Technical Guide | BRC-X400 series

NDI®|HX introduction

SONY

Version 1.0

C O N T E N T S

1. Overview

This document explains typical Procedures and Tips for the NDI®|HX connectivity when using Sony's Color Video Camera BRC-X400/SRG-X400/SRG-X120/BRC-X401/SRG-201M2/SRG-HD1M2.


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2. Flowchart

The flowchart shows outline of the procedure for enabling the NDI®|HX connectivity function of the camera described in the following chapter.
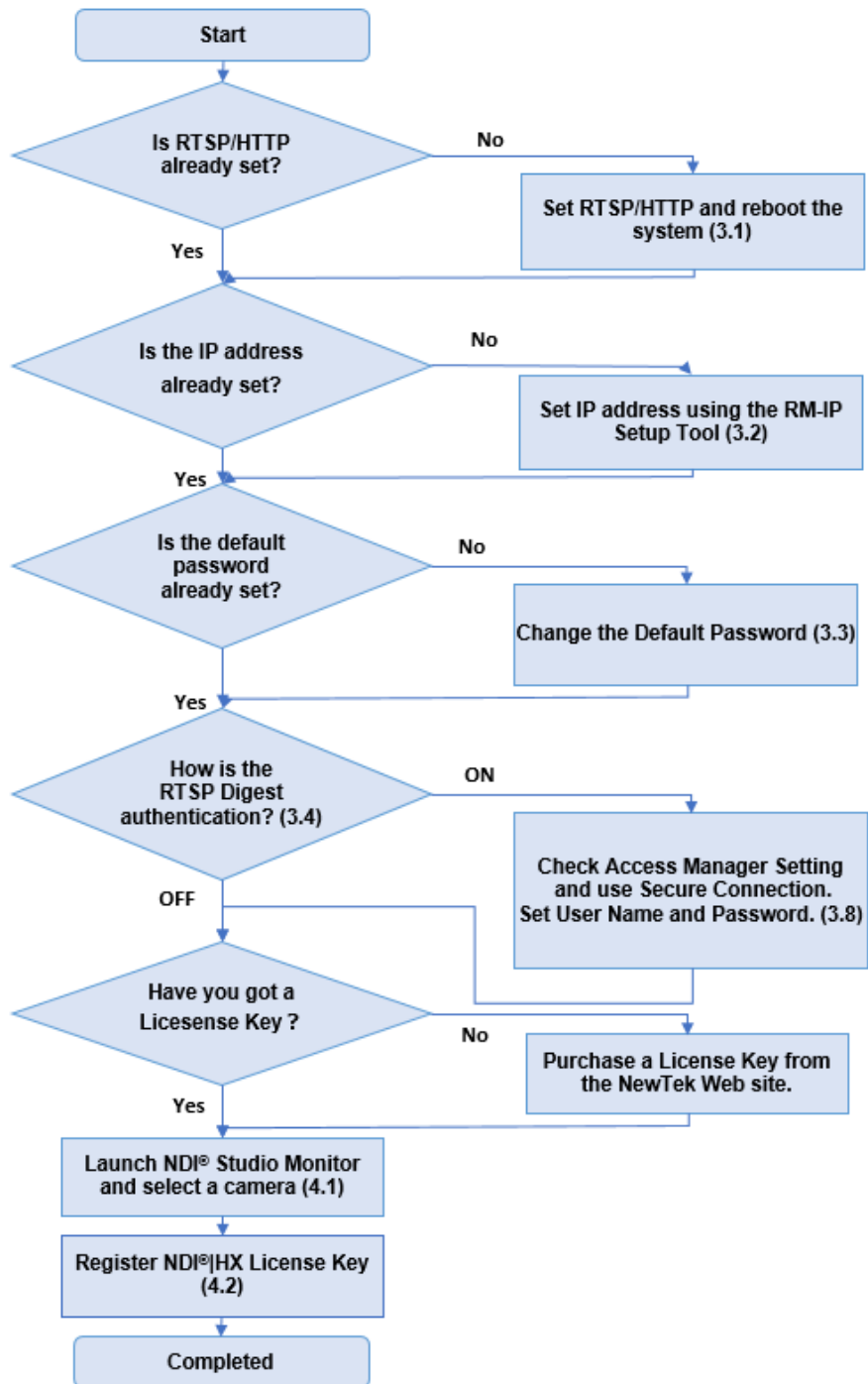
3. Pre-configuration Settings

This section describes some pre-configuration settings you will need (ex. enable CGI command/RTSP streaming etc.) before activating the NDI®|HX function for the BRC/SRG cameras.

3.1. HTTP/RTSP setting

The HTTP/RTSP communication setting need to be enabled in order to communicate via network before the NDI®|HX function of the camera is enabled. Please refer to the Operation Manual of the target camera, and set the HTTP/RTSP communication setting.

Ref). The section of [Accessing the Camera from a Web Browser] – [Enabling HTTP/RTSP in the Camera] of the Camera's Operation Manual.

3.2. Set IP address by using the RM-IP Setup Tool

For IP communication, the IP address needs to be set. You can use RM-IP Setup Tool to assign IP address to the camera. Please refer to the RM-IP Setup Tool Guide for more details.
The NDI® Tools (provided by NewTek on the NewTek web site) will detect a Camera by using "Name" filed data displayed on the RM-IP Setup Tool. When you use the NDI®|HX function for multiple cameras, it is recommended to change the "Name" in advance. The default camera Name is "CAM1".

[Note]
The DHCP setting cannot be enabled from the RM-IP Setup Tool.

3.3. Change the default password

When the procedure of 3.1 and 3.2 are performed, HTTP access to the camera is available. Please change the default password (initial password) according to the Operation Manual of the Camera.

Ref). The section of [Accessing the Camera from a Web Browser]-[Changing the Initial Password] of the Camera's Operation Manual.

3.4. RTSP authentication

The NDI®|HX function of the camera uses the RTSP streaming function. The NewTek NDI® system issues RTSP commands to a camera as required by each device or software.

You can enable/disable RTSP authentication for video and audio streaming according to the RTSP authentication setting (it can be set with the [RTSP authentication] checkbox on the camera's Web setting screen [Settings]->[Security]->[User] tab.)

The on/off setting of the RTSP authentication setting affects access to the camera via NDI® Tools.

When the RTSP authentication is off, NDI® Tools will detect devices. You can monitor a camera selected from the detected devices list.

When the RTSP authentication is on, an access method via the Access Manager tool is required. Please refer to the following table.
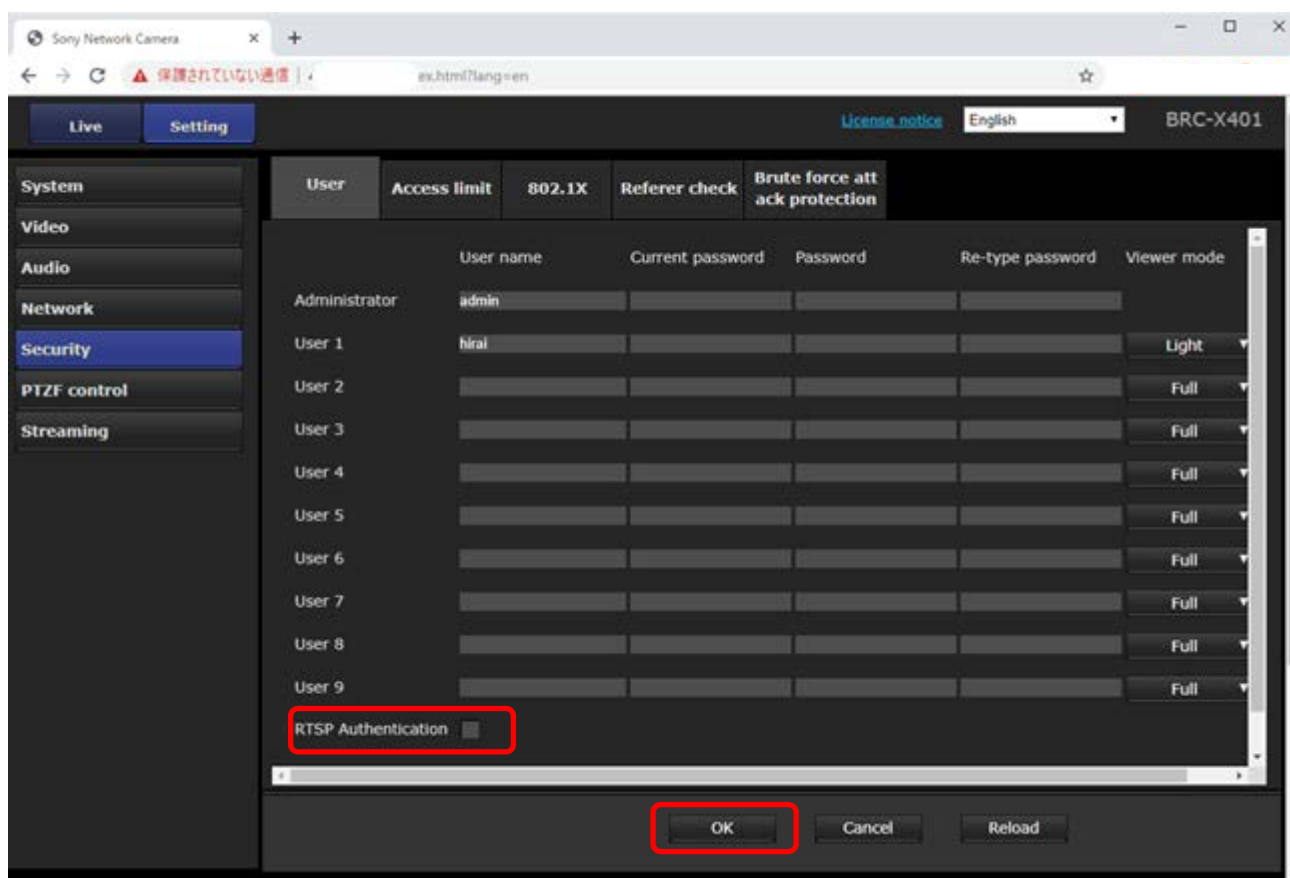
	RTSP authentication "ON"	RTSP authentication "OFF"
Registration of NDI®|HX license	Registration of Camera's IP address, user name and password for the Access Manager are required in advance.	Use NDI® Studio Monitor to detect devices and select them for the license registration.
Video Playback	Registration of Camera's IP address, user name and password for the Access Manager are required in advance.	
Security	Be authenticated	Authentication is not required for the video/audio streaming acquisition from the camera.
Switching speed	Compared with when the RTSP authentication is "OFF", several tens of milliseconds is additionally required until video acquisition.	Compared with when the RTSP authentication is "ON", the connection time is short a little bit. It is because the communication for the RTSP authentication is not required.

[RTSP authentication] On/Off setting

Access the camera by using an Internet browser (ex. Chrome), press the [Setting] button, and open the [User] tab of [Security].

Check/uncheck the [RTSP authentication] checkbox at the bottom of the page to turn it on or off.

Click [OK] button to set.

[Note]

When RTSP authentication is "ON", be sure to authorize the "Use Secure Connection" of the Access Manager before accessing the camera.

When consecutive authentication errors occur from the same computer, subsequent requests may be recognized as a brute force attack.

With the RTSP authentication "ON", when you try to access a camera by using NDI® Studio Monitor without setting camera's IP address, user name and password in the Access Manager, the NDI® Studio Monitor will repeatedly request connection to the camera. This phenomenon is considered as a brute force attack.

3.5. Camera's Codec Setting

The NewTek NDI® System acquires a video stream with an appropriate resolution as needed.
In the case of Sony BRC-X400 series, Image 1 and Image 2 channels are used.
The following shows the recommended codec settings when using the NDI®|HX function.

3.5.1. Image 1 Setting

The Video 1 setting is a channel used when an NDI® system requires "high resolution and high quality" stream. The following settings are recommended.

- ➢ Codec: H.264
- ➢ Size: 3840 x 2160 (4K)   or   1920 x 1080 (FHD)
- ➢ Frame rate: Maximum
- ➢ Bit rate compression mode: VBR
- ➢ H.264 Quality: 6

3.5.2. Image 2 Setting

The Video 2 setting is a channel used when an NDI® system requires "low resolution" stream. The following settings are recommended.

- ➢ Codec: H.264
- ➢ Size: 640 x 360
- ➢ Frame rate: Maximum
- ➢ Bit rate compression mode: VBR
- ➢ H.264 Quality: 6
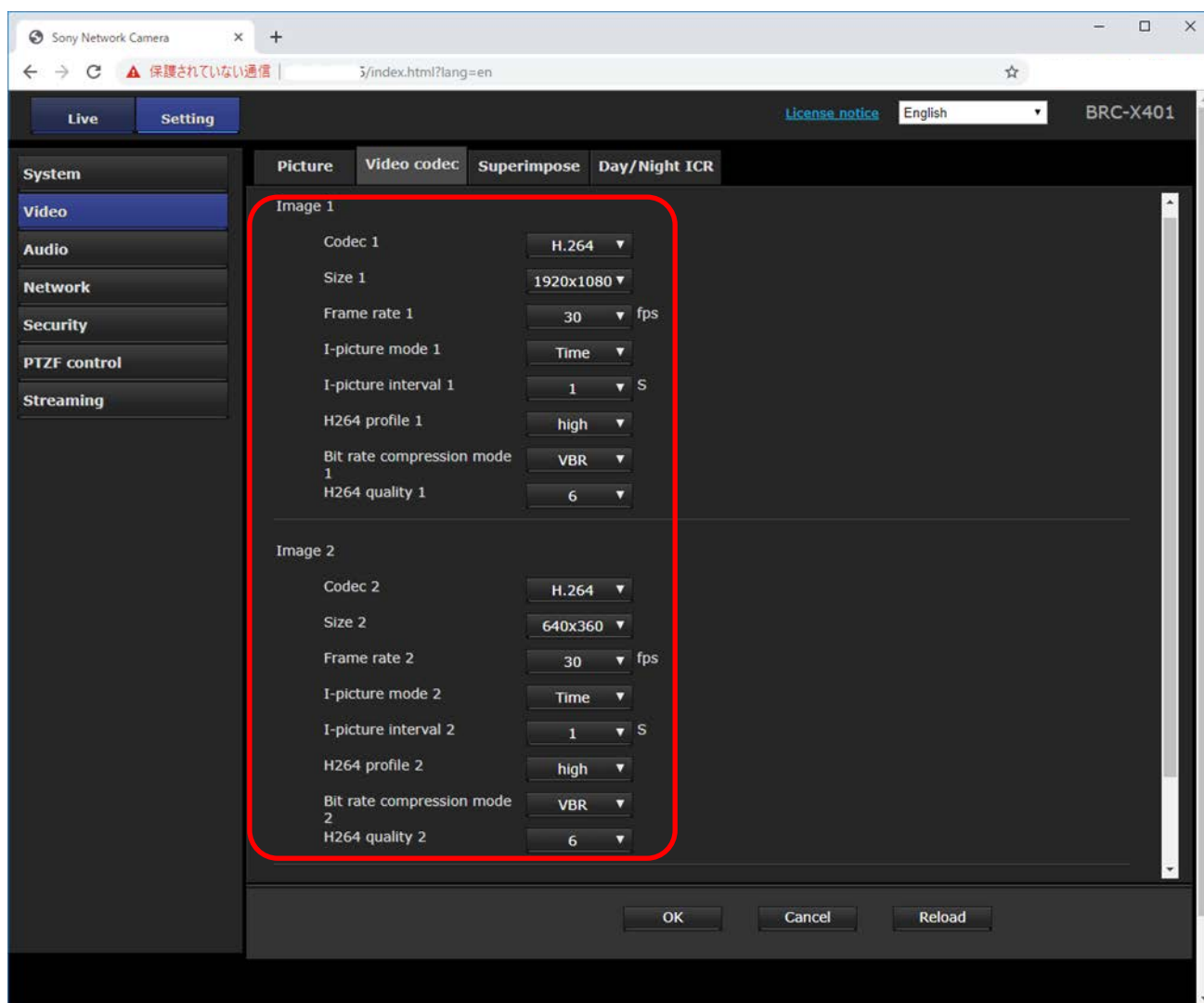
3.5.3. Audio Setting

The NDI® system utilizes audio stream also when the camera's audio output setting is enabled.

Enable/disable the audio transmission function regarding the use case.

The related settings are in the [Audio] tab on the [Audio] page of the administrator menu.

3.6. RTSP multicast setting and RTSP setting

The NDI® system tries to connect with the priority of 1) RTSP multicast, and 2) RTSP unicast in the video/audio acquisition of Sony BRC-X400 series.

In case you want to send the camera's video/audio to multiple NDI® devices, using multicast can reduce the distribution load of the camera, and a stable system construction can be expected.

Open the [Streaming] tab of the Administrator Settings menu, and check [Enable] checkbox of the Multicast streaming.

If you want to enable multicast distribution for multiple cameras, set the multicast address, multicast distribution port number (Video Port number 1, 2) and Audio port number carefully without any duplicate information among those cameras, and click [OK] button to set them.
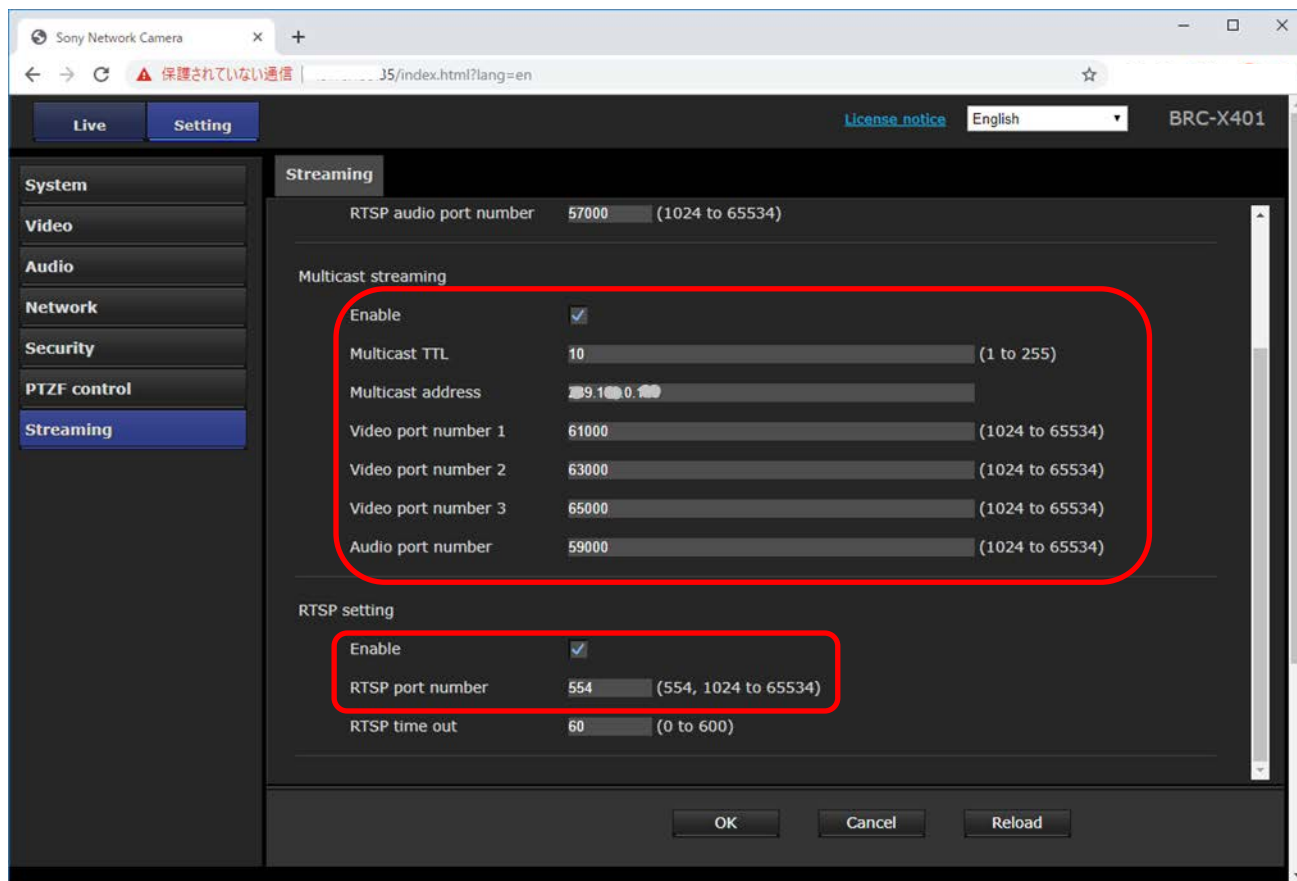
Set the RTSP setting as follows (no change from the default setting values)

➢ Enable: be checked

➢ RTSP port number: 554

3.7. NDI® Tools download/installation

To activate NDI®|HX function of the camera and connect to NDI® products via NDI®|HX function, the NDI® Tools provided by NewTek needs to be installed on a PC.

NDI® Tools is available from the following site.

https://ndi.tv/tools/

Once NDI® Tools is installed, the software below will be available for the Windows OS.

- ➢ Access Manager
- ➢ Scan Converter
- ➢ Studio Monitor
- ➢ Test Patterns
- ➢ Virtual Input

3.8. Remote Source settings via Access Manager

The Access Manager tool allows you to configure the connection settings for remote sources (NDI® media sources connected to the network) in the NDI® system.
When the authentication function is "ON" (in the section 3.4, the RTSP authentication), this setting is mandatory. This setting can also be used when the authentication is set to "OFF".

- ➢ Stop Studio Monitor
  When NDI® Studio Monitor is launched before starting the Access Manager, stop and close all the NDI® Studio Monitor windows.

- ➢ Launch Access Manager
 Launch Access Manager. Go to the [Remote Sources] tab.
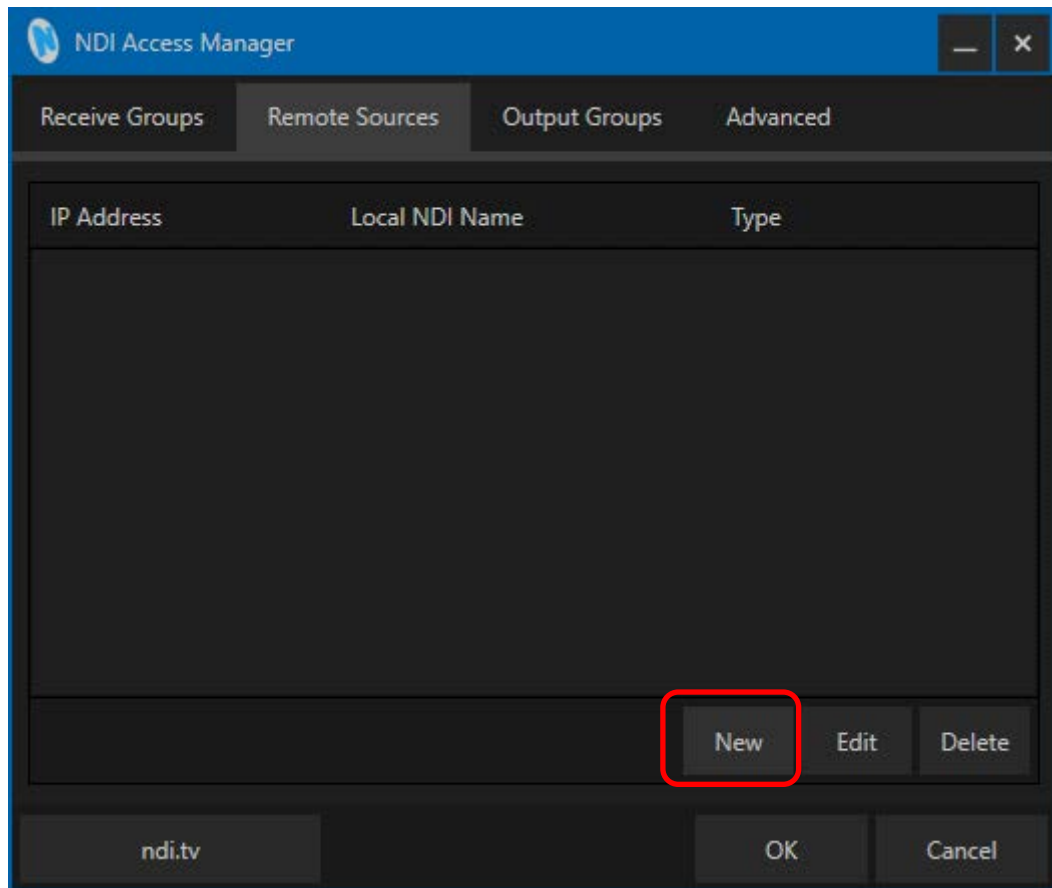
Click the [New] button to register the camera access settings. Use the following settings in the new dialog box.

➢ Type: Select Sony Camera from the menu option.
➢ Device IP Address: Input Camera's IP address
➢ Local Device Name: Specify the list name displayed when selecting the source of the NDI® system. (The default name is Sony Camera).
➢ Local Device Channel: Specify the name to be displayed in the above Local Device Name list.
➢ Use Secure Connection: Specify if the camera should make a sercure connection using RTSP authentication. When the RTSP authentication is ON, this check should be enabled.
➢ User Name: Specify the user name required when accessing the camera.
➢ Password: Specify the password to access the camera.
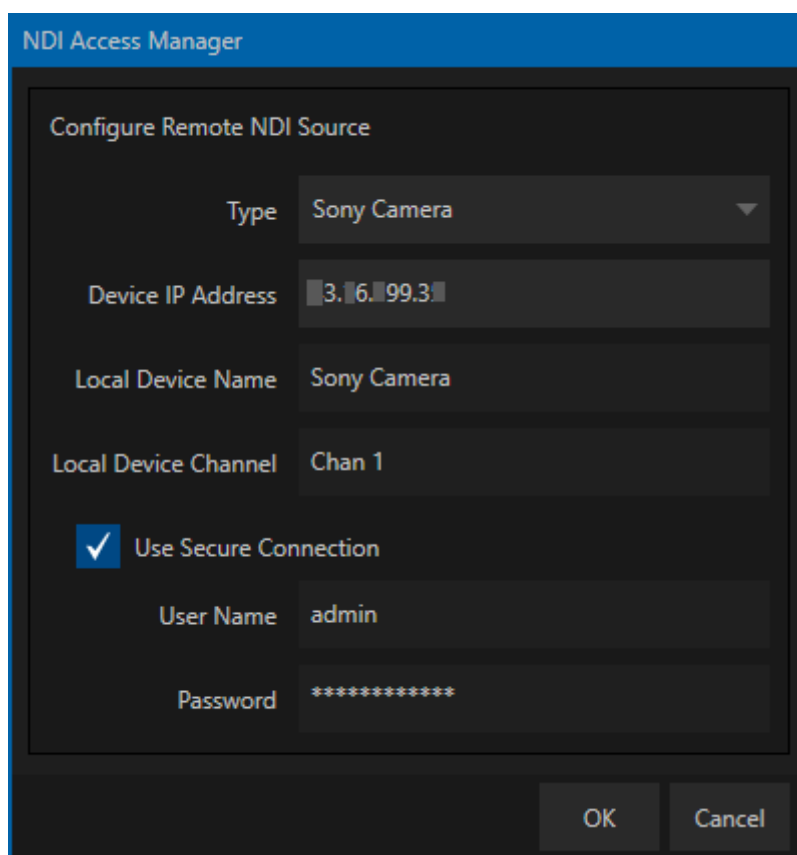
When the entry set in the list on the Remote Source tab has been created, press [OK] to exit the Access Manager.

➢ Launch Studio Monitor to confirm

Launch NDI® Studio Monitor. When opening the Studio Monitor, move the cursor into the Studio Monitor window and right-click. Make sure that the entry is visible in the NDI source list as [Local Device Name] -> [Local Device Channel].

If it is not confirmed, stop all the NDI® Tools, launch the Access Manager again and check the settings.
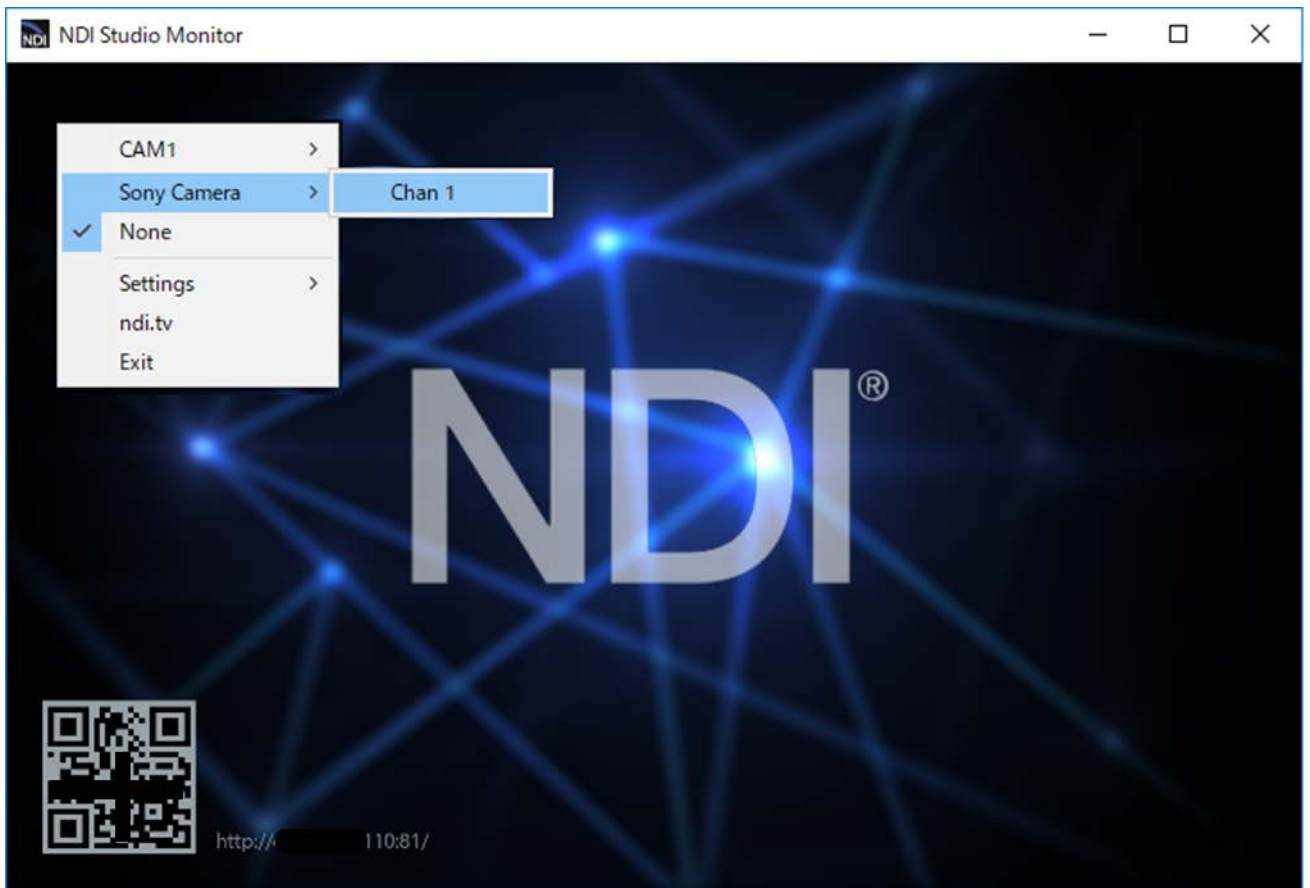
4. NDI®|HX License Key Registration

The NDI®|HX License Key registration is required for the camera to be workable with its NDI®|HX function.
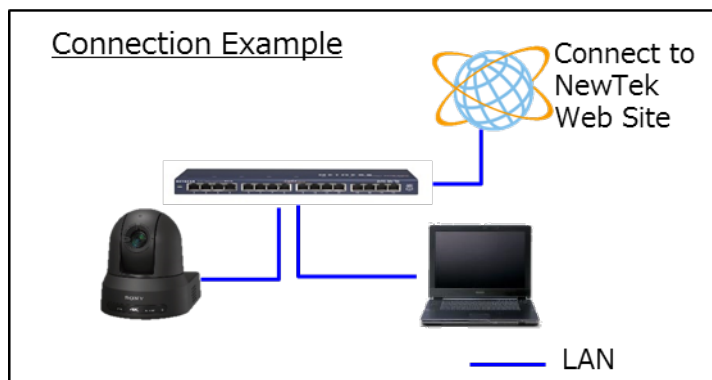
You can purchase the NDI®|HX License Key from the following NewTek URL.

http://new.tk/ndi_sony

The following describes the registration procedure after successfully purchasing the License Key.

4.1. Connect to the Internet

Connecting to the Internet is required when you register a license key.

4.2. Launch NDI® Studio Monitor and select a camera

Launch the NDI® Studio Monitor, and move the mouse cursor in the window and right click. The cameras that can be connected via NDI® on the network are displayed in the list.

When the remote source setting by the Access Manager shown in the Section 3.8 is performed, the corresponding camera is displayed as [Local Device Name] -> [Local Device Channel].

If the remote source is not set by the Access Manager, the Camera name set in the Section 3.2 (default

value is "CAM1")-> Channel 1, <IP address> will be displayed.

Select (left-click) the camera. A screen window that asks you to register the NDI®|HX License Key is displayed as shown below.

4.3. Register the NDI®|HX License Key

Click the [REGISTER] button at the bottom right of the screen window displayed as above, and register the License Key.

Click the button to register the License Key. When the button is pressed, the following dialog box will appear.
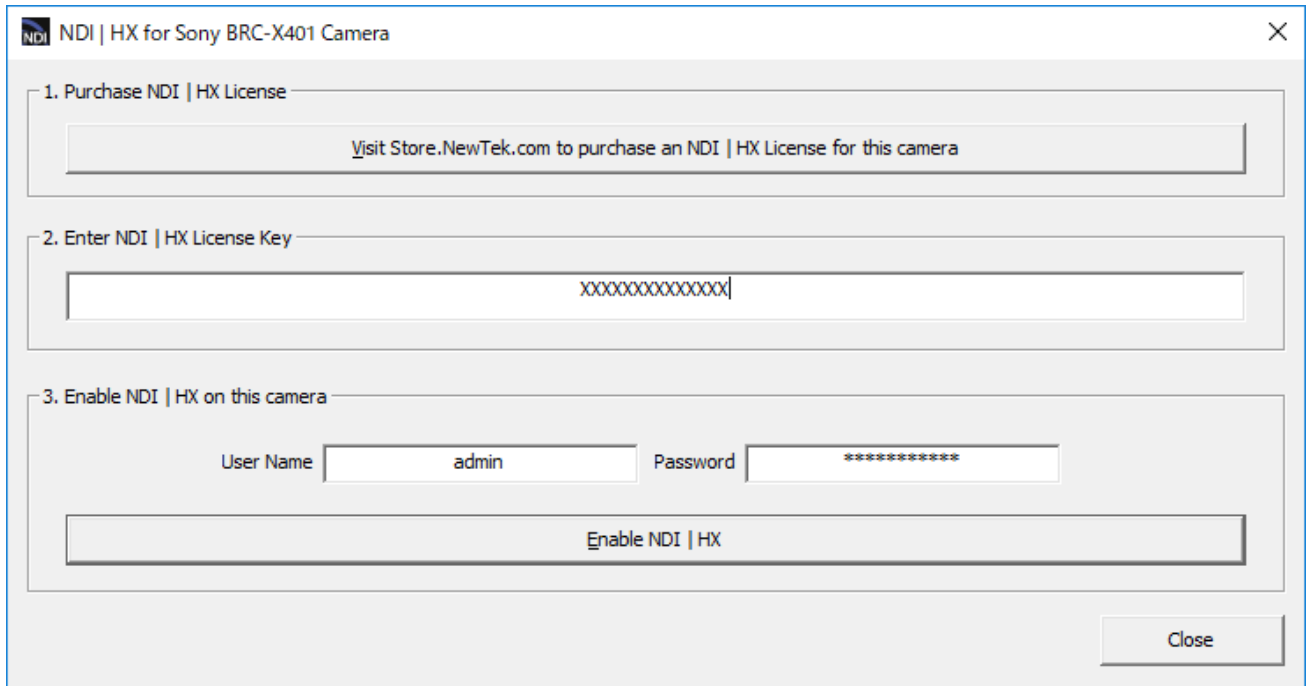
You can purchase a license via the above link of [1. The Purchase NDI®|HX License]. (http://new.tk/ndi_sony).

Enter the key string obtained by purchasing a license into [2. Enter NDI | HX License Key]. (Sample capture shows XXXX…).

Enter Camera's user name and password in the field of User Name and Password in [3. Enable NDI®|HX on this camera] and click the [Enable NDI®|HX] button.

When the registration succeeds, the following dialog will pop up.
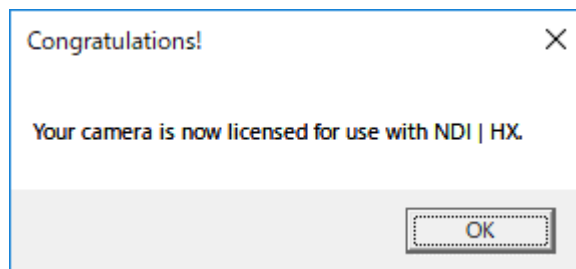
When you click the [OK] button, NDI® Studio Monitor shows the video of the corresponding camera. You can see that the NDI®|HX function has been activated.

5. Troubleshooting

- When starting NDI ® Studio Monitor, yet no cameras are detected and therefore there is no camera listed in the camera list on the NDI® Studio Monitor.

  [Case-1] Depending on your computer environment (Windows PC), the device detection mechanism may be filtered due to personal firewall settings or anti-virus settings, and the camera may not be detected. In such a case, please review the security settings of your computer or perform remote source setting by using Access Manager as described in the Section 3.8.

  [Case-2]
  There is a report that device detection does not work properly if a network adapter called "Loopback Adapter" is configured on your computer (Windows PC). Installing the software called "Wireshark" may configure a network adapter called "Npcap Loopback Adapter". If you want the device detection mechanism of NDI® Studio Monitor to work, disabling this network adapter may solve the problem.

- The NDI®|HX License Key registration failed even when the [Enable NDI®|HX] button was pressed.

  [Case-1]
  When registering an NDI®|HX License Key, your computer (the computer on which NDI® Studio Monitor is installed) needs to be connected to the Internet. If the camera and the computer are installed in a corporate network, make sure that the proxy server settings on the computer are properly set.

  [Case-2]
  Once a License Key has been registered to a camera, it cannot be registered to another camera. Please purchase a separate license for each NDI®|HX camera.

- Once the camera is initialized to factory default settings, the NDI®|HX functions will stop working.
  The NDI®|HX registered information inside the camera will be deleted when the Camera is restored to factory default settings. Please re-register the same License Key you registered previously to the Camera. You can re-register the license key to the same camera as many times

as you like.

● The NDI®|HX License Key registration was successful, but the camera image after registration is not displayed, and the monitor window is black.

[Case-1]

This issue will occur when the remote source setting by Access Manager described in Section 3.8 is not performed with the RTSP authentication setting on the camera "On".

Here is some background information on what is occurring. NDI® Studio Monitor tries to make an RTSP connection to the camera and the camera requests authentication information, but NDI® Studio Monitor does not know the necessary authentication information, then it will repeat connection failures.

Once this issue occurs, the "brute force attack protection function" of the camera may be activated in some cases. If there is continuous accessing that causes an authentication error, the computer will be recognized as an "illegal client" and the accessing from that computer will not be allowed for a certain period of time.

If this symptom occurs, please stop NDI® Studio Monitor immediately and wait for about a minute (in the case of the camera default setting). After that, please input the information for the camera as described in Section 3.8. Finally, quit Access Manager and restart NDI® Studio Monitor to access the camera.

● The video playback on the NDI® Studio Monitor is not smooth.
This issue may be due to the performance of your computer or the network environment.

[Case-1]

This issue may be improved by using the hardware acceleration function of your computer (Windows). Open NDI® Studio Monitor, and choose the context menu, then check Allow H/W Acceleration under [Settings] -> [Video].

[Case-2]

Ensure you have a Gigait Ethernet connection as insufficient bandwidth may be an issue.

● PTZ operation or preset operation does not work.
In the NDI®|HX function, operations such as PTZ and preset are controlled by VISCA over IP.

[Case-1]

Only one program can be used for VISCA over IP control on your computer due to restrictions

on network resource usage.

If another application that uses the VISCA over IP protocol is running in addition to NDI® Studio Monitor, please stop that program and start the NDI® Studio Monitor again.