

Release Notes for CaraVR 2.0v1

Copyright © 2017 The Foundry Visionmongers Ltd.

Release Date

November 2017

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

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_GlobalWarp

A new node, C_GlobalWarp, has been added to rapidly produce a preview stitch using metadata, passed downstream from a C_CameraSolver, to help minimize ghosting in overlap regions. C_GlobalWarp adds controls to adjust a stitch to line up key features and allows you to add constraints to reduce warping on known straight lines in the rectilinear input images.

See [C_GlobalWarp](#) for more information.

C_Tracker

C_Tracker has been redesigned to simplify and accelerate the process of stabilisation and match-moving. C_Tracker runs on the GPU, where available, and adds automatic tracking in 360 stitches. You can then use the existing user defined tracks workflow to lock stabilisation to particular regions.

See [C_Tracker](#) for more information.

C_DisparityGenerator

C_DisparityGenerator has been rewritten to utilise the quality of Ocula's disparity vectors in CaraVR. CaraVR now includes a gizmo tool, C_DisparityToDepth, designed to convert disparity to a depth map. Depth maps can be useful in compositing when you're placing 3D objects in a scene.

See [C_DisparityGenerator](#) for more information.

C_NewView

A new node, C_NewView, has been added to simplify and accelerate 360 corrections in stereoscopic stitching. C_NewView brings the quality of Ocula's view rebuilding to CaraVR by incorporating the improved disparity vectors from the C_DisparityGenerator node. C_NewView also computes occlusion in stereo camera pairs automatically.

See [C_NewView](#) for more information.

C_StereoColourMatcher

A new node, C_StereoColourMatcher, has been added to ensure left and right stereo views are consistent for a comfortable viewing experience. C_StereoColourMatcher brings the quality of Ocula's colour matching to CaraVR by incorporating the improved disparity vectors from the C_DisparityGenerator node. C_StereoColourMatcher also computes occlusion in stereo camera pairs automatically.

See [C_StereoColourMatcher](#) for more information.

Feature Enhancements

- BUG ID 231514 - C_Tracker: You can now zoom the tracker window by holding **Shift** and then clicking and dragging in the Viewer widget for the selected track.

- BUG ID 317812 - C_DisparityGenerator: Calculated vectors are now cached to avoid unnecessary re-rendering.

Bug Fixes

- BUG ID 230483 - C_ColourMatcher: Matching colour after a OneView node produced NaN errors.
- BUG ID 244959 - Toolsets: The **Google Jump Depth To Points** toolset was connected incorrectly if more than one toolset was created.
- BUG ID 270799 - CameraTracker: Disabling **Export > Link output** caused CaraVR node creation to fail with a **global name 'indexes' is not defined** error.
- BUG ID 275292 - C_CameraSolver: Copying and pasting values between C_CameraSolver nodes did not work as expected.
- BUG ID 305670 - C_RayRender: Render results from C_RayRender were clipped when compared to Nuke's RayRender node.
- BUG ID 311032 - C_Stitcher: Differences were visible between GUI renders with NVIDIA GPUs when rendering out multiples of the same footage.
- BUG ID 311040 - C_Stitcher: Differences were visible between Frame Server renders when rendering out multiples of the same footage.
- BUG ID 315732 - C_Stitcher: Connecting a Viewer to a C_Stitcher with no input displayed a misleading error message.
- BUG ID 315772 - C_RayRender: Connecting a Viewer to a C_RayRender node with no CaraVR licence displayed a misleading error message.
- BUG ID 315809 - Linux only: Connecting a C_Stitcher to a C_CameraSolver and then clicking **Match** in the solver properties caused Nuke to crash if no NukeX licence was found.
- BUG ID 315812 - macOS only: Connecting a C_Stitcher to a C_CameraSolver without first solving the cameras displayed a kernel error in the Viewer.
- BUG ID 315976 - Toolsets: Viewing the PreviewStitch node in the **Full_Pipeline** toolset caused Nuke to crash.
- BUG ID 316419 - C_ColourMatcher: Selecting **Latlong** projection from the C_CameraSolver was not interpreted correctly by C_ColourMatcher.
- BUG ID 317941 - C_RayRender: The node label for C_RayRender was incorrect.
- BUG ID 317984 - C_Tracker: The **Global** frame range setting was not always respected.
- BUG ID 318025 - C_Tracker: User tracks could only be added to one C_Tracker node when there were multiple instances in the script and their **Properties** were open.

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\<caravvr_verion>\
```

For example, if you're installing a new version of CaraVR 2.0, delete this folder before installation:

```
C:\Program Files\Common Files\Nuke\<nuke_version>\plugins\2.0\
```

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 323507 - C_CameraSolver: Adjusting solved camera positions by dragging the widgets in the Viewer occasionally causes Nuke to crash.
- BUG ID 312749 - C_CameraSolver: **Alpha** channels, such as those generated by Roto nodes, are not always recognized by C_CameraSolver and an **Input 1 is missing alpha** is displayed.

As a workaround, disable and enable the alpha generator to dismiss the error.

- BUG ID 312310 - C_CameraSolver: Saving, closing, and reopening a script containing a solved rig occasionally causes C_CameraSolver to override all camera controls with the values from the first camera.
- BUG ID 312081 - CaraVR renders are inconsistent when rendering frames in batches if C_CameraSolver has been solved for an animated rig and the keyframes are not matched in C_Stitcher.
- BUG ID 311032 - C_Stitcher: Differences are visible between GUI renders with AMD GPUs when rendering out multiples of the same footage.
- BUG ID 283927 - C_CameraSolver: Cameras in the **Properties** panel **Cameras** table don't currently retain manually animated keyframes.
- BUG ID 282556 - C_Stitcher: Importing keyframes from another CaraVR node disables the **Vectors** tab in the **Properties** panel.
- BUG ID 232523 - C_ColourMatcher: **Gains** control keyframes for multiple cameras in the Curve Editor are not recognised as keyframes.
- BUG ID 226177 - C_CameraSolver: Horizon edit mode does not work when a camera is selected in the **Properties** panel **Cameras** table.

Preview

- HTC Vive headset support on Mac OS X/macOS and Linux does not currently support lens distortion.
- Windows only: 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](#).

- Windows only: 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 on Windows, 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.

- 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.
- 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](#)).
- On Windows, 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.
- Many facilities lock down USB access for security, which impacts Oculus Rift support. Some customers found that authorising 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"
```

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 323538 - Write: Scripts containing C_SphericalTransform and RotoPaint nodes occasionally cause Nuke to reach its memory limit and become unresponsive.
- BUG ID 321973 - C_SphericalTransform: **RGB** channels are currently required by C_SphericalTransform, even if you're only transforming the **alpha** channel.
- BUG ID 309986 - Frame Server: Rendering 360 stitches through the Frame Server renders duplicate frames.