins playout.
F. File Name	Not Selectable	The name of the file that is to be played in the scheduled time.

5.5 Scheduling Configuration Panel

The Scheduling Configuration Panel provide configuration of the play out scheduling or events. Click on the icon to select the Scheduling Configuration Panel. Each of the rows or schedules, up to 16 different listings, has its own unique schedule for configuration. Select the icon in the row corresponding to the schedule you wish to edit.



This panel provides configuration of the play schedule. In this panel you create timed events or scheduled playout of stream files. You can review the current schedule and make additions, deletions, or changes. You can completely clear the current schedule and build a new one or load a schedule from a CSV file. This section provides a description of the fields contained in the Scheduling Configuration Panel.

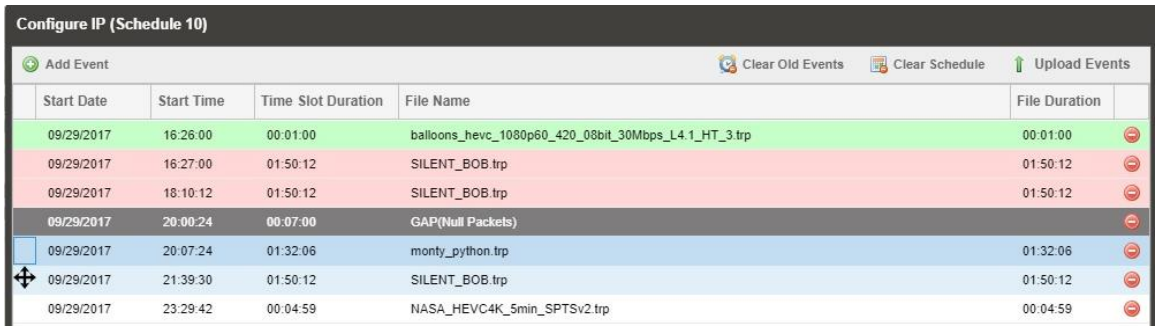


Item or Field Name	Button/Action	Description
A. Add Event	Click Add Event icon to access Schedule Configuration Panel	Adds a timed event or stream (row) to the play list. When selected a Browse Files menu appears for file selection. File loads as a row into the schedule showing the default start date/time and file information.
B. Clear Old Events	Click on Clear Old Events icon to select	Clears all the events or playlist files that are prior to the system's current date/time
C. Clear Schedule	Click on Clear Schedule icon to select	Clears all events or playlist files from the schedule.
D. Upload Events	Click on Upload Events icon to select	Provides selection of a CSV data file configured with matching date, time, file names, file duration data to directly populate Scheduling Configuration Panel field. See section 5.5.3.
E. Start Date	Click in field to select.Enter date or click on calender to select date.	Selects or enters a date in which the event/file is scheduled to play out
F. Start Time	Click in field to	Selects or enters a time within the scheduled day in which the event/file is scheduled to start playing out.

	select. Enter time.	scheduled time.
G. Time Slot Duration	Click in field to select. Enter values to shorten or lengthen the duration	Defaults to the playout time of the selected file. Permits increasing or decreasing the time. If decreased, the playout ends prior to the end of the stream. If lengthened, the event or playout continues at the end of the stream
H. File Name	Not selectable	Indicates the name of the selected file within the play list of the schedule
I. File Length	Not Selectable	Indicates the play length or time duration of the play file listed
J. Delete	Click to delete the schedule	Deletes the schedule listing or row from the schedule

5.5.1 Scheduling Configuration Panel - Colors

The Schedule Panel provides background colors to supplement conditions or activities regarding the schedule. An active stream which is playing out is highlighted in green. A pink highlighted row indicates that this event is in conflict with another playout event. It is common for two rows to be highlighted pink when a schedule conflict exists.



The colors in the Schedule Panel are summarized in the following chart.

Background color	Button/Action
Dark Grey	Indicates a gap in the schedule and the gap playout stream specified
Red	Indicates a fault condition. A conflict in the times of the schedule between events. A missing or corrupt file. Scroll your mouse over red background listing for information on the conflict
Green	Indicates an active event in the schedule, this event or stream is currently playing out
Blue	Row is selected or highlighted
No color (While)	Indicates a normal listing or event in the schedule
Light Blue	Currently selected with Move Cursor

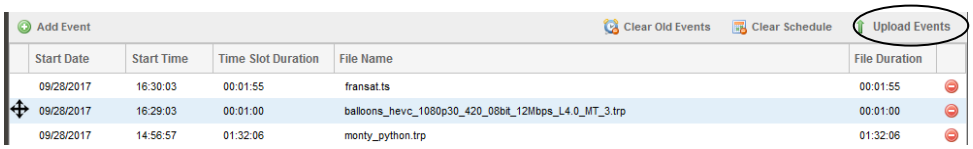
5.5.2 Scheduling Configuration Panel – Moving Cursor

The Configuration panel provides a Moving Cursor in which to select and move a listed event within the schedule. Moving your mouse over a listed event or row highlights the event producing a cursor at the left of the listing.

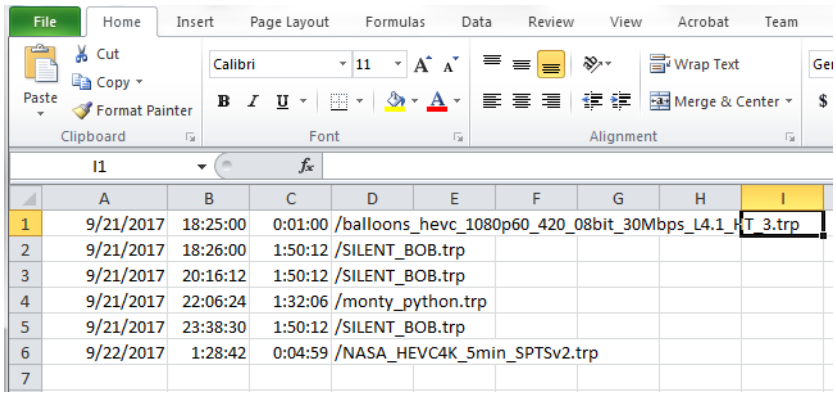
The Moving Cursor is used to drag and drop a listed event to a time earlier or later in the schedule. To move a listed event, hoover your mouse over the Moving Cursor location at the left side of the listing, left mouse click on the Moving Cursor, drag your mouse moving the listing up or down in the listed schedule, and release the left mouse click to position the event at the new location in the schedule.

5.5.3 Scheduling Configuration Panel - Loading Event Lists

The Configuration Panel provides the ability to upload an event schedule that is created and/or edited in a spreadsheet. To upload a schedule of events, click on the Upload Events icon at the upper right of the display menu. Browse to the CSV file containing your schedule. Select and open the file to upload the listed events from the CSV file to the Schedule. Once in the schedule you can move or edit uploaded events.



When uploading events, the values in the CSV format must match the columns in the TSS 6220 schedule for date, time, duration, and file naming. File naming must accurately match file naming of play files. Below is a sample file showing CSV formatting.



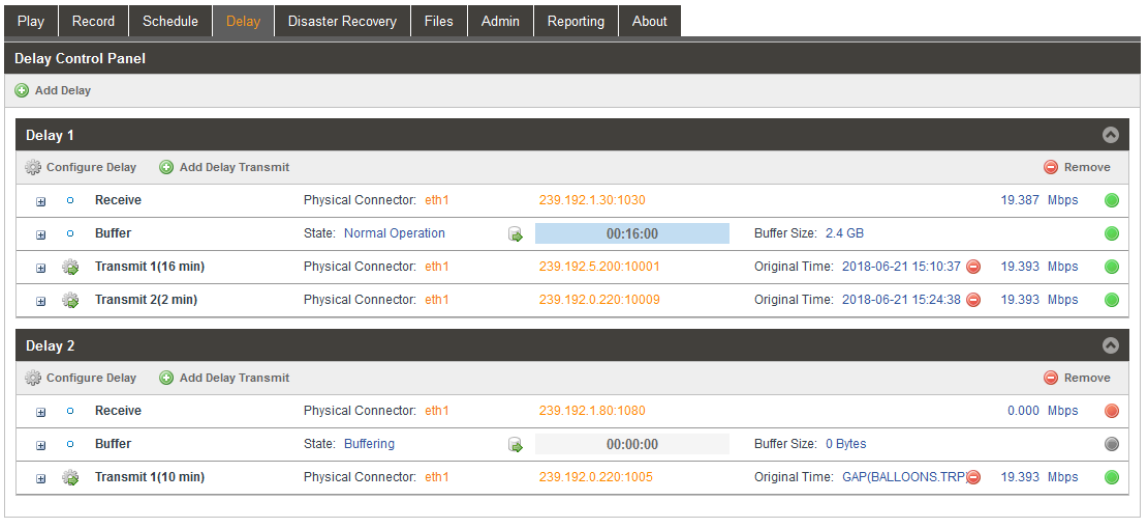
6 Delay Viewing Panel

The Delay Viewing Panel provides configuration and monitoring of the time shifted output(s) of the TSS 6220. The Time Delay feature's primary application is for time-zone shifting. An input TS stream is configured for receive and sent to a record buffer. The buffered TS stream data is time stamped and after the specified delay is output to a specified physical port to a defined destination address/port.

The Delay feature of the TSS 6220 is an optional licensed feature. When licensed the Delay tab is present in the main menu and available for selection. Each delayed in-to-out line (Single Delay Line) is a licensed feature. Multiple single delay line licenses may be purchased as needed.

If a particular buffered input (Defined Delay) must have two or more different outputs with different delays, a Multi Transmit Delay License is needed. This enables multiple delay outputs with different defined delays and/or output ports and addresses. An instant of the Multi Transmit Delay License is needed for each of the single delay lines in which multiple output delays are needed.

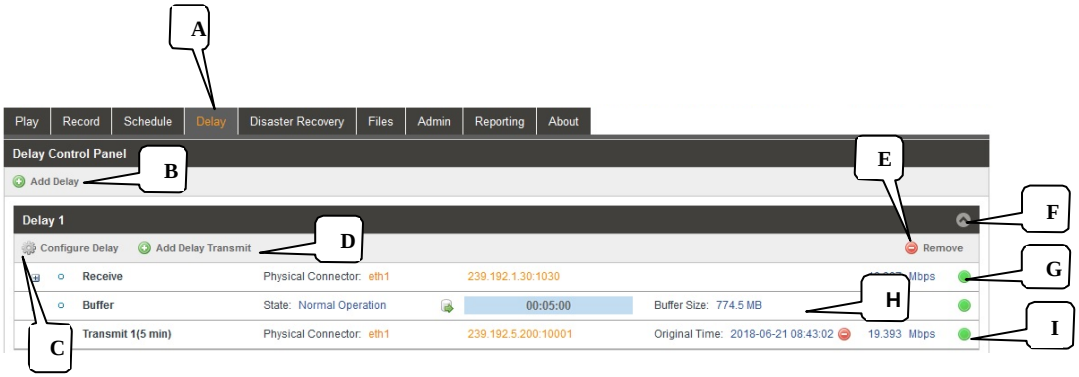
The following sections in this chapter describe configuration and monitoring menus for receive, buffering and outputting of the TS streams in the Delay function.



6.1 Delay Panel Overview

The Delay Panel is used to add or create a delay line or path routing an input stream to a memory buffer and after the specified delay time routing it to an output. The TSS 6220 provides flexibility in setting up the receiver, buffer, delay, and output criteria. When a delay is created and defined, the information is shown in the Delay Panel. For each created delay, there is a row in the panel indicating the receive criteria, a row showing the buffer criteria, and a row indicating transmit or output criteria.

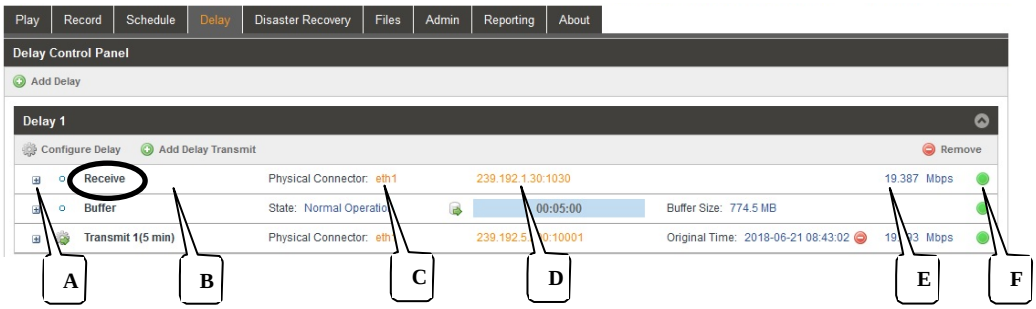
Depending on licensing, multiple delays may be created with unique inputs, delays and outputs. Also, multiple outputs are possible from a particular buffered input. The following diagram and descriptions provide an overview of the layout and fields common in the Delay Panel. The remainder of this chapter provides additional details of configuration menus, informational fields in the panel, and dropdown information menus.



Item or Field	Button/Action	Description
A. Select Delay	Delay Click on this field to access the Delay feature	Provides access to the Delay feature and all configuration and monitoring menus. Delay license required.
B. Add Delay	Add Click this icon to add a delay to an output ethernet port	Provides access to menus to add and configure receive, buffer, and transmit criteria for the delay
C. Configure Delay	Click this icon to access control menus	Provides access to menus to setup/control receive, buffer and transmit criteria for the delay
D. Add Delay Transmit	Add Click this icon to add a delay	Adds a second transmit output for the existing delay, Requires Multi Transmit Delay license. This selection only available with feature license.
E. Delete Delay	Remove Click on this ito delete this delay	Removes the delay from the panel, stops input receive, buffering and transmit of this delay.
F. Show/Hide Delay fields	Selectable, click on the icon	Collapses the receive, buffer, transmit rows to not be visible in the panel. Expands to show receive, buffer, and transmit rows when collapsed
G. Receive	See section: 6.2	This row shows the receiver information for the Delay
H. Buffer Section	See section 6.3	This row shows the buffer information for the Delay
I. Transmit section	See next section 6.4 for field descriptions	This row shows the transmit output information of the defined Delay

6.2 Delay Panel – Receive Fields

The Delay Panel contains a row of information that is identified by a “Receive” indication. This row of information summarizes the configuration of the receiver for the created delay. The information in the fields indicate user settings that were specified when the Delay was added or created. See section 6.5.2 in this manual for setup of the Delay receive. The fields also indicate current status on the input stream and bitrate. The following information provides a description of each field in the Receive row.

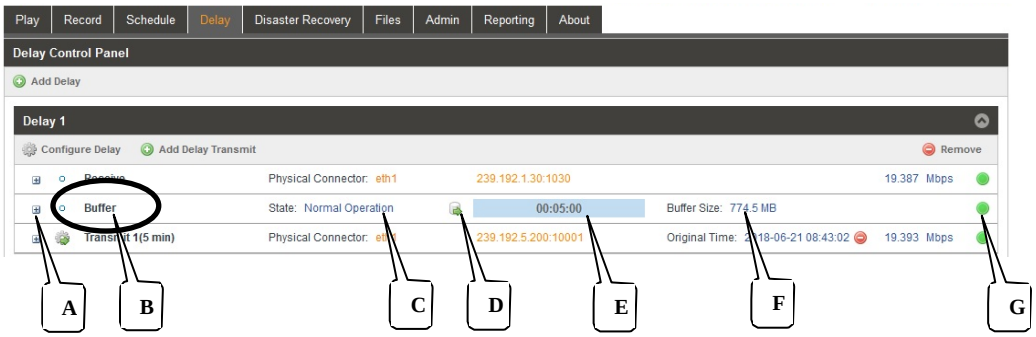


Receive row field descriptions:

Item or Field	Button/Action	Description
A. Adds Status Menu to Delay Panel	Click icon to add dropdown menu	Adds a dropdown section to the Receive row showing additional Configuration & Status information. See section 6.7.
B. Receive	Not a selectable field	Identifies row as information relative to receive and input stream of the Delay
C. Physical Input Ethernet Port	Not a selectable field	Indicates the user defined receive or destination input IP address and port. Or, indicates ASI port when selected.
D. Input Destination Address/Port	Not a selectable field	Indicates the user defined receive or destination input IP address and port. Indicates ASI input sync status when ASI input port is selected.
E. Input Bitrate	Not a selectable field	Indicates the incoming TS stream bitrate
F. Status Indicator	Status Light, not a selectable field	Red: No input stream, abnormal input or condition Green: Input active/enabled – input normal Gray: Input inactive/disabled – input not setup

6.3 Delay – Buffer Information Fields

The Delay Panel contains a row of information that is identified by a “Buffer” indication. This row of information summarizes the configuration of the Buffer for the created delay. The information in the fields indicate user settings that were specified when the Delay was added or created. See section 6.5.3 in this manual for related setup settings for the Delay buffer. The row further indicates status information in regard to buffering the input stream. The following information provides a description of each field in the Buffer row.

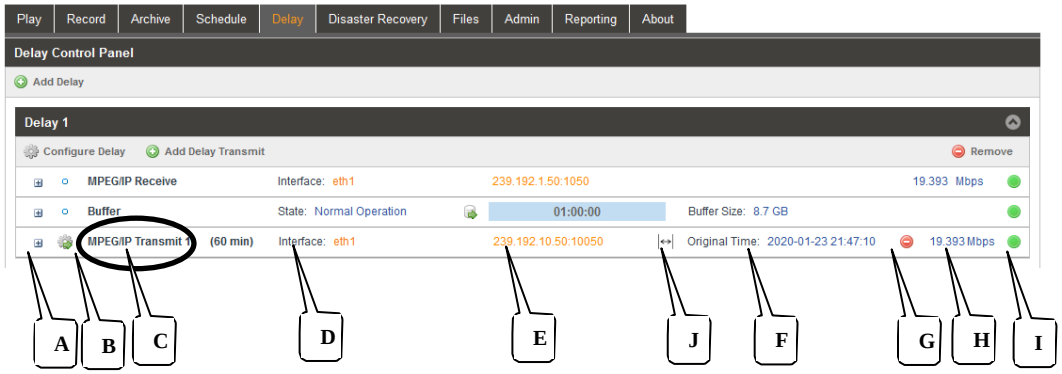


Buffer row field descriptions:

Item or Field	Button/Action	Description
A. Adds Configuration Status Menu to Delay Panel	Click icon to add dropdown menu	Adds a dropdown section to the Buffer row showing additional buffer configuration information. See section 6.8 for details
B. Buffer	Not a selectable field	Identifies row as information relative to receive buffer
C. Buffer state	Not a selectable field	Indicates the current state of the buffer Buffering: Building a buffer to specified time delay Normal Operation: – actively buffering delayed output
D. Extract File Menu	Click on icon, provides an Extract Buffer to File menu	Provides a menu in which the time referenced stream data in the buffer memory can be named and extracted to a file
E. Buffer Time Delay	Not a selectable field	Indicates when buffer is filling as moving blue filler, indicates time of data capture or delay time of buffer
F. Buffer Size	Not a selectable field	Indicates the buffer size as drive storage space being utilized
G. Status Indicator	Status Light, not a selectable field	Red: No output stream, abnormal output or condition Green: Input active/enabled – output normal Gray: Input inactive/disabled – output not setup

6.4 Delay – Transmit Information Fields

The Delay Panel contains a row of information that is identified with a “Transmit” indicator. This row of information summarizes the configuration of the delayed transmit or output. The information in the fields indicate user settings that were specified when the Delay was added or created. See section 6.5.3 in this manual for setup of the Delay transmit criteria. The fields also indicate current status information of the delayed output. The following information provides a description of each field in the Transmit row.



Transmit row field descriptions:

Item or Field Name	Button/Action	Description
A. Status & Configuration	Click on this icon	Provides an added window showing Delay output status and configuration information. See section 6.9 for details.
B. Configuration Menu Select	Click on this icon	Provides configuration menus to define/modify the delay’s input receive, buffer and transmit criteria
C. Identifies Transmit section	Not selectable, No action	Identifies the row as related to the delay’s output or transmit criteria
D. Physical Connector/port	Not Selectable field, view only	Indicates the Physical Ethernet port specified inwhich the delay stream in the listed schedule will playout. Or, indicates the ASI Output port when used
E. IP Address/Port	Not Selectable field, view only	Indicates the destination IP address and port of delay output. Indicates the ASI output Null Stuffing status when ASI output port is in use
F. Original Time	Not Selectable field, view only	Provides reference of the original date and time that the delay is referenced. Time stamps of buffered data
G. Delete icon	Click to delete the schedule	Removes a schedule from the listed schedules
H. Total Port Bitrate Indication	Not selectable, view only	Indicates Ethernet port bitrate of the delayed output TS streams
I. Status Indicator	Not Selectable	Indicates status of output: Gray: Inactive – output stopped, Green: Good active playout, Red: Playout fault or no output
J. Enable Force Gap Mode Switch	Click on the icon	Enables or switches the Delay output to the user specified Gap mode. Click on grayed icon to return to normal Delayed output

6.5 Delay – Adding or Creating a Delay Line

To create a new delay input to output line or path requires that you define receive, buffer and ouput parameters. To create a Delay click on the Add Delay icon. This icon is located just below the Delay Control Panel heading. If you do not see this section, click on the Expand Panel icon located at the right. Note that this selection is available for each of the Delays that are available.

To add a delay requires that you configure general, receive, and output parameters. These parameters are found in General, Receive, and TxDelay menus that are available upon clicking the Add Delay icon. The next sections describe these menus and their configuration.

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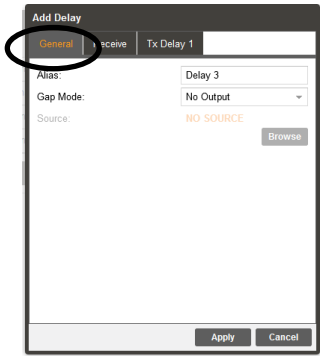
6.5.1 Add Delay – General Configuration - IP

When clicking on the Add Delay icon, the Add Delay menu is shown. There is a General, Receive, and Transmit (TxDelay) menus which are selected by clicking on the available tabs. The General configuration menu is shown by default. This menu provides alias naming and definition of the Gap Mode. Click on the Alias field and enter an alias name, if desired. This is not required as the application automatically assigns a name as an incrementing delay number.



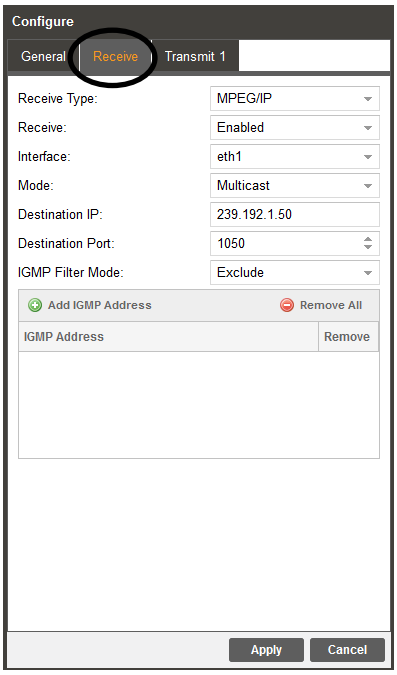
The Gap Mode importantly defines what the output is when there is no output transport stream to output from the delay buffer. This occurs when the buffer is buffering and has not yet reached the specified delay time. It also occurs when the input TS stream is lost and the buffer streams out until it is depleted. It can also occur when bad data is contained in the buffer because of an input stream issue.

The Gap Mode user selections include: No Output, Null packets, Default File, and Live. The No Output setting would provide no output TS stream when a gap occurs. The Null Packets setting would fill the output ts stream with Null Packets when a gap occurs. A Live setting would route the input ts stream directly to the output bypassing the delay buffer when a gap occurs. When set to Default File, the Source field defines the TS transport stream that plays out during a gap. Click on the Browse tab and choose the stream to be the default file.

Setting	Range/Selections	Description
Stream – Alias	Value and or Letter Entry	Provides entry of alias to identify a delay. If no alias is entered, the TSS 6220 assigns a delay number.
GAP Mode	Click Dropdown – select from listed	Determines the output when a gap exists and there is no TS stream from the buffer. Selections include: Default File: Outputs choose TS file No Output: Outputs no output stream Null Packets: Outputs TS stream with null packets Live: Routes the input TS stream directly to output
Source	Not selectable	Indicates “No Source” when no file has been selected. Indicates the selected file name when a

file is selected.

6.5.2 Add Delay – Receive Configuration - IP



The Add Delay Receive Configure menu provides configuration of the IP input used to receive the MPEG-IP unicast or multicast. The selected input TS stream is routed to the delay buffer. This section provides descriptions of the settings in this menu.

Set the Receive Type field to MPEG/IP or ASI. Optional ASI hardware is required or this listing will not be available. Configure the IP input to be active by setting the Receive field to “Enabled.” Select the Interface field to select the physical input Ethernet port on the TSS 6220 to use as the receive port. Eth 0 and Eth 1 are available. If the added ethernet port hardware option is added to your TSS 6220, then eth 2 and eth 3 will be available in the dropdown.

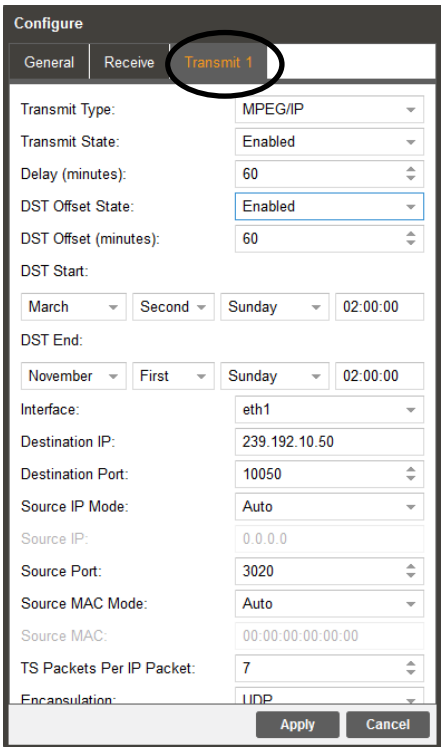
Select the Mode of the receiver to be Unicast or Multicast. For unicast, specify the destination port in the Destination IP field. For Multicast, specify the Destination IP address, and Destination IP Port.

The IP configuration section further includes settings to provide IGMPv3 features. An IGMP filter may be implemented for use to specify the inclusion or exclusion of source addresses. The TSS 6220 is IGMPv3 compliant. IGMPv3 allows each steam to be seen by the network as relating to a unique source device with a unique IP address, port, and/or MAC address. IGMPv2 is used to join/leave multicast streams by default if no IGMP Filter addresses are entered in the Add IGMP Address section of the menu. If IGMP Filter Mode addresses are specified then IGMPv3 is automatically used.

Settings	Range	Description
Receive Type	Select MPEG/IP or ASI (ASI only available with optional ASI hardware installed)	Select the input to be used for the Delay input. Selects MPEG/IP or the optional ASI card input port
IP Receive	Enable Disabled	This setting allows the user to enable or disable these input stream settings.
IP – Physical Connector	Selects eth0 or eth1, the standard Ethernet ports, eth2 and eth3 available if TSS 6220 has added optional ports	Entry selects which of the available Ethernet ports on the TSS 6220 that the stream record input is assigned
IP Mode	Multicast Unicast	*Multicast* setting allows the unit to receive multicast streams. Multicast streams originate from the IP range 224.0.0.0 – 239.255.255.255. *Unicast* allows the unit to receive unicast streams. Unicast streams originate directly from a

		source device.
Destination IP	Enter Value: 224.0.0.0 – 239.255.255.255	This address is the IP address the source device is sending to for a multi-cast. A unicast would use an IP address less than 224.0.0.0. This setting is only available when receiving a multicast stream. This address is the IP address the source device is sending to.
Destination Port	Enter Value: 0 – 65535	This is the UDP port the source device is sending to. This is the only setting required to receive a unicast stream.
IGMP Filter Mode	Settings: Select Include or Exclude	Used on networks supporting IGMPv3. If this setting is set to *Exclude* any streams originating from the user defined IP addresses will be rejected. If this setting is set to *Include* any streams originating from the user defined IP addresses will be received.
Add IGMP Address	Click in field - Enter IP address to include or exclude as per filter mode: Values: 0.0.0.0 – 255.255.255.255	Enter and list IP address of IGMPv3 to include or exclude as a filter setting.
Remove All	Click on icon	Removes or clears all the listed IGMPv3 address

6.5.3 Add Delay – Transmit Configuration - IP



The Add Delay Transmit (Transmit x) configure menu provides configuration of the Delay output. Click on the Transmit x tab (Example: Transmit 1). If licensed for multiple transmit outputs, more than one tab is shown with incrementing tab numbers. Select and configure each Transmit (Transmit 1, Transmit 2, etc) output.

Configure the delayed transmit output to be active by setting the Transmit field to “Enabled.” Select the Physical Connector or Ethernet port on the TSS 6220 to use as the receive port. Eth 0 and Eth 1 are available. If the added ethernet port hardware option is added to your TSS 6220, then eth 2 and eth 3 will be available in the dropdown. Note that the receive and transmit ports for the delay may be the same or different ports.

Select and enter the Destination IP and port values. For unicast, specify the destination port in the Destination IP field. For Multicast, specify the Destination IP address, and Destination IP Port.

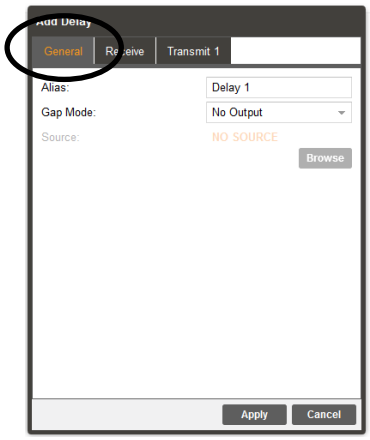
The Tx Delay tab includes settings to define the TSS 6220 as a specific source device for IGMPv3. This allows each steam to be seen by the network as a unique source device with a unique IP address, and/or source port, and/or MAC address. This section provides descriptions of the settings.

When finished with all the selections in the General, Receive, and TxDelay menus, click on the Apply box at the bottom to apply changes and create the delay. The delay is added to the Delay Panel. You can access the configuration menus for changes by clicking on the cog wheel in the Transmit row of the created Delay.

Setting	Range	Description
Transmit Type	Selects MPEG/IP or ASI output	Selects the output in which the delayed transport stream is to be routed or output ASI: Routes delayed input to the ASI output port (requires optional ASI hardware). MPEG/IP: Routes delayed input to the MPEG/IP output in which destination and source configuration settings apply
Transmit	Selects Enabled or Disabled	Enable or disables the output stream and related menu settings. Enabled: Source & Destination settings and output streaming is active Disabled: Source & Destination settings and output streaming is inactive (off)
Delay (minutes)	Select – enter delay in minutes	Entry of the number of minutes the output is delayed in respect to the input. The time delay of the stream buffer
IP – Physical Connector	Selects eth0 or eth1, the standard Ethernet ports, eth2 and eth3 available if TSS 6220 has added optional ports	Entry selects which of the available Ethernet ports on the TSS 6220 that the transmit delay stream is assigned to output
DST Offset State	Select Enabled or Disabled	Enables or Disables the time shift as specified in the DST Offset Minutes field on the specified date entered in the DST Start fields and continuing to the date entered in the DST End fields
DST Offset Minutes	Enter/Select from -180 to + 180 minutes	Provides the offset time in minutes desired for matching the delay or advance in delayed output as needed for daylight savings time changes. Delay up to 3 hours or advance time up to 3 hours
DST Start	Includes entry fields for selection of the month, week in the month, day, and time	Identifies the month, week, day and time to begin shifting time delay by the amount in the DST Offset Minutes field to correspond with Daylight Saving Times shift
DST End	Includes entry fields for selection of the month, week in the month, day, and time	Identifies the month, week, day, and time to end the shifting time dely by the amount in the DST Offset Minutes field corresponding with the ending of the Daylight Savings Time shift
Interface	Select Eth 0, Eth 1 physical IP port, Additional ports are available with added IP I/O hardware	Selects the physical interface output IP port in which to output the delayed TS stream. The Transmit Type must be set to MPEG/IP

	options	
Destination IP	224.0.0.0 – 239.255.255.255	This address is the IP address the source device is sending to for a multi-cast. A unicast would use an IP address less than 224.0.0.0.
Destination Port	0 – 65535	This is the UDP port the source device is sending to.
Source IP Mode	Select Auto or Manual	Provides entry of how the TSS 6220 communicates a source IP address Auto: Allows TSS 6220 to automatically select and communicate the source IP address Manual: Provides user entry of the source address
Source IP	Available for entry when Source IP Mode is set to Manual.	Provides entry of a Source IP address for the stream that is communicated by the TSS 6220
Source Port	Click up or down arrows to increment value shown. Click in field and enter value. Range: 1030 to 65535	Specifies a value for the source port associated with the stream.
Source MAC Mode	Select Auto or Manual	In Auto, the TSS 6220 simulates a source device and creates and communicates a unique source MAC address for the stream. In Manual, a user Source MAC address can be entered.
Source MAC	Available when Source Mac Mode Manual - enter MAC address	Provides entry of a MAC address you want to specify as the Source MAC for the stream communicated by the TSS 6220
TS Packets Per IP Packet	Enter value 1 to 7, Default is 7	This setting determines the number of TS stream packets that are inserted into IP packets. 7 being the maximum and the typical setting. Lesser packets may be selected.
Encapsulation	Select UDP or RTP	Selects IP encapsulation to UDP or RTP

6.5.4 Add Delay – General Configuration – ASI In/Out



The following sections describe the Delay menus and configuration when the TSS 6220 is equipped with the optional ASI input/output hardware. Click on the Add Delay icon to create a Delay input to output path. This opens the Delay configuration menus. There is a General, Receive, and Transmit menu which is selected by clicking on the available tabs. The General configuration menu is shown by default. This menu provides alias naming and definition of the Gap Mode.

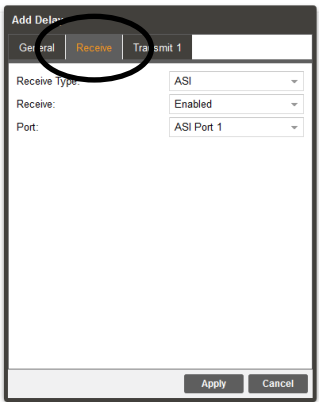
Click on the Alias field and enter an alias name, if desired. This is not required as the application automatically assigns a name as an incrementing delay number.

The Gap Mode importantly defines what the output is when there is no output transport stream to output from the delay buffer. This occurs when the buffer is buffering and has not yet reached the specified delay time. It also occurs when the input TS stream is lost when the buffer streams out until it is depleted. It can also occur when bad data is contained in the buffer because of an input stream issue.

The Gap Mode user selections include: No Output, Null packets, Default File, and Live. The No Output setting would provide no output TS stream when a gap occurs. The Null Packets setting would fill the output ts stream with Null Packets when a gap occurs. A Live setting would route the input ts stream directly to the output bypassing the delay buffer when a gap occurs. When set to Default File, the Source field defines the TS transport stream that plays out during a gap. Click on the Browse tab and choose the stream to be the default file.

Setting	Range/Selections	Description
Stream – Alias	Value and or Letter Entry	Provides entry of alias to identify a delay. If no alias is entered, the TSS 6220 assigns a delay number.
GAP Mode	Click Dropdown – select from listed	Determines the output when a gap exists and there is no TS stream from the buffer. Selections include: Default File: Outputs choose TS file No Output: Outputs no output stream Null Packets: Outputs TS stream with null packets Live: Routes the input TS stream directly to output
Source	Not selectable	Indicates “No Source” when no file has been selected. Indicates the selected file name when a file is selected.

6.5.5 Add Delay – Receive Configuration – ASI In/Out



The Add Delay Receive menu provides selection and configuration of the ASI input used to receive the incoming stream. When the TSS 6220 contains the optional ASI input/output hardware, a Receive Type field is included in the Receive Menu. This field configures the Delay input as ASI or MPEG-IP. In the Receive Type field click on the drop-down arrow and select ASI. This configures the TSS 6220 to receive and rout an ASI input TS stream for the created Delay. It further modifies the Receive menu for ASI input configuration.

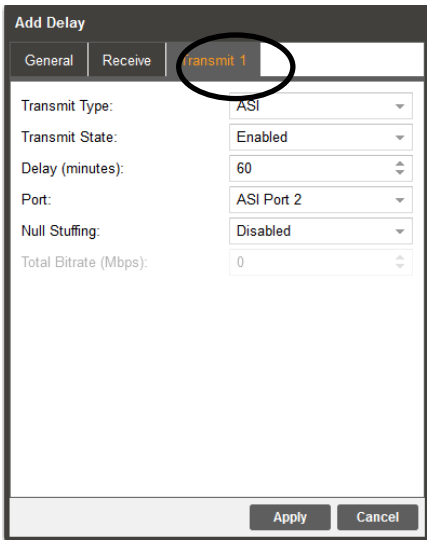
When the Receive Type is ASI, the Receive menu provides selection for enabling or disabling the input port. It further provides selection of one of the available ASI hardware ports. Set the Receive field to "Enabled" to start receiving and buffering the incoming stream. If the Receive field is set to "Disabled" the incoming TS stream on the selected port is not received or routed to the delay buffer.

The optional ASI hardware contains 4 ASI ports. These ports can be configured by the TSS 6220 as an input or as an output port. The ASI ports are available for use by licensed features of the TSS 6220 including the Play, Record, Delay, and Disaster Recovery features. An ASI port cannot be shared by these features. Once a port is assigned or in use by a feature, the port becomes unavailable (greyed out) for the other features. Click the drop-down arrow in the Port field to view available input ports when adding a Disaster Recovery.

ASI Receive Menu Descriptions

Setting	Range/Selections	Description
Receive Type	ASI or MPEG-IP select, click field dropdown arrow and select	Provides selection of an input port for the Disaster Recover function. ASI: selects ASI option card MPEG-IP: select MPEG-IP port
Receive	Enable or Disabled select, click dropdown arrow and select	Enables or Disables the receive ASI input and selected port. Enabled: Incoming TS stream on the Port specified is routed to the delay buffer. Disabled: The select ASI input Port is disabled.
Port	Selects ASI input Port 1, 2, 3, or 4, click dropdown and select from list of available ports	Selects from available ASI ports. Ports listed are available for use and not used by other TSS 6220 features (Play, Record, Delay, Disaster Recovery). The ASI hardware contains 4 ASI ports. These ports can be either used as inputs or output ports.

6.5.6 Add Delay – Transmit Configuration – ASI In/Out



The Add Delay menu provides configuration of the delay's output. Click on the Transmit tab to configure the output criteria of the Delay output. This section describes the selections in the Transmit configuration menu when an ASI output port is selected.

The Add Delay Transmit (Transmit 1) menu provides configuration of the Delay output. If licensed for multiple transmit outputs, more than one tab is shown with incrementing tab numbers. Select and configure each Transmit (Transmit x) output independently.

When the Transmit Type is ASI, the menu provides selection for the physical ASI port. The optional ASI hardware contains 4 ASI ports. These ports can be configured by the TSS 6220 as an input or as an output port. The ASI ports are available for use by licensed features of the TSS 6220 including the Play, Record, Delay, and Disaster Recovery features. An ASI port cannot be shared by these features. Once a port is assigned or in use by a feature, the port becomes unavailable (greyed out) for the other features. Click the drop-down arrow in the Port field to view available output ASI ports. When configuring an ASI output, select from the list of available ports.

When considering applications and licensing for multiple delays, be sure to consider the hardware configuration regarding ASI ports. Each delay output via ASI would require an independent ASI port. If the port is used as an input by any of the TSS 6220 features, it would not be available for a Delay output application.

The Null Stuffing field provides an option to add null stuffing bytes to the Disaster Recovery output to increase the output bitrate. Click on the field and enable the features. The Total Bitrate field below becomes available to enter a desired bit rate. Enter the desired bit rate, in Mbps, in the Total Bitrate field.

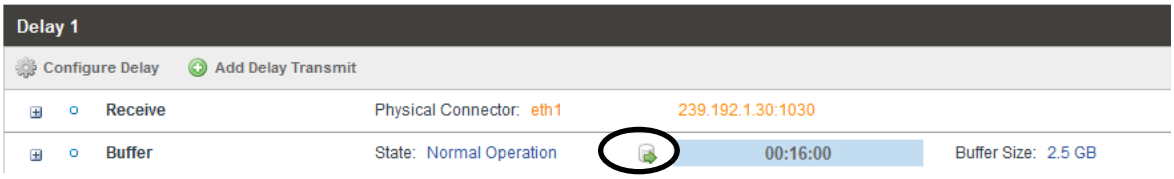
Setting	Range/Selections	Description
Transmit Type	ASI or MPEG-IP, click field dropdown arrow and select	Provides selection of an output port for the Disaster Recover function. ASI: selects ASI option card MPEG-IP: select MPEG-IP port
Transmit State	Selects ASI output as active "Enabled" or inactive "Disabled. Click dropdown arrow and select.	Enabled: Disabled
Delay (minutes)	Select – enter delay in minutes	Entry of the number of minutes the output is delayed in respect to the input. The time delay of the stream buffer
Port	Selects ASI input Port 1, 2, 3, or 4, click dropdown and select from list of available ports	Selects from available ASI ports when Transmit Type is ASI. ASI Ports listed are available for use and not in use by other features (Play, Record, Delay). The ASI hardware contains 4 ASI ports. These ports can be either used as inputs or output ports. Once in use they are unavailable and are

Null Stuffing	Select and choose either disabled (default) or enabled.	Disabled: The ASI output bitrate is determined automatically by the TSS 6220. The Total Bitrate (Mbps) field below in the menu is grayed out. Enabled: The TSS 6220 adds null stuffing to increase the playout bitrate of the ASI output stream. The user enters the desired playout bitrate in the Total Bitrate (Mbps) field in the menu.
Total bitrate	Available when Null Stuffing is enabled. Click on the field and enter a value in Mbps	Enter a value in Mbps of the desired ASI output bit rate. The TSS 6220 adds null bytes to the stream to increase the total bit rate to the entered value in Mbps.

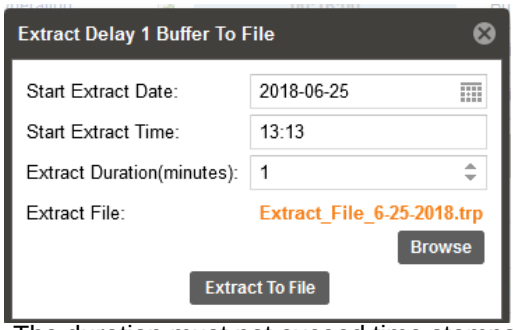
6.6 Delay Buffer – Extract Buffer To File

The TSS 6220's Delay feature has an active buffer receiving TS input data stream and outputting delayed ts stream data. The buffer contains an accumulation of TS captured data in a proprietary format that extends in duration slightly beyond the specified delay time(s). The incoming buffered TS data is time stamped according to its arrival time by the system clock. The TSS 6220 offers the ability to specify a time relative to the incoming time stamps and extract a duration of the ts captured data from the buffer to a memory file. The extracted transport stream data can be written to a file in a common ts or trp format.

In the Delay's buffer section of the web GUI exists an Extract Buffer to File icon . It is located near the middle of the page in the Buffer section/row. Click on this icon to access the Extract Buffer to File menu. This section describes the Extract Buffer to File menu and how to extract the time stamped buffer data.



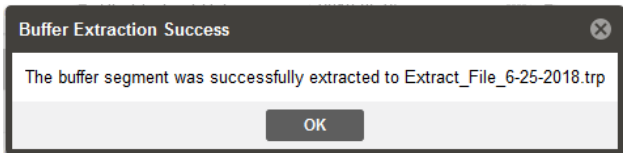
The Extract Delay Buffer To File Menu includes selection of a Start Extract Date and Start Extract Time. This date & time selection permits a user to specify a day and time of the original arrival time of the TS input data to the buffer. The selections must be a time which matches time stamps of data currently in the buffer. Click on the Start Extract Date field and enter a date. Or, click on the calendar icon and select a day. Click in the Start Extract Time field and edit or enter the extract time.



The data extraction requires a duration of time entry in the Extract Duration (minutes) field. Click in the field and enter a value, in minutes. Or click on the up and/or down arrows at the right of the field. The duration must not exceed time stamps currently in the buffer. Reference the time indicated by the Original Time field in the Transmit section and the Delay duration setting to determine applicable start and duration entries for extraction compatibility.

Extracted data is written to a file selected by clicking on the Browse icon and selecting a current file. Or, click on Browse and enter a new file name in the bottom field of the Browse Files menu.

Finally, click on the Extract To File icon at the bottom center of the menu to start the data extraction. A progress bar will indicate the process is being implemented. If time and duration entries are not found in the time stamped buffer data, a message will be indicated. Upon conclusion of the extraction, a Buffer Extraction Success message appears. Click the OK field to acknowledge the extraction as completed.

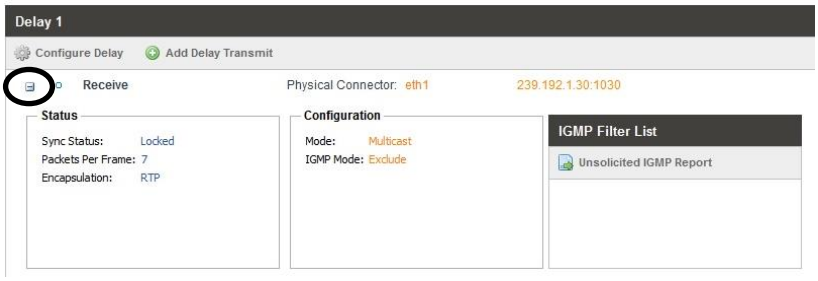


Extra Delay Buffer to File Menu field descriptions.

Settings	Range	Description
Start Extract Date	Click on calendar icon select date, or enter date infield YYYY,MM,DD	This setting (date) marks the day in which the buffer data is extracted from memory and written to a file. Note: The selected date is typically today's date unless the delay is > 24 Hrs. The day must be in current buffer data time stamps.
Start Extract Time	Click in field, Enter time	Entry references time stamp (hours, seconds) of data in the buffer in which the data extraction starts. Note: The time reference must be within current buffer.
Extract Duration (minutes)	Time	Field indicating the time duration of the data following the start extract time that is to be extracted and written to the file.
Extract File	Click Browse field to go to Browse File menu. Select an existing file to overwrite. Or enter a file name at the bottom of the menu.	This is file name that the buffer data is extracted to. If "No Source" is shown you need to select an existing file to replace or create a new file.
Browse	Click on Browse field	Takes you to the Browse Files menu. Enter a file for selection or entry of a file name, once a file is named or selected the file name is indicated in the Extract File field
Extract to File	Click on Extract To File field to apply entries	Extracts the buffer data starting at the date/time referenced for the duration specified to the selected file name. Convert data to the file type specified.

6.7 Delay Receive Status & Configuration - Information Menu

Each of the Delays in the Delay Panel includes in the Receive row an added Status and Configuration window. To access this window and add it to the panel, click on the icon at the left of the Receive row. The Status and Configuration boxes are added to the Play Control Panel providing status and configuration details. Click on the icon at the same location to hide the status and configuration information. Following is a description of the fields and information found in this Status and Configuration window.



The Sync Status, Packets Per Frame and Encapsulation fields provide information regarding the incoming receive transport stream. Should the Sync Status indicate “Unlocked” check the IP configuration settings and/or availability of the MPEG-IP stream.

Status Listing	Description
Sync Status	Indicates the source TS stream is being received and TS sync is established. Locked: Indicates receiving and locked to TS stream Sync
Packets Per Frame:	Indicates the TS packets per TS frame in the incoming TS stream
Encapsulation:	Indicates receive IP stream encapsulation, RTP, UDP

The Configuration part of the window provides information regarding the settings for the Delay input. The Configuration window also indicates the IGMP receive mode, unicast or multicast, along with IGMPv3 settings and filter addresses.

Configuration Listing	Description
Mode:	Indicates if input receive is configured as Unicast or Multicast
IGMP Mode:	Indicates Include or Exclude mode for IGMPv3 address entry
Add IGMP Filter	Indicates listed IGMP filter addresses to Exclude or Include for Source Specific IGMPv3

6.8 Delay Buffer Configuration – Information Menu

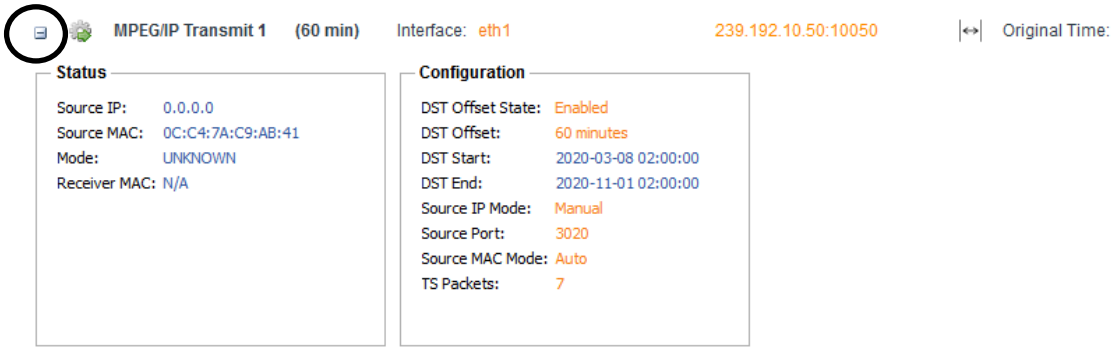
In the Buffer section of each of the delays there is an added Configuration information window available. To access this window and add it to the panel, click on the icon at the left of the Buffer section in the panel. The Configuration window is added to the Delay panel. Click on the icon at the same location to hide the status and configuration information. Below is a description of the information you will find in this information window.

The Configuration window includes information regarding the Gap Mode and Gap File. It further includes the Maximum Buffer Duration listed in minutes. Recall that the Gap Mode permits selection of what you want to be outputting when there is no TS stream available to output from the buffer. A transport stream file may be selected to output during a gap condition by setting the Gap Mode to Default File. A selected file for this is indicated in the Gap File field of the Configuration window.

Configuration Listing	Description
Gap Mode:	Indicates the Gap mode: Default File: Outputs selected TS file No Output: Outputs no output stream Null Packets: Outputs TS stream with null packets Live: Routes the input TS stream directly to the Delay output
Gap File:	Indicates the ts file in which to play out when the Gap Mode is set to Default File and there is no TS data in the Buffer to output.
Maximum Buffer Duration (minutes)	Indicates the maximum Buffer time in minutes

6.9 Delay Transmit Status – Information Menu

An added Status and Configuration window is available in the Transmit section of each of the delays listed in the Delay Panel. To access this window and add it to the panel for viewing, click on the ⊞ icon at the left of the Transmit row. The Status and Configuration boxes are added to the Play Control Panel providing status and configuration details. Click on the ⊟ icon at the same location to hide the status and configuration information. This section of the manual provides a description of the fields and information found in this Status and Configuration window.



The Status part of the window provides information regarding the Delay's output status. It includes an indication of its source IP address and its MAC address. It indicates if the output is in a unicast or multicast configuration status. It indicates a MAC address from a destination receiver if applicable.

Status Listing	Description
Source IP	Indicates the Source IP address
Source MAC	Indicates the Source MAC address,
Mode	Indicates Transmit IP mode, either Unicast or Multicast
Receiver MAC	Indicates a MAC address as indicated by a destination receiver

The Configuration part of the window provides information regarding the Delay's transmit user settings selected in the TX Delay configuration menu. See section 6.5.3 in this manual.

Configuration Listing	Description
DST Offset State	Enabled or Disabled, Indicates if the DST offset minutes will be applied to the delayed output during the period between DST Start and DST End times selected
DST Offset	Indicates the DST time shift or offset configured for the delay. Settings range from -180 to +180 minutes
DST Start	Indicates the DST month, week, day, and hour in which the DST offset time in minutes is applied to the delay output. There entries should identify when DST begins in the location and a shift in time to compensate is desired. Indicates the DST month, week, day, and hour in which the DST offset time in minutes is no longer applied to the delay output. These entries should identify when DST

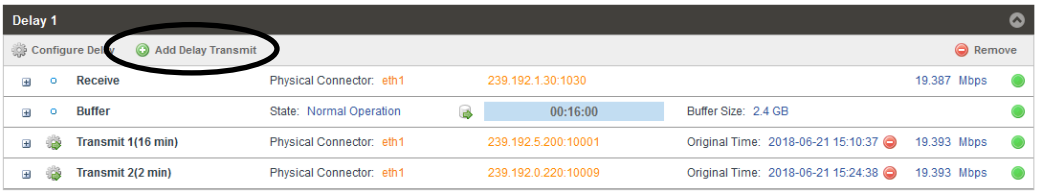
	ends in the location
Source IP Mode:	Auto or Manual
Source Port	Indicates the port value selected
Source MAC Mode	Indicates Automatic or Manual as selected in the TX Delay setup menu.
TS Packets	Indicates the number of TS packets per IP packet as selected by the user in the TX Delay setup menu

6.10 Multi Transmit Delay – Tx Delay 2 Configuration

The TSS 6220 can provide multiple transmit outputs from a Delay buffer. The added transmit output can specify a different delay time, a different physical output Ethernet port, and unique output address/port configurations. A Multi Transmit Delay License is needed to add this capability to the Delay feature. For each Delay that requires more than one output, an additional instance of a Multi Transmit Delay License is needed.

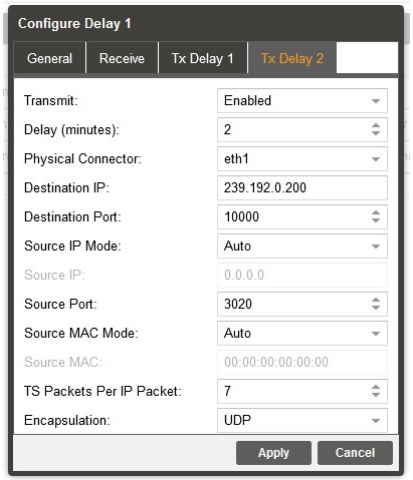
When the TSS 6220 contains Multi Transmit Delay licensing, after a Delay is added and shown in the Delay Panel, you will see an Add Delay Transmit 

icon. This icon is located in the Delay Panel heading as illustrated below. Click on this icon to add a second transmit output to the existing Delay. This manual section describes the related settings and menus.



Upon clicking the Add Delay Transmit icon 

, the Configure Delay menu appears. The menu now contains an additional tab in which to configure a 2nd delayed output (Example: Tx Delay 2). The TS 6220 adds tabs with incrementing Tx Delay numbers. The new Tx Delay tab is selected by default and provides configuration of the added delay's output. The table below summarizes the available configuration settings.



When finished with all the selections in the added TxDelay menu, click on the Apply box at the bottom to apply changes. The delay is added to the Delay Panel. You can access the configuration menus for changes by clicking on the cog wheel in the Transmit row of the created Delay.

It should be noted that the Delay time for the added Delay can be longer or shorter in duration compared to the existing delay(s). If the delay is longer, upon adding the added delay, the TSS 6220 responds by adding more buffered data to extend the existing buffer time. The newly created delay will not output original delayed input TS stream unit the buffer has built up the needed buffered delay time. The Gap Mode determines the output of the TSS 6220 during this buffer build up delay.

Setting	Range	Description
Transmit	Selects Enabled or Disabled	Enable or disables the output stream and related menu settings. Enabled: Source & Destination settings and output streaming is active Disabled: Source & Destination settings and output streaming is inactive (off)

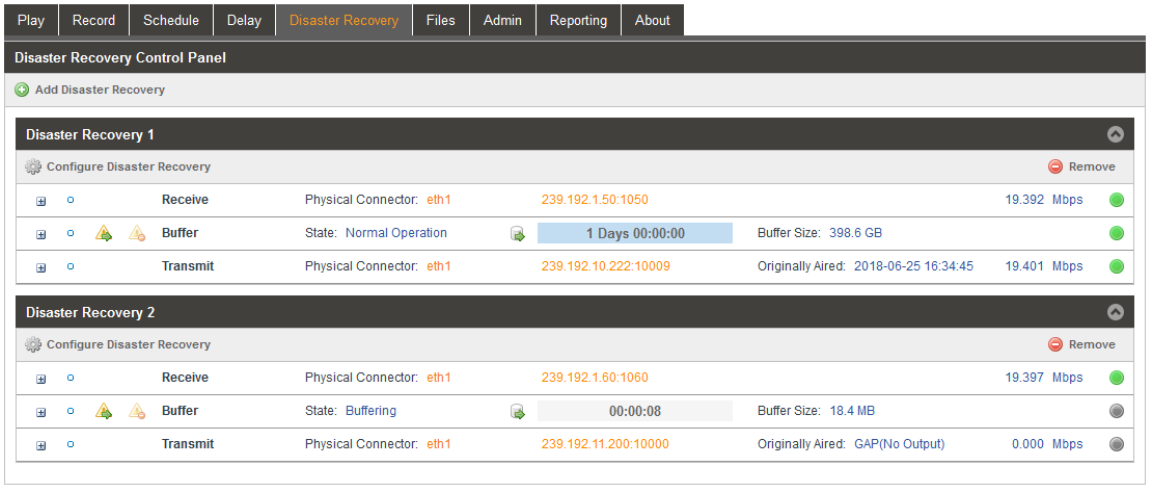
Delay (minutes)	Select – enter delay in minutes	Entry of the number of minutes the output is delayed in respect to the input. The time delay of the stream buffer
IP – Physical Connector	Selects eth0 or eth1, the standard Ethernet ports, eth2 and eth3 available if TSS 6220 has added optional ports	Entry selects which of the available Ethernet ports on the TSS 6220 that the transmit delay stream is assigned to output
Destination IP	224.0.0.0 – 239.255.255.255	This address is the IP address the source device is sending to for a multi-cast. A unicast would use an IP address less than 224.0.0.0.
Destination Port	0 – 65535	This is the UDP port the source device is sending to.
Source IP Mode	Select Auto or Manual	Provides entry of how the TSS 6220 communicates a source IP address Auto: Allows TSS 6220 to automatically select and communicate the source IP address Manual: Provides user entry of the source address
Source IP	Available for entry when Source IP Mode is set to Manual.	Provides entry of a Source IP address for the stream that is communicated by the TSS 6220
Source Port	Click up or down arrows to increment value shown. Click in field and enter value. Range: 1030 to 65535	Specifies a value for the source port associated with the stream.
Source MAC Mode	Select Auto or Manual	In Auto, the TSS 6220 simulates a source device and creates and communicates a unique source MAC address for the stream. In Manual, a user Source MAC address can be entered.
Source MAC	Available when Source Mac Mode Manual - enter MAC address	Provides entry of a MAC address you want to specify as the Source MAC for the stream communicated by the TSS 6220
TS Packets Per IP Packet	Enter value 1 to 7, Default is 7	This setting determines the number of TS stream packets that are inserted into IP packets. 7 being the maximum and the typical setting. Lesser packets may be selected.
Encapsulation	Select UDP or RTP	Selects IP encapsulation to UDP or RTP

7 Disaster Recovery Viewing Panel

The Disaster Recovery Viewing Panel provides the capability to setup, control and monitor the Disaster Recovery capability offered by the TSS 6220. The Disaster Recovery feature receives and monitors a defined incoming transport stream. The input stream is buffered to memory storing a defined period of programming segments, typically a day or week. The Disaster Recovery feature serves as a programming backup. Upon the loss of the incoming stream, the stored memory is available to stream to the output.

The Disaster Recovery feature of the TSS 6220 is an optional licensed feature. The Disaster Recovery tab is only available when the feature is licensed. More than one license is available for purchase if multiple disaster recovery output capabilities are needed. Options for increasing the hardware, memory storage drive, and redundancy RAID configuration capabilities are available to accommodate different requirements.

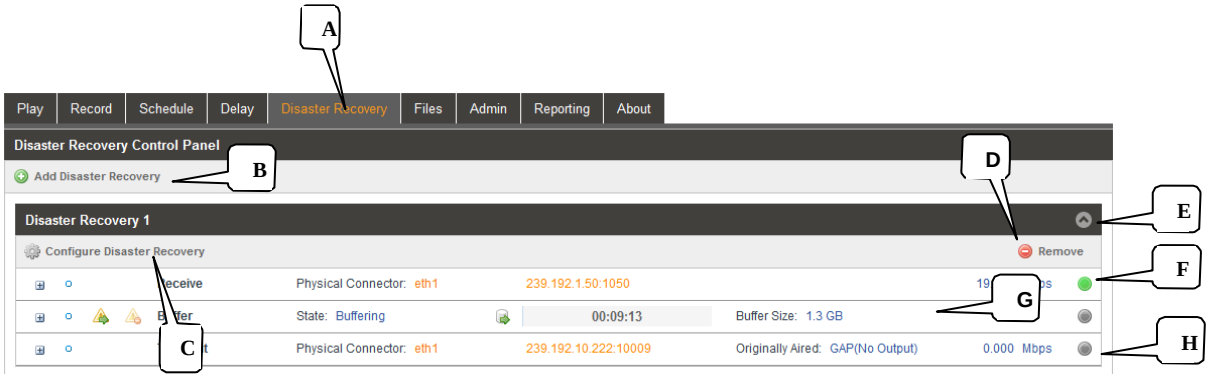
The following sections in this chapter describe configuration and monitoring menus for receive, buffering and outputting of the TS streams in the Delay function.



7.1 Disaster Recovery Panel Overview

The TSS 6220 provides flexibility in setting up the receiver, buffer, and disaster recovery criteria Depending on licensing, more than one Disaster Recovery can be added and shown in the Disaster Recovery Panel. Each disaster recovery added has its unique user defined input, buffering, transmit, and disaster recovery management settings. Each disaster recovery added has its own section in the panel and is identified by a heading with incrementing identifying numbers Disaster Recovery 1, Disaster Recovery 2, etc.

For each Disaster Recovery in the panel, there is a row in the panel indicating the receive criteria, a row indicating buffer information and a row indicating Transmit or output information. The following diagram and descriptions provide an overview of the layout and fields common in the Disaster Recovery Panel. The remainder of this chapter provides additional details of configuration menus, informational fields in the panel, and dropdown information menus.



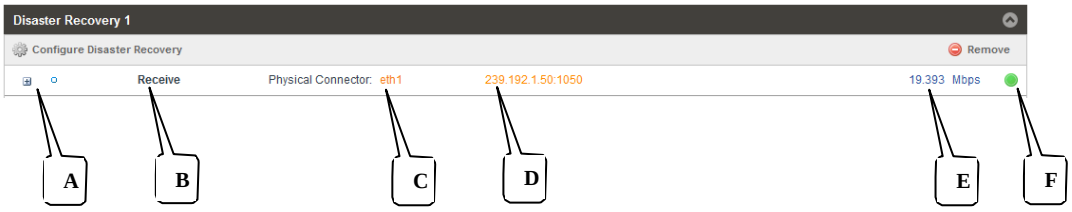
Item or Field		Button/Action	Description
A.	**Select Disaster Recovery**	Delay Click on this field to access the Disaster Recovery feature	Provides access to the Disaster Recovery feature and all configuration and monitoring menus. Disaster Recovery license required.
B.	**Add Disaster Recovery**	Add Click this icon to add a recovery to an output ethernet port	Provides access to menus to add and configure receive, buffer, and transmit criteria for the disaster recovery
C.	**Configure Disaster Recovery**	Click this icon to access control menus	Provides access to menus to setup/control receive, buffer and transmit criteria for the Disaster Recovery
D.	**Delete Delay**	Remove Click on this ito delete this delay	Removes the recovery from the panel, stops input receive, buffering and transmit of this disaster recovery.
E.	**Show/Hide Disaster Recovery fields**	Selectable, click on the icon	Collapses the receive, buffer, transmit rows to not be visible in the panel. When collapsed, it expands to show receive, buffer, and transmit rows
F.	**Receive**	See section: 7.2.1 for descriptions	This row shows the receiver information for the Disaster Recovery
G.	**Buffer Section**	See section 7.2.2 for descriptions	This row shows the buffer information for the Disaster Recovery
H.	**Transmit section**	See next section 7.2.3 for field descriptions	This row shows the transmit output information of the Disaster Recovery

7.2 Disaster Recovery Panel Descriptions

The Disaster Recovery Panel contains three rows of information associated with an added Disaster Recovery. A top row is identified as receive information. A middle row identified as buffer information. A bottom row is identified as transmit information. This section provides descriptions of the information contained in these sections of the Disaster Recovery Panel. The next section in this chapter, Section 7.3, describes configuration settings which determine or impact the listed information described in the panel.

7.2.1 Disaster Recovery Panel – Receive Descriptions

The Disaster Recovery Panel contains a row of information that is identified by a "Receive" indication. This row of information summarizes the configuration of the receiver for the added disaster recovery. The information in the fields indicate user settings that were specified when the disaster recovery was added or created. See section 7.3.1 and 7.3.2 in this manual for setup of the disaster recovery receive. The fields also indicate current status on the input stream and bitrate. The following information provides a description of each field in the Receive row.

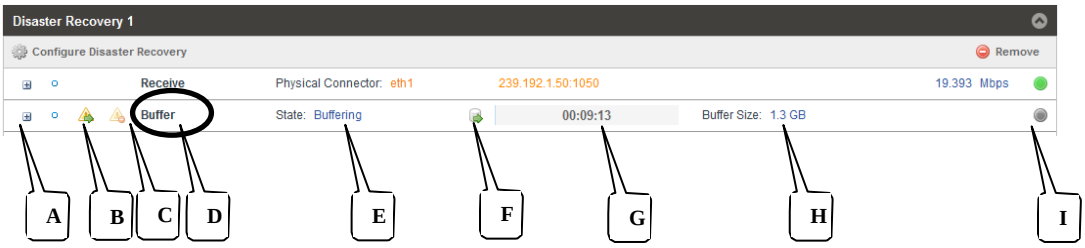


Receive row field descriptions:

Item or Field	Button/Action	Description
A. Adds Status Menu to Delay Panel	Click icon to add dropdown menu	Adds a dropdown section to the Receive row showing additional Status information. See section 7.5.1.
B. Receive row	Not a selectable field	Identifies row as information relative to receive and input stream of the Delay
C. Physical Input Ethernet Port	Not a selectable field	Indicates the user defined receive or destination input IP address and port. Or, indicates if an ASI input port is selected.
D. Input Destination Address/Port	Not a selectable field	Indicates the user defined receive or destination input IP address and port When ASI input is selected, this field indicates Sync Status (Locked, Unlocked)
E. Input Bitrate	Not a selectable field	Indicates the incoming TS stream bitrate
F. Status Indicator	Status Light, not a selectable field	Red: No input stream, abnormal input or condition Green: Input active/enabled – input normal Gray: Input inactive/disabled – input not setup

7.2.2 Disaster Recovery Panel – Buffer Descriptions

The Disaster Recovery Panel contains a row of information that is identified by a “Buffer” indication. This row of information summarizes the configuration of the Buffer for the created delay and disaster recovery mode. The information in the fields indicate user settings that were specified when the Disaster Recovery was added or created. See section 7.3.1 for setup of the Disaster Recovery buffer. The row further indicates status information in regard to buffering the input stream. The following information provides a description of each field in the Buffer row.

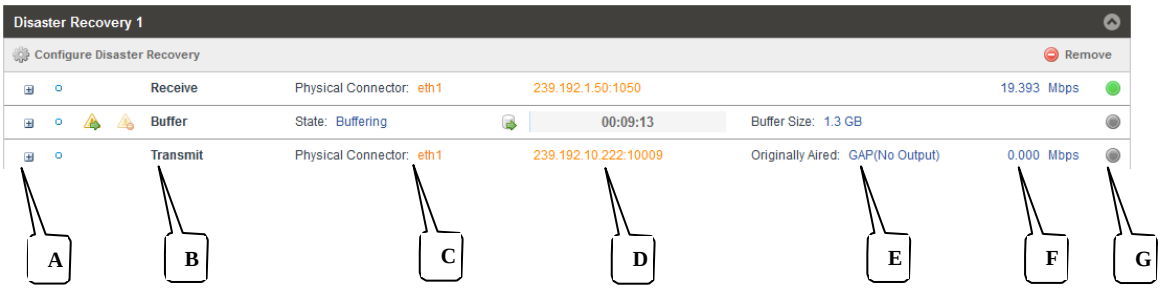


Buffer row field descriptions:

Item or Field	Button/Action	Description
A. Adds Configuration Menu to Delay Panel	Click icon to add dropdown menu	Adds a dropdown section to the Buffer row showing additional buffer configuration information. See section 7.5.2 for details
B. Start Disaster Recovery Output	Click on icon to Start Disaster Recovery mode	Starts Disaster Recovery output mode, outputs buffered delayed stream, stops recording,
C. Stop Disaster Recovery Output	Click on icon to exit the Disaster Recovery mode	Stops Disaster Recovery output mode, resumes input recording to buffer
D. Buffer Label	Not a selectable field	Identifies row as information relative to receive buffer
E. Buffer state	Not a selectable field	Indicates the current state of the buffer Buffering: Building a buffer to specified duration Normal Operation: – actively buffering delayed output Recovery: buffering disaster recovery output
F. Extract File Menu	Click on icon, provides an Extract Buffer to File menu	Provides a menu in which the time referenced stream data in the buffer memory can be named and extracted to a file
G. Buffer Time Delay	Not a selectable field	Indicates when buffer is filling as moving blue filler, indicates time of data capture or delay time of buffer
H. Buffer Size	Not a selectable field	Indicates the buffer size as drive storage space being utilized
I. Status Indicator	Status Light, not a selectable field	Red: No output stream, abnormal output or condition Green: Input active/enabled – output normal Gray: Input inactive/disabled – output not setup

7.2.3 Disaster Recovery Panel – Transmit Descriptions

The Disaster Recovery Panel contains a row of information that is identified by a “Transmit” or “ASI Transmit” indication. This row of information summarizes the configuration of the delayed transmit or output. The information in the fields indicate user settings that were specified when the Disaster Recovery was created. See section 7.3.3 in this manual for setup of the Disaster Recovery transmit criteria. The fields also indicate current status of the delayed output or transmit. The following information provides a description of each field in the Transmit row.



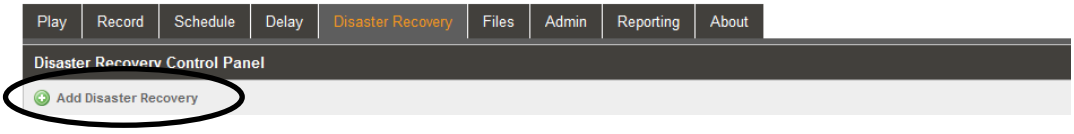
Transmit row field descriptions:

Item or Field Name	Button/Action	Description
A. Status & Configuration	Click on this icon	Provides an added window showing Delay output status and configuration information. See section 7.5.3 for details.
B. Identifies Transmit section	Not selectable, No action	Identifies the row as related to the delay’s output
C. Physical Connector/port	Not Selectable	Indicates the Physical Ethernet port or ASI port which the delay stream in the listed schedule will playout
D. IP Address/Port	Not Selectable	Indicates the destination IP address and port of delay output. If ASI output port is used this field indicates Null Stuffing status (Enabled or Disabled)
E. Original Time	Not Selectable	Provides reference of the original date and time that the delay is referenced.
F. Total Port Bitrate Indication	Not selectable, view only	Indicates Ethernet port bitrate of the delayed output TS streams
G. Status Indicator	Not Selectable	Indicates status of output: Gray: Inactive – output stopped, Green: Good active playout, Red: Playout fault or no output

7.3 Adding & Configuring a Disaster Recovery

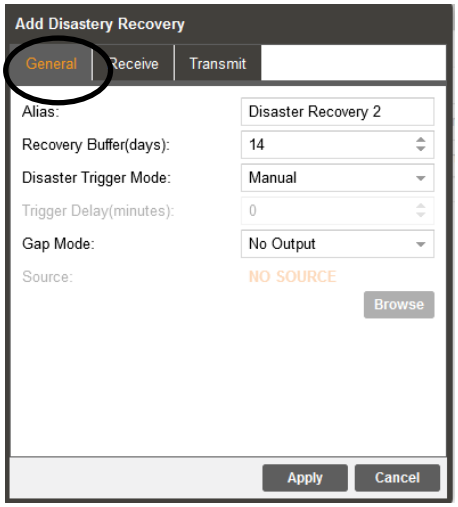
To add a Disaster Recovery which provides a new delay input to output line or path and disaster recovery mode in the event of an incoming stream failure/disaster, requires that you define receive, buffer and ouput parameters. To create a Disaster Recovery listing, click on the Add Disaster Recovery icon. This icon is located just below the Disaster Recovery Panel heading. If you do not see this section, click on the Expand Panel icon located at the right. Note that this selection is available for each of the Disaster Recovery Control Panels that are available by licensing.

To add a delay requires that you configure general, receive, and output parameters. These parameters are found in General, Receive, and Transmit menus that are available upon clicking the Add Disaster Recovery icon. The following sections describe these menus and their configuration. See sections 7.3.4, 7.3.5, and 7.3.6 for information on menus and configuration when adding a Disaster Recovery using the optional ASI input/output hardware.



7.3.1 Adding a Disaster Recovery – General Menu

When clicking on the Add Disaster Recovery icon, the Add Disaster Recovery menu is shown. There is a General, Receive, and Transmit menu which is selected by clicking on the available tabs. The General configuration menu is shown by default. This menu provides alias naming, recovery buffer and triggering criteria, and definition of the Gap Mode.



Click on the Alias field and enter an alias name, if desired. This is not required as the application automatically assigns a name as an incrementing Disaster Recovery number

The Recovery Buffer (days) field permits entry, or selection with the up and down arrow increments, of the days in the buffer. This is the duration of the stored or buffered input TS stream data. It also is the delay, in days specified, between the incoming TS stream data and the delayed output.

The Disaster Trigger Mode is set to either manual or automatic. The manual setting requires a user selection to start a Disaster Recovery mode or output. An auto setting directs the TSS 6220 to automatically start a Disaster Recovery mode output after the input TS stream is lost and after the specified user Trigger Delay (minutes) has elapsed. When the Disaster Trigger Mode is set to Auto, the Trigger Delay (minutes) field becomes available for entry or for selection of minutes by using the up and down arrow fields. The entry determines the time (minutes) in which the Disaster Trigger output mode waits for the incoming TS stream to return prior to implementing a Disaster Recovery mode output. If the incoming TS stream, remains missing for the duration of the minutes specified in the Trigger Delay (minutes) field, the Disaster Recovery mode is implemented.

The Gap Mode importantly defines what the output is when there is no output transport stream to output from the delay buffer. This occurs when the buffer is buffering and has not yet reached the

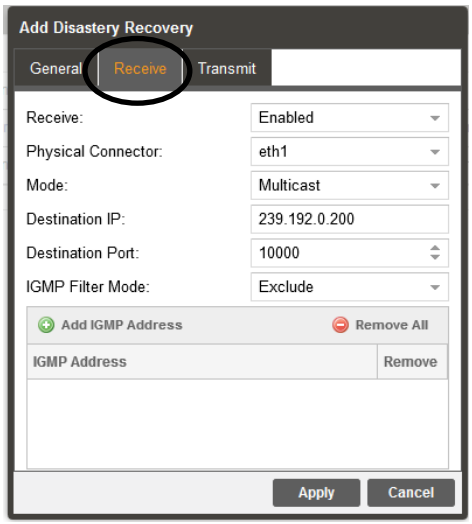
specified delay time. This condition also occurs upon ending an active Disaster Recovery mode or output, as the buffer would need to catch up to the specified Recovery Buffer Days. A gap mode also occurs if buffer TS stream data is bad because of an input stream issue when recorded into the buffer.

The Gap Mode user selections include: No Output, Null packets, Default File, and Live. The No Output setting would provide no output TS stream when a gap occurs. The Null Packets setting would fill the output ts stream with Null Packets when a gap occurs. A Live setting would route the input ts stream directly to the output bypassing the delay buffer when a gap occurs. When set to Default File, the Source field defines the TS transport stream that plays out during a gap. Click on the Browse tab and choose the stream to be the default file.

Setting	Range/Selections	Description
Stream – Alias	Value and or Letter Entry	Provides entry of alias to identify a delay. If no alias is entered, the TSS 6220 assigns a delay number.
Recovery Buffer (days)	Enter value or click on up and down arrow fields to increment value	Provides entry of days. Defines the duration, in days, of the buffered memory size/duration of input TS stream data. Duration also is the delay between incoming TS stream and output when not in a Disaster Recovery mode.
Disaster Trigger Mode	Select to Manual or Auto	Manual: Auto:
Trigger Delay (minutes)	Enter value or click on up and down arrow fields to increment value	Provides entry of minutes. In Auto Disaster Trigger Mode - Defines the wait time (minutes) between when the input TS stream is lost (start of disaster) and when the output is replaced by the buffered TS stream data (Disaster Recovery Output started)
GAP Mode	Click Dropdown – select from listed	Determines the output when a gap exists and there is no TS stream from the buffer. Selections include: Default File: Outputs choose TS file No Output: Outputs no output stream Null Packets: Outputs TS stream with null packets Live: Routes the input TS stream directly to output
Source	Not selectable	Indicates “No Source” when no file has been selected. Indicates the selected file name when a file is selected.

7.3.2 Adding a Disaster Recovery – Receive Menu

The Add Disaster Recovery Receive menu provides configuration of the IP input used to receive the MPEG-IP unicast or multicast. The selected input TS stream is routed to the delay buffer. This section provides descriptions of the settings in this menu



Configure the IP input to be active by setting the Receive field to "Enabled." Select the Physical Connector or Ethernet port on the TSS 6220 to use as the receive port. Eth 0 and Eth 1 are available. If the added ethernet port hardware option is added to your TSS 6220, then eth 2 and eth 3 will be available in the dropdown.

Select the Mode of the receiver to be Unicast or Multicast. For unicast, specify the destination port in the Destination IP field. For Multicast, specify the Destination IP address, and Destination IP Port.

The IP configuration section further includes settings to provide IGMPv3 features. An IGMP filter may be implemented for use to specify the inclusion or exclusion of source addresses. The TSS 6220 is IGMPv3 compliant. IGMPv3 allows each steam to be seen by the network as relating to a unique source device with a unique IP address, port, and/or MAC address. IGMPv2 is used to join/leave multicast streams by default if no IGMP Filter addresses are entered in the Add IGMP Address section of the menu. If IGMP Filter Mode addresses are specified then IGMPv3 is automatically used.

Settings	Range	Description
IP Receive	Enable Disabled	This setting allows the user to enable or disable these input stream settings.
IP – Physical Connector	Selects eth0 or eth1, the standard Ethernet ports, eth2 and eth3 available if TSS 6220 has added optional ports	Entry selects which of the available Ethernet ports on the TSS 6220 that the stream input is assigned
IP Mode	Multicast Unicast	*Multicast* setting allows the unit to receive multicast streams. Multicast streams originate from the IP range 224.0.0.0 – 239.255.255.255. *Unicast* allows the unit to receive unicast streams. Unicast streams originate directly from a source device.
Destination IP	Enter Value: 224.0.0.0 – 239.255.255.255	This address is the IP address the source device is sending to for a multi-cast. A unicast would use an IP address less than 224.0.0.0. This setting is only available when receiving a multicast stream. This address is the IP address the source device is sending to.

Destination Port	Enter Value: 0 – 65535	This is the UDP port the source device is sending to. This is the only setting required to receive a unicast stream.
IGMP Filter Mode	Settings: Select Include or Exclude	Used on networks supporting IGMPv3. If this setting is set to *Exclude* any streams originating from the user defined IP addresses will be rejected. If this setting is set to *Include* any streams originating from the user defined IP addresses will be received.
Add IGMP Address	Click in field - Enter IP address to include or exclude as per filter mode: Values: 0.0.0.0 – 255.255.255.255	Enter and list IP address of IGMPv3 to include or exclude as a filter setting.
Remove All	Click on icon	Removes or clears all the listed IGMPv3 address

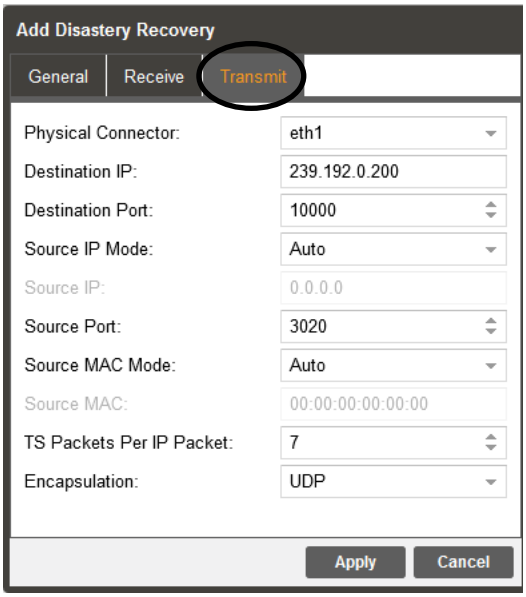
7.3.3 Adding a Disaster Recovery – Transmit Menu

The Add Disaster Recovery menu provides configuration of the Disaster Recovery delay output. Click on the Transmit tab to configure the output criteria of the Disaster Recovery output. This section describes the selections in the Transmit configuration menu.

Select the Physical Connector or Ethernet port on the TSS 6220 to use as the receive port. Eth 0 and Eth 1 are available. If the added ethernet port hardware option is added to your TSS 6220, then eth 2 and eth 3 will be available in the dropdown. Note that the receive and transmit ports for the delay may be the same or different ports.

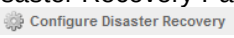
Select and enter the Destination IP and port values. For unicast, specify the destination port in the Destination IP field. For Multicast, specify the Destination IP address, and Destination IP Port.

The Transmit tab includes settings to define the TSS 6220 as a specific source device for IGMPv3. This allows each steam to be seen by the network as a unique source device with a unique IP address, and/or source port, and/or MAC address. This section provides descriptions of the settings.



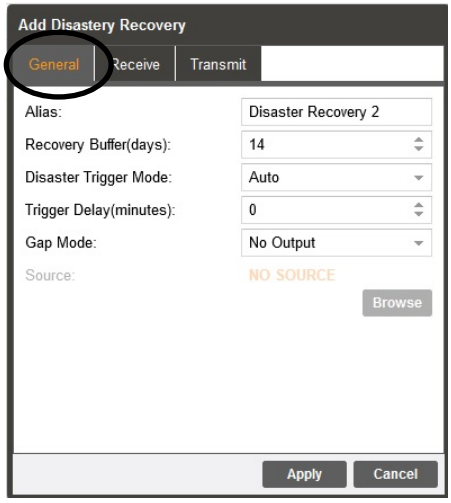
Setting	Range	Description
IP – Physical Connector	Selects eth0 or eth1, the standard Ethernet ports, eth2 and eth3 available if TSS 6220 has added optional ports	Entry selects which of the available Ethernet ports on the TSS 6220 that the transmit delay stream is assigned to output
Destination IP	224.0.0.0 – 239.255.255.255	This address is the IP address the source device is sending to for a multi-cast. A unicast would use an IP address less than 224.0.0.0.
Destination Port	0 – 65535	This is the UDP port the source device is sending to.
Source IP Mode	Select Auto or Manual	Provides entry of how the TSS 6220 communicates a source IP address Auto: Allows TSS 6220 to automatically select and communicate the source IP address Manual: Provides user entry of the source address
Source IP	Available for entry when Source IP Mode is set to Manual.	Provides entry of a Source IP address for the stream that is communicated by the TSS 6220

Source Port	Click up or down arrows to increment value shown. Click in field and enter value. Range: 1030 to 65535	Specifies a value for the source port associated with the stream.
Source MAC Mode	Select Auto or Manual	In Auto, the TSS 6220 simulates a source device and creates and communicates a unique source MAC address for the stream. In Manual, a user Source MAC address can be entered.
Source MAC	Available when Source Mac Mode Manual - enter MAC address	Provides entry of a MAC address you want to specify as the Source MAC for the stream communicated by the TSS 6220
TS Packets Per IP Packet	Enter value 1 to 7, Default is 7	This setting determines the number of TS stream packets that are inserted into IP packets. 7 being the maximum and the typical setting. Lesser packets may be selected.
Encapsulation	Select UDP or RTP	Selects IP encapsulation to UDP or RTP

When finished with all the selections in the General, Receive, and Transmit menus, click on the Apply box at the bottom to apply changes and create the Disaster Recovery. The Disaster Recovery is added to the Disaster Recovery Panel. You can access the configuration menus for changes by clicking on the 

7.3.4 Adding a Disaster Recovery – General Menu – ASI In/Out

The following sections describe the Disaster Recovery menus and configuration when the TSS 6220 is equipped with the optional ASI input/output hardware. Click on the Add Disaster Recovery icon to create a Disaster Recovery. This opens the Disaster Recovery configuration menus. There is a General, Receive, and Transmit menu which is selected by clicking on the available tabs. The General configuration menu is shown by default. This menu provides alias naming, recovery buffer and triggering criteria, and definition of the Gap Mode.



Click on the Alias field and enter an alias name, if desired. This is not required as the application automatically assigns a name as an incrementing Disaster Recovery number

The Recovery Buffer (days) field permits entry, or selection with the up and down arrow increments, of the days in the buffer. This is the duration of the stored or buffered input TS stream data. It also is the delay, in days specified, between the incoming TS stream data and the delayed output.

The Disaster Trigger Mode is set to either manual or automatic. The manual setting requires a user selection to start a Disaster Recovery mode or output. An auto setting directs the TSS 6220 to automatically start a Disaster Recovery mode output after the input TS stream is lost and after the specified user Trigger Delay (minutes) has elapsed. When the Disaster Trigger Mode is set to Auto, the Trigger Delay (minutes) field becomes available for entry or for selection of minutes by using the up and down arrow fields. The entry determines the time (minutes) in which the Disaster Trigger output mode waits for the incoming TS stream to return prior to implementing a Disaster Recovery mode output. If the incoming TS stream, remains missing for the duration of the minutes specified in the Trigger Delay (minutes) field, the Disaster Recovery mode is implemented.

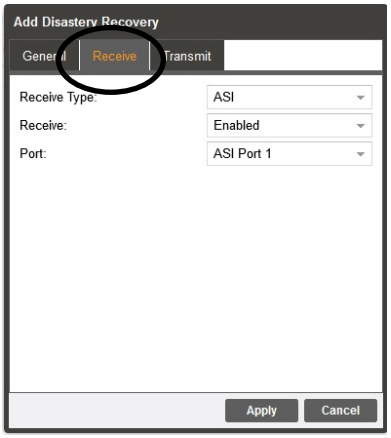
The Gap Mode importantly defines what the output is when there is no output transport stream to output from the delay buffer. This occurs when the buffer is buffering and has not yet reached the specified delay time. This condition also occurs upon ending an active Disaster Recovery mode or output, as the buffer would need to catch up to the specified Recovery Buffer Days. A gap mode also occurs if buffer TS stream data is bad because of an input stream issue when recorded into the buffer.

The Gap Mode user selections include: No Output, Null packets, Default File, and Live. The No Output setting would provide no output TS stream when a gap occurs. The Null Packets setting would fill the output ts stream with Null Packets when a gap occurs. A Live setting would route the input ts stream directly to the output bypassing the delay buffer when a gap occurs. When set to Default File, the Source field defines the TS transport stream that plays out during a gap. Click on the Browse tab and choose the stream to be the default file.

Setting	Range/Selections	Description
Stream – Alias	Value and or Letter Entry	Provides entry of alias to identify a delay. If no alias is entered, the TSS 6220 assigns a delay number.
Recovery Buffer (days)	Enter value or click on up and down	Provides entry of days. Defines the duration, in days, of the buffered memory size/duration of input

	arrow fields to increment value	TS stream data. Duration also is the delay between incoming TS stream and output when not in a Disaster Recovery mode.
Disaster Trigger Mode	Select to Manual or Auto	Manual: Auto:
Trigger Delay (minutes)	Enter value or click on up and down arrow fields to increment value	Provides entry of minutes. In Auto Disaster Trigger Mode - Defines the wait time (minutes) between when the input TS stream is lost (start of disaster) and when the output is replaced by the buffered TS stream data (Disaster Recovery Output started)
GAP Mode	Click Dropdown – select from listed	Determines the output when a gap exists and there is no TS stream from the buffer. Selections include: Default File: Outputs choose TS file No Output: Outputs no output stream Null Packets: Outputs TS stream with null packets Live: Routes the input TS stream directly to output
Source	Not selectable	Indicates “No Source” when no file has been selected. Indicates the selected file name when a file is selected.

7.3.5 Adding a Disaster Recovery – Receive Menu – ASI In/Out



The Add Disaster Recovery Receive menu provides selection and configuration of the ASI input used to receive the incoming stream. When the TSS 6220 contains the optional ASI input/output hardware, a Receive Type field is included in the Receive Menu. This field configures the Disaster Recovery input as ASI or MPEG-IP. In the Receive Type field click on the drop-down arrow and select ASI. This configures the TSS 6220 to receive and rout an ASI input TS stream for the created Disaster Recovery. It further modifies the Receive menu for ASI input configuration.

When the Receive Type is ASI, the Receive menu provides selection for enabling or disabling the input port. It further provides selection of one of the available ASI hardware ports. Set the Receive field to “Enabled” to start receiving and buffering the incoming stream. Click on the dropdown in the Receive field and select “Enabled” to make the selected ASI port active.

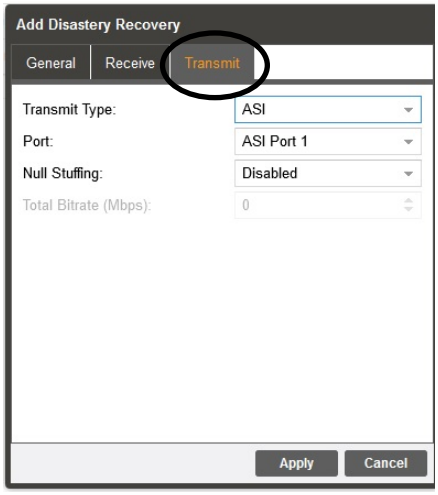
The optional ASI hardware contains 4 ASI ports. These ports can be configured by the TSS 6220 as an input or as an output port. The ASI ports are available for use by licensed features of the TSS 6220 including the Play, Record, Delay, and Disaster Recovery features. An ASI port cannot be shared by these features. Once a port is assigned or in use by a feature, the port becomes unavailable (greyed out) for the other features. Click the drop-down arrow in the Port field to view available input ports when adding a Disaster Recovery.

ASI Receive Menu Descriptions

Setting	Range/Selections	Description
Receive Type	ASI or MPEG-IP select, click field dropdown arrow and select	Provides selection of an input port for the Disaster Recover function. ASI: selects ASI option card MPEG-IP: select MPEG-IP port
Receive	Enable or Disabled select, click dropdown arrow and select	Enables or Disables the receive ASI input and selected port
Port	Selects ASI input Port 1, 2, 3, or 4, click dropdown and select from list of available ports	Selects from available ASI ports. Ports listed are available for use and not used by other TSS 6220 features (Play, Record, Delay). The ASI hardware contains 4 ASI ports. These ports can be either used as inputs or output ports.

7.3.6 Adding a Disaster Recovery – Transmit Menu – ASI In/Out

The Add Disaster Recovery menu provides configuration of the Disaster Recovery delay output. Click on the Transmit tab to configure the output criteria of the Disaster Recovery output. This section describes the selections in the Transmit configuration menu when an ASI type is used.



A Transmit Type field is included in the Transmit Menu. This field configures the Disaster Recovery output as ASI or MPEG-IP. In the Transmit Type field click on the drop-down arrow and select ASI. This configures the TSS 6220 to output the Disaster Recovery ts stream to a selected ASI port. When selected, it modifies the Transmit menu for ASI output configuration.

When the Transmit Type is ASI, the menu provides selection for the physical ASI port. The optional ASI hardware contains 4 ASI ports. These ports can be configured by the TSS 6220 as an input or as an output port. The ASI ports are available for use by licensed features of the TSS 6220 including the Play, Record, Delay, and Disaster Recovery features. An ASI port cannot be shared by these features. Once a port is assigned or in use by a feature, the port becomes unavailable (greyed out) for the other features. Click the drop-down arrow in the Port field to view available output ASI ports. When configuring an ASI out, select from the list of available ports.

The Null Stuffing field provides an option to add null stuffing bytes to the Disaster Recovery output to increase the output bitrate. Click on the field and enable the features. The Total Bitrate field below becomes available to enter a desired bit rate. Enter the desired bit rate, in Mbps, in the Total Bitrate field.

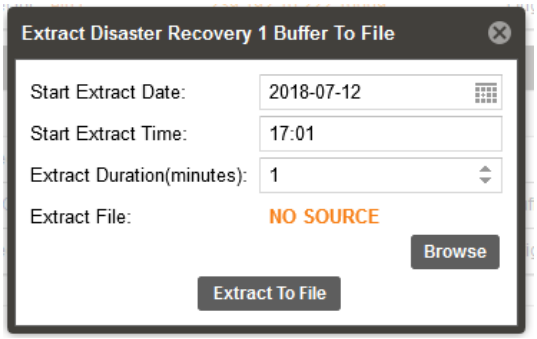
Setting	Range/Selections	Description
Transmit Type	ASI or MPEG-IP, click field dropdown arrow and select	Provides selection of an output port for the Disaster Recover function. ASI: selects ASI option card MPEG-IP: select MPEG-IP port
Port	Selects ASI input Port 1, 2, 3, or 4, click dropdown and select from list of available ports	Selects from available ASI ports when Transmit Type is ASI. ASI Ports listed are available for use and not in use by other features (Play, Record, Delay). The ASI hardware contains 4 ASI ports. These ports can be either used as inputs or output ports. Once in use they are unavailable and are
Null Stuffing	Select and choose either disabled (default) or enabled.	Disabled: The ASI output bitrate is determined automatically by the TSS 6220. The Total Bitrate (Mbps) field below in the menu is grayed out. Enabled: The TSS 6220 adds null stuffing to increase the playout bitrate of the ASI output stream. The user enters the desired playout bitrate in the Total Bitrate (Mbps) field in the menu.
Total bitrate	Available when Null Stuffing is enabled. Click on the field and enter a value in Mbps	Enter a value in Mbps of the desired ASI output bit rate. The TSS 6220 adds null bytes to the stream to increase the total bit rate to the entered value in Mbps.

7.4 Delay Buffer – Extract Buffer To File

The TSS 6220's Disaster Recovery feature has an active buffer receiving TS input data stream and outputting delayed ts stream data. The buffer contains an accumulation of TS captured data in a proprietary format that extends in duration slightly beyond the specified recovery/delay time(s). The incoming buffered TS data is time stamped according to its arrival time by the system clock. The TSS 6220 offers the ability to specify a time relative to the incoming time stamps and extract a duration of the ts captured data from the buffer to a memory file. The extracted transport stream data can be written to a file in a common ts or trp format.

In the Delay's buffer section of the web GUI exists an Extract Buffer to File icon . It is located near the middle of the page in the Buffer section/row. Click on this icon to access the Extract Buffer to File menu. This section describes the Extract Buffer to File menu and how to extract the time stamped buffer data.

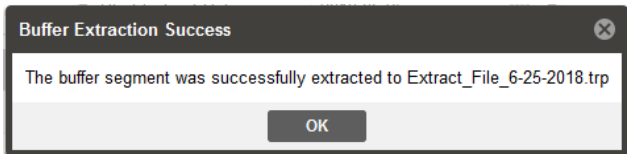
The Extract Disaster Recovery Buffer To File Menu includes selection of a Start Extract Date and Start Extract Time. This date & time selection permits a user to specify a day and time of the original arrival time of the TS input data to the buffer. The selections must be a time which matches time stamps of data currently in the buffer. Click on the Start Extract Date field and enter a date. Or, click on the calendar icon and select a day. Click in the Start Extract Time field and edit or enter the extract time.



The data extraction requires a defined duration which is determined by an entry in the Extract Duration (minutes) field. Click in the field and enter a value, in minutes. Or click on the up and/or down arrows at the right of the field. The duration must not exceed time stamps currently in the buffer. Reference the time indicated by the Original Time field in the Transmit section and the Delay duration setting to determine applicable start and duration entries for extraction compatibility.

Extracted data is written to a file selected by clicking on the Browse icon and selecting a current file. Or, click on Browse and enter a new file name in the bottom field of the Browse Files menu.

Finally, click on the Extract To File icon at the bottom center of the menu to start the data extraction. A progress bar will indicate the process is being implemented. If time and duration entries are not found in the time stamped buffer data, a message will be indicated. Upon conclusion of the extraction, a Buffer Extraction Success message appears. Click the OK field to acknowledge the extraction as completed.

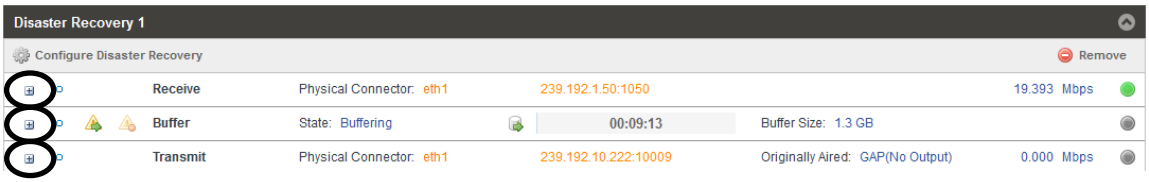


Extract Disaster Recovery Buffer To File descriptions:

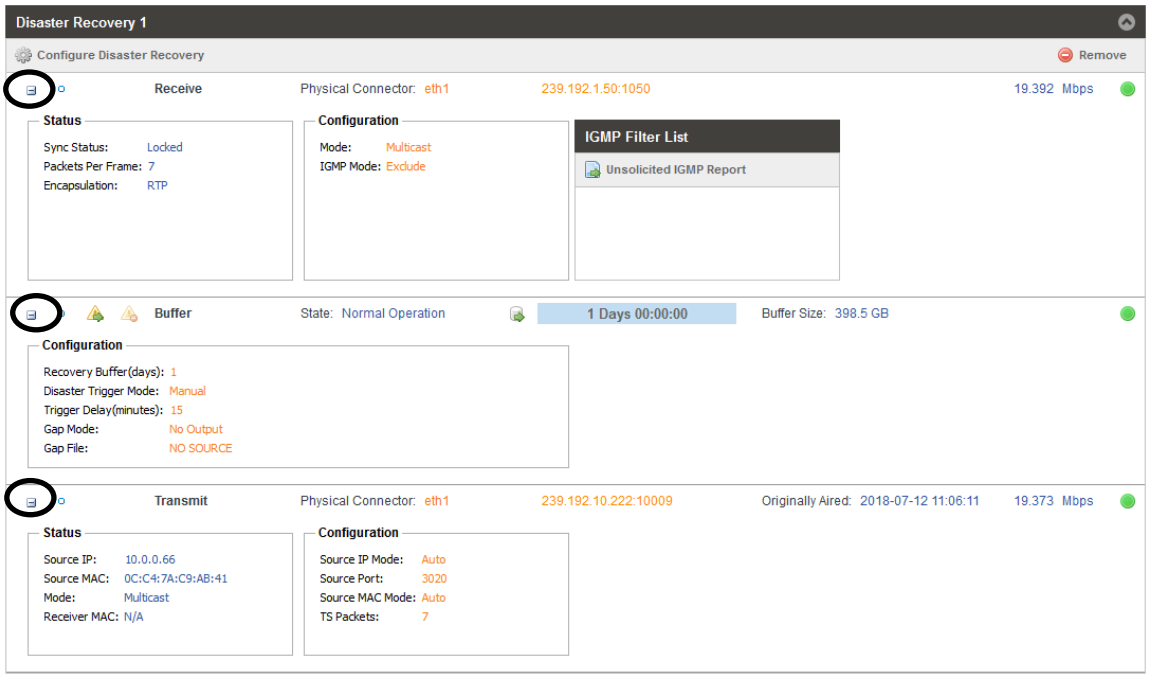
Settings	Range	Description
Start Extract Date	Click on calendar icon select date, or enter date infield YYYY,MM,DD	This setting (date) marks the day in which the buffer data is extracted from memory and written to a file. Note: The selected date is typically today's date unless the delay is > 24 Hrs. The day must be in current buffer data time stamps.
Start Extract Time	Click in field, Enter time	Entry references time stamp (hours, seconds) of data in the buffer in which the data extraction starts. Note: The time reference must be within current buffer.
Extract Duration (minutes)	Time	Field indicating the time duration of the data following the start extract time that is to be extracted and written to the file.
Extract File	Click Browse field to go to Browse File menu. Select an existing file to overwrite. Or enter a file name at the bottom of the menu.	This is file name that the buffer data is extracted to. If "No Source" is shown, you need to select an existing file to replace or create a new file.
Browse	Click on Browse field	Takes you to the Browse Files menu. Enter a file for selection or entry of a file name, once a file is named or selected the file name is indicated in the Extract File field
Extract to File	Click on Extract To File field to apply entries	Extracts the buffer data starting at the date/time referenced for the duration specified to the selected file name. Convert data to the file type specified.

7.5 Disaster Recovery – Added Panel Status & Configuration Menus

Each of the Disaster Recovery listings in the Panel includes a Receive, Buffer and Transmit row. The information in each of these rows is a summary of the configuration settings and status of the receiver, buffer and outputs associated with the Disaster Recovery. Full information regarding configuration and status is available by clicking on the ⊞ icon at the left of each row. The following sections in this manual show these added dropdown panels and describe the information provided.

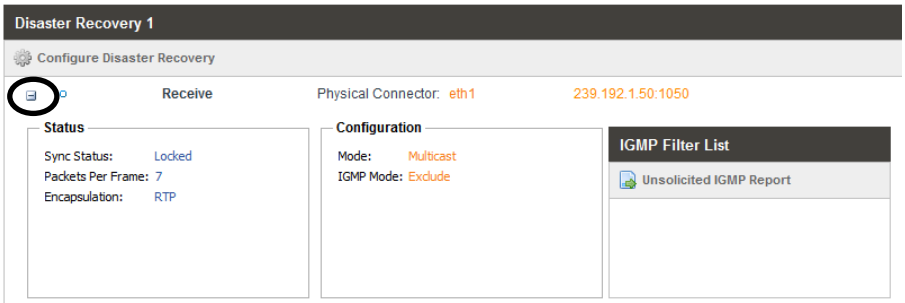


When each of the windows are expanded complete status and configuration information is shown for receive, buffer, and transmit sections. Click on the ⊟ icon at the left of each row to collapse the added status and configuration panel windows.



7.5.1 Disaster Recovery Receive – Status Information Menu

Each of the Disaster Recovery listings in the Panel includes in the Receive row an added Status and Configuration window. To access this window and add it to the panel, click on the icon at the left of the Receive row. The Status and Configuration boxes are added to the Play Control Panel providing status and configuration details. Click on the icon at the same location to hide the status and configuration information. Following is a description of the fields and information found in this Status and Configuration window.



The Sync Status, Packets Per Frame and Encapsulation fields provide information regarding the incoming receive transport stream. Should the Sync Status indicate “Unlocked” check the IP configuration settings and/or availability of the MPEG-IP stream.

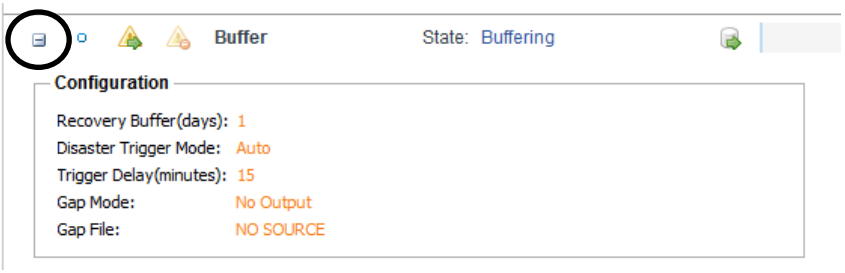
Status Listing	Description
Sync Status	Indicates the source TS stream is being received and TS sync is established. Locked: Indicates receiving and locked to TS stream Sync
Packets Per Frame:	Indicates the TS packets per TS frame in the incoming TS stream
Encapsulation:	Indicates receive IP stream encapsulation, RTP, UDP

The Configuration part of the window provides information regarding the settings for the Disaster Recovery input. The Configuration window also indicates the IGMP receive mode, unicast or multicast, along with IGMPv3 settings and filter addresses.

Configuration Listing	Description
Mode:	Indicates if input receive is configured as Unicast or Multicast
IGMP Mode:	Indicates Include or Exclude mode for IGMPv3 address entry
Add IGMP Filter	Indicates listed IGMP filter addresses to Exclude or Include for Source Specific IGMPv3

7.5.2 Disaster Recovery Buffer – Configuration Menu

In the Buffer section of each of Disaster Recovery Panel listings there is an added Configuration information window available. To access this window and add it to the panel, click on the icon at the left of the Buffer section in the panel. The Configuration window is added to the Delay panel. Click on the icon at the same location to hide the status and configuration information. Below is a description of the information you will find in this information window.

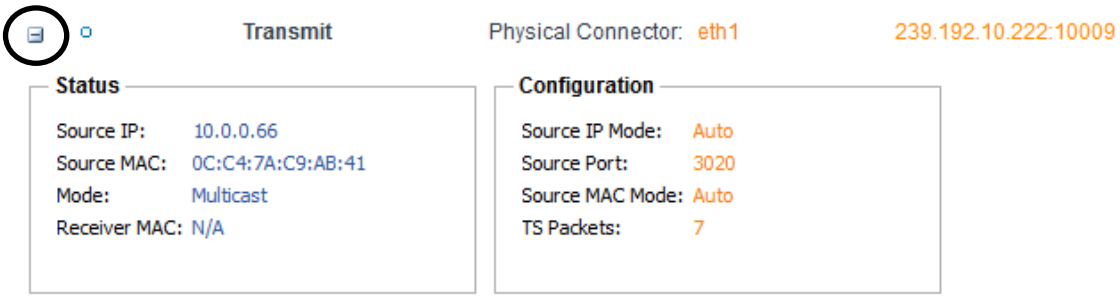


The Configuration window includes the selected Recovery Buffer delay. This is the buffer size (delay) in days. It window indicates the selected Disaster Trigger Mode, either Manual or Automatic. If set to Auto mode, the selected delay time before the Disaster Recovery Mode is triggered is shown. The Configuration window also includes information regarding the Gap Mode and Gap File. It further includes the Maximum Buffer Duration listed in minutes. Recall that the Gap Mode permits selection of what you want to be outputting when there is no TS stream available to output from the buffer. A transport stream file may be selected to output during a gap condition by setting the Gap Mode to Default File. A selected file for this is indicated in the Gap File field of the Configuration window.

Configuration Listing	Description
Recovery Buffer (days)	Length of the buffer recording, in days
Disaster Trigger Mode	Manual: Disaster Recovery mode or playout is set to be activated manually by a user clicking on the icon Automatic: Disaster Recovery mode or playout is set to be activated automatically when the input TS stream is lost for the time specified by the Trigger Delay (minutes) entry
Trigger Delay (minutes)	In Auto Disaster Trigger Mode - The delay in minutes after the incoming TS stream is lost before the Disaster Recovery mode or playout is activated
Gap Mode:	Indicates the Gap mode: Default File: Outputs selected TS file No Output: Outputs no output stream Null Packets: Outputs TS stream with null packets Live: Routes the input TS stream directly to the Delay output
Gap File:	Indicates the ts file in which to play out when the Gap Mode is set to Default File and there is no TS data in the Buffer to output.

7.5.3 Disaster Recovery Transmit – Status & Configuration Information Menu

An added Status and Configuration window is available in the Transmit section of each of the Disaster Recovery listings in the Panel. To access this window and add it to the panel for viewing, click on the ⊞ icon at the left of the Transmit row. The Status and Configuration boxes are added to the Panel providing status and configuration details. Click on the ⊟ icon at the same location to hide the status and configuration information. This section of the manual provides a description of the fields and information found in this Status and Configuration window.



The Status part of the window provides information regarding the Disaster Recovery output status. It includes an indication of its source IP address and its MAC address. It indicates if the output is in a unicast or multicast configuration status. It indicates a MAC address from a destination receiver if applicable.

Status Listing	Description
Source IP	Indicates the Source IP address
Source MAC	Indicates the Source MAC address,
Mode	Indicates Transmit IP mode, either Unicast or Multicast
Receiver MAC	Indicates a MAC address as indicated by a destination receiver

The Configuration part of the window provides information regarding the Disaster Recovery's transmit user settings selected in the TX Disaster Recovery configuration menu. See section 7.3.3 in this manual.

Configuration Listing	Description
Source IP Mode:	Auto or Manual
Source Port	Indicates the port value selected
Source MAC Mode	Indicates Automatic or Manual as selected in the TX Disaster Recovery setup menu.
TS Packets	Indicates the number of TS packets per IP packet as selected by the user in the TX Disaster Recovery setup menu

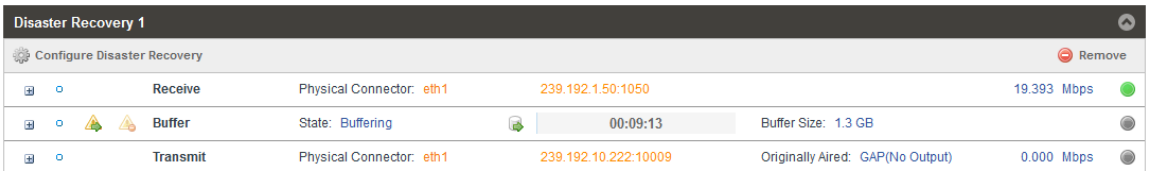
7.6 Understanding Disaster Recovery

Disaster Recovery provides a time delayed output in the event that a disaster occurs and the live input content is lost. The following provides more detail overviewing the Disaster Recovery feature to aid in understanding of how it works and how the panel indicators provide status information.

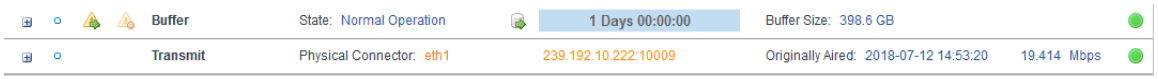
Disaster Recovery Explained: **Buffering**

The Disaster Recovery feature receives an input TS that is user specified. The input TS is routed to a record memory buffer. The size of the memory buffer is determined by a user entry of the buffer delay time in days. This is the Recovery Buffer (days) setting in the General menu. The recorded TS data is timed stamped with date/time information when recorded. After the buffer is initially filled with the specified day(s) of input TS stream data, it is maintained at this size. The buffer is continuously maintained in small segments. For example, after a new 5-minute segment is added to the buffer, the oldest 5-minute segment is deleted, keeping the buffer continuously updated and at the specified delay size (days).

In the process or adding a Disaster Recovery, after the Disaster Recovery is initially added and configured, the incoming TS stream begins to fill the record buffer, when this is occurring you see the time bar in the Buffer row filling and time incrementing toward the specified buffer time. While the buffer is filling there is no buffer data with the correct time stamps to correctly delay to the output. During this time the gap mode determines what if anything is output. The Transmit row shows the output criteria determined by the gap mode. For information on the gap mode see Section 7.3.1.



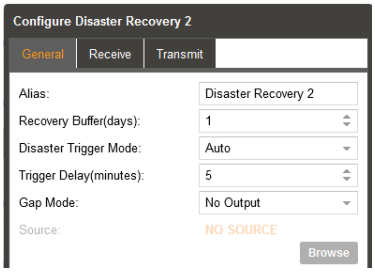
A full buffer is indicated by the blue gauge fully filled and the indicated time matching the buffer time delay setting. The Buffer size field indicates the memory size required determined by the incoming TS bit rate and buffer delay time.



Once the buffer is filled with input TS data per the specified day(s), the output becomes active by design norm. The output or transmit criteria is determined by entries in the Transmit setup menu. The output is continuously feed with the TS data that is delayed by the amount of time specified for the buffer, the Recovery Buffer (days) setting. The Disaster Recovery function serves as a delay TS signal path from a specified input to a specified output. This occurs normally while the Disaster Recovery feature is in a non-disaster mode constantly feeding a delayed output to downstream equipment. This condition is indicated by a “Normal Operation” indication in the state field of the Buffer.

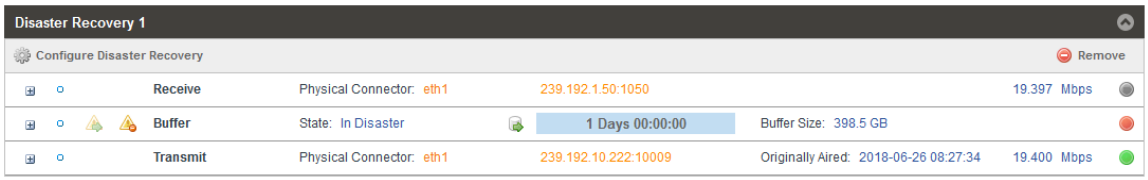
Disaster Recovery Explained: In Disaster Mode

Once the buffer is filled and the delayed output is active in the Normal Operation state, the Disaster Recovery feature is ready to replace lost programming in the event the input TS stream



is lost. The TSS 6220 provides input TS stream monitoring of the normal programming. In the event the incoming TS stream programming is lost, (Disaster!) the buffered data is ready and available to continue or maintain the output. This requires that the output be switched to a Disaster Recovery mode or output. This can be done manually, or be setup for the Disaster Recovery feature to do automatically after a specified time elapses in which the input remains lost. The manual or auto mode is set in the Disaster Trigger Mode field of the General setup menu. The delay time waiting for the input TS stream to recover prior to automatically switching to the Disaster Recovery output is set in the Trigger Delay (minutes) field of the General setup menu. See section 7.3.1 in this manual for more details.

When the output is switched to a Disaster Recovery mode, either manually or when the auto criteria (minutes) elapses, the output is in the Disaster Recovery mode. This mode is indicated by an “In Disaster” indication in the Buffer’s State field. In this state, the incoming buffer recording is suspended. The TS stream data in the buffer is routed to the output. The timestamps of the buffered stream data is shown in the “Originally Aired” Transmit field. The output bit rate and green status further indicate a normal disaster mode output.



You can also launch into the Disaster Recovery mode manually by clicking on the Start Disaster icon located in the Buffer row of the recovery panel. When a Disaster Recovery mode is active, the Transmit row status light at the right remains green and the output bitrate indicates the output bitrate. The Originally Aired field in the Transmit row of information for the Disaster Recovery indicates the timestamped date/time of the buffered TS stream data which is being output. You can reference this date/time to determine at what time the original programming was buffered. Should the Disaster Recovery reach the end of the buffered memory, it loops to the beginning of the buffer and continues to output

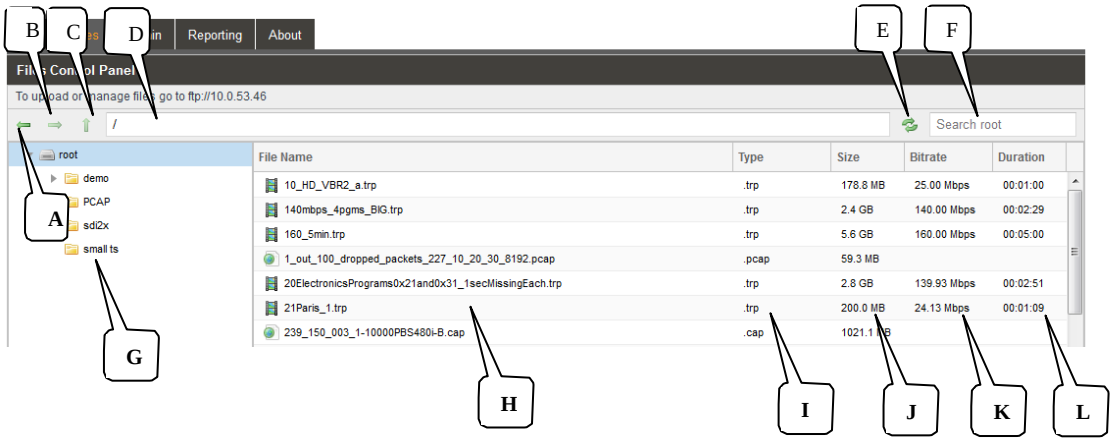
When the Disaster Recovery becomes active it stops recording the input to the buffer. This is indicated by the grey (inactive) status indicator light in the Receive information row. The buffer status indicator light turns red and the “State” field in the Buffer information row shows “In Disaster.”

To manually end the Disaster Recovery output, click on the Stop Disaster Recovery icon located next to the Start icon. This icon manually stops the Disaster Recovery mode playout from the buffer. You cannot end the Disaster Recovery automatically. Upon manually ending the Disaster Recovery mode, the buffer begins recording to recover the specified buffer time and programming delay. During this recovery time, the gap mode, as user defined, is active to the defined output.

8 File Viewing Panel

The File Viewing Panel provides a convenient reference to view the media drive folders and files. It provides navigation to all directory levels. It provides information of each file including the naming, type, size, bitrate and duration information. This section describes the navigation tools and information provided.

The File Viewing Panel does not provide file or folder management. All folder and file management functions are performed using FTP or SMB. FTP or SMB provides file loading to the media drive, folder creation and naming. It provides file management including renaming, moving, and deletion. The next sections in this chapter describe how to access and use FTP and SMB.



File Viewing Panel Descriptions

The File Viewing Panel is structured much like that of a PC based file viewing application. It differs in the information provided regarding the file information providing information important to managing the TSS 6220's output. The following chart provides details of the fields and features of this panel.

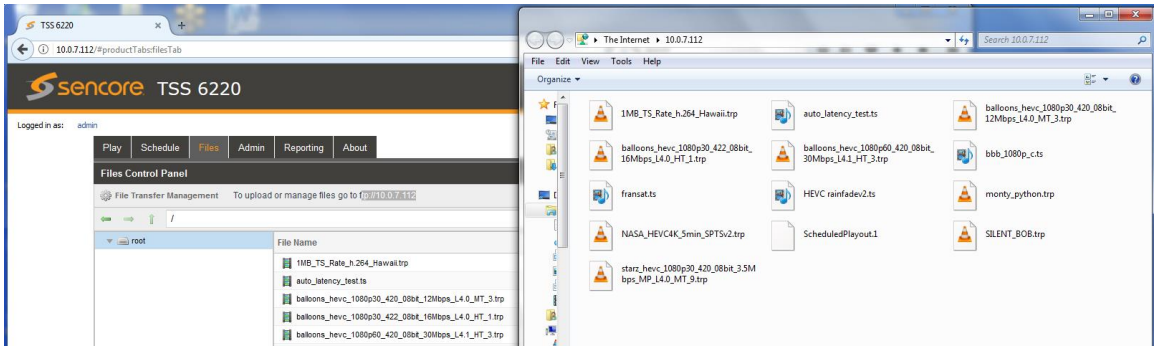
To view folders or files, click on the folder in the root directory. Or, you may click on the navigational icons to move back or up in the folders directory.

Item or Field Name	Button/Action	Description
A. Back	Click back icon	Moves back one level in the directory
B. Forward	Click forward icon	Moves forward in the directory level. When grayed out – the action is not available file
C. Up	Click Up Icon	Moves up in the directory. When grayed out the action is not available
D. Directory	Not selectable	Shows the selected file/folder hierarchy with left to right order
E. Refresh Screen	Click on icon	Refreshes the page and contents
F. Search Folder/File hierarchy	Enter text in the Search root field	Click on field – enter folder or file names to search the directory

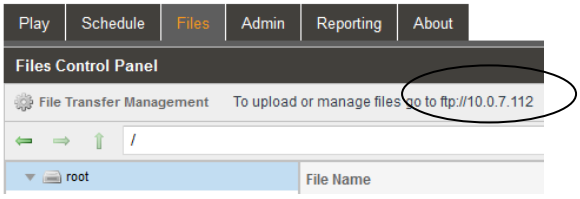
G.	**Folder/File Directory**	Not a Selectable field root	This field shows the selected file/folder hierarchy
H.	**File Name**	Not a Selectable field	Indicates a list of all the files by name of in the selected folder
I.	**File Type**	Not a selectable field	Indicates the type of file by suffix for each of the files
J.	**File Size**	Not a selectable field	Indicates the memory size of the named file
K.	**File Bitrate**	Not a selectable field	Indicates the playout bitrate of the file when added to the playlist and output from the TSS 6220
L.	**File Duration**	Not a selectable field	Indicates total duration of the play file

8.1 FTP - SMB Loading Play Files to the TSS 6220

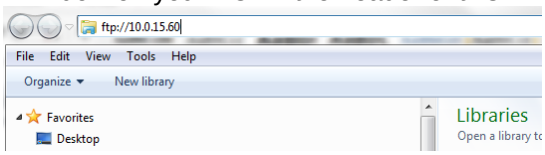
The TSS 6220 requires stream files and PCAP files to play out as scheduled events. The files must be loaded onto the internal storage drives of the unit. This is done using FTP (File Transfer Protocol), a common protocol used for the transfer of computer files between a client and server on a network. Or, you may use Samba (SMB), a network file sharing protocol implemented in windows.

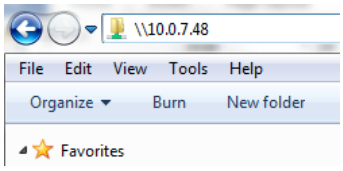


The FTP server address is located in the File Viewing Panel (Files tab) in the TSS 6220's web GUI. Look near the top of the page under the Files Control Panel header. (See circle in illustration) Click at the end of the field and drag the mouse to highlight the ftp address. Copy the address – (Keyboard Ctrl-C key sequence). When using SMB (Samba), copy only the IP address.



Open a Windows Explorer or File Explorer application window on your PC. In the header of this application – paste in the ftp address listed in the TSS 6220's File menu on the second line below the Files Control Panel heading. Paste the ftp address – (Ctrl V). For SMB protocol, enter backslash key entries and paste only the IP address listed into the Control Panel address line of Windows Explorer. See example below.

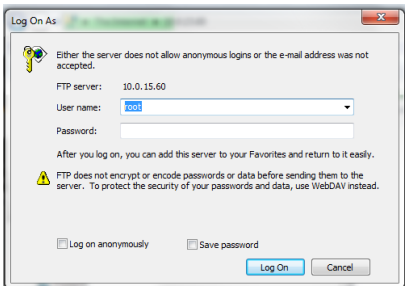




Example ftp shown: ftp://10.0.15.60.
Example SMB (Samba) shown: \\10.0.7.48

Press the Enter key on your keyboard.

Upon connection to the ftp server you will be prompted for a username and password: The default username and password is shown below. Please see the next section in this chapter on how to create a Username and Password to provide protection against unwanted file transfers or deletions.



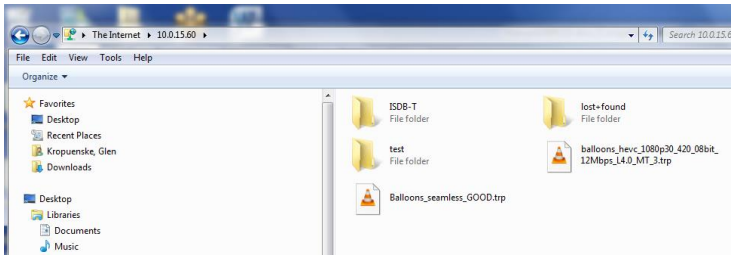
Default Settings:

User Name: root
Password:
Note: The Password field is left blank or no entry as shown.

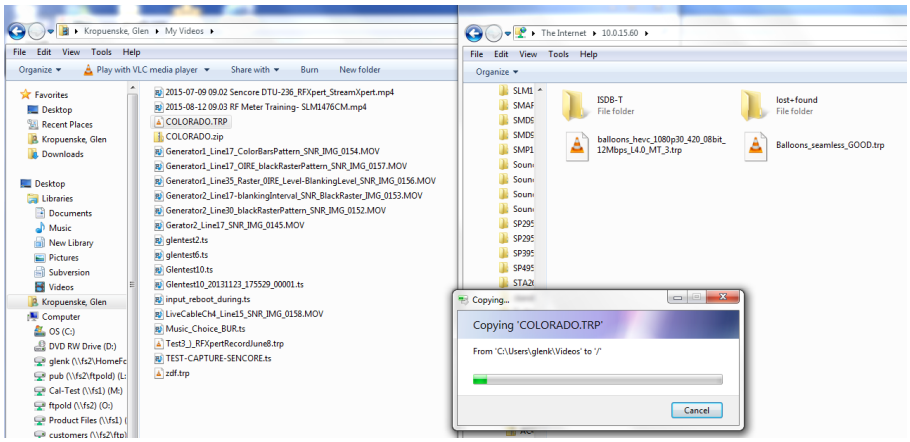
The User Name and Password can be changed and managed to provide protection against unwanted file changes by unauthorized users. Please see the next section of this manual.

Once you have entered the User name and Password, click on the Log On field to access the server.

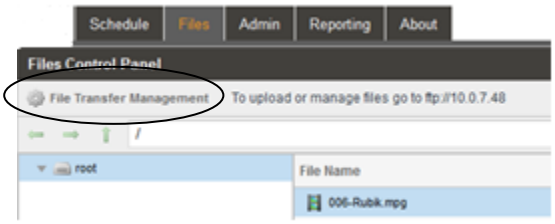
Upon connection to the server you can view the current folders and play files in the TSS 6220.



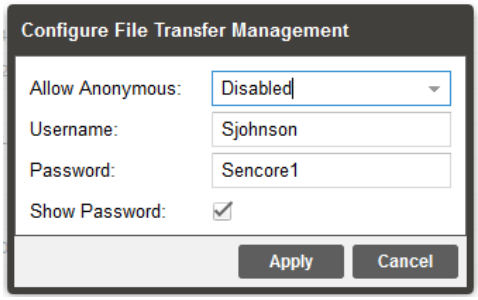
To transfer files to the server, you may use common Window's-based file copy and paste techniques or drag and drop techniques. For example, open a 2nd version of Windows Explorer application. (Right mouse click on the Windows Explorer icon at the bottom system tray – click on Windows Explorer) You now have both the server window and the Windows Explorer application running. Position both the server window and the Windows Explorer windows beside each other on your PC screen. See example below. Click on a file or folder in the Windows Explorer window and drag it into the right side of the server window. The folder or file is transferred.



8.2 File Transfer Management - User Name and Password



The ability to access the internal media files of the TSS 6220 can be limited to authorized users by setting up a User name and associated password. Click on the File Transfer Management cog wheel located at the left of the page under the Files Control Panel header.



The Configure File Transfer Management menu appears providing entry of enabling/disabling the Username/Password protection. Enabling the Allow Anonymous setting provides anonymous user entry and access. Disabling the Allow Anonymous setting enables the Username/Password user requirement.

Username/Password: These fields provide entry for a Username and associated Password. Click in the field and enter up to 32 characters. Click the Apply field to enter changes. Click on the Show Password checkbox to check it if you wish to made the characters of the entered Password visible.

Field	Action/Range	Description
Allow Anonymous	Click dropdown arrow, select Enabled or Disabled	Enabled: Username/Password entry not required – allows anonymous user entry. Disabled: Username/Password entry required
Username		Select which network protocol used to transmit to the Syslog server
Password	Click in the box, enter up to 32 characters	IP of the Syslog server. 0.0.0.0 and 255.255.255.255 are not permitted

8.3 Managing Play Files & Folders

All file and folder management in the TSS 6220's media drive is done using the FTP or server. For details on getting connected and viewing the files and folders in FTP see the previous section of this manual, Section 8.1. Once connected you can use conventional Window's-based file management techniques. The management tasks are summarized below:

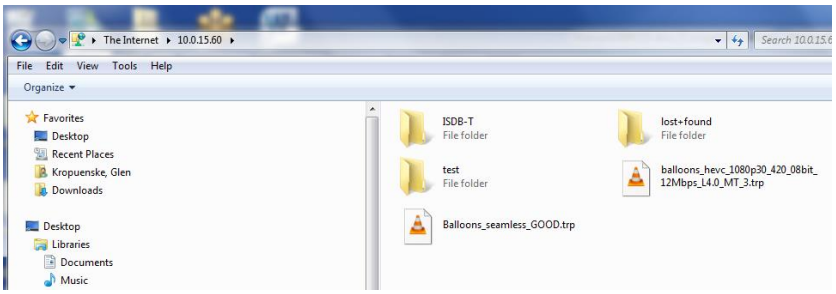
In FTP you can do the following file/folder management tasks:

Delete a file: Right click on the file you want to delete. Select Delete. Click Yes to confirm.

Rename a file: Right click on the file you want to rename. Select Rename. Click in the name field and edit or rename as desired. Click outside the field to apply

Create a new folder: Click on the File tab at the top. Click on "New". Click on the Folder. Click in naming field and name as desired

Delete a folder: Right click on the folder you wish to delete. Select Delete. Click Yes to confirm.



Rename a folder: Right click on the folder you want to rename. Select Rename. Click in the naming field and edit or enter the desired name. Click outside the field to apply.

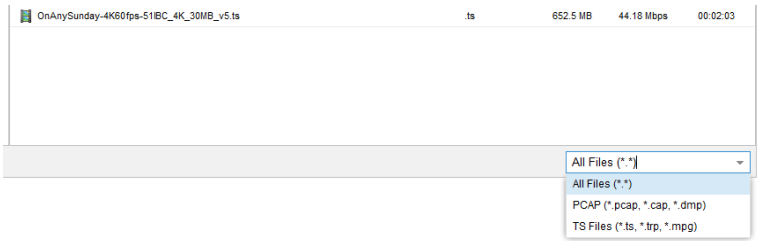
Move a folder: Select the folder. Click on the Edit tab at the top. Click on Move to folder selection. Browse and select the new folder location. Click Move.

8.4 File Viewing Panel – Filter by Type

The files listed in the File Viewing Panel may be filtered by type so you can see only the TS files or the PCAP files. The filter selection is located at the bottom right of the File Viewing Panel. Click on the dropdown to see the filter categories.

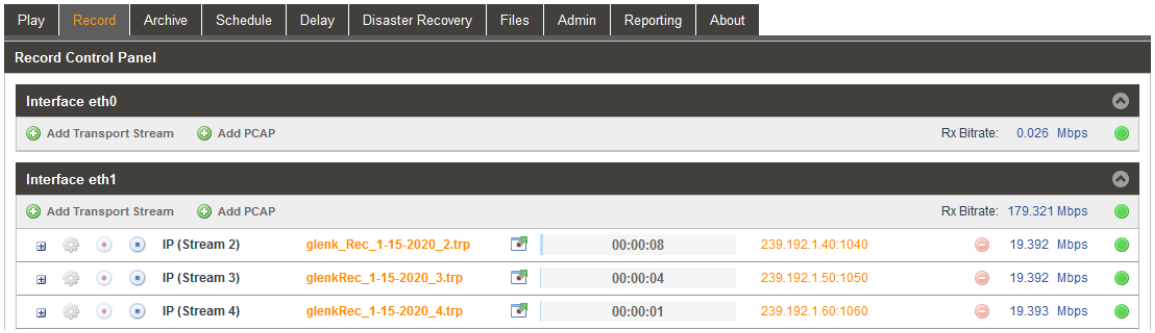
By default, the "All Files" type is selected. This shows all file types in the panel. You may select the "PCAP" or "TS Files" selections to filter and view only the chosen file types. In a library that contains many files it can speed up finding a file of interest.

To search for a known file name, use the file search utility that is located at the top right side of the panel. Click on the folder or root index listing at the left, click in the Search root field and enter the file name.



9 Record Panel

The Record Panel provides a recording feature to record an incoming transport stream or PCAP. The record feature is a licensed feature of the TSS 6220. When licensed, the Record tab is shown and available to select. To access the Record Panel, click on the Record tab in the header. This chapter provides descriptions and overviews of the Record feature.

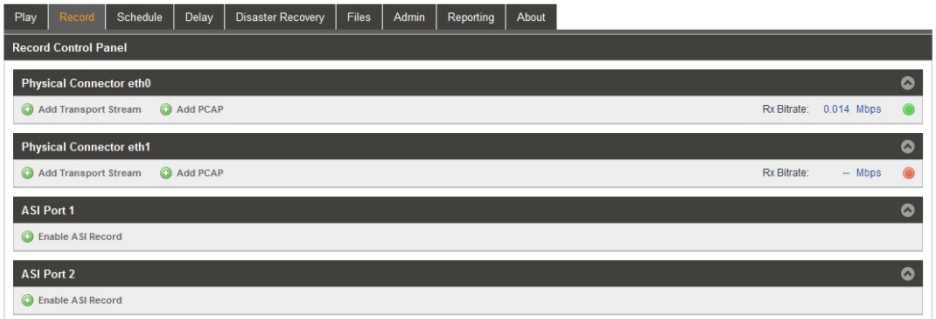


The record feature provides manual recording in which a user may control the start and ending of the record segment. A user may also perform a scheduled record event in which the duration of the timed recording may be specified along with the start date and time.

The TSS 6220 can record a transport stream via an MPEG-IP unicast or multicast as available from the specified Ethernet port. It also can perform a PCAP capture from the specified Ethernet port. Filters are available to specify PCAP IP address and/or port. Multiple recording events can be created and scheduled for each available Ethernet port. Each record license includes the ability to display and configure 10 record events.

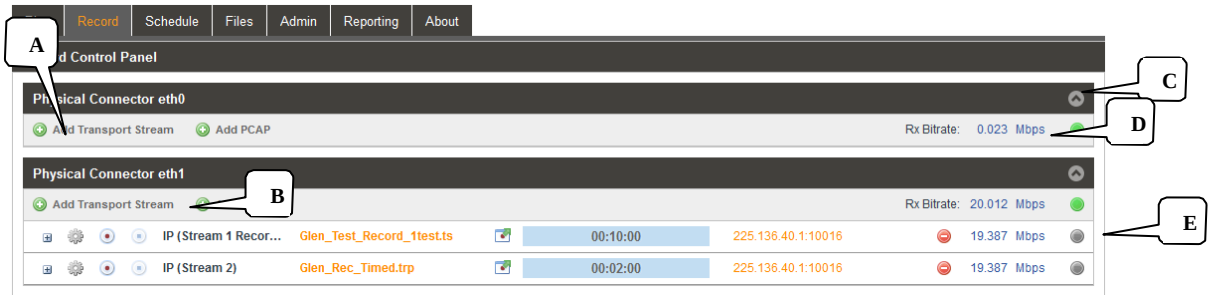
To perform a recording requires that you first create and configure a recording event. A recording event can be specified as an immediate event or a scheduled (Date/Time) event. Each created record event is shown as a listing or row of information in the Record Panel. Each listing, or row of information, provides details of the event and user control of the event.

The TSS 6220 offers a hardware configuration that accommodates the addition of an ASI input/output card. With this optional hardware configuration, the Record feature may be used to record a TS stream input via an ASI port. When so equipped, the Record Panel includes sections which list the available ASI input ports. You can configure and record.



9.1 Record Panel Overview

The Record Panel includes a section for each available Ethernet port. The sections are identified by headers indicating the physical connector port. For example, the Ethernet port 0 is shown as “Interface eth0.” If you have added the optional Ethernet ports to the TSS 6220, then two additional sections are included for physical connector Interface eth2 and eth3. The shown ports are available for input transport stream or PCAP recording.

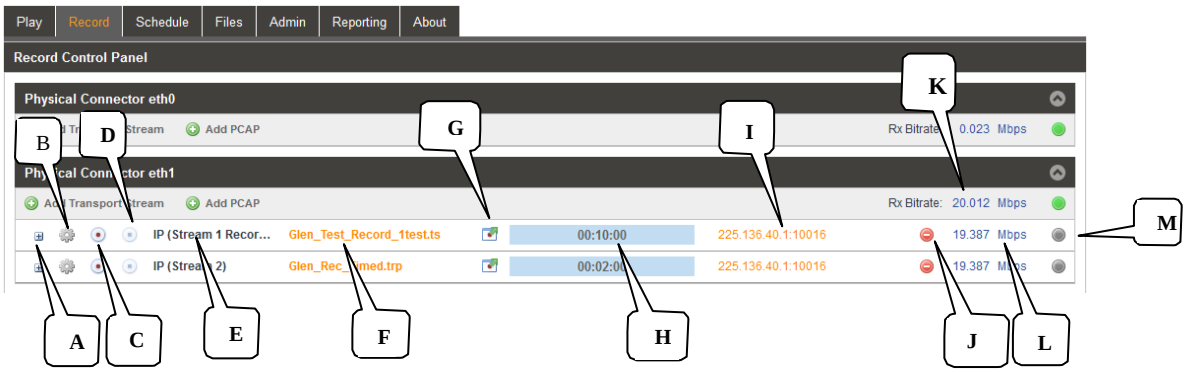


Each Ethernet port section includes some common control fields. The following is a general overview of items in the Record Control Panel and description of some common fields. The remainder of this chapter describes definition of the fields and configuration menus.

Item or Field	Button/Action	Description
A. Add Record event to eth0 port	Add Click on this icon to add a recording event to eth 0	Provides menus to select record file, define input criteria, define record criteria and schedule,
B. Add Record event to eth1 port	Add Click this icon to add a recording event to eth 1	Provides a menu to select record file, define input criteria, define record criteria and schedule.
C. Show/Hide port record event info	Selectable, click on the icon	Hides or shows all the record event listings, click to hide or click to show all listed record events
D. TX Bitrate	Not a selectable field	Shows the receive input bitrate of stream or PCAP to the Ethernet port
E. A record event	See next section	Row showing a created record event and information regarding the event’s current status and input to Ethernet 1 port (eth1)

9.2 Record – Information Fields

The Record Panel creates and shows all the record events and scheduled record events. Each event has a row of information and related control functions. There are common data fields for each listed record event forming columns of information in the panel. This section provides a brief definition of the information and/or features provided in each column.

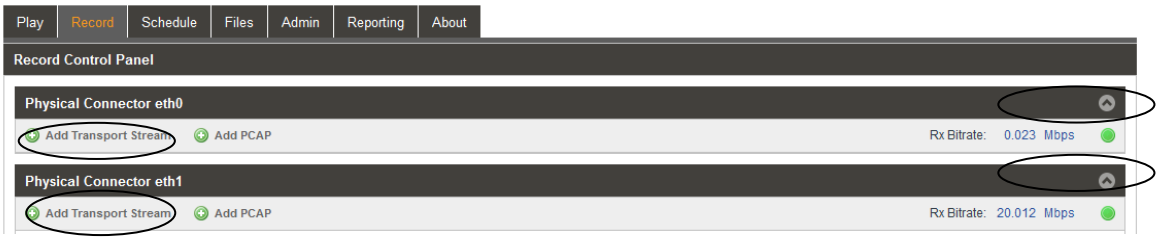


Item or Field Name	Button/Action	Description
A. Status & Configuration	Click on this icon	Provides a window showing IP record stream/PCAP status and configuration information
B. Configuration Menu Select	Click on this icon	Provides a menu with configuration settings to define the record IP/PCAP stream and IP address
C. Output Control	Record - click on icon to start recording	Indicates IP/PCAP stream as record active or paused. Click on icon to record. When paused, the current location of the record event of stream or PCAP is maintained.
D. Stop Control	Click on icon to stop IP/PCAP recording	Stops a recording or timed recording event. Click on record icon to restart – restarts at file recording point.
E. Stream name or alias	Not selectable, No action	Shows a default output IP/PCAP stream name. See section 9.3 for naming streams. (Alias field)
F. TS/PCAP File name	Double click to browse to name/select record file	Indicates the current selected/named record file.
G. Stream configuration	Click on icon to open configuration menu	Provides convenient overview of stream input and record status, some critical settings, and provides some control features. See section 9.6 for details.

H.	**Record Status**	Not selectable	Indicates a stream recording is active. Indicates record position/time within the start-to-end duration time span. Visual blue highlight indicates stream progress.
I.	**IP Address/Port ASI Sync status**	Not selectable	Indicates the IP receive address and port. Or, ASI input sync status
J.	**Delete icon**	Click to delete stream or PCAP	Removes a IP/PCAP stream record event from the record listings
K.	**Total Port Bitrate Indication**	Not selectable, view only	Indicates Ethernet port receive bitrate of the addition of all recording TS streams and PCAP files. Indicates ASI input bit rate.
L.	**Bitrate Indication**	Not selectable, view only	Indicates bitrate of the individual record stream/PCAP to the Ethernet port
M.	**Status Indicator**	Not selectable, view only	Indicates status of record event. Gray: Inactive – stopped or paused Green: Good recording active condition Red: Fault record condition

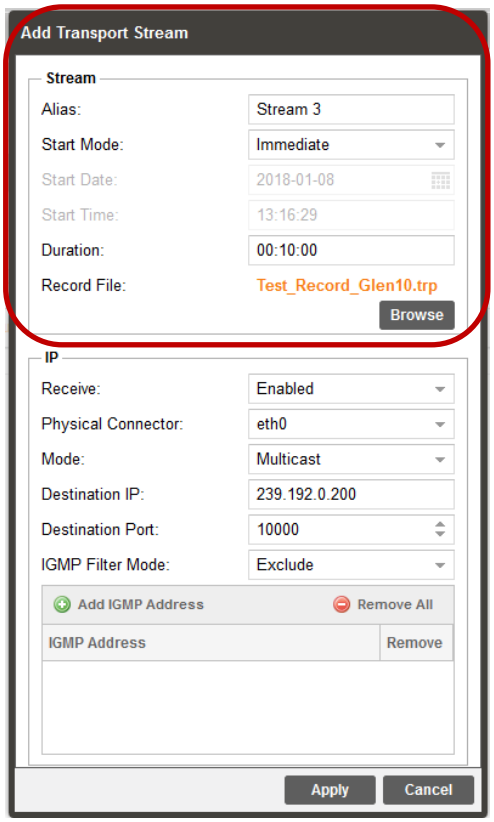
9.3 Recording Input TS Stream Configuration - IP

To record a new TS stream requires that you select or name a record file and configure the input receive MPEG-IP parameters. To create a record event click on the Add Transport Stream icon. Note that this selection is available for each of the Physical connector Ethernet ports of your TSS 6220. Select the Add Transport Stream icon in the section corresponding to the Ethernet port in which you want to create a record event.



The Record Panel is simplified for viewing with a Hide/Show feature for each Physical Connector eth section. To show all the record events listed for use with a certain Ethernet port, click on the Show/Hide icon .. To hide all the record events listed for a certain Ethernet port, click on the Show/Hide icon ..

9.3.1 Record Add Transport Stream IP Configuration



To define a recording event, start by clicking on the Add Transport Stream icon. The Add Transport Stream menu opens. The Add Transport Stream record menu provides configuration of the record file, receive MPEG-IP configuration, and how the recording event will start and end. This menu contains 2 sections for configuring the record stream event, the top “Stream” section and the lower “IP” section. This part of the manual covers the settings within the top “Stream” section of the menu. The next part of this manual (section 9.3.2) covers the settings within the IP section of this menu.

The Stream section of the Add Transport Stream menu provides entry of an alias name to provide a convenient reference. Click on the Alias field and enter an alias name. This is not required as the application automatically assigns a name as an incrementing stream number.

The Start Mode field defines how the recording event starts. The event can be configured to start immediately when the record icon is selected in the main menu. If a manual recording start is desired, click in the Start Mode field and select “Immediate.” This setting is the default setting.

A timed recording event may be configured by clicking the dropdown in the Start Mode field and selecting Date/Time. When the Date/Time mode is selected, the menu’s Start Date and Start Time entry fields become available. Select or enter the start date and the start time in these fields. It is important to note that a timed recording event once defined as an event by clicking the Apply field must be launched or be activated by clicking on the record icon in the main menu. Once the record icon is clicked, the recording event becomes active counting down to the date/time specified in the Start Date and Start time field and recording as specified by the time and duration entries.

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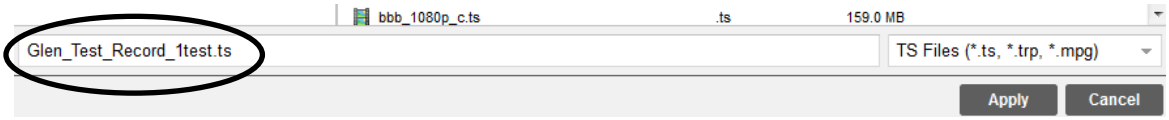
The Duration field provides entry of the length of the recording. In the duration field enter the hours, minutes, and seconds of the record duration. Keep in mind that the record duration directly impacts the memory of the system using available storage memory space. The memory used is dependent on the incoming stream bit rate and duration of the recording.

The Output field, and associated Browser button provide definition of the record file name in memory in which to route the incoming transport stream. You can create a new file or select an existing file. To create a new file, click the Browse box Browse . Enter the new file name in the directory or file type field. Click the Apply icon Apply. To select an existing file, click on the Browse icon and select/click the existing file to re-record, replacing the existing record file with the new record event. Click on the Apply icon Apply to select the file.

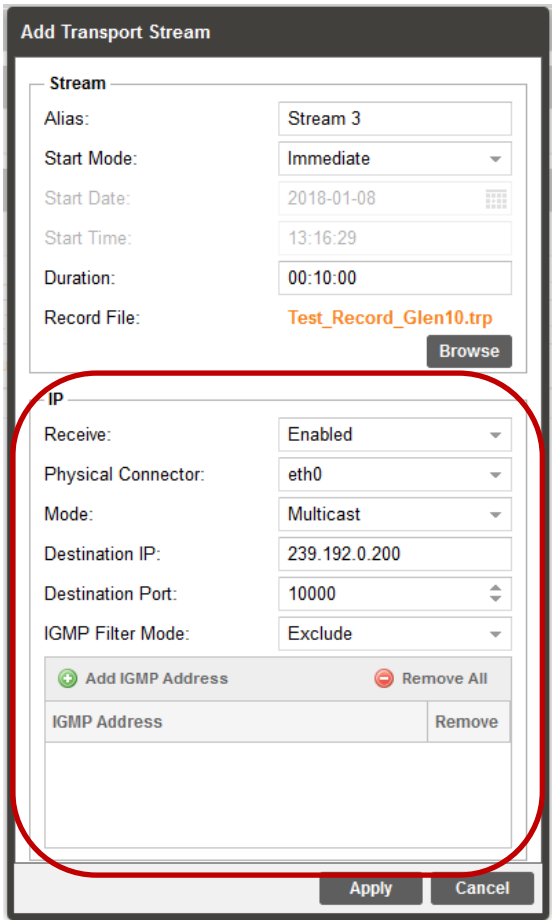


The following chart provides a summary of the fields within the Stream section of the Add Transport Stream menu.

Add Transport Stream – Stream Section Settings Overview

Setting	Range	Description
Stream – Alias	Value and or Letter Entry	Provides entry to name or assign alias to identify a record event or stream. If no name is entered, the TSS 6220 assigns an incrementing stream number
Stream – Start Mode	Immediate Date/Time	Selects recording event to start immediately upon manually clicking on the record icon in the main menu. Selecting Date/Time configures for a timed record event in which the record start date and time is defined and the Record event activated by clicking on the record/start icon
Start Date	Enter date in date fields, or click on calendar and click on month/day to select	Selects a day – month/day in which the desired recording event is to be scheduled.
Start Time	Enter time in hours, minutes, seconds	Specifies a time within the day selected in which the recording event will start
Output (Record File)	Creates a new record file name in which the input TS stream is recorded, or, selects an existing recording file to be re-recorded	Creates a new record file name in which the input TS stream is recorded, or, selects an existing recording file to be re-recorded
Browse	Click on Browse field to access stream files in library.	Provides navigation to browse to available stream and PCAP files for selection. Provides name entry field in which to specify a new file name in which to direct the recording event to a memory file

9.3.2 Record Add Transport Stream - IP Configuration



The Add Transport Stream record configuration menu includes an IP section. The IP section provides configuration of the IP input used to receive the MPEG-IP unicast or multicast and route the TS stream to the record file. This section provides descriptions of the settings in this IP section of the menu.

To configure the IP input set the Receive field to "Enabled." Select the Physical Connector or Ethernet port on the TSS 6220 to use as the receive port. Eth 0 and Eth 1 are available. If the added ethernet port option is added to your TSS 6220 then eth 2 and eth 3 will be available in the dropdown.

Select the Mode of the receiver to be Unicast or Multicast. For unicast, specify the destination port in the Destination IP field. For Multicast, specify the Destination IP address, and Destination IP Port.

The IP configuration section further includes settings to provide IGMPv3 features. An IGMP filter may be implemented for use to specify the inclusion or exclusion of source addresses. The TSS 6220 is IGMPv3 compliant. IGMPv3 allows each steam to be seen by the network as relating to a unique source device with a unique IP address, port, and/or MAC address. IGMPv2 is used to join/leave multicast streams by default if no IGMP Filter addresses are entered in the Add IGMP Address section of the menu. If IGMP Filter Mode addresses are specified then IGMPv3 is automatically used.

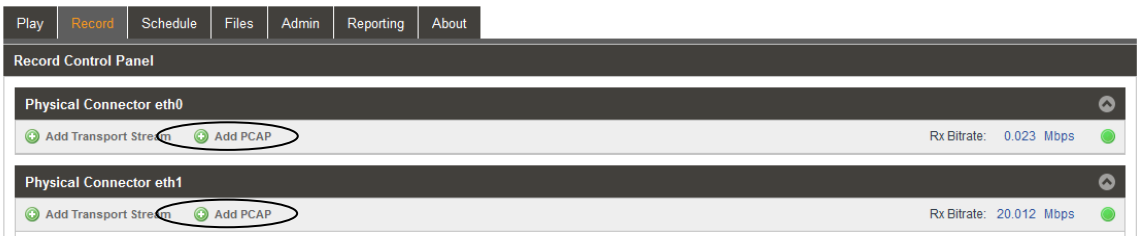
The chart below summarizes the selections within the IP section of the Add Transport Stream record menu.

Setting	Range	Description
IP Receive	Enable Disabled	This setting allows the user to enable or disable these input stream settings.
IP – Physical Connector	Selects eth0 or eth1, the standard Ethernet ports, eth2 and eth3 available if TSS 6220 has added optional ports	Entry selects which of the available Ethernet ports on the TSS 6220 that the stream record input is assigned
IP Mode	Multicast Unicast	*Multicast* setting allows the unit to receive multicast streams. Multicast streams originate from the IP range 224.0.0.0 – 239.255.255.255. *Unicast* allows the unit to receive unicast

		streams. Unicast streams originate directly from a source device.
Destination IP	Enter Value: 224.0.0.0 – 239.255.255.255	This address is the IP address the source device is sending to for a multi-cast. A unicast would use an IP address less than 224.0.0.0. This setting is only available when receiving a multicast stream. This address is the IP address the source device is sending to.
Destination Port	Enter Value: 0 – 65535	This is the UDP port the source device is sending to. This is the only setting required to receive a unicast stream.
IGMP Filter Mode	Settings: Select Include or Exclude	Used on networks supporting IGMPv3. If this setting is set to *Exclude* any streams originating from the user defined IP addresses will be rejected. If this setting is set to *Include* any streams originating from the user defined IP addresses will be received.
Add IGMP Address	Click in field - Enter IP address to include or exclude as per filter mode: Values: 0.0.0.0 – 255.255.255.255	Enter and list IP address of IGMPv3 to include or exclude as a filter setting.
Remove All	Click on icon	Removes or clears all the listed IGMPv3 address

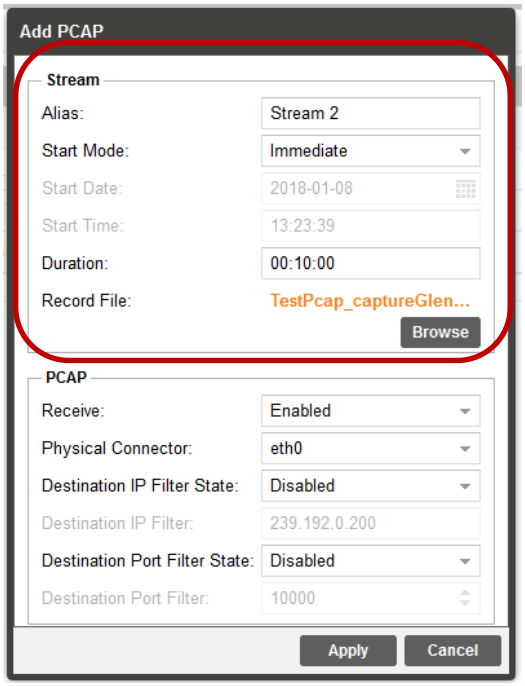
9.4 Recording Input PCAP - Configuration

To create a new PCAP record event requires that you select a PCAP file and define its output parameters. To create or add a PCAP record event, click on the Add PCAP icon. Note that this selection is available for each of the Physical Connector Ethernet ports of your TSS 6220. Select the Add PCAP icon in the section corresponding to the Ethernet port in which you want to use for the IP input. This section describes how to select, add and configure a PCAP record event for recording from one of the available Ethernet ports.



The Record Panel is simplified for viewing with a Hide/Show feature for each Physical Connector eth section. To show all the record events listed for use with a certain Ethernet port, click on the Show/Hide icon .. To hide all the record events listed for a certain Ethernet port, click on the Show/Hide icon ..

9.4.1 Record Add PCAP - Stream Configuration



To define a recording event, start by clicking on the Add PCAP icon. The Add PCAP menu opens. This record menu provides configuration of the record file, receive MPEG-IP configuration, and how the recording event will start and end. This menu contains 2 sections for configuring the record event, the top “Stream” section and the lower “PCAP” section. This part of the manual covers the settings within the Stream section of the menu. The next part of this manual covers the settings within the PCAP section of this menu.

The Stream section of the Add PCAP menu provides entry of an alias name to provide a convenient reference. Click on the Alias field and enter an alias name. This is not required as the application automatically assigns a name as an incrementing stream number.

The Start Mode field defines how the recording event starts. The event can be configured to start immediately when the record icon is selected in the main menu. If a manual recording start is desired, click in the Start Mode field and select “Immediate.” This setting is the default setting.

A timed recording event may be configured by clicking the dropdown in the Start Mode field and selecting Date/Time. When the Date/Time mode is selected, the menu’s Start Date and Start

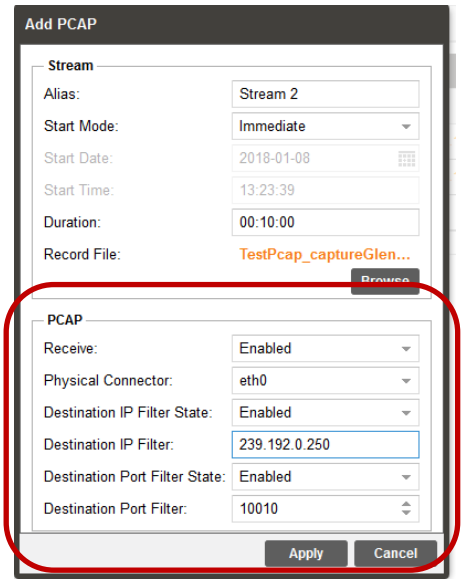
Time entry fields become available. Select or enter the start date and the start time in these fields. It is important to note that a timed recording event once defined as an event by clicking the Apply field must be launched by clicking on the record icon in the main menu. Once the record icon is clicked, the recording event becomes active. When active, you see it counting down to the date/time specified in the Start Date and Start time fields and recording indications when the specified date/time is reached.
.
The Duration field provides entry of the length of the recording. In the duration field enter the hours, minutes, and seconds of the record duration. Keep in mind that the record duration directly impacts the memory of the system using available storage memory space. The memory used is dependent on the incoming PCAP data bit rate and duration of the recording.

The Output field, and associated Browser button provide definition of the record file name in memory in which to route the incoming PCAP recording. You can create a new file or select an existing PCAP file. To create a new file, click the Browse box Browse . Enter the new file name in the directory or file type field. Click the Apply icon Apply. To select an existing file, click on the Browse icon and select/click the existing file to re-record, replacing the existing record file with the new record event. Click on the Apply icon Apply to select the file.

Add PCAP – Stream Section Settings Overview

Setting	Range	Description
Stream - Alias	Value and or Letter Entry	Provides entry to name or assign alias to identify a record event or stream. If no name is entered, the TSS 6220 assigns an incrementing stream number
Stream – Start Mode	Immediate Date/Time	Selects recording event to start immediately upon manually clicking on the record icon in the main menu. Selecting Date/Time configures for a timed record event in which the record start date and time is defined and the Record event activated by clicking on the record/start icon
Start Date	Enter date in date fields, or click on calendar and click on month/day to select	Selects a day – month/day in which the desired recording event is to be scheduled.
Start Time	Enter time in hours, minutes, seconds	Specifies a time within the day selected in which the recording event will start
Duration	Selectable, enter the desired duration of the record event	Specifies and/or Indicates the duration of the record event
Output (Record File)	Creates a new record file name in which the input TS stream is recorded, or, selects an existing recording file to be re-recorded	Creates a new record file name in which the input TS stream is recorded, or, selects an existing recording file to be re-recorded
Browse	Click on Browse field to access stream files in library.	Provides navigation to browse to available stream and PCAP files for selection. Provides name entry field in which to specify a new file name in which to direct the recording event to a memory file

9.4.2 Record Add PCAP - PCAP Configuration



The Add PCAP record configuration menu includes an PCAP section. This section provides configuration of the IP PCAP input parameters used to receive and filter the MPEG-IP input and route the PCAP capture date to the specified record file. This section provides descriptions of the settings in this PCAP section of the Add PCAP menu

To configure the IP input set the Receive field to "Enabled." Select the Physical Connector or Ethernet port on the TSS 6220 to use as the receive port. Eth 0 and Eth 1 are available. If the added ethernet port option is added to your TSS 6220 then eth 2 and eth 3 will be available in the dropdown.

The PCAP record input can be filtered by enabling an incoming Destination IP address and/or a Destination IP port. Set the Destination IP Filter State field and/or the Destination Port Filter State fields to Enabled. Enter the filter IP address and/or the Destination Port Filter value in their respective entry fields. Click on the Apply field to create the record PCAP event with the specified filter values.

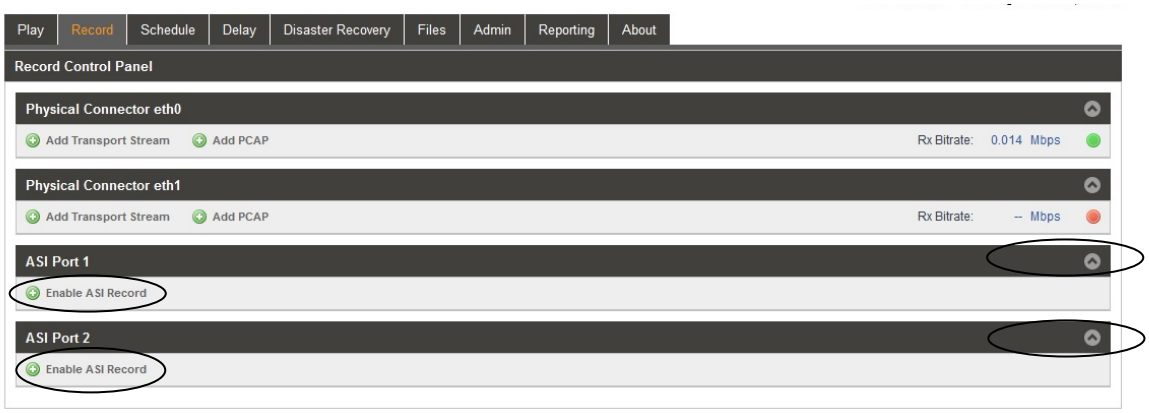
The chart below summarizes the selections within the IP section of the PCAP section of the Add PCAP record menu.

Setting	Range	Description
Receive	Enable Disabled	This setting allows the user to enable or disable these input stream settings.
IP – Physical Connector	Selects eth0 or eth1, the standard Ethernet ports, eth2 and eth3 available if TSS 6220 has added optional ports	Entry selects which of the available Ethernet ports on the TSS 6220 that the stream record input is assigned
Destination IP Filter State	Enabled Disabled	Enables or Disables an IP Address filter for the incoming PCAP recording
Destination IP Filter Address	Enter Value: 0.0.0.0 – 255.255.255.255	This IP address is used to filter the incoming PCAP recording
Destination Port Filter State	Enabled Disabled	Enables or Disables an IP Port filter for the incoming PCAP recording
Destination Port Filter	Enter Port Value: 0 – 65535	This port value is used to filter the incoming PCAP recording

9.5 Recording Input ASI - Configuration

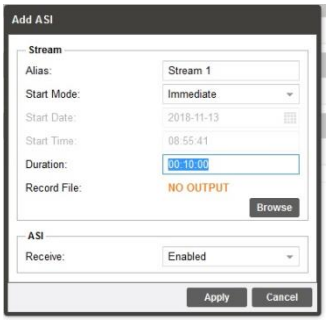
To record a new TS stream requires that you select or name a record file and configure the input receive ASI parameters. To create a record event click on the Enable ASI Record icon. Note that this selection is available for each of the ASI ports. Select the Enable ASI Record icon in the section corresponding to the ASI input port in which you want to create a record event.

If the Enable ASI Record icon is grayed out and you cannot select it, the ASI Port is not available for use as an input. It is being used by another application of the TSS 6220. If you hover your mouse over the field it creates a popup message window indicating which application is using the port.



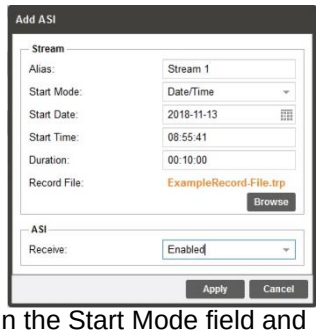
The Record Panel is simplified for viewing with a Hide/Show feature for each Physical Connector eth section. To show all the record events listed for use with a certain Ethernet port, click on the Show/Hide icon . To hide all the record events listed for a certain Ethernet port, click on the Show/Hide icon .

9.5.1 Record Enable ASI Record – Add ASI Configuration



To define a recording event using an ASI input port, start by clicking on the Enable ASI Record icon. The Add ASI menu opens providing selections to configure the recording event. The Add ASI record menu provides configuration of the record file, receive ASI port configuration, and how the recording event will start and end.

The Add ASI menu provides entry of an alias name to provide a convenient reference for the record event. Click on the Alias field and enter an alias name. This is not required as the application automatically assigns a name as an incrementing stream number.



The Start Mode field defines how the recording event starts. The event can be configured to start immediately when the record icon is selected in the main menu. If a manual recording start is desired, click in the Start Mode field and select “Immediate.” This setting is the default setting. *Note: After you apply the settings within the Add ASI menu by clicking on the “Apply” box at the bottom of the menu, to begin the immediate recording you need to click on the start icon In the Record Panel.*

A timed recording event may be configured by clicking the dropdown in the Start Mode field and

selecting Date/Time. When the Date/Time mode is selected, the menu's Start Date and Start Time entry fields become available. Select or enter the start date and the start time in these fields. It is important to note that a timed recording event once defined as an event by clicking the Apply field must be launched or be activated by clicking on the record icon in the main menu. Once the record icon is clicked, the recording event becomes active counting down to the date/time specified in the Start Date and Start time field and recording as specified by the time and duration entries.

The Duration field provides entry of the length of the recording. In the duration field enter the hours, minutes, and seconds of the record duration. Keep in mind that the record duration directly impacts the memory of the system using available storage memory space. The memory used is dependent on the incoming stream bit rate and duration of the recording.

The Output field, and associated Browser button provide definition of the record file name in memory in which to route the incoming transport stream. You can create a new file or select an existing file. To create a new file, click the Browse box Browse icon. Enter the new file name in the directory or file type field. Click the Apply icon Apply to create the file name. To select an existing file, click on the Browse icon and select/click the existing file to re-record, replacing the existing record file with the new record event. Click on the Apply icon Apply to select the existing file. The file name should now be shown in the Add ASI menu in the Record File field.

The ASI Receive field provides an enable/disable selection which routes the incoming ASI input stream to the application or opens the path. Click on the dropdown arrow and select "Enabled" to enable the ASI connection.

The following chart provides a summary of the fields found in the Add ASI menu.

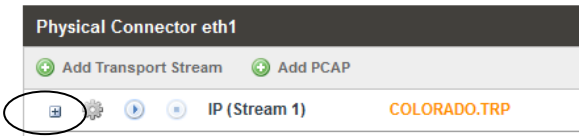
Add ASI – Settings Overview

Setting	Range	Description
Stream – Alias	Value and or Letter Entry	Provides entry to name or assign alias to identify a record event or stream. If no name is entered, the TSS 6220 assigns an incrementing stream number
Stream – Start Mode	Immediate Date/Time	Selects recording event to start immediately upon manually clicking on the record icon in the main menu. Selecting Date/Time configures for a timed record event in which the record start date and time is defined and the Record event activated by clicking on the record/start icon
Start Date	Enter date in date fields, or click on calendar and click on month/day to select	Selects a day – month/day in which the desired recording event is to be scheduled.
Start Time	Enter time in hours, minutes, seconds	Specifies a time within the day selected in which the recording event will start
Duration	Selectable, enter the desired duration of the record event	Specifies and/or Indicates the duration of the record event
Output (Record)	Creates a new record	Creates a new record file name in which the input

File	file name in which the input TS stream is recorded, or, selects an existing recording file to be re-recorded	TS stream is recorded, or, selects an existing recording file to be re-recorded
Browse	Click on Browse field to access stream files in library.	Provides navigation to browse to available stream and PCAP files for selection. Provides name entry field in which to specify a new file name in which to direct the recording event to a memory file
ASI Receive	Selects Enabled or Disabled, click on dropdown arrow and click on Enabled or Disabled	Enabled: Routes incoming TS stream on ASI port to record application Disabled: Opens paths so TS stream on ASI port cannot reach the record application

9.5 Record Status & Configuration Information

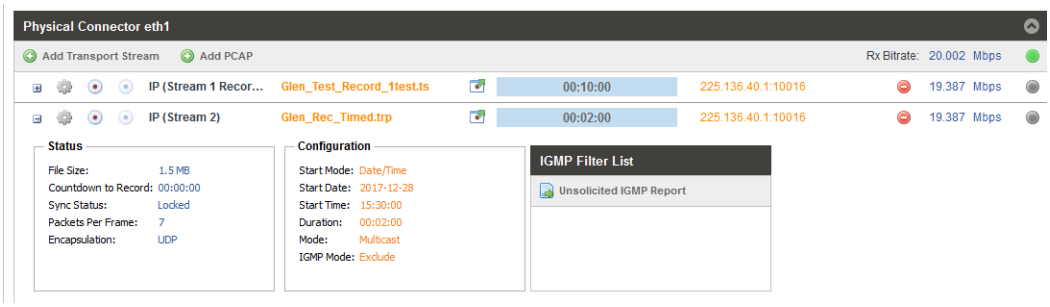
Each of the record events listed in the Record Control Panel includes a Status and Configuration window. To access this window and add it to the panel, click on the icon at the left of the row containing the IP stream or PCAP record listing. The Status and Configuration boxes are added to the Play Control Panel providing status and configuration details. Click on the icon at the same location to hide the status and configuration information.



IP Stream - Status and Configuration Windows

The Status and Configuration windows provide information relative to the recording event. This section summarizes the information provided for a record event of an input transport stream.

The Status window indicates the size or memory space required for the recording. The Countdown to Record listing indicates or counts down the time remaining before the recording event starts. *Keep in mind that once the scheduled recording event is created, you need to click on the Record icon to activate or launch the event. Once activated, the countdown indicates the countdown or time remaining.* The Sync Status, Packets Per Frame and Encapsulation fields provide information regarding the incoming receive transport stream. Should the Sync Status indicate “Unlocked” check the IP configuration settings and/or availability of the MPEG-IP stream.



Summary of the informational fields in the Status window:

Status Listing	Description
File Size:	Indicates the memory size of the record file
Countdown to Record:	Indicates the time remaining from the current time to the scheduled record time of the record event. This field indicates 00.00.00 when the event is an immediate event or when the scheduled recording time is reached or surpassed. This field shows decrementing time values or time remaining until a scheduled recording event.
Sync Status:	Indicates the source TS stream is being received and TS sync is established.
Packets Per Frame:	Indicates the TS packets per TS frame in the incoming TS stream
Encapsulation:	Indicates receive IP stream encapsulation, RTP, UDP

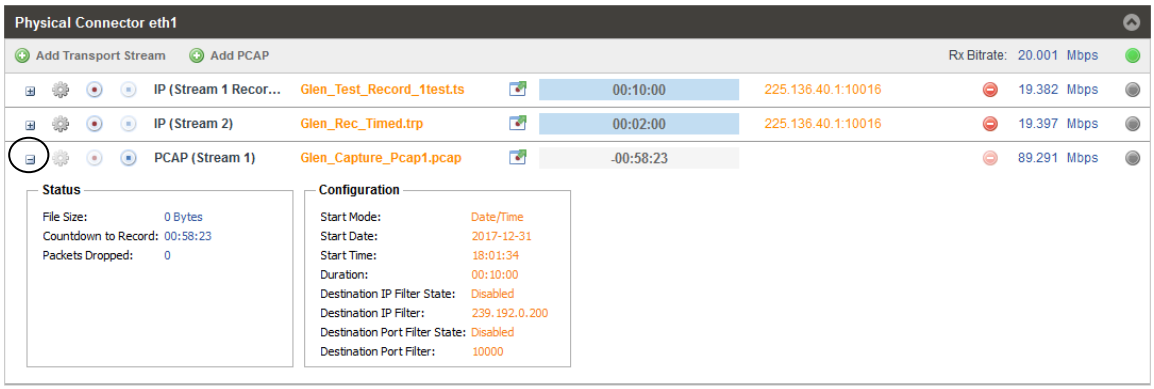
The Configuration part of the window provides information regarding the settings for the record event. It indicates if the record event is to be immediate or scheduled for a later specified date/time. If scheduled, it indicates the user selected start date and time along with the duration. The Configuration window also indicates the IGMP receive mode, unicast or multicast, along with IGMPv3 settings and filter addresses.

Summary of the informational fields in the Configuration window:

Configuration Listing	Description
Start Mode: Immediate or Date/Time	Indicates recording event mode: Immediate: Starts recording immediately upon manually clicking on the record icon in the main menu. Date/Time: Records when specified date/time is reached.
Start Date:	Indicates the year – month – date when the recording event is scheduled to start
Start Time:	Indicates the hour – minute – second when the recording event is scheduled to start
Duration:	Indicates the duration of the record capture once it is started.
Mode:	Indicates if input receive is configured as Unicast or Multicast
IGMP Mode:	Indicates Include or Exclude mode for IGMPv3 address entry
Add IGMP Filter	Indicates listed IGMP filter addresses to Exclude or Include for Source Specific IGMPv3

PCAP File - Status and Configuration Windows

Click on the icon at the left of the row containing a PCAP stream adds the Status and Configuration windows to the Play Control Panel. There is less status and configuration information for a PCAP file compared to an IP stream file. The following describes the information provided in the Status and Configuration windows. Click on the icon at the same location to hide the Status and Configuration windows.



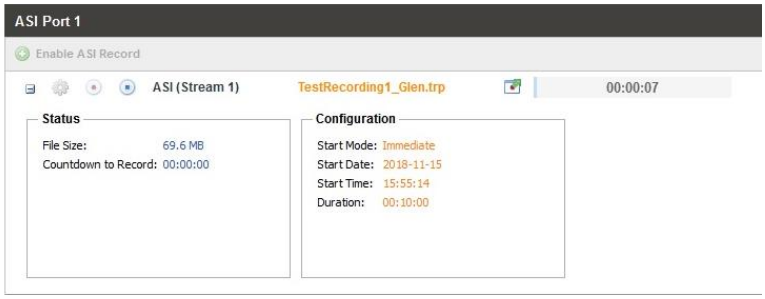
Status Listing	Description
File Size:	Indicates the total memory size of the recorded PCAP file
Countdown to Record:	Indicates the time remaining from the current time to the scheduled record time of the record event. This field indicates 00.00.00 when the event is an immediate event or when the scheduled recording time is reached or surpassed. This field shows decrementing time values or time remaining until a scheduled recording event.
Packets Dropped:	Indicates the dropped packet count of the incoming p-cap recording

Configuration Listing	Description
Start Mode:	Indicates recording event mode: Immediate: Starts recording immediately upon manually clicking on the record icon in the main menu. Date/Time: Records when specified date/time is reached.
Start Date:	Indicates the year – month – date when the recording event is scheduled to start e
Start Time:	Indicates the hour – minute – second when the recording event is scheduled to start
Duration:	Indicates the duration of the record capture once it is started.
Destination IP Filter State: **Enabled or Disabled**	Enables or Disables an IP Address filter for the incoming PCAP recording
Destination IP Filter:	This address is used to filter the incoming PCAP recording
Destination Port Filter State:	PCAP recording Enables or Disables an IP Port filter for the incoming
Destination Port Filter:	This port value is used to filter the incoming PCAP recording

ASI In Record File - Status and Configuration Windows

The Status and Configuration windows provide information relative to the recording event. This section summarizes the information provided for a record event when an ASI port input transport stream is configured.

The Status window indicates the size or memory space required for the recording. The Countdown to Record listing indicates or counts down the time remaining before the recording event starts. *Keep in mind that once the scheduled recording event is created, you need to click on the Record icon to activate or launch the event*. *Once activated, the countdown indicates the countdown or time remaining.*



Summary of the informational fields in the Status window:

Status Listing	Description
File Size:	Indicates the memory size of the record file
Countdown to Record:	Indicates the time remaining from the current time to the scheduled record time of the record event. This field indicates 00.00.00 when the event is an immediate event or when the scheduled recording time is reached or surpassed. This field shows decrementing time values or time remaining until a scheduled recording event.

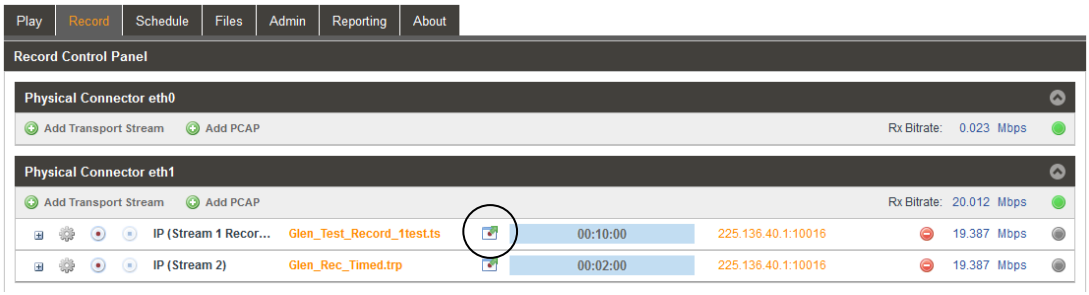
The Configuration part of the window provides information regarding the settings for the record event. It indicates if the record event is to be immediate or scheduled for a later specified date/time. If scheduled, it indicates the user selected start date and time along with the duration.

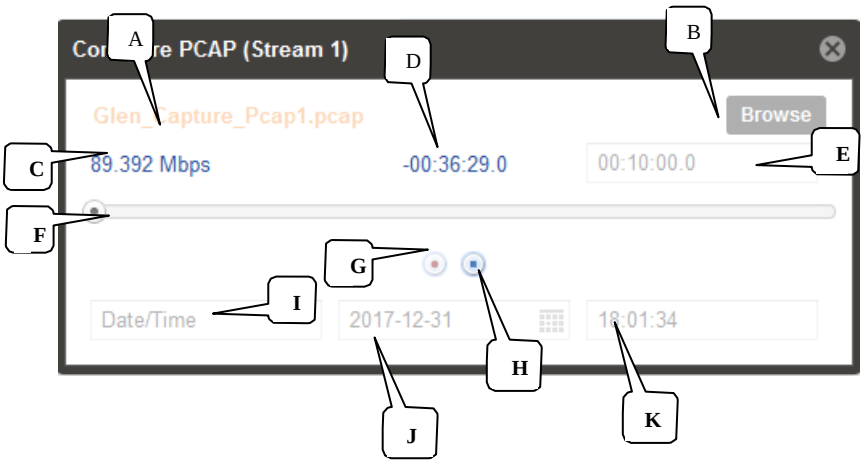
Summary of the informational fields in the Configuration window:

Configuration Listing	Description
Start Mode: Immediate or Date/Time	Indicates recording event mode: Immediate: Starts recording immediately upon manually clicking on the record icon in the main menu. Date/Time: Records when specified date/time is reached.
Start Date:	Indicates the year – month – date when the recording event is scheduled to start
Start Time:	Indicates the hour – minute – second when the recording event is scheduled to start
Duration:	Indicates the duration of the record event

9.6 IP – PCAP - ASI Monitor Panel

For each listed transport stream or PCAP record event listed in the Record Control panel you will find a icon. Clicking on this icon provides a record monitoring panel for that transport stream or PCAP record event and its corresponding input. This panel provides a convenient shortcut to improve viewing of the record event and provides several convenient control options. The following descriptions provide an overview of the features provided.





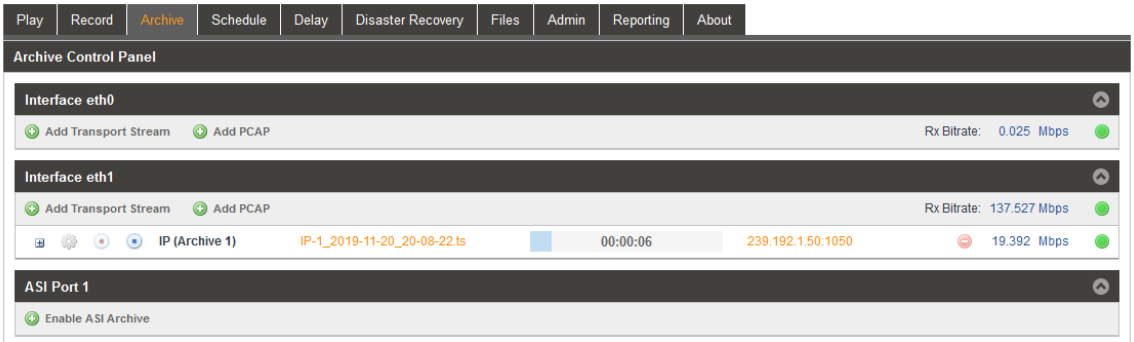
Descriptions of fields in the Record Event Monitor Panel

Item or Field Name	Button/Action	Description
A. File name	Not a selectable field	Indicates the current record file for the transport stream or PCAP record event
B. Browse	Click to browse or view available files	Provides quick access to view files, to locate current file or search for files. Files cannot be selected in this menu to replace the existing play file. (A file is created in memory after a record event is started.)
C. Bitrate	Not selectable	Indicates the bitrate of input IP or PCAP stream
D. Record time indicator	Not selectable	Indicates the current record time position or time within the duration. When record

			scheduled – indicates negative time countdown to record event time
E.	**Record Time Duration**	Not selectable	Indicates the total time duration or the ending time of the TS or PCAP recording.
F.	**Record Bar Progress Indicator**	Not selectable	Provides visual indicator that the stream record is active and progressing, Indicates the current record position or time relative to the start time and record duration.
G.	**Start Control**	Record – click on icon to start output	Indicates IP/PCAP stream as playing or paused. Click on icon to pause or play. When paused, the current location of the stream or PCAP is maintained.
H.	**Stop Control**	Click on icon to stop IP/PCAP recording	Stops a recording of IP/PCAP input. Click on record icon to restart – restarts at file starting point.
I.	**Record Mode**	Indicates Immediate or Date/Time mode	Indicates the record mode. If Date/Time is selected the day and time information indicates the record start date and time
J.	**Record Date**	Value cannot be changed in this menu	Indicates a specified stream record starting - year, month, day
K.	**Record Time**	Value cannot be changed in this menu	Indicates a specified stream record starting time – hour, minute, second

10 Archive Panel

The Archive Panel provides a recording feature to record an incoming transport stream or PCAP for an extended duration for the purpose of archiving transport streams and services/programming within. The archive feature is a licensed feature of the TSS 6220. When licensed, the archive tab is shown and available to select. To access the Archive Panel, click on the Archive tab in the header. This chapter provides descriptions and overviews of the features provided by the Archive function.

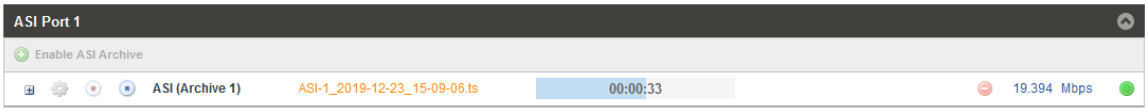


The archive feature provides manual archiving in which a user may control the start and duration of the archiving event. A user may also perform a scheduled archive event in which the duration of the timed archive may be specified along with the start date and time.

The TSS 6220 can archive a transport stream via an MPEG-IP unicast or multicast as available from the specified Ethernet port. It also can perform a PCAP capture archive from the specified Ethernet port. Filters are available to specify PCAP IP address and/or port. Multiple archiving events can be created and scheduled for each available Ethernet port.

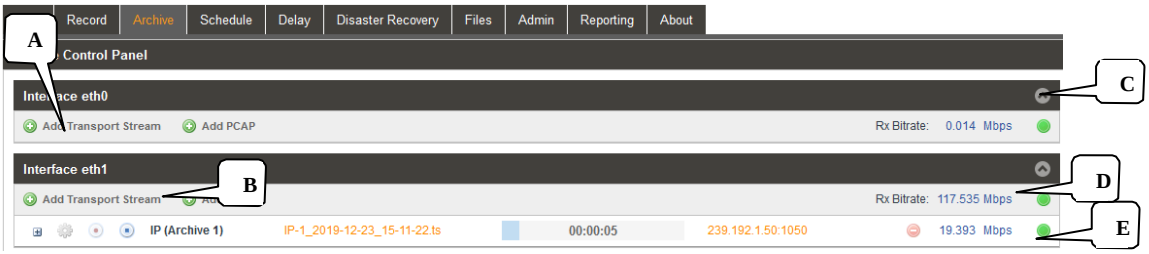
To perform an archive requires that you first create and configure a archive event. A archive event can be specified as an immediate event or a scheduled (Date/Time) event. Each created record event is shown as a listing or row of information in the Archive Panel. Each listing, or row of information, provides details of the event and user control of the event. It further shows status of the event and configuration information.

The TSS 6220 offers a hardware configuration that accommodates the addition of an ASI input/output card. With this optional hardware configuration, the archive feature may be used to archive a TS stream input via an ASI port. When so equipped, the Archive Panel includes sections which list the available ASI input ports you can configure and use for archiving. Be aware that if the ASI port is configured and being used by the archive function it is not available for use by the other TSS 6220 applications or features.



10.1 Archive Panel Overview

The Archive Panel includes a section for each available Ethernet port. The sections are identified by headers indicating the physical connector port. For example, the Ethernet port 0 is shown as “Interface eth0.” If you have added the optional Ethernet ports to the TSS 6220, then two additional sections are included for Interface eth2 and eth3. The shown ports are available for input transport stream or PCAP recording.

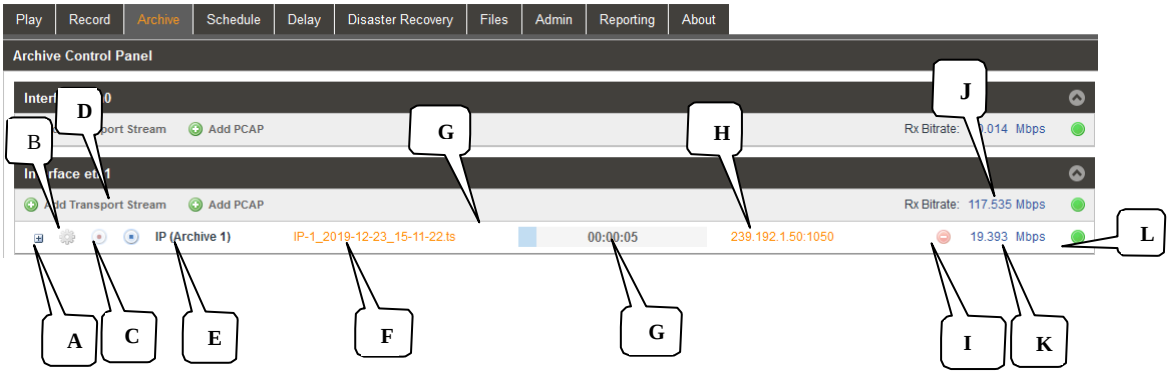


Each Ethernet port section includes some common control fields. The following is a general overview of items in the Record Control Panel and description of some common fields. The remainder of this chapter describes definition of the fields and configuration menus.

Item or Field	Button/Action	Description
A. Add Archive event to eth0 port	Add Click on this icon to add an archiving event to eth 0	Provides menus to select record file, define input criteria, define archiving criteria and schedule,
B. Add Archive event to eth1 port	Add Click this icon to add an archiving event to eth 1	Provides a menu to select record file, define input criteria, define archiving criteria and schedule.
C. Show/Hide port record event info	Selectable, click on the icon	Hides or shows all the record event listings, click to hide or click to show all listed record events
D. RX Bitrate	Not a selectable field	Shows the total receive input bitrates of all stream(s) or PCAP(s) to the Ethernet port
E. An archive event	See next section	Row showing a created archive event and information regarding the event’s current status and input to Ethernet 1 port (eth1)

10.2 Archive – Information Fields

The Archive Panel creates and shows all the created archiving events. Each event has a row of information and related control functions. There are common data fields for each listed archiving event forming columns of information in the panel. This section provides a brief definition of the information and/or features provided in each column.

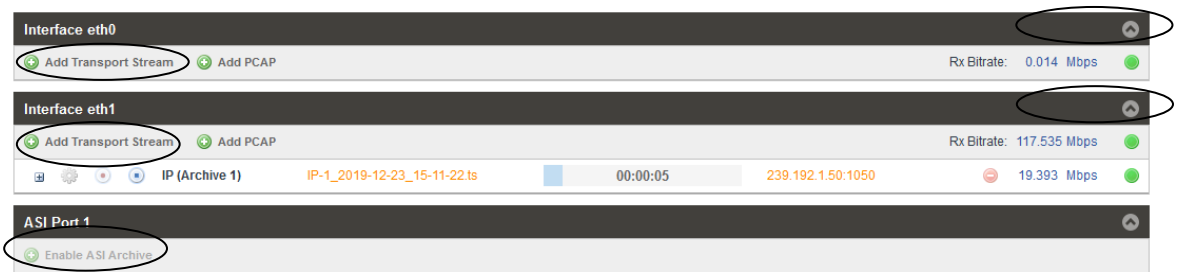


Item or Field Name	Button/Action	Description
A. Status & Configuration	Click on this icon	Provides a window showing IP archiving stream/PCAP status and configuration information
B. Configuration Menu Select	Click on this icon	Provides a menu with configuration settings to define or modify the archive IP/PCAP stream and input IP address
C. Output Control	Record - click on icon to start archiving record segments	Indicates IP/PCAP stream as record active or paused. Click on icon to record/archive. When paused, the current location of the archive event/segment of stream or PCAP is maintained.
D. Stop Control	Click on icon to stop IP/PCAP record archiving	Stops an archiving- recording event. Click on record icon to restart – restarts at the archive segment recording point.
E. Stream name or alias	Not selectable, No action	Shows a default output IP/PCAP stream name. See section 10.3 for naming streams. (Alias field)
F. TS/PCAP Segment Prefix name	Double click to browse to Prefix naming/select menuj for archiving file	Indicates the current selected segment prefix naming for the the archive event/file. (Archive recordings are broken up into smaller record segments or files with incrementing prefix names)
G. Archive Record Status	Not selectable	Indicates a stream archive segment is active. Indicates record position/time within the start-to-end duration archive

			segment. Visual blue highlight indicates stream progress.
H.	**IP Address/Port ASI Sync status**	Not selectable	Indicates the IP receive address and port. Or, ASI input sync status
I.	**Delete icon**	Click to delete stream or PCAP	Removes a IP/PCAP stream archive event from the panel listings
J.	**Total Port Bitrate Indication**	Not selectable, view only	Indicates Ethernet port receive bitrate of the addition of all recording TS streams and PCAP files. Indicates ASI input bit rate.
K.	**Bitrate Indication**	Not selectable, view only	Indicates bitrate of the individual archiver stream/PCAP to the Ethernet port
L.	**Status Indicator**	Not selectable, view only	Indicates status of archiving event. Gray: Inactive – stopped or paused Green: Good recording/archiving active condition Red: Fault record/archiving condition

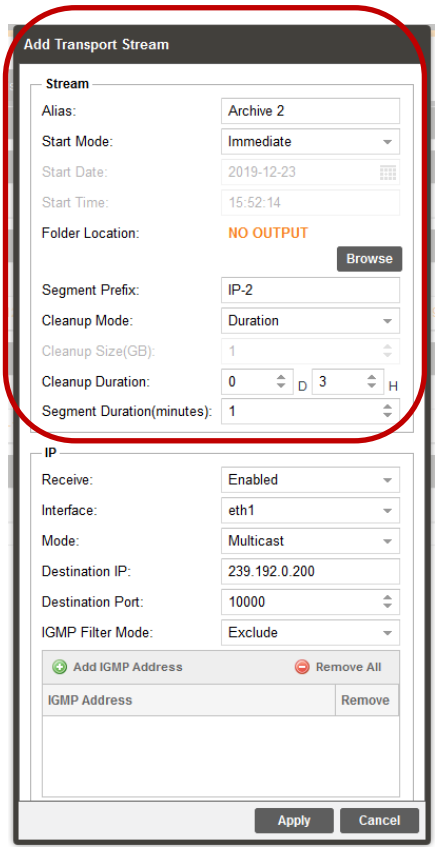
10.3 Archive Input TS Stream Configuration - IP

To archive a new TS stream requires that you select or name a record folder/file and configure the input receive MPEG-IP parameters. To create an archiving event click on the Add Transport Stream icon. Note that this selection is available for each of the Physical connector Ethernet ports of your TSS 6220. Select the Add Transport Stream icon in the section corresponding to the Ethernet port in which you want to create an archiving event.



The Archive Panel is simplified for viewing with a Hide/Show feature for each Physical Connector eth section. To show all the archive events listed for use with a certain Ethernet port, click on the Show/Hide icon .. To hide all the archive events listed for a certain Ethernet port, click on the Show/Hide icon ..

10.3.1 Archive - Add Transport Stream – Stream Configuration



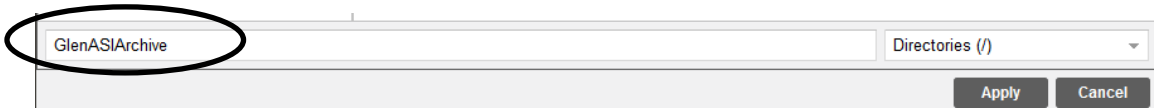
To define an archiving event, start by clicking on the Add Transport Stream icon. The Add Transport Stream menu opens. The Add Transport Stream archive menu provides configuration of the record folder location, receive MPEG-IP configuration, and how the archiving event is configured to start and end. This menu contains 2 sections for configuring the archive event, the top “Stream” section and the lower “IP” section. This part of the manual covers the settings within the top “Stream” section of the menu. The next part of this manual (section 10.3.2) covers the settings within the IP section of this menu.

The Stream section of the Add Transport Stream menu provides entry of an alias name to provide a convenient reference to the archive event. Click on the Alias field and enter an alias name. This is not required as the application automatically assigns a name as an incrementing stream number.

The Start Mode field defines how the archiving event starts. The event can be configured to start immediately when the record icon is selected in the main menu. If a manual recording start is desired, click in the Start Mode field and select “Immediate.” This setting is the default setting.

A timed archiving event may be configured by clicking the dropdown in the Start Mode field and selecting Date/Time. When the Date/Time mode is selected, the menu’s Start Date and Start Time entry fields become available. Select or enter the start date and the start time in these fields. It is important to note that a timed event, once defined as an event by clicking the Apply field, must be launched or be activated by clicking on the record icon in the main menu. Once the record icon is clicked, the archiving event becomes active counting down to the date/time specified in the Start Date and Start time field and archiving begins as specified by the time and duration entries.

The Folder Location field and associated Browser button provide definition of the archive folder name in system memory in which to route the incoming transport stream for segment recoding. You can create a new folder or select an existing folder. To create a new folder, click the Browse box Browse . Enter the new folder name in the directory field near the bottom. Click the Apply icon Apply. To select an existing folder, click on the Browse icon and select/click the existing folder to re-record, replacing the existing archive file with the new archive event/recording. Click on the Apply icon Apply to select the folder.



An archive recording on the TSS 6220 is divided into small record segment files. These files are incrementally created and recorded in the specified folder. The files are automatically assigned a naming prefix number. The Segment Prefix field specifies a name prefix that is applied to the recorded segment files during the archive record. You may optionally add naming to the segment name to assist in file recognition or management.

The Cleanup Mode field provides entry defining how much of the system memory is used by the archiving event and defines how the system manages the allocated space. You can choose to define the memory used by selecting the duration of time or selecting a size of memory. Select the default “Duration” in the Cleanup Mode field if you want to define the archive size by defining a total time for the archive event. Click the dropdown arrow and select “Size” if you wish to define the memory (GB of memory) used for the archive event.

Selecting size specifies a memory or directory total memory size for the archive. Enter the memory size in GB in the Cleanup Size (GB) field. Selecting “Duration” specifies a total duration of time is to be defined for the archive recording. Enter the duration by specifying the days and hours in the respective days and hour entry fields. Keep in mind that the duration directly impacts the total memory size needed by the system for the archive event. The total is dependent on the incoming stream bit rate and selected duration. Also be aware as you consider creating additional archiving events to check system memory availability.

The Segment Duration (minutes) field provides entry of the size, in minutes, of each of the individual record segments which makeup the archiving event/recording. This permits selection to manage the total number of segment files that are needed for the archiving event.

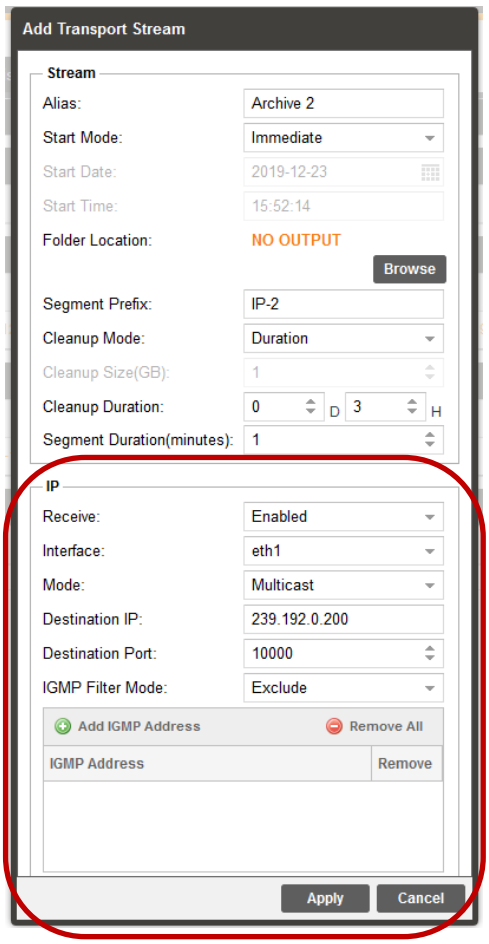
Add Transport Stream – Archive Stream Section Settings Overview

Setting	Range	Description
Stream – Alias	Value and or Letter Entry	Provides entry to name or assign alias to identify a archive event. If no name is entered, the TSS 6220 assigns an incrementing archive alias number
Stream – Start Mode	Immediate Date/Time	Selects archiving event to start immediately upon manually clicking on the record icon in the main menu. Selecting Date/Time configures for a timed archiving event in which the archive start date and time is defined and the archiving event initiates by clicking on the record/start icon
Start Date	Enter date in date fields, or click on calendar and click on month/day to select	Selects a day – month/day in which the desired archiving event is to be scheduled to start
Start Time	Enter time in hours, minutes, seconds	Specifies a time within the day selected in which the archiving event will start
Folder Location	Not selectable	Indicates folder/directory for the archive segment files. Select or configure with Browser icon/field
Browse	Click on Browse field to access file-directory library.	Provides navigation to browse to available directory folders for selection. Provides name entry field in which to specify a new folder/directory name in which to direct the archive event to a memory folder
Segment Prefix	Optional: Enter name of prefix	Specifies a name extension for the recorded archive segment. Prefix number increments each segment. Optional entry, the TSS 6220 adds a default prefix to each archive segment.
Cleanup Mode	Selectable, select either size or duration	Specifies how the archive directory size or duration is determined and maintained. Size: Specifies a memory or directory total memory size for the archive. Duration: Specifies a total duration of time

		for the archive recording. “Cleanup Mode” manages the total system memory size or duration of the archive event/recording.
Cleanup Size(GB)	Selectable, enter size in GB	Specifies memory space or size total used for the archive event/recording
Cleanup Duration	Selectable enter time duration in days, and/or hours	Specifies total time of the archive recording event
Segment Duration (minutes)	Specifies the duration in minutes of each archive record segment	The total size/duration of each archive event is broken up into small record segments/files. The Segment size is entered in minutes

10.3.2 Archive - Add Transport Stream - IP Configuration

The Add Transport Stream archive configuration menu includes an IP section. The IP section provides configuration of the IP input used to receive the MPEG-IP unicast or multicast and route the TS stream to the archive record folder. This section provides descriptions of the settings in this IP section of the menu.



To configure the IP input set the Receive field to “Enabled.” Select the Physical Connector or Ethernet port on the TSS 6220 to use as the receive port. Eth 0 and Eth 1 are available. If the added ethernet port option is added to your TSS 6220 then eth 2 and eth 3 will be available in the dropdown.

Select the Mode of the receiver to be Unicast or Multicast. For unicast, specify the destination port in the Destination IP field. For Multicast, specify the Destination IP address, and Destination IP Port.

The IP configuration section further includes settings to provide IGMPv3 features. An IGMP filter may be implemented for use to specify the inclusion or exclusion of source addresses. The TSS 6220 is IGMPv3 compliant. IGMPv3 allows each steam to be seen by the network as relating to a unique source device with a unique IP address, port, and/or MAC address. IGMPv2 is used to join/leave multicast streams by default if no IGMP Filter addresses are entered in the Add IGMP Address section of the menu. If IGMP Filter Mode addresses are specified then IGMPv3 is automatically used.

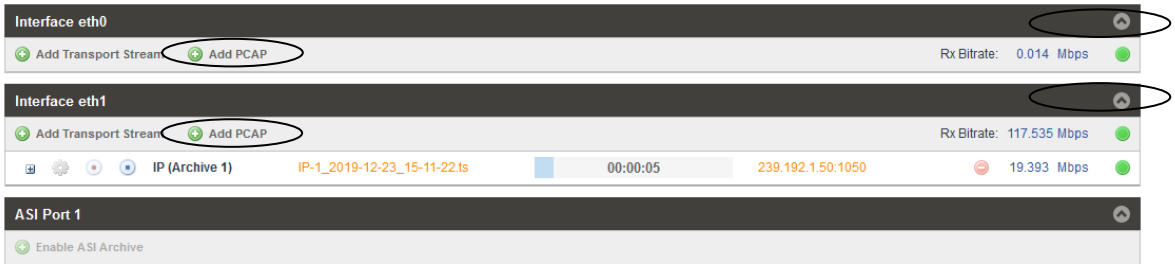
The chart below summarizes the selections within the IP section of the Add Transport Stream archive menu.

Setting	Range	Description
IP Receive	Enable	This setting allows the user to enable or disable

	Disabled	these input stream settings.
IP – Interface or Physical Connector Port	Selects eth0 or eth1, the standard Ethernet ports, eth2 and eth3 available if TSS 6220 has added optional ports	Entry selects which of the available Ethernet ports on the TSS 6220 that the stream record input is assigned
IP Mode	Multicast Unicast	*Multicast* setting allows the unit to receive multicast streams. Multicast streams originate from the IP range 224.0.0.0 – 239.255.255.255. *Unicast* allows the unit to receive unicast streams. Unicast streams originate directly from a source device.
Destination IP	Enter Value: 224.0.0.0 – 239.255.255.255	This address is the IP address the source device is sending to for a multi-cast. A unicast would use an IP address less than 224.0.0.0. This setting is only available when receiving a multicast stream. This address is the IP address the source device is sending to.
Destination Port	Enter Value: 0 – 65535	This is the UDP port the source device is sending to. This is the only setting required to receive a unicast stream.
IGMP Filter Mode	Settings: Select Include or Exclude	Used on networks supporting IGMPv3. If this setting is set to *Exclude* any streams originating from the user defined IP addresses will be rejected. If this setting is set to *Include* any streams originating from the user defined IP addresses will be received.
Add IGMP Address	Click in field - Enter IP address to include or exclude as per filter mode: Values: 0.0.0.0 – 255.255.255.255	Enter and list IP address of IGMPv3 to include or exclude as a filter setting.
Remove All	Click on icon	Removes or clears all the listed IGMPv3 address

10.4 Archiving an Input PCAP - Configuration

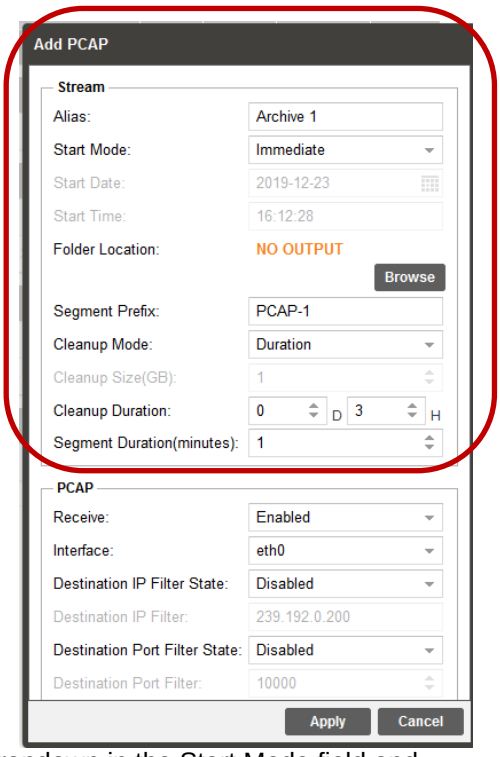
To create a new PCAP archiving event requires that you select a PCAP file and define its output parameters. To create or add a PCAP archive event, click on the Add PCAP icon. Note that this selection is available for each of the Physical Connector Ethernet ports of your TSS 6220. Select the Add PCAP icon in the section corresponding to the Ethernet port in which you want to use for the IP input. This section describes how to select, add and configure a PCAP record event for recording from one of the available Ethernet ports.



The Record Panel is simplified for viewing with a Hide/Show feature for each Physical Connector eth section. To show all the record events listed for use with a certain Ethernet port, click on the Show/Hide icon .. To hide all the record events listed for a certain Ethernet port, click on the Show/Hide icon ..

10.4.1 Archiving PCAP - Add PCAP - Stream Configuration

To define an archiving PCAP event, start by clicking on the Add PCAP icon. The Add PCAP menu opens. This archiving menu provides configuration of the archive file, receive MPEG-IP configuration, and how the archiving event will start, end, and manage required memory. This menu contains 2 sections for configuring the archiving event, the top “Stream” section and the lower “PCAP” section. This part of the manual covers the settings within the Stream section of the menu. The next part of this manual covers the settings within the lower PCAP section of this menu.



The Stream section of the Add PCAP menu provides entry of an alias name to provide a convenient reference. Click on the Alias field and enter an alias name. This is not required as the application automatically assigns a name as an incrementing stream number.

The Start Mode field defines how the archiving event starts. The event can be configured to start immediately when the record icon is selected in the main menu. If a manual archive recording start is desired, click in the Start Mode field and select “Immediate.” This setting is the default setting.

A timed archiving event may be configured by clicking the dropdown in the Start Mode field and selecting Date/Time. When the Date/Time mode is selected, the menu’s Start Date and Start Time entry fields become available. Select or enter the start date and the start time in these fields. It is important to note that a timed archiving event, once defined as an event by clicking the

Apply field, must be launched by clicking on the record icon in the main menu. Once the record icon is clicked, the archiving event becomes active. When active, you see it counting down to the date/time specified in the Start Date and Start time fields and recording segment indications when the specified date/time is reached.

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The Folder Location field and associated Browser button provide definition of the archive folder name in system memory in which to route the incoming PCAP for segment recoding. You can create a new folder or select an existing folder. To create a new folder, click the Browse box Browse . Enter the new folder name in the directory field near the bottom. Click the Apply icon Apply. To select an existing folder, click on the Browse icon and select/click the existing folder to re-record, replacing the existing archive file with the new archive event/recording. Click on the Apply icon Apply to select the folder.

An archive recording on the TSS 6220 is divided into small record segment files. These files are incrementally created and recorded in the specified folder. The files are automatically assigned a naming prefix number. The Segment Prefix field specifies a name prefix that is applied to the recorded segment files during the archive record. You may optionally add naming to the segment name to assist in file recognition or management.

The Cleanup Mode field provides entry defining how much of the system memory is used by the archiving event and defines how the system manages the allocated space. You can choose to define the memory used by selecting the duration of time or selecting a size of memory. Select the default “Duration” in the Cleanup Mode field if you want to define the archive size by defining a total time for the archive event. Click the dropdown arrow and select “Size” if you wish to define the memory (GB of memory) used for the archive event.

Selecting size specifies a memory or directory total memory size for the archive. Enter the memory size in GB in the Cleanup Size (GB) field. Selecting “Duration” specifies a total duration of time is to be defined for the archive recording. Enter the duration by specifying the days and hours in the respective days and hour entry fields. Keep in mind that the duration directly impacts the total memory size needed by the system for the archive event. The total is dependent on the incoming stream bit rate and selected duration. Also be aware as you consider creating additional archiving events to check system memory availability.

The Segment Duration (minutes) field provides entry of the size, in minutes, of each of the individual record segments which makeup the archiving event/recording. This permits selection to manage the total number of segment files that are needed for the archiving event.

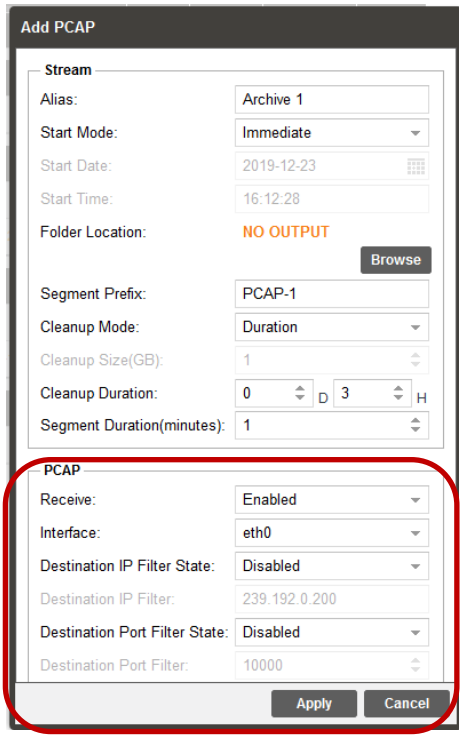
Add PCAP – Archive Stream Section Settings Overview

Setting	Range	Description
Stream – Alias	Value and or Letter Entry	Provides entry to name or assign alias to identify a archive event. If no name is entered, the TSS 6220 assigns an incrementing archive alias number
Stream – Start Mode	Immediate Date/Time	Selects archiving event to start immediately upon manually clicking on the record icon in the main menu. Selecting Date/Time configures for a timed archiving event in which the archive start date and time is defined and the archiving event initiates by

		clicking on the record/start icon
Start Date	Enter date in date fields, or click on calendar and click on month/day to select	Selects a day – month/day in which the desired archiving event is to be scheduled to start
Start Time	Enter time in hours, minutes, seconds	Specifies a time within the day selected in which the archiving event will start
Folder Location	Not selectable	Indicates folder/directory for the archive segment files. Select or configure with Browser icon/field
Browse	Click on Browse field to access file-directory library.	Provides navigation to browse to available directory folders for selection. Provides name entry field in which to specify a new folder/directory name in which to direct the archive event to a memory folder
Segment Prefix	Optional: Enter name of prefix	Specifies a name extension for the recorded archive segment. Prefix number increments each segment. Optional entry, the TSS 6220 adds a default prefix to each archive segment.
Cleanup Mode	Selectable, select either size or duration	Specifies how the archive directory size or duration is determined and maintained. Size: Specifies a memory or directory total memory size for the archive. Duration: Specifies a total duration of time for the archive recording. “Cleanup Mode” manages the total system memory size or duration of the archive event/recording.
Cleanup Size(GB)	Selectable, enter size in GB	Specifies memory space or size total used for the archive event/recording
Cleanup Duration	Selectable enter time duration in days, and/or hours	Specifies total time of the archive recording event
Segment Duration (minutes)	Specifies the duration in minutes of each archive record segment	The total size/duration of each archive event is broken up into small record segments/files. The Segment size is entered in minutes

10.4.2 Archive - Add PCAP - PCAP Configuration

The Add PCAP archive configuration menu includes a lower PCAP section. This section provides configuration of the IP PCAP input parameters used to receive and filter the MPEG-IP input and route the PCAP capture data to the specified archive folder/file. This section provides descriptions of the settings in this PCAP section of the Add PCAP menu



To configure the IP input set the Receive field to "Enabled." Select the Interface to the physical connector or Ethernet port on the TSS 6220 to use as the receive port. Eth 0 and Eth 1 are available. If the added ethernet port option is added to your TSS 6220, eth 2 and eth 3 will be available in the dropdown for selection.

The PCAP record input can be filtered by enabling an incoming Destination IP address and/or a Destination IP port. Set the Destination IP Filter State field and/or the Destination Port Filter State fields to Enabled. Enter the filter IP address and/or the Destination Port Filter value in their respective entry fields. Click on the Apply field to create the record PCAP event with the specified filter values.

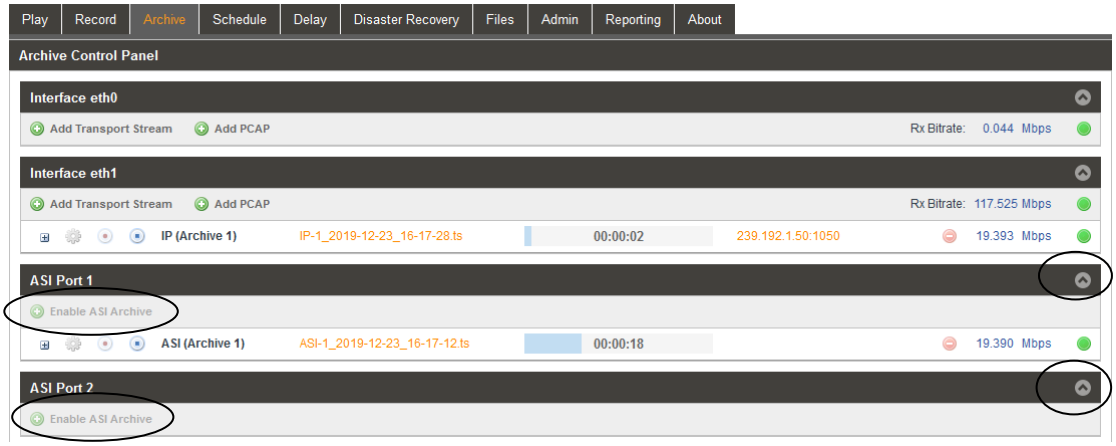
The chart below summarizes the selections within the IP section of the PCAP section of the Add PCAP archiving menu.

Setting	Range	Description
Receive	Enable Disabled	This setting allows the user to enable or disable these input stream settings.
Interface, IP – Physical Connector	Selects eth0 or eth1, the standard Ethernet ports, eth2 and eth3 available if TSS 6220 has added optional ports	Entry selects which of the available Ethernet ports on the TSS 6220 that the stream archiving event is assigned
Destination IP Filter State	Enabled Disabled	Enables or Disables an IP Address filter for the incoming PCAP recording
Destination IP Filter Address	Enter Value: 0.0.0.0 – 255.255.255.255	This IP address is used to filter the incoming PCAP recording
Destination Port Filter State	Enabled Disabled	Enables or Disables an IP Port filter for the incoming PCAP archive record
Destination Port Filter	Enter Port Value: 0 – 65535	This port value is used to filter the incoming PCAP recording

10.5 Archiving Input ASI - Configuration

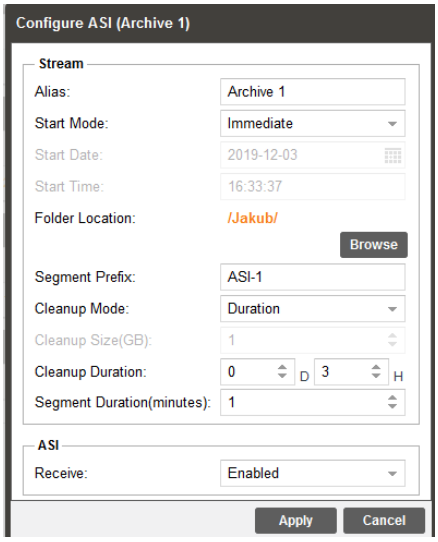
To archive a new TS stream via the ASI input of the TSS 6220 requires that you select or name an archive file and configure the input receive ASI parameters. To create an archiving event click on the Enable ASI Archive icon. Note that this selection is available for each of the ASI ports. Select the Enable ASI Archive icon in the section corresponding to the ASI input port in which you want to create a record event.

If the Enable ASI Archive icon is grayed out and you cannot select it, the ASI Port is not available for use as an input. It is being used by another application of the TSS 6220. If you hoover your mouse over the field it creates a popup message window indicating which application is using the port.



The Archive Panel is simplified for viewing with a Hide/Show feature for each Physical Connector eth section. To show all the archiving events listed for use with a certain Ethernet port, click on the Show/Hide icon . To hide all the record events listed for a certain Ethernet port, click on the Show/Hide icon .

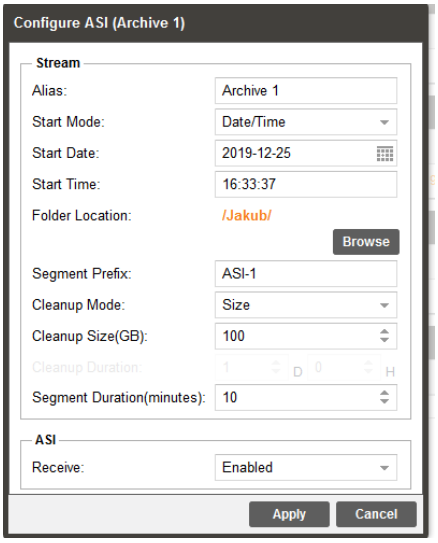
10.5.1 Archive - Enable ASI Record – Add ASI Configuration



To define an archiving event using an ASI input port, start by clicking on the Enable ASI Record icon. The Add ASI menu opens providing selections to configure the recording event. The Add ASI arhive menu provides configuration of the record file, receive ASI port configuration, and how the archiving event will start, end and manage memory required.

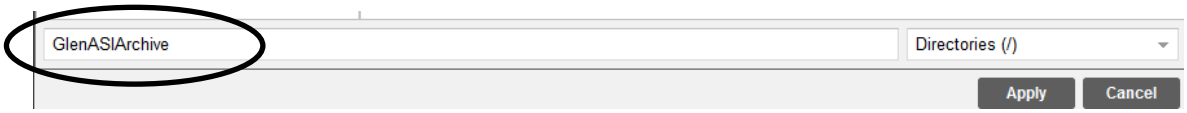
The Add ASI menu provides entry of an alias name to provide a convenient reference for the record event. Click on the Alias field and enter an alias name. This is not required as the application automatically assigns a name as an incrementing archive number.

The Start Mode field defines how the arching event starts. The event can be configured to start immediately when the record icon is selected in the main menu after the event is created. If a manual archiving start is desired, click in the Start Mode field and select “Immediate.” This setting is the default setting. *Note: After you apply the settings within the Configure ASI (Archive) menu and click on the “Apply” box at the bottom of the menu, to begin the immediate recording you need to click on the start icon In the Archive Panel.*



A timed archiving event may be configured by clicking the dropdown in the Start Mode field and selecting Date/Time. When the Date/Time mode is selected, the menu’s Start Date and Start Time entry fields become available. Select or enter the start date and the start time in these fields. It is important to note that a timed archiving event, once defined as an event by clicking the Apply field, must be launched or be activated by clicking on the record icon in the main menu. Once the record icon is clicked, the archiving event becomes active counting down to the date/time specified in the Start Date and Start time field and recording as specified by the time and duration entries.

The Folder Location field and associated Browser button provide definition of the archive folder name in system memory in which to route the incoming PCAP for segment recoding. You can create a new folder or select an existing folder. To create a new folder, click the Browse box Browse . Enter the new folder name in the directory field near the bottom. Click the Apply icon Apply. To select an existing folder, click on the Browse icon and select/click the existing folder to re-record, replacing the existing archive file with the new archive event/recording. Click on the Apply icon Apply to select the folder.



An archive recording on the TSS 6220 is divided into small record segment files. These files are incrementally created and recorded in the specified folder. The files are automatically assigned a naming prefix number. The Segment Prefix field specifies a name prefix that is applied to the recorded segment files during the archive record. You may optionally add naming to the segment name to assist in file recognition or management.

The Cleanup Mode field provides entry defining how much of the system memory is used by the archiving event and defines how the system manages the allocated space. You can choose to define the memory used by selecting the duration of time or selecting a size of memory. Select the default “Duration” in the Cleanup Mode field if you want to define the archive size by defining a total time for the archive event. Click the dropdown arrow and select “Size” if you wish to define the memory (GB of memory) used for the archive event.

Selecting size specifies a memory or directory total memory size for the archive. Enter the memory size in GB in the Cleanup Size (GB) field. Selecting “Duration” specifies a total duration of time is to be defined for the archive recording. Enter the duration by specifying the days and hours in the respective days and hour entry fields. Keep in mind that the duration directly impacts the total memory size needed by the system for the archive event. The total is dependent on the incoming stream bit rate and selected duration. Also be aware as you consider creating additional archiving events to check system memory availability.

The Segment Duration (minutes) field provides entry of the size, in minutes, of each of the individual record segments which makeup the archiving event/recording. This permits selection to manage the total number of segment files that are needed for the archiving event.

The ASI Receive field provides an enable/disable selection which routes the incoming ASI input stream to the application or opens the path. Click on the dropdown arrow and select “Enabled” to enable the ASI connection.

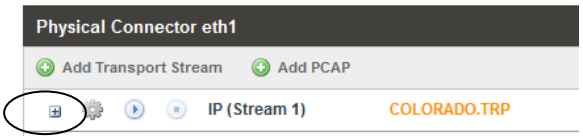
The following chart provides a summary of the fields found in the Add ASI menu.

Setting	Range	Description
Stream – Alias	Value and or Letter Entry	Provides entry to name or assign alias to identify a archive event or stream. If no name is entered, the TSS 6220 assigns an incrementing archive-stream number
Stream – Start Mode	Immediate Date/Time	Selects recording event to start immediately upon manually clicking on the record icon in the main menu. Selecting Date/Time configures for a timed record event in which the record start date and time is defined and the Record event activated by clicking on the record/start icon
Start Date	Enter date in date fields, or click on calendar and click on month/day to select	Selects a day – month/day in which the desired recording event is to be scheduled.
Start Time	Enter time in hours, minutes, seconds	Specifies a time within the day selected in which the recording event will start
Folder Location	This field is not selectable. Use Browser field	Indicates folder/directory for the archive segment files. Select or configure with Browser icon/field
Browse	Click on Browse field to access file-directory	Provides navigation to browse to available directory folders for selection. Provides name entry field in

	library.	which to specify a new folder/directory name in which to direct the archive event to a memory folder
Segment Prefix	Enter name of prefix	Specifies additional name extension for the recorded archive segment. Optional entry as the TSS 6220 automatically creates the prefix number extension
Cleanup Mode	Selectable, select either size or duration	Specifies how the archive directory size or duration is determined. Size: Specifies a memory or directory total memory size for the archive. Duration: Specifies a total duration of time for the archive recording
Cleanup Size(GB)	Selectable, enter size in GB	Specifies memory space or size total used for the archive event. Cleanup Mode must be set to “Size”
Cleanup Duration	Selectable enter time duration in days, hours	Specifies total time of the archive recording event. Cleanup Mode must be set to “Duration”
Segment Record Duration (minutes)	Specifies the duration in minutes of each archive record segment	The total size/duration of each archive event is broken up into small record segments/files. The Segment size is entered in minutes
ASI Receive	Selects Enabled or Disabled, click on dropdown arrow and click on Enabled or Disabled	Enabled: Routes incoming TS stream on ASI port to archiving application Disabled: Opens paths so TS stream on ASI port cannot reach the archiving application

10.6 Archive Status & Configuration Information

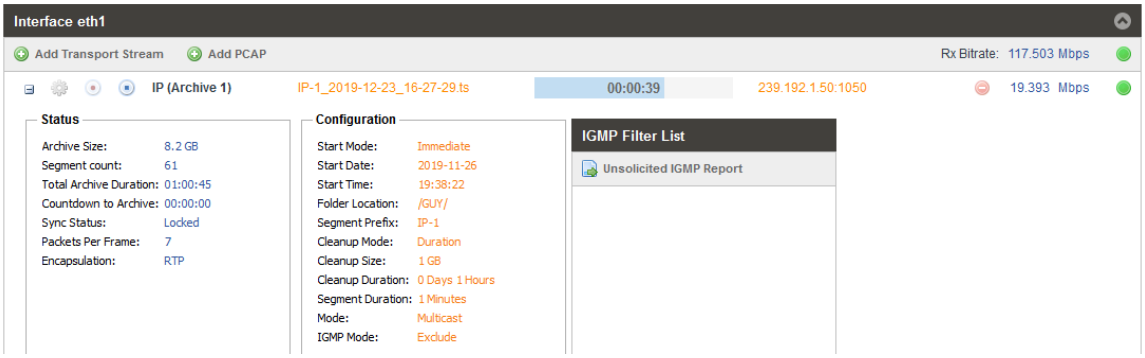
Each of the created archiving events is listed in the Archive Control Panel. This panel includes a Status and Configuration window for each event listed. To access this window and add it to the panel, click on the icon at the left of the row containing the IP stream or PCAP archive listing. The Status and Configuration boxes are added to the Control Panel providing status and configuration details. Click on the icon at the same location to hide the status and configuration information.



10.6.1 IP Stream Archive – Status and Configuration Windows

The Status and Configuration windows provide information relative to the archiving event. This section summarizes the information provided for an archiving event of an input transport stream.

The Status window indicates the size or memory space required for the archive event. The Countdown to Archive listing indicates or counts down the time remaining before the archiving event is scheduled to start. *Keep in mind that once the scheduled archiving event is created, you need to click on the Record icon to activate or launch the event. Once activated, the countdown indicates the countdown or time remaining before archiving starts.* The Sync Status, Packets Per Frame and Encapsulation fields provide information regarding the incoming receive transport stream. Should the Sync Status indicate “Unlocked” check the IP configuration settings and/or availability of the MPEG-IP stream.



Summary of the informational fields in the Status window:

Status Listing	Description
Archive Size:	Indicates the memory size needed to contain the archive event for the configured duration or size
Segment Count	Indicates the current count or number of segment record files in the current archiving event as it progresses
Total Archive Duration	Indicates the total archive duration of the archiving event as it progresses
Countdown to Archive:	Indicates the time remaining from the current time to the scheduled record time of the record event. This field indicates 00.00.00 when the event is an immediate event or when the scheduled recording time is reached or surpassed. This field

	shows decrementing time values or time remaining until a scheduled recording event.
Sync Status:	Indicates the source TS stream is being received and TS sync is established.
Packets Per Frame:	Indicates the TS packets per TS frame in the incoming TS stream
Encapsulation:	Indicates receive IP stream encapsulation, RTP, UDP

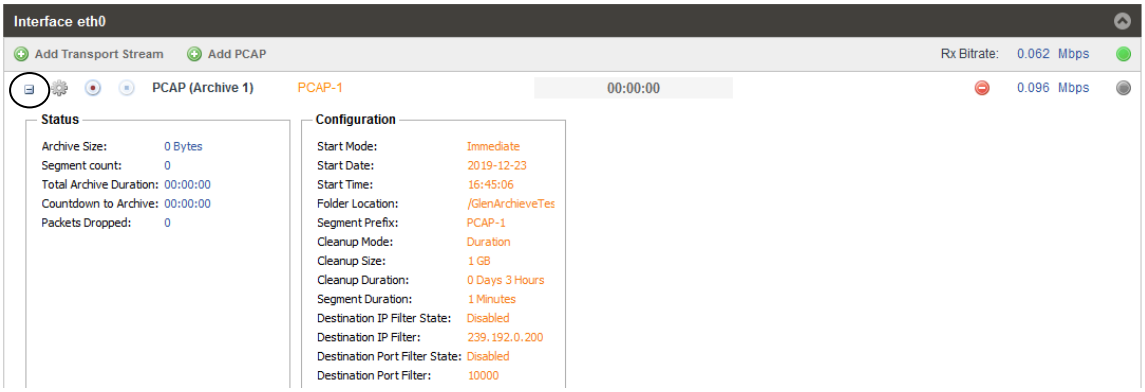
The Configuration part of the window provides information regarding the settings for the record event. It indicates if the record event is to be immediate or scheduled for a later specified date/time. If scheduled, it indicates the user selected start date and time along with the duration. The Configuration window also indicates the IGMP receive mode, unicast or multicast, along with IGMPv3 settings and filter addresses.

Summary of the informational fields in the Configuration window:

Configuration Listing	Description
Start Mode: Immediate or Date/Time	Indicates recording event mode: Immediate: Starts recording immediately upon manually clicking on the record icon in the main menu. Date/Time: Records when specified date/time is reached.
Start Date:	Indicates the year – month – date when the recording event is scheduled to start
Start Time:	Indicates the hour – minute – second when the recording event is scheduled to start
Folder Location:	Indicates the folder/directory of the archive event
Segment Prefix:	Indicates the segment prefix name which is assigned to that recorded archive segment
Cleanup Mode	Indicates the selected method to manage/maintain the total record memory for the archiving event. Size: Maintains the defined total file/memory size. Duration: Maintains the defined total memory time
Cleanup Size	Specifies memory space (GB) total used for the archive event
Cleanup Duration	Specifies total time in days/hours of the archive recording event
Segment Duration:	Indicates the duration of each of the archive segment files once the archive event is actively recording
Mode:	Indicates if input receive is configured as Unicast or Multicast
IGMP Mode:	Indicates Include or Exclude mode for IGMPv3 address entry
Add IGMP Filter	Indicates listed IGMP filter addresses to Exclude or Include for Source Specific IGMPv3

10.6.2 PCAP Archive– Status and Configuration Windows

Click on the icon at the left of the row containing a PCAP stream adds the Status and Configuration windows to the Play Control Panel. There is less status and configuration information for a PCAP file compared to an IP stream file. The following describes the information provided in the Status and Configuration windows. Click on the icon at the same location to hide the Status and Configuration windows.



Status Listing	Description
Archive Size:	Indicates the total memory size of the archive/record file
Segment Counts	Indicates the total number of record segment files that comprise the archive event and total record memory or duration
Total Archive Duration or Size	Indicates the total duration or size of the archive event
Countdown to Archiving Start Record:	Indicates the time remaining from the current time to the scheduled time of the start archiving event. This field indicates 00.00.00 when the event is an immediate event or when the scheduled recording time is reached or surpassed. This field shows decrementing time values or time remaining until a scheduled recording event.
Packets Dropped:	Indicates the dropped packet count of the incoming p-cap recording

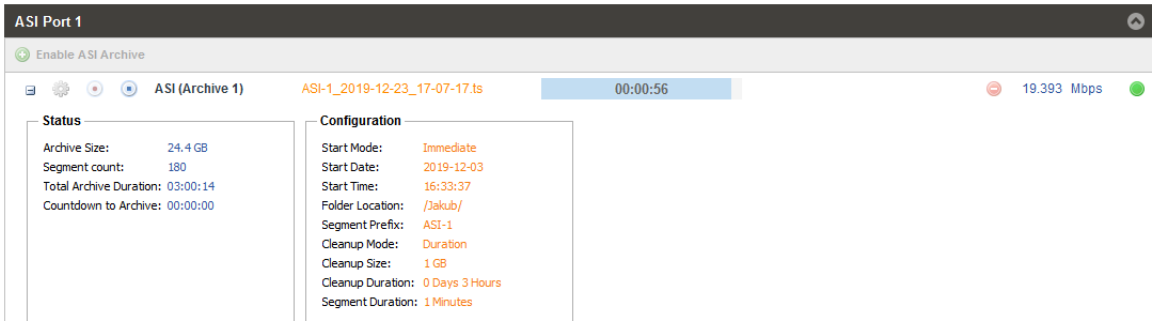
Configuration Listing	Description
Start Mode:	Indicates recording event mode: Immediate: Starts recording immediately upon manually clicking on the record icon in the main menu. Date/Time: Records when specified date/time is reached.
Start Date:	Indicates the year – month – date when the archiving event is scheduled to start e
Start Time:	Indicates the hour – minute – second when the archiving event is scheduled to start

Folder Location:	Indicates the folder/directory of the archive event
Segment Prefix:	Indicates the segment prefix name which is assigned to that recorded archive segment
Cleanup Mode	Indicates the selected method to manage/maintain the total record memory for the archiving event. Size: Maintains the defined total file/memory size. Duration: Maintains the defined total memory time
Cleanup Size	Specifies memory space (GB) total used for the archive event
Cleanup Duration	Specifies total time in days/hours of the archive recording event
Segment Duration:	Indicates the duration of each of the archive segment files once the archive event is actively recording
Destination IP Filter State: **Enabled or Disabled**	Enables or Disables an IP Address filter for the incoming PCAP recording
Destination IP Filter:	This address is used to filter the incoming PCAP recording
Destination Port Filter State:	PCAP recording Enables or Disables an IP Port filter for the incoming
Destination Port Filter:	This port value is used to filter the incoming PCAP recording

10.6.3 ASI Archive – Status and Configuration Windows

The Status and Configuration windows provide information relative to the recording event. This section summarizes the information provided for a record event when an ASI port input transport stream is configured.

The Status window indicates the size or memory space required for the recording. The Countdown to Record listing indicates or counts down the time remaining before the recording event starts. *Keep in mind that once the scheduled recording event is created, you need to click on the Record icon to activate or launch the event. Once activated, the countdown indicates the countdown or time remaining.*



Summary of the informational fields in the Status window:

Status Listing	Description
Archive Size:	Indicates the total memory size of the archive/record file
Segment Counts	Indicates the total number of record segment files that comprise the archive event and total record memory or duration
Total Archive Duration or Size	Indicates the total duration or size of the archive event
Countdown to Archiving Start Record:	Indicates the time remaining from the current time to the scheduled time of the start archiving event. This field indicates 00.00.00 when the event is an immediate event or when the scheduled recording time is reached or surpassed. This field shows decrementing time values or time remaining until a scheduled recording event.

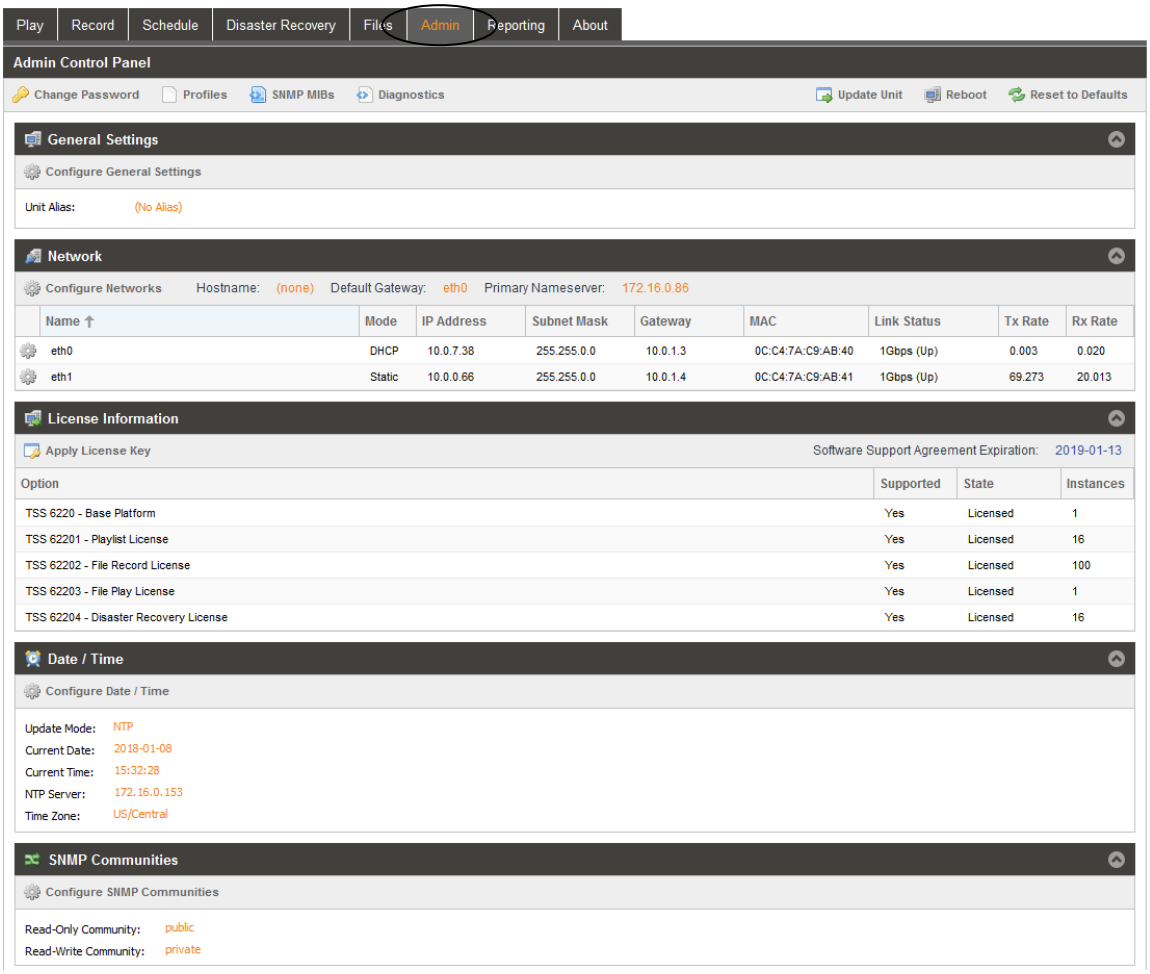
The Configuration part of the window provides information regarding the settings for the archiving event. It indicates if the event is to start immediate or scheduled for a later specified date/time. If scheduled, it indicates the user selected start date and time along with the duration.

Summary of the informational fields in the Configuration window:

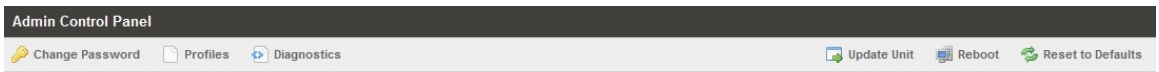
Configuration Listing	Description
Start Mode: Immediate or Date/Time	Indicates recording event mode: Immediate: Starts recording immediately upon manually clicking on the record icon in the main menu. Date/Time: Records when specified date/time is reached.
Start Date:	Indicates the year – month – date when the recording event is scheduled to start
Start Time:	Indicates the hour – minute – second when the recording event is scheduled to start
Folder Location	Indicates the folder/directory of the archive event
Segment Prefix	Indicates the segment prefix name which is assigned to that recorded archive segment
Cleanup Mode	Showed selection for managing directory size, either duration or size. Size: Specifies a memory or directory total memory size for the archive. Duration: Specifies a total duration of time for the archive recording
Cleanup Size	Specifies memory space (GB) total used for the archive event
Cleanup Duration	Specifies total time in days/hours of the archive recording event
Segment Duration:	Indicates the duration of each of the archive segments for the archive event

11 Admin

The Admin Panel provides administrative tasks and configuration settings. To access the Admin Control Panel, click on the Admin tab. This section provides descriptions and overviews of the features provided by the Admin panel.

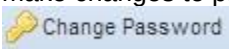


Located directly under the admin control panel are the options for saving/loading profiles, changing the network password, downloading the SNMP MIBs, downloading the diagnostic file, updating the unit software, and resetting to factory defaults. Below is a short description of each feature shown. The sections that follow provide more operational details for each of the features.

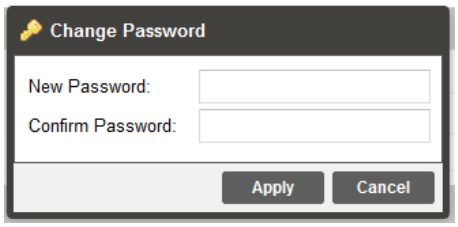


Change Password: Select to change the unit's network login credentials (User name/password)
Profiles: Creates, saves, recalls, applies unit configuration files or profiles
Diagnostics: Generates a diagnostic file to be used by Engineers when analyzing unit operation.
Update Unit: Provides updates to the unit's operational software version.
Reboot: Provides a reboot of the unit.
Reset to Defaults: Resets the unit to factory preset configuration settings.

11.1 Changing Unit Password

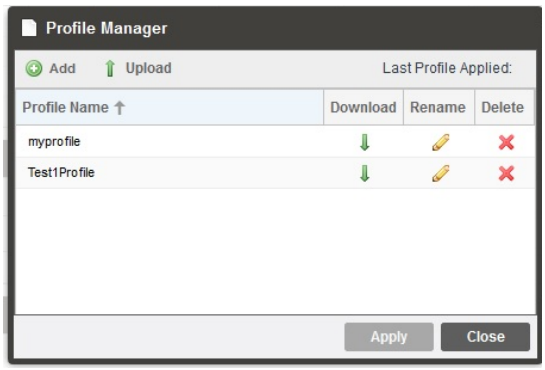
The TSS 6220 can be assigned an access password and the current access password can be changed. In order to make changes to passwords, click the 

button. A window will appear to enter the current password and new password. Enter the new password and click the Apply field.



11.2 Profile Manager

The TSS 6220 has the ability to save all configuration settings to a file (profile). Multiple profiles can be saved for recall. Profiles can be saved locally, renamed and saved to external storage to be used on other TSS 6220s. Profiles can be used to quickly and easily change the configuration of an TSS 6220 to suit different applications.



Profile Manager descriptions:

Action	Button	Description
Add New Profile	Add	Adds a new profile from current settings. User must name profile before creation is complete.
Upload Profile	Upload	Allows the user to browse to external storage or workstation to upload profile to TSS 6220.
Last Profile Applied	Last Profile Applied:	Select to see the last profile that was applied.
Apply Profile	Apply	Select a profile from the drop-down menu and click this button. All settings in the selected profile are applied
Rename Profile		Select a profile from the drop-down menu and click this button. You are prompted for a new name for the profile.
Delete Profile		Select a profile from the drop-down menu and click this button. You are prompted to confirm profile deletion.
Download Profile		Select a profile from the drop-down menu and click this button. The user will be prompted to select a directory to download the profile.

11.3 SNMP MIB Files

The TSS 6220 stores the SNMP MIB files for the currently installed version of software on the unit. These files can be downloaded directly from the TSS 6220 by clicking on the SNMP MIBs icon. The screen below will appear where the files can be downloaded and saved off of the unit.

Index of /mibs/

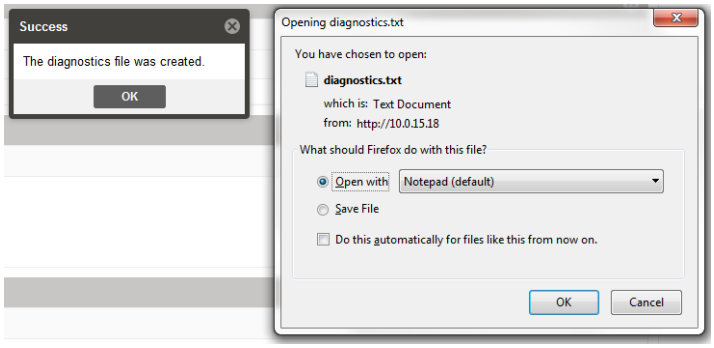
Name	Last Modified	Size	Type
Parent Directory/		-	Directory
INET-ADDRESS-MIB.MIB	2017-Oct-17 12:18:30	16.3K	application/octet-stream
SENCORE-CSP-MIB.MIB	2017-Oct-17 12:13:06	86.3K	application/octet-stream
SENCORE-GLOBAL-REG.MIB	2017-Oct-17 12:13:06	2.3K	application/octet-stream
SENCORE-TSS6220-MIB.mib	2017-Oct-17 12:13:04	37.1K	application/octet-stream
SNMP-COMMUNITY-MIB.MIB	2017-Oct-17 12:18:31	15.1K	application/octet-stream
SNMP-FRAMEWORK-MIB.MIB	2017-Oct-17 12:18:31	21.8K	application/octet-stream
SNMP-MPD-MIB.MIB	2017-Oct-17 12:18:31	5.3K	application/octet-stream
SNMP-TARGET-MIB.MIB	2017-Oct-17 12:18:30	22.2K	application/octet-stream
SNMP-USER-BASED-SM-MIB.MIB	2017-Oct-17 12:18:31	38.2K	application/octet-stream
SNMP-VIEW-BASED-ACM-MIB.MIB	2017-Oct-17 12:18:31	33.3K	application/octet-stream
SNMPv2-MIB.MIB	2017-Oct-17 12:18:31	28.6K	application/octet-stream
SNMPv2-SMI.MIB	2017-Oct-17 12:18:30	8.7K	application/octet-stream
SNMPv2-TC.MIB	2017-Oct-17 12:18:30	37.1K	application/octet-stream

To Download: Right-Click, Save Link As or Save Target As

11.4 Diagnostics

The “Diagnostics” icon Diagnostics generates a text file for troubleshooting by Sencore support. Click on the Diagnostics icon to generate the file. This file includes the configuration of the system, a log history, licensing and hardware information.

Upon generation of the diagnostic file you are prompted with an “Opening diagnostics.txt” screen. You may open the file to view the contents using the default application (Notepad) or choose to save the file. Click on the selection circle for “Save File” and enter a file name. The file is saved to the computer browsing to the unit.

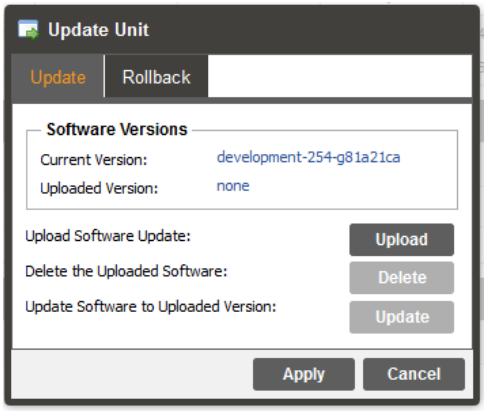


11.5 Update the Unit Software Version

Software updates may become available from Sencore to improve performance or add features. Updates to the TSS 6220 are performed through the web interface. Select the Admin tab of the TSS 6220 main menu and locate the Update Unit icon 

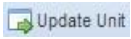
at the top of the screen.

11.5.1 Applying Software Updates



A software update file is provided by Sencore and named with a numbered sequence indicating the version. The update file is first downloaded from the Sencore web site or from an ftp site as referred by Sencore support. If downloaded as a zip folder, navigate to the zipped folder and unzip the file by right mouse clicking on the file and selecting “Extract All”. Always install or browse to the unzipped folder when applying software updates.

Software updates are governed by Software Subscription Agreements which dictate an expiration date. Software released after the expiration date cannot be loaded. The expiration date is indicated in the License Information section of the Admin tab. Please see section 10.8 in this chapter on Licensing Configuration for more information.

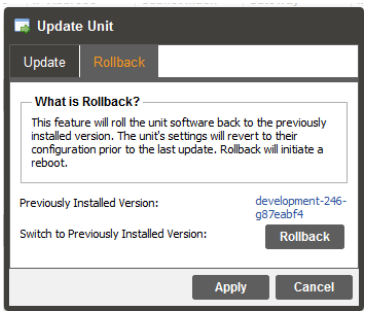
To apply a software update within the web GUI, select the Admin tab and click on the 

icon. The current version and any uploaded version is displayed in the Software Versions section. If no version has been uploaded, this field indicates “none.” Click on the Upload field and browse to the unzipped folder containing the TSS 6220 update software. Open the file and it will be uploaded and be readied for installation. You will be prompted to approve the installation. Approve and the uploaded software is installed into the TSS 6220. The unit reboots after a software update is complete. The reboot requires that you refresh or re-establish your network connection to the unit.

Action	Button	Description
Upload Software Update	Upload	To upload software updates to the TSS 6220 click this button. The user will be prompted to navigate to an update file. The file will then upload to the TSS 6220. When complete the TSS 6220 with prompt the user to either apply the update or cancel
Delete the Uploaded Software	Delete	Clicking this button prompts the user to confirm the deletion of the software update from the TSS 6220. This will also clear the Uploaded Version status of the Software Versions section.
Update Software to Uploaded Version	Update	Clicking the button starts the software update process. The TSS 6220 will prompt the user to confirm the update. Click Yes to continue or No to cancel.

11.5.2 Rollback - Software Update

The TSS 6220 is capable of reverting back to a previous version of software using the Rollback feature. The TSS 6220 maintains two separate software images; one is the most current version of software with all current settings and the other is the previous version of software with all settings. To perform a rollback, click the Update Unit button and then click the Rollback tab. The TSS 6220 will reboot after the rollback process is complete.



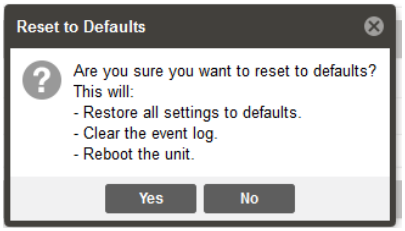
Action	Button	Description
Rollback Software	Rollback	Clicking this button starts the Rollback process. The TSS 6220 will prompt the user to confirm the rollback or click cancel to stop the process.

11.6 Reboot Unit

The TSS 6220 can be rebooted from the web interface. In order to perform a reboot, click the Reboot button. The TSS 6220 will prompt the user to confirm the reboot. Once the reboot is complete the login screen will appear allowing the web interface to be logged into.

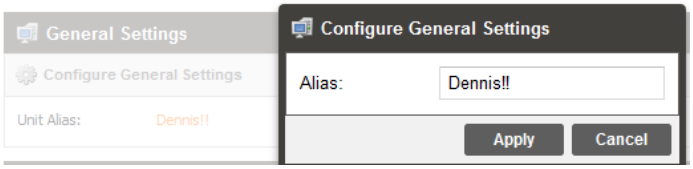
11.7 Reset Unit to Factory Defaults

The TSS 6220 settings can be reset to factory defaults. All settings will be returned to the factory defaults except the network management ports TCP/IP settings. All event logs will be cleared. To reset all settings to default, click the Reset to Defaults button. The TSS 6220 will prompt the user to confirm the reset as shown. Click the Yes field to proceed with the reset in which all the unit settings will be set back to factory setting. Press No to exist without resetting the unit to factory defaults.



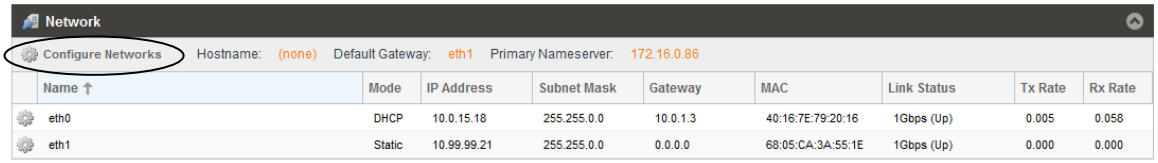
11.8 General Configuration

The TSS 6220 can be assigned an alias which is displayed in the upper right-hand corner of the web interface. The alias helps identify which TSS 6220 the operator is logged into. To edit the Unit Alias, click on the Configure General Settings icon. The name can be up to 32 characters. Click the Apply box to enter or edit changes to the alias name.

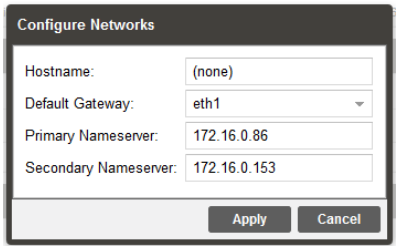


11.9 Network Port Configuration

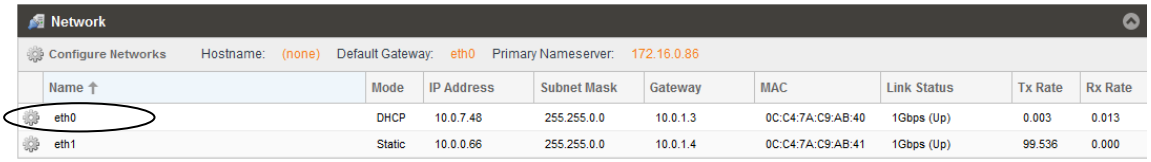
The Ethernet ports used for web management and stream playout of the TSS 6220 can be configured from the web interface. Select the Admin tab within the TSS 6220 web GUI and locate the Network section as shown below.



Domain name servers can be configured by clicking the Configure Namerservers button. Choose the default gateway from available unit network ports. IP address and web address entries are accepted as Nameserver addresses.



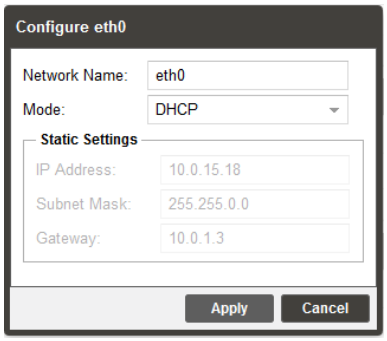
The network ports of the TSS 6220 can be configured from the web interface. To make changes click the cog wheel icon at the left in the Network section for the respective port you wish to change.

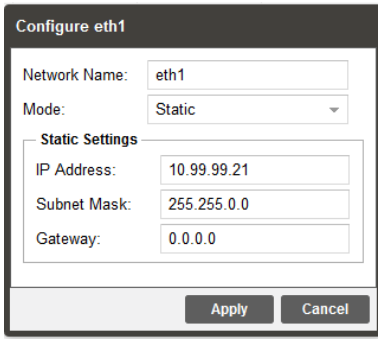


NOTE: Exercise caution when performing changes to this menu as network communication can be lost with the TSS 6220.

Note the IP address before making changes and prior to changes so you can reestablish a connection to the unit's web GUI.

When selected for changes, the Configure ethX menu is presented and identified by the Network Name. You may set the port to use DHCP to derive IP settings or select static settings and enter the desired IP Address, Subnet Mask and Gateway addresses.





Configure Networks and Configure Network Port Settings

Setting	Range	Description
Hostname	Valid characters: A through Z 0 through 9 - (hyphen)	This setting allows the user to define an optional unit Hostname.
Default Gateway	Lists the available Ethernet ports, Eth0, Eth1, etc. for selection	Selects the network interface to use as the network gateway
Nameserver	Four decimal octets XXX.XXX.XXX.XXX	Allows entry of a primary and a secondary nameserver IP address. To disable set to 0.0.0.0
Mode	DHCP Static	Setting to *DHCP* will allow the network assign an IP address automatically to the TSS 6220 (if supported). Setting to *Static* allows the user to manually define all TCP/IP settings for the management port.
IP	Four decimal octets: XXX.XXX.XXX.XXX	This option is only available if Static Mode is set. This is the IP address assigned to the management port.
Subnet Mask	255.0.0.0 – 255.255.255.254	This option is only available if Static Mode is set. This is the Subnet Mask assigned to the management port.
Gateway	Four decimal octets: XXX.XXX.XXX.XXX	This option is only available if Static Mode is set. This is the Gateway address assigned to the management port.

11.10 Licensing Configuration

Features of the TSS 6220 require a license in order to be functional. Licensing information is shown in the web GUI within the Admin tab and License Information section. This section also provides license management in which new licensing may be applied to add features.


License Information

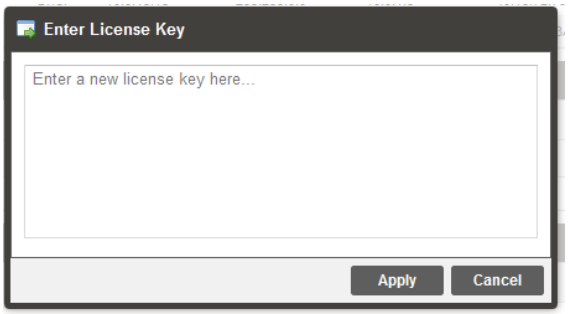
Apply License Key — Software Support Agreement Expiration: 2021-01-18

Option	Supported	State	Instances
TSS 6220 - Base Platform	Yes	Licensed	1
TSS 62201 - Playlist License	Yes	Licensed	16
TSS 62202 - File Record License	Yes	Licensed	1
TSS 62203 - File Play License	Yes	Licensed	1
TSS 62204 - Disaster Recovery License	Yes	Licensed	16
TSS 62205 - Single Transmit Delay License	Yes	Licensed	50
TSS 62206 - Multi-Transmit Delay License	Yes	Licensed	16
TSS 62207 - Archive Record License	Yes	Licensed	1
TSS 62212 - ASI License	Yes	Licensed	1
TSS 62253 - Stream Impairment License	Yes	Licensed	1

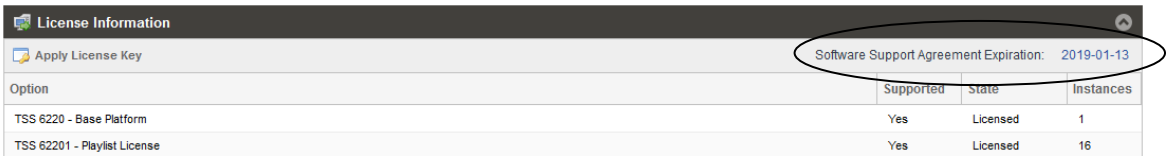
The License Information section displays all licenses which are available as well as the following status regarding the listings.

- License Status: Locked or Unlocked
- License Supported: Supported or Unsupported by the installed hardware
- Instances: Number of the license instances when multiple licenses with the same name are applicable

If licenses need to be applied to the TSS 6220 click Apply License Key icon. The menu below appears where the user can copy and paste the provided license key from Sencore. The currently applied license key, if applicable, can be viewed by clicking the View Current Key button.



The TSS 6220 software updates are managed by software support agreements (SSAs). A 1-year SSA is automatically included at the time of the unit purchase and issuance of the base software license. The user is able to apply any software update that was created by Sencore before the SSA expiration date. The expiration date is indicated at the far right of the Apply License key row in the GUI as shown/circled below. Software updates created by Sencore after the indicated SSA expiration date cannot be loaded into the TSS 6220.

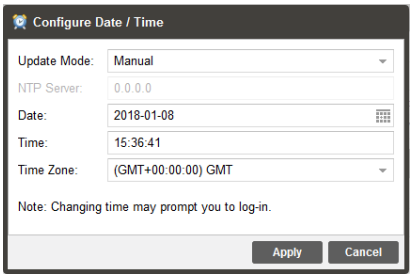


Customers may purchase extensions to the Software Support Agreement period to extend the expiration date. Extensions are available to add 1-year, 2-years, or 4-years of software support time.

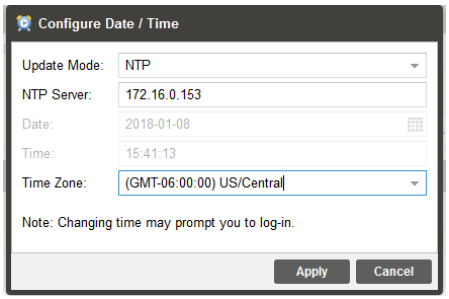
11.11 Date/Time Configuration

The TSS 6220 provides date and time references. The date/time can be set to synchronize with an NTP server or a manual data and time can be defined by the user. The Date/Time setting is found in the web GUI under the ADMIN tab. Locate the Date/Time section and click the Configure Date / Time button to configure the date and time. The date/time values are used to timestamp entries in the Alarm and Event logs under the Reporting tab.

To set the Date/Time manually, click the Configure Date / Time icon and set the Update Mode to “Manual.” Enter the current date and time. Click on the Apply field at the bottom. To update the date and time via an NTP server, click on the Configure Date / Time icon and set the Update Mode to “NTP.” Enter the NTP Server address in the address field. Click the Apply field.



When the Update Mode is set to “NTP” and the TSS 6220 cannot access the Server an alarm is generated in the Reporting section indicating the NTP Server is unreachable. Check the availability of the Server, NTP Server address entered, network connections to resolve communications issues to the Server.



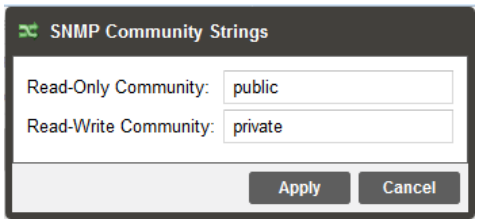
Setting	Range	Description
Update Mode	NTP Manual	Setting to *NTP* uses the local network’s NTP server to synchronize date and time. *Manual* allows the user to define a date and time.
NTP Server	Four decimal octets: XXX.XXX.XXX.XXX Domain Name	This is the IP Address or Domain Name of the local NTP Server on the network. This setting is only available if Update Mode is set to NTP.
Date	YYYY-MM-DD	This setting is the user defined date. A calendar widget can be used to select the data by clicking the button. This setting is only available if Update Mode is set to Manual.
Time	00:00:00 – 24:00:00	This setting is the user defined time. The time is based on a 24-hour clock. This setting is only available if the Update Mode is set to Manual.
Time Zone	Time Zone	Indicates the selected time zone (GMT) in which to reference the correct time

11.12 SNMP Communities

SNMP Communities define whether users have read-only or read-write SNMP rights. These two communities are given unique names. The default names for these communities are:

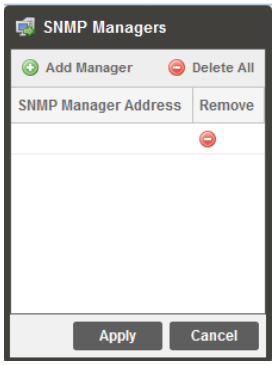
- Read –Only Community: public
- Read- Write Community: private

To modify the names of these communities, click on the Configure SNMP Communities button.



11.13 SNMP Trap Managers

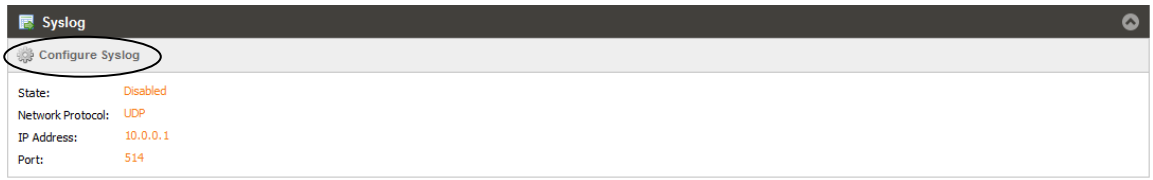
The SNMP trap managers are recipients of SNMP traps sent from the TSS 6220. The following menu allows the user to configure the recipient's IP addresses. To add and remove recipients of the SNMP traps click the Configure SNMP Managers button.

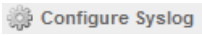


Action	Button	Description
Add Manager	Add Manager	Clicking this button prompts the user for the IP address of the SNMP trap manager.
Delete All	Delete All	Clicking this button prompts the user to confirm the deletion of all SNMP trap manager IP addresses. If the user confirms deletion all SNMP trap manager IP addresses will be removed.
Delete Single Entry		Highlight a single SNMP trap manager IP address and click this button to delete the entry. A prompt will appear confirming the deletion of IP address.

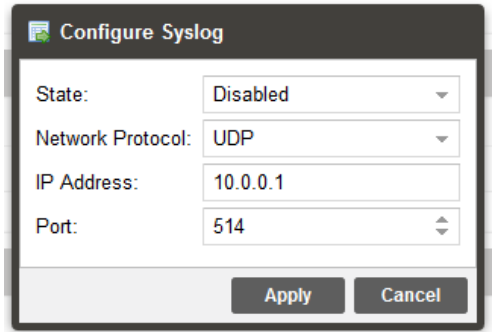
11.14 Syslog Configuration

The TSS 6220 can be configured to send error and event logs formatted in the syslog protocol to a remote user specified Syslog server. Configuration is provided in the Admin tab section of the TSS 6220 web GUI within the Syslog section.



To configure the Syslog, click on the Configure Syslog icon 

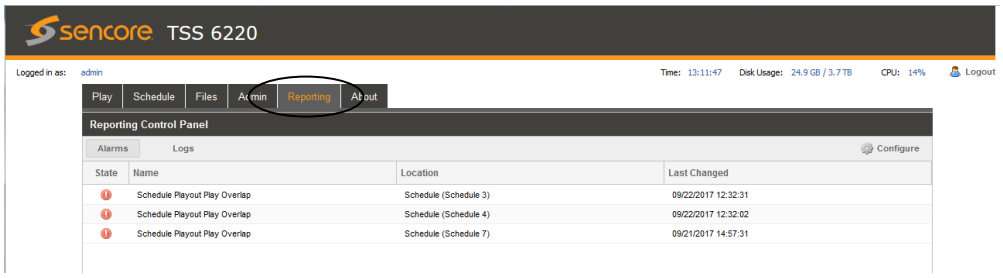
. Enter the IP address and port values along with the network protocol. Enable or Disable the Syslog state as desired.



Action	Range	Description
State	Enabled Disabled	Enable or Disable sending messages to Syslog server.
Network Protocol	UDP TCP	Select which network protocol used to transmit to the Syslog server
IP Address	Four decimal octets: XXX.XXX.XXX.XXX	IP of the Syslog server. 0.0.0.0 and 255.255.255.255 are not permitted
Port	0 - 65535	Destination port of the Syslog server

12 Reporting Panel

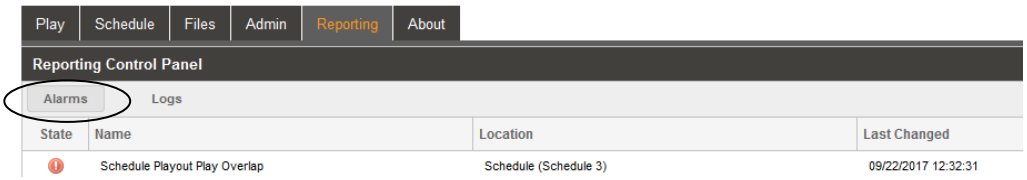
The reporting tab provides listings of unit alarms that are currently active alarms and also a listing of logs that show past alarm activities and conditions. To access the Reporting panel, click on the Reporting tab at the top of the screen. This section provides an overview of the alarm and logging features of the TSS 6220 and shows how to configure the operation.



The Reporting tab in the TSS 6220 contains logs for active alarms currently affecting the unit and an event log. The active alarms are updated periodically in order to reflect the real-time state of the unit. Once an error is cleared it will be cleared from the active alarms window. The event log can be used to view alarm and event history. Both the active alarm and event logs can be configured to hide or change the behavior of alarms and events.

12.1 Active Alarms

Clicking on the Alarms button displays the Active Alarms menu. This list displays all of the active alarms currently affecting the unit. There are four columns in the log that display different types of information.



Title	Description
State	This column displays the nature of the alarm. The icon means the log entry is informational and is not an error. The icon means the log entry is an active alarm.
Name	This column displays the description of the error. The function that is experiencing an error condition is described here.
Location	This column displays the hardware or function that is experiencing the active error.
Last Changed	This column displays the data and time the error was raised. This data and time correlates with the Date and Time settings configured in

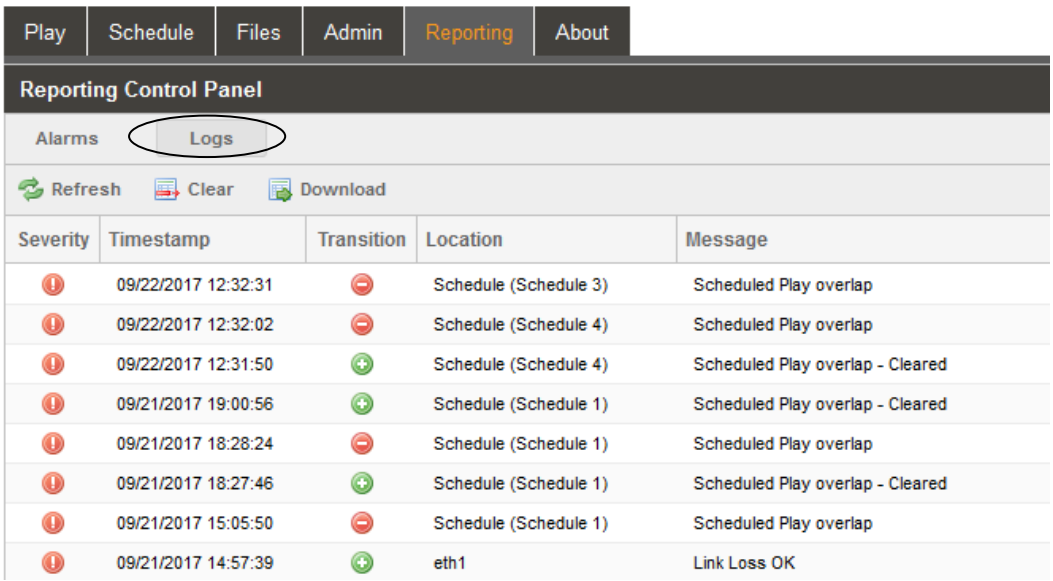
Section **Error! Reference source not found.**.

TSS 6220 Alarm Conditions:

- **Port Link Loss Error**: Error occurs when the NIC on the Streaming Server Platform NIC is providing a network link for an enabled output IP stream and the NIC loses physical link to the network
- **Port Link Loss Error Ends:** Error condition clears when the NIC regains the link or unit reconfiguration has the NIC no longer providing a network link for an output IP stream or PCAP
- **MPEG/IP Transmit Unicast Receiver Not Found**: Error condition occurs when the streamer is outputting a unicast and cannot communicate with a receiver
- **MPEG/IP Transmit Unicast Receiver Found**: Error clears when the unicast receiver communication occurs
- **Schedule Playout Play Overlap**: Error condition occurs when the schedule playout time of a stream overlaps or runs into the time scheduled for another stream
- **Schedule Conflict**: Error condition occurs when one or more streams in a schedule have the same start time
- **Dropped Packets Error:** Error condition indicates dropped packets on the output
- **TS Sync Loss:** Record Error condition indicates inability to synchronize to incoming TS stream
- **In Disaster:** Indicates input, time delay, control conditions meet for Disaster Recovery output to be active
- **NTP Server Unreachable:** Indicates NTP server cannot be found on the network or path

12.2 Event Logs

Clicking on the Logs button displays the Event Log menu. This list displays all of the events and alarms that have affected the unit. The TSS 6220 stores logs up to four days. If the unit is rebooted or powered off and on, the event logs are cleared. The logs can be cleared manually by clicking the Clear button. The logs can be downloaded as a .tsv file and saved to an external location by clicking the Download button. There are five columns in the log that display different types of information.



Severity	Timestamp	Transition	Location	Message
	09/22/2017 12:32:31		Schedule (Schedule 3)	Scheduled Play overlap
	09/22/2017 12:32:02		Schedule (Schedule 4)	Scheduled Play overlap
	09/22/2017 12:31:50		Schedule (Schedule 4)	Scheduled Play overlap - Cleared
	09/21/2017 19:00:56		Schedule (Schedule 1)	Scheduled Play overlap - Cleared
	09/21/2017 18:28:24		Schedule (Schedule 1)	Scheduled Play overlap
	09/21/2017 18:27:46		Schedule (Schedule 1)	Scheduled Play overlap - Cleared
	09/21/2017 15:05:50		Schedule (Schedule 1)	Scheduled Play overlap
	09/21/2017 14:57:39		eth1	Link Loss OK

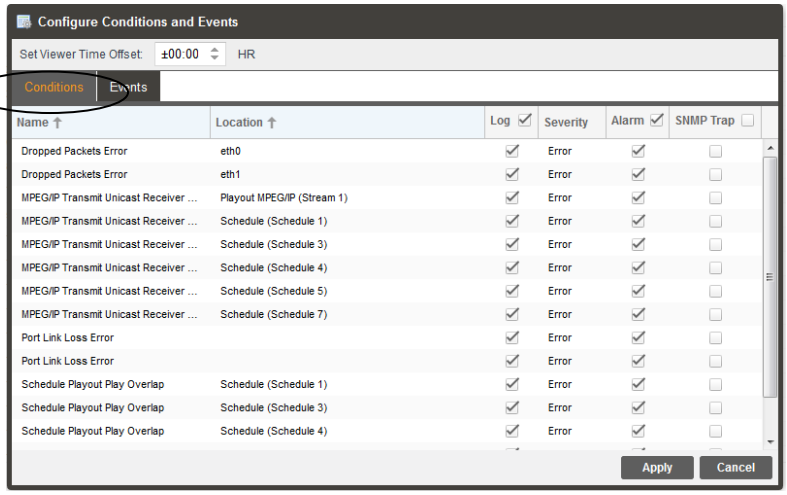
Title	Description
Severity	This column displays the nature of the alarm. The icon means the log entry is informational and is not an error. The icon means the log entry is an active alarm.
Timestamp	This column displays the data and time the error was raised or cleared. This data and time correlates with the Date and Time settings configured in Section **Error! Reference source not found.**.
Transition	This column displays when an alarm transition from a bad to good state. When an error is raised the icon is displayed. When an error is cleared the icon is displayed. When an event takes place the icon is displayed.
Message	This column displays the description of the error or event. The function or hardware that experienced the event or error is described here.
Location	This column displays the hardware or function that experienced the alarm or event.

TSS 6220 Event Conditions:

- **Unit Booted**: The Streaming Server Platform shall notify the user when the unit is booted.
- **Unit Shutdown Event**: Notifies when a software update has succeeded.
- **Software Update Failed Event**: Notifies when a software update has failed.
- **NTP Updated Event**: Notifies when the system time has been updated by an NTP server.
- **Date/Time Changed Event**: Notifies when the system time has been changed by the user.
- **GAP started**: Notifies that the Delay, Schedule Playout, or Disaster Recovery is in GAP started status

12.3 Configuring the Logs

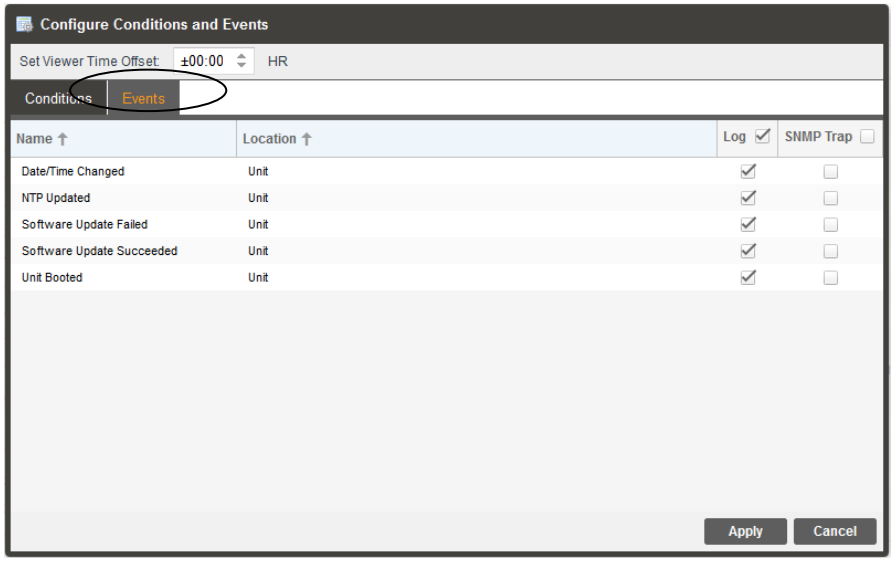
The TSS 6220 allows the user to configure alarms and events. Events and alarms can be hidden or set to send SNMP traps. To configure these options, click the Configure button while in the Logs section of the Reporting tab.



The Conditions tab allows the user to configure the alarms reported by the TSS 6220. Check the boxes of the listed conditions you wish to include in the logs and/or

alarms. You may also choose which conditions to include or generate an SNMP trap when available.

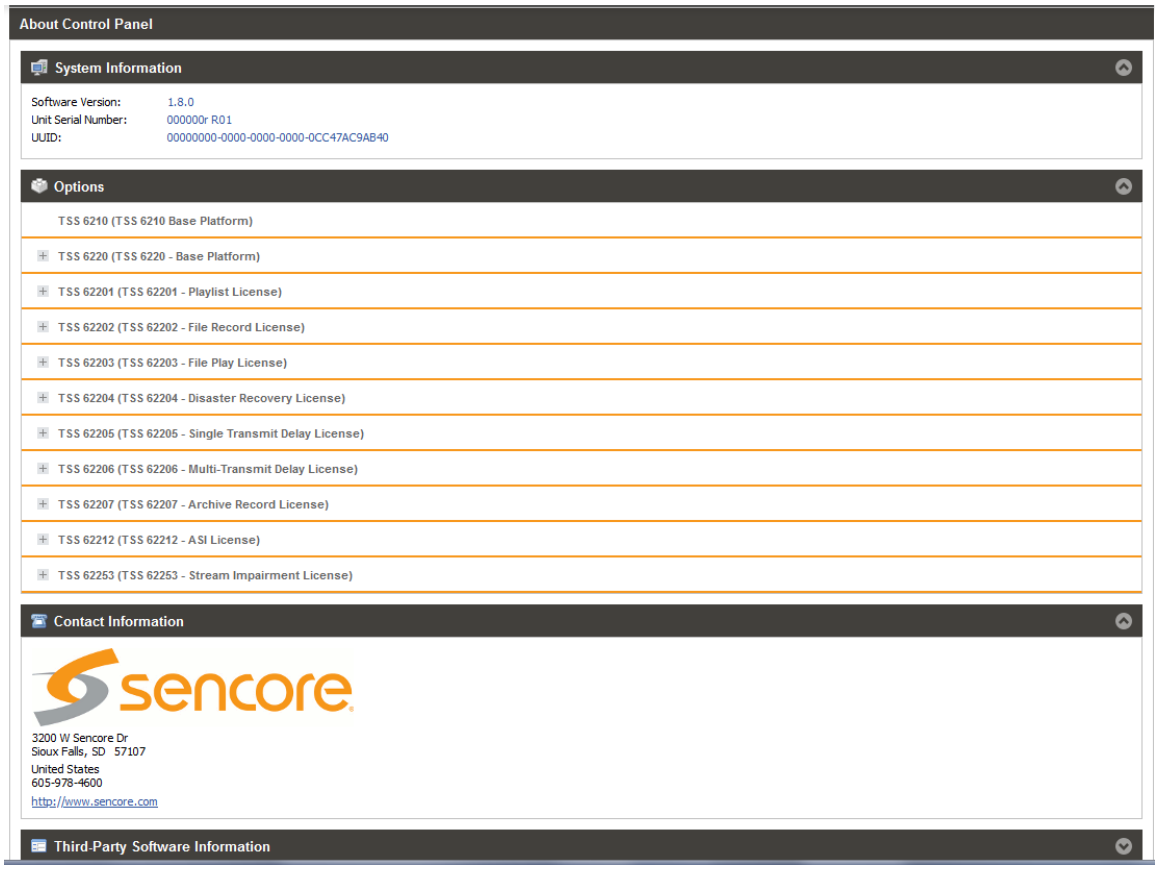
The Events tab allows the user to configure the events reported by the TSS 6220. Each column and its function are described below. A user configured time offset can also be applied to allow viewing the logs in a local time zone. Check the box for the events you want included in the logs or to include or generate an SNMP trap, when available.



Title	Description
Name	This column displays the name of the error or condition. This is informational data; no options can be set here.
Location	This column displays the hardware or function that the alarm or event applies to. This is informational data; no options can be set here.
Log	Checking the box in this column creates an entry in the event log in the case this error or event is raised. If this box is unchecked this error or event will be hidden and not logged if raised.
Log Severity	This column is only available in the Conditions tab This option allows the user to set the severity of the error to Info or Error. If Info is selected in the drop-down box the icon will be displayed in the event log. If Error is selected the icon will be displayed in the event log.
Alarm	This column is only available in the Conditions tab This option allows the user to enable or disable this alarm in the Active Alarms log. If checked the alarm will be displayed in the Active Alarms log if raised. If this box is unchecked this error will be hidden.
SNMP Trap	This column allows the user to send an SNMP Trap if this alarm is raised. If this box is checked an SNMP Trap is sent when this alarm is raised. If this box is unchecked an SNMP is not sent.

13 About Panel

The About tab provides information regarding the TSS 6220 including system information, hardware and software options, Sencore contract information, and third-party software information. Click on the About tab to access the About Panel.



Under the About tab, there are no user definable parameters. Below is a description of the information found in the About Panel.

System Information

The System Information section provides the following information regarding the specific TSS 6220.

Software Version: Indicates the current software version.
Unit Serial Number: Indicates the unit's serial number
UUID: Indicates a unique unit identification number, typically the MAC address.

Options

The Options section provides a list of the unit's hardware and software licensing options. Click on the + symbol at the left of each listing for additional drop down informational lines and details of each option. The listings provide useful information regarding the hardware versions and unit configuration. The listings differ depending on the configuration and options of the TSS 6220.

Contact Information

The Contact Information section provides Sencore company and contact information.

Third Party Software Information

The Third-Party Software Information section lists all the TSS 6220's third party software. Information includes the package identification, software version, license numbers and copyright information. Click the box to show a complete listing.