

WHAT'S NEW IN VICON EVOKE 1.3?

What's inside

About the latest release of Evoke 2

New features in Evoke 1.3.1 3

New features in Evoke 1.3 7

Addressed issues in Vicon Evoke 1.3 20

Known issues in Vicon Evoke 1.3 23

Further resources 24

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About the latest release of Evoke

Evoke 1.3 is the third point release of the Vicon software that controls Vicon's Origin system, which is used in the location-based VR (LBVR) market.

It includes new features such as proximity grouping, which enables more than 70 Pulsar clusters to be used in a single volume; automatic assignment of clusters to characters; and usability improvements to radio pairing, as well as fixing a number of issues.

For a more detailed description of the latest additions and improvements, see [New features in Vicon Evoke 1.3.1, page 3](#) and [New features in Vicon Evoke 1.3, page 7](#).

For information on optimizing performance for AMD CPUs, see [Improving system performance on AMD CPUs¹](#).

¹ <https://docs.vicon.com/display/Connect/Improving+system+performance+on+AMD+CPUs>



New features in Evoke 1.3.1

Evoke 1.3.1 includes the following new features.

- [Calibration scaling, page 4](#)
- [Control system health metrics from the Processing panel, page 5](#)
- [Optimize object tracking, page 6](#)



Calibration scaling

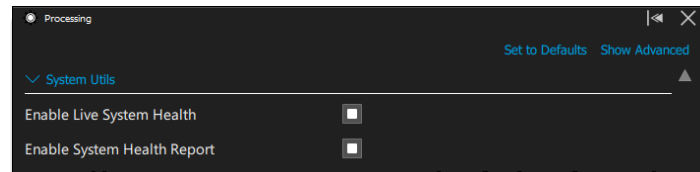
After you've calibrated the system in the usual way, for improved scaling across calibrations and a permanently fixed origin point, you can create a large custom calibration object from objects placed across the volume. You can then use this calibration object, coupled with using the Perform Rescale option, for subsequent setting of the system origin. This improves calibration stability and consistency over time.

For more information, see [Scale calibration and set a fixed origin in *Getting started with Vicon Evoke*](#).



Control system health metrics from the Processing panel

You can now enable and disable the production of live system health metrics and reports from the **System Utils** section of the **Processing** panel.

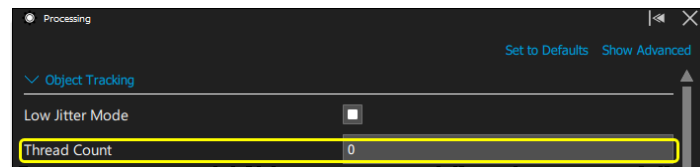


Note that disabling **Enable Live System Health** also disables auto bump healing.

See also [System health reports via API](#), page 13.

Optimize object tracking

In Evoke 1.3.1, you can optimize system performance by specifying the number of threads used for object tracking from the **Object Tracking** section of the **Processing** panel.



Note that if **Thread Count** is set to 0 (the default), the thread count is calculated automatically.



New features in Evoke 1.3

Evoke 1.3 includes these new features:

- Proximity-based tracking for more than 70 Pulsar clusters in a single volume, [page 9](#)
- Automatic assignment of clusters to characters, [page 10](#)
- Improved tracking quality for large numbers of objects, [page 11](#)
- Cluster calibration and refined solving skeleton weights, [page 12](#)
- System health reports via API, [page 13](#)
- Improvements to radio pairing, [page 15](#)
- New tracking filter buttons, [page 17](#)
- Camera orientation detection, [page 18](#)
- Selected marker count, [page 19](#)

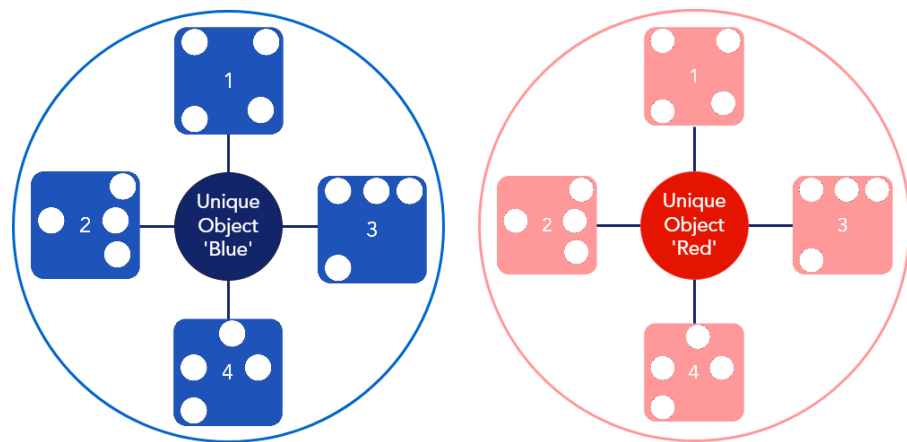
⚠ Vicon Evoke 1.3 and retargeting

- Evoke 1.3 works with VST 3.5 files. VST 3.4 files, as used with Evoke 1.2, are compatible.
- To benefit from the latest retargeting enhancements, update Vicon Retarget to 1.1.2 for use with Evoke 1.3 (to do this, ensure that the option to upgrade Retarget is selected during installation).
- Avoid using Evoke 1.3 with Retarget 1.0.2 or earlier as the cluster template from Evoke 1.3 will not load into these earlier versions of Retarget.
- If you created retarget files in Retarget 1.0.2 or earlier, to benefit from the improved scale estimation and cluster calibration in Evoke 1.3, recreate the retarget files in Retarget 1.1.2.



Proximity-based tracking for more than 70 Pulsar clusters in a single volume

Proximity grouping enables more than 70 Pulsar clusters to be used in a single volume. To achieve this, Evoke permits some duplication of patterns between clusters. It distinguishes between the duplicated patterns by linking the patterns to unique objects by their proximity to these unique objects.



For more information, see Use proximity-based tracking in *Getting started with Vicon Evoke*.



Automatic assignment of clusters to characters

Evoke 1.3 enables you to automatically identify a character's limbs (eg, label hands and feet) based on position of a single reference object (eg, a headset).

This new feature significantly reduces the need to set up and organize the individual cluster identities in advance.

You no longer need to manually assign every object to the correct character and slot. For each character, you now need to manually assign only one reference object to the correct slot: the other slots may be left empty. You then designate the remaining objects as auto-assignable.

When the character is calibrated, these objects are automatically allocated to the correct limbs based on their 3D position.

After the experience, you can clear the character calibration: this returns the auto-assignable objects to their unassigned state.

Note

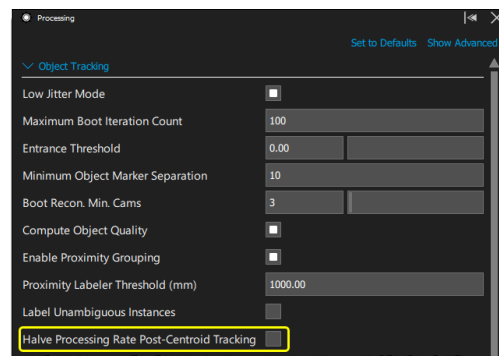
If you require only object tracking, you can auto-assign clusters without character solving or retargeting by selecting an option to disable solving.

For more information, see [Assign clusters and calibrate characters \(automated workflow\)](#) in *Getting started with Vicon Evoke*.



Improved tracking quality for large numbers of objects

Evoke 1.3 introduces a new processing option, **Halve Processing Rate Post-Centroid Tracking**, which may help when you're tracking a large number of objects. Normally, when the system is heavily loaded, to avoid dropping frames, you must reduce the system frame rate. With this new option, you can keep the system frame rate high, but reduce the rate of subsequent processing (eg, object and character tracking). A high frame rate may improve tracking quality (particularly for fast movements) while subsequent processing is reduced, lowering processing load requirements on the host PC.



When using the **Halve Processing Rate Post-Centroid Tracking** option, note the following points:

- 2D centroid detection always happens at the system frame rate
- Subsequent processing depends on whether **Halve Processing Rate Post-Centroid Tracking** is selected or not:
 - When cleared (the default), every frame is processed as normal
 - When selected, every other frame is dropped (yielding a tracking rate of 1:2)
- When using the Datastream, if **Halve Processing Rate Post-Centroid Tracking** is selected, dropped frames occur at every other frame.



Cluster calibration and refined solving skeleton weights

Cluster calibration corrects for minor variability in Pulsar placement on the feet and spine, along with refining the skeleton to give more lifelike character-solving. This helps adapt Characters From Clusters (CFC) to inconsistent application of the clusters to the body for specific objects on certain common axes. This happens automatically when you calibrate characters (see Calibrate characters in *Getting started with Vicon Evoke*).

Example of a misaligned foot cluster:



Without cluster calibration



With cluster calibration

Note

Not all clusters are calibrated on all axes. This feature adapts to minor deviations for foot and spine orientation and position to adjust for commonly misplaced locations.

In addition, skeleton solving weightings have been adjusted to provide a more lifelike character solve.



System health reports via API

To monitor your system to ensure consistent performance, you can now remotely trigger the collection of data for a system health report while continuing to run a live experience. The report includes raw data for each camera, indicating how much data it has seen and how well it corresponds to the other cameras.



Important

If data is collected over too short a time period, these metrics may be highly variable for some cameras.

It is strongly recommended that before analysis, you collect data over a sustained period of time, and during a standardized type of activity.

These API services are available for system health reporting:

- Start/stop/cancel report collection
- Get latest report

Information on the status of your system is accessible via the API.



> New features in Evoke 1.3

An example implementation (*system_health_report.py*) can be found in the supplied Evoke API sample scripts.

To access the example, extract the files from the .zip file installed in this default location to a suitable folder:

`C:\Program Files\Vicon\Evoke1.3\SDK`

You can find *system_health_report.py* in the *sample_scripts* subfolder.

The information generated for each camera includes:

- Centroid count: The number of 2D centroids seen by the camera
- Labeled centroid count: The number of centroids that correspond to a 3D model point on a tracked object
- Average reprojection error: RMS error between the observed centroid coordinates and the coordinates computed by projecting the 3D model point onto the image

The following reports were generated by running the example. Three reports were generated, showing the system running normally (Report 1), a camera having been moved (Report 2), the issue fixed and the system healthy again (Report 3):

```
Windows PowerShell
PS C:\Users\QATEST\Desktop\EvokeAPIPython\sample_scripts> python .\system_health_report.py
Connected to Evoke 1.3.0.126297h
system health report controls:  s - Start a new report
                               p - Stop current report and print result
                               c - Cancel current report
                               x - Exit

-----
Started system health report 2
-----
System health report 2:
31 cameras in system
30 cameras are active (calibrated and enabled)
INFO: All active cameras have acceptable centroid connection score (80% or above).
INFO: All active cameras have acceptable reprojection error scores (1.0 pixel or below).
INFO: All active cameras have acceptable centroid counts (10% of median or above)
-----
Started system health report 3
-----
System health report 3:
31 cameras in system
30 cameras are active (calibrated and enabled)
WARNING: Found 1 camera with low centroid connection score (below 80%).
The system should be fully recalibrated or the Recover Camera Position operation may be performed on this camera.
Camera 30 (Viper V2.2) centroid connection score 0.0% (30277 centroids)
INFO: All active cameras have acceptable reprojection error scores (1.0 pixel or below).
INFO: All active cameras have acceptable centroid counts (10% of median or above)
-----
Started system health report 4
-----
System health report 4:
31 cameras in system
30 cameras are active (calibrated and enabled)
INFO: All active cameras have acceptable centroid connection score (80% or above).
INFO: All active cameras have acceptable reprojection error scores (1.0 pixel or below).
INFO: All active cameras have acceptable centroid counts (10% of median or above)
-----
```

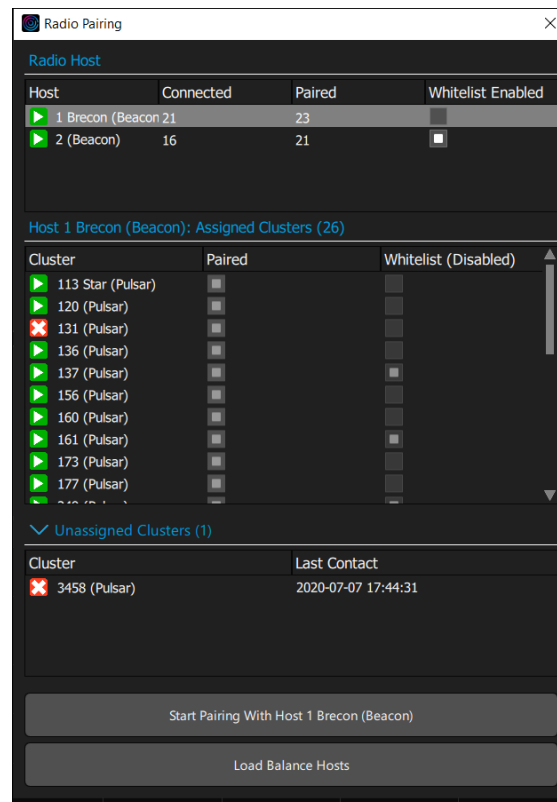


Improvements to radio pairing

This update provides improved support for multiple Beacons, and a more streamlined interface.

To access the **Radio Pairing** dialog box:

- In the **System** panel, right-click on a Beacon and select **Radio Pairing**.



The **Radio Host** list shows the number of clusters paired and connected to the host and enables you to choose whether the whitelist for the selected Beacon is enabled.

Below, each Beacon (radio host) has its own list of assigned Pulsar clusters. A cluster is assigned to a Beacon when paired to it, or added to its whitelist. The list of clusters for the selected Beacon enables you to see if each cluster is paired and to choose whether or not it is on the whitelist.



In the Assigned Clusters list, you can right-click on one or more selected clusters to perform the following operations:

- Add to or remove from the selected radio host whitelist
- Clean the whitelist. This removes any clusters from the selected radio host whitelist that are paired to another radio host. This option may be useful if you encounter problems when load-balancing or transferring clusters (see Load balancing between hosts in *Getting started with Vicon Evoke*).
- Unpair the selected cluster(s) from the selected radio host
- Transfer (pair) the selected cluster(s) to another connected, enabled radio host

At the bottom of the dialog box, a separate list of unassigned clusters keeps track of pairing requests and recently unpaired clusters. This list persists for the lifetime of the application session, and the time of last contact between the application and the clusters is recorded. To add one or more selected clusters to the selected radio host whitelist, right-click the cluster(s) and then click **Add to Host <host name> whitelist**.

Note that in the case of pairing requests, pairing must also be started in order to enable clusters to connect.

For more information on how to use the Radio Pairing dialog box, see Turn on the Beacon and enable pairing in *Getting started with Vicon Evoke*.



New tracking filter buttons




You can now display or hide items in the Tracking panel, depending on their type. This enables you to display only the items needed for the current task.

To toggle the display of tracking items:

At the top right of the **Tracking** panel, click the relevant button(s):



The buttons toggle the display of:

- Basic objects (non-assigned) 
- Characters (including assigned objects) 
- Smart Objects (non-assigned) 

By default, all items are displayed in the Tracking panel.



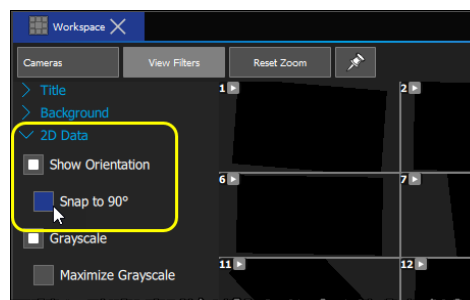
Camera orientation detection

View frames in the Cameras view can now be rotated to match their physical orientation, so that up in the image matches up in the real world. The orientation is determined from the camera calibration if available, otherwise the accelerometer on board the camera is used.

This option is enabled by default.

To turn on or off camera orientation detection:

1. In the **Cameras** view, click **View Filters**.
2. In the **2D Data** section, select or clear **Show Orientation**.
3. To choose whether to snap to 90° increments, ignoring smaller rotations, select or clear **Snap to 90°**.



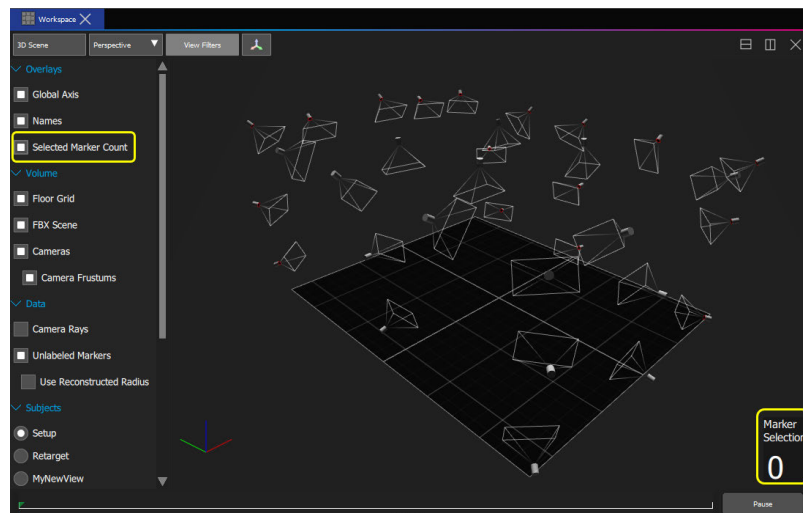


Selected marker count

In the **3D Scene** view, you can now select a new option to show the number of markers currently selected. This enables you to quickly check that all markers on a particular target are visible.

To display the number of selected markers:

1. In the **3D Scene** view, click **View Filters**.
2. In the **Overlays** section, select or clear **Selected Marker Count**.
At the bottom right of the view pane, the **Marker Selection** count is displayed. If no markers are currently selected, a zero is displayed.



As you select markers, the Marker Selection counter changes to display the number of selected markers.



Addressed issues in Vicon Evoke 1.3

- Issues addressed in Evoke 1.3.1, page 21
- Issues addressed in Evoke 1.3, page 22



Issues addressed in Evoke 1.3.1

Vicon Evoke 1.3.1 resolves a number of issues, including the following:

- Object booting now behaves as expected when **Halve Processing Rate Post-Centroid Tracking** processing option is enabled.
- If you force close Evoke, your selection for **Ask before recovery of latest settings** in Preferences is now saved when you restart Evoke.
- During calibration, when you are setting the origin, the wand is now displayed in the 3D Scene.
- Large volume calibrations can now be scaled to match external reference measurements (see Scale calibration and set a fixed origin).



Issues addressed in Evoke 1.3

Vicon Evoke 1.3 resolves a number of issues, including the selection listed here:

- You can now calibrate a system using Evoke headless.
- The presence of Vue cameras in the system no longer results in an unrecoverable error after calibration.
- Basic objects are now tracked if there was previously a Smart Object with the same name (ie, a deleted Smart Object) in the current Evoke session.
- Setting a ViperX to default parameters with Low Jitter Mode off does not now cause an increase in delivery latency.
- Editing a subject name no longer causes Evoke to stop unexpectedly.
- Evoke no longer occasionally stops responding when you click a Smart Object.
- x2d files recorded in Evoke now display timecode information.
- Several specific instances causing the application to crash.

For more details, please review the release notes.



Known issues in Vicon Evoke 1.3

The following issues are known to exist in Evoke 1.3:

- Ctrl+A in System tree selects all cameras, regardless of selection.
- In the Graph view, the axes don't display labels showing units of measurement.
- In Evoke 1.2 and later, Vue cameras support frame rates up to to 120 Hz at 720 p. Sub-sampling of Vue cameras is not currently supported.



Further resources

If you need more information than that supplied in the documentation or on the [Vicon Support web pages](#)², please contact Vicon:

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