Streaming Gateway Cloud User Guide

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   - offer the best product quality and support
2. Make Cool Practical Technology
   - develop great products that customers love

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If anything at all with your Ross experience does not live up to your expectations be sure to reach out to us at *solutions@rossvideo.com*.

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9. We will go above and beyond in times of crisis. *If there's no one to authorize the required action in times of company or customer crisis - do what you know in your heart is right. (You may rent helicopters if necessary.)*

Streaming Gateway Cloud · User Guide

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This product may use one or more software components subject to licenses. Refer to "**Third Party Licenses**" for a complete list of licenses that apply to this product.

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Introduction

This guide covers the installation, configuration, and use of the softGear Streaming Gateway on an AWS™ EC2 instance. The following chapters are included:

- "**Introduction**" summarizes the guide and provides important terms, and conventions.
- "**Before You Begin**" summarizes the features of the Streaming Gateway and provides a workflow example for the Streaming Gateway integration.
- "**Getting Started**" provides the software requirements, installation instructions for the Streaming Gateway and DashBoard, and instruction on connecting DashBoard to the Streaming Gateway.
- "**Licensed Features**" outlines the available software licensed features, and how to manage your software keys for licensed features.
- "**Using DashBoard**" provides instructions for launching DashBoard, and accessing the Streaming Gateway interfaces in DashBoard.
- "**Configuring the NTP Settings**" provides instructions for configuring the Streaming Gateway for communication with your facility NTP server.
- "**Specifying an NDI Stream as a Source**" outlines how to configure a source by assigning an NDI stream.
- "**Specifying an SRT Stream as a Source**" outlines how to configure a source by assigning an SRT stream.
- "**Assigning an SRT Stream as a Destination**" outlines how to assign an SRT stream as a destination.
- "**Assigning an NDI Stream as a Destination**" outlines how to assign an NDI stream as a destination.
- "**Connection Management**" outlines how to enable a connection, edit an existing connection, disable a connection, and delete a connection.
- "**DashBoard Interface Overview**" summarizes the menus and parameters of the Streaming Gateway tabs in DashBoard.
- "**Third Party Licenses**" contains licenses for third party libraries that are used in the softGear Streaming Gateway.
- "**Glossary**" provides a list of terms used throughout this guide.

Related Publications

It is recommended to consult the following Ross documentation before installing and configuring your Streaming Gateway:

- ***DashBoard User Guide***, Ross Part Number: 8351DR-004

Documentation Conventions

Special text formats are used in this guide to identify parts of the user interface, text that a user must enter, or a sequence of menus and sub-menus that must be followed to reach a particular command.

Interface Elements

Bold text is used to identify a user interface element such as a dialog box, menu item, or button. For example:

In the **Network** tab, click **Apply**.

User Entered Text

Courier text is used to identify text that a user must enter. For example:

In the **Language** box, enter **`English`**.

Referenced Guides

Text set in bold and italic represent the titles of referenced guides, manuals, or documents. For example:

For more information, refer to the ***DashBoard User Guide***.

Menu Sequences

Menu arrows are used in procedures to identify a sequence of menu items that you must follow. For example, if a step reads "**File** > **Save As**," you would click the **File** menu and then click **Save As**.

Important Instructions

Star icons are used to identify important instructions or features. For example:

✶ Contact your IT department before connecting to your facility network to ensure that there are no conflicts.

Contacting Ross Video Technical Support

At Ross Video, we take pride in the quality of our products, but if problems occur, help is as close as the nearest telephone.

Our 24-hour Hot Line service ensures you have access to technical expertise around the clock. After-sales service and technical support is provided directly by Ross Video personnel. During business hours (Eastern Time), technical support personnel are available by telephone. After hours and on weekends, a direct emergency technical support phone line is available. If the technical support person who is on call does not answer this line immediately, a voice message can be left and the call will be returned shortly. This team of highly trained staff is available to react to any problem and to do whatever is necessary to ensure customer satisfaction.

- **Toll Free Technical Support (North America)**: 1-844-652-0645
- **Toll Free Technical Support (International)**: +800 1005 0100
- **Technical Support**: (+1) 613-652-4886
- **After Hours Emergency**: (+1) 613-349-0006
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Before You Begin

The softGear Streaming Gateway is a transport converter with built-in micro-services. The Streaming Gateway allows you to transport content based on softGear™ micro-service architecture, and can run on an AWS EC2 instance.

If you have questions pertaining to the operation of the Streaming Gateway, contact us at the numbers listed in "**Contacting Ross Video Technical Support**".

Features

The Streaming Gateway includes the following features:

- Support for MPEG2-TS over SRT transmission and reception
- Supports multiple resolutions and frame rates
- NDI transmission and reception
- Intuitive control and monitoring via DashBoard

DashBoard Interfaces

The Streaming Gateway includes DashBoard interfaces for configuration and operation. The interfaces are accessed by expanding the Streaming Gateway node in the DashBoard Tree View and selecting the appropriate sub-node. The DashBoard client software enables you to monitor and control DashBoard Connect compatible devices from a computer.

For More Information on...

- displaying the DashBoard interfaces, refer to "**Using DashBoard**".

Configuration Overview

Figure 1 provides a generalized workflow of configuring your Streaming Gateway for streaming.

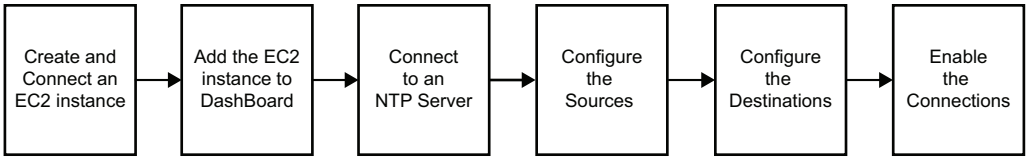


Figure 1 Configuration Workflow

Create and Connect to an EC2 Instance on AWS

The Streaming Gateway operates as an EC2 instance as of version 4.0. There is no hardware to install and configure. You must install the Streaming Gateway as an AWS™ EC2 instance first. This requires you to:

1. Create a suitable Ubuntu 24.04 EC2 instance on AWS.
2. Upload and install the SSG package.
3. Retrieve the IP address of the EC2 instance.

For More Information on...

- creating and connecting to an EC2 instance, refer to "**Getting Started**".

Add the EC2 Instance to the DashBoard Tree View

You must install the DashBoard software on your PC and manually add the EC2 instance to the Tree View. This will then provide you access to the Streaming Gateway interfaces.

For More Information on...

- installing the DashBoard software, refer to "**Install DashBoard**".
- adding the EC2 instance to DashBoard, refer to "**Add the EC2 Instance as a Device to the DashBoard Tree View**".
- the menus and parameters available in DashBoard, refer to "**Using DashBoard**" and "**DashBoard Interface Overview**".

Connect to an NTP Server

Once you can successfully access the Streaming Gateway in DashBoard, the next step is to establish a connection to an NTP Server. The Streaming Gateway requires an accurate time reference, in order to ensure correct watermarking and crediting. Refer to "**Configuring the NTP Settings**".

Configure the Sources

Each source is configured independently, allowing you to assign NDI or SRT streams as the source for a connection. Once all the sources are configured, you can proceed to assign each source to an output (destination) to create a connection. Refer to "**Specifying an NDI Stream as a Source**" or "**Specifying an SRT Stream as a Source**".

✶ The Streaming Gateway supports a maximum of 32 sources.

Configure the Destinations

A destination is created by defining an output from the Streaming Gateway to a specific SRT or NDI destination. Each destination is configured independently. Refer to "**Assigning an SRT Stream as a Destination**" or "**Assigning an NDI Stream as a Destination**".

✶ The Streaming Gateway supports a maximum of 32 destinations.

Enable the Connections

The Streaming Gateway supports two workflows: receiving an NDI stream and transmitting an SRT video stream, or receiving an SRT stream and transmitting an NDI stream. Use the DashBoard interfaces to map a source to a destination, then enable the connection to output the required stream. This workflow requires you to:

1. Configure a workflow to receive an NDI stream and output to an SRT stream:
   - Refer to "**To specify an NDI stream as a source**".
   - Refer to "**To assign an SRT stream as the destination**".
2. Configure a workflow to receive an SRT stream and output to an NDI stream:
   - Refer to "**To specify an SRT stream as a source**".
   - Refer to "**To assign an NDI stream as the destination**".
3. Repeat steps 1 and 2 for each additional connection as required.
4. Enable each connection. Refer to "**Connection Management**".

Getting Started

This chapter provides the installation instructions for creating an AWS EC2 instance, installing the Streaming Gateway and DashBoard, and instructions on adding the EC2 instance to the Tree View in DashBoard.

If you have questions pertaining to the installation of the Streaming Gateway, contact us at the numbers listed in "**Contacting Ross Video Technical Support**". Our technical staff is always available for consultation, training, or service.

✶ The Streaming Gateway does not run as an application on your computer. Instead, it runs as a service that DashBoard connects to and presents the user interface for. DashBoard is required to operate the Streaming Gateway.

Additional Software

In addition to the Streaming Gateway software, you should download and install the following software applications.

DashBoard

DashBoard is required to configure and use the Streaming Gateway. The latest version of DashBoard is available from our website.

NDI® Tools

The latest version of NDI® Tools can be found at ndi.tv. This suite is free to download and has been designed to introduce anyone, from end users to professional installers to the world of NDI® connectivity. Some NDI® configuration settings are performed using these tools and therefore should be installed for Streaming Gateway.

NDI® Tools is made up of several useful applications, including the following:

- NDI Studio Monitor — for viewing NDI® video sources on your network.
- NDI Access Manager — for managing visibility and accessibility of sources.
- NDI Test Patterns — for generating reference signals.
- NDI Router — for routing NDI® sources to custom outputs.
- NDI Bridge — for sending and receiving sources beyond your local network.
- NDI VLC Plugin — for generating NDI® sources from the VLC media player.

NDI® SDK (NDI Discovery Server)

The NDI® SDK is available at ndi.tv and includes a number of useful utilities.

The NDI Discovery Server is designed to allow you to replace the automatic discovery NDI® uses with a server that operates as a centralized registry of NDI® sources.

Using a discovery server is as simple as running the application in Bin\Utilities\x64\NDI Discovery Service.exe. This application will then run a server on your local machine that accepts incoming connections with senders, finders, and receivers, and coordinates amongst them all to ensure they are all visible to each other.

Once NDI Discovery is running, configuration of each device on your network is made by checking the Discovery Server box and adding its IP Address within the NDI® Access Manager.

Overview

This chapter outlines how to:

1. Create a suitable Ubuntu 24.04 EC2 instance on AWS (g4dn.4xlarge, 100GB disk).
2. Upload and install the latest SSG v4 package (ssg-<version>-<date>-<git hash>.install) on the instance.
3. Retrieve the IP address of the EC2 instance.
4. Install DashBoard on your Microsoft Windows machine.
5. Add the EC2 instance to the DashBoard Tree View.

Notice — *Keep track of your credentials and IP addresses, and make sure to close any unused ports to maintain security. If you run into connectivity issues, double-check your AWS Security Group and local firewall settings.*

Create and Connect to an EC2 Instance on AWS

This section outlines how to log into the AWS Console, and launch a new EC2 instance.

To create an EC2 instance on AWS

1. Log into the AWS Console:
   a. Use your browser to navigate to aws.amazon.com.
   b. Log in with your AWS credentials.
2. In the AWS Management Console, select **Services** > **EC2**.
3. Launch an EC2 instance:
   a. Click **Launch Instances** (or Launch Instance).
   b. Use the **Name** and **Tags** fields to give your instance a descriptive name (e.g. ssg-instance).
   c. Under **Application and OS images** (Amazon Machine Image), select **Ubuntu Server 24.04 LTS (HVM), SSD Volume Type**.
   d. Set the **Instance** type to **g4dn.4xlarge** (as required).
   e. Under **Key pair** (login), select an existing key pair or create a new one.

      The key pair is required to connect via SSH.
   f. Under **Network settings**, confirm the VPC and subnet are correct for your setup.

✶ If you plan on connecting from the Internet, ensure you have a public IP or an Elastic IP available.

   g. Under **Configure storage**, set the **Root volume** size to **100GB**.
   h. Review your settings.
   i. Click **Launch Instance**.

✶ For the Security group, Ports 22 (ssh), 5254, and any SRT port you wish to use should be allowed.

4. Wait for the Instance to Start.
   - AWS will provision the instance.
   - Once it is running, it will be reported in your EC2 Console with a status of Running.

To connect to your EC2 instance

1. Locate the Public IP or DNS:
   a. In the **EC2 Management Console**, select your instance.
   b. In the **Description** or **Details** pane, note the Public IPv4 address or the Public DNS.
2. SSH into the EC2 instance on your local machine (Mac/Linux) connect to the instance.
   For example (Mac/Linux terminal):
   ssh -m hmac-sha2-512 -i **`/path/to/your_key_pair.pem`** ubuntu@**`<EC2-Public-IP-or-DNS>`**
   a. Replace **`/path/to/your_key_pair.pem`** with the path to your key file (from step 3e above).
   b. Replace **`<EC2-Public-IP-or-DNS>`** with your instance's public address.

Upload and Run the SSG Installer

This section requires you to use scp (Mac/Linux) or an SFTP client (Windows) to upload the file to your EC2 instance. Then you can prepare and run the SSG Installer.

To upload the SSG Installer

1. Ensure the file **ssg-<version>-<date>-<git hash>.install** is on your local machine.
2. Transfer the Installer to EC2 using scp (Linux/Mac):

```
scp -o MACs=hmac-sha2-512 -i /path/to/your_key_pair.pem \
   ssg-<version>-<date>-<git hash>.install \
   ubuntu@<EC2-Public-IP-or-DNS>:~
```

✶ This command uploads the file to your home directory on the EC2 instance.

3. Verify the file.
4. Log back into the EC2 instance.
5. To ensure the file is present, run one of the following:
   - **`ls -l`** or
   - **`ls -l ssg-<version>-<date>-<git hash>.install`**

To make the Installer executable

- Change the file permissions so the Installer can be executed:

```
chmod +x ssg-<version>-<date>-<git hash>.install
```

To run the Installer

- run the script: **`sudo ./ssg-<version>-<date>-<git hash>.install`**

To confirm the installation

- Wait for the script to complete.

Retrieve the IP Address of the EC2 Instance

This section outlines how to locate the IP address for your EC2 instance. This information is required to add the instance to the DashBoard interface.

To retrieve the IP address for your EC2 instance

1. Log into the AWS Console:
   a. Use your browser to navigate to aws.amazon.com.
   b. Log in with your AWS credentials.
2. In the AWS Console, select **EC2** > **Instances**.
3. Select your instance.
4. Make a note of the value reported in the **Details** > **Private IPv4 address** field.

Install DashBoard

The installation wizard will enable you to install the DashBoard application on your PC. DashBoard will backup and restore your current settings if another version is already installed on the computer.

To install DashBoard

1. Launch the DB#.##.#_setup_64 installer on the PC you want to run the Streaming Gateway and follow the on-screen instructions.
2. Review the **End User Licensing Agreement (EULA)** and click **I Agree**.
3. Review the **Eclipse Foundation Software User Agreement** and click **I Agree**.
4. Select the components you want to install and click **Next**.

   It is recommended to leave everything selected.
5. Select where you want the application to be installed and click **Next**.

   You can either accept the default location or click **Browse** and select a new location.
6. Enter a name for the folder on the Start Menu that you want to use for the application.
7. Click **Install**.
8. Click **Finish** to complete the installation.

Add the EC2 Instance as a Device to the DashBoard Tree View

You must manually add the EC2 instance to the Tree View. Once you add the EC2 instance to the Tree View, you can access the Streaming Gateway interfaces.

✶ Launch DashBoard from another instance running in the same VPC as the EC2 instance.

To manually add the EC2 instance to the Tree View in DashBoard

1. From the main toolbar in DashBoard, select **File** > **New** > **TCP/IP DashBoard Connect or openGear Device**.

   The **New TCP openGear Frame Connection** dialog opens.
2. In the **IP Address** field, enter the IP address from "**To retrieve the IP address for your EC2 instance**".
3. Click **Detect Frame Information**.

✶ Use the **Display Name** field to assign a unique name for the EC2 instance.

4. Click **Finish** to close the dialog.
5. Verify that the **softGear Streaming Gateway** node displays in the DashBoard Tree View, along with the **System** sub-node below it.

Licensed Features

The Streaming Gateway has software licenses for enabling functions and features. This chapter outlines the available software licensed features, and how to install a product key for a licensed feature.

✶ Software licenses are managed and validated by a remote server. Contact Ross Technical Support for details.

Overview

The Streaming Gateway provides floating licenses for cloud servers. Floating licensing is integrated with the Ross Platform Manager (RPM), and requires a constant connection with the RPM.

The Streaming Gateway re-activates licenses on a regular interval with the RPM. If an activation fails as a result of being unable to reach the RPM, the Streaming Gateway will start a 2-day grace period before terminating the features. During this time, the Streaming Gateway will operate as normal. A reboot will remove any Streaming Gateway grace period in effect and the Streaming Gateway will start without any features. If an activation fails as a result of the RPM being unable to reach the activation server, the RPM will start a grace period where the Streaming Gateway will be able to continue activating the licenses without issues. After the this grace period is over, the features will be terminated. The Streaming Gateway can be rebooted safely while the RPM grace period is in effect.

✶ Contact Ross Technical Support for details on the Ross Platform Manager (RPM).

✶ When the Streaming Gateway is rebooted or turned off, it will deactivate all of its licenses with the RPM.

Product Keys Overview

The Streaming Gateway Licensing tab in DashBoard indicates the current state of each license. These fields will always be populated for a licensed system and warn the users of any changes or issues, such as licenses expiring soon (within a week), or if the connection between the Streaming Gateway and the RPM has been lost.

✶ Expired or invalid licenses will result in the immediate termination of all features.

Table 1 provides a brief summary on the types of licensed features available for the Streaming Gateway.

Table 1 List of Streaming Gateway Licensed Features

License	Description
Platform	Basic license for the softGear product line
SG-SGW-NDI-1CH	Enables one decoder channel on the Streaming Gateway. Make a note of the value reported in the Number of Uses field in the Licenses tab. This value indicates the total number of channels that can be Online (active) on the Streaming Gateway at one time. For example, to decode two NDI streams requires two licenses.

Installing a Product Key

Ross Video uses product keys to control user access to specific Streaming Gateway features. You can obtain a key for a Streaming Gateway licensed feature from Ross Video Technical Support.

To install a Streaming Gateway Product Key

1. In the **Basic Tree View** of DashBoard, locate the **softGear Streaming Gateway** node.
2. Expand the **softGear Streaming Gateway** node.
3. Double-click the **System** sub-node.
4. Select the **Licensing** tab.
5. Enter the Product Key in the **Product Key** field.
6. Click **Activate**.
7. Verify that the **Status** field updates to Activation Successful and the Licensing Table populates.

   The **SSG** sub-node will now be available in the **Basic Tree View** of DashBoard under the **softGear Streaming Gateway** node.

Uninstalling a Product Key

Whether your use of Streaming Gateway features has changed, or you are switching to using another Streaming Gateway instance, you will need to uninstall the product key that you were using.

To uninstall a Streaming Gateway Product Key

1. In the **Basic Tree View** of DashBoard, locate the **softGear Streaming Gateway** node.
2. Expand the **softGear Streaming Gateway** node.
3. Double-click the **System** sub-node.
4. Select the **Licensing** tab.
5. Click **Deactivate**.
6. Click **Yes** when prompted.

   The Product Key is now uninstalled.

Using DashBoard

The DashBoard client software enables you to configure and monitor the Streaming Gateway from a computer. The interfaces are accessed by expanding the main Streaming Gateway node in the DashBoard Tree View and selecting the appropriate sub-node. This chapter provides instructions for accessing the sub-nodes of the Streaming Gateway.

Launching DashBoard

DashBoard must run on a computer that has a physical wired ethernet connection. Wireless connections do not allow device discovery.

For More Information on...

- downloading and installing the DashBoard client software, refer to the ***DashBoard User Guide***.

To launch DashBoard

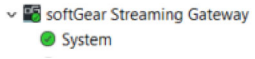
1. Ensure that you are running DashBoard software version 9.15 or higher.
2. Launch DashBoard by double-clicking its icon on your computer desktop.

Accessing the System Interfaces in DashBoard

Use the System interfaces to enable licensed features, connect to an NTP server, and monitor the read-only information about your system.

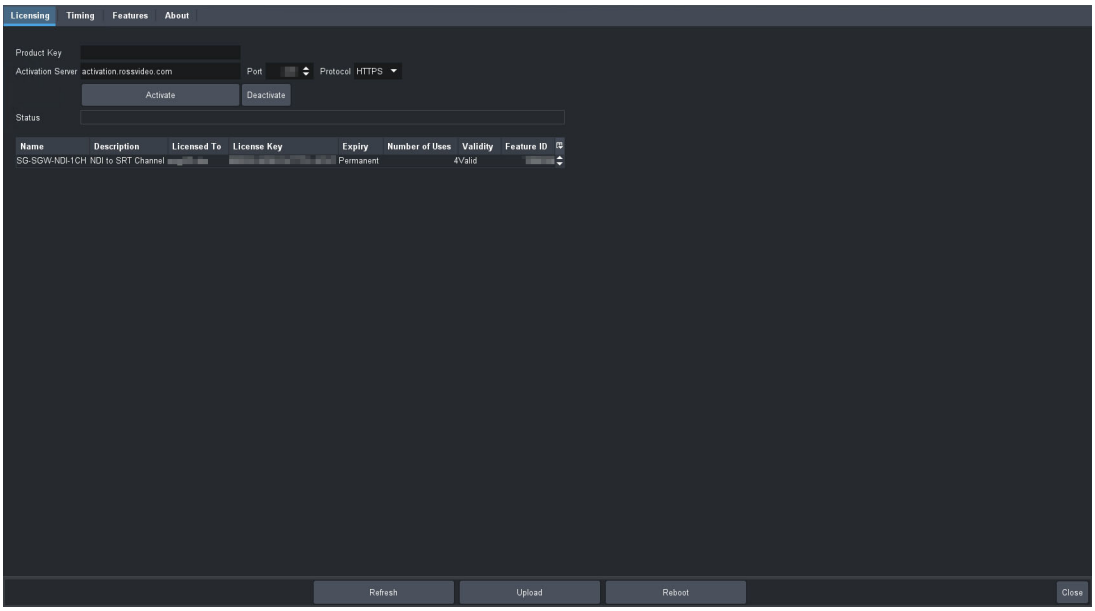
To display the System interfaces in DashBoard

1. In the **Basic Tree View** of DashBoard, locate the **softGear Streaming Gateway** node.
2. Expand the **softGear Streaming Gateway** node.



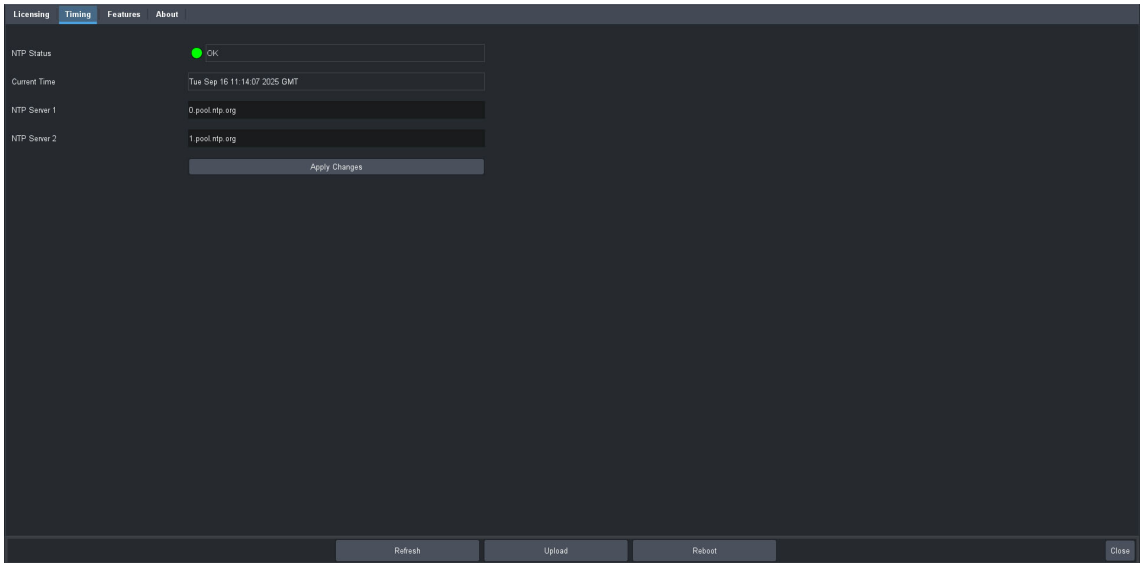
3. Double-click the **System** sub-node.

   The **Licensing** tab enables you to manage the licensed features.



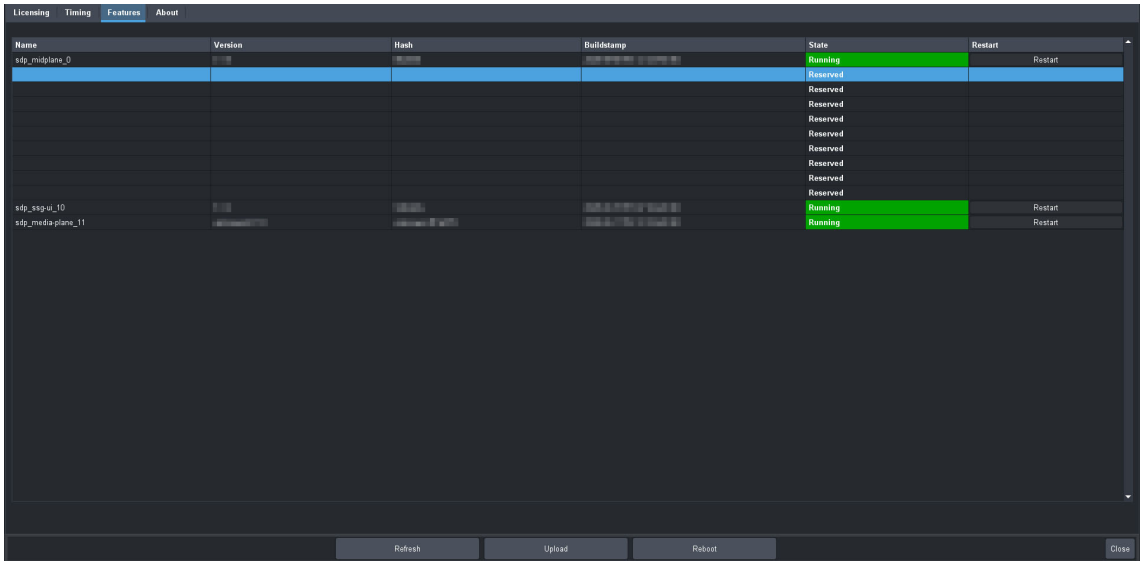
4. Select the **Timing** tab.

   The **Timing** tab provides settings to connect to an NTP server to establish accurate timing.



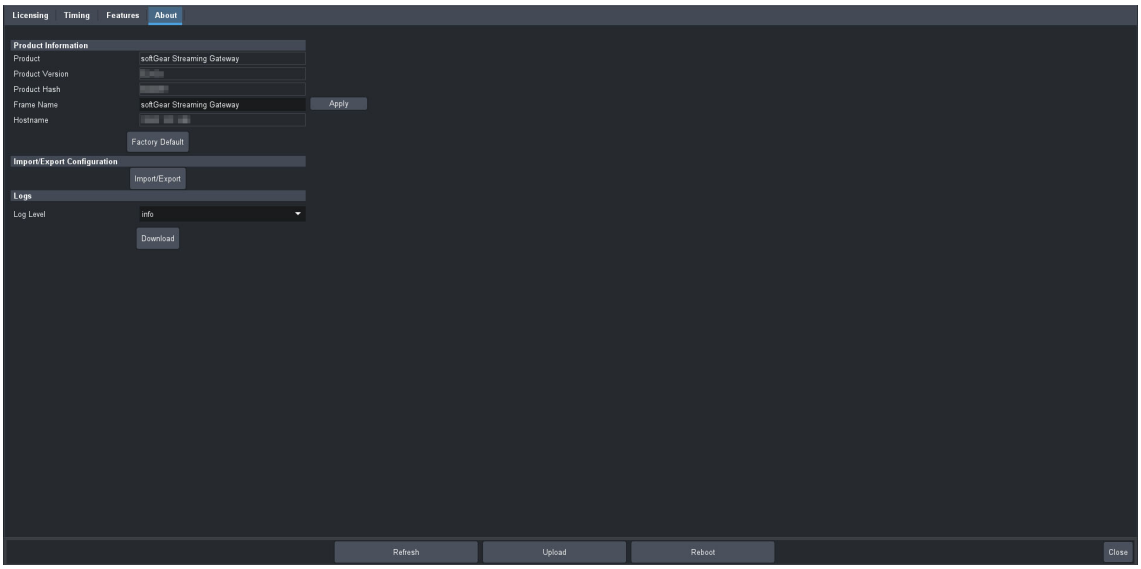
5. Select the **Features** tab.

   The **Features** tab provides read-only information on the running features.



6. Select the **About** tab.

   The **About** tab provides general system information, such as the product name, version, and enables you to apply a unique identifier to this Streaming Gateway. From this tab you can also download an archive of the logs for troubleshooting purposes.

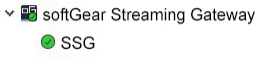


Accessing the SSG Interfaces in DashBoard

The SSG interfaces are accessed by double-clicking the SSG sub-node. Use the SSG interfaces to configure the sources and destinations, enable connections, and monitor the traffic.

To display the SSG interfaces in DashBoard

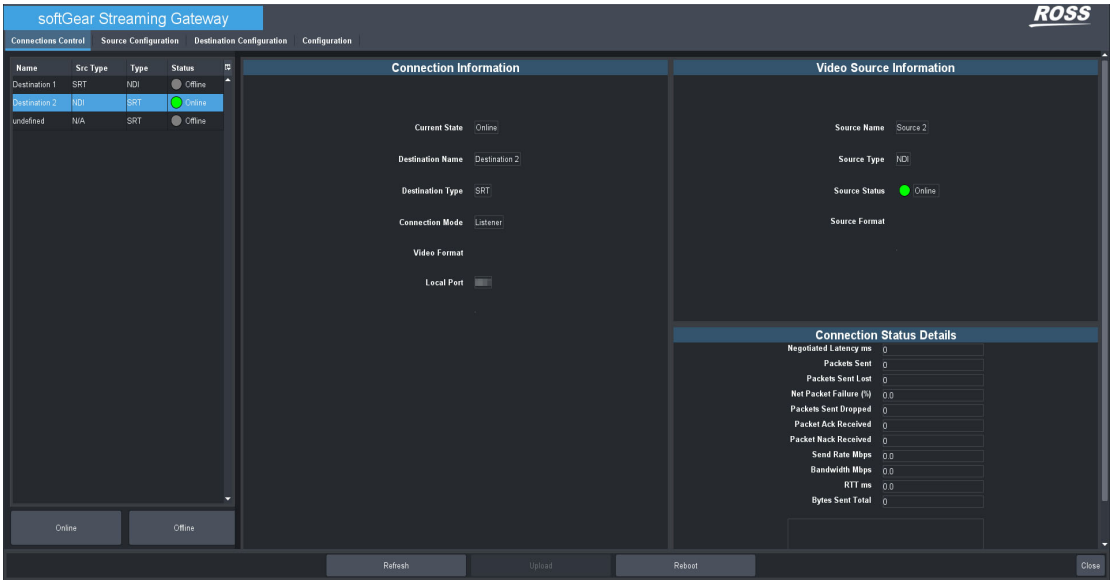
1. In the **Basic Tree View** of DashBoard, locate the **softGear Streaming Gateway** node.
2. Expand the **softGear Streaming Gateway** node.



3. Double-click the **SSG** sub-node.

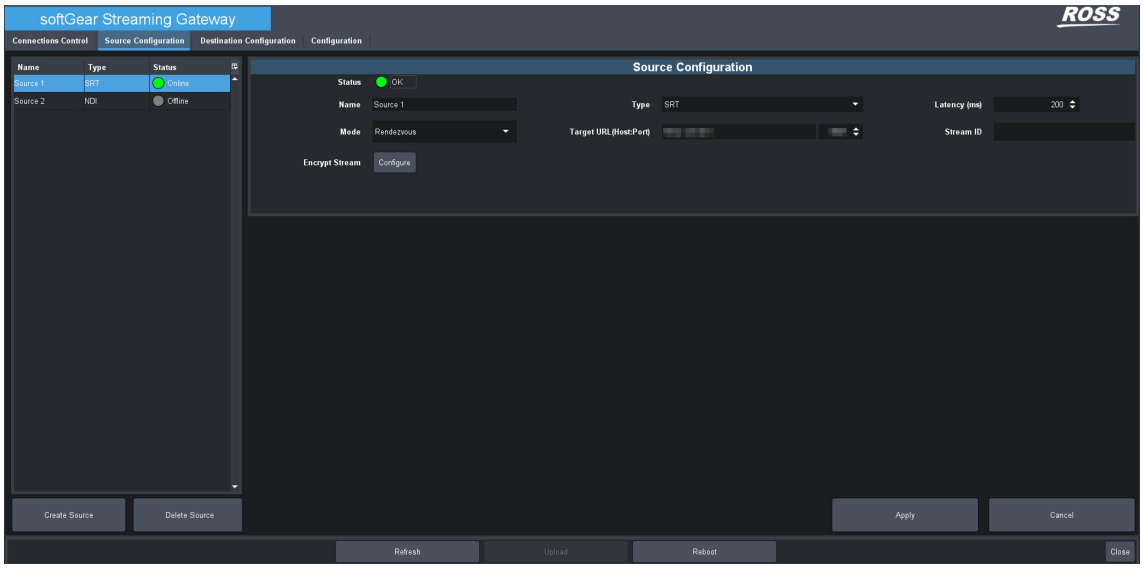
   The **Connections Control** tab is automatically selected. This enables you to specify which connections are active (online) or not (offline), and monitor the connections.

✶ The read-only fields depend on the type of connection you selected to monitor.



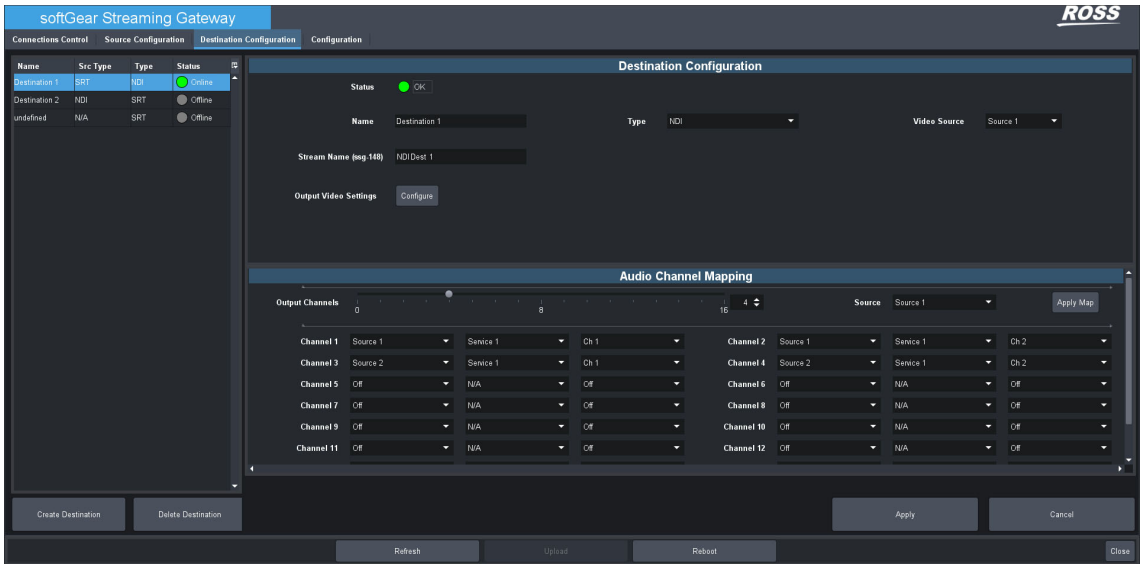
4. Select the **Source Configuration** tab.

   The **Source Configuration** tab enables you to manage the input signals that the Streaming Gateway will have access to. The tab is organized into two panes. The left pane lists all the configured sources in a table format. Selecting a row in this table displays the options for the selected source in the right pane of the window.



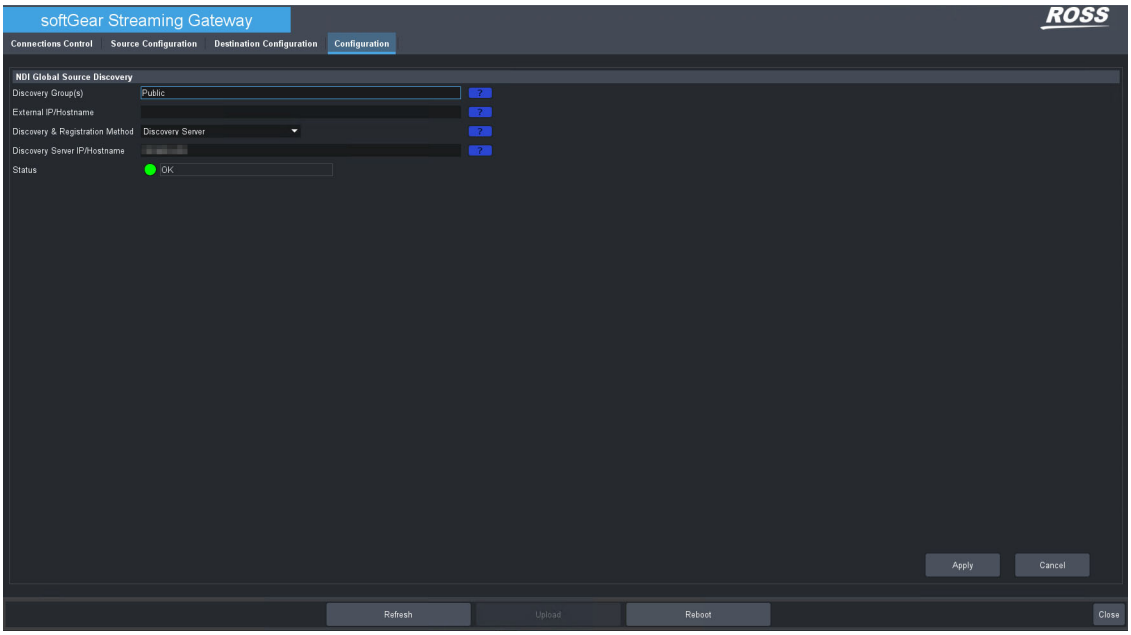
5. Select the **Destination Configuration** tab.

   The **Destination Configuration** tab enables you to manage the output signals that the Streaming Gateway will have access to. The tab is organized into two panes. The left pane lists all the configured destinations in a table format. Selecting a row in this table displays the options for the selected destination in the right pane of the window.



6. Select the **Configuration** tab.

   From this tab you can access the NDI Global Source Discovery settings. Refer to "**Configuration Tab**" for more information.



Upgrading the Software

The Streaming Gateway can be upgraded in the field via DashBoard. Contact Ross Technical Support before upgrading from versions prior to v4.1. Refer to "**Contacting Ross Video Technical Support**" for contact details.

Configuring the NTP Settings

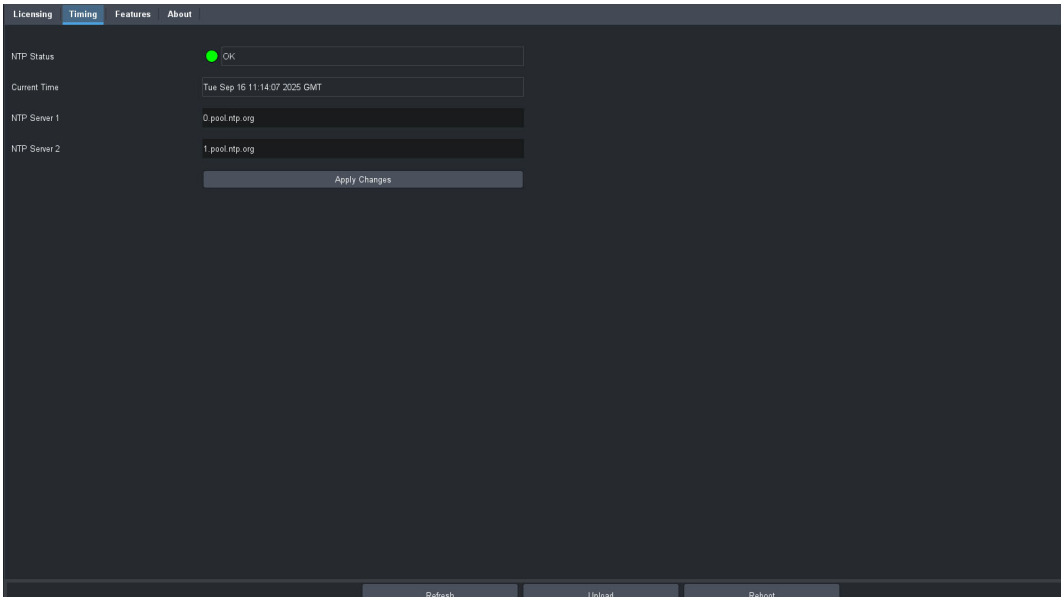
The Streaming Gateway requires an accurate time reference to ensure correct watermarking and crediting. This chapter outlines how to set the system time of the Streaming Gateway.

Configuring the NTP Settings

You have the option to set the current date and time on the system clocks of the Streaming Gateway by using a Network Time Protocol (NTP) server. This requires you to enter the IP address of up to two (2) NTP servers. Ensure the Streaming Gateway is able to access these IP addresses in order to acquire the time from the NTP server(s).

To set the system time of the Streaming Gateway

1. Display the **System** interface as outlined in "**To display the System interfaces in DashBoard**".
2. Select the **Timing** tab.



3. In the **NTP Server 1** field, enter the IP address of the first NTP server you want to access.
4. If required, in the **NTP Server 2** field, enter the IP address of the second NTP server you want to access.
5. Click **Apply Changes**.
6. Wait until the Streaming Gateway is:
   - synchronized to the new NTP server, and
   - the **NTP Status** field reports "OK".
7. If OK is not reported, verify:
   - that the time displayed in the **Current Time** field is correct;
   - that the IP address is correct;
   - that the Streaming Gateway has access to the address.

Specifying an NDI Stream as a Source

This chapter outlines how to configure the Streaming Gateway to receive an NDI stream.

For More Information on...

- SRT destinations, refer to "**Assigning an SRT Stream as a Destination**".
- managing your connections, refer to "**Connection Management**".

Before You Begin

Keep the following mind:

- Each connection is configured independently.
- Once all the sources are configured, you proceed to configure the SRT destination(s).

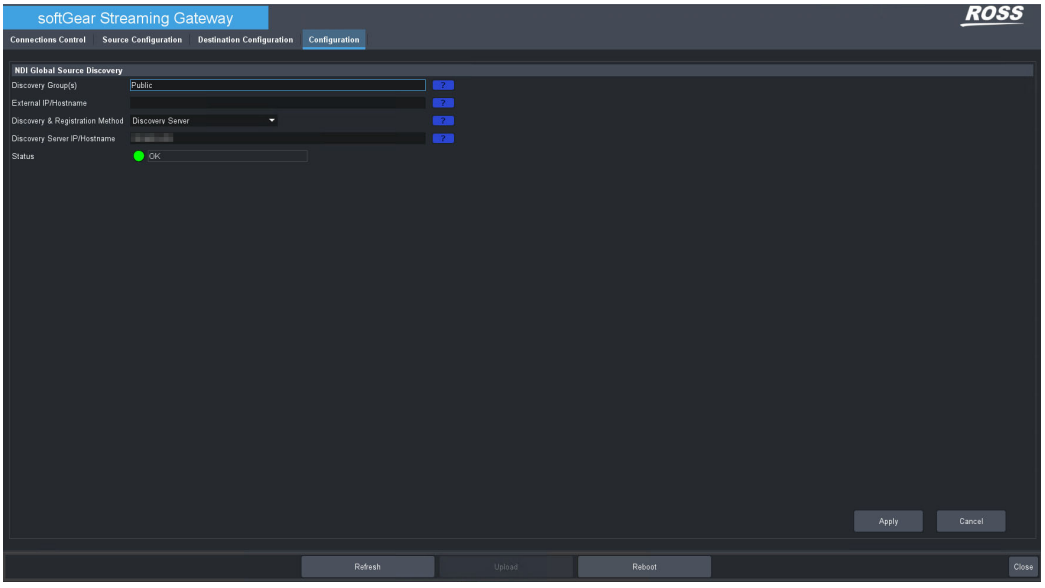
✶ Audio support requires Streaming Gateway version 5.0 or higher.

Configuring the NDI Global Source Discovery

The Global Settings sub-tab (located in the SSG > Configuration tab) provides options for NDI Global Source Discovery. If you are using a private group or an external server, ensure that the NDI Global Source Discovery is set accordingly.

To configure the NDI Global Source Discovery on the Streaming Gateway

1. Display the SSG sub-node in DashBoard as outlined in "**Accessing the SSG Interfaces in DashBoard**".
2. Select the **Configuration** tab.



✶ The **Discovery Group(s)** field is set to Public by default.

✶ The **Discovery & Registration Method** is automatically set to Discovery Server. The NDI Discovery Server is a tool that allows NDI devices to perform discovery. The user is required to set up the NDI Discovery Server independently. Refer to "**Additional Software**".

3. Use the **Discovery Server IP/ Host name** field to specify the IP address or host name for the NDI discovery method.
4. Click **Apply** (located in the bottom right corner).
5. Reboot the Streaming Gateway.

✶ After inputting the NDI Discovery Server IP address or host name, you must reboot the Streaming Gateway in order to connect to the NDI Discovery Server.

6. Monitor the **Status** field to ensure the Streaming Gateway establishes a valid connection to your NDI Discovery Server. Refer to **Table 19** for a list of possible messages.

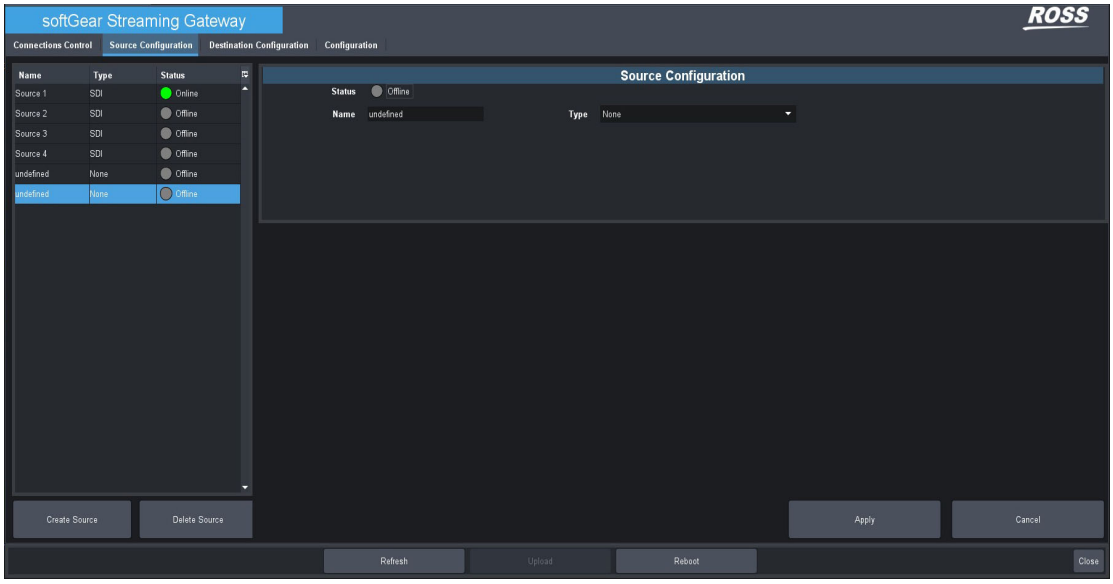
Specifying an NDI Stream as a Source

By default, there are two sources populated in DashBoard. You may edit one of these preexisting sources instead of creating a new one, if desired.

To specify an NDI stream as a source

1. Display the **Source Configuration** interface as outlined in "**Accessing the SSG Interfaces in DashBoard**".
2. Click **Create Source**.

   A new row displays in the source table (left pane) and the DashBoard window updates to display the Source Configuration options (right pane).

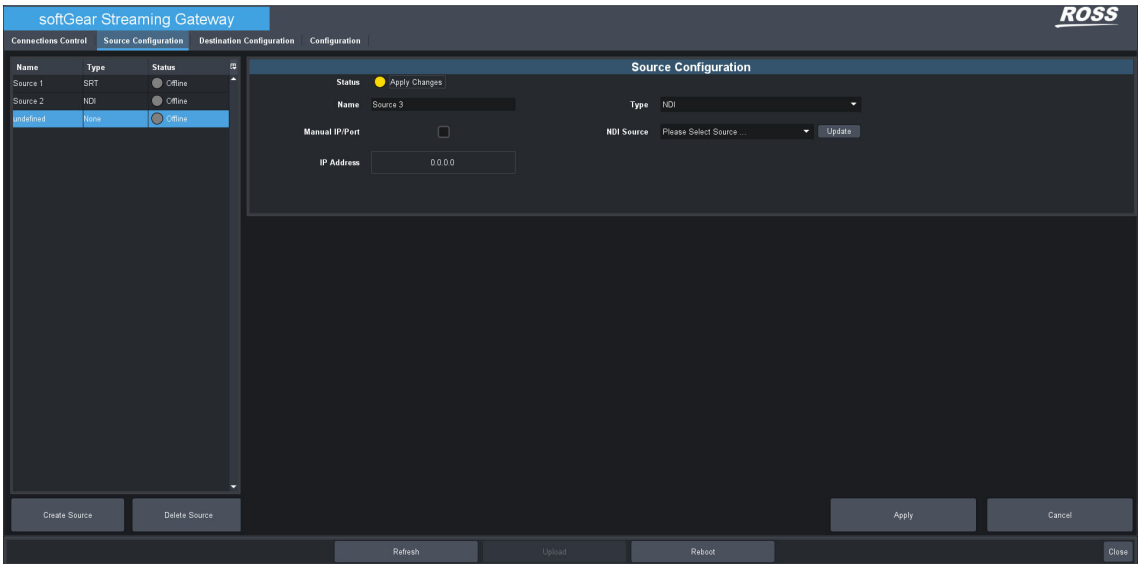


3. Use the **Name** field to assign a unique identifier to this source.

   The source name is used to identify the available sources on the Destination Configuration tab.

4. Use the **Type** menu to select **NDI**.

   The **Source Configuration** area updates to display options for configuring the source as an NDI stream.



5. Click the **Update** button beside the **NDI Source** menu.

   This refreshes the list of existing NDI sources.

6. Use the **NDI Source** menu to select the desired source.

   The **IP Address** field populates with the IP address for the selected source.

✶ If you want to create an NDI source instead of selecting an existing one, select the **Manual IP/Port** box and manually fill the **IP Address** and **Port** fields.

7. Click **Apply** (located in the bottom right corner).
8. Continue to "**Assigning an SRT Stream as a Destination**".

Specifying an SRT Stream as a Source

This chapter outlines how to configure the Streaming Gateway to accept an SRT stream as a source.

For More Information on…

- NDI outputs, refer to "**Assigning an NDI Stream as a Destination**".
- managing your connections, refer to "**Connection Management**".

Before You Begin

Keep in mind that:

- The SRT peer operating in Listener mode must be reachable over UDP on the port specified in the Local Port field for Listener mode.
- The SRT peer operating in Caller mode simply calls the listener at the specified Target URL (Host:Port).
- When using Rendezvous mode, both SRT peers must:
  - be set to Rendezvous mode,
  - use the same UDP port (local/source and destination),
  - be able to send outbound UDP to the other peer's public IP:Port, and
  - have Port rewriting (dynamic PAT) disabled on intervening firewalls/NATs.
- Once all the sources are configured, you proceed to configure the NDI destination(s).

Specifying an SRT Stream as a Source

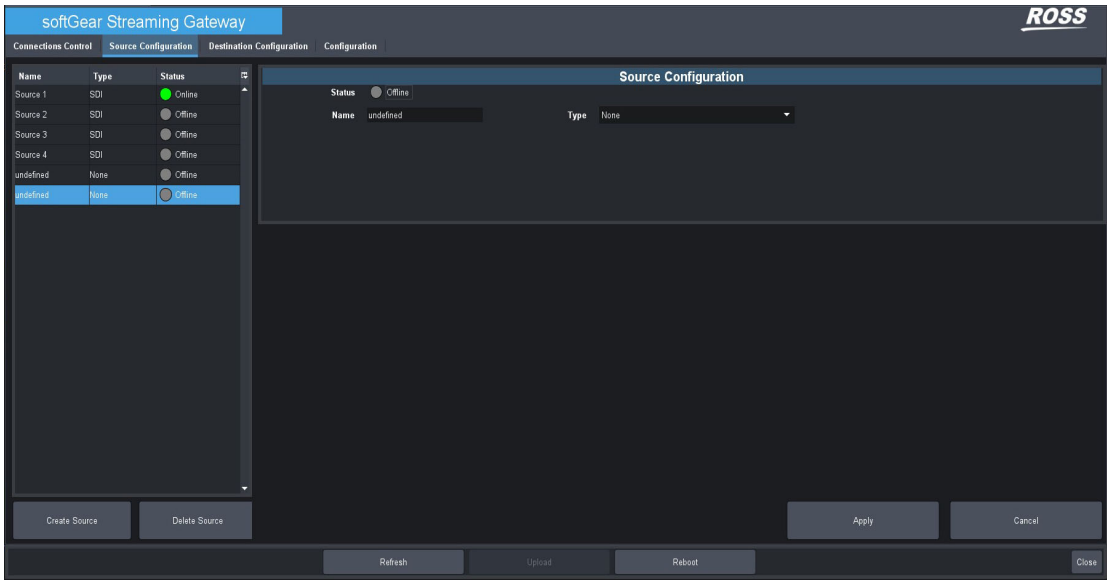
To establish an SRT connection, one of the peers must operate in **Listener** mode while the other operates as **Caller**. The mode of operation for the peer is determined by network configuration. It is not important which mode either the source or destination operates in.

By default, there are two sources populated in DashBoard. You may edit one of these preexisting sources instead of creating a new one, if desired.

To specify an SRT stream as a source

1. Display the **Source Configuration** interface as outlined in "**To display the SSG interfaces in DashBoard**".
2. Click **Create Source**.

   A new row displays in the source table (left pane) and the DashBoard window updates to display the Source Configuration options (right pane).

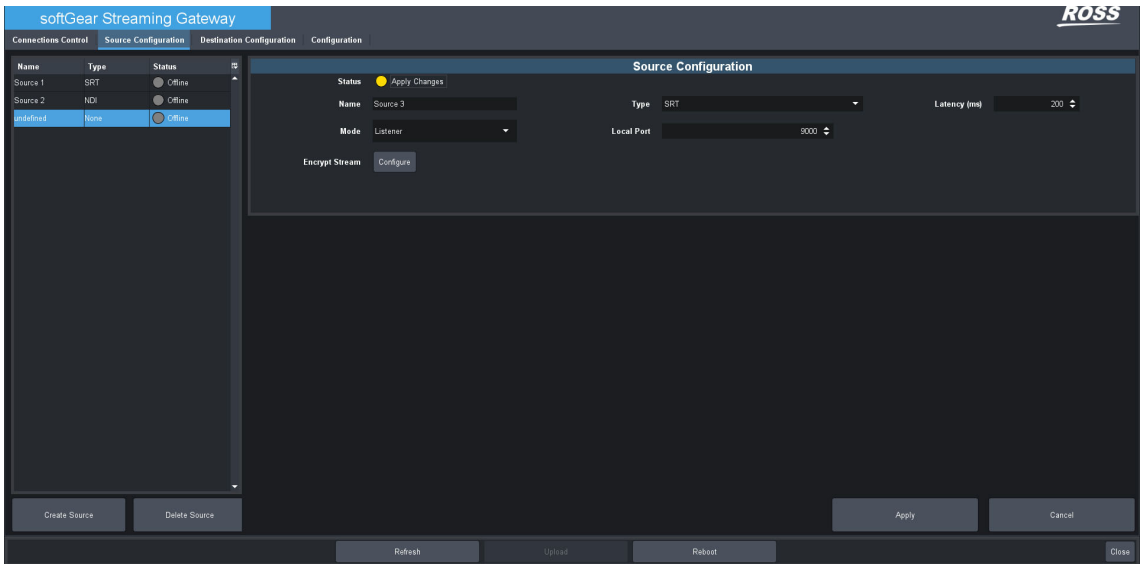


3. Use the **Name** field to specify a unique identifier for the source.

   The source name is used to identify the available sources on the Destination Configuration tab.

4. Use the **Type** menu to select **SRT**.

   The **Source Configuration** area updates to display options for configuring the source as an SRT stream.



5. Use the **Mode** menu to assign a function to the Streaming Gateway when decoding this stream. Choose from the following:

   - Listener — the Streaming Gateway acts as a receiver using the SRT protocol over the network.
   - Caller — the Streaming Gateway acts as a transmitter using the SRT protocol over the network.
   - Rendezvous — enables the SRT end points to auto-negotiate port settings when your network includes a firewall.

6. Use the **Latency (ms)** field to define the minimum receiver buffering delay before delivering an SRT data packet from a receiving SRT socket to stream decoder.

7. If the **Mode** selected in step 5 was **Listener**, use the **Local Port** field to define the port.

8. If the **Mode** selected in step 5 was **Caller**:
    a. Use the **Target URL (Host:Port)** fields to define the IP and the port.
    b. *(optional)* For configurations in which the Listener expects a specific Stream ID to be present, set the **Stream ID** field on the **Caller** to define the Stream ID for the connection.
9. If the **Mode** selected in step 5 was **Rendezvous**:
    a. Use the **Target URL (Host:Port)** fields to define the IP and the port.
    b. *(optional)* For configurations in which the Listener expects a specific Stream ID to be present, set the **Stream ID** field on the **Caller** to define the Stream ID for the connection.
10. Click **Apply** (located in the bottom right corner).
11. If you are using encryption, continue to "**To use encryption**". If you are not using encryption, continue to step 12.
12. Continue to "**Assigning an NDI Stream as a Destination**".

To use encryption

1. Select **Encrypt Stream** > **Configure**.

    The **Encrypt Stream** dialog opens.
2. Select the **Encrypt** box.
3. Use the **Key Length** menu to select the desired key length to encrypt the data.
4. Use the **Passphrase** field to specify a string between 10-80 characters long. The passphrase must match for both peers.
5. Click **OK** to close the **Encrypt Stream** dialog.
6. Click **Apply** (located in the bottom right corner).
7. Continue to "**Assigning an NDI Stream as a Destination**".

Assigning an SRT Stream as a Destination

This chapter outlines how to configure the SRT destinations (outputs) that will create connections for your Streaming Gateway.

For More Information on…

- managing your connections, refer to "**Connection Management**".

Before You Begin

Keep the following in mind:

- A destination for a connection can include only the video, only the audio, or both the audio and video from a single source.
- Each SRT destination is configured independently.
- Routing an SRT source to an SRT destination is not supported.
- The SRT peer operating in Listener mode must be reachable over UDP on the port specified in the Local Port field for Listener mode.
- The SRT peer operating in Caller mode simply calls the Listener at the specified Target URL (Host:Port).
- When using Rendezvous mode, both SRT peers must:
  - › be set to Rendezvous mode,
  - › use the same UDP port (local/source and destination),
  - › be able to send outbound UDP to the other peer's public IP:Port, and
  - › have Port rewriting (dynamic PAT) disabled on intervening firewalls/NATs.

✶ Audio support requires Streaming Gateway version 5.0 or higher.

Assigning an SRT Stream as the Destination

To establish an SRT-to-SRT connection, one of the peers must operate in Listener mode while the other operates as Caller. The mode of operation for the peer is determined by network configuration. It is not important which mode either the source or destination operates in.

By default, there are two destinations populated in DashBoard. You may edit one of these preexisting destinations instead of creating a new one, if desired.

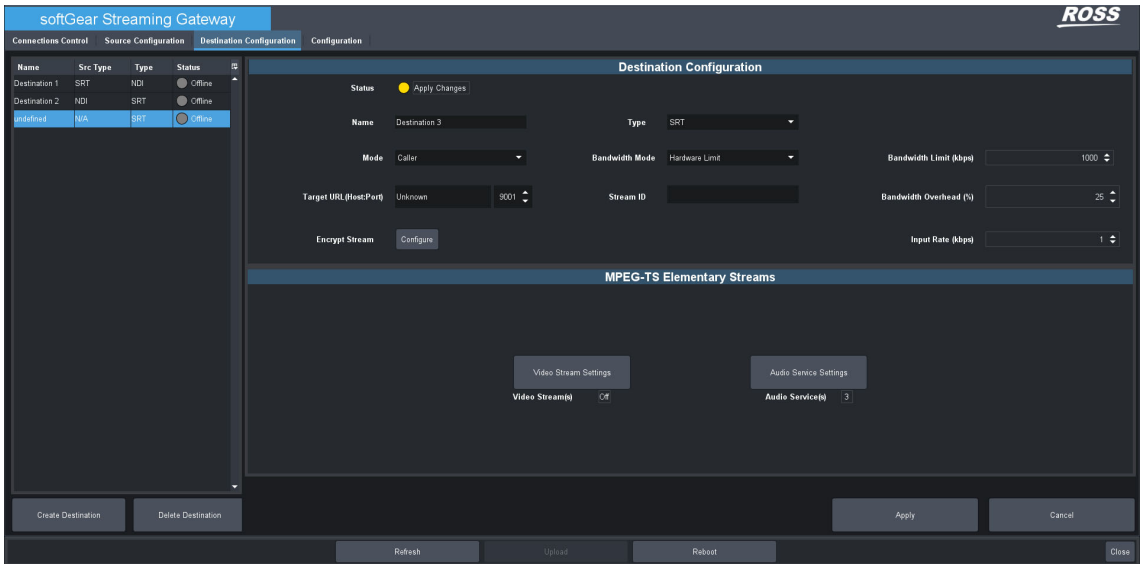
To assign an SRT stream as the destination

1. Display the **Destination Configuration** interface as outlined in "**Accessing the SSG Interfaces in DashBoard**".
2. Click **Create Destination**.

   A new row displays in the destination table (left) and the DashBoard window updates to display the Destination Configuration settings for the new destination (right).
3. Use the **Name** field to assign a unique identifier to this destination.

   This name is used to quickly identify connections on the Connections Control tab.
4. Use the **Type** menu to select **SRT**.

The **Destination Configuration** pane updates to display options for assigning an SRT stream as a destination.



5. Use the **Mode** menu to assign a function to the Streaming Gateway for this network stream. Choose from the following:
   - Listener — the Streaming Gateway acts as a receiver using the SRT protocol over the network.
   - Caller — the Streaming Gateway acts as a transmitter using the SRT protocol over the network.
   - Rendezvous — enables the SRT end points to auto-negotiate port settings when your network includes a firewall.
6. If the **Mode** selected in step 5 was **Listener**, use the **Local Port** field to define the port on the Streaming Gateway that will receive the stream.
7. If the **Mode** selected in step 5 was **Caller**:
   a. Use the **Target URL (Host:Port)** menu to specify the Host Port on your network that the peer SRT Listener device is monitoring.
   b. Use the **Stream ID** field to assign a unique identifier to the stream.
8. If the **Mode** selected in step 5 was **Rendezvous**:
   a. Use the **Target URL (Host:Port)** menu to specify the Host Port on your network that the peer SRT Listener device is monitoring.
   b. Use the **Stream ID** field to assign a unique identifier to the stream.
9. Use the **Bandwidth Mode** options to specify the Bandwidth limits. Choose from the following:
   - Hardware Limit — the Streaming Gateway applies the ethernet port bandwidth as the limit.
   - Input Rate Limit — the Input Rate and Bandwidth Overhead fields are now editable.
   - Manual Limit — the Bandwidth Limit field is now editable.
10. If the **Bandwidth Mode** is set to **Manual Limit**, use the **Bandwidth Limit (kbps)** field to define the maximum sender bandwidth.
11. If the **Bandwidth Mode** is set to **Input Rate Limit**:
    a. Use the **Bandwidth Overhead (%)** field to define the recovery bandwidth overhead.
    b. Use the **Input Rate (kbps)** field to define the anticipated bitrate of your live stream.
12. Click **Apply** (located in the bottom right corner).

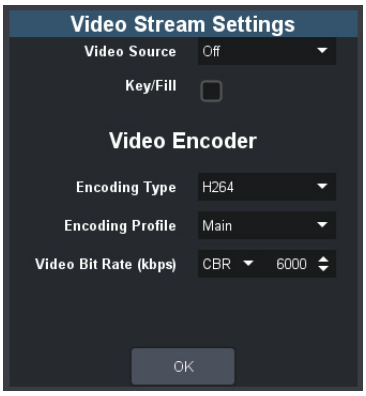
Adjusting the Video Settings

Once the network stream credentials are configured for the encode channel, you can proceed to adjust the settings for the video data.

To configure the video data for a stream

1. From the left pane, select the destination to configure.
2. Locate the **MPEG-TS Elementary Streams** area in the right pane.
3. Click **Video Stream Settings**.

   The **Video Stream Settings** dialog opens.



4. Use the **Video Source** menu to select the desired source.
5. Select the **Key/Fill** box to map the Key/Fill from the selected source to this video destination.
6. Use the **Encoding Type** menu to specify the MPEG codec. Choose from the following:
   - H264 — uses the H.264 (MPEG-4 Part 10) codec to encode the stream channel.
   - H265 — uses the H.265 (MPEG-H Part 2) codec to encode the stream channel.
7. Use the **Encoding Profile** menu to select the profile to use. Choose from the following:
   - Main — defines that the codec profile used will be Main.
   - Baseline — for use in low powered systems; applies a compression ratio of approximately 1000:1 (compresses a 1Gbsp stream to 1Mbps).
   - High — for use with broadcast or storage formats; applies a compression ratio of 2000:1 (compresses a 2Gbsp stream to 1Mbps).
   - High 4:2:2 — defines that the codec profile used will be High 4:2:2.
8. Use the **Video Bit Rate (kbps)** fields to define the video bitrate and mode.
9. Click **OK** to close the **Video Stream Settings** dialog.
10. Click **Apply** (located in the bottom right corner).
11. If you are using encryption, continue to "**To use encryption**".
12. If you are not using encryption, continue to "**Connection Management**".

To use encryption

1. Select the **Configure** button for **Encrypt Stream**.

   The **Encrypt Stream** dialog opens.
2. Select the **Encrypt** box.

   The **Key Length** menu and **Passphrase** field display.
3. Use the **Key Length** menu to select the desired key length to encrypt the data.

4. Use the **Passphrase** field to specify a string between 10-80 characters long.

✶ The passphrase must match for both peers.

5. Click **OK** to close the **Encrypt Stream** dialog.
6. Click **Apply** (located in the bottom right corner).

Embedded Audio Setup

By default, the Streaming Gateway supports up to 8 services of ACC per video stream. This enables flexible audio workflow for contribution or to support in house productions. The Streaming Gateway uses the AAC-LC compression standard to encode the audio data.

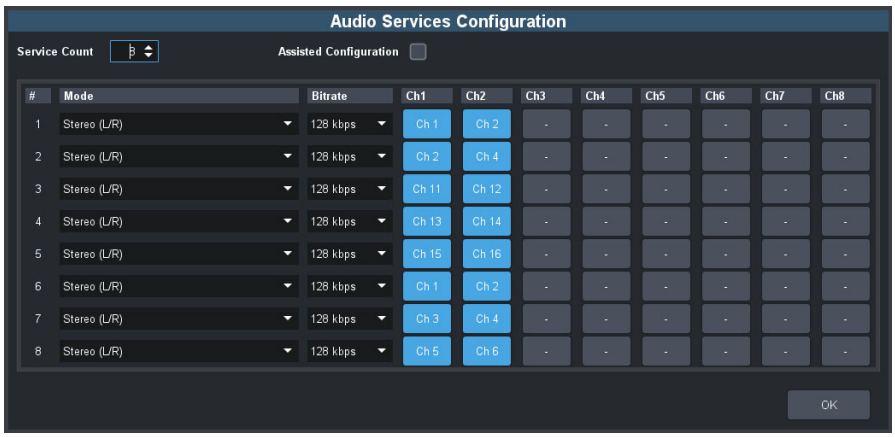
✶ The embedded output channels are configured per processed input to allow different audio mapping that will track the currently processed input.

To map a channel

1. From the left pane, select the destination to configure.
2. Locate the **MPEG-TS Elementary Streams** area.
3. Click **Audio Service Settings**.

   The **Audio Service Settings** dialog opens. The Audio Services dialog is organized into a table where each row represents an audio group, and each column provides the audio settings.
4. Use the **Service Count** field to set the number of audio services allocated to this stream.

   The dialog updates to display a row for each service. In the following example, the Service Count is set to 8.



5. Use the **Mode** menu to specify the type of audio data to include in the encoded stream group. Choose from the following:
   - Mono — the first audio channel is mapped in the encoded stream. All other channels are set to Off (buttons are unlit). The default Bitrate is 64kbps.
   - Stereo — the first two audio channels are mapped in the encoded stream (buttons are lit blue). All other channels set to Off (buttons are unlit). The default Bitrate is 128kbps.
   - Quad — the first four audio channels (L, R, C, LFE) are mapped in the encoded stream. All other channels set to Off (buttons are unlit). The default Bitrate is 256kbps.
   - 5.1 Surround — the first six channels (L, R, C, LFE, BL, BR) are mapped in the encoded stream. All other channels set to Off (buttons are unlit). The default Bitrate is 384kbps.
   - 7.1 Surround — the eight channels (L, R, C, LFE, BL, BR, SL, SR) are mapped in the encoded stream. The default Bitrate is 512kbps.

✶ When using 5.1 Surround or 7.1 surround modes, a low pass filter is applied to the LFE channel. If the audio passed to this channel is of a higher frequency, it may be muted.

6. Click **OK** to close the **Audio Service Settings** dialog.
7. Click **Apply**.

Assigning an NDI Stream as a Destination

This chapter outlines how to assign an NDI stream as a destination for the Streaming Gateway.

For More Information on…

- managing your connections, refer to "**Connection Management**".

Before You Begin

Keep the following in mind:

- A destination for a connection can include only the video, only the audio, or both the audio and video from a single source.
- Each destination is configured independently.
- Routing an NDI source to an NDI destination is not supported.

Assigning an NDI Stream as a Destination

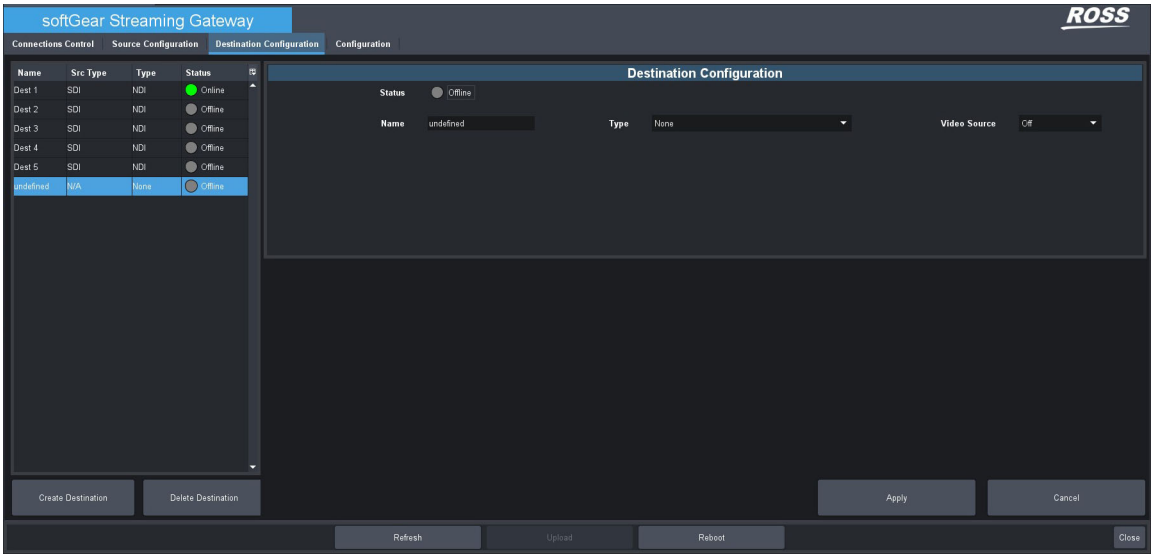
By default, there are two destinations populated in DashBoard. You may edit one of these preexisting destinations instead of creating a new one, if desired.

✶ The Port will change when switching a connection with an NDI stream online and offline on a cloud server.

To assign an NDI stream as the destination

1. Display the **Destination Configuration** interface as outlined in "**To display the SSG interfaces in DashBoard**".
2. Click **Create Destination**.

   A new row displays in the destination table (left pane) and the DashBoard window updates to display the Destination Configuration options (right pane).

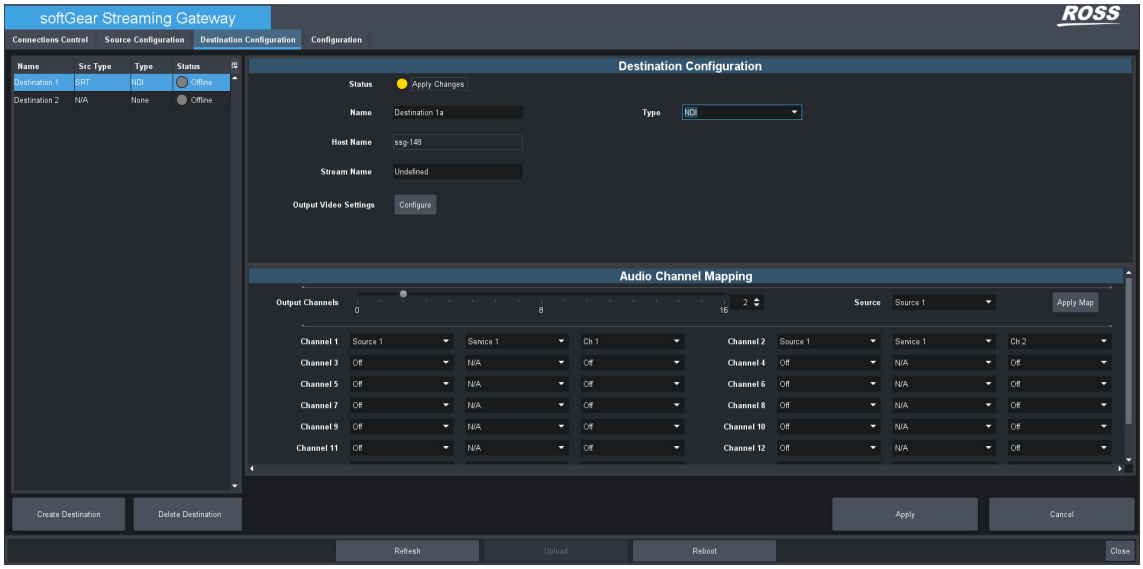


3. Use the **Name** field to specify a unique identifier for the destination.

This name is used to quickly identify connections on the Connections Control tab.

4. Use the **Type** menu to select **NDI**.

   The **Destination Configuration** pane updates to display options for assigning an NDI stream to a destination.



5. Use the **Stream Name** field to assign a unique identifier to the NDI stream.
6. Use the **Group Name** field to specify a private group name for the Receiver to join to get the stream.
7. Click **Apply** (located in the bottom right corner).

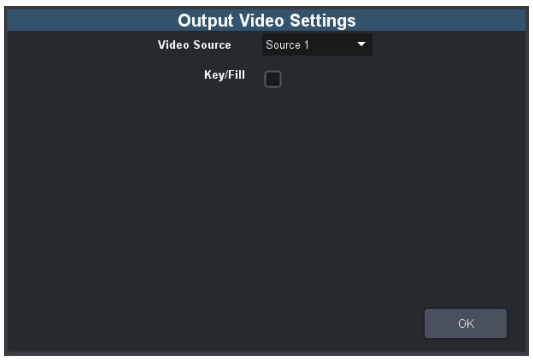
Adjusting the Video Settings

Once the credentials are configured for the NDI stream, you can proceed to adjust the settings for the video data.

To configure the video data for a stream

1. Select the **Configure** button for the **Output Video Settings**.

   The **Output Video Settings** dialog opens.



2. Use the **Video Source** menu to select the desired source.
3. Select the **Key/Fill** box to add the Key/Fill video from a decoded SRT stream to this NDI destination.
4. Click **OK** to close the **Output Video Settings** dialog.

5. Click **Apply** (located in the bottom right corner).

Customizing the Audio Channel Mapping

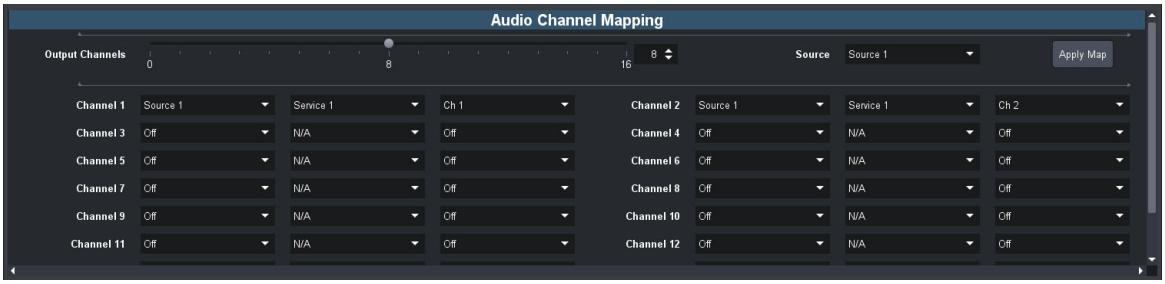
This section outlines how to customize the audio channel mapping for an NDI destination.

✶ The number of audio channels you can map to the destination depends on the audio data from the assigned source.

To map the audio channels for an NDI output

1. Locate the **Audio Channel Mapping** area in the **Destination Configuration** tab.
2. Use the **Output Channels** field to specify the maximum number of channels to include in this output.

   In the following example, the user selected 8.



3. Locate the row for the audio channel to map.

✶ Clicking **Apply Map** will apply the default channel mapping and override any manually assigned channel mapping.

4. Use the first column to select the video source for the embedded audio.
5. Use the second column to assign the source audio service.
6. Use the third column to assign an audio channel from the source stream.
7. Click **Apply** (located in the bottom right corner).

Connection Management

Once the sources are configured, and the destinations are assigned, you are ready to enable a connection. Enable each connection as required. This chapter outlines how to enable a connection, edit an existing connection, disable a connection, and delete a connection.

For More Information on...

- the sources for your connections, refer to "**Specifying an NDI Stream as a Source**" or "**Specifying an SRT Stream as a Source**".
- the destinations for your connections, refer to "**Assigning an SRT Stream as a Destination**" or "**Assigning an NDI Stream as a Destination**".

Before You Begin

Keep the following in mind:

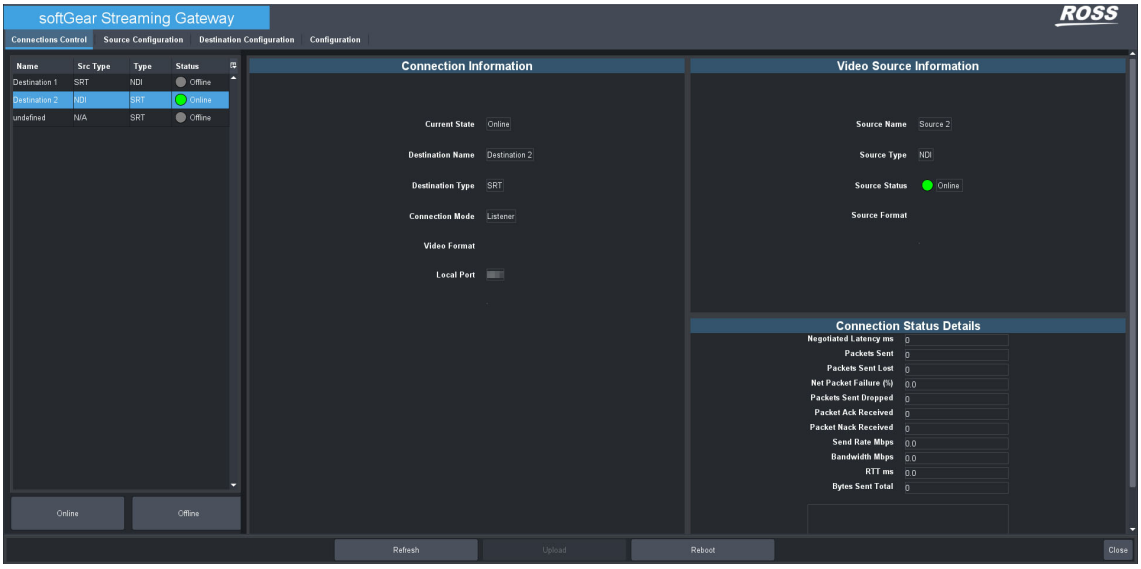
- By default, a new connection is disabled (the status is reported as Offline) to ensure that a change in settings does not disrupt any downstream equipment or user portals.
- You must manually enable each connection by toggling its Online button on the Connections Control tab.
- Two SG-SGW-NDI-1CH licenses are required to create one connection (one license for the source and one license for the destination).
- Ensure the video source assigned to the destination is valid.

Enabling a Connection

Enabling a connection requires you to select it from the list of available connections, and click **Online**. The connection is then published to your downstream devices.

To enable a connection

1. Display the **Connections Control** tab in DashBoard as outlined in "**Accessing the SSG Interfaces in DashBoard**".



2. From the **Connections** table (in the leftmost pane), select the row for the connection you wish to enable.

3. Click **Online** (located in the bottom left corner of the **Connections** table).

   The **Status** fields for the source and destination update to report that the selected connection is now enabled.

✶ The bottom right corner, in the Connection Status Details pane, includes a read-only field that reports error messages. This information may be useful when troubleshooting.

Disabling a Connection

When disabling a connection, clicking **Offline** immediately stops that session and freezes the output. This is helpful:

- to free up bandwidth
- if the source is invalid or missing
- if the source includes data that you do not want to output
- to update the connection settings

To disable a connection

1. Display the **Connections Control** tab in DashBoard as outlined in "**Accessing the SSG Interfaces in DashBoard**".
2. From the **Connections** table, select the row for the connection you wish to disable.

   The **Selected Connection** area updates to display the settings for the connection.
3. Click **Offline** (located at the bottom of the **Connections** table).

   The **Status** fields for the source and destination update to report that the selected connection is now disabled.

Editing an Existing Connection

Before editing an existing connection, ensure that it is currently offline (disabled) and not in use by downstream equipment or user portals. A connection must be offline before it can be edited.

To edit an existing connection

1. Disable the connection as outlined in "**Disabling a Connection**".
2. Edit the source for a connection using the steps in "**Specifying an NDI Stream as a Source**".
3. Edit the destination for a connection using the steps in "**Assigning an SRT Stream as a Destination**".
4. Enable the connection as outlined in "**Enabling a Connection**".

✶ If you no longer want to save changes made to the connection, click **Cancel** instead of **Apply**. This will revert any changed field to its previous state.

Deleting a Connection

You cannot delete a connection that is currently online (active). You must first disable the connection, as outlined in "**To disable a connection**", before proceeding to delete it.

To delete a connection

1. Disable the connection as outlined in "**Disabling a Connection**".
2. Select the **Destination Configuration** tab.
3. From the **Destinations** table, select the row for the connection output you wish to delete.

4. Click **Delete Destination** (located at the bottom of the **Destinations** table).

✶ If the Source for the deleted connection is no longer used by any other connection, it can also be deleted by performing steps 3-4 under the **Source Configuration** tab.

Troubleshooting

This section briefly summarizes some of the error messages that display on the Connections Control interface when creating the connections for your Streaming Gateway.

Table 2 Connections Control — Possible Error Messages

Message	Notes
Audio Mapping is Invalid	• The user attempted to map an unavailable (N/A) audio channel to a stream. • Verify that valid audio channels are mapped to your stream. • Refer to "**Embedded Audio Setup**" and "**Customizing the Audio Channel Mapping**".
Destination Does Not Have Output Video Enabled	• The output video source is not detected for a destination. • For an SRT destination, verify that the MPEG-TS Elementary Streams > Video Stream Settings > Video Source is set for the destination. Refer to "**Assigning an SRT Stream as a Destination**". • For an NDI destination, verify that the Output Video Settings > Configure > Video Source is set for the destination. Refer to "**Assigning an NDI Stream as a Destination**".
Destination is Online	• The user attempted to edit a destination that was assigned to a connection that is currently online and in use. • You must first disable the associated connection before editing the destination. • Refer to "**Disabling a Connection**" and "**Editing an Existing Connection**".
Source is Online	• The user attempted to edit a source that was assigned to a connection that is currently online and in use. • You must first disable the associated connection before editing the source. • Refer to "**Disabling a Connection**" and "**Editing an Existing Connection**".
Video Source is Invalid	• The user attempted to assign a video source that is not available (N/A). • Refer to "**Specifying an NDI Stream as a Source**" and "**Assigning an SRT Stream as a Destination**".

DashBoard Interface Overview

This chapter summarizes the interfaces, tabs, and menus available from DashBoard for the Streaming Gateway.

System Interfaces

The System interfaces are access via the System sub-node in the DashBoard Tree View. Double-clicking the System sub-node displays four tabs in the DashBoard window: Licensing, Timing, Features, and About. This section provide a summary of each tab.

Licensing Tab

Use the options on the **Licensing** tab to manage the licensed features that require a valid Product Key. (**Figure 2**)

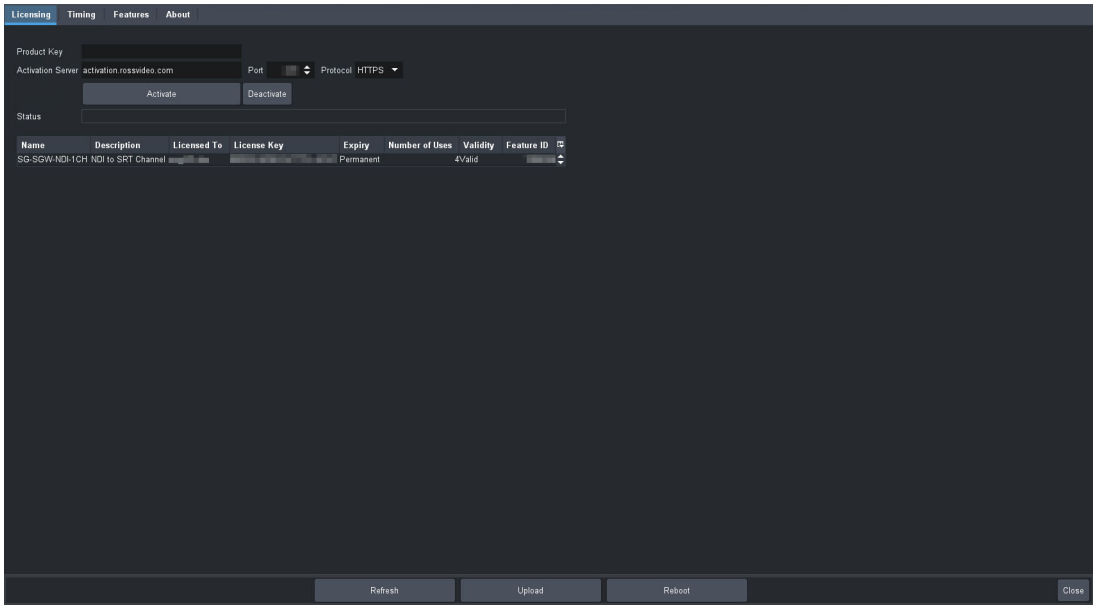


Figure 2 Example of the Licensing Tab

Table 3 summarizes the options displayed in the **Licensing** tab.

Table 3 System — Licensing

Item	Parameters	Description
Product Key	#	Used to enter the Product Key in order to license the server
Activation Server	<text>	Used to enter the server the license must connect with to confirm its validity
Port	#	Used to select the Port for the Activation Server
Protocol	HTTP	Selects HTTP for the Activation Server
	HTTPS	Selects HTTPS for the Activation Server
Activate	Activates the entered Product Key	

Table 3 System — Licensing (Continued)

Item	Parameters	Description
Deactivate	Deactivates the Product Key	
Status	<text>	Can report the following: • the validity of the Product Key used, • the result of activation, • and the result of checking the license per the interval defined by the licensing mode
Name	<text>	Reports the marketing code for the feature
Description	<text>	Summarizes the licensed feature
Licensed To	#	Indicates the device the license applies to
License Key	#	A character string to obtain an Activation Key
Expiry	MM/YYYY	Reports the expiry date for the feature
Number of Uses	#	Represents the amount of docker containers set up and running for the specific feature
Validity	Valid/Invalid	Reports if the Activation Key is valid and the feature is still licensed or not
Feature ID	#	Provides the license code that you must provide to Ross Technical Support

Timing Tab

The Timing tab provides options for configuring a connection to your facility NTP Server. (**Figure 3**)

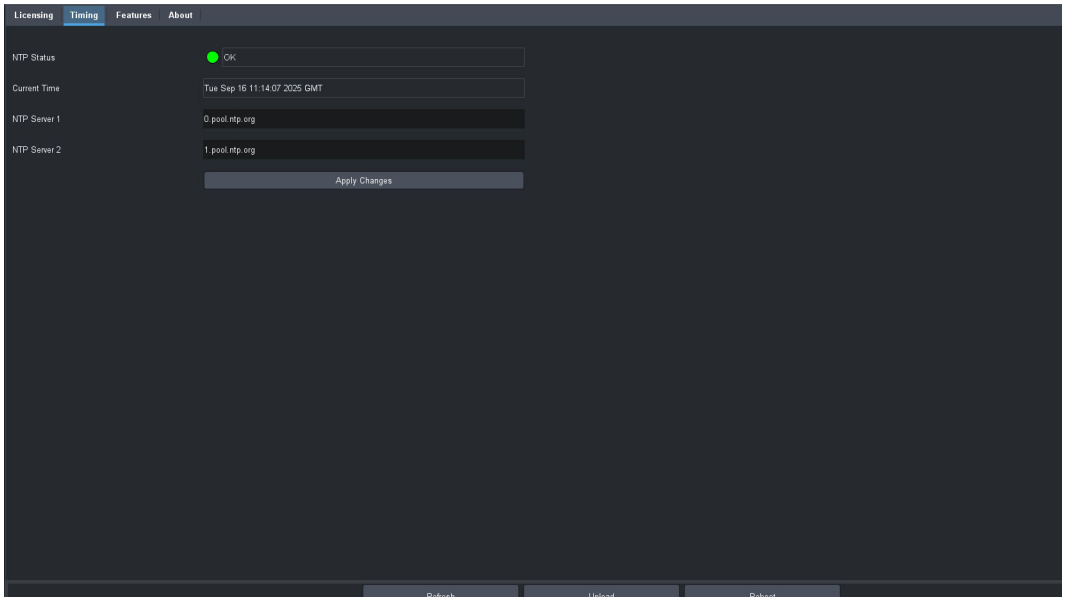


Figure 3 Example of the Timing Tab

Table 4 summarizes the fields displayed in the **Timing** tab.

Table 4 System — Timing

Item	Parameters	Description
NTP Status (read-only)	OK (Green)	Indicates a valid time source is reporting to the Streaming Gateway
	Apply Changes (Yellow)	At least one NTP Server address has changed. Click Apply Changes to save the new setting(s).
	Not Running (Red)	Software was not able to start NTP client
	No Servers Configured (Red)	The NTP Server fields are blank
	Cannot Resolve Server Name (Red)	At least one of the NTP Server host-names could not be resolved. It is recommended to specify the IP address instead of a host-name for the server.
	No Time Server Available At Address (Red)	At least one NTP Server IP Address does not have a valid time server running
Current Time (read-only)	Ddd Mmm ## hh : mm : ss yyyy GMT	Indicates the encoded date where: • Ddd represents the day of the week • Mmm represents the month • ## represents the day of the month • hh : mm : ss reports the current encoding time as reported by the NTP Server(s) • yyyy represents the year
NTP Server 1	#	Specifies the first Network Time Server (NTP) address the Streaming Gateway can use for timecode information
NTP Server 2	#	Specifies an additional Network Time Server (NTP) address the Streaming Gateway can use for timecode information
Apply Changes	Applies any changes made	

Features Tab

The **Features** tab enables you to monitor the Streaming Gateway features. (**Figure 4**)

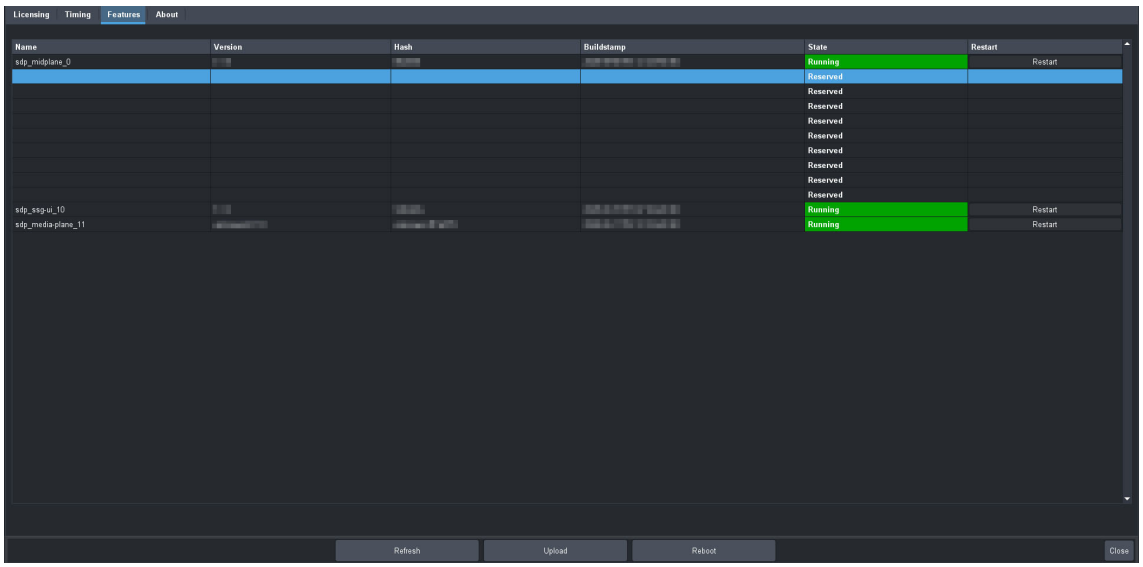


Figure 4 Example of the Features tab

Table 5 summarizes the fields displayed in the **Features** tab.

Table 5 System — Features

Item	Parameters	Description
Name	<text>	The name of the feature
Version	#	The version of the feature
Hash	<text>	The hash of the feature
Buildstamp	<text>	The buildstamp of the feature
State	<text>	The current status of the feature
Restart		Click the button to restart the feature

About Tab

The About tab reports product information, manage your configuration files, and access the system logs. (**Figure 5**)

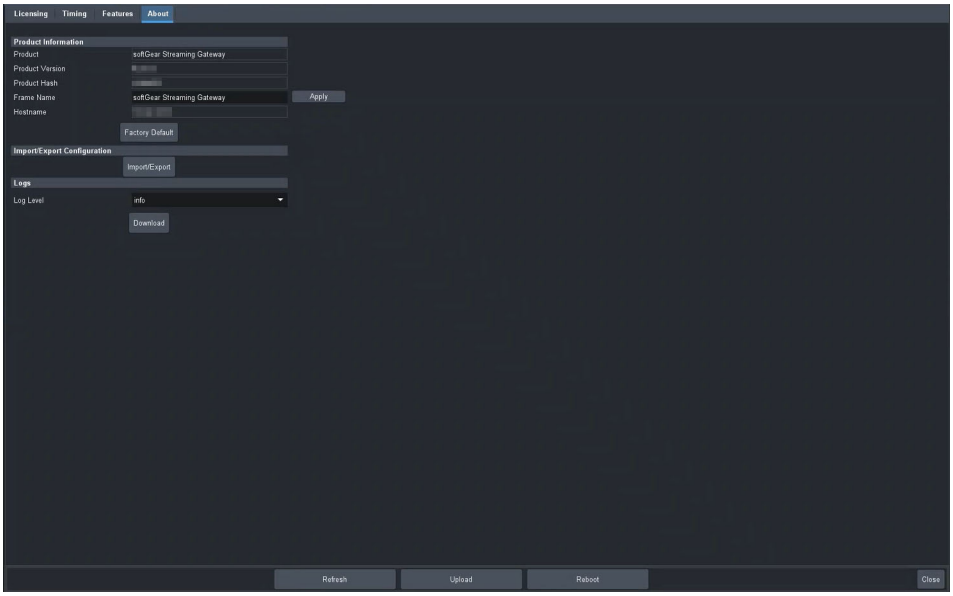


Figure 5 Example of the About Tab

Table 6 summarizes the fields and read-only information displayed in the **About** tab.

Table 6 System — About

Item	Parameters	Description
Product Information		
Product (read-only)	softGear Streaming Gateway	
Product Version (read-only)	<text>	The software build the Streaming Gateway is currently running
Product Hash (read-only)	<text>	The hash of the software build
Frame Name	<text>	• Assigns a unique identifier to the Streaming Gateway. • This name displays in the node for the Streaming Gateway in the Tree View of DashBoard. • The default is softGear Streaming Gateway. • Note that any change to this name may take up to one minute to be reflected in the Tree View of DashBoard.
Host name	#.#.#.#	Reports the IP address of the AWS EC2 instance
Factory Default	Reboots the Streaming Gateway and resets any editable fields to the factory default values. This impacts all tabs except the Ethernet and About tabs.	

Table 6 System — About (Continued)

Item	Parameters	Description
Import/Export Configuration		
Import/Export		Click this button to export a configuration file for the Streaming Gateway to your computer, or to import a previously saved configuration file from your computer to the Streaming Gateway. The export option allows you to save the current configuration to a file on your computer, while the import button lets you load a previously saved configuration file onto the Streaming Gateway. An import will trigger a reboot of the Streaming Gateway. **Note:** Only configurations that match the feature set of the currently licensed system will be imported.
Logs		
Download		Exports an archive of the logs to a specified location on your network or computer

SSG Interfaces

Double-clicking the SSG sub-node displays four tabs in the DashBoard window: Connections Control, Source Configuration, Destination Configuration, and Configuration.

Connections Control Tab

The Connections Control tab is organized into four panels (from left to right): a Connections table, Connection Information area, Video Source Information area, and Connection Status Details area. (**Figure 6**)

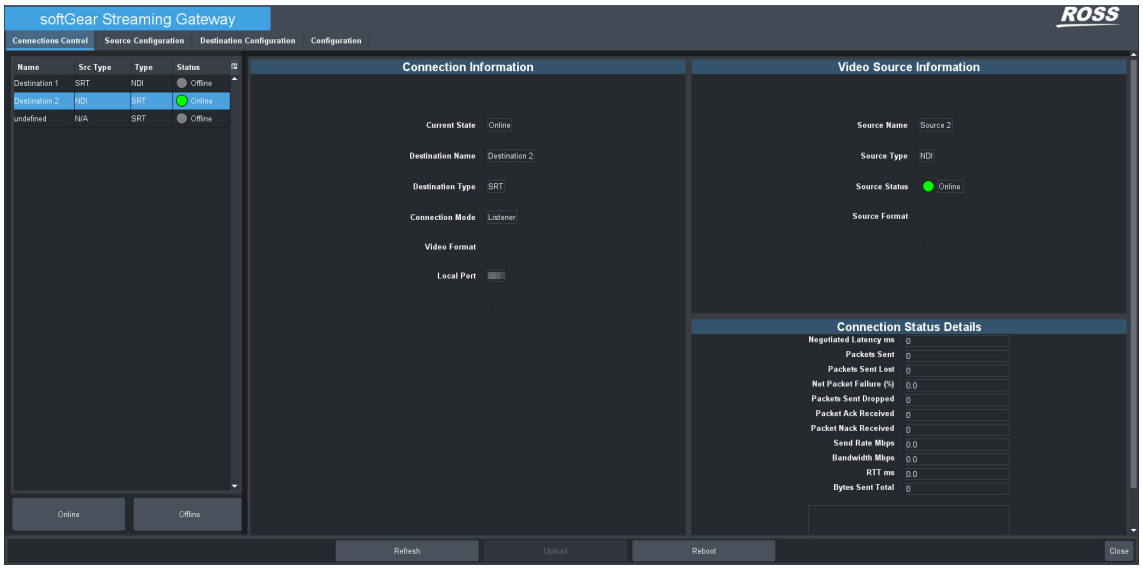


Figure 6 Example of the Connections Control Tab

Connections Table

The Connections table reports a list of active and inactive connections that the user has configured using the Sources Configuration and Destinations Configuration tabs. Each table row is a connection with the assigned source, destination, and a brief status message. Selecting a row displays more information in the right areas of the tab.

Table 7 summarizes the read-only fields displayed in the **Connections** table.

Table 7 SSG — Connections Control — Connections Table

Item	Description
Name	Reports the destination assigned as the output for the connection
Src Type	Identifies the signal type of the input of the connection
Type	Reports the signal type assigned to the destination
Status	Reports the connection status of the stream: online (green), offline (gray), or warning (yellow) of an error condition
Online	Select this button to enable the selected connection
Offline	Select this button to disable the selected connection

Connection Information

Table 8 summarizes the read-only fields displayed in the **Connection Information** area.

For More Information on...

- the available input options, refer to "**Source Configuration Tab**".
- the available output options, refer to "**Destination Configuration Tab**".

Table 8 SSG — Connections Control — Connection Information

Item	Parameters	Description
Current State	Online	The connection is active and no errors are detected. The connection cannot be edited.
	Offline	The connection is inactive and can be edited
Destination Name	<text>	Reports the unique identifier assigned to the output signal of this connection. Used to identify the connection in the Manage Connections table.
Destination Type	SRT	Identifies the output of the connection as an SRT stream
	NDI	Identifies the output of the connection as an NDI stream
Destination Type > SRT		
Connection Mode	<text>	This field reports the connection mode that is assigned as the output for the connection
Video Format	#	Indicates the video format of the input signal
Local Port	#	When the Mode is set to Listener, this field indicates the port used
Destination Type > NDI		
NDI Stream Name	<text>	Indicates the identifier assigned to this NDI destination via the Destinations Configuration interface

Video Source Information

Table 9 summarizes the read-only fields displayed in the **Video Source Information** area.

Table 9 SSG — Connections Control — Video Source Information

Item	Parameters	Description
Source Name	<text>	Reports the unique identifier assigned to the input signal of this connection
Source Type	SRT	Identifies the input of the connection as an SRT stream
	NDI	Identifies the input of the connection as an NDI stream
Source Status	Online (Green)	The input signal is valid and no errors are detected
	No input signal detected (Yellow)	The specified stream is assigned as an input but a valid signal is not detected
	Initializing Signal (Yellow)	The Streaming Gateway is in the process of establishing a connection
	Closed to Signal Server (Yellow)	The input is unavailable. The connection with the media server is no longer valid.
	Shared Memory Input Error (Red)	The input cannot be connected. Toggling the Offline and Online buttons may fix this.
	Not Initialized (Red)	The input is no longer valid. Verify that a valid signal is available.
	Packets Missing (Red)	The input signal is experiencing errors. Verify if a valid signal is available.
	Offline (Gray)	The stream was stopped or is not yet initialized. Verify your network connections.
Source Type > SRT		
Connection Mode	Listener	Reports the function assigned to the Streaming Gateway when decoding this stream
	Caller	
	Rendezvou	
Host:Port	#:#	Reports the IP address and the port assigned to the Streaming Gateway
Source Type > NDI		
Source Format	#	Reports the input video format

Connection Status Details

Table 10 summarizes the read-only fields displayed in the **Connection Status Details** area.

Table 10 Connections Control — Connection Status Details

Item	Parameters	Description
Negotiated Latency (ms)	#	Defines the minimum receiver buffering delay before sending an SRT data packet via this connection
Packets Sent	#	Reports the total number of packets transmitted by this connection
Packets Sent Lost	#	Reports the total number of missing packets transmitted by this connection
Net Packet Failure (%)	#	Reports the number of error packets received on the network stream
Packets Sent Dropped	#	Reports the total number of dropped packets transmitted by this connection
Packet ACK Received	#	Reports the total number of acknowledged packets that were transmitted by this connection and received by the downstream SRT device
Packet NACK Received	#	Reports the total number of packets that were transmitted by this connection but not received by the downstream SRT device
Send Rate (Mbps)	#	Reports the packets received by the Streaming Gateway and forwarded to the processor on the specified connection
Bandwidth (Mbps)	#	Reports the bandwidth utilization (to the nearest 100Mbps) sent from the processor to the network links on this connection
RRT (ms)	#	Reports the detected latency on your network (the number of milliseconds that passed from when the Streaming Gateway sent a network request was sent and an acknowledgment was received)
Bytes Sent Total	#	Reports the amount of data the Streaming Gateway sent on the specified connection since the Online button was selected

Source Configuration Tab

The Source Configuration tab is organized into two areas (from left to right): the Sources table, and the Source Configuration area. (**Figure 7**)

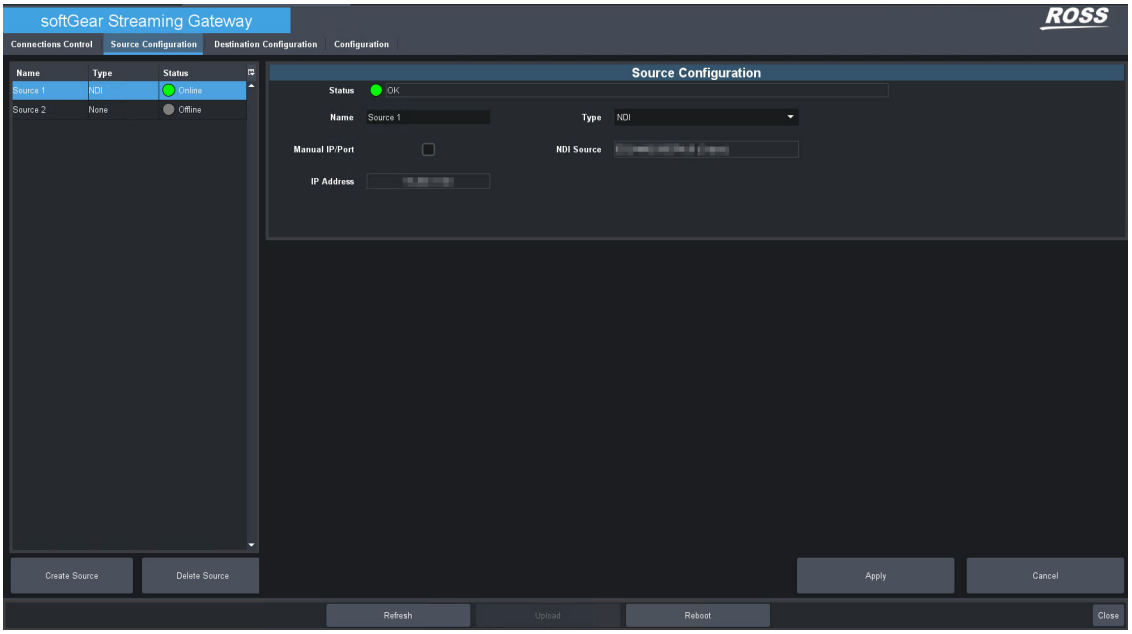


Figure 7 Example of the Source Configuration Tab

Sources Table

The Sources table reports a list of active and inactive sources that the user has configured. Double-clicking a row displays more information in the Sources Configuration area.

Table 11 summarizes the read-only fields displayed in the **Sources** table.

Table 11 SSG — Connections Control — Sources

Item	Description
Name	Reports the source assigned as the input signal for the connection
Type	Reports the signal type assigned to the source
Status	Reports the connection status of the source: online (green), offline (gray), or warning (yellow) of an error condition.
Create Source	Select this button to define and add a new source to the database
Delete Source	Select this button to remove the selected source from the database

Source Configuration > NDI

Table 12 summarizes the options when the **Type** is set to **NDI**.

Table 12 SSG — Source Configuration — Type > NDI

Item	Parameters	Description
Status (read-only)	Reports the status of the connection: online (green), offline (gray), warning (yellow), or error (red)	
Name	<text>	Identifier assigned to the source connection

Table 12 SSG — Source Configuration — Type > NDI (Continued)

Item	Parameters	Description
Manual IP/Port	Selected	Allows you to create a new NDI source to use. When selected, you must manually enter the IP address and port of the desired source stream.
	Cleared	Indicates that the source to be used is preexisting
NDI Source	<text>	Selects an existing source to use as the NDI Source
	Update	Refreshes the list of existing NDI sources
IP Address	#	Reports the IP address of the selected source

Source Configuration > SRT

Table 13 summarizes the options when the **Type** is set to **SRT**.

Table 13 SSG — Source Configuration — Type > SRT

Item	Parameters	Description
Status (read-only)	Reports the status of the connection: online (green), offline (gray), warning (yellow), or error (red)	
Name	<text>	Identifier assigned to the source connection
Latency (ms)	#	Defines the minimum receiver buffering delay before delivering an SRT data packet from a receiving SRT socket to stream decoder

Table 13 SSG — Source Configuration — Type > SRT (Continued)

Item	Parameters	Description
Mode	Listener	Indicates the mode for the source is set to Listener. When in Listener mode, you are listening on a port to establish a connection.
	Caller	Indicates the mode for the source is set to Caller. When in Caller mode, you are sending out a message to the IP address and port to connect.
	Rendezvous	Enables the SRT end points to auto-negotiate port settings when your network includes a firewall. When using Rendezvous mode, both SRT peers must: • be set to Rendezvous mode, • use the same UDP port (local/source and destination), • be able to send outbound UDP to the other peer's public IP:Port, and • have Port rewriting (dynamic PAT) disabled on intervening firewalls/NATs
Local Port	#	• Available in Listener Mode • Specifies the local port to be used
Target URL (Host:Port)	<text>, #	• Available in Caller or Rendezvous Modes • Specifies the target URL and port to be used
Stream ID	<text>	• Available in Caller or Rendezvous Modes • Defines the Stream ID
Encrypt Stream > Configure		
Encrypt	Selected	Enables data encryption in transit using AES
	Cleared	Disables data encryption
Key Length[a]	Default	Defaults key length to 128-bit to encrypt the data
	AES-128	Specifies that 128-bit key length is used to encrypt the data
	AES-192	Specifies that 192-bit key length is used to encrypt the data
	AES-256	Specifies that 256-bit key length is used to encrypt the data

Table 13 SSG — Source Configuration — Type > SRT (Continued)

Item	Parameters	Description
Passphrase[a]	<text>	• Determines the passphrase that must be matching for both peers, or the connection will be rejected by the receiver and fail. • Passphrase must be 10-80 characters long.

a. Displays only when the Encrypt box is selected.

Destination Configuration Tab

The Destination Configuration tab is organized into two areas: a Destinations table, and the Destination Configuration area. (**Figure 8**)

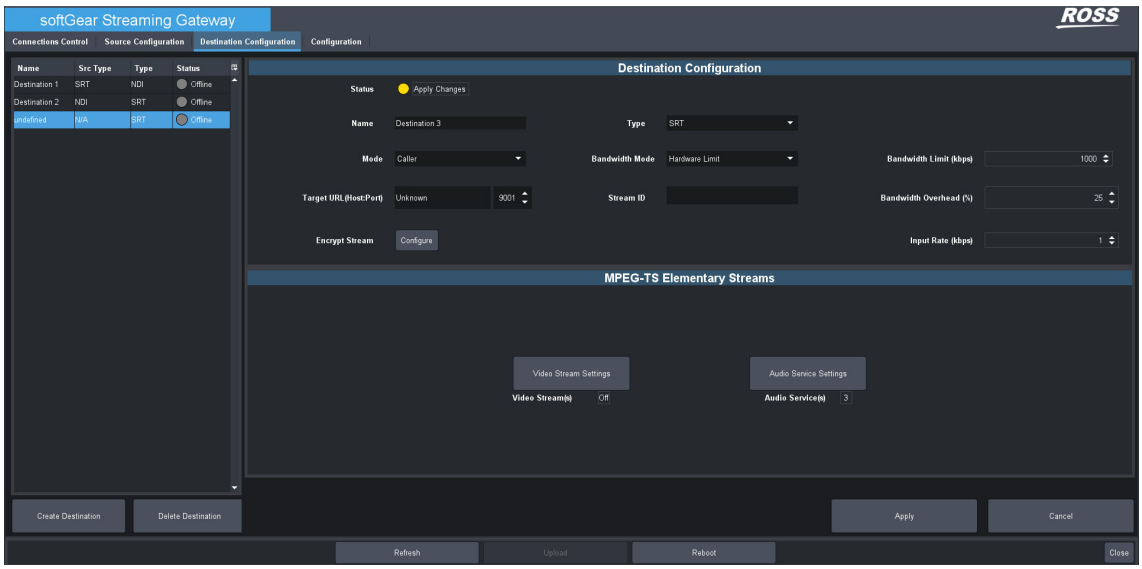


Figure 8 Example of the Destination Configuration Tab

Destinations Table

The Destinations table reports a list of active and inactive destinations that the user has configured. Double-clicking a row displays more information in the Destinations Configuration area.

Table 14 summarizes the read-only fields displayed in the **Destinations** table.

Table 14 SSG — Destination Configuration — Destinations

Item	Description
Name	Reports the destination assigned as the output signal for the connection
Src Type	Reports the source signal type to this destination
Type	Reports the signal type assigned to the destination
Status	Reports the connection status of the connection: online (green), offline (gray), or warning (yellow) of an error condition
Create Destination	Select this button to define and add a new destination to the database

Table 14 SSG — Destination Configuration — Destinations (Continued)

Item	Description
Delete Destination	Select this button to remove the selected destination from the database

Destination Configuration > SRT

Table 15 summarizes the options when **Type** is set to **SRT**.

Table 15 SSG — Destination Configuration — Type > SRT

Item	Parameters	Description
Status (read-only)	Reports the status of the connection: online (green), offline (gray), warning (yellow), or error (red)	
Name	<text>	Assigns a unique identifier to the connection
Mode	Listener	Indicates the mode for the source is set to Listener. When in Listener mode, the Streaming Gateway is listening on a port to establish a connection.
	Caller	Indicates the mode for the source is set to Caller. When in Caller mode, the Streaming Gateway sends out a message to the IP address and port to connect.
	Rendezvous	Enables the SRT end points to auto-negotiate port settings when your network includes a firewall. When using Rendezvous mode, both SRT peers must: • be set to Rendezvous mode, • use the same UDP port (local/source and destination), • be able to send outbound UDP to the other peer's public IP:Port, and have Port rewriting (dynamic PAT) disabled on intervening firewalls/NATs
Bandwidth Mode	Hardware Limit	The Streaming Gateway applies the ethernet port bandwidth as the limit
	Input Rate Limit	The Input Rate and Bandwidth Overhead fields are now editable
	Manual Limit	The Bandwidth Limit field is now editable.
Bandwidth Limit (kbps)	#	• This field is only editable when the Bandwidth Mode is set to Manual Limit. • Defines the maximum sender bandwidth.
Target URL (Host:Port)	<text>, #	• Available in Caller or Rendezvous Modes. • Specifies the target URL and port to be used.

Table 15 SSG — Destination Configuration — Type > SRT (Continued)

Item	Parameters	Description
Stream ID	<text>	• Available in Caller or Rendezvous Modes. • Defines the Stream ID.
Bandwidth Overhead (%)	#	• Defines the recovery bandwidth overhead percentage. The default is 25%. • Only applicable when the Bandwidth Mode is set to Input Rate Limit.
Local Port	#	• Available in Listener Mode. • Specifies the local port to be used.
Input Rate (kbps)	#	• Defines the anticipated bitrate of your live stream. • Only applicable when the Bandwidth Mode is set to Input Rate Limit. • The default is 0. When set to 0, the value used will be estimated from the rate of the input during transmission.
Encrypt Stream > Configure		
Encrypt	Selected	Enables data encryption in transit using AES
	Cleared	Disables data encryption
Key Length[a]	Default	Defaults key length to 128-bit to encrypt the data
	AES-128	Specifies that 128-bit key length is used to encrypt the data
	AES-192	Specifies that 192-bit key length is used to encrypt the data
	AES-256	Specifies that 256-bit key length is used to encrypt the data
Passphrase[a]	<text>	• Determines the passphrase that must be matching for both peers, or the connection will be rejected by the receiver and fail. • Passphrase must be 10-80 characters long.

a. Displays only when the Encrypt box is selected.

Table 16 outlines the SRT > MPEG-TS Elementary Streams > Video Stream Settings dialog.

Table 16 SSG — Destination Configuration — Type > SRT > Video Settings

Item	Parameters	Description
Video Source	#	Provides a list of the available sources as defined using the Sources Configuration tab
Key/Fill	Selected	Enables the Streaming Gateway to output the Key/Fill from a decoded SRT stream
	Cleared	The Streaming Gateway does not output the Key/Fill from a decoded SRT stream

Table 16 SSG — Destination Configuration — Type > SRT > Video Settings (Continued)

Item	Parameters	Description
Video Encoder		
Encoding Type	H264	Uses the H.264 (MPEG-4 Part 10) codec to encode the stream channel
	H265	Uses the H.265 (MPEG-H Part 2) codec to encode the stream channel
Encoding Profile	Main	Defines that the codec profile used is Main
	Baseline	For use in low powered systems. Uses a compression ratio of approximately 1000:1 (compresses a 1Gbsp stream to 1Mbps).
	High	For use with broadcast or storage formats. Uses a compression ratio of 2000:1 (compresses a 2Gbsp stream to 1Mbps).
	High 4:2:2	Defines that the codec profile used is High 4:2:2
Video Bit Rate (kbps)	CBR, #	Defines the video bitrate and its mode, CBR. CBR refers to constant bitrate, meaning the bitrate will be kept the same.
	VBR, #	Defines the video bitrate and its mode, VBR. VBR refers to variable bitrate, meaning the bitrate will vary. The value is the maximum bitrate allowed.

Table 16 outlines the SRT > MPEG-TS Elementary Streams > Audio Service Settings dialog.

Table 17 SSG — Destination Configuration — Type > SRT > Audio Service Settings

Item	Parameters	Description
Service Count	#	Determines the maximum number of audio services allocated to this stream
Assisted Configuration	Selected	Automates 1:1 channel mapping. You can still edit the audio channel mapping as required.
	Cleared	Disables this feature
#	An auto-assigned identifier for the audio service	

Table 17 SSG — Destination Configuration — Type > SRT > Audio Service Settings (Continued)

Item	Parameters	Description
Mode	Mono (C)	The first audio channel is mapped in the encoded stream. All other channels are set to Off (buttons are unlit). The default Bitrate is 64kbps.
	Stereo (L/R)	The first two audio channels are mapped in the encoded stream (buttons are lit blue). All other channels set to Off (buttons are unlit). The default Bitrate is 128kbps.
	Quad (L/R/C/LFE)	The first four audio channels (L, R, C, LFE) are mapped in the encoded stream. All other channels set to Off (buttons are unlit). The default Bitrate is 256kbps.
	5.1 Surround (L/R/C/LFE/BL/BR)	The first six channels (L, R, C, LFE, BL, BR) are mapped in the encoded stream. All other channels set to Off (buttons are unlit). The default Bitrate is 384kbps.
	7.1 Surround (L/R/C/LFE/BL/BR/SL/SR)	The eight channels (L, R, C, LFE, BL, BR, SL, SR) are mapped in the encoded stream. The default Bitrate is 512kbps.
Bitrate	#	Sets the upstream data transfer rate; the number of bytes received in the last field. This value is automatically set by the Mode.
Ch#	On	The channel is embedded in the encoded stream
	Off	The channel is not embedded in the encoded stream
	Mute	• Mutes the specified channel • The channel is no longer embedded

Destination Configuration > NDI

Table 18 summarizes the options when **Type** is set to **NDI**.

Table 18 SSG — Destination Configuration — Type > NDI

Item	Parameters	Description
Status (read-only)	Reports the status of the connection: online (green), offline (gray), warning (yellow), or error (red)	
Name	<text>	Assigns a unique identifier this NDI stream
Host Name (read-only)	<text>	Reports the identifier assigned to this Streaming Gateway in your NDI network
Stream Name	<text>	Assigns a unique identifier to this NDI stream
Output Video Settings > Configure		

Table 18 SSG — Destination Configuration — Type > NDI (Continued)

Item	Parameters	Description
Video Source	<name>	Lists the available video sources as defined using the Source Configuration tab
	Off	Does not assign a specific video source to this NDI stream
Key/Fill	Selected	The NDI output will include the Key/Fill video from a decoded SRT stream
	Cleared	The Key/Fill video data is not included in the output signal for this connection
Audio Channel Mapping		
Output Channels	#	Sets the maximum number of audio channels in this NDI stream
Source	#	The video source as determined by the Video Source menu selection
Apply Map		Applies the changes made to the Output Channels and Source settings
Channel #	Source #	Specifies the video source assigned to this output audio channel
	Service #	Identifies the SRT audio service assigned as the source for this output
	Ch #	Specifies the audio channel from the video source

Configuration Tab

The Configuration tab enables you to configure NDI Global Source Discovery for the Streaming Gateway. (**Figure 9**)

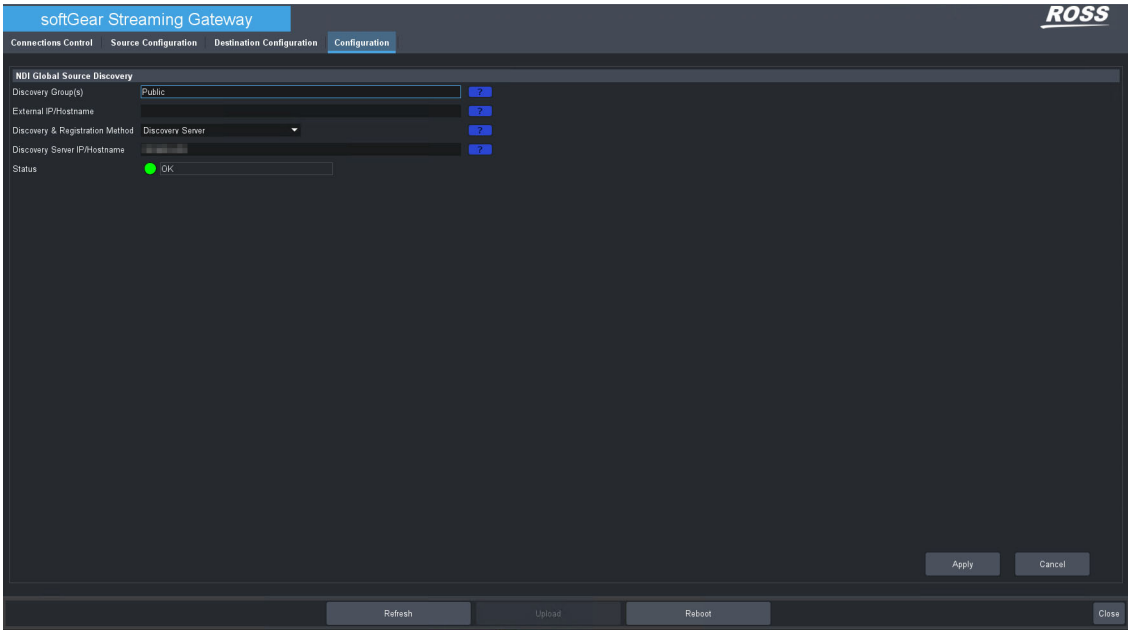


Figure 9 Example of the Configuration Tab

Table 19 summarizes the options displayed in the **Configuration** tab.

Table 19 SSG — Configuration

Item	Parameters	Description
NDI Global Source Discovery		
Discovery Group (s)	Public	Identifies the NDI Discovery Group(s) that the Streaming Gateway is subscribed to
External IP/ Host name	#	Identifies the IP address or host name used to subscribe to sources from an external Discovery Server
Discovery & Registration Method	Discovery Server	The NDI Discovery Server is a tool that allows NDI devices to perform discovery. The user is required to set up the NDI discovery server independently. Refer to "**Getting Started**".
Discovery Server IP/ Host name	#	This field identifies the IP address or host name for the NDI discovery server. After inputting the server IP address or host name, the user must reboot their device in order to connect to the server.
Status (read-only)	OK (Green)	There is no Discovery Server connected
		NDI receiver and sender successfully connected to the Discovery Server
	Apply Changes (Yellow)	There are unsaved changes. Click **Apply** (located in the bottom right corner) to apply the changes made to the fields on this tab
	Internal error reaching discovery server	NDI receiver had an SSG internal error on attempting to reach the NDI Discovery Server
	Lookup failure on discovery server name	NDI receiver had a DNS lookup failure for NDI Discovery Server
	Discovery server not reachable	NDI receiver cannot reach the Discovery Server
	Failure to query discovery server	NDI receiver had an internal error querying the Discover Server
	No response from discovery server	NDI receiver connected to the Discovery Server but received no response
	Unexpected response from discovery server	NDI receiver connected to the Discover Server but received an unexpected response

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httprouter

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IXWebSocket

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libsamplerate

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mongo-driver

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spdlog

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zmq4

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The following terms are used throughout this guide:

DashBoard — refers to the DashBoard Control System.

Destination — refers to the output.

NTP — refers to Network Time Protocol.

Operator and **User** — refer to the person who uses the Streaming Gateway.

RPM — refers to the Ross Platform Manager.

Source — refers to the input.

Tree View — refers to the area located to the far left of the DashBoard window. This area displays devices in a tree structure.