# 5.2.2.1

Released 10 Jan 2019

## Bug fixes

- #6376 Parallel AiMakeTx can consume too much memory
- #7741 Arnold crashes when you try to write out render stats
- #7760 Space transform screen space issue
- #7763 Subdivs: per face iterations should be ignored if type is not BYTE
- #7781 Crash when using polygon holes
- #7794 running multiple AiMakeTx hangs and crashes in 5.2.2.0
- #7803 Contour filter memory leak
- #7805 Change error to warning when OSL output keyword is missing
- #7808 maketx was not automatically doing --opaque-detect

# 5.2.2.0

Released 12 Dec 2018

## Enhancements

- **Improved sampling of photometric lights**: Photometric lights now take advantage of the same techniques used for point lights. This can show significant reductions in noise, especially for large lights illuminating surfaces at grazing angles (rim lighting, for example). (#7646)
- **Separate azimuthal roughness in standard_hair**: You can now specify different roughness values for the azimuthal and longitudinal distributions on the `standard_hair` shader. A new `roughness_azimuthal` parameter is used when `roughness_anisotropic` is enabled. The `roughness` parameter is then used to control the longitudinal roughness. When `roughness_anisotropic=false`, `roughness`controls both the azimuthal and longitudinal distributions as before. (#7400)
- **License manager priorities**: Order in which license managers are checked can now be specified by the environment variable `ARNOLD_LICENSE_MANAGER` which contains a comma separated list of the following tokens (`clm`, `rlm` or `none`). If `ARNOLD_LICENSE_MANAGER` is not set, Arnold will use the default priorities of `rlm,clm`. (#7384)For example, to alter the default order, and use first Autodesk Licensing (CLM) , and if it fails use RLM:

```
$ export ARNOLD_LICENSE_MANAGER=clm,rlm
```

To use Autodesk licensing only:

```
$ export ARNOLD_LICENSE_MANAGER=clm
```

To disable all license managers (you'll always get watermarks!):

```
$ export ARNOLD_LICENSE_MANAGER=none
```

- **Linkable toon uv/angle_threshold**: The NPR toon shader's `uv_threshold` and `angle_threshold` parameters are now linkable. (#7713)
- **Adaptive Subdivs Interruption**: It is now faster to interrupt ongoing adaptive subdivision (#7722)
- **Cryptomatte 1.1.0:** Upgraded Cryptomatte to 1.1.0 which contains the fix: "Preview AOVs are now always displayed in display drivers, even when preview_in_exr is disabled". (#7631)
- **Upgrade OIIO and OSL**: OIIO has been upgraded to 2.0.1 and OSL to 1.10.1 (#6040, #7283)
- **Profiling node stages**: Profiling of node_init and node_update have been added so that it's possible to see which nodes are consuming significant time in these stages. (#7313)

## Incompatible changes

- **Round corners default radius**: The default value of `round_corner.radius` has been changed from 1.0 to 0.01 (#7624)
- **Photometric lights with radius**: Just like their `point_light` counterparts, points within the sphere defined by `photometric_light.radius` will no longer be illuminated. (#7646)
- **Minimum OSX version requirement raised from 10.8 to 10.9** In order to upgrade to a more recent version of OIIO, the minimum required OSX version has been raised from 10.8 (Mountain Lion) to 10.9 (Mavericks). (#7318)
- **Maketx and unassociated alpha tiffs**: OIIO 2.0.0 corrects an issue with tiff textures with unassociated alpha that will produce different results. If you need the old behavior you can use `maketx --ignore-unassoc` (#7749)

## Bug fixes

- #7359 Multiple concurrent users on the same node each check out a license with CLM
- #6925 Uncaught exception during OptiX device selection
- #7436 Toon Render: random issues with keylight initialization
- #7568 Improve the performance of parameter selection matching used by the operator runtime
- #7588 Shadow artifacts in Overlapped Polygons
- #7593 Randomly corrupted matrix on procedural lights
- #7596 Noice: AOV variance is not found if added using LPE AOVs
- #7605 photometric_lights crash when radius is non zero
- #7623 Round Corners: not working with transmission
- #7624 Round corners: switch default radius to 0.01
- #7629 crash when writing to an invalid profile.json
- #7632 uv_camera crashes with tiny triangles without normals
- #7643 noice requiring more output paths than inputs
- #7663 Alembic Scalar property being translated as Array
- #7682 alembic crash with bucket callback in Arnold < 5.2
- #7690 AiTextureInvalidate() crashes when the path contains unicode characters
- #7691 Threaded subdivs crash on render abort
- #7698 Disable OptiX when bad NVML is found
- #7712 degenerate camera_projection produces invalid texture lookups
- #7722 Threaded Subdivs: fix interrupt request latency regression
- #7723 Crash in materialx due to invalid/unrecognized node types
- #7745 shadow_matte overrides indirect AOVs even when disabled