

Release Notes for CaraVR 1.0v3

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Release Date

November 2016

Minimum System Requirements

- A version of Nuke 9.0v9, or above, or Nuke 10.0v4, or above on:



NOTE: CaraVR is not currently available for Nuke 10.5v1.

- Mac OS X 10.9 (Mavericks) or 10.10 (Yosemite)
- Windows 7 or Windows 8 (64-bit only)
- CentOS/RHEL 5 or CentOS/RHEL 6 (64-bit only)
- Foundry Licensing Tools (FLT 7.0v2 or later) for floating licenses.

Requirements for GPU Acceleration

To take advantage of GPU acceleration, you must have, either:

- An NVIDIA GPU with compute capability 2.0 (Fermi) or above. A list of the compute capabilities of NVIDIA GPUs is available at www.nvidia.co.uk/object/cuda_gpus_uk.html



NOTE: The compute capability is a property of the GPU hardware and can't be altered by a software update.

With graphics drivers capable of running CUDA 4.2 or above.

- On Windows and Linux, CUDA graphics drivers are bundled with the regular drivers for your NVIDIA GPU. Drivers from April 2012 onward support CUDA 4.2.
Go to <http://www.nvidia.com/Download/Find.aspx?lang=en-us> for more information.

- On Mac, the CUDA driver is separate from the NVIDIA graphics driver and must be installed, if you don't have it already. The minimum requirement for CUDA 4.2 is driver version 4.2.5 which can be downloaded from www.nvidia.com/drivers.



NOTE: If your computer enters sleep mode, the CUDA drivers cannot recover and you must restart Nuke to use GPU acceleration.



TIP: We recommend using the latest graphics drivers, where possible, regardless of operating system.

- An AMD FirePro GPU on late 2013 Mac Pro 6.1, running OS X 10.9.3 'Mavericks', or later (see the [Blink API](#) documentation for caveats on CPU/GPU result consistency on Mac Pros).

New Features

Google Jump Rigs

C_CameraSolver now supports Google Jump rigs, which employ additional camera metadata from a **.json** file. To import the metadata:

1. Select **Google Jump** from the **Preset** dropdown and then click **Setup Rig**.
2. Browse to the location of the rig **.json** file and click **Open**.

CaraVR populates the **Properties** panel with all the camera data relevant to the rig.

Google Jump Toolset

A Google Jump toolset has been added under **CaraVR 1.0 > Toolsets**, allowing you to quickly extract depth information from the Google Jump metadata for point cloud creation and other depth-dependent workflows.

C_STMap

A new node, C_STMap, has been added. This new node is a GPU accelerated version of the standard STMap node in Nuke.

Write

CaraVR now adds a tab to the **Properties** panel of Nuke's Write node allowing you quickly select groups of views such as **stereo** and **cams** when rendering previews or stitches. You can still select views manually using the **views** dropdown, but **View Presets** can make the process faster.

Feature Enhancements

- C_CameraSolver, C_Stitcher, and C_Blender now blend all channels in the stream rather than just **rgba**.
- C_Stitcher: A new **Blend** mode, **Spherical Multi-Band**, has been added. Spherical blending performs more accurately at the poles, looking up and down, of a stitch.
- 34179/234181 - C_RayRender: The improvement work done on Nuke's RayRender node has been applied to C_RayRender, including new controls on the **AOVs** tab in the **Properties** panel.

Bug Fixes

- BUG ID 221721 - Exports: Deleting a node with **Export** controls, such as C_CameraSolver, and then undoing the action duplicated the options in the **Export** dropdown.
- BUG ID 222261 - C_SphericalTransform: Adjusting the image quality using the Viewer **downrez** control caused controls in the **Properties** panel to change when zooming in the Viewer.
- BUG ID 225693 - C_SphericalTransform: Setting the **Width** to a high value caused a kernel error.
- BUG ID 228082 - C_CameraSolver: Adding and removing a camera in the left or right views of a stereo stitch occasionally caused Nuke to become unresponsive.
- BUG ID 230442 - C_CameraSolver: Adding another C_CameraSolver during matching caused Nuke to crash.
- BUG ID 233526 - C_Stitcher: Setting the **Vectors > Temporal Window** control to a value other than 0 occasionally rendered black frames.
- BUG ID 229557 - C_RayRender: Rendering a customer multi-object **.abc** file filled the RAM, causing the machine to become unresponsive.
- BUG ID 233984 - STMap: Viewing a C_Blender node downstream of exported STMaps from the C_Stitcher produced different results to viewing the C_Stitcher directly.
- BUG ID 235741 - C_SphericalTransform: In **Rotation > Look** mode, the look **Direction** was incorrect with proxy or downrez enabled.
- BUG ID 241640 - C_DisparityGenerator: Setting **Mask** to **Source Alpha** in stereo scripts displayed a **Source is missing** error in the Viewer and connecting a multi-view Roto node to the **Mask** input created an infinite render loop.

Known Issues and Workarounds

Installation

- Windows only: Please delete the **CaraVR** folder, if it exists, prior to installation. The folder resides here:
C:\Program Files\Common Files\Nuke\`<nuke_version>`\plugins\

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 ever projects the central 180° from material shot on wider lenses, such as the Nokia OZO.

Preview

- 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.

- On Mac OS X, with the EoL official Oculus SDK installed, the monitor out plug-in can not 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.
- Nuke 9 only: When **Project Settings > Views > View selection uses buttons?** is disabled, the views dropdown menu does not allow you to change views.

As a workaround, use the keyboard shortcuts ; (semicolon) and ' (apostrophe) to cycle backwards and forwards through the available views or enable the **View selection uses buttons?** control.

Release Notes for CaraVR 1.0v2

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Release Date

September 2016

Minimum System Requirements

- A version of Nuke 9.0v9, or above, or Nuke 10.0v4, or above on:
 - Mac OS X 10.9 (Mavericks) or 10.10 (Yosemite)
 - Windows 7 or Windows 8 (64-bit only)
 - CentOS/RHEL 5 or CentOS/RHEL 6 (64-bit only)
- Foundry Licensing Tools (FLT 7.0v2 or later) for floating licenses.

Requirements for GPU Acceleration

To take advantage of GPU acceleration, you must have, either:

- An NVIDIA GPU with compute capability 2.0 (Fermi) or above. A list of the compute capabilities of NVIDIA GPUs is available at www.nvidia.co.uk/object/cuda_gpus_uk.html



NOTE: The compute capability is a property of the GPU hardware and can't be altered by a software update.

With graphics drivers capable of running CUDA 4.2 or above.

- On Windows and Linux, CUDA graphics drivers are bundled with the regular drivers for your NVIDIA GPU. Drivers from April 2012 onward support CUDA 4.2.
Go to <http://www.nvidia.com/Download/Find.aspx?lang=en-us> for more information.
- On Mac, the CUDA driver is separate from the NVIDIA graphics driver and must be installed, if you don't have it already. The minimum requirement for CUDA 4.2 is driver version 4.2.5 which can be downloaded from www.nvidia.com/drivers.



NOTE: If your computer enters sleep mode, the CUDA drivers cannot recover and you must restart Nuke to use GPU acceleration.



TIP: We recommend using the latest graphics drivers, where possible, regardless of operating system.

- An AMD FirePro GPU on late 2013 Mac Pro 6.1, running OS X 10.9.3 'Mavericks', or later (see the [Blink API](#) documentation for caveats on CPU/GPU result consistency on Mac Pros).

New Features

C_CameraSolver

Support has been added for multi-view inputs, allowing you to define which views to use per input, and assign them to the left or right output view for stereo stitching in C_Stitcher.

Feature Enhancements

Stitching

C_CameraSolver

The camera views are now created in the **knob_changed** call, where possible, to improve script stability.

C_Blender

- A new multi-blend merging option has been added to improve stitch results by matching low frequency colour changes over the course of the blend region.
- C_Blender now includes a control to specify which views to blend together. Any set of views can be selected, provided that they match in format.

C_Stitcher

- A new multi-blend merging option has been added to improve stitch results by matching low frequency colour changes over the course of the blend region.
- Enabling **Stitch** > **Enable Stereo Stitch** in C_Stitcher's properties now generates a left and right view for each camera, allowing more export flexibility for stereo stitches.

C_CameraSolver/C_ColourMatcher/C_Stitcher

Caching has been improved to reduce memory usage, particularly on Linux platforms.

C_Blender/C_CameraSolver/C_ColourMatcher/C_Stitcher

Various performance improvements have been implemented, including minimised code paths and improved knob handling.

C_CameraSolver/C_ColourMatcher/C_Stitcher/C_MetaDataTransform

Global rig rotation is now written as a separate metadata key/value pair, rather than cooked into the individual rig cameras. This change allows for the separation of rig movements and camera layout, as well encoding further rig level parameters with a matching metadata name space.

Bug Fixes

Compositing Workflows

C_RayRender

Rendering in terminal mode caused Nuke to crash.

CameraTracker

CaraVR-specific exports were not available in the **Export** dropdown in Nuke 10.

Review

HMD review using SteamVR has been updated to the latest version 1311417.

Known Issues and Workarounds

Stitching

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Preview

- When using the Oculus Rift CV1, we recommend using the official Oculus Rift SDK rather than SteamVR or OpenVR. We recommend using the OculusVR Runtime instead of SteamVR wherever possible, as SteamVR is currently less stable for CaraVR operations.



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- On Mac OS X, with the EoL official Oculus SDK installed, the monitor out plug-in can not open the device as the SDK locks it. Possible workarounds include uninstalling the SDK, or preventing the OVRServer being run at startup, using the launchctl load/unload commands (read up on the specifics and implications of working with the OS X launchd).
- 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:

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Release Notes for CaraVR 1.0v1

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Release Date

July 2016

Minimum System Requirements

- A version of Nuke 9.0v7, or above on:
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 - Windows 7 or Windows 8 (64-bit only)
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New Features

This section will describe new features in later versions.

Feature Enhancements

This section will describe feature enhancements in later versions.

Bug Fixes

This section will describe fixed bugs in later versions.

Known Issues and Workarounds

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 ever projects the central 180° from material shot on wider lenses, such as the Nokia OZO.

Preview

- Due to recent changes in the Nuke 10 Monitor Output API, VR headsets are only supported on Nuke 10.0v1 and 10.0v2. Headsets work as normal on all Nuke 9.0 builds.
- On Mac OS X, with the EoL official Oculus SDK installed, the monitor out plug-in can not open the device as the SDK locks it. Possible workarounds include uninstalling the SDK, or preventing the OVRServer being run at startup, using the launchctl load/unload commands (read up on the specifics and implications of working with the OS X launchd).

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