



# Service Host Administrator Guide

Version 1.2



## Service Host



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### **Created on**

2019/01/23

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Service Host is a component that abstracts the Windows Service layer. The Service Host operates with Service Host plugins that implement the services and functionality, while the Service Host itself manages Windows Service related operations, such as logging, on behalf of all plugins.

An example is the **Control Mode** plugin. By default, it is registered as a Windows service named `ServiceHost.control` upon successful installation. **Control Mode** provides a REST interface and comes with a web-based user interface, and is used to operate the Service Host plugin instances and installed Viz Engine instances.

The fastest way to get started with Service Host is:

1. Install Service Host, see Install / Uninstall.
2. Launch the web GUI of the Control Mode. After each launch of The Control Mode, a shortcut to the web GUI endpoint is updated under `%ProgramData%/vizrt/ServiceHost/ServiceHost.control`. Open this shortcut with your favorite browser. A description of this web GUI is found under Control Mode.

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# 1 Getting Started

Service Host is a component that abstracts the Windows Service layer. The Service Host operates with Service Host plugins that implement the services and functionality, while the Service Host itself manages Windows Service related operations, such as logging, on behalf of all plugins.

An example is the **Control Mode** plugin. By default, it is registered as a Windows service named `ServiceHost.control` upon successful installation. **Control Mode** provides a REST interface and comes with a web-based user interface, and is used to operate the Service Host plugin instances and installed Viz Engine instances.

The fastest way to get started with Service Host is:

1. Install Service Host, see [Install / Uninstall](#).
2. Launch the web GUI of the Control Mode. After each launch of The Control Mode, a shortcut to the web GUI endpoint is updated under `%ProgramData%/vizrt/ServiceHost/ServiceHost.control`. Open this shortcut with your favorite browser. A description of this web GUI is found under [Control Mode](#).

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## 2 Service Host Component

Service Host is a Vizrt component that abstracts the Windows Service layer. The Service Host operates with plugins that implement a desired service or functionality. The Service Host itself takes care of logging and all the Windows Service stuff.

An example is the Control Mode plugin, which by default is registered as a Windows service called *ServiceHost.control*. Control Mode provides a REST interface and comes with a web-based user interface. It provides the necessary functionality to manage the Service Host plugins and installed Viz Engine instances.

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### 2.1 Install / Uninstall

This page contains information on the following topics:

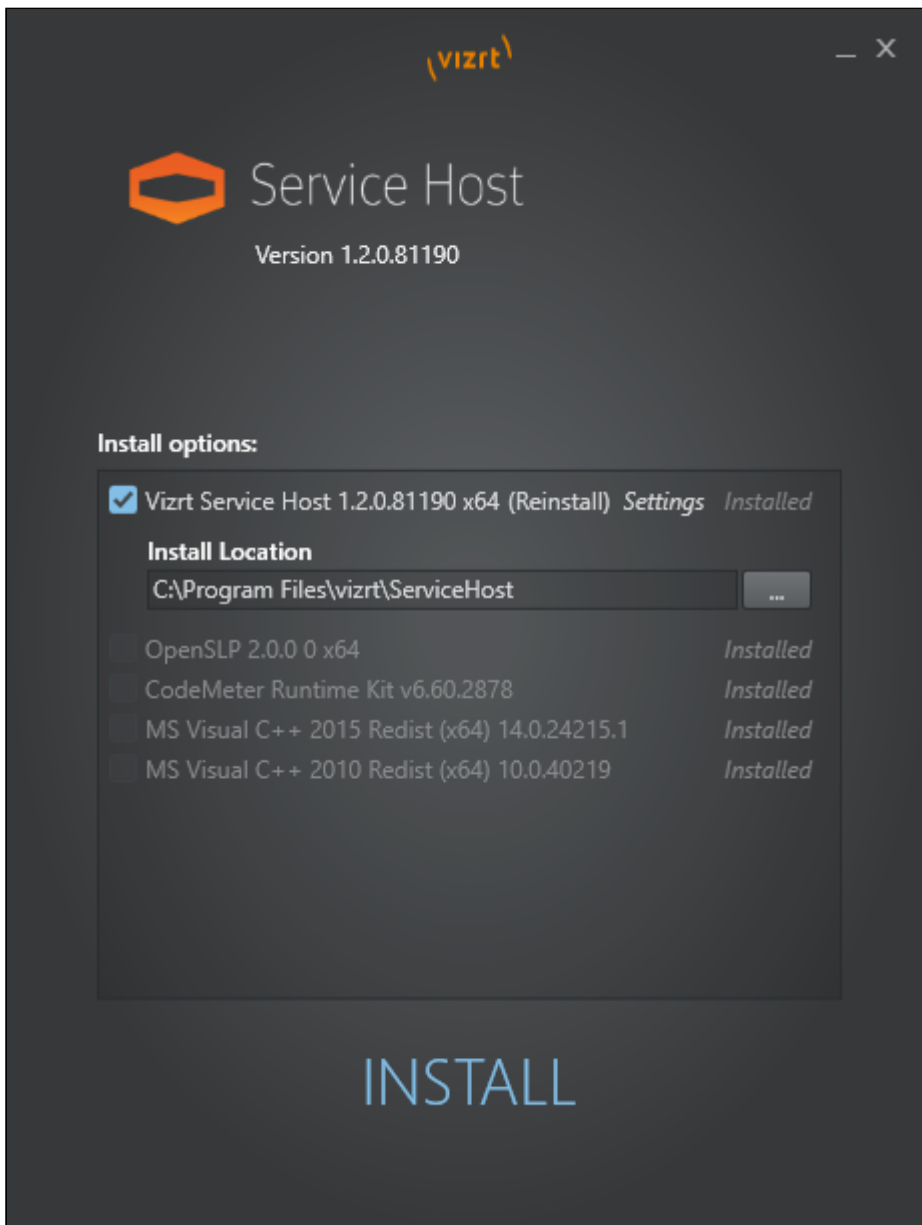
- [Installers](#)
  - [Installation](#)
    - [msi Installer](#)
  - [Upgrade an Existing Installation](#)
    - [msi Installer](#)
  - [Uninstall](#)
    - [msi Installer](#)
  - [Control Mode](#)

#### 2.1.1 Installers

The Service Host installer comes in two flavors:

- `ServiceHostBundle-x64*.exe`
- `ServiceHost-x64*.msi`

The main difference is that the bundle installer takes care of upgrading an existing installation and installs the required operating system run-times (if not already present), whereas the .msi installer only installs the Service Host.



## Installation

The bundle installer itself is using the .msi installer. The .msi and other files can be extracted from the bundle. This is mostly used for silent and unattended installs. Please run the bundle with -h command line switch to get all the available options.



### Command Line Options for Bundle Installer

```
Z:\my_path> ServiceHostBundle-x64-1.0.0.68324 -h

Z:\my_path>
Running with no parameters will install the product
-s, --silent           Runs the installer with no user interaction

--msi                 Extracts all .msi files to a subdirectory
--dump                Extracts all files to a subdirectory
--dumpTo=VALUE        Extracts all files to the specified path
-h, -?, --help        Prints this help
```

## msi Installer

```
Z:\my_path> msixec /package ServiceHost-x64-1.99.0.68094.msi /l*vx! install.log
```

### Pre Conditions

- No Service Host is installed prior to the procedure.

### Post Conditions

- Service Host is installed at the indicated location. the default value is %ProgramFiles%/vizrt/ServiceHost.
- Configuration and log files are located at %ProgramData%/vizrt/ServiceHost.
- If the configuration of the Control Mode does not exist, then a default one will be created at %ProgramData%/vizrt/ServiceHost/ServiceHost.control.xml.
- The Control Mode is registered as Windows Service and started.
- A shortcut, ServiceHost.control, is created in %ProgramData%/vizrt/ServiceHost to point to the web GUI of the Control Mode. Use this shortcut to verify the installation.

## Upgrade an Existing Installation

### msi Installer

Upgrading an existing installation using the .msi installer is possible when doing an uninstall of the old package followed by an install of the new package.

### Pre Conditions

- Service Host is installed.
- The Control Mode is running.

The uninstallation process writes the current configuration and state into `Reinstall.profile`. This file is then used by the installer of the new package to re-establish the state and configuration.

### Post Conditions

- The new version of Service Host is installed.
- The existing configuration and state of the Service Host services is re-established.

## Uninstall

### msi Installer

```
Z:\my_path> msixec /uninstall ServiceHost-x64-1.99.0.68094.msi /l*vx! uninstall.log
```

### Pre Conditions

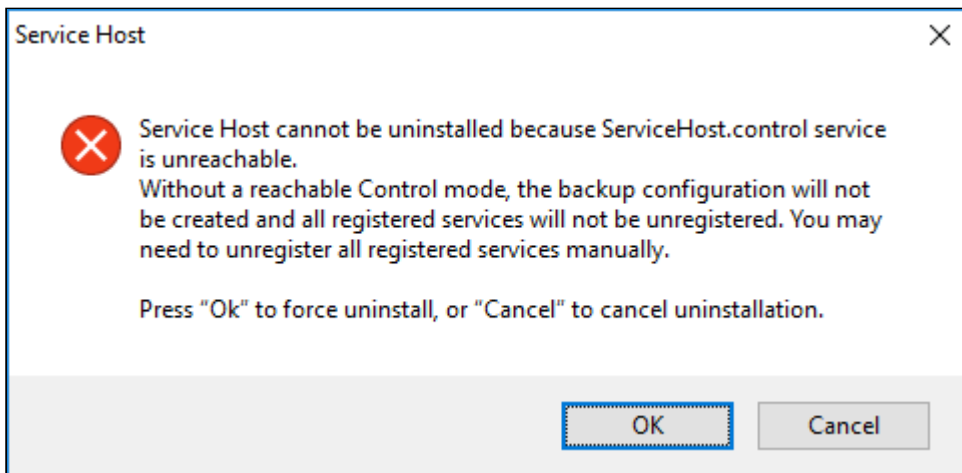
- Service Host is installed.
- Zero, one or more services may be registered with this Service Host.
- Zero, one or more services may be registered with this Service Host and running.
- The `Control Mode` has to be running. otherwise the uninstall silently fails.

### Post Conditions

- The configuration and status of services under this Service Host are stored as the config file location in `Reinstall.profile`. They can be used later for further installations.
- Any running services are stopped.
- Any registered services are unregistered.
- The files under `%ProgramFiles%\vizrt\ServiceHost` are removed.

### Notes

If the `Control Mode` is unreachable during uninstallation, it is still possible to uninstall. The dialog will inform users that the `Control Mode` is unreachable and prompt users to decide to force uninstall, or cancel. If users force uninstall, users have to manually unregister all Service Host services registered as Windows services.



## Control Mode

To register/unregister and start/stop Service Host plugin instances manually, please take a look at [Control Mode](#).

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## 2.2 Control Mode

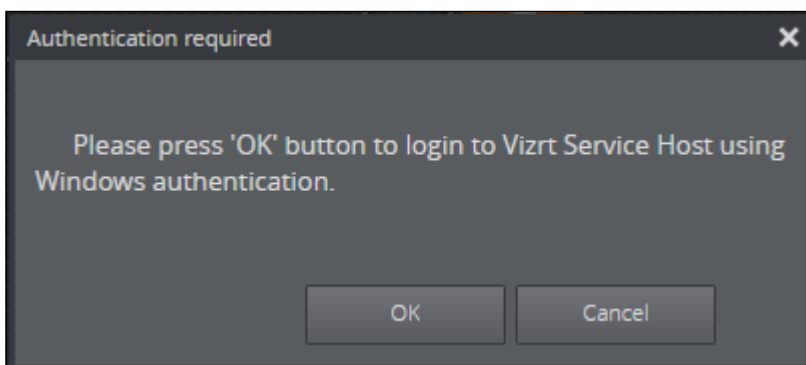
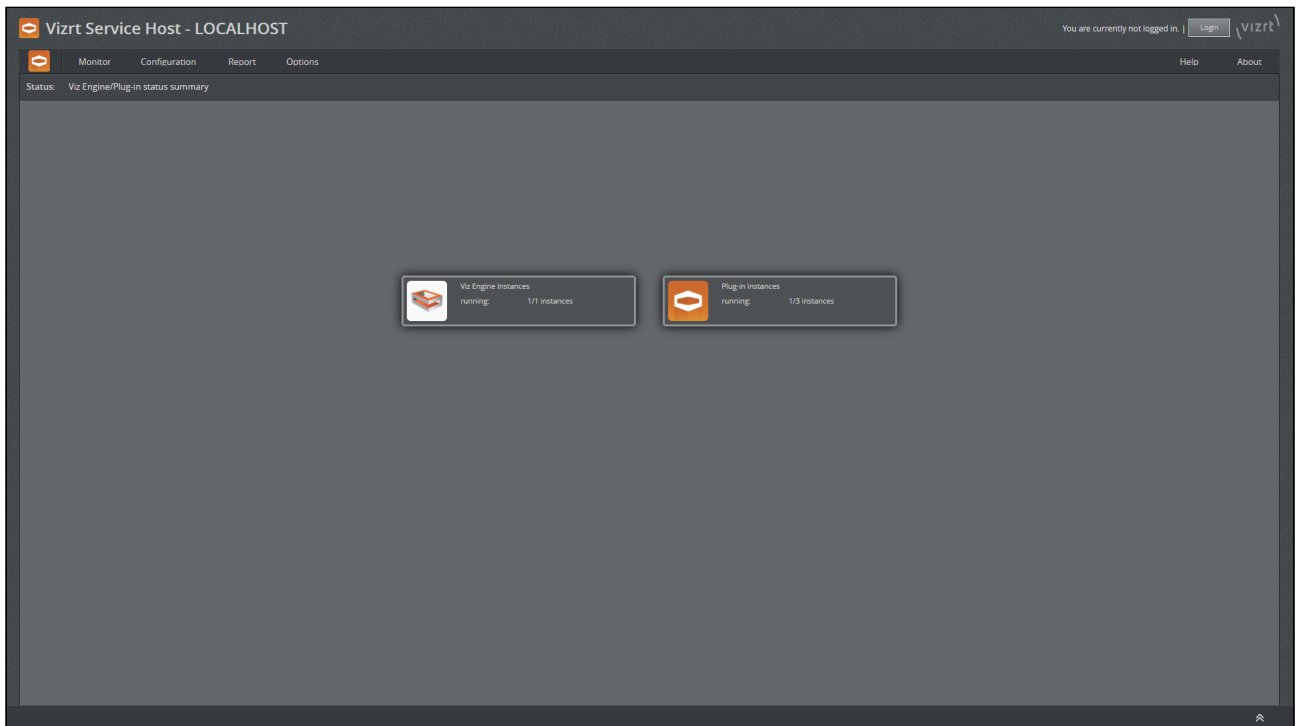
The Control Mode plug-in is registered as a Windows Service when the Service Host is installed. This service is the administration point for this Service Host. The shortcut to the Control Mode of the current Service Host can be found at %ProgramData%\vizrt\ServiceHost\ServiceHost.control. It provides the following functionalities via REST and Command interface.

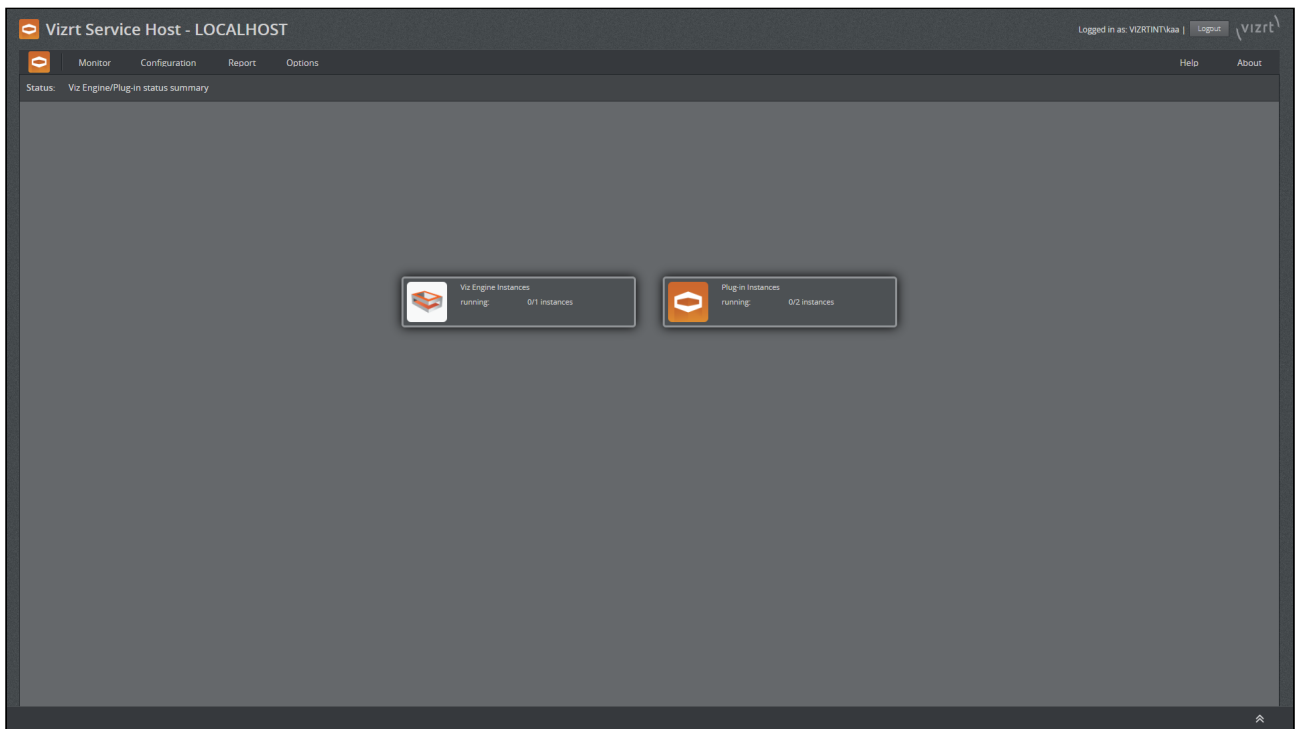
This page contains information on the following topics:

- [Viz Engine](#)
  - [Start a Viz Engine Instance](#)
    - [Preconditions](#)
    - [Postconditions](#)
  - [Stop a Viz Engine Instance](#)
    - [Preconditions](#)
    - [Postconditions](#)
    - [View Viz Engine Configuration](#)
    - [View Viz Engine Logs](#)
    - [Notes](#)
- [Plug-ins](#)
  - [Register a Plug-in Instance](#)
  - [Configure a Plug-in Instance](#)
  - [Plug-in Monitor](#)
  - [Start/Stop a Plug-in Instance](#)
  - [Unregister a Plug-in Instance](#)
  - [Report/Logs](#)
  - [Notes](#)
    - [The Configuration File of a Plug-in Instance is Missing](#)

- Service Host (Control Mode)
  - Configuration
  - Report/Logs
  - The Control Mode Log
  - Service Host Startup Logs
- Debugging of Service Host
  - Manual Register/Unregister and Stop/Start
  - Launch Service Host in Foreground with a Console Window

On the welcome page, the first thing to do is to log in. The login name is used to log all interactions with the Control Mode. The login name can be viewed on the upper right of the GUI, next to the Login/Logout button.

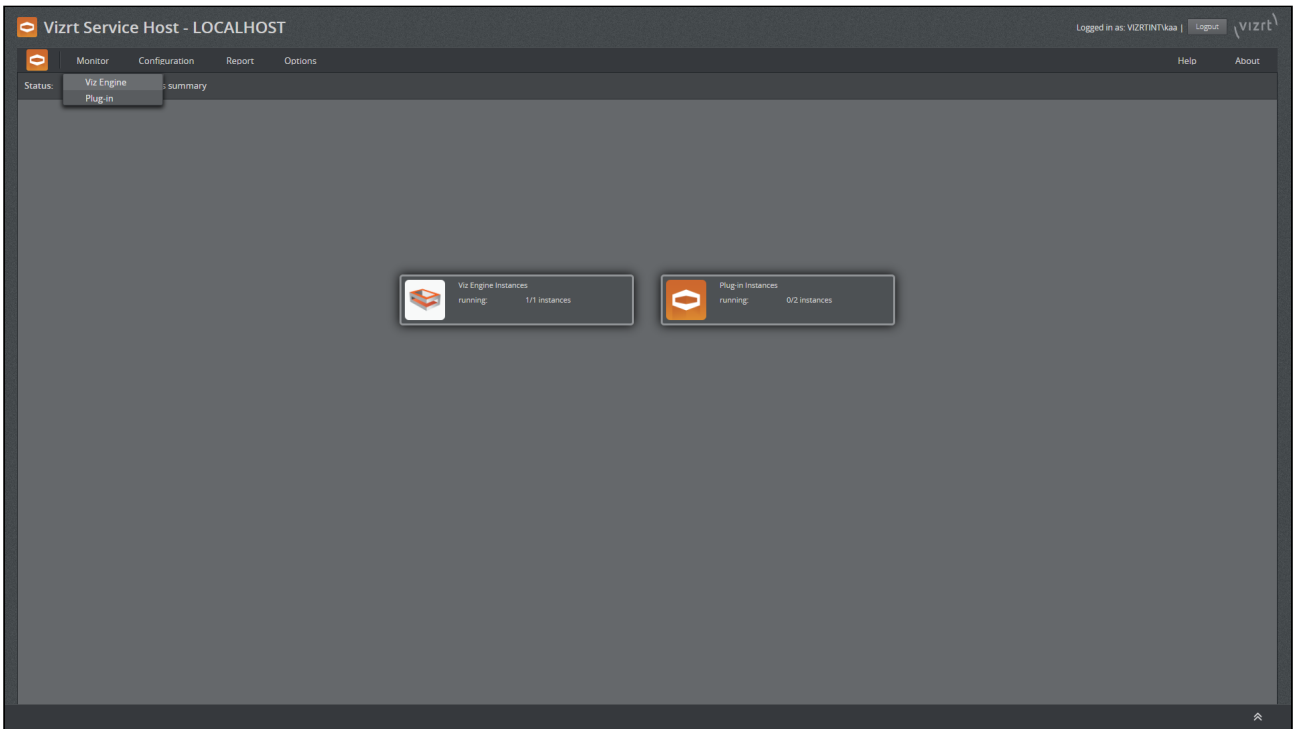




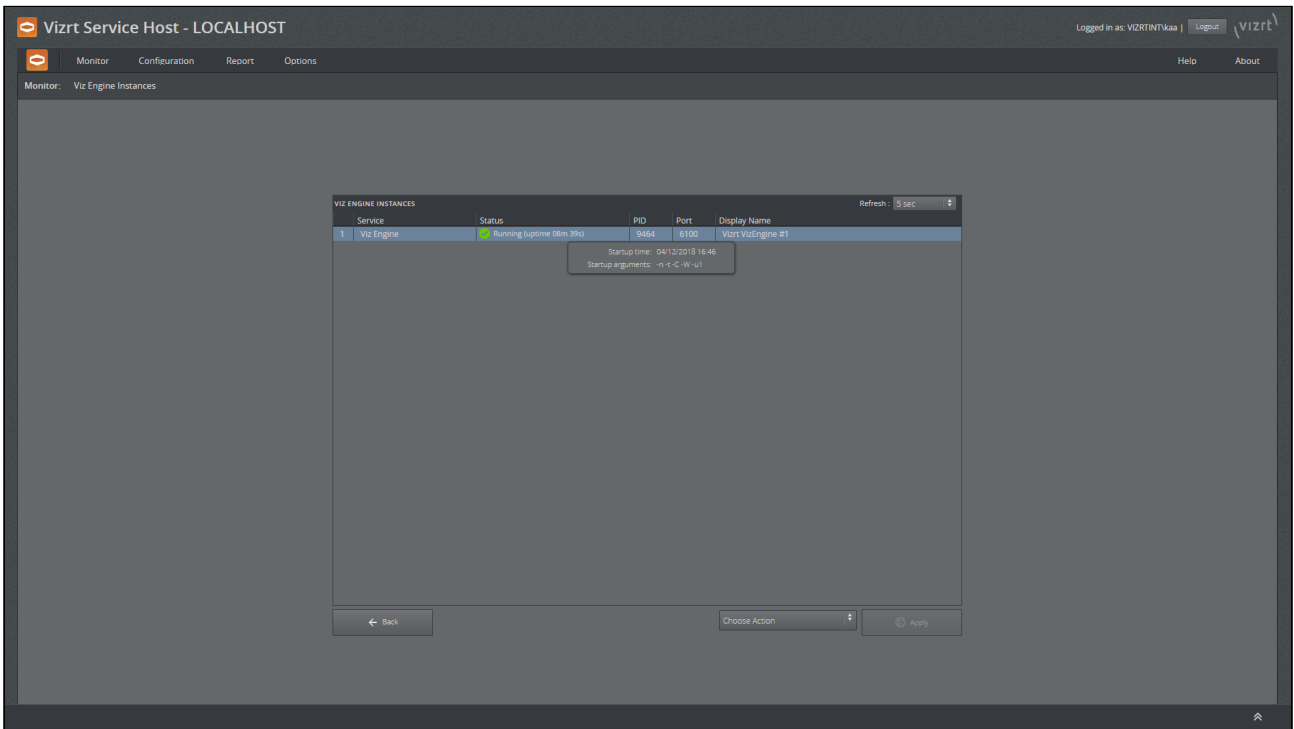
## 2.2.1 Viz Engine

The Control Mode is aware of Viz Engine instances on the local machine. They can be controlled from here.

Follow the menu **Monitor > Viz Engine**.

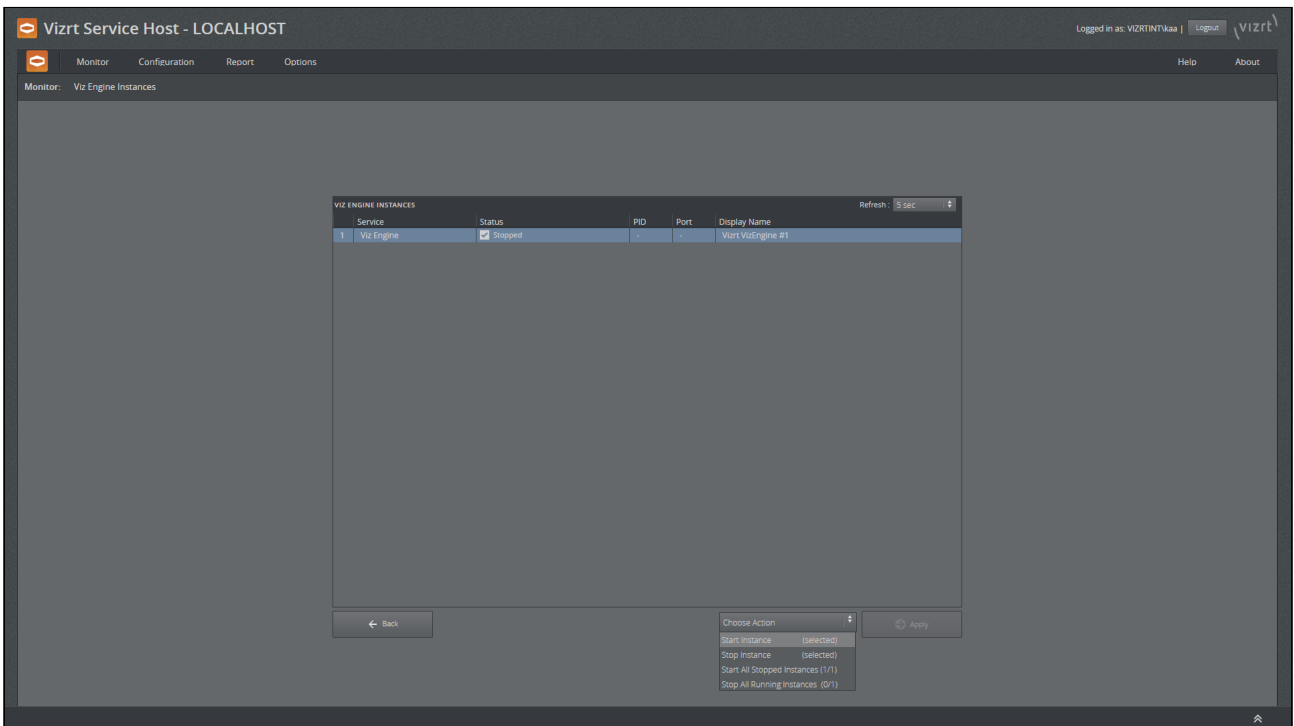
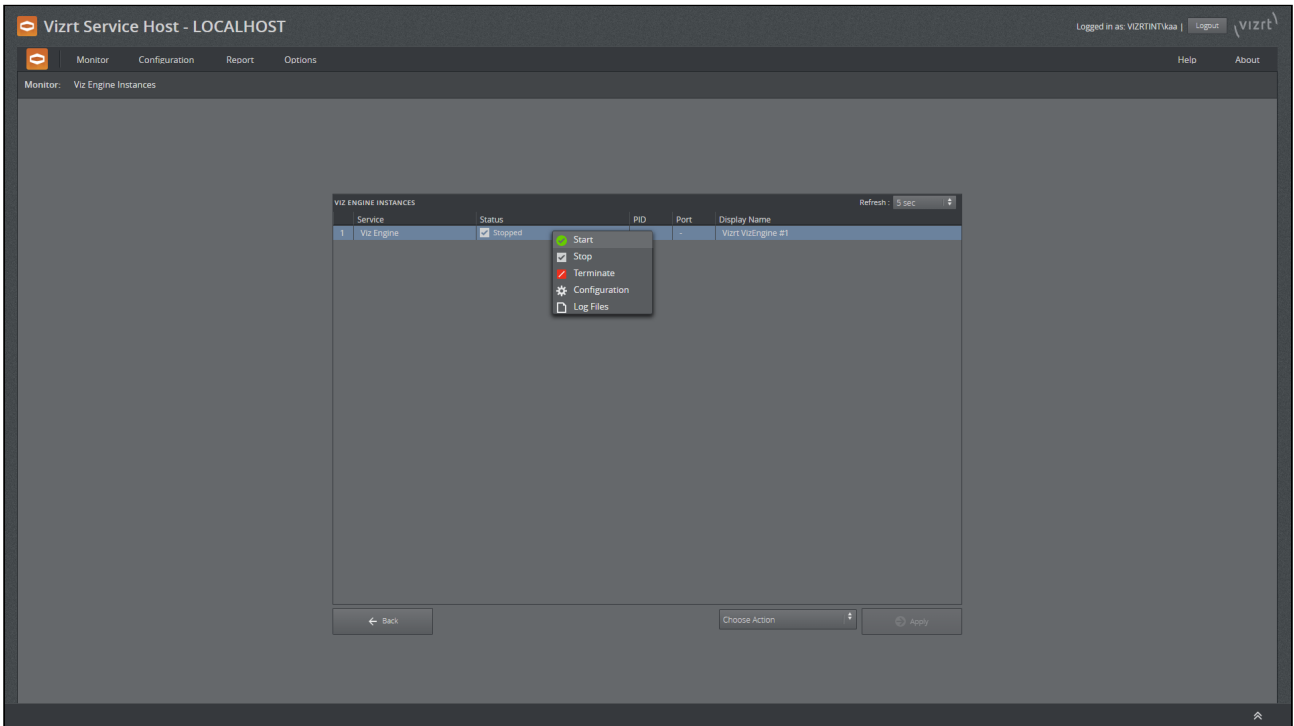


to go to this screen.



## Start a Viz Engine Instance

From the Viz Engine Instances Monitor page, the context menu on an individual Viz Engine instance or use the action bar on the bottom of the screen can be used to start Viz Engine instances.



The page is automatically refreshed every five seconds by default.

## Preconditions

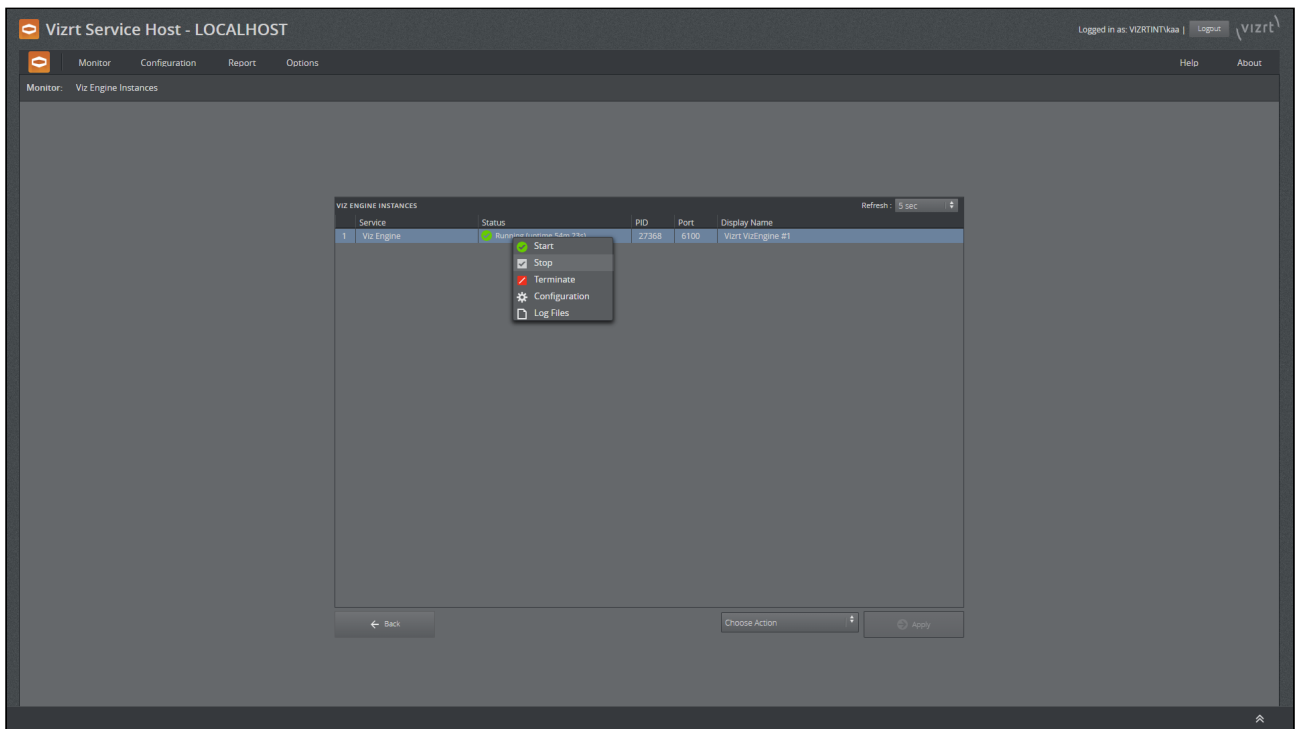
- The Viz Engine needs to be installed at the default location.

## Postconditions

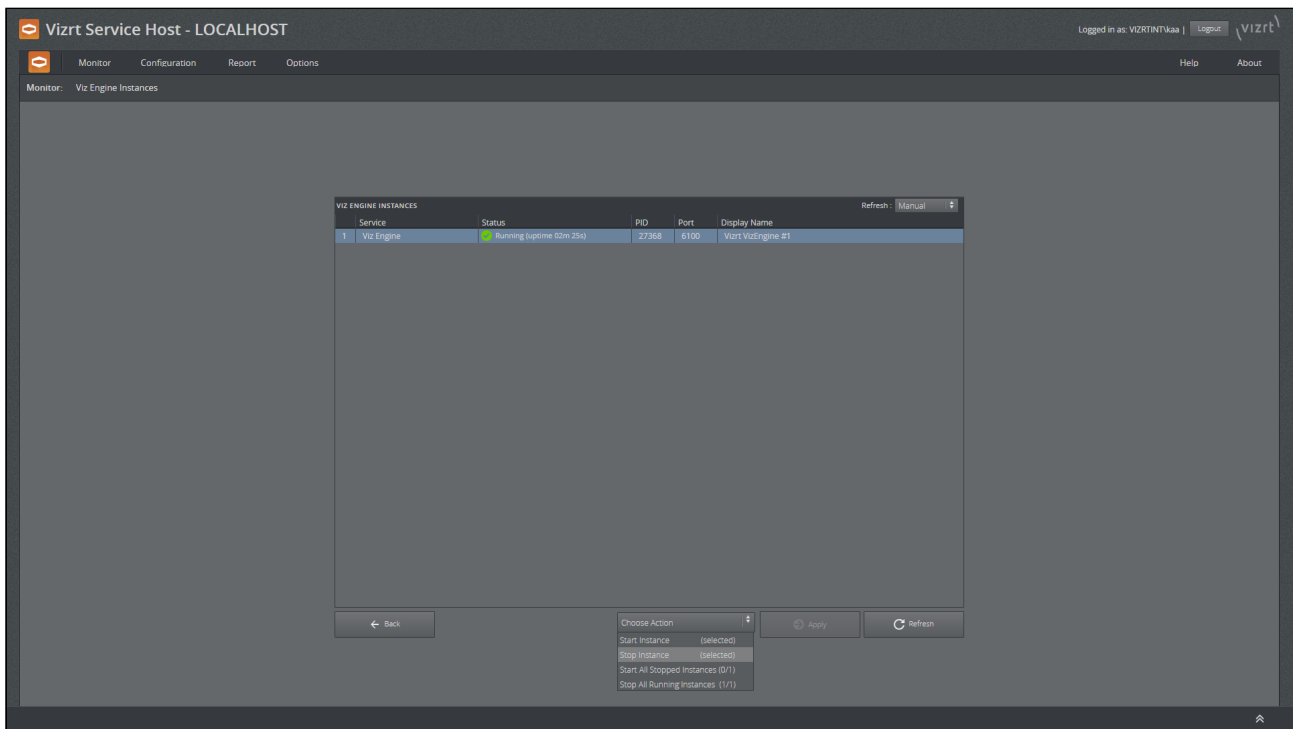
- Start: A Viz Engine was launched without GUI and without a console.
- Start: The launch may have failed. Please check the reason in the logs. Context menu Logs or **Menu Report > Logs > Viz Engine**.

### 2.2.2 Stop a Viz Engine Instance

From the Viz Engine Instances Monitor page, the context menu on an individual Viz Engine instance or use the action bar on the bottom of the screen can be used to stop Viz Engine instances.







The page is automatically refreshed every five seconds by default.

## Preconditions

- Viz Engine needs to be installed at the default location.
- The General Comm. Port of each Viz Engine instances need to be configured properly. Otherwise, the control instance will not be able to stop the specified Viz Engine instance correctly.

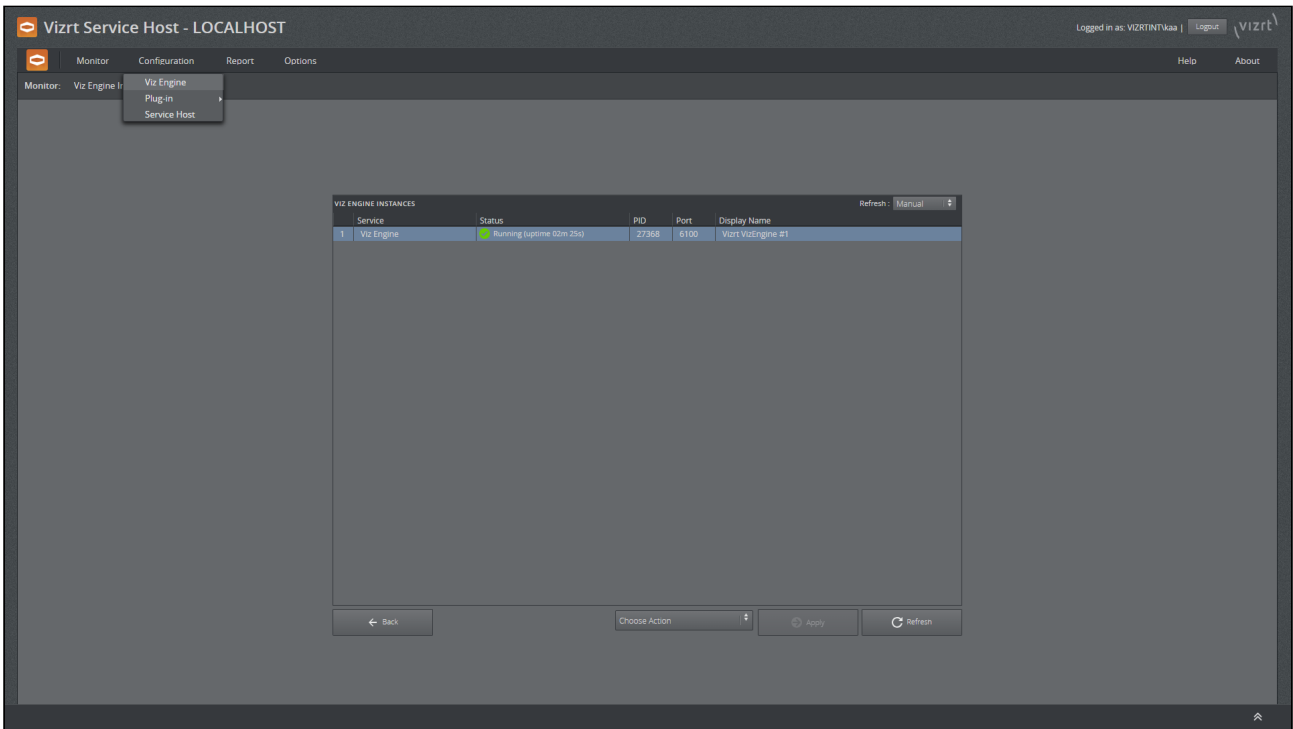
## Postconditions

- Stop: The Viz Engine instance was sent the EXIT command.

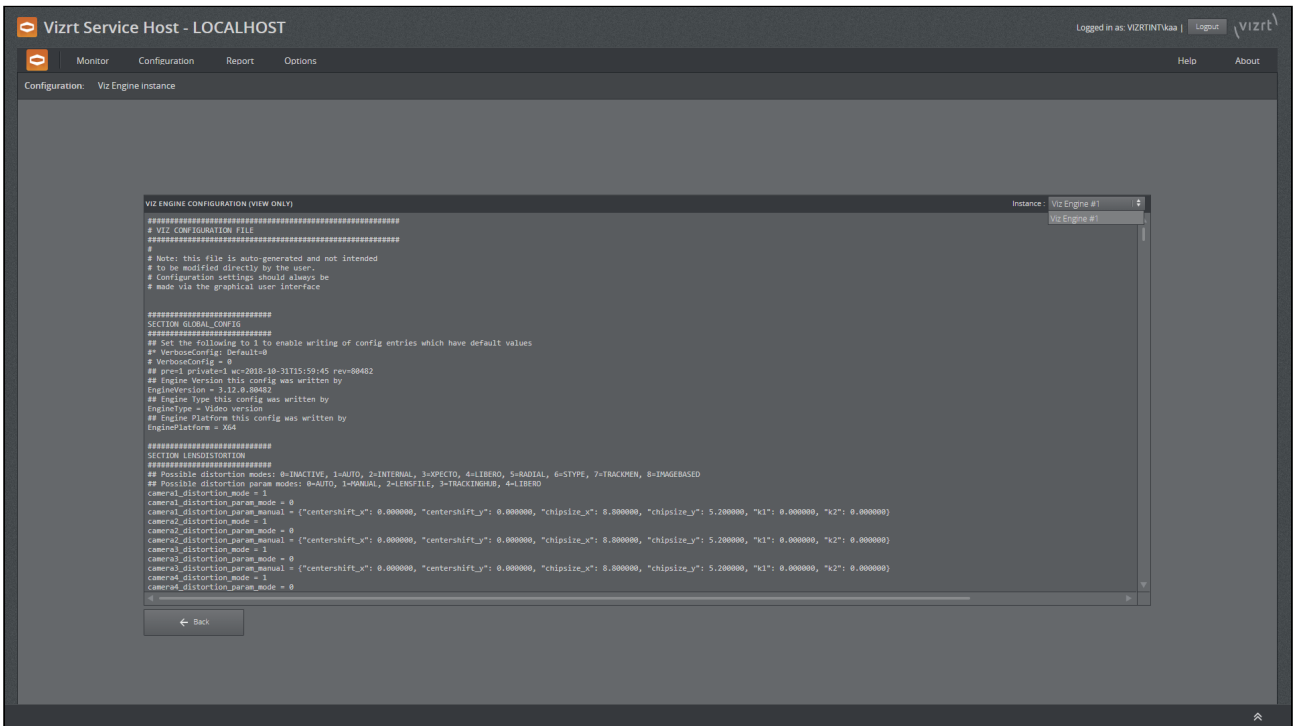
The shutdown of a Viz Engine may take some time. To kill the process, with all consequences, use Terminate from the context menu.

## View Viz Engine Configuration

The config file of a Viz Engine instance can be viewed either from the Context menu on the Monitor page or via menu **Configuration > Viz Engine**.



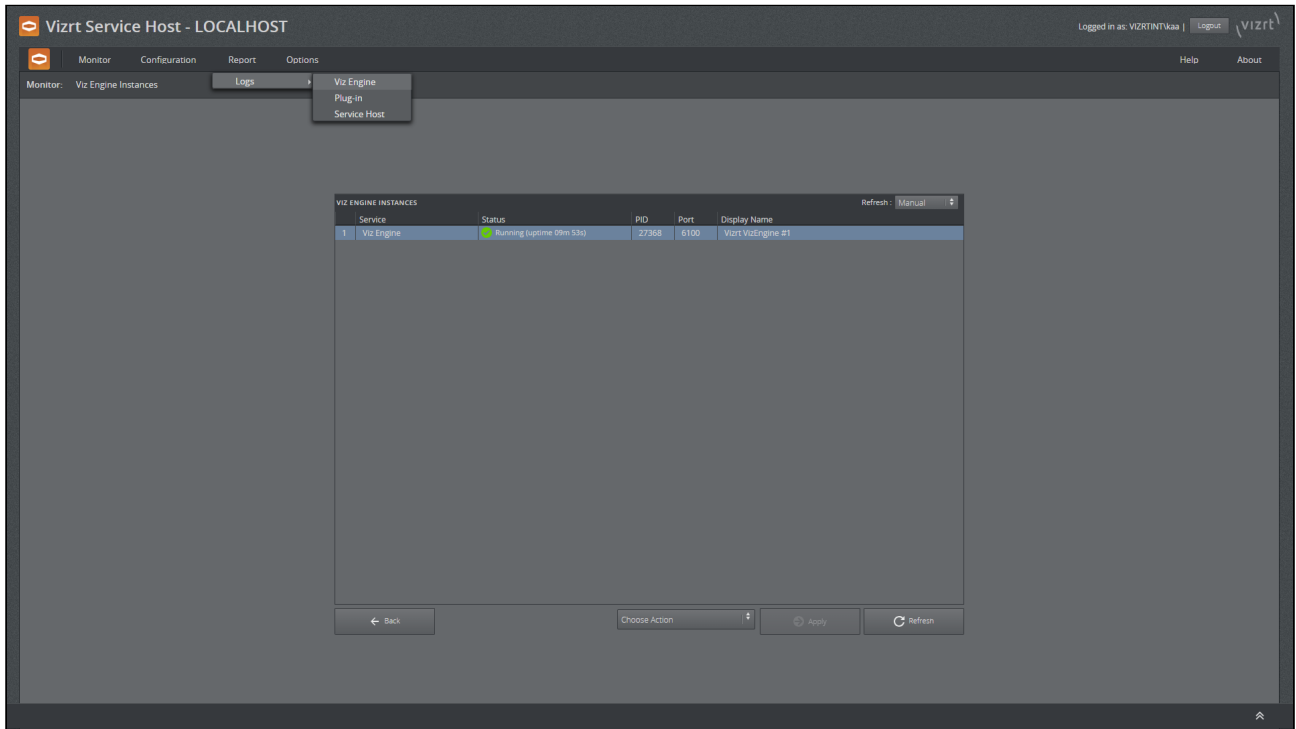
From there, select the Viz Engine instance.



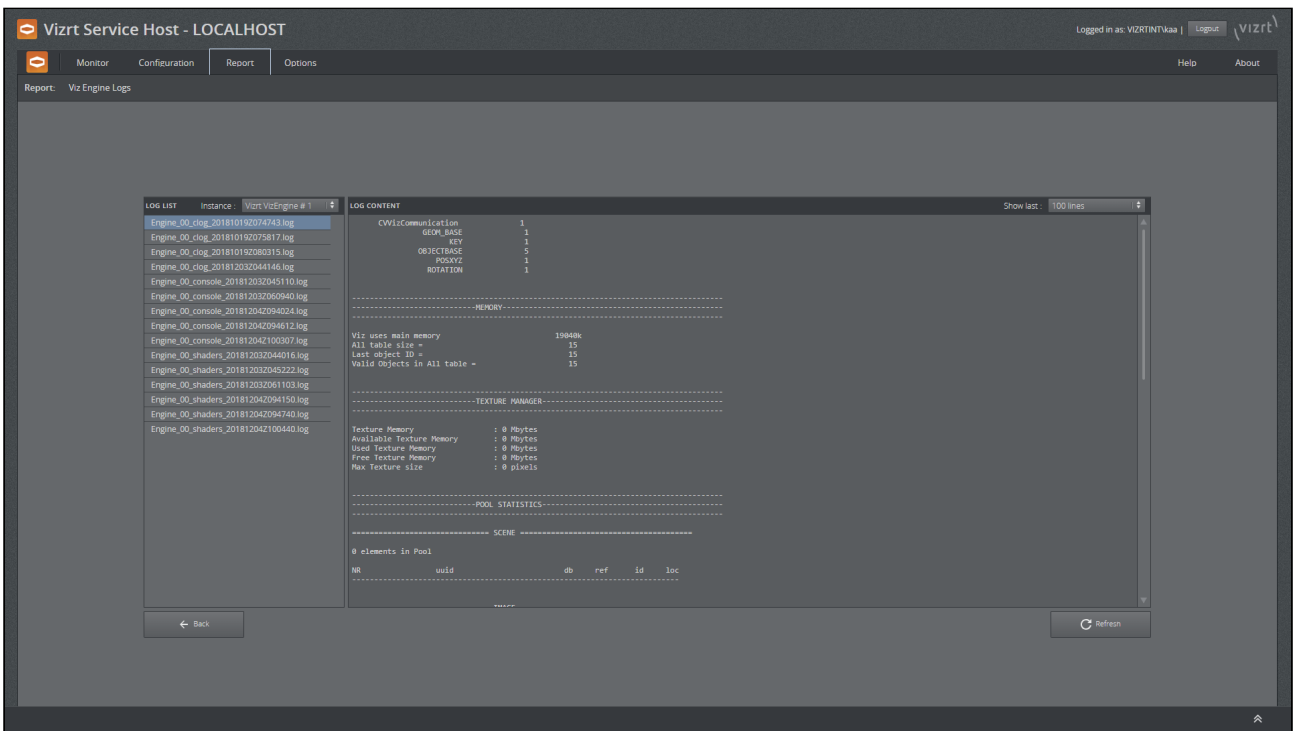
The page is view only.

## View Viz Engine Logs

The log file of a Viz Engine instance can be viewed either from the Context menu on the Monitor page or via menu **Report > Logs > Viz Engine**.

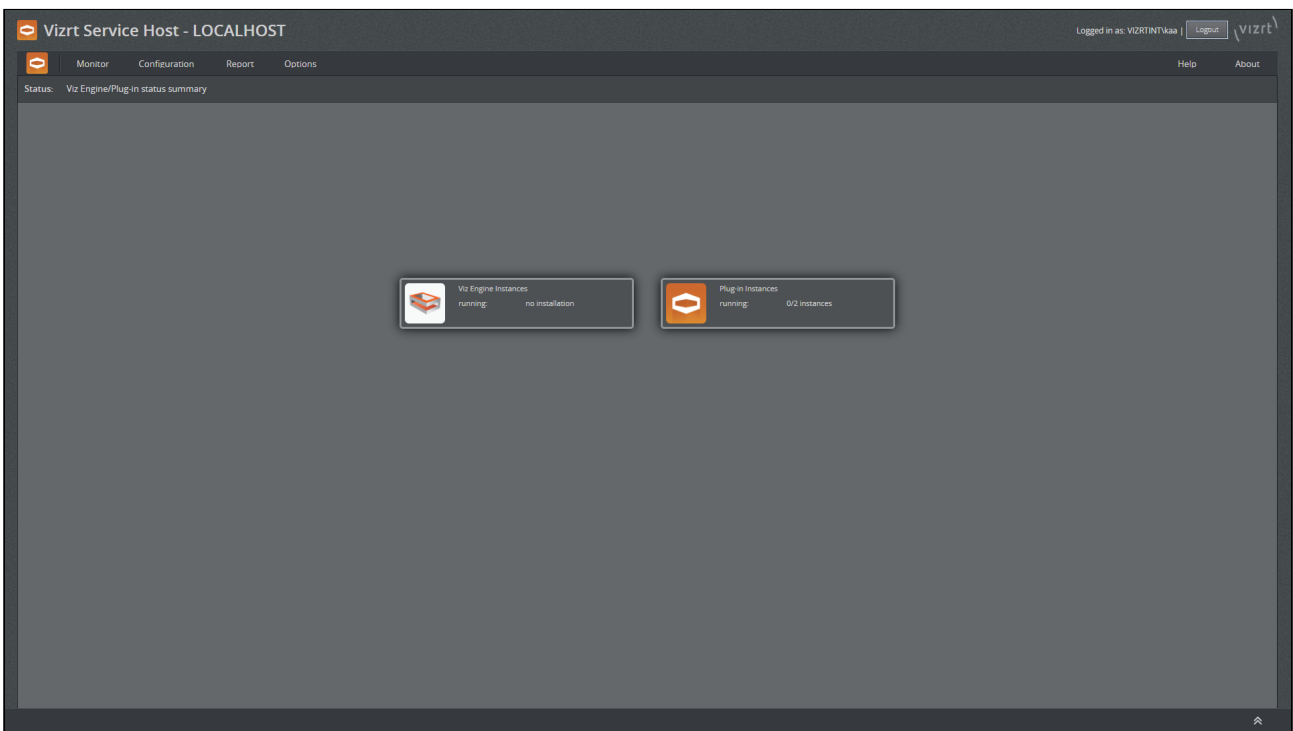


From there, select the Viz Engine instance to filter the available log files and how many lines to display.

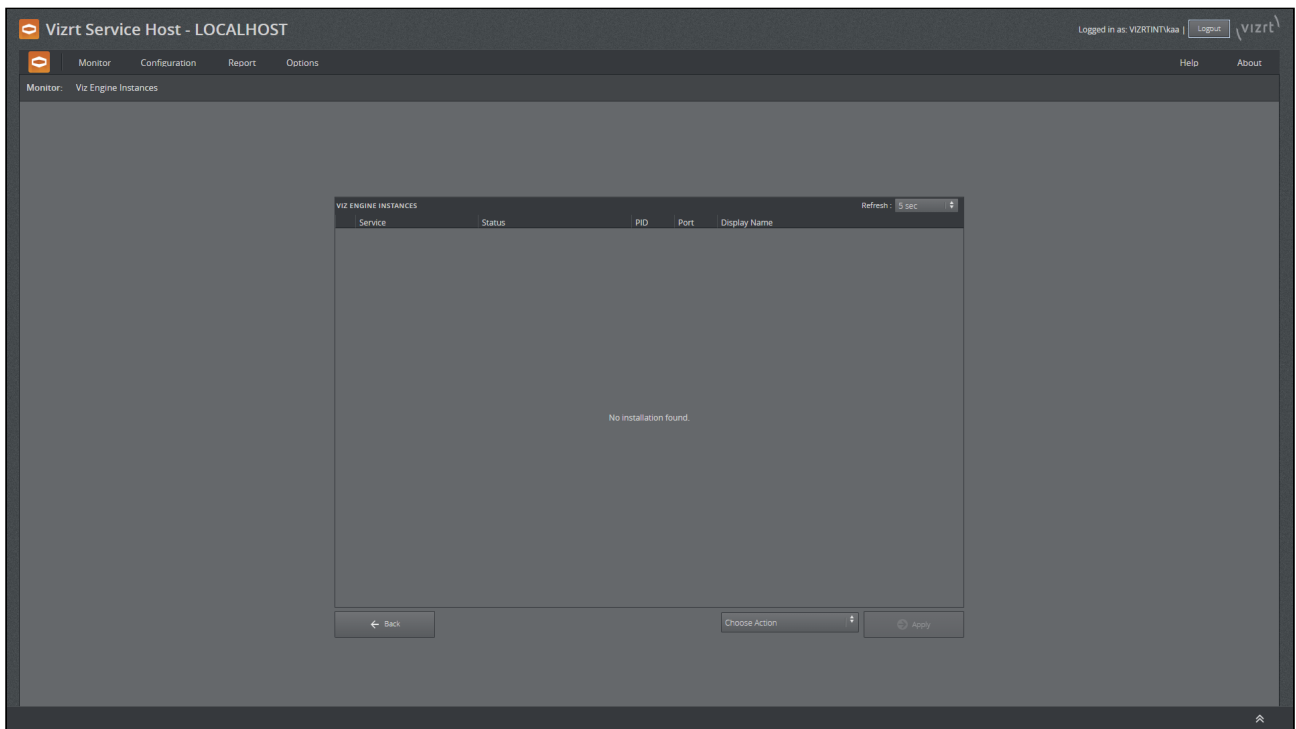


### Notes

If Viz Engine is not installed on the machine, Service Host will show *no installation* at the status page.



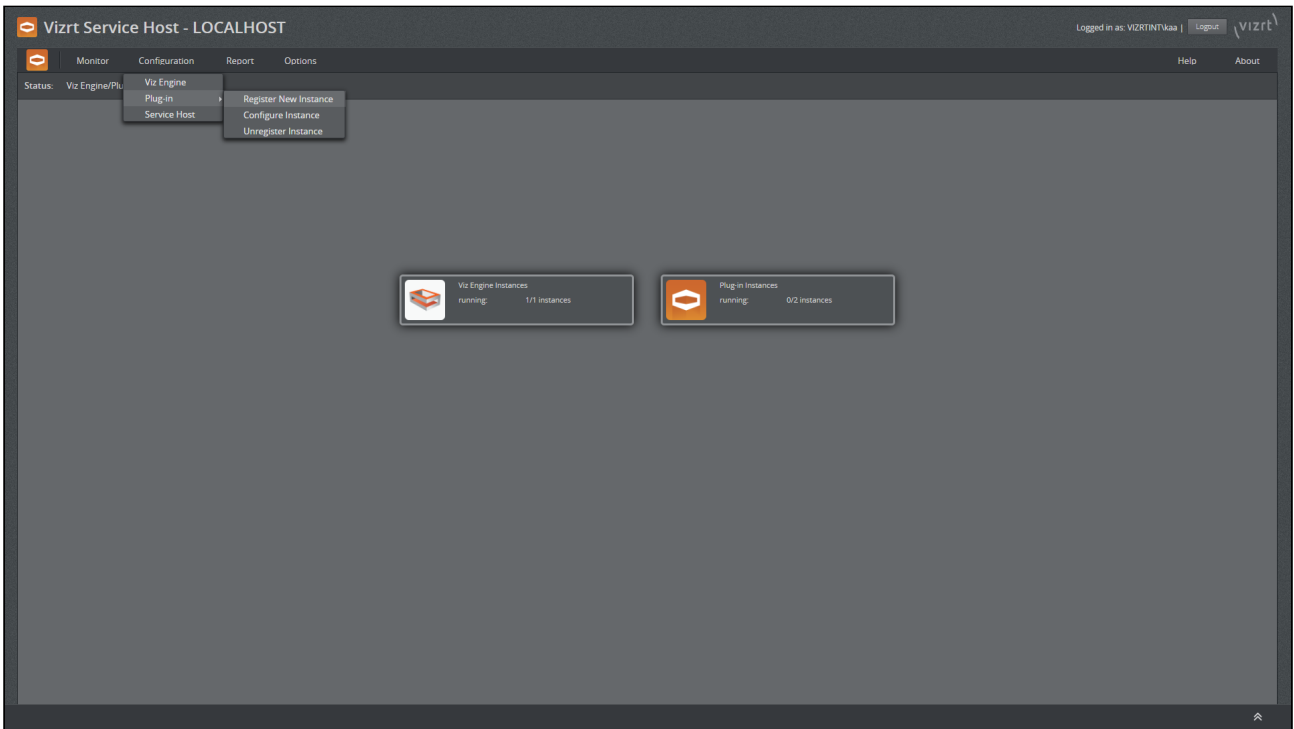
And no instances are shown in the Monitor Viz Engine page.



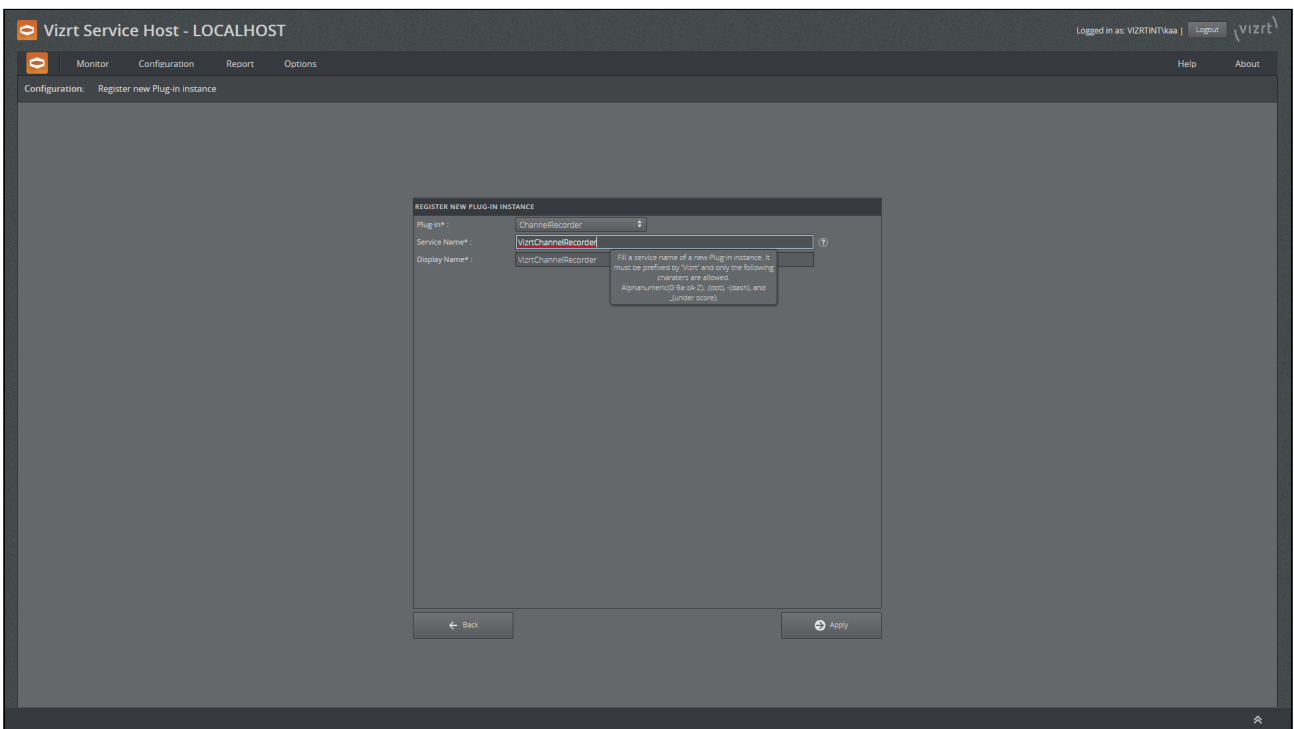
## 2.2.3 Plug-ins

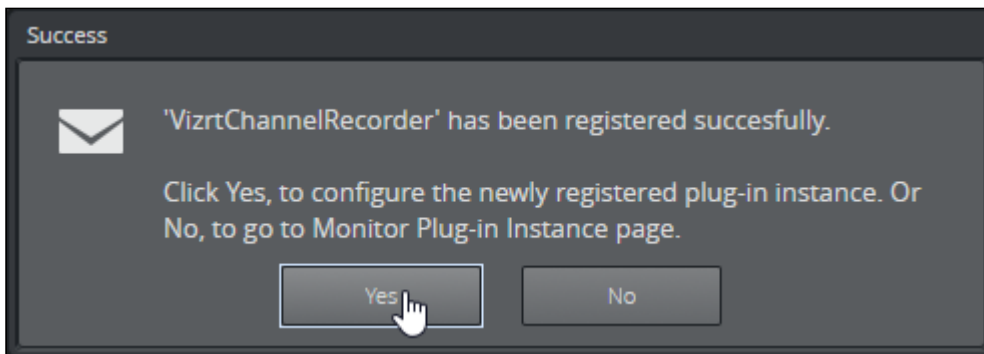
### Register a Plug-in Instance

To register a new instance of a plug-in as a Windows Service, use the menu **Configuration > Plug-in > Register New Instance**.



On the following screen, select the plug-in type and give the instance a service and display name (e.g. register a Channel Recorder):

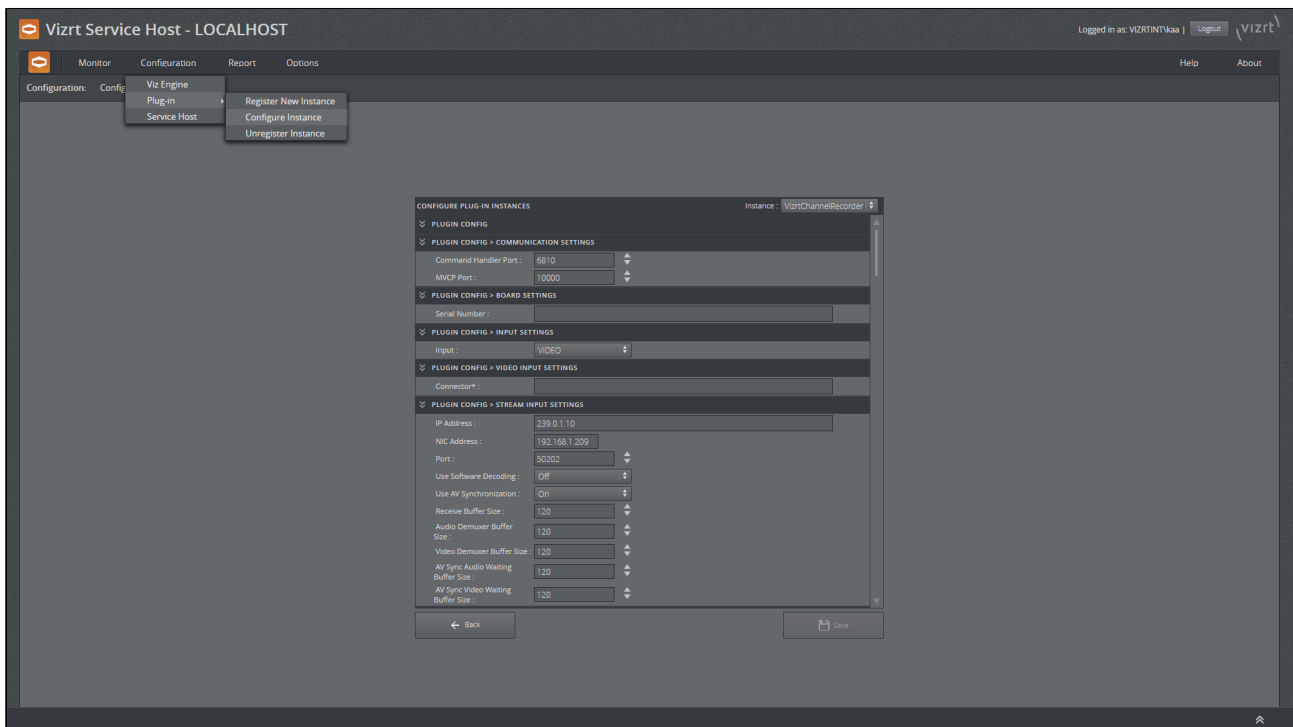




Confirm by clicking **Yes**. The dialog moves directly to the configuration of this plug-in instance.

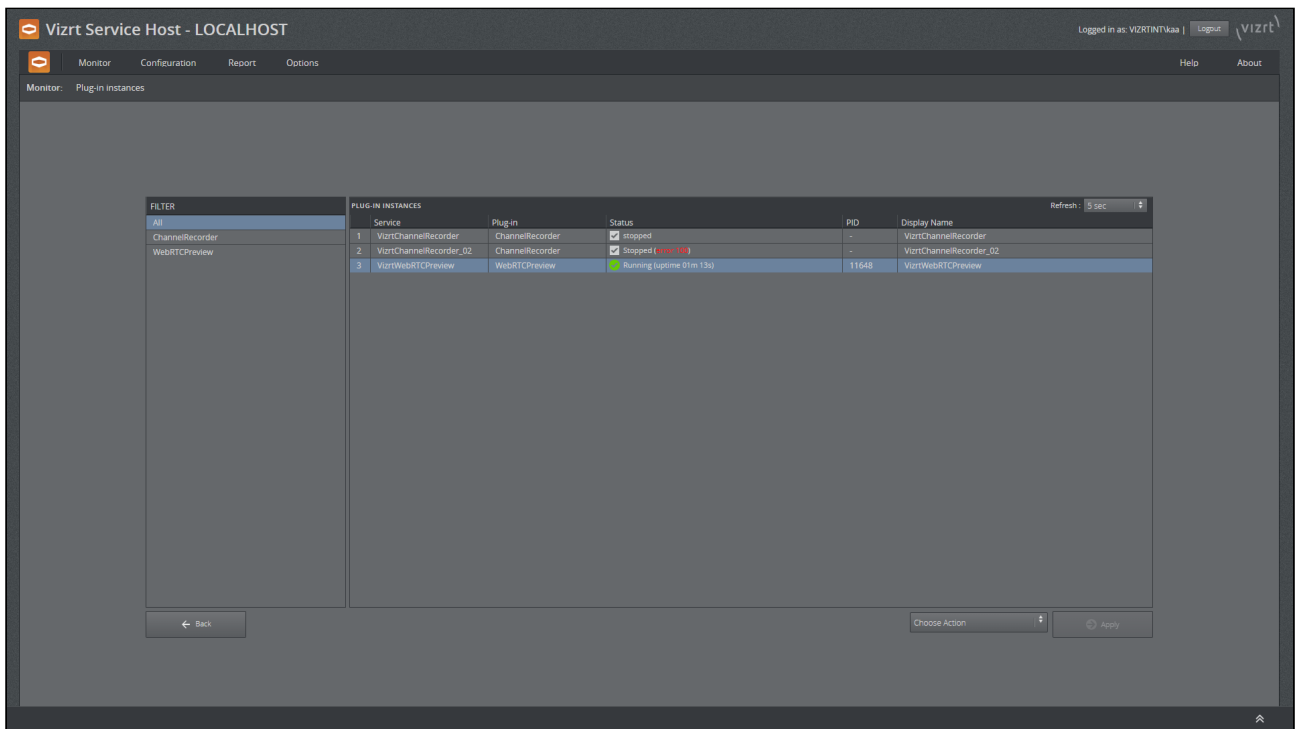
## Configure a Plug-in Instance

The configuration of a plug-in instance can be reached from the Monitor plug-in page via the context menu of a plug-in instance or via the menu **Configuration > Plug-in > Configure Instance**.



## Plug-in Monitor

The plug-in monitor page can be reached via the menu **Monitor > Plug-in** or from the welcome page by clicking on the Plug-in instances icon.

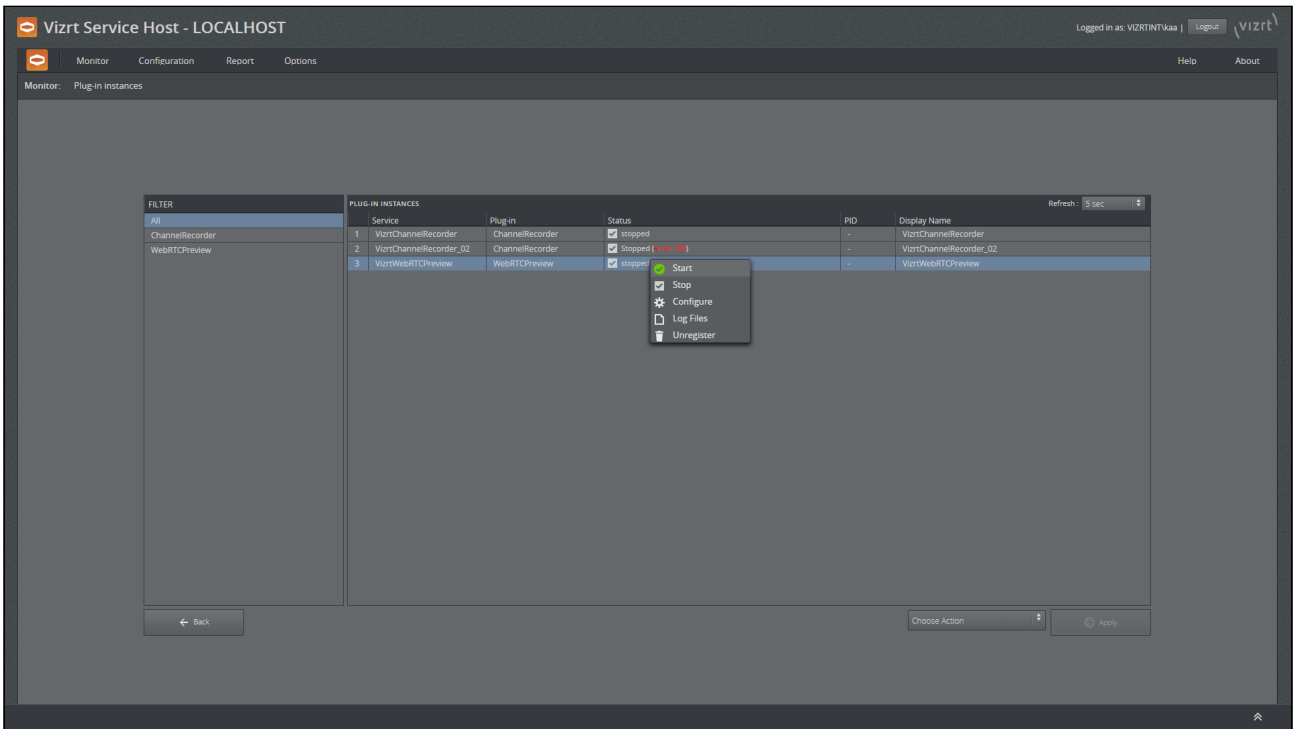


On this page, there is a filter on the left-hand side to select the available plug-in instances. Each concrete entry on the right-hand side has a context menu that allows the plug-in instance to be unregistered.

### Start/Stop a Plug-in Instance

The context menu provides the capability to start/stop a plug-in instance.

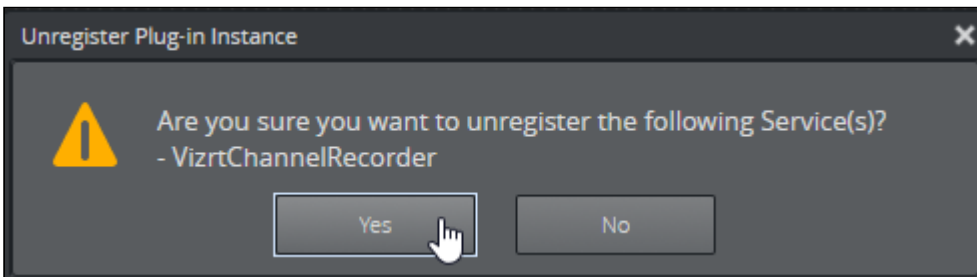
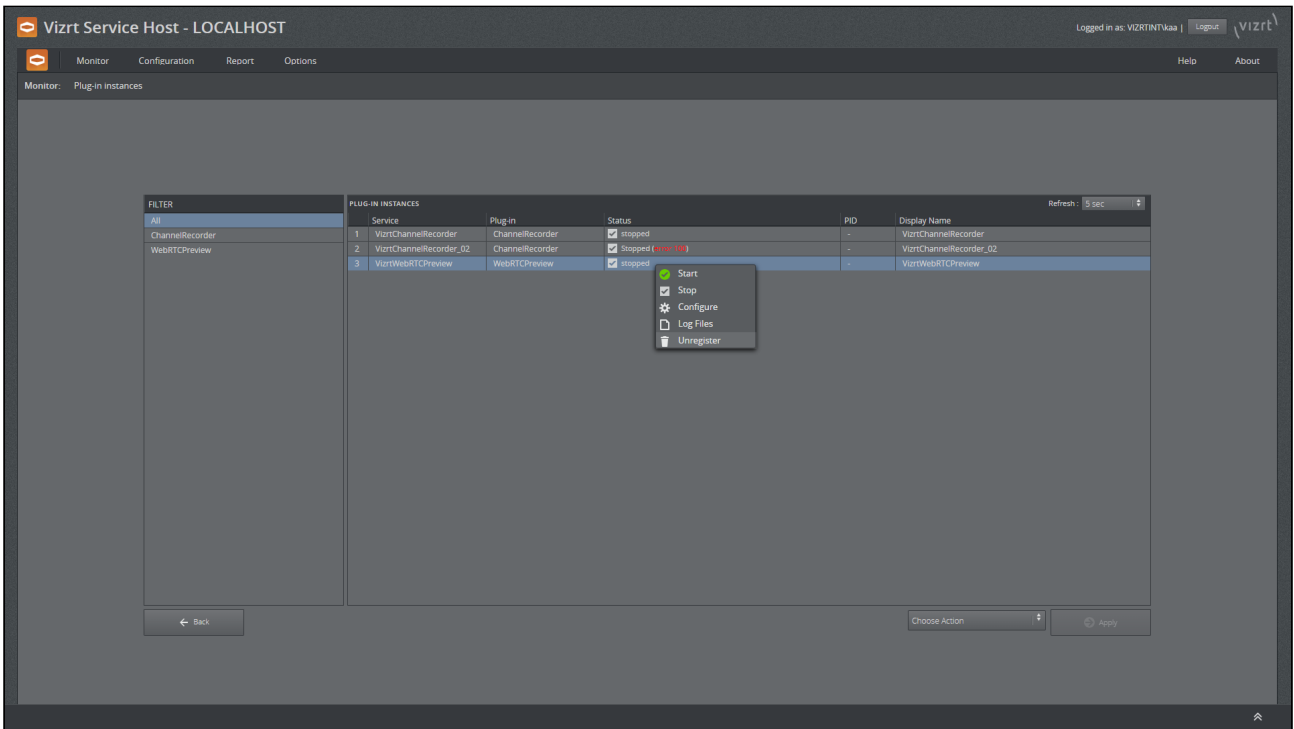




### Unregister a Plug-in Instance

The context menu provides the capability to unregister a plug-in instance. Once selected and the following dialog has been answered with Yes, then the plug-in instance is stopped if it was running and unregistered from Windows services.

Any log and configuration files remain in *%ProgramData%* for later use by a subsequent new registration.



## Report/Logs

The logs can be reached either via the context menu on the plug-in monitor page or from the menu **Report > Logs > Plug-in**.

The screenshot shows the 'Vizrt Service Host - LOCALHOST' application window. The 'Logs' tab is active, and a dropdown menu is open over it, showing 'Viz Engine', 'Plug-in', and 'Service Host'. The main area is divided into two panes. The left pane, titled 'LOG LIST', shows a table with columns for 'Instance' and 'Log Name'. The right pane, titled 'LOG CONTENT', displays the text of the selected log file, 'VizrtWebRTCPreview\_restapi.log'. The log content includes timestamps, instance IDs, and various system messages such as 'Startup', 'LicenseLib: logger changed', 'LicenseLib: anonymous\_namespace::is\_running\_in\_vm', and 'VizrtWebRTCPreview: starting up'.

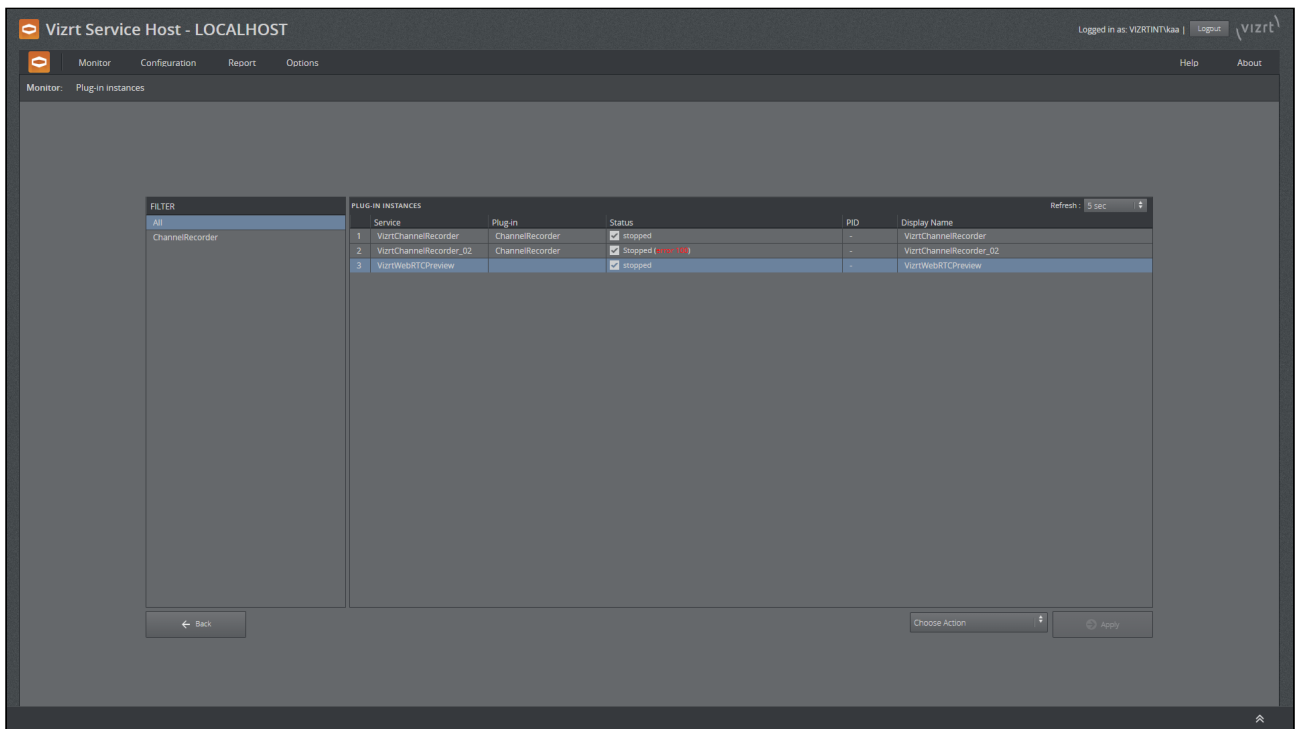
On the left-hand side, there is the instance filter and the content of the selected log file is displayed on the right-hand side of the screen. The number of lines displayed can be selected. It operates like the `tail` command.

## Notes

### The Configuration File of a Plug-in Instance is Missing

The configuration file of a plug-in instance, located at `%ProgramData%\vizrt\ServiceHost`, contains the plug-in name, which is a most important information. Service Host uses the plug-in name to load the correct DLL at run time to serve functionalities and get some information from the DLL, such as the configuration model. If the configuration file missing, a plug-in instance cannot be started.

At the Plug-in monitor page, for the plug-in instances which their configuration files missing, the Plug-in field will be empty. To fix the problem, users need to unregister and re-register them.

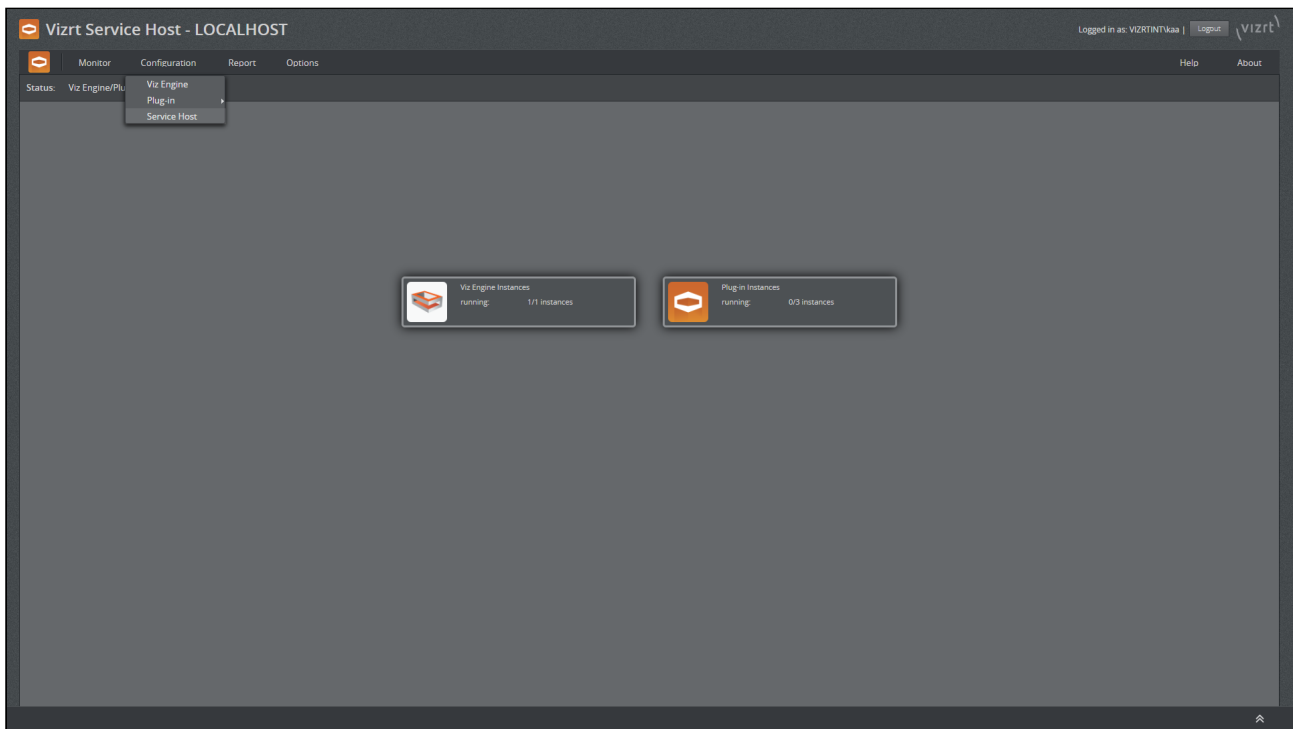


## 2.2.4 Service Host (Control Mode)

The Control Mode can be configured too. For security reasons, the configuration of the Control Mode needs to be configured by administrators.

### Configuration

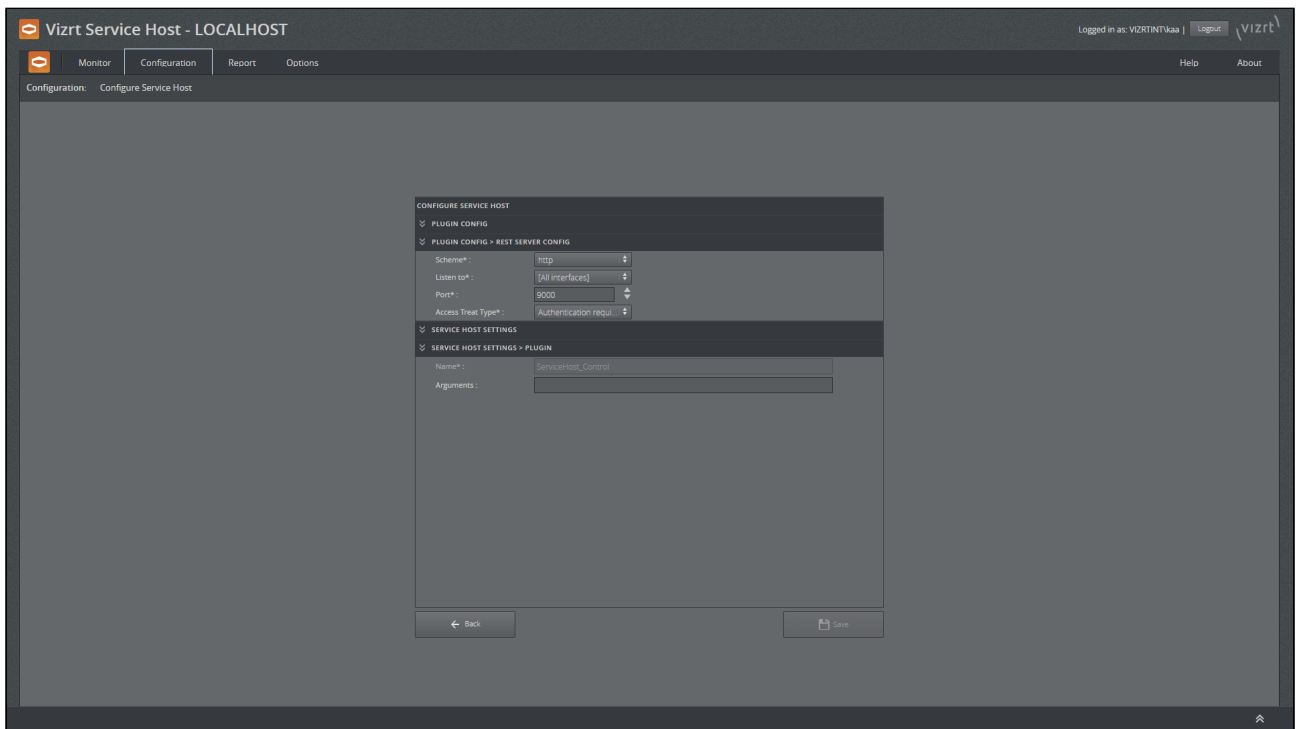
The configuration page for the Control Mode may be reached via the menu **Configuration > Service Host**.



On this page, the REST listening address can be configured. By default, Service Host is listening to all interfaces. This is specified by `[All interfaces]` in the `Listen to` field. As port number, any valid and unused port number may be used. Later versions may support automatically finding of an available port number.

The Access Treat Type controls who is able to interact with the Service Host.

- **Only local access (LOCAL\_ONLY):** To allow only users accessing the GUI via the local machine to change the system (such register/unregister new plug-in instance or start/stop Viz Engine instances). Users accessing the GUI from external machine, regardless of whether authenticated, are not allowed to make any changes.
- **Authentication required (AUTHENTICATION\_REQUIRED):** Same as above, only local access; except that users accessing externally are allowed as long as they are authenticated. In future versions, this may change to all users are required to authenticate before they can make changes to the system.
- **No authentication (NO\_AUTHENTICATION):** No restrictions apply. All users may change the system, both locally and externally. We do not recommend this setting since there is no way of gathering user information in the operating logs.



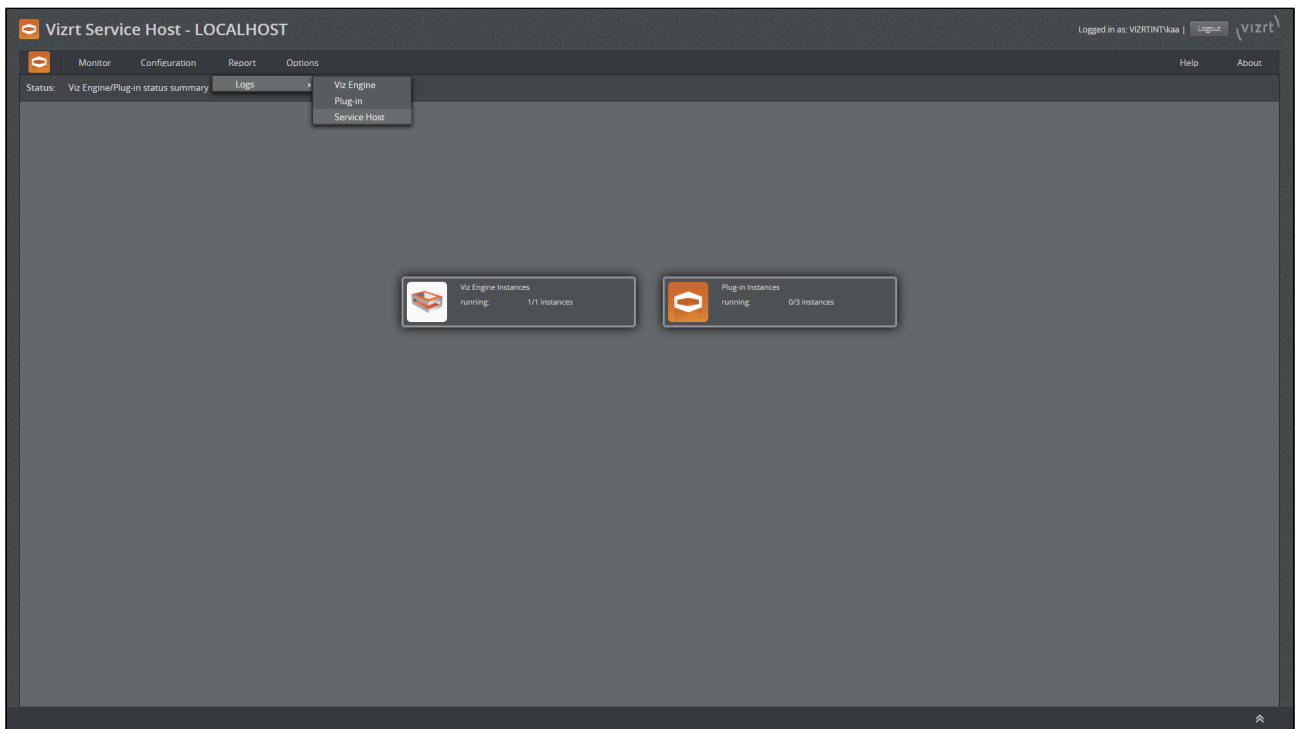
The Arguments editor allows passing arbitrary startup arguments to the control mode plug-in. In this case, we set the log level to debug mode.

Allowed values for Arguments are:

- -l debug
- -l info
- -l warning
- -l error
- -l off

## Report/Logs

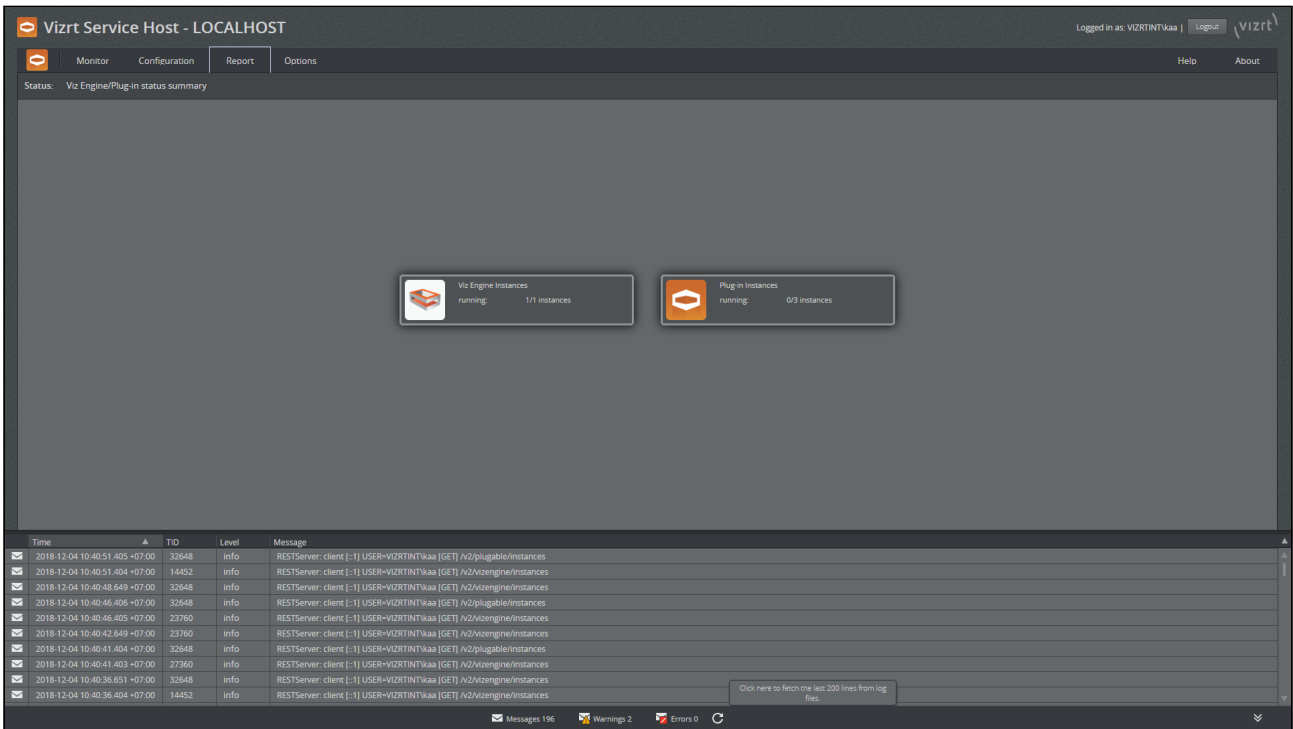
The logs produced by the control mode may be accessed via the menu **Report > Logs > Service Host**.



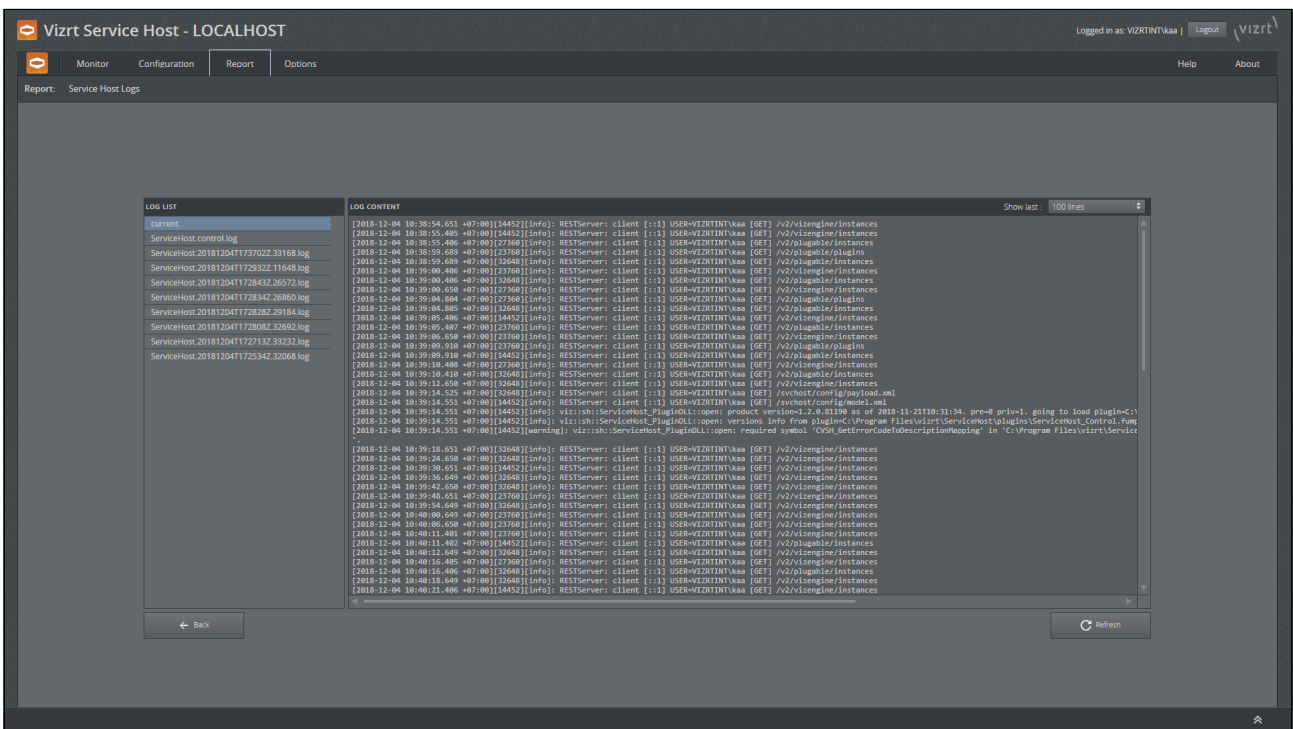
On the left-hand side, select the log file to be displayed. There are two types of logs available.

### The Control Mode Log

This log file is named `ServiceHost.control.log`, it does log rotation and may also be reached via the log panel on the bottom of the screen.



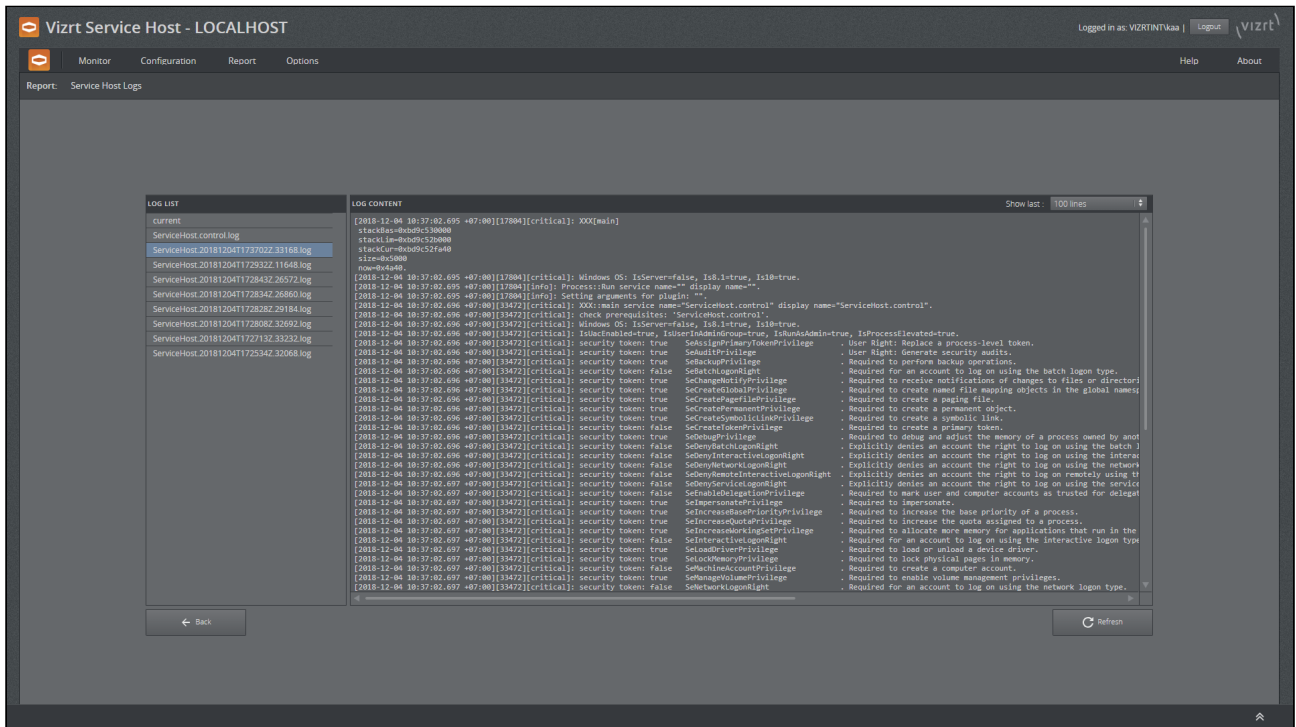
and





## Service Host Startup Logs

Logs are produced during startup and kept as long as this Service Host is running, so possible startup issues can be captured before a plug-in is loaded and initialized. These log files are removed after a successful shutdown. They are named `ServiceHost.dateandtime.pid.log`, where `dateandtime` is the date and time the selected timezone, `pid` is the process ID.



## 2.2.5 Debugging of Service Host

### Manual Register/Unregister and Stop/Start

Service Host is capable of registering and unregistering itself as Control Mode service. This might be useful in cases not covered by the installer.

#### Register Control Mode from Command Line

```
Z:\> ServiceHost.exe -c -i
```

#### Unregister Control Mode from Command Line

```
Z:\> ServiceHost.exe -c -r
```

The Service Host in Control Mode can also be started and stopped from the command line.

**Start Control Mode from Command Line**

```
Z:\> ServiceHost.exe -c -s
```

**Stop Control Mode from Command Line**

```
Z:\> ServiceHost.exe -c -k
```

### Launch Service Host in Foreground with a Console Window

For debugging, the Service Host can be launched in foreground and with a console window attached. To list all the possibilities use the command line switch `-h`.

**Command line Options for Service Host**

```

Z:\>ServiceHost.exe -h
Usage:
$0 [-v] ... start from within windows services, optional verbose mode
$0 [-v] -N service_name -i
    ... install $service_name as service
    -v ... optional verbose mode
$0 [-v] -N service_name -r
    ... remove $service_name as service
    -v ... optional verbose mode
$0 [-v] -N service_name -s
    ... start service $service_name
    -v ... optional verbose mode
$0 [-v] -N service_name -k
    ... kill service $service_name
    -v ... optional verbose mode
$0 [-v] -N service_name -d
    ... run $service_name in debug mode with a console window
    -v ... optional verbose mode
$0 [-v] -c -i
    ... install control as service, the service name is '{ProductName}.control'
    -v ... optional verbose mode
$0 [-v] -c -r
    ... remove control as service, the service name is '{ProductName}.control'
    -v ... optional verbose mode
$0 [-v] -c -s
    ... start control service, the service name is '{ProductName}.control'
    -v ... optional verbose mode
$0 [-v] -c -k
    ... kill control service, the service name is '{ProductName}.control'
    -v ... optional verbose mode
$0 [-v] -c -d
    ... run control in debug mode with a console window
    -v ... optional verbose mode
-p "[argument...]"
    ... arguments that gets forwarded to the plug-in
    e.g. -p "-l debug -v"

```

What we are interested in here are the lines with the `-d` option.

To start the Service Host in the `Control` Mode with a console window, make sure it is not running as windows service then launch it with `-c -d` options.

```

Z:\>ServiceHost.exe -c -k
Z:\>ServiceHost.exe -c -d

```

Optionally, you can add verbose and log parameters to the Service Host and the `Control` Mode plug-in.

```
Z:\>ServiceHost.exe -c -d -v -l debug -p "-v -l debug"
```

the first `-v -l debug` are for the Service Host executable and the one inside the `-p` option are forwarded to the Control Mode plug-in. In the console mode, the logs are also forwarded to the console window.

---

## 3 Channel Recorder

This section details the installation, configuration and operation of Channel Recorder. Channel Recorder is a service that creates video clips, using an SDI or IP stream as source. It can be controlled using an arbitrary set of commands, or by remote applications utilizing the Multiport Video Computer Protocol (MVCP). The incoming stream is captured into a file and can be transferred via Shared memory to be used with other products (e.g. Viz Coder).

---

### 3.1 Installation And Configuration

This section describes the installation requirements and procedure required to use Channel Recorder. It contains information on the following topics:

- [Installing, Registering and Removing Channel Recorder](#)
- [Channel Recorder Configuration](#)
- [Example Configuration File](#)
- [Integration with Other Services](#)
- [Hardware and Software Requirements](#)
- [Removing Channel Recorder](#)
- [WIBU Licensing](#)
- [Upgrading from Channel Recorder 1.0](#)
- [Upgrading from Channel Recorder 1.1, 1.2 or 1.2.1](#)

#### 3.1.1 Installing, Registering and Removing Channel Recorder

Channel Recorder runs as a plugin of [Service Host](#). Channel Recorder cannot operate without Service Host, for this reason the installation of Channel Recorder consists of the following parts:

1. Running the **Service Host Setup Wizard**.
2. Manually registering one or more Channel Recorder instance(s) using the Service Host web interface.

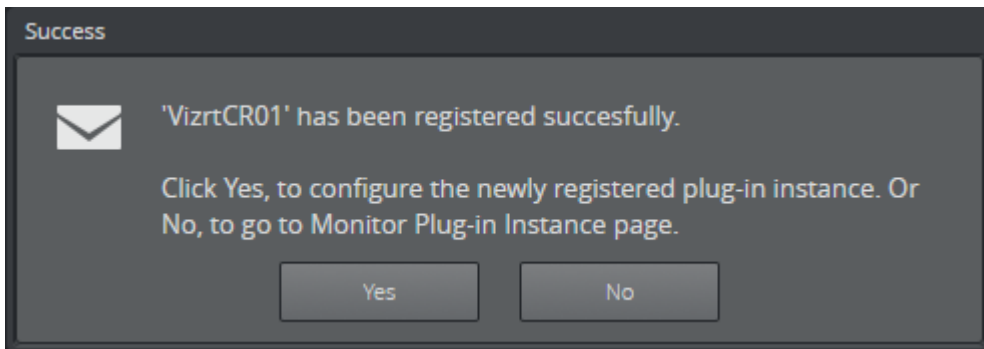
Before installing Service Host, please make sure to obtain the latest installer from the Vizrt FTP server: <ftp://download.vizrt.com/>

#### To Install Service Host

Refer to the [Service Host Administrator Guide](#) documentation.

#### To Register Channel Recorder Instance

Refer to the [Service Host Administrator Guide](#) documentation. After successfully registering your Channel Recorder instance, the following dialog window appears:



This is to inform you that the registration of the instance is successful. You are prompted to choose between configuring the instance now or later. See [Channel Recorder Configuration](#) for further details.

## Upgrading or Repairing an Existing Installation

Use the Service Host Setup Wizard to upgrade or repair an existing installation of Channel Recorder. When upgrading or repairing, Service Host remembers the registered instances and which states they were before the upgrade or repair occurs. After a successful upgrade or repair operation, any previously running services stopped by the Setup Wizard is restarted.

## Removing Channel Recorder

Use the Service Host web interface to remove Channel Recorder. For more information, refer to the [Service Host Administrator Guide](#) documentation.

## Starting First Recording

To start recording a Matrox board will need to be installed with the right Matrox Utils version and Matrox Codec license depending on the user needs. See [Hardware and Software Requirements](#) for further details. Before starting a recording, using the different available protocols check the log to find any possible error. See [Troubleshooting Channel Recorder](#) for further details.

### 3.1.2 Channel Recorder Configuration

You can configure Channel Recorder at any time after successfully registering an instance. For any configuration changes to take effect, you must restart the instance. Every plugin of Service Host has its own configuration page. For more information, refer to the [Service Host](#) documentation.

Every plugin configuration page consist of two main sections:

- [Plugin Configuration Section](#)
- [Service Host Section](#)

The Plugin Configuration Section is unique for each plugin. From the Service Host Section, you can set specific command arguments to the plugin. This is useful mainly for debugging purposes.

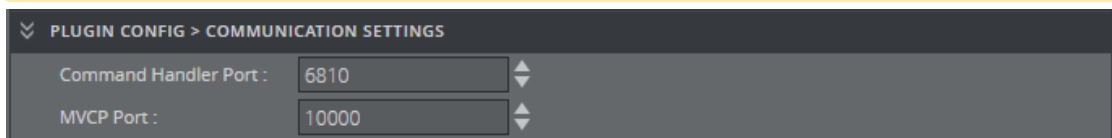
## Plugin Configuration Section

The Plugin Configuration Section consists of the following parts:

- **Communication Settings**

- **Command Handler Port:** Selects the port used to communicate with Channel Recorder via **Viz Send**. The default value is 6810.
- **MVCP Port:** Selects the port used to communicate with Channel Recorder using MVCP. Some Vizrt components, such as Ingest, Dart or Capture, use this protocol to communicate with Channel Recorder. The default value is 10000, while e.g. Ingest uses 5250 as default for its first channel and subsequent port numbers for any additional channels.

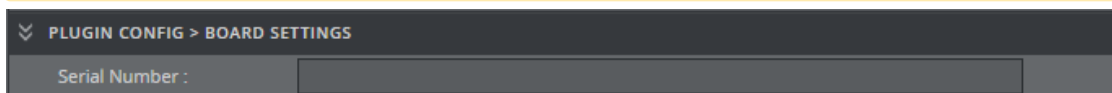
**Tip:** If several instances of Channel Recorder are present in the machine, the ports must be different for each.



- **Board Settings** (changes to these settings only take effect by restarting the Channel Recorder instance).

- **Serial Number:** Selects the board with the specified serial number. If no serial number is specified, the first detected board is selected. By default, no value is specified.

**Tip:** The serial number on Matrox video boards can be found in the hardware tab of **Matrox X.info**, it usually begins with an A.



- **Input Settings**

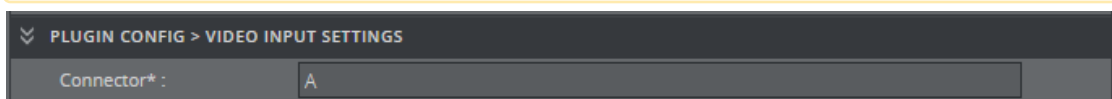
- **Input:** Selects the type of input to use. At the moment, only Video input is possible.



- **Video Input Settings**

- **Connector:** Selects the connector that will be used for recording live input. This is a required value. The default value is *empty*. Accepted values are A to H, depending on the input configuration of the Matrox board.

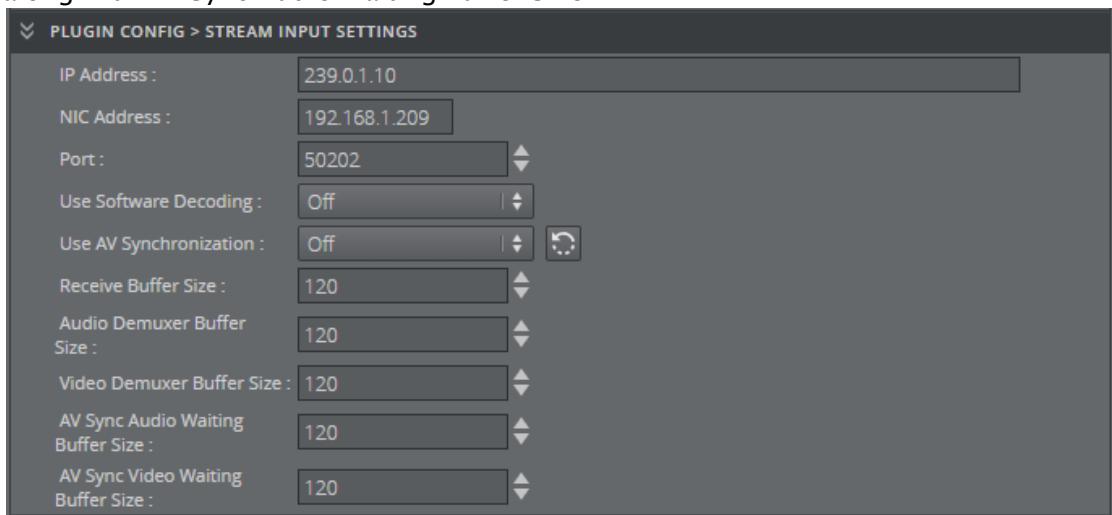
**Tip:** The ports for Matrox IP board indicate the SFP.



- **Stream Input Settings**

- **IP Address:** Indicates the source IP address.
- **NIC Address:** Indicates which NIC is used for receiving the stream.
- **Port:** Indicates the source port.

- **Use Software Decoding:** Chooses between using the hardware or software decoder.
- **Use AV Synchronization:** Enables audio and video synchronization of both are present. If only video is present this option must be disabled.
- **Receive Buffer Size:** Indicates the size of the buffer of the RTP receiver. If performance is an issue this can be increased.
- **Audio Demuxer Buffer Size:** Indicates the size of the audio demuxer buffer. If performance is an issue this can be increased.
- **Video Demuxer Buffer Size:** Indicates the size of the video demuxer. If performance is an issue this can be increased.
- **AV Sync Audio Waiting Buffer Size:** Indicates how much audio data it should have before synchronization is done. If sync is an issue this can be increased or decreased along with AV Sync Video Waiting Buffer Size.
- **AV Sync Video Waiting Buffer Size:** Indicates how much video data it should have before synchronization is done. If sync is an issue this can be increased or decreased along with AV Sync Audio Waiting Buffer Size.



#### ▪ Process Settings

- **Priority:** Sets the process priority class. The values correspond to the Windows process priority levels. The default value is Normal.

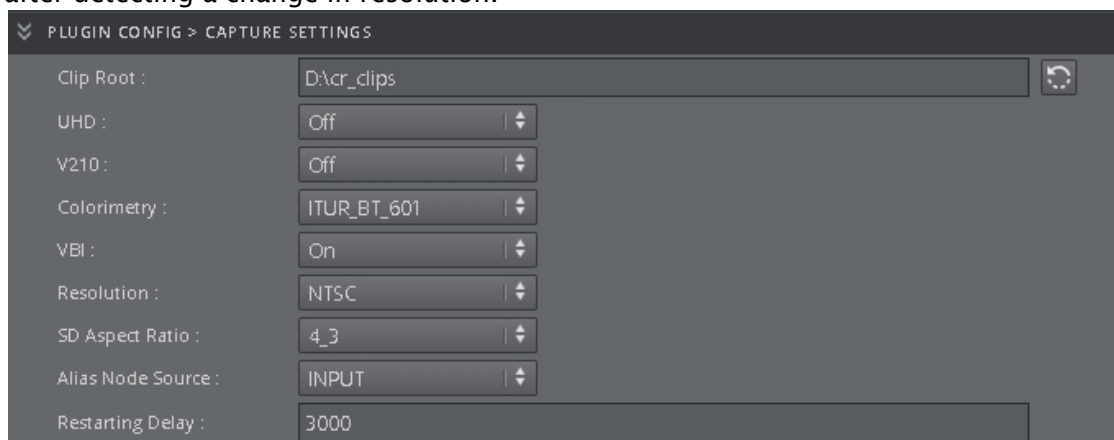


#### ▪ Capture Settings

- **Clip Root:** Sets the default folder for the recordings. The default value is v: /.
- **UHD:** Enables detection of UHDTV signals. When set to on, the Channel Recorder scans the signal resolution on the four corresponding input connectors. If four 3G signals are detected, they are interpreted as one UHDTV signal. When set to off, the four connectors are treated as separate 3G signals. The default value is off.
- **V210:** Uses the 10-bit surface format V210. This is needed to record XAVC, it increases performance when for example recording ProRes. This surface format is not supported on the Matrox X.mio2+. The default value is off.



- **Colorimetry:** Specifies the colorimetry to be used to be able to record in HDR. By default ITUR\_BT\_601 will be used for SD resolution and ITUR\_BT\_709 for HD and UHD resolution.
- **VBI:** Enables VBI recording. To capture closed caption this value must be set to On. The default value is On.
- **Resolution:** Sets the default resolution. The possible values are: NTSC, PAL, 720p50, 720p60M, 1080i25, 1080p60, 1080i30M, 1080i30, 1080p50, 1080p60M and 1080p60. The default value is NTSC.
- **SD Aspect Ratio:** Specifies the aspect ratio for SD resolution.
- **Alias Node Source:** Specifies the source of the alias node which specify from which output or input connector the application will record.
- **Restarting Delay:** Specifies the time in milliseconds before the channel is restarted after detecting a change in resolution.



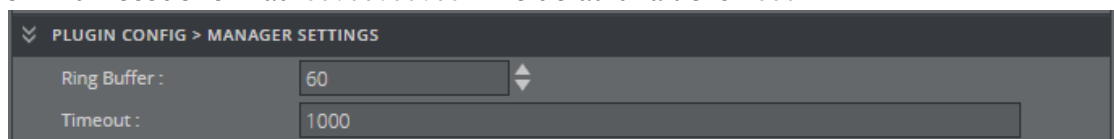
#### • Test Settings

- **Performance Test Mode:** Selects the mode when a performance test is to be performed. The values are GENERATE and CONSUME. GENERATE will generate a RAW file using the input signal. CONSUME will read the generated file **as fast as possible** and send it for encoding. While using CONSUME mode calling RECORD PERFORMANCE GET will give you the maximum frame rate, which gives you how many recording can be run in the machine taking into account **only** the CPU usage. For example, if the value is 280 FPS using as input 720p, the machine can only do five recordings at 720p50.



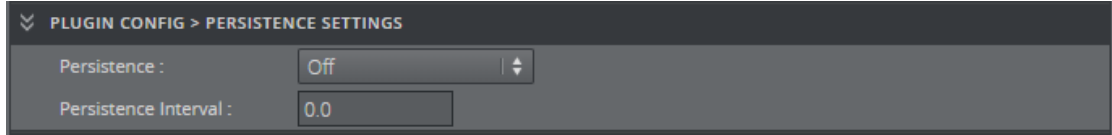
#### • Manager Settings

- **Ring Buffer:** Sets the size of the capture ringbuffer. The default value is 60.
- **Timeout:** Sets the timeout for the capture operation in milliseconds. If the recorder reports timeout errors, increasing the timeout could help. The value can be in frames or in timecode format: 00:00:00:00. The default value is 1000.



#### • Persistence Settings

- **Persistence:** Chooses if a backup of the scheduled recording is needed. This is only useful for scheduled recordings. The default value is `off`.
- **Persistence Interval:** Defines, in seconds, the interval in which the backup is written to disk. The default value is `0`.



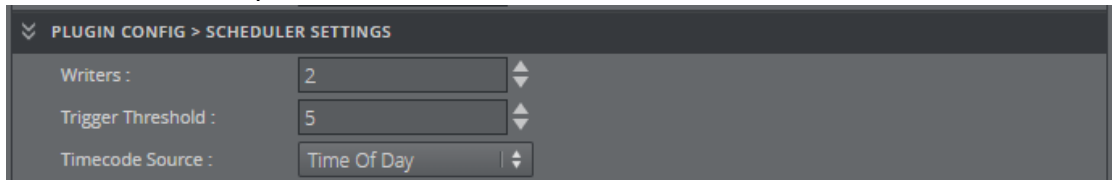
- **Log Settings**

- **Timecode Log Interval:** Specifies the interval at which the current timecode is logged. The value can either be a number of frames or a timecode-based relative value. The default value is `0`, which means that every full second is logged.




- **Scheduler Settings**

- **Writers:** Sets the number of writers to initialize. This value is only relevant in loop and scheduled recordings in which consecutive recordings are very close to each other within the timeline (less than six seconds). The default value is `2` and should never be below `2`.
- **Trigger Threshold:** Determines whether to execute a timed command late if it misses the execution time. If the time is still within the trigger threshold, it will be executed late. Outside of this window, the command is ignored until the next time the timecode is received. The value can either be a number of frames or a timecode-based relative value. The default value is `5`.
- **Timecode Source:** Specifies the timecode source. The default value is `TIME_OF_DAY`.



- **Inclusive Out:** Writes the last timecode to the file at the defined out point of the recording when enabled.
- **Clip Settings** (these are the default values for any future recordings)
  - **File Extensions:** Enables or disables automatically adding a file extension to the file name. If this feature is turned off, the client application has full control over the file name. The default value is `off`.
  - **Container:** Sets the container type of the recorded file. Possible values are `AVCINTRAMXF`, `AVI`, `DVCPROMXF`, `MOV`, `MXF`, `XAVCMXF`, `XDCAMMXF`. For capturing OP-Atom the value should be `MXF`. The default value is `XDCAMMXF`.
  - **Codec:** Sets the codec type of the recorded file. The possible values are: `DvCam`, `DvCPro`, `Dv50`, `IFrame`, `XDCam`, `AVCIntra50`, `AVCIntra100`, `ProRes`. The default value is `XDCam` which corresponds to `XDCAM HD422`.
  - **Bitrate:** Sets the bitrate for the video encoding in `mbps` (megabits per second). Not all codecs allow changes to the bitrate. In such cases, this value is ignored. The default value is `0`.

- **IN:** Sets the default value for the recording in point. The value must be in timecode format: 00:00:00:00.
- **OUT:** Sets the default value for the recording out point. The value must be in timecode format: 00:00:00:00.
- **Duration:** Sets the default duration of the recording. The default value is 0.
- **StartTC:** Sets the default value for the starting timecode. The value must be in timecode format: 00:00:00:00.
- **Audio Channels:** Sets the number of audio channels to record. How many channels are actually recorded depends on the codec and the input signal. The default value is 8.

 **Tip:** Some formats have specific audio support, so even if the user specifies a higher or lower value, it will record always the same number of channels. Please refer to the documentation for each format.

- **Disk Access Size:** Sets the size of data blocks written to the disk in bytes. Postfixes like KiB, Kb, k, etc., are allowed, but must not be separated from the value with a blank space. The default value is 4MiB (1\*4194304 bytes). The minimum value is 32KiB (32768 bytes).
- **VBR:** Sets whether the recorded file, when the format supports it, should be in VBR (Variable Bit Rate).
- **TDIR:** Sets the default behavior of TDIR (Time Delayed Instant Replay). The default value is 0n.
- **TDIR Interval:** Sets the interval of file header updates in TDIR recordings. The value is in seconds and fractions of seconds, meaning both 11.1 and 11.2 are considered valid values. Minimum allowed value is 10.0, which is interpreted by Channel Recorder as every frame. The maximum value is 60.0. The default value is 10.0.
- **Update Modification Time:** Updates the modification time of the recorded clip regardless of TDIR setting value. The default value is 0n.

- **Stop At End:** Sets the default value at the end of the recording. For loop and scheduled recordings this value should be off. The default value is off.

PLUGIN CONFIG > CLIP SETTINGS

File Extension :	On
Container :	XDCAMMXF
Codec :	XDCam
Bitrate :	0
IN :	
OUT :	
Duration :	0
StartTC :	
Audio Channels :	8
Disk Access Size :	4MiB
VBR :	Off
TDIR :	On
TDIR Interval :	10.0
Update Modification Time :	Off
Stop At End :	On

- **Clock Type:** Defines what type of clock is used for recording. The possible values are: GENLOCK and INPUT. The default value is INPUT.

**Tip:** When recording without a signal, GENLOCK clock type is recommended due to the drift that INPUT clock type can cause. INPUT clock type is generally the better choice when a signal is present all the time while recording.

- **Genlock Flywheel:** Uses the flywheel in case the genlock signal is lost if Clock Type is GENLOCK.
- **Flywheel Timeout:** Sets the timeout of the genlock flywheel in seconds. This defines the time until the genlock switches to free run, as well as the maximum time the flywheel can use to resynchronize. The default value is 5.0.

PLUGIN CONFIG > CLOCK SETTINGS

Clock Type :	INPUT
Genlock Flywheel :	Off
Flywheel Timeout :	5

#### ▪ Output Settings

- **Output:** Specifies the output mode. The possible values are: VIDEO, CODER, NONE. The default value is NONE.

**Tip:** Only one type of output can be configured at startup using the web interface. However, after startup, it is still possible to configure another output via Viz Send.



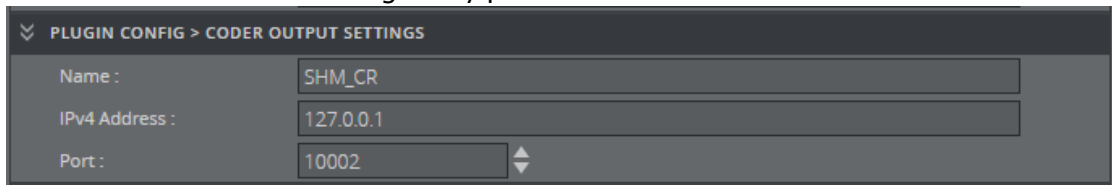
#### • Video Output Settings

- **Connector:** Selects the connector that will be used for outputting the recorded frames. Accepted values are A to H, depending on the output configuration of the Matrox board.



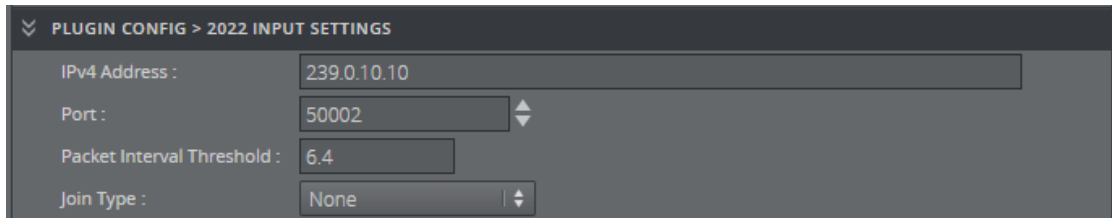
#### • Coder Output Settings

- **Name:** Sets the name of the shared memory.
- **IPv4 Address:** Sets Viz Coder Recording Proxy IP address.
- **Port:** Sets Viz Coder Recording Proxy port number.



#### • 2022 Input Settings

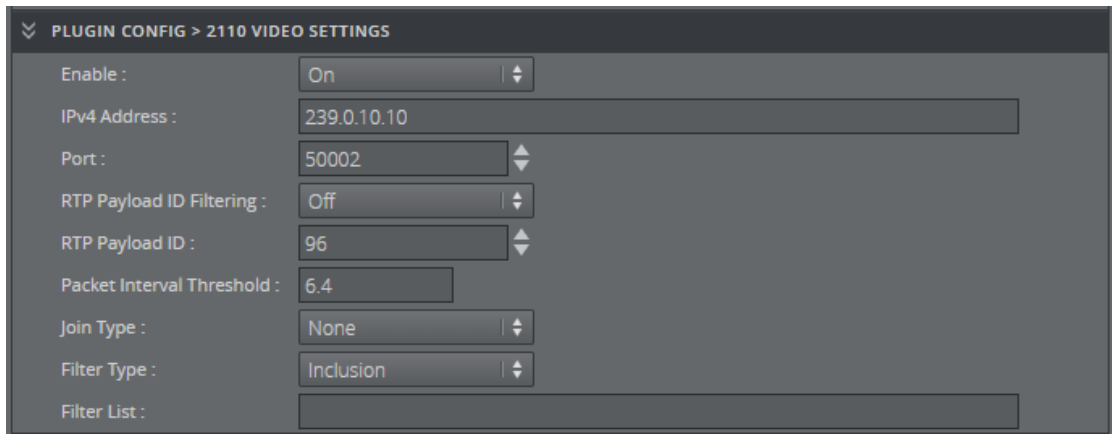
- **IPv4 Address:** Sets destination IPv4 address.
- **Port:** Sets destination port.
- **Packet Interval Threshold:** Indicates the threshold for generating the time interval between the IP packets alarm on the main IP stream. The range is from 6.4 nanoseconds to 419424.0 nanoseconds, in intervals of 6.4 nanoseconds.
- **Join Type:** Indicates the type of membership request made when IPv4 address is a multicast address.



#### • 2110 Input Video Settings

- **Enable:** Enables video flow when set to True.
- **IPv4 Address:** Sets destination IPv4 address.
- **Port:** Sets destination port.
- **RTP Payload ID Filtering:** Uses the RTP Payload ID value to filter the incoming network packets when set to True.
- **RTP Payload ID:** Indicates the RTP (Real-time Transfer Protocol) Payload ID to capture. Used when RTP Payload ID is set to True.
- **Packet Interval Threshold:** Indicates the threshold for generating the time interval between the IP packets alarm on the main IP stream. For video, the range is from 6.4 nanoseconds to 419424.0 nanoseconds, in intervals of 6.4 nanoseconds.

- **Join Type:** Indicates the type of membership request made when IPv4 address is a multicast address.
- **Filter Type:** Specifies the type of filtering applied to the source list when IGMPv3 is used.
- **Filter List:** Lists IPv4 addresses to be included or excluded, separated by a space character.



#### ▪ 2110 Input Audio Settings

- **Enable:** Enables audio flow when set to `True`.
- **IPv4 Address:** Sets destination IPv4 address.
- **Port:** Sets destination port.
- **RTP Payload ID Filtering:** Uses the RTP Payload ID value to filter the incoming network packets when set to `True`.
- **RTP Payload ID:** Indicates the RTP (Real-time Transfer Protocol) Payload ID to capture. Used when RTP Payload ID is set to `True`.
- **Packet Interval Threshold:** Indicates the threshold for generating the time interval between the IP packets alarm on the main IP stream. For audio, the range is from 102.4 nanoseconds to 6710681.6 nanoseconds in intervals of 102.4 nanoseconds.
- **Join Type:** Indicates the type of membership request made when IPv4 address is a multicast address.
- **Filter Type:** Specifies the type of filtering applied to the source list when IGMPv3 is used.
- **Filter List:** Lists IPv4 addresses to be included or excluded separated by a space character.
- **Use Track Count:** Uses track count to specify the number of tracks for the incoming IP stream when set to `True`.
- **Track Count:** Specifies the number of tracks for the incoming IP stream.
- **Packet Duration:** Indicates the duration of the incoming audio packet. The packet size (in samples) can be computed using the sample rate (48000 samples/sec) and the

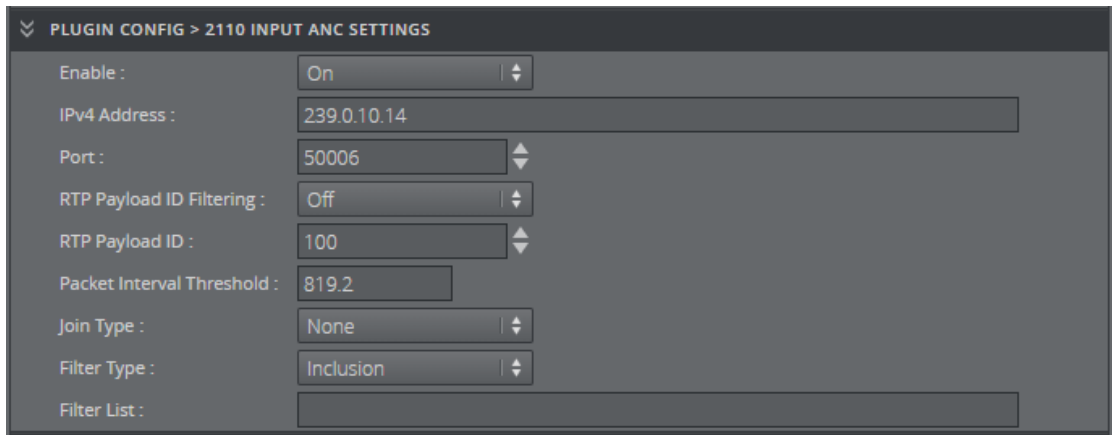
packet duration.

Setting	Value
Enable :	On
IPv4 Address :	239.0.10.12
Port :	50004
RTP Payload ID Filtering :	Off
RTP Payload ID :	97
Packet Interval Threshold :	102.4
Join Type :	None
Filter Type :	Inclusion
Filter List :	
Use Track Count :	Off
Track Count :	8
Packet Duration :	1 ms

#### • 2110 Input ANC Settings

- **Enable:** Enables ANC flow when set to True.
- **IPv4 Address:** Sets destination IPv4 address.
- **Port:** Sets destination port.
- **RTP Payload ID Filtering:** Uses the RTP Payload ID value to filter the incoming network packets when set to True.
- **RTP Payload ID:** Indicates the RTP (Real-time Transfer Protocol) Payload ID to capture. Used when RTP Payload ID is set to True.
- **Packet Interval Threshold:** Indicates the threshold for generating the time interval between the IP packets alarm on the main IP stream. For ancillary data, the range is from 819.2 nanoseconds to 53685452.8 nanoseconds in intervals of 819.2 nanoseconds.
- **Join Type:** Indicates the type of membership request made when IPv4 address is a multicast address.
- **Filter Type:** Specifies the type of filtering applied to the source list when IGMPv3 is used.

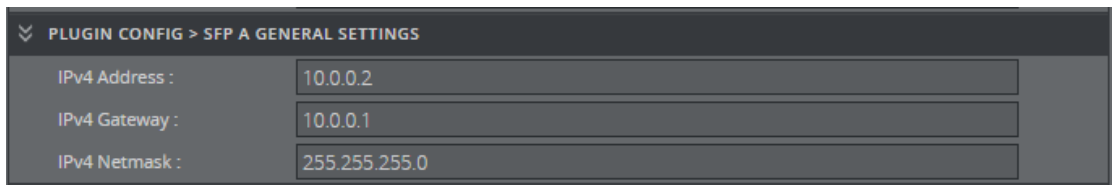
- **Filter List:** Lists IPv4 addresses to be included or excluded separated by a space character.



PLUGIN CONFIG > 2110 INPUT ANC SETTINGS	
Enable :	On
IPv4 Address :	239.0.10.14
Port :	50006
RTP Payload ID Filtering :	Off
RTP Payload ID :	100
Packet Interval Threshold :	819.2
Join Type :	None
Filter Type :	Inclusion
Filter List :	

- **SFP A General Settings**

- **IPv4 Address:** Sets IPv4 address.
- **IPv4 Gateway:** Sets IPv4 gateway.
- **IPv4 Netmask:** Sets IPv4 netmask.



PLUGIN CONFIG > SFP A GENERAL SETTINGS	
IPv4 Address :	10.0.0.2
IPv4 Gateway :	10.0.0.1
IPv4 Netmask :	255.255.255.0

- **SFP A 2059 Settings**

- **Type of Service DSCP:** Specifies a datagram's priority and requests a route for low-delay, high-throughput, or highly-reliable service.
- **Delay Mechanism:** Specifies the type of network delay mechanism to use for the time server connection.
- **IP Mode:** Specifies the type of internet protocol mode to use for the time server connection.
- **Master Clock Domain Number:** Specifies the master clock domain number.
- **Join Type:** Indicates the type of membership request made when IPv4 address is a multicast address.
- **Filter Type:** Specifies the type of filtering applied to the source list when IGMPv3 is used.



- **Filter List:** Lists IPv4 addresses to be included or excluded separated by a space character.

PLUGIN CONFIG > SFP A 2059 SETTINGS

Type of Service DSCP :	0
Delay Mechanism :	End-to-End
IP Mode :	Multicast
Master Clock Domain Number :	127
Join Type :	None
Filter Type :	Inclusion
Filter List :	

#### ▪ SFP B General Settings

- **IPv4 Address:** Sets IPv4 address.
- **IPv4 Gateway:** Sets IPv4 gateway.
- **IPv4 Netmask:** Sets IPv4 netmask.

PLUGIN CONFIG > SFP B GENERAL SETTINGS

IPv4 Address :	10.0.0.3
IPv4 Gateway :	10.0.0.1
IPv4 Netmask :	255.255.255.0

#### ▪ SFP B 2059 Settings

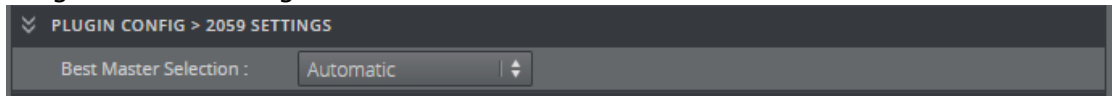
- **Type of Service DSCP:** Specifies a datagram's priority and requests a route for low-delay, high-throughput, or highly-reliable service.
- **Delay Mechanism:** Specifies the type of network delay mechanism to use for the time server connection.
- **IP Mode:** Specifies the type of internet protocol mode to use for the time server connection.
- **Master Clock Domain Number:** Specifies the master clock domain number.
- **Join Type:** Indicates the type of membership request made when IPv4 address is a multicast address.
- **Filter Type:** Specifies the type of filtering applied to the source list when IGMPv3 is used.
- **Filter List:** Lists IPv4 addresses to be included or excluded separated by a space character.

PLUGIN CONFIG > SFP B 2059 SETTINGS

Type of Service DSCP :	0
Delay Mechanism :	End-to-End
IP Mode :	Multicast
Master Clock Domain Number :	127
Join Type :	None
Filter Type :	Inclusion
Filter List :	

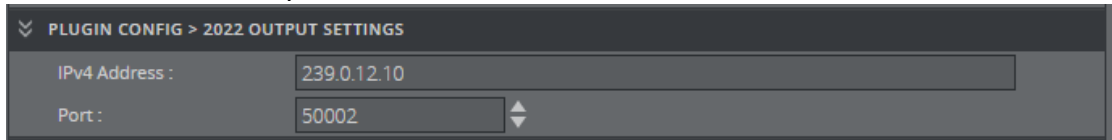
- **2059 Settings**

- **Best Master Selection:** Specifies the BMCA (Best Master Clock Algorithm) used to select the genlock over IP signal.



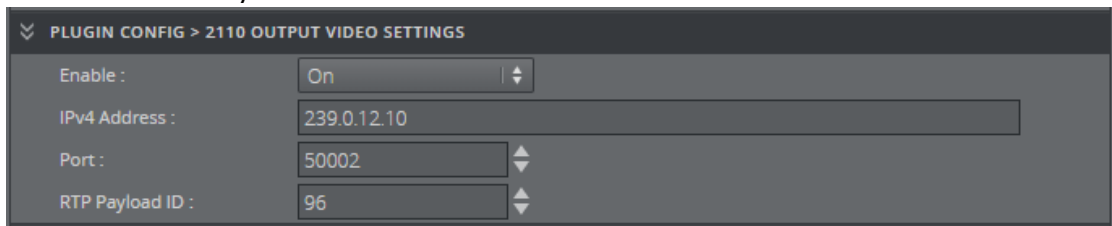
- **2022 Output Settings**

- **IPv4 Address:** Sets destination IPv4 address.
- **Port:** Sets destination port.



- **2110 Output Video Settings**

- **Enable:** Enables video flow when set to True.
- **IPv4 Address:** Sets destination IPv4 address.
- **Port:** Sets destination port.
- **RTP Payload ID:** Indicates the RTP (Real-time Transfer Protocol) Payload ID to capture. Used when RTP Payload ID is set to True.



- **2110 Output Audio Settings**

- **Enable:** Enables audio flow when set to True.
- **IPv4 Address:** Sets destination IPv4 address.
- **Port:** Sets destination port.
- **RTP Payload ID:** Indicates the RTP (Real-time Transfer Protocol) Payload ID to capture. Used when RTP Payload ID is set to True.
- **Use Track Count:** Uses track count to specify the number of tracks for the outgoing IP stream when set to True.
- **Track Count:** Specifies the number of tracks for the incoming IP stream.
- **Packet Duration:** Indicates the duration of the incoming audio packet. The packet size (in samples) can be computed using the sample rate (48000 samples/sec) and the

packet duration.

PLUGIN CONFIG > 2110 OUTPUT AUDIO SETTINGS

Enable :	On
IPv4 Address :	239.0.12.12
Port :	50004
RTP Payload ID :	97
Use Track Count :	Off
Track Count :	8
Packet Duration :	1ms

#### • 2110 Output ANC Settings

- **Enable:** Enables ANC flow when set to True.
- **IPv4 Address:** Sets destination IPv4 address.
- **Port:** Sets destination port.
- **RTP Payload ID:** Indicates the RTP (Real-time Transfer Protocol) Payload ID to capture. Used when RTP Payload ID is set to True.
- **SMPTE352:** Enables SMPTE 352 packets when set to True.

PLUGIN CONFIG > 2110 OUTPUT ANC SETTINGS

Enable :	On
IPv4 Address :	239.0.12.14
Port :	50006
RTP Payload ID :	100
SMPTE352 :	Off

#### • License Settings

- **License Location:** Defines where the WIBU license is located. This can be network or local if the user has a file or a WIBU dongle attached.
- **License:** Defines the license type. If the user does not have SDI IN (max). Demo option can be used, however the recordings will have 100 black frames every 400 frames.
- **4K Video Enablement:** Enables 4K video license fetching. If none is found the user will not be able to start Channel Recorder. If already recording and the license is not accessible or expired, the user will have 100 black frames every 400 frames.
- **DNxHD Enablement:** Enables DNxHD license fetching. If none is found the user will not be able to start Channel Recorder. If already recording and the license is not accessible or expired, the user will have 100 black frames every 400 frames.

PLUGIN CONFIG > LICENSE SETTINGS


License Location* :	Network license
License* :	SDI IN (max)
4K Video Enablement* :	On (Use ENG_ING_4...)
DNxHD Enablement* :	On

## Service Host Section

Only one setting can be set in this section:

- **Arguments:** Specifies the arguments that are going to be passed to Channel Recorder.

An example of a string that can be used for enabling log level debug is: `-v -l debug -n 10 -m 50`

 **Note:** Channel Recorder 1.2 introduces two new parameters: *n* and *m*. *n* specifies the maximum number of log files and *m* the maximum size of each log file in MB. By default, the number of log files is four and the maximum size of each log file is 10 MB.

### See Also


- [Channel Recorder Control Commands](#)
- [Channel Recorder Startup Options](#)
- [Example Configuration File](#)

### 3.1.3 Example Configuration File

You can manually change the configuration, without using the web interface as described in [Channel Recorder Configuration](#).

The configuration file is located in `%ProgramData%\vizrt\ServiceHost\`.

The name of the configuration file is the **Service Name** that has been used during the registration of the instance.

 **Warning:** Manual manipulation of the configuration file is prone to errors. For this reason, you are strongly advised not to do it. Whenever possible, use the web interface provided by Service Host.

```

<?xml version="1.0"?>
<payload model="model.xml" xmlns="http://www.vizrt.com/types">
  <field name="plugin-config">
    <field name="2022-input-settings">
      <field name="ipv4address">
        <value>239.0.10.10</value>
      </field>
      <field name="join-type">
        <value>1</value>
      </field>
      <field name="packet-interval-threshold">
        <value>6.4</value>
      </field>
      <field name="port">
        <value>50002</value>
      </field>
    </field>
    <field name="2022-output-settings">
      <field name="ipv4address">
        <value>239.0.12.10</value>
      </field>
      <field name="port">
        <value>50002</value>
      </field>
    </field>
    <field name="2059-settings">
      <field name="best-master-selection">
        <value>1</value>
      </field>
    </field>
    <field name="2110-input-anc-settings">
      <field name="enable">
        <value>1</value>
      </field>
      <field name="filter-list" />
      <field name="filter-type">
        <value>1</value>
      </field>
      <field name="ipv4address">
        <value>239.0.10.14</value>
      </field>
      <field name="join-type">
        <value>1</value>
      </field>
      <field name="packet-interval-threshold">
        <value>819.2</value>
      </field>
      <field name="port">
        <value>50006</value>
      </field>
      <field name="rtp-payload-id">

```

```

        <value>100</value>
    </field>
    <field name="rtp-payload-id-filtering">
        <value>0</value>
    </field>
</field>
<field name="2110-input-audio-settings">
    <field name="enable">
        <value>1</value>
    </field>
    <field name="filter-list" />
    <field name="filter-type">
        <value>1</value>
    </field>
    <field name="ipv4address">
        <value>239.0.10.12</value>
    </field>
    <field name="join-type">
        <value>1</value>
    </field>
    <field name="packet-duration">
        <value>0</value>
    </field>
    <field name="packet-interval-threshold">
        <value>102.4</value>
    </field>
    <field name="port">
        <value>50004</value>
    </field>
    <field name="rtp-payload-id">
        <value>97</value>
    </field>
    <field name="rtp-payload-id-filtering">
        <value>0</value>
    </field>
    <field name="track-count">
        <value>8</value>
    </field>
    <field name="use-track-count">
        <value>0</value>
    </field>
</field>
<field name="2110-input-video-settings">
    <field name="enable">
        <value>1</value>
    </field>
    <field name="filter-list" />
    <field name="filter-type">
        <value>1</value>
    </field>
    <field name="ipv4address">
        <value>239.0.10.10</value>

```

```
</field>
<field name="join-type">
  <value>1</value>
</field>
<field name="packet-interval-threshold">
  <value>6.4</value>
</field>
<field name="port">
  <value>50002</value>
</field>
<field name="rtp-payload-id">
  <value>96</value>
</field>
<field name="rtp-payload-id-filtering">
  <value>0</value>
</field>
</field>
<field name="2110-output-anc-settings">
  <field name="enable">
    <value>1</value>
  </field>
  <field name="ipv4address">
    <value>239.0.12.14</value>
  </field>
  <field name="port">
    <value>50006</value>
  </field>
  <field name="rtp-payload-id">
    <value>100</value>
  </field>
  <field name="smpte352">
    <value>1</value>
  </field>
</field>
<field name="2110-output-audio-settings">
  <field name="enable">
    <value>1</value>
  </field>
  <field name="ipv4address">
    <value>239.0.12.12</value>
  </field>
  <field name="packet-duration">
    <value>0</value>
  </field>
  <field name="port">
    <value>50004</value>
  </field>
  <field name="rtp-payload-id">
    <value>97</value>
  </field>
  <field name="track-count">
    <value>8</value>
  </field>
</field>
```

```
</field>
<field name="use-track-count">
  <value>0</value>
</field>
</field>
<field name="2110-output-video-settings">
  <field name="enable">
    <value>1</value>
  </field>
  <field name="ipv4address">
    <value>239.0.12.10</value>
  </field>
  <field name="port">
    <value>50002</value>
  </field>
  <field name="rtp-payload-id">
    <value>96</value>
  </field>
</field>
<field name="board-settings">
  <field name="serial-number">
    <value>A524673</value>
  </field>
</field>
<field name="capture-settings">
  <field name="alias-node-source">
    <value>INPUT</value>
  </field>
  <field name="clip-root">
    <value>D:\cr_clips</value>
  </field>
  <field name="colorimetry">
    <value>1</value>
  </field>
  <field name="resolution">
    <value>NTSC</value>
  </field>
  <field name="restarting-delay">
    <value>3000</value>
  </field>
  <field name="sd-aspect-ratio">
    <value>4_3</value>
  </field>
  <field name="uhd">
    <value>0</value>
  </field>
  <field name="v210">
    <value>0</value>
  </field>
  <field name="vbi">
    <value>1</value>
  </field>
</field>
```



```

</field>
<field name="clip-settings">
  <field name="audio-channels">
    <value>8</value>
  </field>
  <field name="bitrate">
    <value>0</value>
  </field>
  <field name="codec">
    <value>XDCam</value>
  </field>
  <field name="container">
    <value>XDCAMMXF</value>
  </field>
  <field name="disk-access-size">
    <value>4MiB</value>
  </field>
  <field name="duration">
    <value>0</value>
  </field>
  <field name="file-extension">
    <value>1</value>
  </field>
  <field name="in" />
  <field name="out" />
  <field name="starttc" />
  <field name="stop-at-end">
    <value>1</value>
  </field>
  <field name="tdir">
    <value>1</value>
  </field>
  <field name="tdir-interval">
    <value>10.0</value>
  </field>
  <field name="update-mt-enable">
    <value>0</value>
  </field>
  <field name="vbr">
    <value>0</value>
  </field>
</field>
<field name="clock-settings">
  <field name="clock-type">
    <value>INPUT</value>
  </field>
  <field name="flywheel-timeout">
    <value>5</value>
  </field>
  <field name="genlock-flywheel">
    <value>0</value>
  </field>

```

```

</field>
<field name="coder-output-settings">
  <field name="ipv4address">
    <value>127.0.0.1</value>
  </field>
  <field name="name">
    <value>SHM_CR</value>
  </field>
  <field name="port">
    <value>10002</value>
  </field>
</field>
<field name="communication-settings">
  <field name="command-handler-port">
    <value>6810</value>
  </field>
  <field name="mvcp-port">
    <value>10000</value>
  </field>
</field>
<field name="input-settings">
  <field name="input">
    <value>VideoIn</value>
  </field>
</field>
<field name="license">
  <field name="4K-video-enablement">
    <value>0</value>
  </field>
  <field name="dnxhd-enablement">
    <value>0</value>
  </field>
  <field name="license">
    <value>1200200</value>
  </field>
  <field name="license-location">
    <value>1</value>
  </field>
</field>
<field name="log-settings">
  <field name="timecode-log-interval">
    <value>0</value>
  </field>
</field>
<field name="manager-settings">
  <field name="ring-buffer">
    <value>60</value>
  </field>
  <field name="timeout">
    <value>1000</value>
  </field>
</field>

```

```

<field name="output-settings">
  <field name="output">
    <value>None</value>
  </field>
</field>
<field name="persistence-settings">
  <field name="persistence">
    <value>0</value>
  </field>
  <field name="persistence-interval">
    <value>0.0</value>
  </field>
</field>
<field name="process-settings">
  <field name="priority">
    <value>REALTIME</value>
  </field>
</field>
<field name="scheduler-settings">
  <field name="inclusive-out">
    <value>0</value>
  </field>
  <field name="timecode-source">
    <value>TIME_OF_DAY</value>
  </field>
  <field name="trigger-threshold">
    <value>5</value>
  </field>
  <field name="writers">
    <value>2</value>
  </field>
</field>
<field name="sfp-a-2059-settings">
  <field name="delay-mechanism">
    <value>1</value>
  </field>
  <field name="filter-list" />
  <field name="filter-type">
    <value>1</value>
  </field>
  <field name="ip-mode">
    <value>1</value>
  </field>
  <field name="join-type">
    <value>1</value>
  </field>
  <field name="master-clock-domain-number">
    <value>127</value>
  </field>
  <field name="type-of-service-dscp">
    <value>0</value>
  </field>
</field>

```

```

</field>
<field name="sfp-a-general-settings">
  <field name="ipv4address">
    <value>10.0.0.2</value>
  </field>
  <field name="ipv4gateway">
    <value>10.0.0.1</value>
  </field>
  <field name="ipv4netmask">
    <value>255.255.255.0</value>
  </field>
</field>
<field name="sfp-b-2059-settings">
  <field name="delay-mechanism">
    <value>1</value>
  </field>
  <field name="filter-list" />
  <field name="filter-type">
    <value>1</value>
  </field>
  <field name="ip-mode">
    <value>1</value>
  </field>
  <field name="join-type">
    <value>1</value>
  </field>
  <field name="master-clock-domain-number">
    <value>127</value>
  </field>
  <field name="type-of-service-dscp">
    <value>0</value>
  </field>
</field>
<field name="sfp-b-general-settings">
  <field name="ipv4address">
    <value>10.0.0.3</value>
  </field>
  <field name="ipv4gateway">
    <value>10.0.0.1</value>
  </field>
  <field name="ipv4netmask">
    <value>255.255.255.0</value>
  </field>
</field>
<field name="stream-input-settings">
  <field name="audio-demuxer-buffer-size">
    <value>120</value>
  </field>
  <field name="av-sync-audio-waiting-buffer-size">
    <value>120</value>
  </field>
  <field name="av-sync-video-waiting-buffer-size">

```

```

        <value>120</value>
    </field>
    <field name="ipaddress">
        <value>239.0.1.10</value>
    </field>
    <field name="nicaddress">
        <value>192.168.1.209</value>
    </field>
    <field name="port">
        <value>50202</value>
    </field>
    <field name="receive-buffer-size">
        <value>120</value>
    </field>
    <field name="use-av-synchronization">
        <value>1</value>
    </field>
    <field name="use-software-decoding">
        <value>0</value>
    </field>
    <field name="video-demuxer-buffer-size">
        <value>120</value>
    </field>
</field>
<field name="test-settings">
    <field name="performance-test-mode">
        <value>NONE</value>
    </field>
</field>
<field name="video-input-settings">
    <field name="connector">
        <value>A</value>
    </field>
</field>
<field name="video-output-settings">
    <field name="connector">
        <value>A</value>
    </field>
</field>
</field>
<field name="service-host">
    <field name="plugin">
        <field name="plugin-name">
            <value>ChannelRecorder</value>
        </field>
        <field name="plugin-arguments">
            <value>-v -l debug -n 10 -m 50</value>
        </field>
    </field>
</field>
</payload>

```

### 3.1.4 Integration with Other Services

Channel Recorder can be integrated with other services.

#### Viz Capture

The Viz Capture video acquisition tool can be configured to acquire assets using Channel Recorder. Integration of Channel Recorder with Viz Capture is based on the MLT Video Control Protocol, or MVCP. MVCP is activated on port 10000 by default. To change the port, refer to [Channel Recorder Configuration](#).

For using Channel Recorder with VizCapture the following settings are specially important:

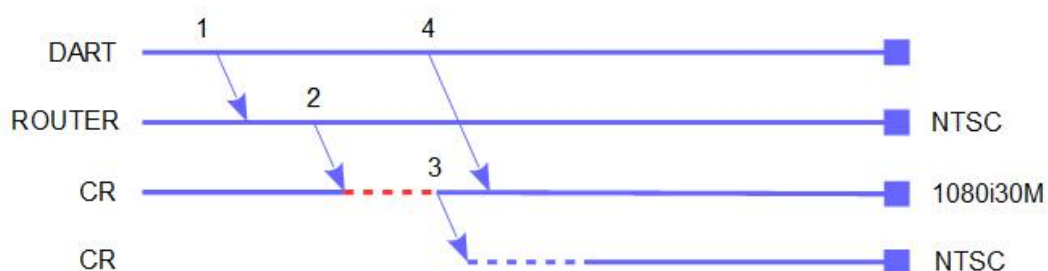
- **Inclusive Out:** By default, Channel Recorder will not record the last frame specified by Viz Capture. This must be changed to 1 if the value in Viz Capture application should match the recorded frames timecode.
- **Timecode Source:** When using VizCapture this value should be changed to VITC or LTC.

For further information on how to configure Viz Capture, or how to operate it on a Video Disk Recorder, refer to the Viz Capture Documentation.

#### Viz Dart

The Viz Dart video acquisition tool can be configured to acquire assets using Channel Recorder. Integration of Channel Recorder with Viz Dart is based on the MLT Video Control Protocol, or MVCP. MVCP is by default activated on port 10000. To change the port, refer to [Channel Recorder Configuration](#).

When operating Viz Dart with Channel Recorder, the timing between the different components is important. Take the following example:

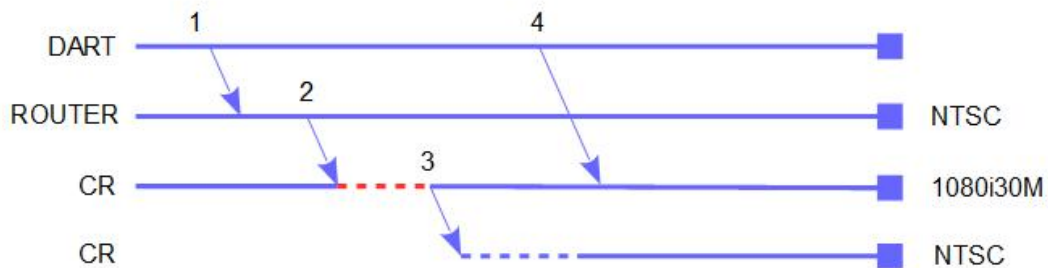


The typical operation when using Viz Dart is as follows:

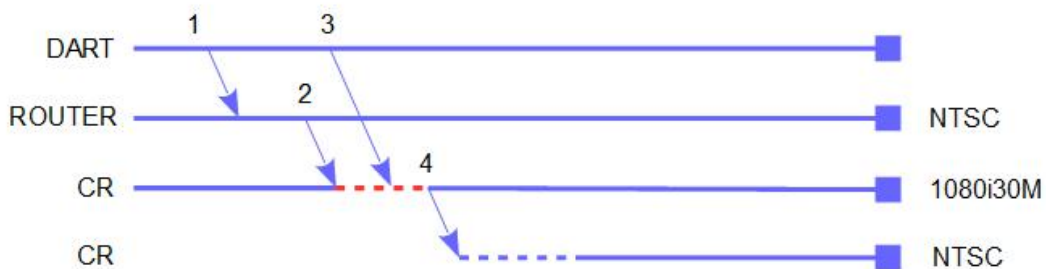
1. Dart sends a command to the router to route an NTSC signal to Channel Recorder.
2. The router sends the NTSC signal to Channel Recorder.

3. Channel Recorder was configured as 1080i30M, so it will trigger a configurable timeout (dotted red line).
  - a. By default, this timeout is three seconds duration and can be configured (restarting\_delay).
  - b. After the timeout, Channel Recorder restarts with NTSC signal resolution.
  - c. If the same signal as configured (.i.e 1080i30M) is received again within those three seconds, the restart is cancelled.
4. During the restart (dotted blue line) it is possible that Dart sends the MVCP commands to schedule a recording. If this happens, Channel Recorder will queue the commands until it is ready with the new resolution.

There are other several situations (this is not meant to be an exhaustive list, but rather some examples):



In this case, the MVCP commands are sent after the restart has already finished.



In this case, the MVCP commands are sent before the restart occurred. When the restart finishes Channel Recorder recovers the timeline created before the restart.

Viz Dart also offers some configuration options, such as when the MVCP commands should be sent (*prestarttime*). To see the other options, use the following command on the Viz Dart machine: `/opt/dart/bin/editconf -ey dartsettings`.

For further information on how to configure Viz Dart, or how to operate it on a Video Disk Recorder, refer to the Viz Dart Documentation.

## Coder

Coder is the next generation transcoder that can be used as a standalone component with Viz Engine, or in a MAM environment using Viz One. To setup the Channel Recorder to output to Coder, issue the following command:

```
CONFIG SET SHMOUT SHMNAME [shared memory name]
CONFIG SET SHMOUT ADDRESS [proxy hostname]
CONFIG SET SHMOUT PORT [proxy port]
OUTPUT START Coder
```

Alternatively, the output can be started automatically during startup. Refer to Output Settings in [Channel Recorder Configuration](#).

[proxy hostname] and [proxy port] are only used by Viz Coder Recording Proxy and are not necessary. This application automatically creates a job for Coder and transcodes using the setting specified in an XML file bundled with the application. If the Viz Coder Recording Proxy is not used, [proxy hostname] and [proxy port] can be left out.

To be able to use Coder with Channel Recorder in a new machine, follow these steps:

1. Install Viz Coder.
2. Go to C:\Program Files (x86)\vizrt\Coder and run **coder\_slave.exe** in the command prompt with Administrator privileges:

```
register_slave.exe http://[IP]:[Port]
```

Where [IP] IP address where Coder is installed (if in doubt use the localhost IP) and [Port] is the port that Coder is using (if in doubt use 8081 which is the default value of Coder port).

3. Go to C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Vizrt\Coder and run **run\_benchmark.exe** by double clicking on it.

**Warning:** Do not run *run\_benchmark.exe* from *C:\Program Files (x86)\vizrt\Coder*, since this will not work.

The port used by Coder can be checked in C:\ProgramData\vizrt\Coder\vizrt-coder-master.log

4. Go to Coder web interface [http://\[IP\]:\[Port\]/ui/war/index.html](http://[IP]:[Port]/ui/war/index.html) (e.g. <http://localhost:8081/ui/war/index.html>) and check if the slave worker is there by clicking the Workers tab.
5. Create a new live job with the following setting:
  - a. Input URL: `shm://@[IP]:[shared memory name]` where [IP] is the IP address where Channel Recorder is located and [shared memory name] is the shared memory name given in the configuration without the *Global\* string.

**Note:** To use Coder the shared memory name given in the configuration of Channel Recorder must be preceded by *Global\* this is because Coder always expects the shared memory to be located in the Global namespace.



- b. Output URL: `udp://@[IP]:[Port]` where [IP] and [Port] is the IP address and port where the stream is going to be sent.
- c. Profile URL: `mpegts_mpeg2_720p`.

**Note:** The settings above are just example and can be changed, however it is recommended to test with these values first before experimenting with other values.

To test that the above steps are done correctly, open VLC and go to **Media > Open Network Stream** and use the address specified in Output URL when Channel Recorder is recording and using the appropriate configuration. Example of configuration for Coder:

```
<field name="coder-output-settings">
  <field name="name">
    <value>Global\viz_shm_cr_01</value>
  </field>
  <field name="ipv4address">
    <value>127.0.0.1</value>
  </field>
  <field name="port">
    <value>10002</value>
  </field>
</field>
```

Please note that `Global\` is used for the name of the shared memory. For the Input URL only `viz_shm_cr_01` should be given.

For further information on the configuration and operation of Coder, refer to the Media Service documentation.

#### See Also

- Media Service documentation
- Viz One documentation for Viz Dart
- [Channel Recorder Configuration](#)
- [References and Specifications](#)

## 3.1.5 Hardware and Software Requirements

### Hardware Requirements

Channel Recorder runs on the following hardware:

- HP Z840
- Dell R7910 (2U) Rack Server

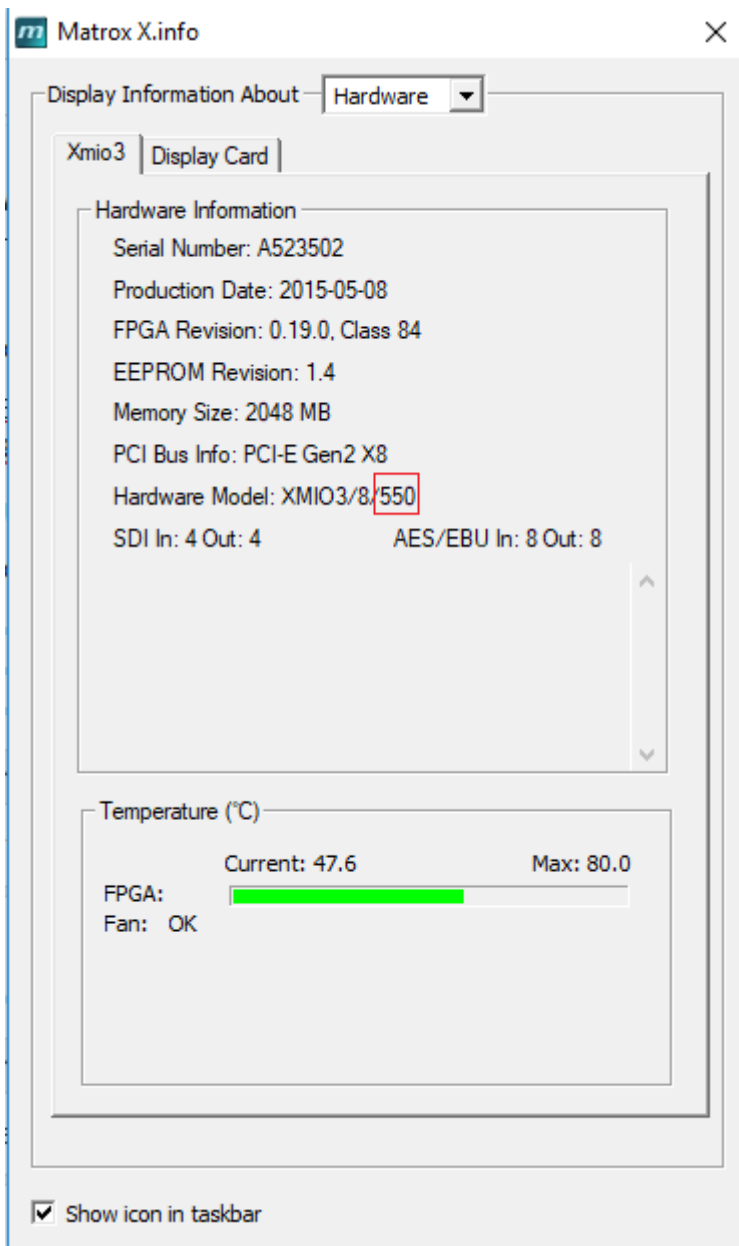
The Viz Engine Administrator Guide provides a detailed description of these machines.

**Note:** To be able to achieve maximum performance using Channel Recorder, **Hypertreading** should be enabled. This is located in the BIOS.

Channel Recorder requires one of the following video boards:

Video Boards	Recording capability
Matrox X.mio3	SDI
Matrox DSX LE4	SDI
Matrox X.mio3 IP	2022, 2110
Matrox DSX LE4 IP	2022, 2110
Matrox M264	RTP/H264
DSX.Core	RTP/H264

**Note:** All the above boards should be upgraded to enable recording with different codecs. To check which upgrades the board has available, use the **Matrox Utils** in the task bar and check if the board has 500 or 550 upgrade applied (for ProRes). If the board does not have this upgrade, this must be ordered. Additionally, to receive RTP/H264 the Matrox M264 must have the RTP upgrade. Refer to [Recording RTP/H264 Stream](#) for more information.



**Note:** The DSX.Core is not technically a physical board and is used to receive and record RTP/H.264 streams. Refer to [Recording RTP/H264 Stream](#) for more information.

**Note:** The M264 encoder/decoder board is required for CPU intense codecs like XAVC and ProRes. It is mandatory for UHD recording and strongly recommended for ProRes and AVC codecs.

## To Upgrade Class and Firmware

To upgrade your Matrox board, for example to enable more IO-ports or a codec upgrade for HD recording, you must use the *mvDongleUpdater.exe* update utility with your Vizrt supplied license upgrade file *<filename>.OPT*. This utility is installed with the Matrox driver package and will normally be installed to:

```
C:\Program Files\Matrox DSK.utils\drivers\mvDongleUpdater.exe
```

To upgrade the card use this syntax:

```
C:\Program Files\Matrox DSX.utils\drivers\mvDongleUpdater.exe upgrade -
sn="BoardSerialNumber" -f="Path to the upgrade file"
```

The command above must be run from a Windows command line window.

## Software Requirements

Channel Recorder 1.3 requires Matrox DSX.utils version **9.9.1.23136**.

In most cases, a system with a configured and reliable NTP server is necessary. This is particularly important when working with other components such as Viz Dart or Viz One, in which case they should all use the same NTP server.

### See Also

- [Viz Engine Administrator Guide](#)

### 3.1.6 Removing Channel Recorder

Channel Recorder can be removed by using the web interface provided by Service Host. For more information please refer to the [Service Host](#) documentation.

### See Also

- [Channel Recorder Startup Options](#)

### 3.1.7 WIBU Licensing

This chapter describes management and usage of the new licensing system based on CodeMeter from [WIBU Systems](#) available in Channel Recorder 1.3 and later.

## Important Pre-installation Information

The WIBU licensing system requires the installation of the CodeMeter Runtime Software 6.60a. This is included as part of the bundle installation of Service Host and Channel Recorder. When the license is retrieved from a dedicated license server, it must be configured in the Vizrt Licensing Service (see the **Installation** section of the [Viz Licensing Administrator Guide](#)) or the CodeMeter WebAdmin.

Please refer to the [Viz Licensing Administrator Guide](#) for further detailed information.

- There is an auto discovery if no license server is configured in the server search list of CodeMeter.
- On network disconnect and reconnect, it may happen that a license is checked out twice. In this case, it must be released manually on the CodeMeter service on the license server or the license server can be restarted.

## Key Features of the Licensing System

- Dongle less operation on the clients with monitoring and logging capabilities.
- Grace periods for allocated licenses to avoid immediate expiration on short network interruptions.
- Configurable WIBU license container location (local, network).

## General Workflow of the Licensing System

- Channel Recorder is unable to start up if any requested license is missing during start up.
- If Service Host core license has expired or is not accessible during the execution of Channel Recorder, then the user will not be able to start any kind of recording.
- If SDI input license has expired or is not accessible during the execution of Channel Recorder, then the user will not be able to start any kind of recording.
- If DNxHD license has expired or is not accessible during the execution of Channel Recorder, then the user will not be able to set the config codec to DNxHD or container to DNXHDMXF.
- If UHD license has expired or is not accessible during the execution of Channel Recorder, then the user will not be able to set the option to enable.
- If any of the above licenses are not accessible or have expired **during a recording**, then the recording will be black 100 frames every 400 frames.

Capability	Short Name	ID
Service Host Core	VL_ENG_SVCHOST_CORE	1200004
SDI IN MAX	VL_ENG_ING_SDIIP_MAX	1200200
DNxHD	VL_ENG_PLROY_DNXHD	1200603
UHD for Playback and Ingest	VL_ENG_ING_4KVIDEO	1200400
UHD for Ingest	VL_ING_4KVIDEO	1200404

There are two UHD license options that can be used for ingest; however, the user can only choose one. For more information regarding the difference between the two license please refer to the [Viz Licensing Administrator Guide](#).

There is a demo license available, however the core still needs to be licensed. The demo license is useful if there is no SDI input license but the user still wants to test Channel Recorder. In the demo version UHD or DNxHD recording is not available and the recordings will be black 100 frames every 400 frames.

## Basic Setup

These are the steps to set up Channel Recorder licensing with WIBU:

1. Install Channel Recorder with the bundle installer (CodeMeter is included in the bundle).
  - a. Configure CodeMeter with the Vizrt Licensing Service or the CodeMeter WebAdmin (can be opened from the CodeMeter Control Center).
2. Configure the license system in Service Host web interface.



Please refer to the [Viz Licensing Administrator Guide](#) for detailed information regarding installation and operation of WIBU Licensing.

### 3.1.8 Upgrading from Channel Recorder 1.0

The biggest difference between Channel Recorder versions 1.0 and 1.3 is that Service Host is now the front end controller. Starting with Channel Recorder version 1.1, Channel Recorder is considered a plugin of Service Host. This means that the Channel Recorder is managed by Service Host through the web interface that it provides. With Service Host you can:

- Register a new instance.
- Remove an existing instance.
- Start an existing instance.
- Stop an existing instance.
- Provide an **initial configuration** to an instance.

For more information, refer to the [Service Host](#) documentation.

## Matrox DSX.Utils

Channel Recorder 1.3 requires Matrox DSX.utils version **9.9.1.23136**.

## Configuration File

For users upgrading from Channel Recorder 1.0, the only required step is the translation of the configuration into the new format. Previously, the configuration was provided via a simple text file located in *%programdata%/vizrt/Channel Recorder*.

This file might contain the following:

```

COMMAND_HANDLER PORT SET 6810
MAIN BOARD SELECT A523502
MVCP PORT 10000
CONFIG SET RINGBUFFERSIZE 60
MAIN CLOCKTYPE GENLOCK
MAIN CONNECTOR SELECT A
CONFIG SET FILEEXTENSION OFF
CONFIG SET PRIORITY REALTIME
CONFIG SET CLIP_ROOT D:/
CONFIG SET TIMEOUT 5000
CONFIG SET AUDIOCHANNELS 4
CONFIG SET CODEC XDCamHD
CONFIG SET CONTAINER XDCAMMXF
CONFIG SET TIMECODE TIME_OF_DAY
CONFIG SET TDIRENABLE FALSE
CONFIG SET VBI OFF

```

In Channel Recorder 1.3, the configuration is provided via an xml file located in `%programdata%/vizrt/ServiceHost`. The configuration file name is the **Service Name** used when registering the Channel Recorder instance. This xml file can be edited directly, however, it is highly recommended that you use the Service Host web interface.

**Note:** All configuration settings that were in 1.0 are still present with the same parameters and similar names.

You must use the Service Host web interface and configure Channel Recorder appropriately to achieve the same behavior as in the old version. Configuration is described in [Channel Recorder Configuration](#).

**Note:** Do not forget to restart the instance after any changes to the configuration.

## Log File

As with the configuration file, the log file is now located in `%ProgramData%/vizrt/ServiceHost` instead of `%programdata%/vizrt/Channel Recorder`.

The old file used to configure the logging mechanism is gone. The only option in the new version is to change the logging level. Refer to the Service Host Section in [Channel Recorder Configuration](#).

### 3.1.9 Upgrading from Channel Recorder 1.1, 1.2 or 1.2.1

This process should be handled automatically during the upgrade process. However, if the automatic upgrade fails, the user will not be able to configure or start the service. In this case, the user must:

1. Create a new service with a different name than the old one, using the new installation to generate a new default configuration.

**Note:** Both the new and old configurations are located at `C:\ProgramData\vizrt\ServiceHost`.

2. Manually copy the relevant configuration parameters from the old configuration to the new one using a text or XML editor.
3. The old configuration can be removed and the new configuration can be renamed as the old one. Now the service can be configured and started via the web interface.

## Matrox DSX.Utils

Channel Recorder 1.3 requires Matrox DSX.utils version **9.9.1.23136**.

---

## 3.2 Operation And Troubleshooting

You can use the application **Viz Send**, which is included in **Viz Artist** installation, to communicate with Channel Recorder. Connect the tool to the port specified in the **Channel Recorder** configuration file.

### 3.2.1 Channel Recorder Initialization

You can start Channel Recorder with the Service Host web interface.

When Channel Recorder is started, the following will happen:

1. User specified configuration runs in a specific order:
  - a. If no serial number is specified, Channel Recorder selects the first board detected by the system.
  - b. If no connector is selected, Channel Recorder fails to execute.
2. Depending on the selected clock type, one of the following can happen:
  - a. If GENLOCK is selected, Channel Recorder queries for the genlock signal. Channel Recorder compares the genlock frequency to the signal frequency. The signal frequencies need to be from the same frequency family, for example, 25i and 50p frequencies will match, but 29.97i and 50p will not.
  - b. If INPUT is selected, Channel Recorder does not query for the genlock signal.

**Note:** INPUT clock type is only available for Matrox X.mio3 IP, Matrox X.mio3 and Matrox DSX LE4.

If everything works as expected, the input channel is set up and Channel Recorder starts capturing from it. As long as no clip is recorded, the captured frames are thrown away. When a recording starts, these frames are written to the file. This is necessary to be able to provide:

1. Instant recording
2. Scheduling of recordings

### 3.2.2 Workflow Example

1. Start the service from the Service Host web interface. For more information, refer to the [Service Host](#) documentation.



2. Check the log in the Service Host web interface to make sure that everything has started correctly. You can also check the log file located at %programdata%\vizrt\ServiceHost/[service name].
3. You should not see any errors or warning messages. If there is any error or warning messages, please try to amend it and restart the service using the web interface provided by Service Host. For more information, refer to the [Service Host](#) documentation. The following is an example of a successful initial run by Channel Recorder:

```

[2018-06-29 08:23:35.031 +02:00][24300][info]: Startup
'ChannelRecorder::ChannelRecorder::Initialize' as 'VizrtCRTest'
[2018-06-29 08:23:35.031 +02:00][24300][info]: Startup
'ChannelRecorder::ChannelRecorder::Initialize' version of ServiceHost is
'1.1.0.77448.'
[2018-06-29 08:23:35.031 +02:00][24300][info]: Startup
'ChannelRecorder::ChannelRecorder::Initialize' version of ChannelRecorder is
'1.1.0.77448.'
[2018-06-29 08:23:35.046 +02:00][24300][info]: [VizrtCRTest] starting up.
thread-id: 24300
[2018-06-29 08:23:35.046 +02:00][24300][info]: [VizrtCRTest] Applying settings
from configuration file!
[2018-06-29 08:23:35.046 +02:00][24300][info]: [VizrtCRTest] Received: -1
COMMAND_HANDLER PORT SET 6810
[2018-06-29 08:23:35.046 +02:00][24300][info]: [VizrtCRTest] setting
COMMAND_HANDLER PORT=6810
[2018-06-29 08:23:35.047 +02:00][24300][info]: [VizrtCRTest] OK
[2018-06-29 08:23:35.047 +02:00][24300][info]: [VizrtCRTest] Received: -1 MVCP
PORT SET 10000
[2018-06-29 08:23:35.047 +02:00][24300][info]: [VizrtCRTest] setting MVCP
PORT=10000
[2018-06-29 08:23:35.047 +02:00][24300][info]: [VizrtCRTest] OK
[2018-06-29 08:23:35.047 +02:00][24300][info]: [VizrtCRTest] Received: -1
CONFIG SET CLIP_ROOT D:/cr_clips
[2018-06-29 08:23:35.047 +02:00][24300][info]: [VizrtCRTest] setting
CLIP_ROOT=D:/cr_clips
[2018-06-29 08:23:35.047 +02:00][24300][info]: [VizrtCRTest] OK
[2018-06-29 08:23:35.047 +02:00][24300][info]: [VizrtCRTest] Received: -1 MAIN
CONNECTOR SELECT A
[2018-06-29 08:23:39.303 +02:00][24300][info]:
[VizrtCRTest::CaptureChannelSystemInA] SetInputResolution: Detected input
resolution is 1080i25
[2018-06-29 08:23:39.303 +02:00][24300][info]:
[VizrtCRTest::CaptureChannelSystemInA] DetectInputResolutionSdi: Selected
resolution is 1080i25
[2018-06-29 08:23:40.908 +02:00][24300][info]: [VizrtCRTest] Capture from
channel InA on board XMI03/8/550 (serial: A523502)
[2018-06-29 08:23:40.909 +02:00][24300][info]: [VizrtCRTest] OK
[2018-06-29 08:23:40.909 +02:00][2916][info]:
[VizrtCRTest::CaptureChannelSystemInA] starting up
[2018-06-29 08:23:40.912 +02:00][5000][info]:
[VizrtCRTest::CaptureChannelSystemInA::ClipOutChannel0] starting up
[2018-06-29 08:23:40.912 +02:00][29676][info]:
[VizrtCRTest::CaptureChannelSystemInA::ClipOutChannel1] starting up

```

4. The most common errors are not specifying a connector, or specifying a connector that is already in use or non-existing.

When Channel Recorder is successfully running, you can control it using Viz Send, or by using Viz Dart through the MVCP protocol. Refer to [Channel Recorder Control Commands](#) for available commands.

**Note:** Telnet can also be used as a way to control Channel Recorder through the MVCP protocol.

### 3.2.3 Change of Input Resolution

Starting with version 1.1, the Channel Recorder handles input resolution changes during run-time. When Channel Recorder detects a change in the input resolution, it resets the channel to use the new resolution, without the need to restart the service.

### 3.2.4 Recording with No Input Signal

Starting with version 1.1, the Channel Recorder can record without an input signal attached. When a signal is attached during recording, Channel Recorder will seamlessly use the signal. This means that the recorder file will have a black signal, plus the new connected signal. This requires that the configured resolution matches the connected signal resolution, and that you select the **INPUT Clock Type** during initial configuration.

### 3.2.5 Drop Frame Timecode

The user should be mindful when using commands to operate Channel Recorder than involves inputting timecode in drop frame resolutions. Such commands require the input of a valid timecode. However, when a timecode is not recognized as valid, Channel Recorder will try to fix it by rounding down the timecode to a valid one. For example:

```
RECORD SET schedule.mxf IN=15:00:00:00 OUT=16:00:00:00
```

Both timecodes are not valid when operating in drop frame resolution. The command and timecode will automatically change to:

```
RECORD SET schedule.mxf IN=15:00:00:04 OUT=16:00:00:04
```

for progressive resolution. For interlace resolution the timecode will automatically change to:

```
RECORD SET schedule.mxf IN=15:00:00:02 OUT=16:00:00:02
```

#### See Also

- [Channel Recorder Control Commands](#)
- [Channel Recorder Startup Options](#)
- [Channel Recorder Configuration](#)

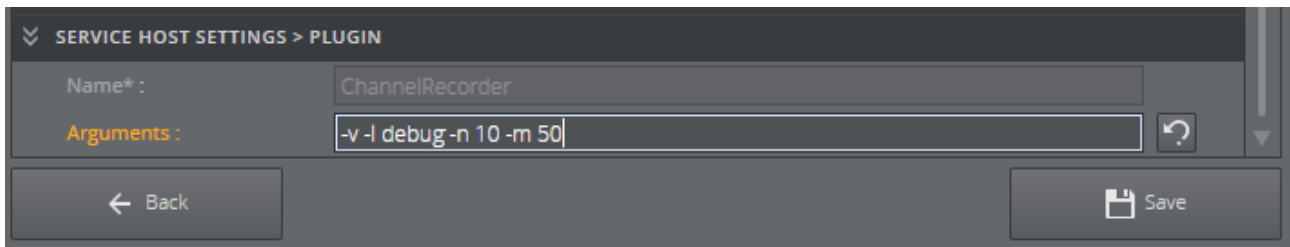
### 3.2.6 Troubleshooting Channel Recorder

This page contains some common troubleshooting tips:

- [Enabling Debug Logging](#)
- [Channel Recorder and Viz Engine](#)
- [The Service Reports Timeout Errors / Failed to Get Frame / Uninitialized Pointer](#)
- [Recordings Stop Unexpectedly when Using Viz Dart](#)
- [The Service Reports Output Dropped a Buffer, Cancelled Late](#)
- [The Service Stops but There Its No Dump](#)
- [Recording with Unsupported Codec / Container / Resolution](#)
- [Recording UHD with XAVC Produces Specified Compression Format is Not Supported Error](#)

## Enabling Debug Logging

To enable debug logging, go to the Service Host web interface and to the configuration page of the instance of Channel Recorder that you wish to enable the debug logging. In the configuration page go to:



Add the following arguments: `-v -l debug -n 10 -m 50`

Where *n* specifies the maximum number of log files and *m* the maximum size of each log file in MB. By default, the number of log files is four and the maximum size of each log file is 10 MB.

## Channel Recorder and Viz Engine

As both Channel Recorder and Viz Engine use Matrox topology, make sure Viz Engine starts before Channel Recorder if you need to use a shared input. If Viz Engine starts after Channel Recorder, the acquisition of the selected input connector fails.

## The Service Reports Timeout Errors / Failed to Get Frame / Uninitialized Pointer

If Channel Recorder reports timeout errors, try increasing the timeout value by sending the command `CONFIG SET TIMEOUT [timeout]`, or by configuring the timeout value using the web interface provided by Service Host.

Channel Recorder reports the following:

```
[2018-09-26 09:55:39.056 +10:00][9408][error]:
[Vizrt_Channel04::CaptureChannelSystemInD] GetAVVField: videoManager
Vizrt_Channel04::CaptureChannelSystemInD::m_pJSMVideo: Error: 0x89998048
facility=0x999 error_code=0x8048 Failed because there was a time out.
[2018-09-26 09:55:39.056 +10:00][9408][error]:
[Vizrt_Channel04::CaptureChannelSystemInD] Failed to get frame
[2018-09-26 09:55:39.056 +10:00][9408][error]:
[Vizrt_Channel04::CaptureChannelSystemInD] GetNodeContentFields: Error: 0x89998045
facility=0x999 error_code=0x8045 One of the method parameter is a uninitialized
pointer.
```

**This is usually related to the performance of the HDD and/or RAID.**

## Recordings Stop Unexpectedly when Using Viz Dart

The issue is usually related to the signal being unstable and Channel Recorder restarting due to change in resolution. Check in the Channel Recorder logs for the *Status of connector* string. If there are more than two signals present in the logs, then the signal is unstable.

 **Note:** Channel Recorder requires a stable signal to function properly with Viz Dart.

An example of a good output after searching the logs is the following:

```
[2018-11-22 21:43:51.157 -05:00][1628][info]: [SdiInStatusCallback] Status of
connector InC: Signal=true, Flywheel=true, Resolution=720p60M
[2018-11-22 21:43:51.173 -05:00][1628][info]: [SdiInStatusCallback] Status of
connector InC: Signal=true, Flywheel=true, Resolution=720p60M
[2018-11-22 21:43:51.189 -05:00][1628][info]: [SdiInStatusCallback] Status of
connector InC: Signal=true, Flywheel=true, Resolution=720p60M
[2018-11-22 21:43:51.204 -05:00][1628][info]: [SdiInStatusCallback] Status of
connector InC: Signal=false, Flywheel=false, Resolution=0iInvalid
[2018-11-22 21:43:51.220 -05:00][1628][info]: [SdiInStatusCallback] Status of
connector InC: Signal=true, Flywheel=false, Resolution=720p60M
[2018-11-22 21:43:51.235 -05:00][1628][info]: [SdiInStatusCallback] Status of
connector InC: Signal=true, Flywheel=true, Resolution=720p60M
[2018-11-22 23:29:37.863 -05:00][1628][info]: [SdiInStatusCallback] Status of
connector InC: Signal=true, Flywheel=true, Resolution=720p60M
[2018-11-22 23:29:37.879 -05:00][1628][info]: [SdiInStatusCallback] Status of
connector InC: Signal=true, Flywheel=true, Resolution=720p60M
[2018-11-22 23:29:37.894 -05:00][1628][info]: [SdiInStatusCallback] Status of
connector InC: Signal=false, Flywheel=false, Resolution=0iInvalid
[2018-11-22 23:29:37.910 -05:00][1628][info]: [SdiInStatusCallback] Status of
connector InC: Signal=true, Flywheel=false, Resolution=720p60M
[2018-11-22 23:29:37.926 -05:00][1628][info]: [SdiInStatusCallback] Status of
connector InC: Signal=true, Flywheel=true, Resolution=720p60M
[2018-11-22 23:29:37.941 -05:00][1628][info]: [SdiInStatusCallback] Status of
connector InC: Signal=true, Flywheel=true, Resolution=720p60M
```

## The Service Reports Output Dropped a Buffer, Cancelled Late

If Channel Recorder reports output dropped a buffer errors, try increasing the timeout value by sending the command `CONFIG SET TIMEOUT [timeout]` or configuring the timeout value using the web interface provided by Service Host. Increasing the ringbuffer size by sending the command `CONFIG SET RINGBUFFERSIZE [size]` or configuring the ringbuffer size using the web interface provided by Service Host, might also help.

Channel Recorder reports the following:

```
[2018-12-02 19:55:05.804 -02:00][1892][error]: ACE
Vizrt_CR1[1892]:CV_ClipOutChannel::WriteField_i GetBuffers() failed: Reason=Error:
0xa306f003 facility=0x306 error_code=0xf003 Output dropped a buffer, cancelled late.
[2018-12-02 19:55:05.804 -02:00][1892][error]: ACE Vizrt_CR1[1892]CV_ClipOutChannel::
Last Message repeated 100 times.
```

**This is usually related to the performance of the CPU. Please make sure that CPU usage while recording does not exceed 80%. Do not forget to enable Hyperthreading if this is disabled in the BIOS.**

## The Service Stops but There Its No Dump

If there is a change in Windows time (i.e. changing the timezone) while Service Host is running, it stops functioning and must be restarted. This is a known issue and will be fixed in future release. To avoid this problem, make sure that Windows time is synchronized to an NTP server. Daylight Savings Time is not affected by this and does not stop Service Host.

## Recording with Unsupported Codec / Container / Resolution

If a combination of Codec / Container / Resolution is not supported Channel Recorder will not start the recording.

Channel Recorder reports the following:

```
[2018-09-26 09:20:45.255 +01:00][6004][error]:
[VizrtCRTest::CaptureChannelSystemInA::Scheduler] Record: could not start recording
due to unsupported codec / container / resolution combination
```

## Recording UHD with XAVC Produces Specified Compression Format is Not Supported Error

UHD recording with XAVC requires a Matrox M264 board to be installed in the system. If the system does not have such a board installed, Channel Recorder will report that the specified compression format is not supported.

### 3.2.7 Logging

The log file for Channel Recorder is located at %ProgramData%/vizrt/ServiceHost. The log file name reflects the **Service Name** the Channel Recorder instance is registered as in Service Host. For troubleshooting, you can enable a higher level of logging for more information.

#### Enabling Debug Logging

To enable debug logging, go to the Service Host web interface and to the configuration page of the instance of Channel Recorder that you wish to enable the debug logging. In the configuration page go to:

The screenshot shows a web interface for configuring a plugin. The breadcrumb is 'SERVICE HOST SETTINGS > PLUGIN'. The 'Name\*' field is 'ChannelRecorder'. The 'Arguments' field contains the command '-v -l debug -n 10 -m 50'. There are 'Back' and 'Save' buttons at the bottom.

Add the following arguments: `-v -l debug -n 10 -m 50`, where *n* specifies the maximum number of log files and *m* the maximum size of each log file in MB. By default, the number of log files is four and the maximum size of each log file is 10 MB.

#### See Also

- The Service Host Section in [Channel Recorder Configuration](#).

### 3.2.8 Crash Recording

Channel Recorder can be used to instantly record any input signal into a clip file. The delay between command and first field written to the file is usually less than four fields.

An example of how to invoke crash recording with MVCP command would be the following:

```
UADD CS_ENCODER1 * SHAR Capture
LOAD U1 "MVCP_Crash" IN CRTE NOEX
CUER U1
REC U1
USTA U1
STOP U1
UNLD U1
UCLS U1
BYE
```

An example of how to invoke crash recording with regular Channel Recorder Commands:

```
RECORD CLIP Crash.mxf
RECORD START
RECORD STOP
```

Both examples create an instant recording (also called a crash recording) using the values in the configuration file.

### 3.2.9 Loop Recording

This mode of recording only works with **Timecode Source** time of day.

Loop recordings can also be split into various chunks. These can either be specified via timecode format or with fields being written.

An example on how to run a loop recording using regular Channel Recorder commands:

```
RECORD LOOP CHUNK=00:01:00:00
RECORD LOOP PREFIX=Loopy
RECORD LOOP START
```

This will generate chunks, each consisting of one minute, until you stop the recording.

Possible options for loop recordings are:

- **Length:** Determines the length of the loop in frames or timecode. At least this amount of frames will reside on the disk. The minimum length value is 00:02:00:00 or the equivalent number of fields / frames.
- **Chunk:** Determines the size of one chunk in frames or timecode. The chunk size influences the loop length. The minimum chunk value is 00:00:10:00 or the equivalent number of fields / frames.
- **Disksize:** Determines the size of the loop is defined by the size of the clips on the disk. The oldest clips are deleted until the disk size drops below the specified value.
- **Diskfree:** Determines the size of the loop is defined by the space left on the disk. If it drops below the value, the oldest clips are deleted until at least the specified amount is free again.

An example on how LENGTH and CHUNK parameters are related:

```
RECORD LOOP CHUNK=00:00:30:00
RECORD LOOP LENGTH=00:04:00:00
RECORD LOOP PREFIX=Loopy
RECORD LOOP START
```

This generates a total of nine files after four minutes. One of the files will always be zero bytes, this is the next file the Channel Recorder will write to. Another file will have a changing size, this is the file Channel Recorder is currently writing to. The other seven files have already been written. When Channel Recorder reaches four minutes it will start removing the first file it has written.



### 3.2.10 Scheduled Recording

Channel Recorder has its own scheduler to plan recordings in the future.

The command to record an input signal starting at 12:00 and running for one hour would be the following:

```
RECORD SET scheduled.mxf IN=12:00:00:00 OUT=13:00:00:00
```

If a scheduled recording is being interrupted by a loop or crash recording, the following logic applies:

- A recording is being issued while a scheduled recording is running: **The scheduled recording will be interrupted and stopped.**
- During loop recording someone decides to schedule a recording in the future: **The recording will be scheduled and run when/if the loop recording stops before the specified time, otherwise it will fail.**

## 3.3 References And Specifications

This section details references and specifications for the Channel Recorder.

This section contains the following topics:

- [Channel Recorder Startup Options](#)
- [Channel Recorder Control Commands](#)
- [Data Types](#)
- [Files and Directories](#)
- [Supported Multiport Video Computer Protocol \(MVCP\) Commands](#)
- [Supported Codecs](#)
- [Clock Behavior and Resolution](#)
- [Recording Modes and States](#)

### 3.3.1 Channel Recorder Startup Options

It is possible to reroute some commands to Channel Recorder during initialization. Refer to the Service Host Section in [Channel Recorder Configuration](#). The only use for this is to activate a higher level of logging.

### 3.3.2 Channel Recorder Control Commands

The application **Viz Send**, included in **Viz Artist** installation, can be used to communicate with Channel Recorder. Connect the tool to the port specified in the configuration file. The following commands are implemented in the service:

- [ABOUT](#)
- [MAIN](#)
- [OUTPUT](#)

- RECORD
- CONFIG
- CONFIG SET
- COMMUNICATION
- EXIT

## ABOUT

Command	Description
ABOUT GET	Prints license information of all libraries used in this software.

## MAIN

Some of the following commands must be called during initialization. To configure these commands, use the configuration web interface and the restart the service. Refer to [Channel Recorder Configuration](#) for more information.

Command	Description
MAIN VERSION	Returns Channel Recorder version.
GET VERSION	Returns Channel Recorder version. Same as MAIN VERSION.
MAIN HOSTNAME	Returns system hostname.
MAIN SVCNAME	Returns Service Host version.
MAIN BOARD LIST	Lists all available boards.
MAIN BOARD SELECT [serial number]	Selects a board. The board is identified by the serial number. If the board with the given number is not found, the first board will be selected.
MAIN BOARD GET	Returns the selected board.
MAIN CONNECTOR SELECT	Selects a connector. Connectors are labeled consecutively from A to H. When using an IP board this refers to the SFP.  This command can also be used to restart the channel without using the web interface.
MAIN CONNECTOR GET	Returns the selected connector.

Command	Description																		
MAIN LICENSES	<p>Returns the state of the licenses defined at configuration. An example output is:</p> <div data-bbox="485 450 1425 907" style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <p><b>Example</b></p> <pre>"Service Host Core" ENG_SVCHOST_CORE 1200004 300 7 1 VL_GRACE_LICENSED VL_SHARED 0 1540987200 0 0 license- server.vizrt.internal "SDI/IP Video Input Enablement (max)" ENG_ING_SDIIP_MAX 1200200 300 21 1 VL_GRACE_LICENSED VL_SHARED 0 1540987200 0 0 license-server.vizrt.internal "4K Video Enablement" ENG_ING_4KVIDEO 1200400 300 15 1 VL_GRACE_LICENSED VL_SHARED 0 1540987200 0 0 license- server.vizrt.internal "Viz Engine DNxHD Codec Support" ENG_PLROY_DNXHD 1200603 300 18 1 VL_GRACE_LICENSED VL_SHARED 0 1540987200 0 0 license-server.vizrt.internal</pre> </div> <p>Each line is one license and each row separated by space is:</p> <ul style="list-style-type: none"> <li>▪ Long name of the license in quotes.</li> <li>▪ Short name of the license.</li> <li>▪ The ID of the license.</li> </ul> <table border="1" data-bbox="528 1072 1422 1435" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Capability</th> <th>Short Name</th> <th>ID</th> </tr> </thead> <tbody> <tr> <td>Service Host Core</td> <td>VL_ENG_SVCHOST_CORE</td> <td>1200004</td> </tr> <tr> <td>SDI IN MAX</td> <td>VL_ENG_ING_SDIIP_MAX</td> <td>1200200</td> </tr> <tr> <td>DNxHD Ingest</td> <td>VL_ENG_PLROY_DNXHD</td> <td>1200603</td> </tr> <tr> <td>UHD for Playback and Ingest</td> <td>VL_ENG_ING_4KVIDEO</td> <td>1200400</td> </tr> <tr> <td>UHD for Ingest</td> <td>VL_ING_4KVIDEO</td> <td>1200404</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>▪ How many licenses of this type are available in the current container.</li> <li>▪ How many licenses of this type are currently in use in the current container.</li> <li>▪ How many licenses are in use by Channel Recorder.</li> <li>▪ Grace state of the license. Possible values are VL_GRACE_LICENSED, VL_GRACE_UNLICENSED or VL_GRACE_GRACE.</li> <li>▪ How is the license allocated. Possible values are VIZLIC_USER_LIMIT, VIZLIC_NO_USER_LIMIT, VIZLIC_EXCLUSIVE or VIZLIC_SHARED. The licenses used by Channel Recorder will always have VIZLIC_SHARED as value.</li> <li>▪ Date when the license starts. In <a href="#">Unix time</a>.</li> <li>▪ Date when the license expires. In <a href="#">Unix time</a>.</li> </ul>	Capability	Short Name	ID	Service Host Core	VL_ENG_SVCHOST_CORE	1200004	SDI IN MAX	VL_ENG_ING_SDIIP_MAX	1200200	DNxHD Ingest	VL_ENG_PLROY_DNXHD	1200603	UHD for Playback and Ingest	VL_ENG_ING_4KVIDEO	1200400	UHD for Ingest	VL_ING_4KVIDEO	1200404
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UHD for Playback and Ingest	VL_ENG_ING_4KVIDEO	1200400																	
UHD for Ingest	VL_ING_4KVIDEO	1200404																	

Command	Description
	<ul style="list-style-type: none"> <li>▪ Start date of the currently valid support contract of a customer (only filled at application licenses) In <a href="#">Unix time</a>.</li> <li>▪ End date of the currently valid support contract of a customer (only filled at application licenses). In <a href="#">Unix time</a>.</li> <li>▪ The host name of the current license server (contains the local computer name in case of a local license).</li> </ul>
MAIN CRASH [type]	<p>Crashes the service. [type] can either be omitted or be one of:</p> <ul style="list-style-type: none"> <li>• MAIN: Crash the service (same as when omitted).</li> <li>• RECORD: Crash the recording thread.</li> </ul>

## OUTPUT

One output target can be initialized during startup. During execution more than one output can be enabled. For instance you can have VideoOut A and Coder enabled. Please refer to [Channel Recorder Configuration](#) to initialize an output during startup.

Command	Description
OUTPUT GET	Lists the active targets.
OUTPUT LIST	Lists available targets.
OUTPUT START [target]	<p>Starts an output handler for the specified [target]. Several output handlers can be started in parallel, but only one is allowed for each target. Valid targets are:</p> <ul style="list-style-type: none"> <li>• VideoOut: This target requires one additional parameter: [connector]. The [connector] parameter specifies the video output connector of the Matrox board.</li> </ul> <div style="border: 1px solid #ffc107; padding: 5px; margin: 5px 0;"> <p><b>⚠ Example</b> OUTPUT START VideoOut A</p> </div> <ul style="list-style-type: none"> <li>• Coder: This target requires three additional parameters that can be configured via CONFIG SET SHMOUT commands.</li> </ul> <div style="border: 1px solid #ffc107; padding: 5px; margin: 5px 0;"> <p><b>⚠ Example</b> OUTPUT START Coder SHMCoder1 localhost 12345</p> </div>
OUTPUT STOP [target]	Stops the output handler for the specified target.

## RECORD

### Crash Recording / One-time Scheduling

These are specific commands used only for crash and one-time scheduling of recording. These command are available from version 1.0. For scheduling, it is recommended to use `RECORD SET` introduced from version 1.1.

Command	Description
<code>RECORD CLIP [clip name]</code>	Sets the clip name and initializes the recorder. This command does not start recording (see <code>RECORD START</code> ).
<code>RECORD START [duration] [start time] [end mode]</code>	<p>Starts or continues recording. The <code>[duration]</code>, <code>[start time]</code>, and <code>[end mode]</code> parameters are optional. However, the parameters are interdependent as follows:</p> <ul style="list-style-type: none"> <li>• If the parameter <code>[start time]</code> is provided, <code>[duration]</code> is also required.</li> <li>• If the parameter <code>[end mode]</code> is provided, <code>[duration]</code> is also required.</li> </ul> <p>The format for both is <b>Timecode</b> (see <a href="#">Data Types</a>).</p> <ul style="list-style-type: none"> <li>• <code>[duration]</code> and <code>[start time]</code> can be zero timecode, which will then be ignored.</li> <li>• <code>[end mode]</code> can either be <code>STOP</code>, which finalizes and closes the clip, or <code>PAUSE</code> (default behavior), where the clip stays open and can be used for further recording.</li> </ul>
<code>RECORD PAUSE</code>	Pauses recording.
<code>RECORD STOP [end time]</code>	Stops recording and flushes the recorder. A new clip needs to be set afterwards (see <code>RECORD CLIP</code> ). The end time is optional and specifies the timecode when the recording should end.



#### Example

##### Crash recording:

```
RECORD CLIP Crash.mxf
RECORD START
RECORD STOP
```

##### One-time scheduling recording:

```
RECORD CLIP Crash.mxf
RECORD START 600 15:00:00:00
```

## Loop Recording

These are specific commands used only for loop recording. It allows setup, start or stop loop recording. These are introduced from version 1.1.

Command	Description
RECORD LOOP [key=value] ... [key=value] [operation]	<p>Starts, stops or configures the settings for loop recording. Any number of properties can be applied in the form of key-value-pairs. If no property is supplied, and the entry does not yet exist, it is added with the default values. Available keys are:</p> <ul style="list-style-type: none"> <li>• PREFIX: Prefixes to the filename. It will be appended with the timestamp of the start time.</li> <li>• POSTFIX: Postfixes to the filename. Will be appended after the timestamp.</li> <li>• LENGTH: Determines the length of the loop in frames or timecode. At least this amount of frames will reside on the disk. The minimum length value is 00:02:00:00 or the equivalent number of fields / frames.</li> <li>• CHUNK: Sets the size of one chunk in frames or timecode. The chunk size influences the loop length. The minimum chunk value is 00:00:30:00 or the equivalent number of fields / frames.</li> <li>• DISKSIZE: Sets the size of the loop is defined by the size of the clips on the disk. The oldest clips are deleted until the disk size drops below the specified value.</li> <li>• DISKFREE: Sets the size of the loop is defined by the space left on the disk. If it drops below the value, the oldest clips are deleted until at least the specified amount is free again.</li> </ul> <p>[operation] can be START or STOP. When no [operation] is specified then only the settings are set for the specified key-value-pairs. It is possible to specify [key=value] [operation] at the same time but only when [operation] is START.</p> <div style="border: 1px solid #f0e68c; padding: 10px; margin-top: 10px;"> <p><b>⚠ Example</b></p> <pre>RECORD LOOP LENGTH=00:05:00:00 CHUNK=00:00:30:00 PREFIX=Loopy START RECORD LOOP STOP</pre> </div>

## Scheduled Recording

These are specific commands used only for scheduled recording. It allows setup, start or stop scheduled recording.

Command	Description
RECORD SET [name] [key=value] ... [key=value]	<p>Adds a new clip to the timeline, or changes a property of an entry defined by [name]. Any number of properties can be applied in the form of key-value-pairs. If no property is supplied, and the entry does not yet exist, it is added with the default values. Available keys are:</p> <ul style="list-style-type: none"> <li>• FILE_EXTENSION: Enables or disables automatically adding a file extension to the file name. If this feature is turned off, the client application has full control over the file name.</li> <li>• CONTAINER: Sets the container type of the recorded file. With the container type, a default codec is also set. By setting the container type, a valid recording can be started.</li> <li>• CODEC: Sets the codec type of the recorded file. By setting the codec type, default values for bitrate and audio will also be set.</li> <li>• BITRATE: Sets the bitrate for the video encoding. The value can either be applied as bits per second or as Megabits per second. Not all codecs allow changes to the bitrate. In such cases, BITRATE will be ignored.</li> <li>• IN: Sets the default value for the recording in point. The value must be in timecode format: 00:00:00:00.</li> <li>• OUT: Sets the default value for the recording out point. The value must be in timecode format: 00:00:00:00.</li> <li>• DURATION: Sets the default value for the recording duration. The value can be in frames or in timecode format: 00:00:00:00.</li> <li>• STARTTC: Sets the default value for the starting timecode. The value must be in timecode format: 00:00:00:00.</li> <li>• AUDIOCHANNELS: Sets the number of audio channels to record. How many channels are actually recorded depends on the codec and the input signal.</li> <li>• DISKACCESSSIZE: Sets the size of data blocks written to the disk in byte. Postfixes like KiB, Kb, k, etc., are allowed, but must not be separated from the value with a blank space. The default value is 4MiB (4194304 bytes). The minimum value is 32KiB (32768 bytes). KiB and k multiplies the value by 1024. kb multiplies the value by 1000. The same works with <i>m</i> for mega and <i>g</i> for giga.</li> <li>• VBR: Sets whether the recorded file, when the format supports it, should be in VBR (Variable Bit Rate).</li> <li>• TDIR Sets the default behavior of TDIR (Time Delayed Instant Replay).</li> <li>• TDIRINTERVAL: Sets the interval of file header updates in TDIR (Time Delayed Instant Replay) recordings. The value is in seconds and fractions of seconds, meaning both 11.1 and 11.2 are considered valid values. Minimum allowed value is 10s, which is interpreted by Channel Recorder as every frame. The maximum value is 60.0s.</li> </ul>

Command	Description
	<ul style="list-style-type: none"> <li>• UPDATEMT: Updates the modification time of the recorded clip regardless of TDIR value. The initial value is 0n.</li> <li>• STOPATEND: Sets the default behavior at the end of the recording.</li> </ul> <p>For more information regarding these settings possible values and default values check the section CONFIG SET below.</p>
RECORD REMOVE [name] ... [name]	Removes the entry [name]. Multiple [name] arguments can be provided.
RECORD GET [name]   [key] ... [name]   [key]	Lists all entries or shows the properties of an entry. If no parameter is applied, a list of all scheduled clips is returned. Any number of [name] and [key] can be applied. The values of all keys will be returned for all values. If no [key] is provided, all values of the applied keys will be returned and vice versa. This means that if you call RECORD GET with clip names only, the command returns all properties of these clips. When called with properties only, it will return this property for all clips. A special [key] is TIMELINE, which returns all entries in the timeline.

## Common Record Commands

Some of these commands are only used for loop and crash recording, while others are used for all three modes.

Command	Description
RECORD DURATION	If no duration parameter is applied to the command, it <b>returns the timecode relative to the start timecode</b> . If a duration parameter is applied, the duration of an ongoing recording is changed. The duration parameter can be specified as either a number of frames or a timecode (see <a href="#">Data Types</a> ). In the case of loop and schedule recording <b>the value used to set</b> using this command is ignored.
RECORD RESOLUTION GET	Returns the resolution the Channel Recorder is running at.
RECORD STATE	<p>Returns the state the Record Channel service is in. By default state is idle. State is only invalid when the clip was configured incorrectly (e.g. container / codec combination is wrong).</p> <div style="border: 1px solid orange; padding: 10px; margin-top: 10px;"> <p><b>⚠ State flow:</b></p> <pre> Idle -- Start() --&gt; Recording -- Stop() --&gt; Paused   ^                                   `-- Flush() -----+-----` </pre> </div>



Command	Description
RECORD STARTTC [starttc]	Defines which start timecode to use for the recording. If the command is not called before the recording starts, the current timecode is written to the clip. If no value is given, the command returns the current value. This is only used for loop and schedule recording.

## CONFIG

Command	Description
CONFIG GET	Gets the current settings.
CONFIG LIST [argument]	Lists all available variables. The optional [argument] flag provides information specific to the applied argument. Known arguments are: <ul style="list-style-type: none"> <li>• CONTAINER: Displays all known container types.</li> <li>• CODEC: Displays all known codec types.</li> <li>• DUMP: Displays the current dump file setting.</li> <li>• PRIORITY: Displays the current process priority setting.</li> </ul>
CONFIG SET [variable] [value]	Sets the [variable] to [value]. To get all available variables, call CONFIG LIST. Refer also to variables and values for CONFIG SET below.

## CONFIG SET

Variable and values for CONFIG SET command. The CONFIG SET command is used to set the configuration globally, this means that all the recording mode will use these settings by default unless specified otherwise. Only schedule recording can specify different settings for each schedule by specifying them via RECORD SET command.

## IPIN

Variable	Value
IPIN SDIIP ADDRESS [address]	Destination IPv4 address. The default value is 239.0.10.10.
IPIN SDIIP PORT [port]	Destination port. The default value is 50002.
IPIN SDIIP PACKETINTERVALTHRES HOLD [threshold]	Indicates the threshold for generating the time interval between the IP packets alarm on the main IP stream. The range is from 6.4 nanoseconds to 419424.0 nanoseconds in intervals of 6.4 nanoseconds. The default value is 6.4.

Variable	Value
IPIN SDIIP JOINTYPE [type]	Indicates the type of membership request made when IPv4 address is a multicast address. Valid values for [type] are: <ul style="list-style-type: none"> <li>• 0 None</li> <li>• 1 IGMPv2</li> <li>• 2 IGMPv3</li> </ul> The default value is None.
IPIN IPVIDEO [bool]	Enables video flow if True.
IPIN IPVIDEO ADDRESS [address]	Sets destination IPv4 address. The default value is 239.0.10.10.
IPIN IPVIDEO PORT [port]	Sets destination port. The default value is 50002.
IPIN IPVIDEO RTPPAYLOADIDFILTERING [bool]	Uses the RTP Payload ID value to filter the incoming network packets if True.
IPIN IPVIDEO RTPPAYLOADID [id]	Indicates the RTP (Real-time Transfer Protocol) Payload ID to capture. Used when RTP Payload ID is set to True. The default value is 96.
IPIN IPVIDEO PACKETINTERVALTHRESHOLD [threshold]	Indicates the threshold for generating the time interval between the IP packets alarm on the main IP stream. For video, the range is from 6.4 nanoseconds to 419424.0 nanoseconds in intervals of 6.4 nanoseconds. The default value is 6.4.
IPIN IPVIDEO JOINTYPE [type]	Indicates the type of membership request made when IPv4 address is a multicast address. Valid values for [type] are: <ul style="list-style-type: none"> <li>• 0 None</li> <li>• 1 IGMPv2</li> <li>• 2 IGMPv3</li> </ul> The default value is None.
IPIN IPANC FILTERTYPE [type]	Specifies the type of filtering applied to the source list when IGMPv3 is used. Valid values for [type] are: <ul style="list-style-type: none"> <li>• 1 Inclusion</li> <li>• 2 Exclusion</li> </ul> The default value is 1.
IPIN IPAUDIO FILTERLIST [list of ips]	Lists IPv4 addresses to be included or excluded separated by a space character.
IPIN IPAUDIO [bool]	Enables audio flow if True.


Variable	Value
IPIN IPAUDIO ADDRESS [address]	Sets destination IPv4 address. The default value is 239.0.10.12.
IPIN IPAUDIO PORT [port]	Sets destination port. The default value is 50004.
IPIN IPAUDIO RTPPAYLOADIDFILTERING [bool]	Uses the RTP Payload ID value to filter the incoming network packets if True.
IPIN IPAUDIO RTPPAYLOADID [id]	Indicates the RTP (Real-time Transfer Protocol) Payload ID to capture. Used when RTP Payload ID is set to True. The default value is 97.
IPIN IPAUDIO PACKETINTERVALTHRESHOLD [threshold]	Indicates the threshold for generating the time interval between the IP packets alarm on the main IP stream. For audio, the range is from 102.4 nanoseconds to 6710681.6 nanoseconds in intervals of 102.4 nanoseconds. The default value is 102.4.
IPIN IPAUDIO JOINTYPE [type]	Indicates the type of membership request made when IPv4 address is a multicast address. Valid values for [type] are: <ul style="list-style-type: none"> <li>• 0 None</li> <li>• 1 IGMPv2</li> <li>• 2 IGMPv3</li> </ul> The default value is None.
IPIN IPANC FILTERTYPE [type]	Specifies the type of filtering applied to the source list when IGMPv3 is used. Valid values for [type] are: <ul style="list-style-type: none"> <li>• 1 Inclusion</li> <li>• 2 Exclusion</li> </ul> The default value is 1.
IPIN IPAUDIO FILTERLIST [list of ips]	Lists IPv4 addresses to be included or excluded separated by a space character.
IPIN IPAUDIO USETRACKCOUNT [bool]	Uses track count to specify the number of tracks for the incoming IP stream if True. The default value is False.

Variable	Value
IPIN IPAUDIO TRACKCOUNT [count]	<p>Specifies the number of tracks for the incoming IP stream. Valid values for [count] are:</p> <ul style="list-style-type: none"> <li>• 1 Mono</li> <li>• 2 Stereo</li> <li>• 4 4</li> <li>• 8 8</li> <li>• 16 16</li> <li>• 32 32</li> <li>• 64 64</li> </ul> <p>The default value is 8.</p>
IPIN IPAUDIO PACKETDURATION [duration]	<p>Indicates the duration of the incoming audio packet. The packet size (in samples) can be computed using the sample rate (48000 samples/sec) and the packet duration. Valid values for [duration] are:</p> <ul style="list-style-type: none"> <li>• 0 125us</li> <li>• 1 250us</li> <li>• 2 333us</li> <li>• 3 1ms</li> <li>• 4 4ms</li> </ul> <p>The default value is 3.</p>
IPIN IPANC [bool]	Enables ANC flow if True.
IPIN IPANC ADDRESS [address]	Sets destination IPv4 address. The default value is 239.0.10.14.
IPIN IPANC PORT [port]	Sets destination port. The default value is 50006.
IPIN IPANC RTPPAYLOADIDFILTERING [bool]	Uses the RTP Payload ID value to filter the incoming network packets if True. The default value is False.
IPIN IPANC RTPPAYLOADID [id]	Indicates the RTP (Real-time Transfer Protocol) Payload ID to capture. Used when RTP Payload ID is set to true. The default value is 100.
IPIN IPANC PACKETINTERVALTHRESHOLD [threshold]	Indicates the threshold for generating the time interval between the IP packets alarm on the main IP stream. For ancillary data, the range is from 819.2 nanoseconds to 53685452.8 nanoseconds in intervals of 819.2 nanoseconds. The default value is 819.2.

Variable	Value
IPIN IPANC JOINTYPE [type]	Indicates the type of membership request made when IPv4 address is a multicast address. Valid values for [type] are: <ul style="list-style-type: none"> <li>• 0 None</li> <li>• 1 IGMPv2</li> <li>• 2 IGMPv3</li> </ul> The default value is None.
IPIN IPANC FILTERTYPE [type]	Specifies the type of filtering applied to the source list when IGMPv3 is used. Valid values for [type] are: <ul style="list-style-type: none"> <li>• 1 Inclusion</li> <li>• 2 Exclusion</li> </ul> The default value is 1.
IPIN IPANC FILTERLIST [list of ips]	List of IPv4 addresses to be included or excluded separated by a space character.

## SFP

[sfp] can be A or B and it refers to the SFP cage.

 These parameters are board-wide, meaning that any change done will affect any other instances of any application that is using the board. The values for these parameters should be the same for every instance of Channel Recorder that is using the board.

Variable	Value
SFP [sfp] ADDRESS [ip]	Sets IPv4 address. The default value is 10.0.0.3.
SFP [sfp] GATEWAY [ip]	Sets IPv4 gateway. The default value is 10.0.0.1.
SFP [sfp] NETMASK [ip]	Sets IPv4 netmask. The default value is 255.255.255.0.
SFP [sfp] TOSDSCP [number]	Specifies a datagram's priority and request a route for low-delay, high-throughput, or highly-reliable service. The default value is 0.
SFP [sfp] DELAYMECHANISM [mechanism]	Specifies the type of network delay mechanism to use for the time server connection. Valid values for [mechanism] are: <ul style="list-style-type: none"> <li>• 1 End-to-End</li> <li>• 2 Peer-to-Peer</li> </ul> The default value is End-to-End.

Variable	Value
SFP [sfp] IPMODE [mode]	Specifies the type of internet protocol mode to use for the time server connection. Valid values for [mode] are: <ul style="list-style-type: none"> <li>• 1 Multicast</li> <li>• 2 Unicast</li> <li>• 3 Hybrid</li> </ul> The default value is Multicast.
SFP [sfp] MASTERCLOCKDOMAINNUMBER [number]	Specifies the master clock domain number. The default value is 127.
SFP [sfp] JOINTYPE [type]	Indicates the type of membership request made when IPv4 address is a multicast address. Valid values for [type] are: <ul style="list-style-type: none"> <li>• 0 None</li> <li>• 1 IGMPv2</li> <li>• 2 IGMPv3</li> </ul> The default value is None.
SFP [sfp] FILTERTYPE [type]	Specifies the type of filtering applied to the source list when IGMPv3 is used. Valid values for [type] are: <ul style="list-style-type: none"> <li>• 1 Inclusion</li> <li>• 2 Exclusion</li> </ul> The default value is 1.
SFP [sfp] FILTERLIST [list of ips]	List of IPv4 addresses to be included or excluded separated by a space character.

## 2059

Variable	Value
2059 BESTMASTERSELECTION	Specifies the BMCA (Best Master Clock Algorithm) used to select the genlock over IP signal.

## Process

Variable	Value
PRIORITY [priority]	<p>Sets the process priority class. The values correspond to the Windows process priority. Valid values for [priority] are:</p> <ul style="list-style-type: none"> <li>• IDLE</li> <li>• BELOW_NORMAL</li> <li>• NORMAL</li> <li>• ABOVE_NORMAL</li> <li>• HIGH</li> <li>• REALTIME</li> </ul> <p>The default value is REALTIME.</p>

## Capture

All the configuration below requires a channel restart. This can be achieved by restarting the service or by calling [MAIN CONNECTOR SELECT](#) while Channel Recorder is running.

Variable	Value
CLIP_ROOT [path]	Sets the root folder for the captured files. If the filename in command RECORD CLIP does not contain a absolute path name, the CLIP_ROOT is prepended.
UHD [bool]	Enables detection of UHDTV signals. When set to on, the Channel Recorder scans the signal resolution on the four corresponding input connectors. If four 3G signals are detected, they are interpreted as one UHDTV signal. When set to OFF, the four connectors are treated as separate 3G signals. This flag must be set before selecting a connector using <a href="#">MAIN CONNECTOR SELECT</a> . The default value is off.
V210 [bool]	Uses the 10-bit surface format V210. This is needed to record XAVC. It also increases performance when for example recording ProRes. This surface format is not supported on the Matrox X.mio2+. This flag must be set before selecting a connector using <a href="#">MAIN CONNECTOR SELECT</a> . The default value is off.
COLORIMETRY	Specifies the colorimetry to be used to be able to record in HDR. By default, ITUR_BT_601 will be used for SD resolution and ITUR_BT_709 for HD and UHD resolution.
VBI [bool]	Turns off VBI recording. The default value is on. This flag must be set before selecting a connector using <a href="#">MAIN CONNECTOR SELECT</a> .

Variable	Value
RESOLUTION [resolution]	<p>Sets the default resolution. Format of [resolution] is: WxHs@F, WxHs@FM, Hs@F, Hs@FM, NTSC, PAL With w = Width, H = Height, s = Scanmode, F = Framerate, and M = Drop Frame Flag. Possible values for s are:</p> <ul style="list-style-type: none"> <li>· i or I: Interlaced</li> <li>· p or P: Progressive</li> <li>· psf or PSF: Progressive segmented</li> </ul> <p>M is optional, and as an alternative, you can use framerate with two decimal points (e.g. 30M = 29.97). Examples: NTSC, PAL, 1280x720p@50, 1920X1080P@50, 1280x720p@60M, 1280x720p@59.97, 720p50, 720P60M, 1080P50. This flag must be set before selecting a connector using <a href="#">MAIN CONNECTOR SELECT</a>. The default value is NTSC.</p>
ALIASNODESOURCE [source]	Specifies the source of the alias node which specify from which output or input connector the application will record.

## Test

Variable	Value
PERFORMANCETESTMODE [mode]	Sets the number of audio channels to record. How many channels are actually recorded depends on the codec and the input signal.

## Manager

Variable	Value
RINGBUFFERSIZE [size]	Sets the size of the capture ringbuffer. The default value is 60.
TIMEOUT [timecode]	Sets the timeout for the capture operation in milliseconds. If the recorder reports timeout errors, increasing the timeout could help. Refer to <a href="#">Data Types</a> for information on time code formatting.

## Persistence

Variable	Value
PERSISTENCE [bool]	Turns on persistence for operational data like the config and the timeline. The default value is Off.



Variable	Value
PERSISTENCEINTERVAL [seconds]	Sets the interval, at which the data is written to the disk. The value is in seconds and fractions of seconds, meaning both 0.1 and 1.0 are considered valid values. A value of 0 means that every change is written. The default value is 0.

## Log

Variable	Value
TCLOGINTERVAL [frames timecode]	Specifies the interval at which the current timecode is logged. The value can either be a number of frames or a timecode-based relative value. The default value is 0, which means that every full second is logged.



## Clip

For the following parameters to take effect Channel Recorder does not need to be restarted, however, a new recording must be issued.

Variable	Value
FILE_EXTENSION [bool]	Enables or disables automatically adding a file extension to the file name. If this feature is turned off, the client application has full control over the file name. The default value is 0n. Please refer to <a href="#">Data Types</a> for details on accepted boolean values.

Variable	Value
CONTAINER [container type]	<p>Sets the container type of the recorded file. With the container type, a default codec is also set. By setting the container type, a valid recording can be started. Available container types are:</p> <ul style="list-style-type: none"> <li>• AVCINTRAMXF</li> <li>• AVI</li> <li>• DVCPRAMXF</li> <li>• MOV</li> <li>• MXF</li> <li>• XAVCMXF</li> <li>• XDCAMMXF</li> <li>• DNxHDMXF</li> </ul> <div style="border: 1px solid #f9e79f; padding: 10px; margin-top: 10px;"> <p><b>⚠ Note:</b> To utilize the TDIR capabilities of the <b>ProRes</b> codec with a <b>.mov</b> container in Viz Engine, you must use the <b>.Ref</b>-file</p> </div> <div style="border: 1px solid #f9e79f; padding: 10px; margin-top: 10px;"> <p><b>⚠ Note:</b> When container is XDCAMMXF the default codec will be XDCam which is HD422. The default bitrate for XDCam, XDCamEX and XDCamHD are 50, 35 and 35 or 25 respectively. XDCamEX will output 1920x1080 clip at 35 Mbps and XDCamHD will output 1440x1080 clip at 35 Mbps (VBR) or 25 Mbps (CBR) depending on the bitrate chosen. Refer to the <a href="#">Supported Codecs</a> for further details.</p> </div>

Variable	Value
CODEC [codec type]	<p>Sets the codec type of the recorded file. By setting the codec type, default values for bitrate and audio will also be set. These values can be changed (Refer to the <a href="#">Supported Codecs</a> for further details). Not all codec types are available with all container types. Available codec types are:</p> <ul style="list-style-type: none"> <li>• DvCam</li> <li>• DvCPro</li> <li>• Dv50</li> <li>• IFrame</li> <li>• XDCam</li> <li>• XDCamEX</li> <li>• XDCamHD</li> <li>• AVCIntra50</li> <li>• AVCIntra100</li> <li>• ProRes</li> <li>• XAVC</li> <li>• DNxHD</li> </ul> <div style="border: 1px solid #f9e79f; padding: 5px; margin-top: 10px;"> <p><b>⚠ Note:</b> To utilize the TDIR capabilities of the <b>ProRes</b> codec with a <b>.mov</b> container in Viz Engine, you must use the <b>.Ref</b>-file.</p> </div> <div style="border: 1px solid #f9e79f; padding: 5px; margin-top: 10px;"> <p><b>⚠ Note:</b> When container is XDCAMMXF the default codec will be XDCam which is HD422. The default bitrate for XDCam, XDCamEX and XDCamHD are 50, 35 and 35 respectively. XDCamEX will output 1920x1080 clip at 35 Mbps and XDCamHD will output 1440x1080 clip at 35 Mbps (VBR) or 25 Mbps (CBR) depending on the bitrate chosen. Refer to the <a href="#">Supported Codecs</a> for further details.</p> </div>
BITRATE [rate]	Sets the bitrate for the video encoding. The value can either be applied as bits per second or as Megabits per second. Not all codecs allow changes to the bitrate. In such cases, BITRATE will be ignored.
IN [timecode]	Sets the default value for the recording start time. The initial value is empty.
OUT [timecode]	Sets the default value for the recording stop time. The initial value is empty.
DURATION [frames timecode]	Sets the default value for the recording duration. The initial value is 0. When applying a duration to the RECORD START command, the default value is ignored but not changed. Refer to <a href="#">Data Types</a> for information on time code formatting.
STARTTC [timecode]	Sets the default value for the starting timecode. The value must be in timecode format: 00:00:00:00.

Variable	Value
AUDIOCHANNELS [channels]	Sets the number of audio channels to record. How many channels are actually recorded depends on the codec and the input signal.
DISKACCESSSIZE [size]	<p>Sets the size of data blocks written to the disk in byte. Postfixes like KiB, Kb, k, etc., are allowed, but must not be separated from the value with a blank space (see example).</p> <ul style="list-style-type: none"> <li>• The default value is 4 MiB (4194304 bytes).</li> <li>• The minimum value is 32 KiB (32768 bytes).</li> <li>• KiB and k multiplies the value by 1024. kb multiplies the value by 1000.</li> <li>• The same works with m for mega and g for giga.</li> </ul> <div style="border: 1px solid #ffc107; padding: 5px; margin-top: 10px;"> <p> <b>Example</b> CONFIG SET DISKACCESSSIZE 1024KiB</p> </div>
VBR [bool]	Activates variable bit rates for codecs which support it (currently XAVC only). The default setting is Off.
TDIR [bool]	Sets the default behavior of TDIR (Time Delayed Instant Replay). The default setting is On.
TDIRINTERVAL [time]	<p>Sets the interval of file header updates in TDIR recordings. The value is in seconds and fractions of seconds, meaning both 0.1 and 1.0 are considered valid values. Minimum allowed value is 0.001, which is interpreted by Channel Recorder as every frame. A typical value would be 10.0, the default value is 3.0.</p> <div style="border: 1px solid #dc3545; padding: 5px; margin-top: 10px;"> <p> <b>Warning:</b> In order to secure proper operation with Viz Engine, this value must <b>not</b> exceed 10.0.</p> </div>
UPDATEMT [bool]	Updates the modification time of the recorded clip regardless of TDIR value. The initial value is On.
STOPATEND [bool]	Sets the default behavior at the end of the recording.

## Clock Type

Variable	Value
CLOCKTYPE [type]	<p>Defines the type of clock used. Valid values for [type] are:</p> <ul style="list-style-type: none"> <li>• INPUT</li> <li>• GENLOCK</li> </ul> <div style="border: 1px solid #ffc107; padding: 5px; margin-top: 10px;"> <p><b>⚠ Note:</b> INPUT clock should be use if automatic detection of input is a requirement.</p> </div>
GENLOCKFLYWHEEL [bool]	Uses the flywheel in case of genlock loss, if genlock is used. The default value is off.
FLYWHEELTIMEOUT [timeout]	Sets the timeout for the genlock flywheel in seconds. This defines the time until the genlock switches to free run, as well as the maximum time the flywheel can use to resynchronize. The initial value is 5.0.

## IPOUT

Variable	Value
IPOUT SDIIP ADDRESS [address]	Destination IPv4 address. The default value is 239.0.12.10.
IPOUT SDIIP PORT [port]	Destination port. The default value is 50002.
IPOUT IPVIDEO [bool]	Enables video flow if True.
IPOUT IPVIDEO ADDRESS [address]	Sets destination IPv4 address. The default value is 239.0.12.10.
IPOUT IPVIDEO PORT [port]	Sets destination port. The default value is 50002.
IPOUT IPVIDEO RTPPAYLOADID [id]	Indicates the RTP (Real-time Transfer Protocol) Payload ID to capture. Used when RTP Payload ID is set to true. The default value is 97.
IPOUT IPAUDIO [bool]	Enables audio flow if True.
IPOUT IPAUDIO ADDRESS [address]	Sets destination IPv4 address. The default value is 239.0.12.12.
IPOUT IPAUDIO PORT [port]	Sets destination port. The default value is 50004.

Variable	Value
IPOUT IPAUDIO RTPPAYLOADID [id]	Indicates the RTP (Real-time Transfer Protocol) Payload ID to capture. Used when RTP Payload ID is set to true. The default value is 98.
IPOUT IPAUDIO USETRACKCOUNT [bool]	Uses track count to specify the number of tracks for the outgoing IP stream if True. The default value is False.
IPOUT IPAUDIO TRACKCOUNT [count]	Specifies the number of tracks for the incoming IP stream. Valid values for [count] are: <ul style="list-style-type: none"> <li>• 1 Mono</li> <li>• 2 Stereo</li> <li>• 4 4</li> <li>• 8 8</li> <li>• 16 16</li> <li>• 32 32</li> <li>• 64 64</li> </ul> The default value is 8.
IPOUT IPAUDIO PACKETDURATION [duration]	Indicates the duration of the incoming audio packet. The packet size (in samples) can be computed using the sample rate (48000 samples/sec) and the packet duration. Valid values for [duration] are: <ul style="list-style-type: none"> <li>• 0 125us</li> <li>• 1 250us</li> <li>• 2 333us</li> <li>• 3 1ms</li> <li>• 4 4ms</li> </ul> The default value is 3.
IPOUT IPANC [bool]	Enables ANC flow if True.
IPOUT IPANC ADDRESS [address]	Sets destination IPv4 address. The default value is 239.0.12.14.
IPOUT IPANC PORT [port]	Sets destination port. The default value is 50006.
IPOUT IPANC RTPPAYLOADID [id]	Indicates the RTP (Real-time Transfer Protocol) Payload ID to capture. Used when RTP Payload ID is set to True. The default value is 100.
IPOUT IPANC SMPTE352 [bool]	Enables SMPTE 352 packets if True. The default value is False.

## SHMOUT

Variable	Value
SHMOUT SHMNAME [name]	Sets shared memory name. The default value is SHM_CR.
SHMOUT ADDRESS [address]	Sets destination IPv4 address. The default value is 127.0.0.1.
SHMOUT PORT [port]	Sets destination port. The default value is 10002.

## COMMUNICATION

Command	Description
COMMAND_HANDLER PORT SET [port]	Sets the port of the command interface. A port can only be set once.
COMMAND_HANDLER DUMP	Prints this list of available commands.
MVCP PORT [port]	Sets the port for the MVCP communication. This command is required to initialize MVCP.

## EXIT

Command	Description
exit, EXIT	Stops all channels, clean up the hardware and stop the service.

### 3.3.3 Data Types

#### Booleans

Booleans are a data type with only two possible values; true or false. The Channel Recorder accepts YES, NO, TRUE, FALSE, ON, or OFF as boolean values, where:

- YES, TRUE and ON are positive values switching a flag on, and
- NO, FALSE and OFF are negative values switching a flag off.

#### Timecodes

Timecodes in Channel Recorder have the form <hh>:<mm>:<ss>:<ff>, where

- <hh> represents the hour in 24 hour format,
- <mm> is minutes,
- <ss> is seconds, and
- <ff> refers to the frame number, according to the frame rate.

**⚠ Example:** A zero timecode looks like this: 00:00:00:00.

### 3.3.4 Files and Directories

The Channel Recorder uses various files and directories while running.

Description	Type	Location
Installation Directory	Directory	<viz install folder>\ServiceHost
ProgramData Directory	Directory	%ProgramData%\vizrt\ServiceHost
Log	File	<instance_name>.log
	Path	%ProgramData%\vizrt\ServiceHost\<instance_name>.log
Configuration	File	<instance_name>.conf
	Path	%ProgramData%\vizrt\ServiceHost\<instance_name>.conf

### 3.3.5 Supported Multiport Video Computer Protocol (MVCP) Commands

Channel Recorder supports the following sets of Multiport Video Computer Protocol (MVCP) commands:

#### Supported Global MVCP Commands

Command	Function
BYE	Closes the current connection.
MON	Initiates event monitoring mode.
PLS	Returns the supported media ports.
UADD	Creates a new unit.



Command	Function
ULS	Returns the existing VST units.

## Supported Unit MVCP Commands

Command	Function
CCST	Gets the current status of the VST Clip Cache (the numbers displayed are bytes used/available).
CUER	Cues recording of the unit's currently loaded clip.
LOAD	Loads a clip into a unit.
SET	Sets controls for the unit: <b>vtr.media.clip.format</b> : Allowed values: [movie/stream/mxf] <b>vtr.media.video.input.compression.type</b> [mpg2] <b>vtr.media.mpeg.bit_rate</b> : Sets the recording bitrate. <b>vtr.media.mpeg.imx</b> : Enables IMX recording. <b>vtr.media.audio.input.channels</b> : Sets the number of audio channels to record. <b>vtr.media.audio.input.sample.width</b> : Sets audio bits per sample. <b>vtr.media.video.standard</b> : The command is understood, however, as the video standard is determined by the input signal, it does not get changed. <b>vtr.media.input.trigger.duration.out</b> : Sets the duration of the recording. <b>vtr.media.clip.start.mode</b> : Allowed values: [time-of-day][vitc][ltc]
STOP	Stops playback or recording.
UCLS	Closes a unit.
UNLD	Unloads the unit's currently loaded clip.
USTA	Returns the status of a unit.

## Example MVCP Commands sent by Viz Dart

```

UADD CS_ENCODER1 * SHAR dart
DISC global U1
UERR U1
SET U1 MED vtr.media.clip.format "movie/stream/mxf"
SET U1 MED vtr.media.video.input.compression.type "mpeg2-ibp-422p@hl"
SET U1 MED vtr.media.audio.input.channels 4
SET U1 MED vtr.media.audio.input.sample.width 16
LOAD U1 LUTAS_-_GLORY_62_-_SPORTV.mxf IN CRTE NOEX
SET U1 MED vtr.media.clip.start.mode "time-of-day"
SET U1 MED vtr.media.input.trigger.duration.out "04:00:00:00"
CUER U1
@14:50:00:00 REC U1
USTA U1
UCLS U1
UNLD U1

```

### See Also

- The [Video Server Toolkit Developer's Guide](#) on ftp.sgi.com ([alternate link](#)).

## 3.3.6 Supported Codecs

The Channel Recorder supports the following containers and codecs.

**Note:** If a combination of CODEC / CONTAINER / RESOLUTION is not supported, Channel Recorder will flood the logs with error. If this happens stop the recording using RECORD STOP. Please make sure that the mentioned combination are supported by consulting the tables below.

**Note:** Only the containers AVCINTRAMXF, DVCPROMXF, XDCAMMXF, XAVCMXF support capturing of closed captions. The closed captions must be part of SMPTE 334M CDP. The captured close caption will be found in the recorded clip in the wrapper according to SMPTE 436M and in the actual MXF essence.

**Note:** The examples below are not exhaustive. The parameter that can be changed within the example are in bold>.

- [PAL Codecs](#)
  - [MPEG-IFrame](#)
  - [DVCAM](#)
  - [DVCPRO](#)
  - [XDCAM](#)
- [NTSC Codecs](#)

- MPEG IFrame
- DVCAM
- DVCPRO
- XDCAM
- 720p50 and 720p59.94 (60M) Codecs
  - MPEG-IFrame
  - DVCPRO HD
  - XDCAM HD 422
  - XDCAM EX HQ
  - AVC-Intra
  - ProRes
  - DNxHD
- 1080i25 and 1080i29.97 (30M) Codecs
  - MPEG-IFrame
  - DVCPRO HD
  - XDCAM HD 422
  - XDCAM HD LP
  - XDCAM HD SP
  - XDCAM HD HQ
  - XDCAM EX HQ
  - AVC-Intra
  - ProRes
  - DNxHD
- 1080p50 and 1080p59.94 (60M) Codecs
  - AVC-Intra
  - MPEG-IFrame
  - ProRes
  - DNxHD
- 2160p50 and 2160p59.94 (60M) Codecs
  - XAVC

## PAL Codecs

## MPEG-IFrame

Container	Codec	Features	Audio	VizSend Example
.avi	MPEG2-IFrame422 720x576	Alpha: No Bitrate: 10-50 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: Yes	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC IFrame CONFIG SET CONTAINER AVI CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START

## DVCAM

Container	Codec	Features	Audio	VizSend Example
.avi	DV/ DVCAM 4:2:0 720x576	Alpha: No Bitrate: 25 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: Yes CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCam CONFIG SET CONTAINER AVI CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START

Container	Codec	Features	Audio	VizSend Example
.mov	DVCAM 4:2:0 720x576	Alpha: No Bitrate: 25 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: N/A CC: No	No Audio  PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCam CONFIG SET CONTAINER MOV CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START
.mxf Panasonic P2(OP-Atom)	DVCAM 4:2:0 720x576	Alpha: No Bitrate: 25 Bit depth: 8 VBI: N/A Timecode: Yes TDIR: Yes CC: No	No Audio	CONFIG SET CODEC DvCam CONFIG SET CONTAINER MXF RECORD CLIP clip RECORD START

## DVCPRO

Container	Codec	Features	Audio	VizSend Example
.avi	DVCPRO 4:1:1 720x576	Alpha: No Bitrate: 25 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: Yes CC: No	No Audio  PCM: - 2 ch: 24 in 32bit; 48kHz; - 4 ch: 24 in 32bit; 48kHz; - 8 ch: 24 in 32bit; 48kHz; - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCPro  CONFIG SET CONTAINER AVI CONFIG SET BITRATE 25 CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START

Container	Codec	Features	Audio	VizSend Example
.avi	DVCPRO 50 4:2:2 720x576	Alpha: No Bitrate: 50 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: Yes CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCPro CONFIG SET CONTAINER AVI CONFIG SET BITRATE 50 CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START
.mov	DVCPRO 4:1:1 720x576	Alpha: No Bitrate: 25 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: N/A CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCPro CONFIG SET CONTAINER MOV CONFIG SET BITRATE 25 CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START
.mov	DVCPRO 50 4:2:2 720x576	Alpha: No Bitrate: 50 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: N/A CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCPro CONFIG SET CONTAINER MOV CONFIG SET BITRATE 50 CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START

Container	Codec	Features	Audio	VizSend Example
.mxf (OP1a)	DVCPRO 4:1:1 720x576	Alpha: No Bitrate: 25 Bit depth: 8 VBI: N/A Timecode: Yes TDIR: Yes CC: Yes	PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCPro CONFIG SET CONTAINER DVCROMXF  CONFIG SET BITRATE 25 CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START
.mxf (OP1a)	DVCPRO 50 4:2:2 720x576	Alpha: No Bitrate: 50 Bit depth: 8 VBI: N/A Timecode: Yes TDIR: Yes CC: Yes	PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCPro CONFIG SET CONTAINER DVCROMXF  CONFIG SET BITRATE 50  CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START
.mxf Panasonic P2 (OP-Atom)	DVCPRO 4:1:1 720x576	Alpha: No Bitrate: 25 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: Yes CC: No	No Audio	CONFIG SET CODEC DvCPro CONFIG SET CONTAINER MXF CONFIG SET BITRATE 25  RECORD CLIP clip RECORD START
.mxf Panasonic P2 (OP-Atom)	DVCPRO 50 4:2:2 720x576	Alpha: No Bitrate: 50 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: Yes CC: No	No Audio	CONFIG SET CODEC DvCPro CONFIG SET CONTAINER MXF CONFIG SET BITRATE 50 RECORD CLIP clip RECORD START

## XDCAM

Container	Codec	Features	Audio	VizSend Example
.mxf XDCAM (OP1a)	D10 (IMX) 4:2:2 720x608	Alpha: No Bitrate: 50 Bit depth: 10 VBI: required Timecode: required TDIR: Yes CC: Yes	AES3: - 4ch: 24 in 32bit; 48kHz	CONFIG SET CODEC XDCam CONFIG SET CONTAINER XDCAMMXF RECORD CLIP clip RECORD START

## NTSC Codecs

## MPEG IFrame

Container	Codec	Features	Audio	VizSend Example
.avi	MPEG2-IFrame422 720x480	Alpha: No Bitrate: 10-50 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: Yes CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC IFrame CONFIG SET CONTAINER AVI CONFIG SET BITRATE 50 CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START



## DVCAM

Container	Codec	Features	Audio	VizSend Example
.avi	DV/ DVCAM 4:1:1 720x480	Alpha: No Bitrate: 25 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: Yes CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCam CONFIG SET CONTAINER AVI CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START
.mov	DVCAM 4:1:1 720x480	Alpha: No Bitrate: 25 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: N/A CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCam CONFIG SET CONTAINER MOV CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START
.mxf Panasonic P2 (OP-Atom)	DVCAM 4:1:1 720x480	Alpha: No Bitrate: 25 Bit depth: 8 VBI: N/A Timecode: Yes TDIR: N/A CC: No	No Audio	CONFIG SET CODEC DvCam CONFIG SET CONTAINER MXF RECORD CLIP clip RECORD START

## DVCPRO

Container	Codec	Features	Audio	VizSend Example
.avi	DVCPRO 4:1:1 720x480	Alpha: No; Bitrate: 25; Bit depth: 8; VBI: N/A; Timecode: N/A TDIR: Yes CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz; - 4 ch: 24 in 32bit; 48kHz; - 8 ch: 24 in 32bit; 48kHz; - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCPro CONFIG SET CONTAINER AVI CONFIG SET AUDIOCHANNELS 8 CONFIG SET BITRATE 25 RECORD CLIP clip RECORD START
.avi	DVCPRO 50 4:2:2 720x480	Alpha: No; Bitrate: 50; Bit depth: 8; VBI: N/A; Timecode: N/A TDIR: Yes CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCPro CONFIG SET CONTAINER AVI CONFIG SET AUDIOCHANNELS 8 CONFIG SET BITRATE 50 RECORD CLIP clip RECORD START
.mov	DVCPRO 4:1:1 720x480	Alpha: No Bitrate: 25 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: N/A CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCPro CONFIG SET CONTAINER MOV CONFIG SET AUDIOCHANNELS 8 CONFIG SET BITRATE 25 RECORD CLIP clip RECORD START

Container	Codec	Features	Audio	VizSend Example
.mov	DVCPRO 50 4:2:2 720x480	Alpha: No Bitrate: 50 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: N/A CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCPro CONFIG SET CONTAINER MOV CONFIG SET AUDIOCHANNELS 8 CONFIG SET BITRATE 50 RECORD CLIP clip RECORD START
.mxf (OP1a)	DVCPRO 4:1:1 720x480	Alpha: No Bitrate: 25 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: Yes CC: Yes	PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCPro CONFIG SET CONTAINER DVCPROMXF CONFIG SET AUDIOCHANNELS 8 CONFIG SET BITRATE 25 RECORD CLIP clip RECORD START
.mxf (OP1a)	DVCPRO 50 4:2:2 720x480	Alpha: No Bitrate: 50 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: Yes CC: Yes	PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCPro CONFIG SET CONTAINER DVCPROMXF CONFIG SET AUDIOCHANNELS 8 CONFIG SET BITRATE 50 RECORD CLIP clip RECORD START

Container	Codec	Features	Audio	VizSend Example
.mxf Panasonic P2 (OP-Atom)	DVCPRO 4:1:1 720x480	Alpha: No Bitrate: 25 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: Yes CC: No	No Audio	CONFIG SET CODEC DvCPro CONFIG SET CONTAINER MXF CONFIG SET BITRATE 25 RECORD CLIP clip RECORD START
.mxf Panasonic P2 (OP-Atom)	DVCPRO 50 4:2:2 720x480	Alpha: No Bitrate: 50 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: Yes CC: No	No Audio	CONFIG SET CODEC DvCPro CONFIG SET CONTAINER MXF CONFIG SET BITRATE 50 RECORD CLIP clip RECORD START

## XDCAM

Container	Codec	Features	Audio	VizSend Example
.mxf XDCAM (OP1a)	D10 (IMX) 4:2:2 720x512	Alpha: No Bitrate: 50 Bit depth: 10 VBI: Required Timecode: Required TDIR: Yes CC: Yes	AES3: - 4 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC XDCam CONFIG SET CONTAINER XDCAMMXF RECORD CLIP clip RECORD START

## 720p50 and 720p59.94 (60M) Codecs

## MPEG-IFrame

Container	Codec	Features	Audio	VizSend Example
.avi	MPEG2-IFrame422 1280x720	Alpha: No Bitrate: 50-300 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: Yes CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC IFrame CONFIG SET CONTAINER AVI CONFIG SET BITRATE 50 CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START

## DVCPRO HD

Container	Codec	Features	Audio	VizSend Example
.avi	DVCPRO HD 1280x720	Alpha: No Bitrate: 100 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: Yes CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCPro CONFIG SET CONTAINER AVI CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START

Container	Codec	Features	Audio	VizSend Example
.mov	DVCPRO HD 960x720	Alpha: No Bitrate: 100 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: N/A CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCPro CONFIG SET CONTAINER MOV CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START
.mxf (OP1a)	DVCPRO HD 960x720	Alpha: No Bitrate: 100 Bit depth: 8 VBI: N/A Timecode: Yes TDIR: Yes CC: Yes	PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCPro CONFIG SET CONTAINER DVCPROMXF CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START
.mxf Panasonic P2 (OP-Atom)	DVCPRO HD 960x720	Alpha: No Bitrate: 100 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: Yes CC: No	No Audio	CONFIG SET CODEC DvCPro CONFIG SET CONTAINER MXF RECORD CLIP clip RECORD START

## XDCAM HD 422

Container	Codec	Features	Audio	VizSend Example
.mxf (OP1a)	XDCAM HD 422 1280x720	Alpha: No Bitrate: 50 Bit depth: 8 VBI: N/A Timecode: Yes TDIR: Yes CC: Yes	No Audio PCM: - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC XDCam CONFIG SET CONTAINER XDCAMMXF CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START

## XDCAM EX HQ

Container	Codec	Features	Audio	VizSend Example
.mxf (OP1a)	XDCAM EX HQ 1280x720	Alpha: No Bitrate: 35 Bit depth: 8 VBI: N/A Timecode: Yes TDIR: Yes CC: Yes	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC XDCamEX CONFIG SET CONTAINER XDCAMMXF RECORD CLIP clip RECORD START

## AVC-Intra

Container	Codec	Features	Audio	VizSend Example
.mxf (OP1a)	AVCIntra Class 50 960x720	Alpha: No Bitrate: 50 Bit depth: 8 VBI: N/A Timecode: Yes TDIR: Yes CC: Yes	PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC AVCIntra100 CONFIG SET CONTAINER AVCINTRAMXF CONFIG SET BITRATE 100 CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START

Container	Codec	Features	Audio	VizSend Example
.mxf (OP1a)	AVCIntra Class 100 1280x720	Alpha: No Bitrate: 100 Bit depth: 8 VBI: N/A Timecode: Yes TDIR: Yes CC: Yes	PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC AVCIntra100 CONFIG SET CONTAINER AVCINTRAMXF CONFIG SET BITRATE 100 CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START
.mxf Panasonic P2 (OP- Atom)	AVCIntra Class 50 960x720	Alpha: No Bitrate: 50 Bit depth: 8 VBI: N/A Timecode: N/ A TDIR: Yes CC: No	No Audio	CONFIG SET CODEC AVCIntra50 CONFIG SET CONTAINER AVCINTRAMXF CONFIG SET BITRATE 50 RECORD CLIP clip RECORD START
.mxf Panasonic P2 (OP- Atom)	AVCIntra Class 100 1280x720	Alpha: No Bitrate: 100 Bit depth: 8 VBI: N/A Timecode: N/ A TDIR: Yes CC:No	No Audio	CONFIG SET CODEC AVCIntra100 CONFIG SET CONTAINER AVCINTRAMXF CONFIG SET BITRATE 100 RECORD CLIP clip RECORD START



## ProRes

Container	Codec	Features	Audio	VizSend Example
.mov	I-Frame 4:2:2 1280x720	Alpha: No Bitrate: 100 (LT), 147, 220 (HQ) Bit depth: 10 VBI: N/A Timecode: N/ A TDIR: Yes, with .Ref file CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC ProRes CONFIG SET CONTAINER MOV CONFIG SET BITRATE 100 CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START

## DNxHD

Container	Codec	Features	Audio	VizSend Example
.mxf (OP1a)	DNxHD (50) 120, 175 DNxHD (59.94) 145, 220 1280x720	Alpha: No Bitrate (50): 120,175 Bitrate (59.94): 145,220 Bit depth: 8 VBI: N/A Timecode: N/ A CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DNxHD CONFIG SET CONTAINER DNXHDMXF CONFIG SET BITRATE 120 CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START

Container	Codec	Features	Audio	VizSend Example
.mxf (OP1a)	DNxHD (50) 175x  DNxHD (59.94) 220x  1280x720	Alpha: No  Bitrate (50): 175x  Bitrate (59.94): 220x  Bit depth: 10 VBI: N/A  Timecode: N/ A  CC: No	No Audio  PCM:  - 2 ch: 24 in 32bit; 48kHz  - 4 ch: 24 in 32bit; 48kHz  - 8 ch: 24 in 32bit; 48kHz  - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DNxHD  CONFIG SET CONTAINER DNXHDMXF  CONFIG SET BITRATE 175  CONFIG SET AUDIOCHANNELS 8  RECORD CLIP clip  RECORD START
.mxf Panasonic P2 (OP- Atom)	DNxHD (50) 120, 175  DNxHD (59.94) 145, 220  1280x720	Alpha: No  Bitrate (50): 120,175  Bitrate (59.94): 145,220  Bit depth: 8 VBI: N/A  Timecode: N/ A  CC: No	No Audio	CONFIG SET CODEC DNxHD  CONFIG SET CONTAINER MXF  CONFIG SET BITRATE 120  CONFIG SET AUDIOCHANNELS 8  RECORD CLIP clip  RECORD START
.mxf Panasonic P2 (OP- Atom)	DNxHD (50) 175x  DNxHD (59.94) 220x  1280x720	Alpha: No  Bitrate (50): 175x  Bitrate (59.94): 220x  Bit depth: 10 VBI: N/A  Timecode: N/ A  CC: No	No Audio	CONFIG SET CODEC DNxHD  CONFIG SET CONTAINER MXF  CONFIG SET BITRATE 175  CONFIG SET AUDIOCHANNELS 8  RECORD CLIP clip  RECORD START

## 1080i25 and 1080i29.97 (30M) Codecs

## MPEG-IFrame

Container	Codec	Features	Audio	VizSend Example
.avi	MPEG2-IFrame422 1920x1080	Alpha: No Bitrate: 50-300 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: Yes CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC IFrame CONFIG SET CONTAINER AVI CONFIG SET BITRATE 50 CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START

## DVCPRO HD

Container	Codec	Features	Audio	VizSend Example
.avi	DVCPRO HD (25) 1920x1080 DVCPRO HD (29.97) 1260x1080	Alpha: No Bitrate: 100 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: Yes CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvcPro CONFIG SET CONTAINER AVI CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START

Container	Codec	Features	Audio	VizSend Example
.mov	DVCPRO HD (25) 1920x1080  DVCPRO HD (29.97) 1260x1080	Alpha: No Bitrate: 100 Bit depth: 10 VBI: N/A Timecode: N/A TDIR: Yes CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCPro  CONFIG SET CONTAINER MOV  CONFIG SET AUDIOCHANNELS 8  RECORD CLIP clip RECORD START
.mxf Panasonic P2 (OP-Atom)	DVCPRO HD (25) 1920x1080  DVCPRO HD (29.97) 1260x1080	Alpha: No Bitrate: 100 Bit depth: 10 VBI: N/A Timecode: N/A TDIR: Yes CC: No	No Audio	CONFIG SET CODEC DvCPro  CONFIG SET CONTAINER MXF  RECORD CLIP clip RECORD START
.mxf (OP1a)	DVCPRO HD (25) 1920x1080  DVCPRO HD (29.97) 1260x1080	Alpha: No Bitrate: 100 Bit depth: 10 VBI: N/A Timecode: Yes TDIR: Yes CC: Yes	PCM: - 4 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DvCPro  CONFIG SET CONTAINER DVCPROMXF  RECORD CLIP clip RECORD START

## XDCAM HD 422

Container	Codec	Features	Audio	VizSend Example
.mxf (OP1a)	XDCAM HD 422 1920x1080	Alpha: No Bitrate: 50 Bit depth: 8 VBI: N/A Timecode: Yes TDIR: Yes CC: Yes	No Audio PCM: - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC XDCam CONFIG SET CONTAINER XDCAMMXF CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START

## XDCAM HD LP

Container	Codec	Features	Audio	VizSend Example
.mxf (OP1a)	XDCAM HD LP 1440x1080	Alpha: No Bitrate: 18 Bit depth: 8 VBI: N/A Timecode: Yes TDIR: Yes CC: Yes	No Audio PCM: - 4 ch: 16 in 32bit; 48kHz	CONFIG SET CODEC XDCamHD CONFIG SET CONTAINER XDCAMMXF CONFIG SET BITRATE 18 RECORD CLIP clip RECORD START

## XDCAM HD SP

Container	Codec	Features	Audio	VizSend Example
.mxf (OP1a)	XDCAM HD SP 1440x1080	Alpha: No Bitrate: 25 Bit depth: 8 VBI: N/A Timecode: Yes TDIR: Yes CC: Yes	No Audio PCM: - 4 ch: 16 in 32bit; 48kHz	CONFIG SET CODEC XDCamHD CONFIG SET CONTAINER XDCAMMXF CONFIG SET BITRATE 25 RECORD CLIP clip RECORD START

## XDCAM HD HQ

Container	Codec	Features	Audio	VizSend Example
.mxf (OP1a)	XDCAM HD HQ 1440x1080	Alpha: No Bitrate: 35 Bit depth: 8 VBI: N/A Timecode: Yes TDIR: Yes CC: Yes	No Audio PCM: - 4 ch: 16 in 32bit; 48kHz	CONFIG SET CODEC XDCamHD CONFIG SET CONTAINER XDCAMMXF CONFIG SET BITRATE 35 RECORD CLIP clip RECORD START

## XDCAM EX HQ

Container	Codec	Features	Audio	VizSend Example
.mxf (OP1a)	XDCAM EX HQ 1920x1080	Alpha: No Bitrate: 35 Bit depth: 8 VBI: N/A Timecode: Yes TDIR: Yes CC: Yes	No Audio PCM: - 2 ch: 16 in 32bit; 48kHz	CONFIG SET CODEC XDCamEX CONFIG SET CONTAINER XDCAMMXF RECORD CLIP clip RECORD START

## AVC-Intra

Container	Codec	Features	Audio	VizSend Example
.mxf (OP1a)	AVCIntra Class 50 1440x1080	Alpha: No Bitrate: 50 Bit depth: 8 VBI: N/A Timecode: Yes TDIR: Yes CC: Yes	PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC AVCIntra50 CONFIG SET CONTAINER AVCINTRAMXF CONFIG SET BITRATE 50 CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START

Container	Codec	Features	Audio	VizSend Example
.mxf (OP1a)	AVCIntra Class 100 1920x1080	Alpha: No Bitrate: 100 Bit depth: 8 VBI: N/A Timecode: Yes TDIR: Yes CC: Yes	PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC AVCIntra100 CONFIG SET CONTAINER AVCINTRAMXF CONFIG SET BITRATE 100 CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START
.mxf Panasonic P2 (OP-Atom)	AVCIntra Class 50 1440x1080	Alpha: No Bitrate: 50 Bit depth: 10 VBI: N/A Timecode: N/ A TDIR: Yes CC: No	No Audio	CONFIG SET CODEC AVCIntra50 CONFIG SET CONTAINER MXF CONFIG SET BITRATE 50 RECORD CLIP clip RECORD START
.mxf Panasonic P2 (OP-Atom)	AVCIntra Class 100 1920x1080	Alpha: No Bitrate: 100 Bit depth: 10 VBI: N/A Timecode: N/ A TDIR: Yes CC: No	No Audio	CONFIG SET CODEC AVCIntra100 CONFIG SET CONTAINER MXF CONFIG SET BITRATE 100 RECORD CLIP clip RECORD START

## ProRes

Container	Codec	Features	Audio	VizSend Example
.mov	I-Frame 4:2:2 1920x1080	Alpha: No Bitrate: 100 (LT), 147, 220 (HQ) Bit depth: 10 VBI: N/A Timecode: N/A TDIR: Yes, with .Ref file CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC ProRes CONFIG SET CONTAINER MOV CONFIG SET BITRATE 100 CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START

## DNxHD

Container	Codec	Features	Audio	VizSend Example
.mxf (OP1a)	DNxHD (30) 120, 185 DNxHD (29.97) 145, 220 1920x1080	Alpha: No Bitrate (50): 120,185 Bitrate (59.94): 145,220 Bit depth: 8 VBI: N/A Timecode: N/ A CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DNxHD CONFIG SET CONTAINER DNXHDMXF CONFIG SET BITRATE 120 CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START



Container	Codec	Features	Audio	VizSend Example
.mxf (OP1a)	DNxHD (30) 185x  DNxHD (29.97) 220x  1920x108 0	Alpha: No  Bitrate (50): 185x  Bitrate (59.94): 220x  Bit depth: 10  VBI: N/A  Timecode: N/ A  CC: No	No Audio  PCM:  - 2 ch: 24 in 32bit; 48kHz  - 4 ch: 24 in 32bit; 48kHz  - 8 ch: 24 in 32bit; 48kHz  - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DNxHD  CONFIG SET CONTAINER DNXHDMXF  CONFIG SET BITRATE 185  CONFIG SET AUDIOCHANNELS 8  RECORD CLIP clip  RECORD START
.mxf Panasonic P2 (OP- Atom)	DNxHD (30) 120, 185  DNxHD (29.97) 145, 220  1920x108 0	Alpha: No  Bitrate (50): 120,185  Bitrate (59.94): 145,220  Bit depth: 8  VBI: N/A  Timecode: N/ A  CC: No	No Audio	CONFIG SET CODEC DNxHD  CONFIG SET CONTAINER MXF  CONFIG SET BITRATE 120  CONFIG SET AUDIOCHANNELS 8  RECORD CLIP clip  RECORD START
.mxf Panasonic P2 (OP- Atom)	DNxHD (30) 185x  DNxHD (29.97) 220x  1920x108 0	Alpha: No  Bitrate (50): 185x  Bitrate (59.94): 220x  Bit depth: 10  VBI: N/A  Timecode: N/ A  CC: No	No Audio	CONFIG SET CODEC DNxHD  CONFIG SET CONTAINER MXF  CONFIG SET BITRATE 185  CONFIG SET AUDIOCHANNELS 8  RECORD CLIP clip  RECORD START

## 1080p50 and 1080p59.94 (60M) Codecs

## AVC-Intra

Container	Codec	Features	Audio	VizSend Example
.mxf (OP1a)	AVCIntra Class 50 1440x1080	Alpha: No Bitrate: 100 Bit depth: 10 VBI: N/A Timecode: Yes TDIR: Yes CC: Yes	PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC AVCIntra50 CONFIG SET CONTAINER AVCINTRAMXF CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START
.mxf (OP1a)	AVCIntra Class 100 1920x1080	Alpha: No Bitrate: 100 Bit depth: 10 VBI: N/A Timecode: Yes TDIR: Yes CC: Yes	PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC AVCIntra100 CONFIG SET CONTAINER AVCINTRAMXF CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START
.mxf Panasonic P2 (OP-Atom)	AVCIntra Class 50 1440x1080	Alpha: No Bitrate: 100 Bit depth: 10 VBI: N/A Timecode: N/A TDIR: Yes CC: No	No Audio	CONFIG SET CODEC AVCIntra50 CONFIG SET CONTAINER MXF CONFIG SET BITRATE 50 RECORD CLIP clip RECORD START

Container	Codec	Features	Audio	VizSend Example
.mxf Panasonic P2 (OP-Atom)	AVCIntra Class 100 1920x1080	Alpha: No Bitrate: 100 Bit depth: 10 VBI: N/A Timecode: N/A TDIR: Yes CC: No	No Audio	CONFIG SET CODEC AVCIntra100  CONFIG SET CONTAINER MXF  CONFIG SET BITRATE 100  RECORD CLIP clip  RECORD START

### MPEG-IFrame

Container	Codec	Features	Audio	VizSend Example
.avi	MPEG2- IFrame422 1920x1080	Alpha: No Bitrate: 50-300 Bit depth: 8 VBI: N/A Timecode: N/A TDIR: Yes CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC IFrame  CONFIG SET CONTAINER AVI  CONFIG SET BITRATE 50  CONFIG SET AUDIOCHANNELS 8  RECORD CLIP clip  RECORD START

## ProRes

Container	Codec	Features	Audio	VizSend Example
.mov	I-Frame 4:2:2 1920x1080	Alpha: No Bitrate: 100 (LT), 147, 220 (HQ) Bit depth: 8, 10 VBI: N/A Timecode: N/A TDIR: Yes, with .Ref file CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC ProRes CONFIG SET CONTAINER MOV CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START

## DNxHD

Container	Codec	Features	Audio	VizSend Example
.mxf (OP1a)	DNxHD (50) 240, 365 DNxHD (59.94) 290, 440 1920x1080	Alpha: No Bitrate (50): 240, 365 Bitrate (59.94): 290, 440 Bit depth: 8 VBI: N/A Timecode: N/A CC: No	No Audio PCM: - 2 ch: 24 in 32bit; 48kHz - 4 ch: 24 in 32bit; 48kHz - 8 ch: 24 in 32bit; 48kHz - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DNxHD CONFIG SET CONTAINER DNXHDMXF CONFIG SET BITRATE 240 CONFIG SET AUDIOCHANNELS 8 RECORD CLIP clip RECORD START

Container	Codec	Features	Audio	VizSend Example
.mxf (OP1a)	DNxHD (50) 365x  DNxHD (59.94) 440x  1920x1080	Alpha: No  Bitrate (50): 365 x  Bitrate (59.94): 440x  Bit depth: 10  VBI: N/A  Timecode: N/A  CC: No	No Audio  PCM:  - 2 ch: 24 in 32bit; 48kHz  - 4 ch: 24 in 32bit; 48kHz  - 8 ch: 24 in 32bit; 48kHz  - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC DNxHD  CONFIG SET CONTAINER DNXHDMXF  CONFIG SET BITRATE 365  CONFIG SET AUDIOCHANNELS 8  RECORD CLIP clip  RECORD START
.mxf Panasonic P2 (OP- Atom)	DNxHD (50) 240, 365  DNxHD (59.94) 290, 440  1920x1080	Alpha: No  Bitrate (50): 240 , 365  Bitrate (59.94): 290 , 440  Bit depth: 8  VBI: N/A  Timecode: N/A  CC: No	No Audio	CONFIG SET CODEC DNxHD  CONFIG SET CONTAINER MXF  CONFIG SET BITRATE 240  CONFIG SET AUDIOCHANNELS 8  RECORD CLIP clip  RECORD START
.mxf Panasonic P2 (OP- Atom)	DNxHD (50) 365x  DNxHD (59.94) 440x  1920x1080	Alpha: No  Bitrate (50): 365 x  Bitrate (59.94): 440x  Bit depth: 10  VBI: N/A  Timecode: N/A  CC: No	No Audio	CONFIG SET CODEC DNxHD  CONFIG SET CONTAINER MXF  CONFIG SET BITRATE 365  CONFIG SET AUDIOCHANNELS 8  RECORD CLIP clip  RECORD START

## 2160p50 and 2160p59.94 (60M) Codecs

### XAVC

Container	Codec	Features	Audio	VizSend Example
.mxf (OP1a)	XAVC	Alpha: No Bitrate: 300, 480, (VBR/CBR) Bit depth: 10 VBI: N/A Timecode: Yes TDIR: N/A CC: Yes HDR: Yes	PCM: - 16 ch: 24 in 32bit; 48kHz	CONFIG SET CODEC XAVC  CONFIG SET CONTAINER XAVCMXF  CONFIG SET BITRATE 300  RECORD CLIP clip  RECORD START

**Note:** A M264 board is required for recording UHD.

### 3.3.7 Clock Behavior and Resolution

The clock is a very important component of Channel Recorder. If no clock is present Channel Recorder might fail in performing scheduled, loop or frame accurate recordings. There are four sources of resolution: input, genlock, configuration and internal.

For clock type GENLOCK, the priority is given in the following order:

- Input
- Genlock
- Configuration
- Internal

For clock type INPUT, the priority is given in the following order:

- Input
- Configuration

Important points to remember are:

- The resolution from the configuration will only be used when there is no input or genlock signal detected.
- Internal resolution is only relevant when the following is true:
  - There is another application using Matrox board.
  - The application in question is using a different frame rate family.

- Clock type `INPUT` is the simplest and should be used unless there is a compelling reason not to use it.

**Note:** For IP boards, 2059 will be used by default.

### 3.3.8 Recording Modes and States

**Note:** The following information is only relevant when using the native recording features of Channel Recorder.

The first time Channel Recorder runs, it will have the *schedule* state. Channel Recorder supports three modes of recordings: *schedule*, *loop* and *crash*. All three modes share the same timeline and writers, thus some kind of logic is needed to avoid conflicting each other operations. The following logic applies:

*Crash* and *loop* have the same level of priority:

- When a *crash* recording is running a *loop* recording can not be started.
- When a *loop* recording is running a *crash* recording can not be started.

Source Recording Mode	Target Recording Mode	Action	Output Mode
Crash	Loop	Not possible	Crash
Crash	Schedule	Deferred until stopped	Crash
Crash	Crash	Stop the active recording and start another recording	Crash
Loop	Crash	Not possible	Loop
Loop	Schedule	Deferred until stopped	Loop
Loop	Loop	Stop the active recording and start another recording	Loop
Schedule	Loop	Suspend existing entries and timeline	Loop
Schedule	Crash	Suspend existing entries and timeline	Crash
Schedule	Schedule	Attempt to add to the timeline	Schedule

## 3.4 Specific Use Cases

This section details how to configure Channel Recorder to help the users achieve specific use cases.

This section contains the following use cases:

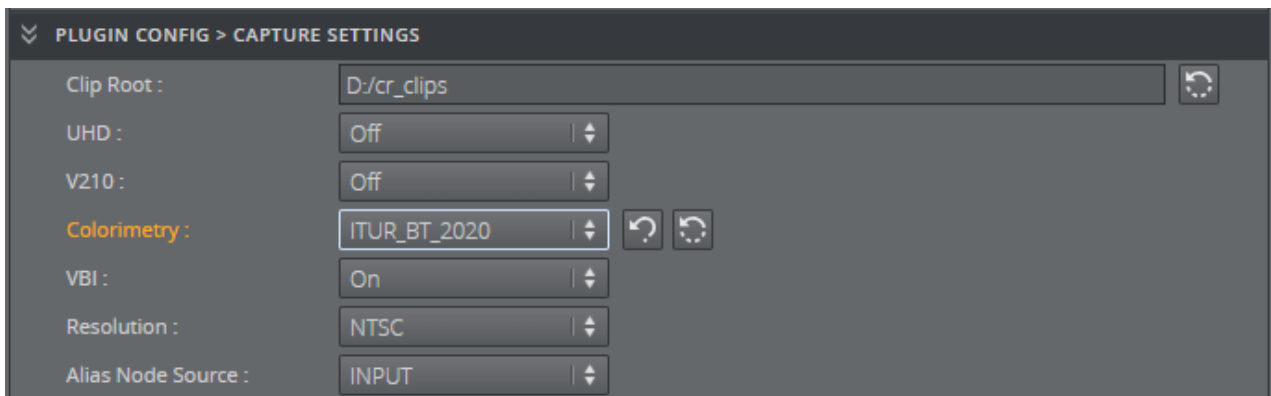
- [Recording HDR](#)
- [Recording RTP/H264 Stream](#)
- [Recording UHD](#)
- [Recording Viz Engine](#)

### 3.4.1 Recording HDR

From version 1.2, Channel Recorder supports the recording of HDR. To be able to record in HDR, the input resolution must be in HD. The possible values for colorimetry are:

- ITUR\_BT\_601
- ITUR\_BT\_709
- ITUR\_BT\_2020
- ITUR\_BT\_2100\_PQ
- ITUR\_BT\_2100\_HLG
- ITUR\_BT\_2100\_SLOG3
- LinearLight

By default, HD resolution will record in ITUR\_BT\_709 and SD resolution will record in ITUR\_BT\_601. The colorimetry can be changed in the Capture Settings of the configuration.



When one of the possible HDR colorimetry options is chosen, the recording will be captured in ten bits per sample instead of eight bits per sample.

### 3.4.2 Recording RTP/H264 Stream

To record RTP/H264 a DSX.Core or a M264 video board is needed.



## DSX.Core

DSX.Core is a cloud based software license from Matrox. It allows a machine in which the **Matrox DSX-TopologyUtils** is installed to acquire a license and to receive RTP/H264 streams along with decoding them for recording. There are two components in a DSX.Core workflow:

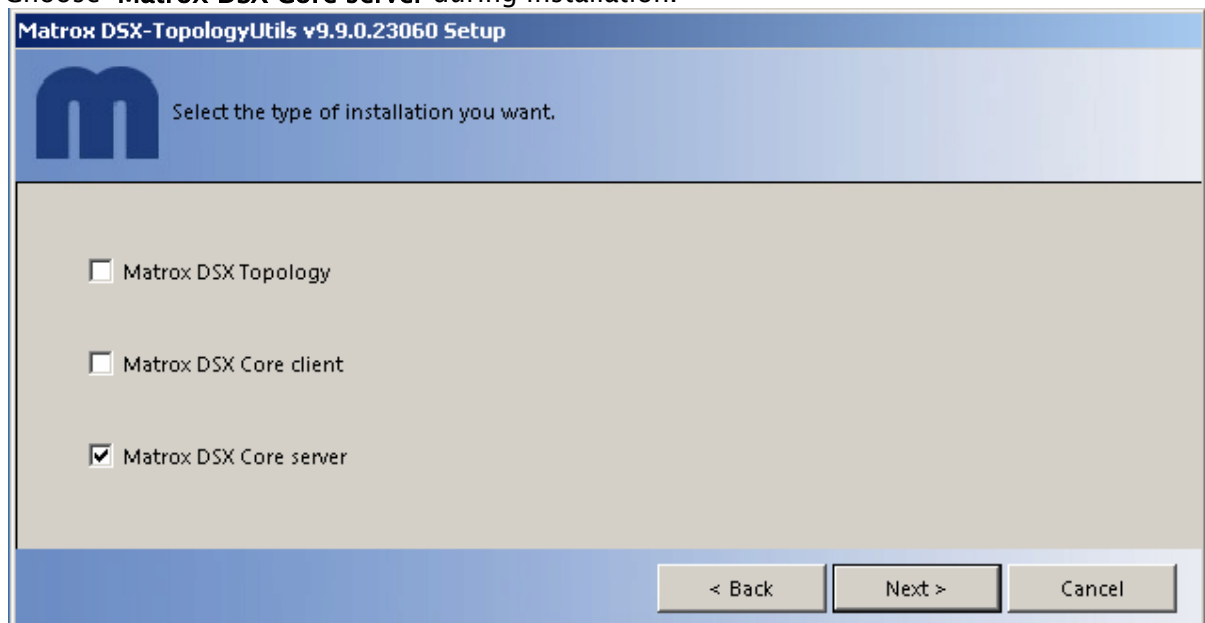
- A server machine where the dongle from Matrox with the corresponding licenses is installed.
- A client machine that points to the server to be able to acquire the license.

### Steps for Installing the Server Machine

1. Obtain the dongle and the licenses file from Matrox.
2. Install *DSX-TopologyUtils.exe* application which usually ships with *DSX.utils.exe*.

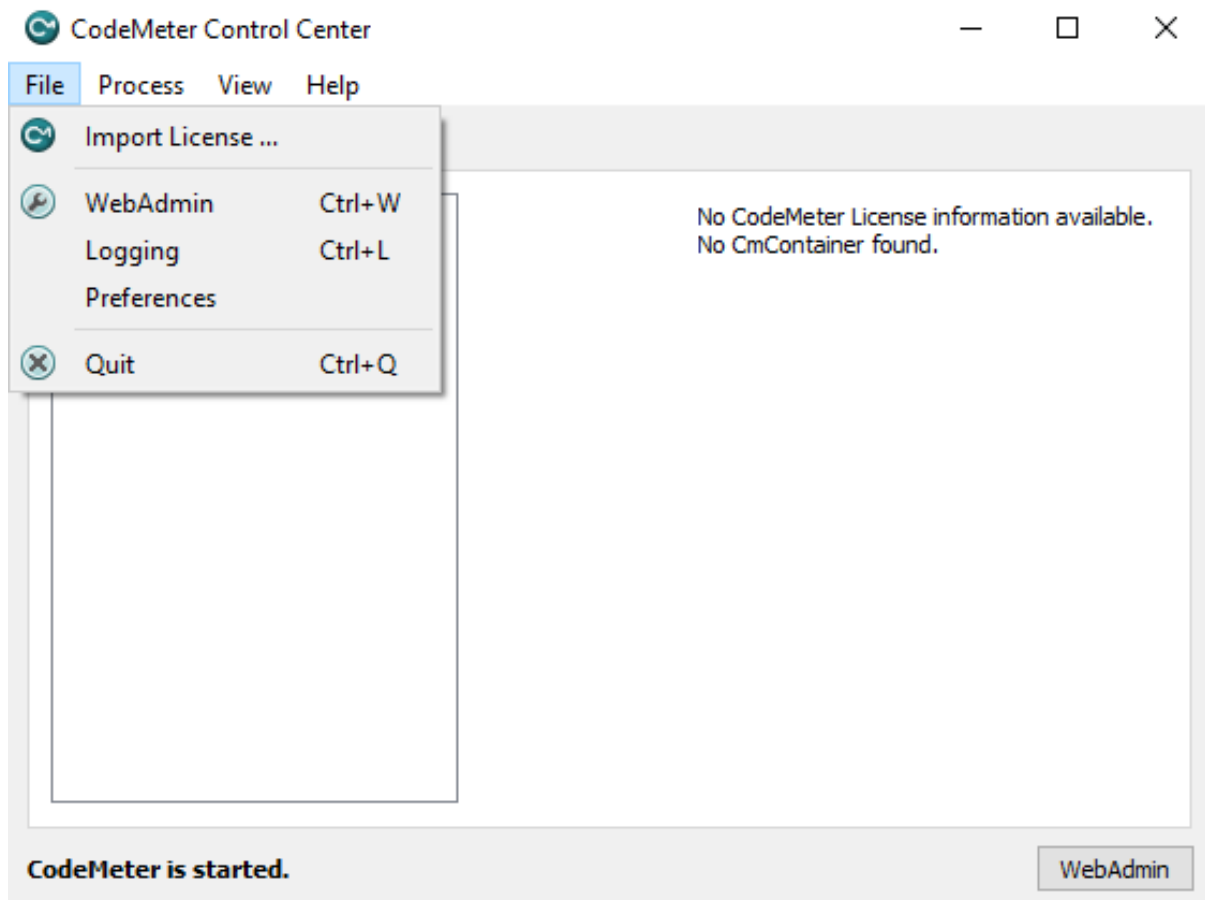
**Warning:** *DSX.utils.exe* must be uninstalled first before installing *DSX-TopologyUtils.exe*!

3. Choose **Matrox DSX Core server** during installation.



4. After installation the CodeMeter Control Center will be installed and located in the taskbar.

5. Import the licenses provided by Matrox using the application.



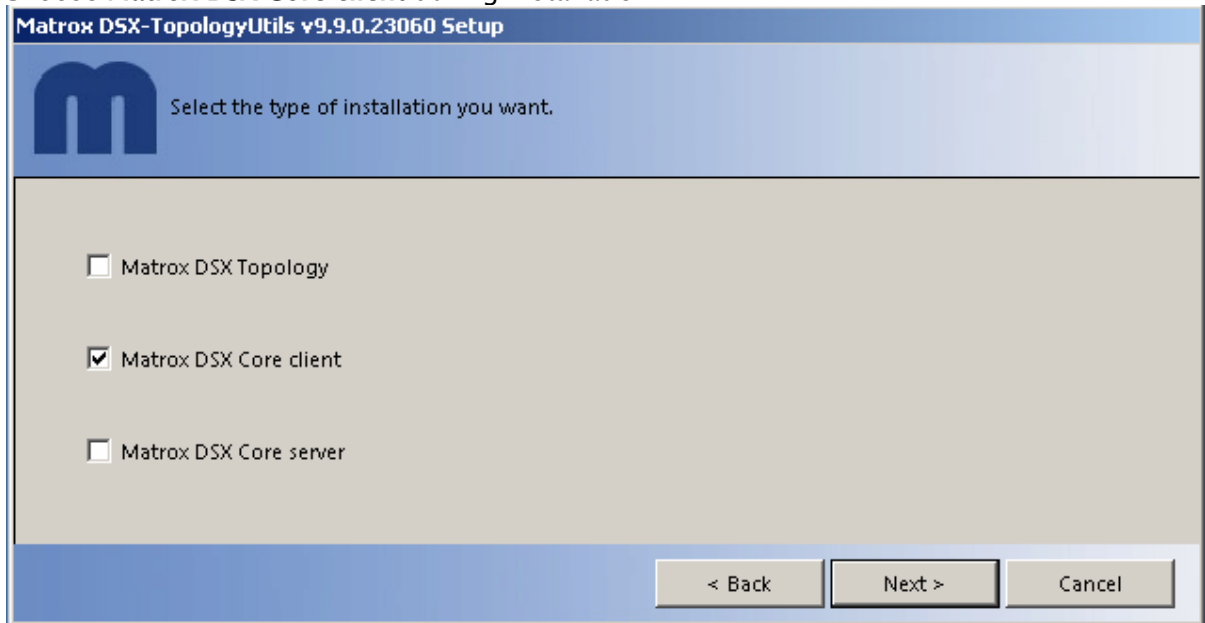
For more information regarding the server installation of DSX.Core please refer to the Matrox DSX.Core documentation.

### Steps for Installing the Client Machine

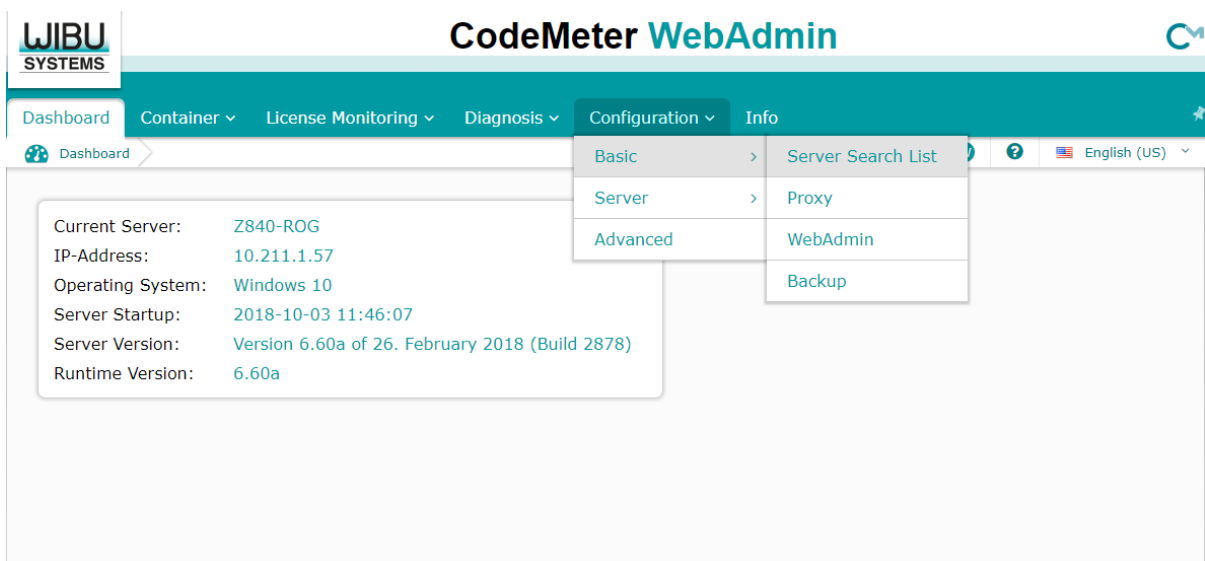
1. Install *DSX-TopologyUtils.exe* application which usually ships with *DSX.utils.exe*.

**Warning:** *DSX.utils.exe* must be uninstalled first before installing *DSX-TopologyUtils.exe*!

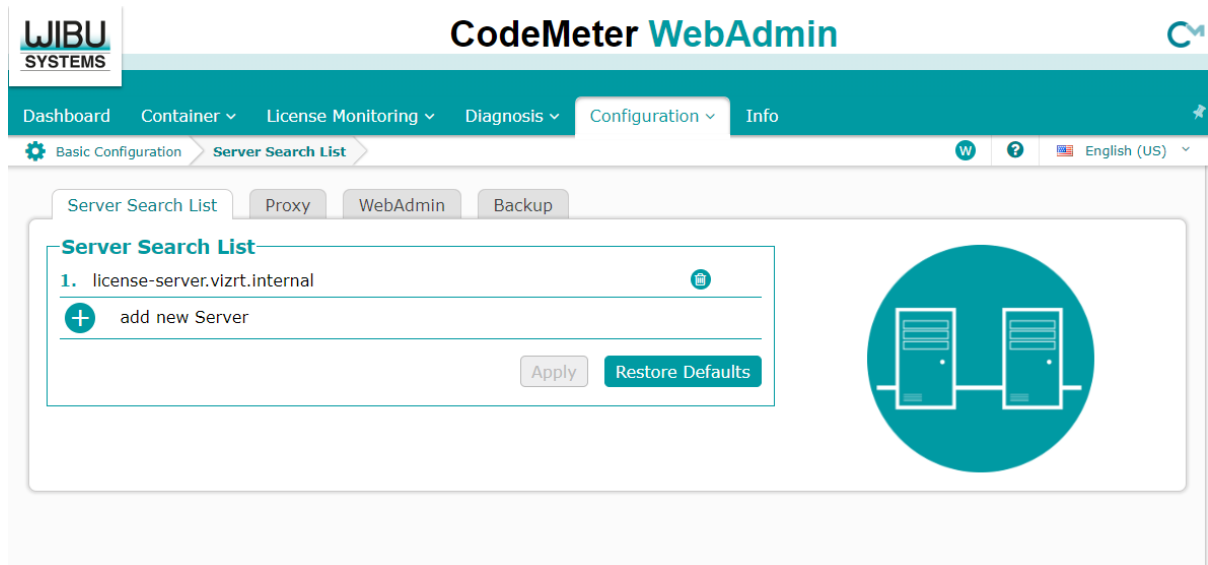
2. Choose **Matrox DSX Core client** during installation.



3. After installation, the CodeMeter Control Center is installed and located in the taskbar.
4. Access the web interface by clicking on the **WebAdmin** button of CodeMeter Control Center.
5. In the web interface access to **Configuration > Basic > Server Search List**.



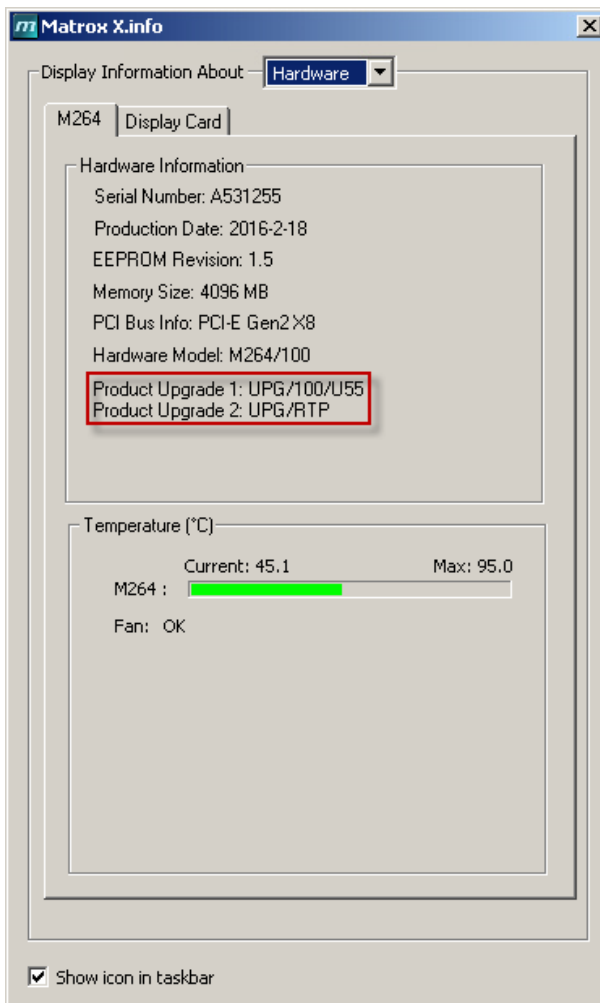
6. In the Server Search List, add the server IP or hostname.



For more information regarding the client installation of DSX.Core please refer to the Matrox DSX.Core documentation.

## M264

For recording the board will need the upgrades UPG/100/U55 and UPG/RTP.



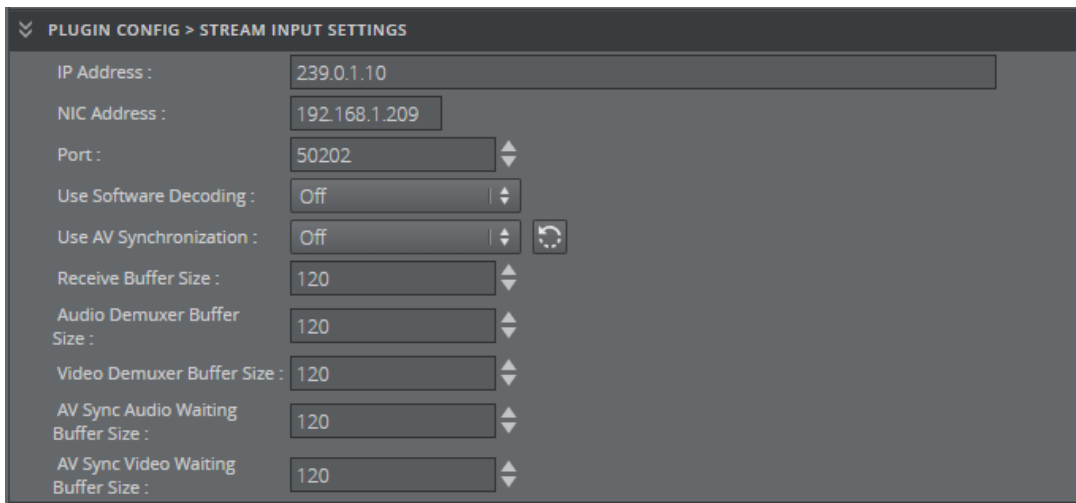
## Configuring Channel Recorder

When using M264 with another Matrox board, the board must be chosen in the configuration by specifying its serial number.



The most important parameters for receiving RTP/H264 streams are the IP Address, NIC Address and Port.

Connector setting still needs to be specified. Any value without space will do.



Additionally the following needs to be taken into account:

- Disable any firewall installed on the system or specifically allow each and every Channel Recorder service to be able to receive incoming RTP/H264 packets.
- The multicast address and port must be already available before starting the service, otherwise Channel Recorder will fail to start.
- If no audio is present in the stream, the parameter *Use AV Synchronization* must be disabled.
- The bitrate of the incoming stream must be below 20 mbps.
- The IP Encapsulation Mode of the incoming stream must be RTP. UDP is not supported.
- Only AAC audio with two channels is supported.
- Only H264 video is supported.
- VBI is not supported.
- Open GOP is not supported for M264 / HW decoding.

If everything is OK the following will appear in the log:

```
[2018-10-05 06:13:41.967 +02:00][19500][info]: [ChannelRecorder_TSDemuxer]
GetElementaryStreamH264VideoDescription: Detected H264 video description: VBR: false,
H264 Level: 40, H264 Profile: 100, Resolution: 1920x1080, Average Bitrate: 0
```

Additionally, if debugging is enabled the following will appear in the log:

```
[2018-10-05 06:14:14.462 +02:00][22116][debug]:
[VizrtCRTTest04::CaptureChannelSystemTest] TIME_OF_DAY = 06:14:14:00
```

If none of those logs messages appear then something went wrong. It is usually related to the nature of the incoming stream: Bitrate, GOP configuration, encapsulation, etc.

## Performance

When using M264 this is the maximum number of inputs:

Resolutions	4:2:2 10-bit Intra frame	4:2:2 10-bit Long GOP	4:2:0 8-bit Long GOP
3840x2160p50	1	1	2
1920x1080p50	3	5	8
1920x1080i25	6	10	16
1280x720p50	6	10	16
PAL/NTSC	-	-	100

### 3.4.3 Recording UHD

From version 1.2, Channel Recorder supports the recording of UHD in 2SI mode as well as HDR. To be able to record in 2SI mode, the board must be of the variant X2 or upgraded with that capability. Please check that the installed board is X2 by accessing the **Matrox X.info** utility.

These are the steps to be able to record UHD in 2SI with HDR support:

1. If not already done, configure the board into 2SI mode by going to C:\Program Files\Matrox DSX.utils\drivers via cmd and call:

**i** `mvConnectorConfig.exe -2SI=on -sn=XXXXXX`  
where XXXXXX is the serial number of the board

2. If not already done, configure the board connectors to be 4in8out (8in4out is not a supported configuration).

**i** `mvConnectorConfig.exe -4in8out -sn=XXXXXX`  
where XXXXXX is the serial number of the board

3. In the Channel Recorder configuration, set the following values to the parameters:

**i** UHD: true  
V210: true  
Resolution: 2160p50 or 2160p60M  
Container: XAVCMXF  
Codec: XAVC  
Colorimetry: Any HDR values

### 3.4.4 Recording Viz Engine

From version 1.2, Channel Recorder supports recording input and output signals from Viz Engine. This feature is controlled by the parameter *AliasNodeSource* in the configuration.

The execution order of the applications is very important. To capture from Viz Engine, this must be executed before Channel Recorder.

Other things to take into account:

- The write-to-read delay of the node to be read must be larger than 0.
- For the reason above, the only supported board is an X.mio3 without Fast Texture Mode enabled.



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## 4 WebRTC Preview

**Software I/O Mode to SHM Channels.** This Administrator Guide gives details on how to install, configure and operate Vizrt's WebRTC Preview service.

WebRTC Preview is a service that allows to stream the video output of a Viz Engine as a preview to WebRTC client applications such as web browsers, Viz Multiplay or Viz Opus.

This page contains the following information:

- [Hardware and Software Requirements](#)
- [Installing, Registering and Removing WebRTC Preview](#)
  - [To Install Service Host](#)
  - [Registering a WebRTC Preview Instance](#)
  - [Removing a WebRTC Preview Instance](#)
  - [Upgrading or Repairing an Existing Installation](#)
- [WebRTC Preview Configuration](#)
  - [Plugin Configuration Section](#)
    - [Video Settings](#)
    - [Source Settings](#)
    - [WebRTC Settings](#)
    - [REST Service Settings](#)
    - [License Settings](#)
  - [Service Host Settings](#)
- [Operation](#)
  - [Integration with Viz Engine](#)
    - [To Configure Viz Engine for WebRTC Preview in Matrox Video Version](#)
    - [To Configure Viz Engine for WebRTC Preview in Video-Fallback Mode](#)
    - [Using the HTML Test Template to Preview the Video Output of a Viz Engine Instance](#)

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### 4.1 Hardware And Software Requirements

In addition to the requirements listed in the Viz Engine release notes, the requirements listed below must also be met:

- Viz Engine 3.11.0 or newer.
- NVIDIA Quadro with NVENC support.

---

### 4.2 Installing, Registering And Removing WebRTC Preview

WebRTC Preview runs as a plugin of Service Host. WebRTC Preview cannot operate without Service Host, for this reason the installation of WebRTC Preview consists of the following parts:

1. Running the **Service Host Setup Wizard**.
2. Manually registering one or more WebRTC Preview instance(s) using the Service Host web interface.

Before installing Service Host, please make sure to obtain the latest installer from Vizrt's FTP server: <ftp://download.vizrt.com/>

**i Prior WebRTC Preview Installations**

In case one had a pre-release or a release candidate installed, it is recommended to remove the existing configuration xml.

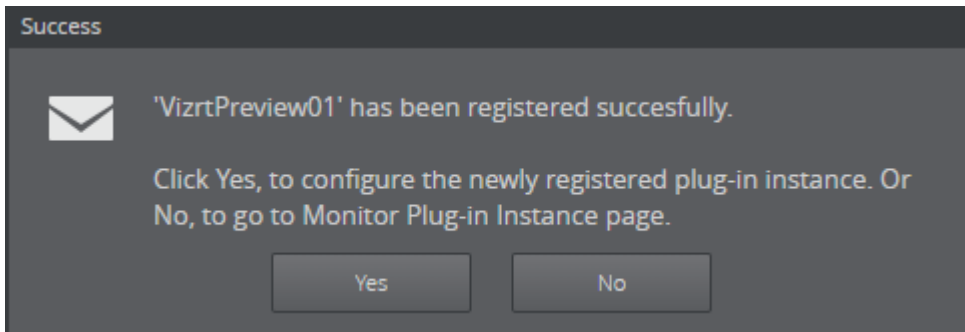
#### 4.2.1 To Install Service Host

Refer to the [Service Host](#) documentation.

#### 4.2.2 Registering a WebRTC Preview Instance

Refer to the [Service Host](#) documentation.

After successfully registering a WebRTC Preview instance, the following dialog window appears.



#### 4.2.3 Removing a WebRTC Preview Instance

Use the Service Host web interface to remove a WebRTC Preview instance. For more information, refer to the [Service Host](#) documentation.

#### 4.2.4 Upgrading or Repairing an Existing Installation

Use the Service Host Setup Wizard to upgrade or repair an existing installation of WebRTC Preview. When upgrading or repairing, Service Host remembers the registered instances and which states they were before the upgrade or repair occurs. After a successful upgrade or repair operation, any previously running services stopped by the Setup Wizard is restarted.

### 4.3 WebRTC Preview Configuration

The configuration page of a WebRTC Preview instance can be reached from the Monitor plugin page via the context menu of a plugin instance or via the menu **Configuration > Plug-in > Configure Instance**. For any configuration changes to take effect, you must restart the instance.

The configuration page of a WebRTC Preview instance consists of two main sections:

- [Plugin Configuration Section](#)
- [Service Host Settings](#)


### 4.3.1 Plugin Configuration Section

From the Plugin Configuration Section, you can change the configuration of a specific WebRTC Preview instance. The configuration of an instance consists of five parts:

- Video Settings
- Source Settings
- Sink Settings
- Test page Settings
- License Settings

#### Video Settings


- **Codec:** Sets the video codec. This value must be set to "H264".
- **Bitrate MBit/s:** Sets the video bitrate in mbps (megabits per second). This value must be in the range between 1 and 15 mbps.
- **GOP-Length:** Sets the GOP length. This value must be in range 1 (I-Frame only) to 300.
- **GPU-Instance:** Specifies which GPU to use for video encoding in dual GPU environments. This value must be in the range between 0 and 1, where "0" uses the first GPU and "1" uses the second GPU.
- **Enable Downscale:** Enables down-scaling of the video input resolution by a factor of two. This value must be in the range between 0 and 1, where "0" disables down-scaling and "1" enables down-scaling.

 Please note that interlaced video formats are not de-interlaced and only scaled in width.

- **Reduce Framerate** enables framerate reduction by a factor of two. This value must be in the range between 0 and 1, where "0" disables framerate reduction and "1" enables framerate reduction

#### Source Settings

- **Shared Memory Name:** Specifies the shared memory connection endpoint to which the WebRTC Preview instance will connect to. This value must be set according to the configuration of the Viz Engine instance the WebRTC Preview instance is to connect to.

 To allow a service connect to shared memory sources, the suffix *Global\{shared\_memory\_name}* must be used. The same name must be defined in the engine configuration.

## WebRTC Settings

The WebRTC Settings allow a user to configure a simple WebSocket server to which a WebRTC client needs to connect to in order to initiate the WebRTC signaling process.

- **Signaling Port:** Specifies the WebSocket server port.

## REST Service Settings

The REST Service Settings allow a user to configure a REST service that can be used to access the HTML test template from a web browser.


- **Listening Address:** Specifies the listening address of the REST service.
- **Listening Port:** Specifies the listening port of the REST service.

To open the HTML test template from a web browser, navigate to `http://<Listening Address>:<Listening Port>`.

## License Settings

The License Settings allows users to configure a WebRTC Preview instance for WiBu Licensing.

- **License Location:** Specifies the location the system will search for a WiBu license. This can be either:
  - "Local license" acquires the licence from either a WiBu Dongle connected to the system or a file based license.
  - "Network license" acquires the licence from WiBu License server.
- **License:** Selects the license feature a user must acquire to use WebRTC Preview. This can be either:
  - "Combination Feature" uses the combination feature of a Viz Engine core license.
  - "MezzIP OUT Upgrade (max)" uses the standalone Mezzanine Out Upgrade feature.
- **4K Video Enablement:** Allows output of video resolutions higher than 2K (optional feature).

 **Note:** In addition to the license features listed above, a user must also acquire a Service Host Core license. The Service Host Core license is consumed by the Service Host itself.

### 4.3.2 Service Host Settings

From the Service Host Section, you can specific command arguments to pass to a plugin instance at start time. This is mainly used for debugging purposes.

---

## 4.4 Operation

This sections gives information on how to setup typical use cases of the WebRTC Preview service.

## 4.4.1 Integration with Viz Engine

The main use case of the WebRTC Preview service is to stream the video output of a Viz Engine as a preview. The Viz Engine supports two different operational modes that can be used in combination with the WebRTC Preview service.

- Preview of SDI video output in Matrox video version.
- Preview of SHM video output in video-fallback version.


### To Configure Viz Engine for WebRTC Preview in Matrox Video Version

1. Open **Viz Configuration**.
2. Click on **Video Output**.
3. Set the **Streaming Output** option to **Active**.

The shared memory endpoint and its name is configured automatically depending on the instance ID of the Viz Engine. The name of the shared memory endpoint follows the naming schema below:

```
Global\viz_out_<INSTANCE_ID>_00
```

For example, the name of the shared memory endpoint of Viz Engine instance 1 is **Global\viz\_out\_01\_00**.

 **Note:** This mode requires the Viz Engine to be installed as video version running with a Matrox SDI video board.

### To Configure Viz Engine for WebRTC Preview in Video-Fallback Mode

1. Open **Viz Configuration**.
2. Click on **Video Board**.
3. Set the **Check Video Card** option to **None**.
4. Set the **Software I/O Mode** option to **SHM Channels**.
5. Click on **Video Output: SHM Output**.
6. Select **SHMOut 1**.
7. Set the **Shared Memory Output** option to **Active**.
8. Set the **Unique Identifier** option to a unique name preceded by **Global\**.

To avoid naming conflicts with other Vizrt products running on the same machine it is recommended to set the **Unique Identifier** option based on the following naming schema.

```
Global\viz_out_<INSTANCE_ID>_00
```

For example the name of the shared memory endpoint of the first Viz Engine instance is **Global\viz\_out\_01\_00**.

**Note:** The shared memory connection endpoint must be located in the Global namespace, otherwise the WebRTC Preview instance will not be able to connect to the shared memory endpoint.

## Using the HTML Test Template to Preview the Video Output of a Viz Engine Instance

1. Configure a Viz Engine instance as described in section **Integration with Viz Engine**.
2. Open a web browser and navigate to the configuration page of the WebRTC Preview instance.
3. Set the **Shared Memory Name** option in section **Source Settings** to the name of the shared memory endpoint of the Viz Engine instance to which the WebRTC Preview instance is supposed to connect to.  
Example: **Global\viz\_out\_01\_00**
4. In section **Rest Service Settings** select a **Listening Address** from the drop down menu.  
Example: **[All interfaces]**
5. Set the **Listening Port** option in section **Rest Service Settings** to a port number that is currently not used by any other application running on the machine.  
Example: **11111**
6. Save the configuration changes and restart the WebRTC Preview instance.
7. Open a web browser and navigate to the HTML test template page **http://<Listening Address>:<Listening Port>**.  
Example: **http://localhost:11111**
8. Click on **Connect**.