

Release Notes for CaraVR 2.1v5

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Release Date

November 2019

Qualified Operating Systems

Nuke Version	Platform		
	Mac OS X/macOS	Windows (64-bit)	Linux (64-bit)
12.0v1, or above	10.13 (High Sierra)	Windows 7	CentOS 7.4, or later
	10.14 (Mojave)	Windows 10	

Other operating systems may work, but have not been fully tested. See the [Nuke Online Help](#) for more information on supported GPUs and other hardware recommendations.

New Features

This release of CaraVR is exclusively for Nuke 12.0 for all platforms. The functionality of all nodes remains the same as previous releases of CaraVR, which should still be used for older releases of Nuke.

Feature Enhancements

- BUG ID 388820 - C_Bilateral: The **size** control has been limited to values less than or equal to **20** to avoid interface unresponsiveness.

Bug Fixes

- BUG ID 386905 - Rayrender: Setting the **left** and **right** views to the same value did not display an error.
- BUG ID 407539 - C_GlobalWarp: The Viewer **outputView** dropdown did not work as expected.
- BUG ID 411486 - C_Rayrender: The stereo options in the **Properties** panel **Camera** tab were disabled.
- BUG ID 415007 - C_Stitcher: Adding a stitcher to the node tree caused the interface to become unresponsive.
- BUG ID 415586 - C_Stitcher: The stitch progress bar did not display as expected with the **Facebook_Surround_Depth_To_Points** toolset.

Known Issues and Workarounds

Installation

Windows only: Delete the CaraVR version folder, if it exists, prior to installation. The folder resides here:

```
C:\Program Files\Common Files\Nuke\<nuke_version>\plugins\<caravr_verion>
```

For example, if you're installing a new version of CaraVR 2.1, delete this folder before installation:

```
C:\Program Files\Common Files\Nuke\<nuke_version>\plugins\2.1\
```

Stitching

- Projections in Nuke's 3D system expect rectilinear footage, which is inherently limited to a 180° field of view. As a result, C_CameraSolver's manual 3D workflow, which relies on projections, only projects the central 180° from material shot on wider lenses, such as the Nokia OZO.
- BUG ID 232523 - C_ColourMatcher: **Gains** control keyframes for multiple cameras in the Curve Editor are not recognized as keyframes.

Preview

- If you have a version of both CaraVR 1 and CaraVR 2 installed on the same machine, any headsets connected to the machine will not work and may cause Nuke to crash.
- Many facilities lock down USB access for security, which impacts Oculus Rift support. Some customers found that authorizing devices using a udev rule allowed them to use the DK2 on both

CentOS 6 and CentOS 7, while still blocking USB storage devices. Thanks to Digital Domain for the following example:

```
ACTION!="add", GOTO="deauthorize_end"

SUBSYSTEM!="usb", GOTO="deauthorize_end"

TEST!="authorized", GOTO="deauthorize_end"

## make hubs deauthorize all devices by default

TEST=="authorized_default", ATTR{authorized_default}="0", GOTO="deauthorize_end"

## whitelist specific devices

ENV{ID_VENDOR_ID}=="2833", ATTR{authorized}="1", MODE="0777"

LABEL="deauthorize_end"
```

Windows Only

- INFO and DEBUG messages are displayed incorrectly in the command prompt on some installations.
- Although CaraVR supports both SteamVR (OpenVR) and the Oculus Runtime for the Oculus Rift headset, we recommend selecting only one during a single session. Switching between the two outputs can cause the Oculus Rift to render black frames with the current version of SteamVR.

If you require both SDKs on your machine, please set the `FN_CARA_VRCOMPOSITOR_QUIT` environment variable to 1, which forces SteamVR to restart when you switch between outputs.

For more information on setting environment variables, see the Nuke [Online Help](#).

- If you're using a headset on multi-GPU machines, ensure that the device is connected to the GPU that handles the monitor output not the internal computation.
- When using the Oculus Rift CV1, we recommend using the official Oculus Rift SDK rather than SteamVR.

We recommend using the OculusVR Runtime instead of SteamVR wherever possible, as SteamVR is currently less stable for CaraVR operations.



Note: Closing SteamVR while Nuke is running with an HMD as an active Viewer causes Nuke to close. To avoid this, save and close Nuke before closing SteamVR.

- The monitor out plug-in routinely notifies about the health and safety implications of use of the Oculus headset. This is a function of the SDK and in newer versions (such as the one we employ) cannot be suppressed or shortened.

Linux Only

- HTC Vive headsets do not currently support lens distortion.
- When using the Oculus Rift CV1 on Linux, be aware that:
 - Unlike the Oculus DK2, the CV1 displays black until you turn it on inside Nuke's Viewer settings.
 - The CV1 does not appear in the list of available screens in Gnome/Kde, it is displayed with the supported devices in Monitor Output.
 - When you initially turn on Monitor Output, all available monitors display black for a few seconds as the OS adjusts to the new configuration.
 - The CV1 remains on until you close Nuke, which causes all available monitors to display black for a few seconds as the OS adjusts to the new configuration.
- When using the HTC Vive on Linux, be aware that:
 - Under Centos 7, powering the headset through a USB 3 port can cause Nuke to become unresponsive.
As a workaround, power the headset through a USB 2 port instead.
 - Installing a newer version of OpenHMD may clash with the one shipped with CaraVR. If you encounter problems with the HTC Vive, try uninstalling the newer version of OpenHMD.
 - On some installations, the viewport on the headset doesn't cover the full screen, so you can still see the desktop background. You can work around this issue by moving the mouse pointer onto the headset screen and double clicking the Viewport.
 - On some installations, you may need to open the NVIDIA Control Panel and enable the HMD as a second monitor so that Nuke can use it.

macOS/Mac OS X Only

- On Mac OS X, with the EoL official Oculus SDK installed, the monitor out plug-in cannot open the device as the SDK locks it. Possible workarounds include uninstalling the SDK, or preventing the OVRServer running at startup, using the launchctl load/unload commands (you can read about the specifics and implications of working with Mac OS X launchd [here](#)).
- 415710 - Adding a Split and Join Selectively node to the Node Graph displays a **Select views to split** popup with a large amount of blank space under the controls.

Miscellaneous

- Nuke Write nodes, when writing multi-view **.exr** files, only write out the set of channels present in the first view for all the other views. For example, if you write out the C_Stitcher's output, because there's only rgba in the rendered **main** view, the individual camera views do not output their vector channels.

To work around this, insert a vector channelset in the first view, even if it contains no data, using the AddChannels node.

- BUG ID 309986 - Frame Server: Rendering 360 stitches through the Frame Server occasionally renders duplicate frames.

Release Notes for CaraVR 2.1v4

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Release Date

January 2019

Qualified Operating Systems

Nuke Version	Platform		
	Mac OS X/macOS	Windows (64-bit)	Linux (64-bit)
11.3v1, or above	10.12 (Sierra)	Windows 7	CentOS 6
	10.13 (High Sierra)	Windows 10	CentOS 7

Other operating systems may work, but have not been fully tested. See the [Nuke Online Help](#) for more information on supported GPUs and other hardware recommendations.

New Features

This release of CaraVR is exclusively for Nuke 11.3 for all platforms. The functionality of all nodes remains the same as previous releases of CaraVR, which should still be used for older releases of Nuke.

Feature Enhancements

There are no feature enhancements in this release.

Bug Fixes

- BUG ID 370526 - Linux only: Headsets did not work as expected when the Nuke Viewer was set to full screen.
- BUG ID 378062 - C_Tracker: Selecting a user track and clicking the **Clear All** button after tracking caused Nuke to crash.
- BUG ID 378582 - C_Tracker: Selecting a user track and clicking the **Clear All** button caused the track to behave unpredictably when retracking the same point.

Known Issues and Workarounds

Installation

Windows only: Delete the CaraVR version folder, if it exists, prior to installation. The folder resides here:

```
C:\Program Files\Common Files\Nuke\<nuke_version>\plugins\<caravr_verion>\
```

For example, if you're installing a new version of CaraVR 2.1, delete this folder before installation:

```
C:\Program Files\Common Files\Nuke\<nuke_version>\plugins\2.1\
```

Stitching

- Projections in Nuke's 3D system expect rectilinear footage, which is inherently limited to a 180° field of view. As a result, C_CameraSolver's manual 3D workflow, which relies on projections, only projects the central 180° from material shot on wider lenses, such as the Nokia OZO.
- BUG ID 232523 - C_ColourMatcher: **Gains** control keyframes for multiple cameras in the Curve Editor are not recognized as keyframes.

Preview

- If you have a version of both CaraVR 1 and CaraVR 2 installed on the same machine, any headsets connected to the machine will not work and may cause Nuke to crash.
- Many facilities lock down USB access for security, which impacts Oculus Rift support. Some customers found that authorizing devices using a udev rule allowed them to use the DK2 on both CentOS 6 and CentOS 7, while still blocking USB storage devices. Thanks to Digital Domain for the following example:

```
ACTION!="add", GOTO="deauthorize_end"
```

```
SUBSYSTEM!="usb", GOTO="deauthorize_end"
```

```

TEST!="authorized", GOTO="deauthorize_end"

## make hubs deauthorize all devices by default

TEST=="authorized_default", ATTR{authorized_default}="0", GOTO="deauthorize_end"

## whitelist specific devices

ENV{ID_VENDOR_ID}=="2833", ATTR{authorized}="1", MODE="0777"

LABEL="deauthorize_end"

```

Windows Only

- We recommend using version 1.0.0 of the StarVR SDK for monitor output to the StarVR DK3 headset. Other versions of the SDK may work, but have not been fully tested.
- INFO and DEBUG messages are displayed incorrectly in the command prompt on some installations.
- Although CaraVR supports both SteamVR (OpenVR) and the Oculus Runtime for the Oculus Rift headset, we recommend selecting only one during a single session. Switching between the two outputs can cause the Oculus Rift to render black frames with the current version of SteamVR.

If you require both SDKs on your machine, please set the `FN_CARA_VRCOMPOSITOR_QUIT` environment variable to 1, which forces SteamVR to restart when you switch between outputs.

- If you're using a headset on multi-GPU machines, ensure that the device is connected to the GPU that handles the monitor output not the internal computation.
- When using the Oculus Rift CV1, we recommend using the official Oculus Rift SDK rather than SteamVR.

We recommend using the OculusVR Runtime instead of SteamVR wherever possible, as SteamVR is currently less stable for CaraVR operations.



Note: Closing SteamVR while Nuke is running with an HMD as an active Viewer causes Nuke to close. To avoid this, save and close Nuke before closing SteamVR.

- The monitor out plug-in routinely notifies about the health and safety implications of use of the Oculus headset. This is a function of the SDK and in newer versions (such as the one we employ) cannot be suppressed or shortened.

Linux Only

- HTC Vive headsets do not currently support lens distortion.

- When using the Oculus Rift CV1 on Linux, be aware that:
 - Unlike the Oculus DK2, the CV1 displays black until you turn it on inside Nuke's Viewer settings.
 - The CV1 does not appear in the list of available screens in Gnome/Kde, it is displayed with the supported devices in Monitor Output.
 - When you initially turn on Monitor Output, all available monitors display black for a few seconds as the OS adjusts to the new configuration.
 - The CV1 remains on until you close Nuke, which causes all available monitors to display black for a few seconds as the OS adjusts to the new configuration.
- When using the HTC Vive on Linux, be aware that:
 - Under Centos 7, powering the headset through a USB 3 port can cause Nuke to become unresponsive.
As a workaround, power the headset through a USB 2 port instead.
 - Installing a newer version of OpenHMD may clash with the one shipped with CaraVR. If you encounter problems with the HTC Vive, try uninstalling the newer version of OpenHMD.
 - On some installations, the viewport on the headset doesn't cover the full screen, so you can still see the desktop background. You can work around this issue by moving the mouse pointer onto the headset screen and double clicking the Viewport.
 - On some installations, you may need to open the NVIDIA Control Panel and enable the HMD as a second monitor so that Nuke can use it.

macOS/Mac OS X Only

- On Mac OS X, with the EoL official Oculus SDK installed, the monitor out plug-in cannot open the device as the SDK locks it. Possible workarounds include uninstalling the SDK, or preventing the OVRServer running at startup, using the launchctl load/unload commands (you can read about the specifics and implications of working with Mac OS X launchd [here](#)).

Miscellaneous

- Nuke Write nodes, when writing multi-view **.exr** files, only write out the set of channels present in the first view for all the other views. For example, if you write out the C_Stitcher's output, because there's only rgba in the rendered **main** view, the individual camera views do not output their vector channels.

To work around this, insert a vector channelset in the first view, even if it contains no data, using the AddChannels node.

- BUG ID 309986 - Frame Server: Rendering 360 stitches through the Frame Server occasionally renders duplicate frames.

Release Notes for CaraVR 2.1v3

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Release Date

September 2018

Qualified Operating Systems

Nuke Version	Platform		
	Mac OS X/macOS	Windows (64-bit)	Linux (64-bit)
10.5v6, or above	10.9 (Mavericks)	Windows 7	CentOS/RHEL 5
	10.10 (Yosemite)	Windows 8	CentOS/RHEL 6
11.1v1, or above	10.12 (Sierra)	Windows 7	CentOS 6
	10.13 (High Sierra)	Windows 10	CentOS 7
11.2v1, or above	10.12 (Sierra)	Windows 7	CentOS 6
	10.13 (High Sierra)	Windows 10	CentOS 7

Other operating systems may work, but have not been fully tested. See the [Nuke Online Help](#) for more information on supported GPUs and other hardware recommendations.

New Features

CaraVR now ships with a monitor out plug-in for the StarVR DK3 headset on Windows, which works in a similar way to Nuke's existing SDI plug-ins.

Feature Enhancements

There are no feature enhancements in this release.

Bug Fixes

- BUG ID 358845 - C_CameraSolver: The **Mask** > **Feather** control did not work as expected when the input bounding box was larger than the format.
- BUG ID 360966 - Monitor Output: The StarVR HMD always appeared in the available device list.
- BUG ID 362985 - C_GlobalWarp: Disconnecting the **Source** input after matching and warping occasionally caused Nuke to crash.

Release Notes for CaraVR 2.1v2

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Release Date

July 2018

Qualified Operating Systems

Nuke Version	Platform		
	Mac OS X/macOS	Windows (64-bit)	Linux (64-bit)
10.5v6, or above	10.9 (Mavericks)	Windows 7	CentOS/RHEL 5
	10.10 (Yosemite)	Windows 8	CentOS/RHEL 6
11.1v1, or above	10.12 (Sierra)	Windows 7	CentOS 6
	10.13 (High Sierra)	Windows 10	CentOS 7
11.2v1, or above	10.12 (Sierra)	Windows 7	CentOS 6
	10.13 (High Sierra)	Windows 10	CentOS 7

Other operating systems may work, but have not been fully tested. See the [Nuke Online Help](#) for more information on supported GPUs and other hardware recommendations.

New Features

This release of CaraVR adds support for Nuke 11.2 for all platforms and a new End User License Agreement (EULA), available [here](#).

Feature Enhancements

There are no feature enhancements in this release.

Bug Fixes

- BUG ID 335187 - C_RayRender: Enabling **Stereo Scan Enable** in **spherical** projection mode clipped the output of far objects greater than 1000 units away from camera.
- BUG ID 346933 - C_GlobalWarp: Re-rendering the output of a C_Stitcher downstream of a C_GlobalWarp occasionally warped the image incorrectly.
- BUG ID 353462 C_CameraSolver: Connecting two or more C_CameraIngest nodes to a C_CameraSolver replicated the number of views in the script incorrectly.
- BUG ID 356118/357103 - Toolsets: Opening the **Warp** and **Warp_And_Stitch** toolsets occasionally caused Nuke to become unresponsive or crash.
- BUG ID 356259 - C_Stitcher: Adjusting the **Converge** control manually in unsaved scripts occasionally caused Nuke to crash.
- BUG ID 357302 - C_GlobalWarp: Rig rotation metadata was not always passed downstream correctly.
- BUG ID 357733 - C_DisparityGenerator: Nuke did not handle cases where a C_DisparityGenerator node was inserted into a script incorrectly.
- BUG ID 357727 - Toolsets: The **Warp_And_Stitch** toolset did not pass keyframes to the C_Stitcher node automatically.

Release Notes for CaraVR 2.1v1

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Release Date

June 2018

Qualified Operating Systems

Nuke Version	Platform		
	Mac OS X/macOS	Windows (64-bit)	Linux (64-bit)
10.5v6, or above	10.9 (Mavericks)	Windows 7	CentOS/RHEL 5
	10.10 (Yosemite)	Windows 8	CentOS/RHEL 6
11.0v3, or above	10.11 (El Capitan)	Windows 7	CentOS 6
	10.12 (Sierra)	Windows 10	CentOS 7
11.1v1, or above	10.12 (Sierra)	Windows 7	CentOS 6
	10.13 (High Sierra)	Windows 10	CentOS 7

Other operating systems may work, but have not been fully tested. See the [Nuke Online Help](#) for more information on supported GPUs and other hardware recommendations.

New Features

C_VerticalAligner

C_VerticalAligner, based on Ocula's VerticalAligner, eliminates vertical differences between stereo camera pairs while maintaining horizontal pixel positions. C_VerticalAligner is predominantly designed for use in rectilinear space, but it can also warp in latlong space to provide better results from fisheye lenses.

C_VerticalAligner includes a discrete solver allowing you to use it independently, but it can also ingest metadata from C_CameraSolver and pass it downstream to C_Stitcher to improve stitch results between camera pairs in a stereo rig.

C_CameraIngest

C_CameraIngest is designed to streamline import workflows when using manually solved or pre-tracked footage from third-party applications. Connect your cameras and your footage to the node to setup a rig that can be used directly for stitching or as the basis for further refinement with the C_CameraSolver.

Feature Enhancements

C_CameraSolver

- The **Analysis** controls now include an **Orientation** dropdown, enabling you to fix the position and/or rotation of cameras in the rig during matching and solving. The default value, **Optimize per Camera**, behaves like previous versions of CaraVR allowing cameras in the rig to change as required.
- The **Camera Layouts** dropdown now includes new experimental rig options: **Horizontal**, **Vertical**, **Planar**, and **Free Layout**. If your rig takes one of these forms, select the appropriate setting before matching and solving the rig.



Note: The **Horizontal**, **Vertical**, **Planar**, and **Free** layouts are experimental. Please contact support.foundry.com if you have any feedback you'd like to share with Foundry.

- C_CameraSolver's **Export** dropdown now includes a **Camera Ingest** option, which automatically sets up your footage with solved cameras piped into a C_CameraIngest node.

C_GlobalWarp

- C_GlobalWarp now has the ability to track constraints over time, for a faster workflow when correcting moving camera rigs. A simplified tracking interface lets you track points directly from the node, while an export workflow allows you to use the full power of the C_Tracker node for more complex tasks.
- BUG ID 343877 - The **Import** button now includes the option to **Import available matches** from C_CameraSolver nodes.

Toolsets

A new toolset, **Stereo_Plate_Align**, has been added to the toolsets that ship with CaraVR. The script contains details of a typical workflow for correcting vertical alignment between two rectilinear stereo plates. This toolset is particularly useful for converging on a certain point in greenscreen plates to allow you to position characters correctly in 360 space using the Card node.

Bug Fixes

C_CameraSolver

- BUG ID 226177 - Horizon edit mode did not work when a camera was selected in the **Properties** panel **Cameras** table.
- BUG ID 342556 - Connecting new inputs to C_CameraSolver with the **Properties** panel closed did not update the Viewer correctly.

C_GlobalWarp

- Proxy images were not handled consistently.
- Clicking **Key All** and then canceling the operation did not create any keyframes.
- Constraint colors were occasionally too similar to differentiate between.
- BUG ID 341985 - Clicking **Match** with more views than cameras in the script did not work as expected.
- BUG ID 343550 - Changing the world rotation upstream did not update feature tracks correctly.
- BUG ID 352070 - The Viewer did not always update after undo and redo actions.

C_Stitcher

- BUG ID 311032 - Differences were visible between GUI renders with AMD GPUs when rendering out multiples of the same footage.
- BUG ID 346933 - Passing C_GlobalWarp data into a C_Stitcher occasionally warped the image unpredictably.

Miscellaneous

- BUG ID 343956 - Linux only: Oculus Rift headset support did not work as expected with the latest version of Nuke.
- BUG ID 347290 - AutoPano Import: The **AutoPanoVideo_Project** script did not work as expected.
- BUG ID 347299 - Python: Exports did not work as expected when CaraVR 2.1 was installed alongside any previous version.
- BUG ID 349320 - C_Bilateral: Connecting an image containing multiple layers, such as **rgba** and **stitch_map**, to the **guide** input caused kernel exception errors.