



Harmony

Toon Boom Harmony V15.0 Release Notes



TOON BOOM ANIMATION INC.

4200 Saint-Laurent, Suite 1020
Montreal, Quebec, Canada
H2W 2R2

+1 514 278 8666

contact@toonboom.com
toonboom.com

Legal Notices

Toon Boom Animation Inc.
4200 Saint-Laurent, Suite 1020
Montreal, Quebec, Canada
H2W 2R2

Tel: +1 514 278 8666

Fax: +1 514 278 2666

toonboom.com

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Toon Boom Harmony 15.0.6

Here is a list of changes in Harmony 15.0.6, build 15.0.6.14310 (2019-01-10):

- [Scripting on page 3](#)
- [Fixed Issues on page 3](#)

Scripting

Feature	Description
Set the value of an attribute at any frame	The new <code>setValueAt</code> method of the <code>Attribute</code> class can set the value of the attribute at a specific frame rather than at the current frame.
Documentation of the <code>node</code> class	Examples of how to use the <code>node</code> class have been added to the Harmony scripting interface documentation.
Documentation of the <code>Attribute</code>	Examples of how to use the <code>Attribute</code> class have been added to the Harmony scripting interface documentation.
Higher decimal precision	The <code>node.getTextAttr()</code> and <code>column.getEntry()</code> methods can now return up to four decimals of precision rather than three, which is the amount of precision supported by most input fields in the user interface.

Fixed Issues

- Harmony fails to connect to the license server when its port and address are specified in the `TOONBOOM_LICENSE_FILE` environment variable in the `port@hostname` format.
- Crash when exporting a QuickTime movie from a scene with deformations applied to a drawing layer with the Preserve Line Thickness layer property. The crash only affects specific scenes.
- Memory leak when selecting an Alembic 3D model with vertex colours
- Memory leak when using deformations on a drawing layer that has the Zoom Independent Thickness option enabled.
- The rendering of drawings with deformations is very slow in the Top and Side views.
- A blank welcome screen appears when opening a scene directly from Finder on macOS 10.14 (Mojave).
- Harmony does not always display error message when audio playback fails.
- Clicking on a drawing with the Transform tool with the Peg Selection Mode tool property enabled does not select its parent peg if the drawing is connected to a deformation that uses a Transformation-Switch.

- Selecting a drawing layer in the Camera view may fail if it is the parent of another drawing layer.
- Position and zoom level of Node View sometimes changes when manipulating a Master Controller.
- When importing a template with groups with the Publish Attribute Mode enabled, the Publish to Parent Group option the groups is always enabled.
- The `scene.checkoutLock()`, `scene.checkOutDate()` and `scene.checkOutUser()` methods always return the default value
- The `TB_PL_IBINKPencil_to_brush` script only converts the drawing's pencil lines to brush strokes in the first drawing of the layer.

Toon Boom Harmony 15.0.5

Here is a list of changes in Harmony 15.0.5, build 13929.

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 - [Colour Management on page 5](#)
 - [3D Models on page 5](#)
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Features

Colour Management

Feature	Description	Edition
Colour Space for Original Bitmaps	<p>If you have an element that uses original bitmap images that are not tagged with their colour space, you can now set whether to display the image in a Linear, sRGB or Rec.709 colour space.</p> <p>To do this, open your element's Layer Properties and, in the Drawing tab, set the Colour Space parameter to the desired colour space.</p>	Advanced, Premium

3D Models

Feature	Description	Edition
Colour Alembic	Harmony now supports Alembic (.abc) 3D models with vertex colours, provided that they are exported from Autodesk Maya with the Write Color Sets option.	Premium

Export

Feature	Description	Edition
Export Layout	<p>The maximum size of images exported with the Export Layout dialog has been increased from 10000 to 524288.</p> <p>The maximum scaling of images exported with the Export Layout dialog has been increased from 999% to 10000%.</p>	Premium

WebCC

Feature	Description	Edition
Automatic Preview Generation	WebCC will now automatically regenerate the thumbnail and the preview movie of a scene after it has been updated, whether by importing the scene into WebCC or by updating it directly from Harmony.	Advanced, Premium
Custom script on scene update	You can now configure WebCC to automatically run a custom shell script or executable when a scene is updated. This is done by storing the path to the script or executable in the environment variable WEBCC_POST_IMPORT_SCRIPT on the WebCC server. This command will be executed with the environment, job and scene name as its command line parameters, in that order.	Advanced, Premium

Scripting

Feature	Description	Edition
Closing Scene Script	When closing a scene, Harmony will now automatically run the script TB_sceneAboutToClose.js . This script is executed after saving the scene, but right before closing the scene. By default, the script does nothing, but you can customize it with routines that you want Harmony to run each time a scene closes.	All
Save As	The saveAs () method has been added to the scene global object to allow saving the scene under a new name via scripting.	All
Clear Art Layer	The clearArt () method was added to the DrawingTools global object. It can be used to empty a specific art layer in a specific drawing.	Advanced, Premium

Enhancements

- It is now possible to assign a keyboard shortcut to the Rename by Frame command. This shortcut is in the General section of the Shortcuts tab of the Preferences dialog.
- Optimized the Colour Selector node to reduce its impact on rendering time.
- The script **TB_PL_IBINKPencil_to_brush.js**, which can be used to convert the pencil lines to brush strokes in multiple drawings, now displays a progress bar while processing the drawings
- Installation on Windows is now faster. The installer no longer registers the fonts packaged with Harmony in the Windows font database.

Bug Fixes

- Fixed issue causing artwork drawn with a Wacom Stylus/Cintiq tablet to be offset on Windows, since the Wacom driver update 6.3.30-6.
- Fixed issue where having two drawing tablets connected to the machine would cause one of them to offset the stylus input.
- Fixed occasional random crash when running Harmony on GNU/Linux.
- Fixed issue causing unwanted extra lines to appear when using a bone deformation on a layer with the Preserve Line Thickness property enabled.
- Fixed crash when exporting a layout image larger than 45000 pixels in width or height.
- Fixed issue causing a Transformation Switch to break when pasting a pose onto a character rig using the Pose Copier.
- Fixed a crash that occurred when undoing the creation of a layer after toggling between selecting the Transform tool and the Brush tool.
- Fixed issue where Master Controller node could cause Harmony to slow down or freeze in heavy scenes if the Master Controller node was connected to an input image.



NOTE

As a side effect of this fix, Master Controller nodes will no longer run scripts in their Softrender tab.

- Fixed rendering issues when using a 3D composite in Seamless Bitmap mode.
- Fixed issue causing some 3D models with both top-level and sub-node animations to appear as hairlines in the Camera view, in the OpenGL preview.
- Fixed issue where Harmony would crash when using the scripting interface to create an empty table widget in a dialog.
- Fixed issue where the **Action.validate()** method would report an action as disabled when no responder is specified.


- Fixed issue where exporting a layout image for a scene with layers that have been moved on the z-axis would render them in the wrong position.
- Fixed issue where using the **TB_PL_IBINK_no_colorart** script would not work on layers that do not have a drawing in the first frame.
- Fixed issue where thumbnails would not appear in the Library view when using Harmony in trial mode.
- Fixed issue where creating colour art from line art would not clear the colour art layer first if the line art is made with pencil lines only.
- Fixed issue where exporting the OpenGL preview of a scene as a QuickTime movie using the **exporter.exportOGLToQuicktime()** method would ignore the **EXPORTOGL_LAUNCH_PLAYER** preference which, when set to true, automatically opens the movie in a movie player and, when set to false, renders the movie without opening it.
- Fixed issue where exporting the OpenGL preview of a scene as a QuickTime movie using the **exporter.exportOGLToQuicktime()** method would offset the starting frame by 1.
- Fixed issue where a Radial-Zoom-Blur node with a blurriness value set to 0 would slow down the rendering of the scene.
- Fixed issue causing the script manager to fail detecting and listing the functions inside an encrypted script.
- Fixed issue causing some elements under deformation nodes to be invisible when rendered on Windows.
- Fixed issue causing Harmony to try to renew an expired subscription license when launched in Trial mode in Japanese.

Toon Boom Harmony 15.0.4

Here is the list of changes in Harmony 15.0.4, build 13658:


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- [Bug Fixes on page 10](#)

Features

Feature	Description	Edition
Source Maya project from original location	<p>The Render Maya Batch node can now source the Maya project from its original location to render the 3D model in a Harmony scene.</p> <p>For more information, refer to the <i>3D Integration</i> chapter of the User Guide or to the <i>Maya Batch Render</i> node documentation of the Reference Guide.</p>	Premium
Import EXR/DTEX/IFF images	<p>It is now possible to import images in OpenEXR (.exr), Deep Texture (.dtex) and Interchange File Format (.iff).</p> <div style="border: 1px solid green; padding: 10px; margin-top: 10px;"> <p> NOTES</p> <ul style="list-style-type: none"> • Although all three of these formats support deep pixels, they are flattened when imported in Harmony. • Importing Deep Texture (.dtex) images is not supported in Harmony Essentials. </div>	All

Scripting

Feature	Description	Edition
Documentation	<p>Enhancements were made to the scripting documentation packaged with Harmony:</p> <ul style="list-style-type: none"> • The style and layout has been updated. • A tree view navigation pane was added to the left of the documentation to make navigation easier. • Most of the information that is not useful to users, such as private classes and members, hierarchy graphs and file references was removed. 	All

Feature	Description	Edition
	The scripting documentation can be viewed by opening the view menu  in the Script Editor view and selecting Help > Scripting Interface Documentation .	

Bug Fixes

- Fixed issue where the Minimum, Maximum and Constant parameters of the Line Thickness adjustment settings of a drawing layer were ignored if the drawing was under a deformation layer.
- Fixed issue causing Dynamic Spring node to ignore rotations from parent on macOS and GNU/Linux.
- Fixed a crash when exporting a movie in Windows Media Video (.wmv) format containing certain audio files.
- Fixed a rare crash when adding a drawing layer.
- Fixed a rare crash when importing certain 3D models in Alembic (.abc) format.
- Enhanced performance when manipulating deformation points in a scene containing a Transformation Switch node that has a lot of connections.
- Made the colour scheme in the script debugging dialog more legible.

Toon Boom Harmony 15.0.3



IMPORTANT

If you use Harmony as a WebCC client, you must enter the full URL including protocol, domain name and port number of the WebCC server in the General tab of the Preferences dialog before you can download and upload changes made to a scene via Harmony.

Here is the list of changes in Harmony 15.0.3, build 13585:

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Features

Effects


Feature	Description	Edition
Ortholock Node Rotation Axis	Added a preference to the Ortholock to rotate the input image only on the x-axis or on the y-axis. By default, the Ortholock node will rotate the input image on both axes.	Premium

WebCC



Feature	Description	Edition
Support for SSL in Harmony	<p>Harmony is now able to update scenes exported from WebCC even if the server only accepts SSL connections. If the WebCC server requires SSL, you must specify it in the General tab of the Preferences dialog by adding https:// before the name of the WebCC server. You can now configure Harmony to use the full URL to your WebCC server, instead of entering the hostname and the port number separately.</p> <p>For Harmony to be able to validate the certificate of the WebCC server, you may have to configure the WebCC server with the root CA certificate and/or its</p>	Advanced, Premium

Feature	Description	Edition
	<p>intermediate. You can now do this by launching WebCC with the following parameter:</p> <pre data-bbox="532 369 1175 394" style="text-align: center;">-ca <path to root CA/intermediate certificate></pre> <p>If you want to specify the root CA and its intermediates, you can use the <code>-ca</code> parameter several times, once for each certificate you need to specify.</p>	
<p>Permission to import and export any scene for animators</p>	<p>It is now possible to override the security restriction on Animator-type users requiring them to be assigned to a scene before they can export and import it. This can be done by running WebCC with the following command line parameter:</p> <pre data-bbox="456 709 1289 781" style="border: 1px solid #ccc; padding: 5px;">-permission animator import_export_any_scene on</pre>	<p>Advanced, Premium</p>

Utilities

Feature	Description	Edition
<p>utransform</p>	<p>The following changes were made to the utransform utility:</p> <ul style="list-style-type: none"> The <code>-flatten_scale</code> parameter has been added. Using this parameter with a scaling factor will scale up the input drawing by this factor, flatten it, then scale it back down to its original size. This can be used to preserve texture quality when flattening drawings containing textured brush strokes. If the pixels of different strokes are not aligned, scaling them up before flattening them will prevent them from becoming blurry. <div data-bbox="532 1377 1289 1579" style="border: 1px solid #90EE90; padding: 10px; margin: 10px 0;"> <p> NOTE</p> <p>As of Harmony 15.0.0, the pixels in textured brush strokes are aligned by default, except when brush strokes are transformed with the selected tool.</p> </div> <ul style="list-style-type: none"> When flattening a drawing with textures, with either the <code>-flatten</code> or <code>-flatten_scale</code> parameter, utransform will clean up old textures from the drawing file and only keep the flattened texture, significantly reducing the file size of the drawing. 	<p>All</p>

Enhancements

Enhancement	Edition
<p>Harmony will now remember whether the Onion Skinning by Drawing option is enabled between sessions.</p> <p>This option can be enabled by doing one of the following:</p> <ul style="list-style-type: none"> • In the top menu, select View > Onion Skin > Onion Skinning by Drawing. • In the top-left corner of the Camera view, open the Camera view menu  and select View > Onion Skin > Onion Skinning by Drawing. 	All
<p>Harmony will now remember whether the Xsheet's Enable Playback option is enabled between sessions.</p> <p>This option can be enabled by opening the Xsheet view menu  in the top-left corner of the Xsheet and selected View > Enable Playback.</p>	Advanced, Premium
Significantly increased the speed of template creation on Windows.	All
Flattening drawings with textured vector brushes will now discard unused textures in the drawing files, reducing their file size.	Advanced, Premium
<p>Increased the precision of colour art generation by scaling up the line art before generating the colour art, then scaling both art layers back down.</p> <p>By default, this is done by scaling the artwork by 4 times before generating the colour art. This factor can be adjusted by setting the hidden parameter LINE_ART_TO_COLOUR_ART_FIT_SCALE to the preferred factor. This can be done by running the following code in the Harmony Script Editor, replacing <preferred factor> with an integer:</p> <pre data-bbox="126 1302 1291 1375">preferences.setDouble("LINE_ART_TO_COLOUR_ART_FIT_SCALE", <preferred factor>);</pre>	Advanced, Premium
Harmony now only initializes the machine's printer when attempting to print instead of when launching the application. If the machine's printer has driver issues, this will prevent such issues from occurring systematically when launching Harmony.	Advanced, Premium
Removed the Distribute to Layers command from the contextual menu of the Camera view, so that tablet users will not accidentally select it.	Advanced, Premium

Bug Fixes

- Fixed issue causing the frame rate to drop or vary when playing a scene with sound enabled..
- Fixed crash when attempting to play a scene containing a missing sound file.

- Fixed crash when logging in to Control Center with an Archive, Xsheet, Scan, Ink & Paint or Animator type user.
- Fixed crash when attempting to copy an Element node that is not linked to an element.
- Fixed memory leak when rendering Portable Network Graphic (.png) images in 16 bits/channel, referred to as PNGDP3 and PNGDP4 in the Write node properties.
- Fixed issue causing the Ortholock node to rotate the image on the z-axis.



NOTE

To avoid affecting the rendered image for existing scenes, existing Ortholock nodes will still rotate their input image on the z-axis. To fix this issue in an existing scene, you must replace the existing Ortholock node with a new Ortholock node.

- Fixed an issue where the Tool Properties view for the Brush tool would not always update when switching from a vector layer to a bitmap layer or vice versa.
- Fixed issue when pasting keyframes from an action template into an Animated Matte Generator would not work.
- Fixed issue where, in rare cases, some drawing layers would be invisible when opening scenes created in Harmony 14.0.

Toon Boom Harmony 15.0.2

Here is the list of changes in Harmony 15.0.2, build 13407:

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Features

Preferences

Feature	Description	Edition
Drawing Substitution Create Key Exposure	<p>A new preference, Create Key Exposure, was added to the Drawing Substitution section of the Timeline tab in the Preferences dialog. This option is enabled by default.</p> <p>When enabled, swapping a drawing with another one using the Drawing Substitution panel of the library view creates a key exposure at the current frame. This means that even if the drawing at the current frame is the same one as the drawing in the previous frame, there will be a key exposure at the current frame. This was the default behaviour in previous versions.</p> <p>When disabled, a key exposure is added to the current frame only if the drawing in the drawing in the current frame is different from the drawing in the previous frames. Hence, if you use drawing substitution to change the drawing at the current frame to be the same drawing as the one in the previous frame, the current frame's exposure will merge with the exposure behind it.</p>	Advanced, Premium

Utilities

Feature	Description	Edition
ConsolidateDb	<p>The following changes were made to the ConsolidateDb utility:</p> <ul style="list-style-type: none"> • Duplicate elements that get emptied by ConsolidateDb will be automatically deleted, even if the <code>-removeEmptyElements</code> option is not specified. • The <code>-removeEmptyElements</code> option will now remove any element in the 	Advanced, Premium

Feature	Description	Edition
	<p>scene that is empty and unused, even if they were not emptied by ConsolidateDb.</p> <ul style="list-style-type: none"> • The <code>-removeUnusedElements</code> option will remove any element in the scene that is not linked to a layer or node. • The <code>-ignoreElementPalettes</code> option will force ConsolidateDb to delete empty elements even if they contain palette files, which it does not do by default. 	

Scripting

Feature	Description	Edition
Optimize Artwork	The <code>optimize</code> function was added to the <code>DrawingTools</code> global object, which can be used to optimize a drawing.	All
Flatten Artwork	The <code>flatten</code> function was added to the <code>DrawingTools</code> global object, which can be used to flatten a drawing.	All
Check Files	The Check Files command located in the Scene top menu can now be executed through scripting using the <code>checkFiles</code> function of the <code>scene</code> global object. The information it reports can be customized by passing options to it in an object.	All
Image Information	<p>The new <code>CELIO</code> global object allows you to obtain information, such as the dimensions, bit depth, amount of channels and type of an image file.</p> <p>For Photoshop Document (.psd) files specifically, it is able to obtain the path, name, dimensions, visibility setting and position in the list of each layer in the file.</p>	All

Enhancements

Enhancement	Edition
The parameters of default eraser for bitmap layers have been optimized for performance.	Advanced, Premium
Enhanced the display quality of bitmap drawings in the OpenGL preview of the Drawing and Camera views when the artwork is zoomed in at a level between 100% and 350%.	Advanced, Premium

Enhancement	Edition
Added scroll bar to Animated Matte Generator view when the view is too small for its content.	Premium

Bug Fixes

- Fixed crash when searching for an asset in the Library view.
- Fixed crash when selecting a disabled layer using the Select Parent (B) or Select Child (Shift + B) keyboard shortcuts.
- Fixed issues where using the Go to Previous Column (H) or Go to next Column (J) keyboard shortcuts to cycle through layers would often skip layers if some layers are disabled.
- Fixed issue where zooming in or out, then copying and pasting artwork in a bitmap layer using the Cutter or Select tool would cause the artwork to be pasted in the wrong position.
- Fixed issue where attempting to give a scene a name with more than 23 characters with the Save As command would fail even if the Allow Unicode Names preference is enabled, which also allows long scene names.
- Fixed an issue where database corruption could occur with scene version tables.
- Fixed issue where a Colour-Override effect's individual colour overrides would be broken if they referred to palettes that are stored at the job or environment level, when doing either of the following:
 - Exporting a scene from WebCC and opening it in Harmony Stand Alone.
 - Updating a scene exported from WebCC on the database with changes made in Harmony Stand Alone.
- Fixed error occurring when using the Download Database Change command if the database scene contains new layers.
- Fixed issue where layers created in scenes exported from WebCC would get disconnected from their element and become invisible after the scene was imported back into WebCC, then exported again.
- Fixed issue where a Colour-Override's individual colour override would appear to be missing if from a palette stored on a different drive than the application's installation drive on Windows.
- Fixed issue where accessing the webcc-api section of the Developer Help menu in WebCC would lead to an error page.
- Fixed issue where, when attempting to add a Supervisor type user in Control Center, the OK button would be greyed out unless the user type was selected after inputting the user's name.
- When launching Harmony in database mode and browsing the database for a scene, the Version drop-down is now greyed out until a scene is selected. Attempting to open this drop-down when no scene was selected would cause an error message.
- Fixed issue where the Colour Wheel type colour editor for effects would only allow negative values down to -254 instead of -255.

Toon Boom Harmony 15.0.1



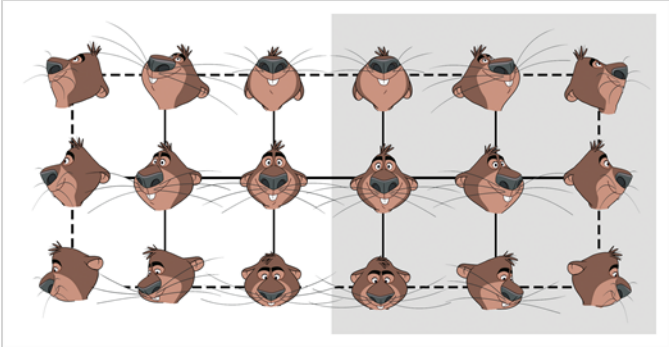
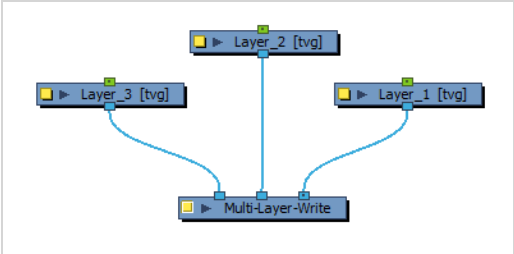
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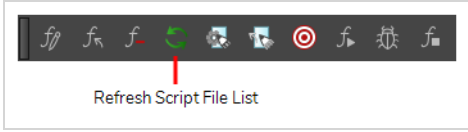
An important fix was made to the licensing mechanic of Harmony in Harmony 15.0.1. If your studio uses a license server, you must upgrade Harmony 15.0 to Harmony 15.0.1 on the license server before upgrading your workstations.

Here is the list of changes in Harmony 15.0.1, build 13289:

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- [Enhancements on page 19](#)
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Features

Feature	Description	Edition
<p>Interpolation Grid for Master Controller</p>	<p>The Interpolation Grid script allows you to create a 2D point Master Controller that makes a character rig take one of many poses set in a 2D grid without having to do any scripting.</p> 	<p>Premium</p>
<p>Multi-Layer Write Node</p>	<p>The Multi-Layer Write Node allows you to export multi-layered Photoshop Document (.psd) and OpenEXR (.exr) images.</p> 	<p>Premium</p>

Feature	Description	Edition
Refresh Script File List	<p>Added a Refresh  button and menu item in the Script Editor view, to refresh the list of script files.</p> 	All

Enhancements

Enhancement	Edition
It is no longer necessary to uninstall the previous version of Harmony before installing the latest version on Windows. If an earlier version of Harmony with the same major and minor version numbers is installed on the machine, the installation wizard will automatically uninstall it before installing the latest version.	All
Renamed the "Project" scope in the Script Editor view to "Scene", since it is used to create scripts in the scene directory.	All
Improved drawing speed with large brushes on bitmap layers.	Advanced, Premium

Bug Fixes

- Fixed issue with licensing service where Harmony and Storyboard Pro would not launch with a standalone license.
- Fixed issue where curve deformation controls would no longer move after performing some manipulations on them.
- Fixed issue where importing scenes in WebCC on a macOS or GNU/Linux server would cause some files to be corrupted.
- Fixed issue with copying extra files linked to a Master Controller node would not work on Harmony Server.
- Fixed issue where packages exported for another database from macOS or GNU/Linux-based WebCC servers would not contain the scene data.
- Fixed issue where extra files linked to a Master Controller node would not be copied over to the scene when using the Save As command.
- Fixed issue preventing from creating script within the project folder in Harmony Server.
- Fixed issue where pencil texture palettes did not preserve their palette type when copying them into a template.
- Fixed issue where opening two scenes one after the other in the same session, both with a palette that had the

same name, but different colours and textures, would load the wrong palette in the second scene.

- Fixed crash when converting brush strokes to pencil lines.
- Fixed occasional crash when a mouse button, stylus button or keyboard shortcut was used while drawing with the Pencil tool.
- Fixed occasional crash when using the Eraser tool on a bitmap layer.
- Fixed crash when undoing operations done with the Cutter tool.
- Fixed issue where drawing with the Brush tool with Repaint mode enabled, undoing, then drawing with the Brush tool with repaint mode disabled would redo the strokes done with Repaint mode enabled.
- Fixed issue where extending exposure on drawings with embedded pivots would temporarily offset their pivot.
- Fixed issue where using keyboard shortcuts to flip through drawings while drawing a stroke would cause the stroke to be discarded.
- Fixed issue where Transformation Limit node would increase rotation instead of decreasing it if parent transformations included a flip.
- Fixed issue where constraint node would invert transformations on the z-axis applied to nodes that are flipped.
- Fixed where connecting a cable to a Composite node would make the cable flicker between two ports.
- Fixed issue where clicking and dragging a group node while holding the Alt key would not insert it into or detach it from cables.
- Fixed issue in the scripting interface where setting the ANGLE attribute of an element using the setTextAttr method would not work.
- Fixed issue allowing to create jobs without assigning them a TD and ATD when running Control Center in a non-English language.

Toon Boom Harmony 15.0.0



IMPORTANT

If your studio uses a license server, you will need to upgrade it to Harmony 15 before you can upgrade to Harmony 15 on client workstations. License servers with Harmony 14 or earlier cannot be used to activate Harmony 15.


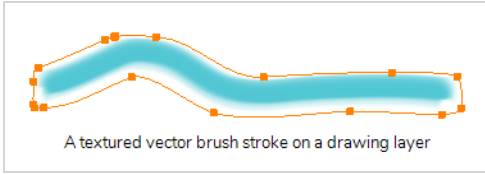
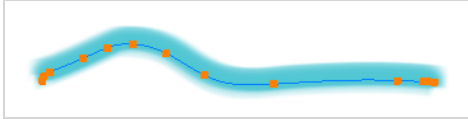
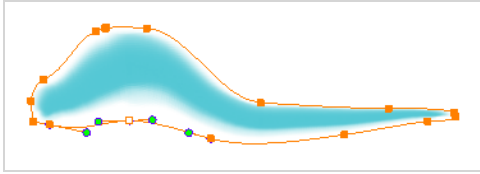
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Features

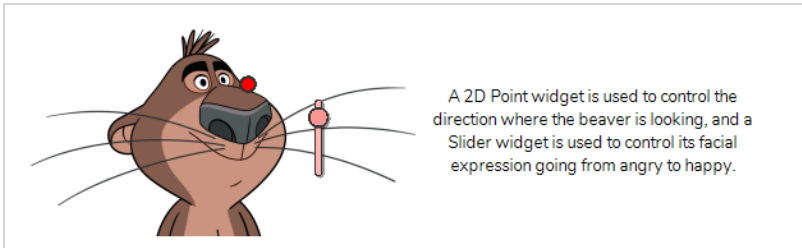
Drawing

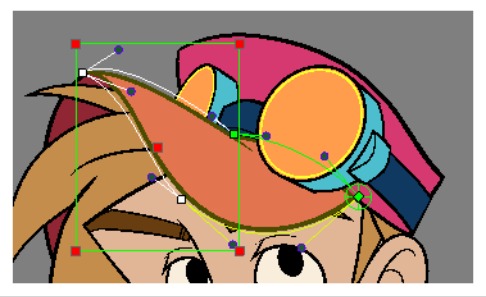
Feature	Description	Edition
Drawing Guides	Guides can be used to help draw backgrounds and objects with perspective by displaying vanishing points and axes in the drawing space and locking your drawing tool to them.	All

Feature	Description	Edition
		
Textured vector brushes	<p>The Brush tool now has the same texture drawing capabilities when used on vector layers as when used on bitmap layers.</p>  <p>A textured vector brush stroke on a drawing layer</p>	Advanced, Premium
Centerline Editor	<p>This new drawing tools allows you to manipulate brush strokes, whether solid or textured, as if they were pencil lines.</p> 	All
Texture deformation	<p>The Contour Editor, Envelope and Perspective tools can deform the texture in textured brush strokes.</p> 	Advanced, Premium
Polyline with pencil textures	<p>The Polyline Tool can now be used with pencil textures.</p>	
Autofill, Trim Extra Lines and Align Handle	<p>These new options in the Tool Properties view allow you to quickly fill and trim closed shapes drawn with the Pencil, Stroke and Polyline tools.</p>	All
Disable antialiasing	<p>It is now possible to draw and render without antialiasing:</p>	Advanced,

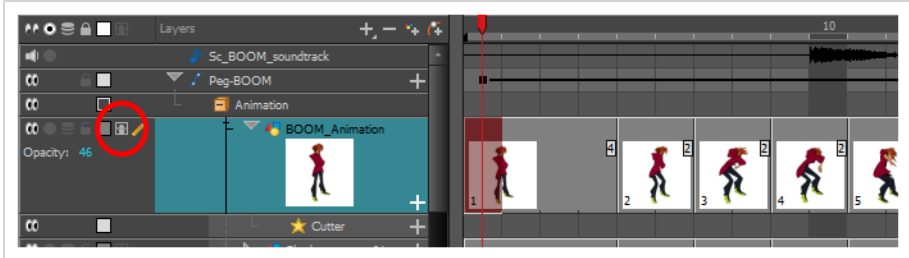
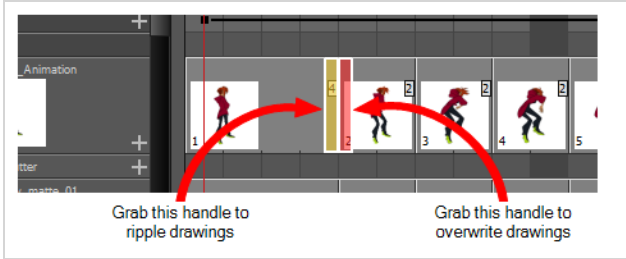
Feature	Description	Edition
	<ul style="list-style-type: none"> • Antialiasing can be disabled when drawing with a textured brush, on both vector and bitmap layers. • Drawing layers have an option to disable antialiasing when they are rendered in the Advanced tab of their Layer Properties. 	Premium

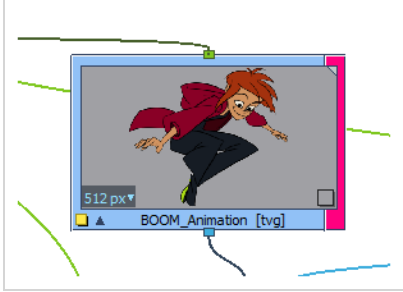
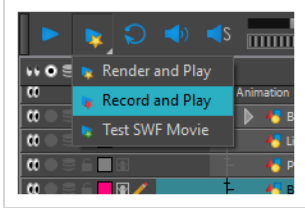
Animation

Feature	Description	Edition
Master Controller	<p>The Master Controller node allows users to create widgets that can be manipulated by animators to affect elements in the scene. The widgets are created and programmed using the Harmony, scripting interface, giving them near infinite flexibility as to how they can be used to streamline animation.</p> 	Premium
Point Constraint	<p>A series of new nodes have been implemented to rig elements together so that they are constrained in specific ways. They can be used to rig parts of cut-out models with realistic physical restrictions and controls that represent their articulations. These nodes can be found in the Constraint category of the Node Library view:</p> <ul style="list-style-type: none"> • Two Points Constraint • Three Points Constraint • Multi-Points Constraint • Dynamic Spring • Constraint Switch • Static Transformation • Transformation Gate • Transformation Limit 	Premium
Deformation manipulator	<p>It is now possible to move, rotate and scale a selection of multiple envelope deformation points using a bounding-box style manipulator.</p>	Premium

Feature	Description	Edition
		
<p>Preserve line thickness with deformations</p>	<p>An option in the Element node can be enabled to preserve the thickness of pencil lines that are deformed by a deformation chain.</p>	<p>Advanced, Premium</p>

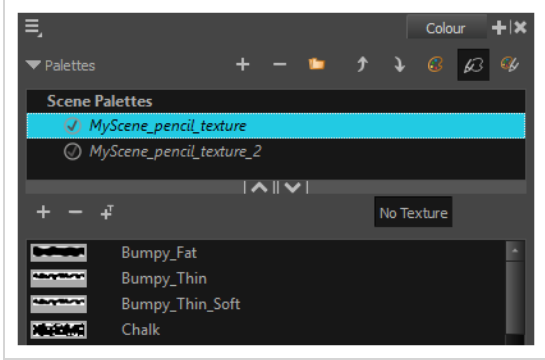
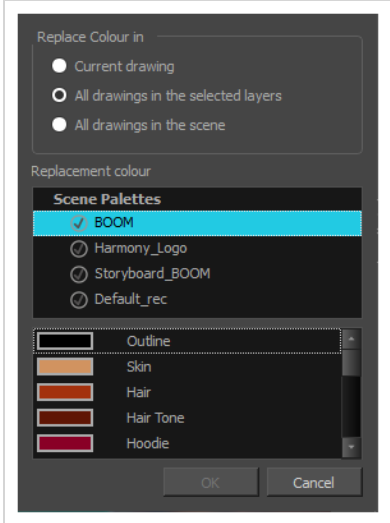
Workflow

Feature	Description	Edition
<p>Timeline thumbnails</p>	<p>Each drawing layer in the Timeline view can now display a thumbnail of the current drawing as well as of every exposed drawing in the scene, allowing users to easily manage drawings when doing paperless animation.</p>  <p>When the Timeline view is sufficiently zoomed in to view the thumbnails of exposed drawings, it is possible to extend or shorten the exposure of individual drawings either by overwriting or rippling the following drawings.</p>  <p>When thumbnails are displayed for a layer, the layer also displays an Opacity parameter which can be adjusted.</p>	<p>All</p>

Feature	Description	Edition
Node view thumbnails	<p>It is now possible to change the size, resolution and background colour of thumbnails in the Node view.</p> 	Premium
Record and Play	<p>The new Record and Play command, available from the Play menu and Playback toolbar, quickly renders OpenGL frames, makes a video file and opens it in the workstation's default video player for a quick preview of the scene's animation with no framerate issues.</p> 	All

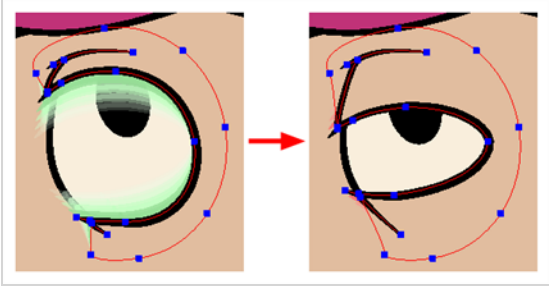
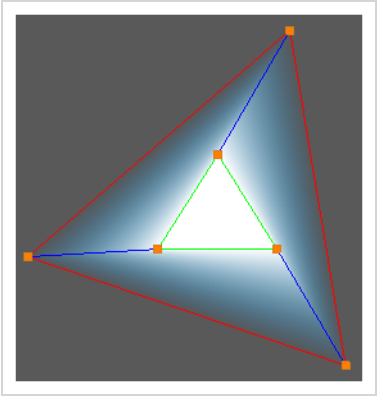
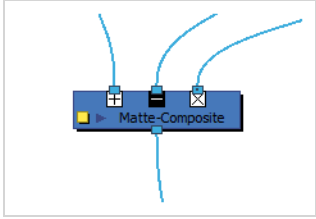

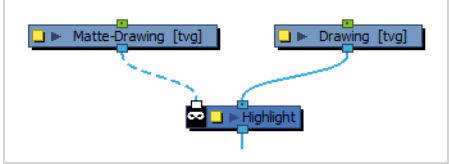
Colours and Palettes



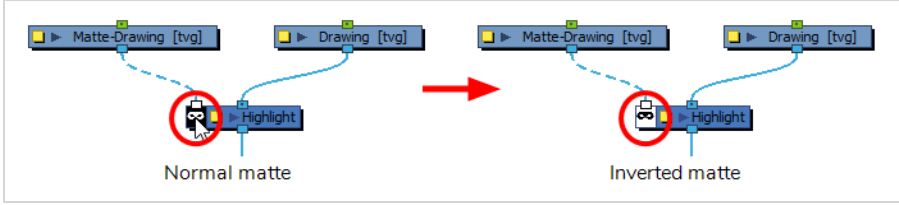
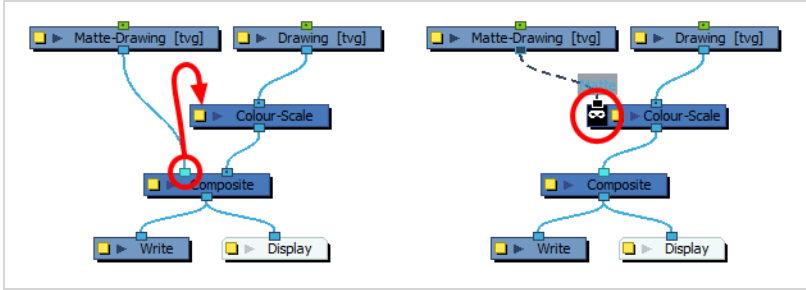

Feature	Description	Edition
Pencil textures	<p>The way pencil texture palettes are managed has been completely revamped:</p> <ul style="list-style-type: none"> • Pencil Texture palettes are now stored in a separate palette list in the Colour view. • A scene can now have several pencil texture palettes. • Whether a palette is colour palette or a pencil texture palette is saved in the palette file. 	Advanced, Premium

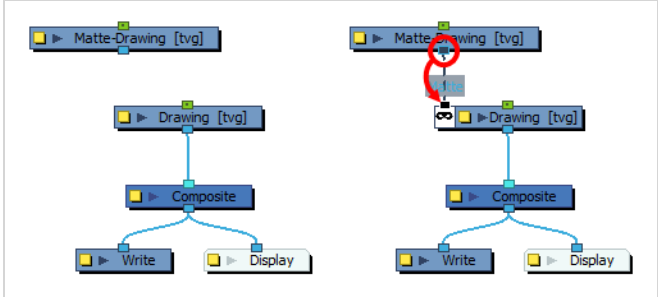

Feature	Description	Edition
		
Recolor drawings	<p>An option in the Colour view can be used to replace a colour or texture with a different colour or texture in the current drawing, all drawings in a layer or all drawings in the scene.</p> 	All
Remove unused colours	<p>The script TB_RemoveUnusedColors removes colours that are not used anywhere in the scene from palettes. Note that this script does not remove colour used by drawings that are not exposed.</p>	Advanced, Premium

Effects

Feature	Description	Edition
Animated Matte Generator	<p>The new Animated Matte Generator node adds two major capabilities:</p> <ul style="list-style-type: none"> It can animate the points of a vector drawing: 	Premium

Feature	Description	Edition
	 <ul style="list-style-type: none"> It can generate a feathered effect going from an inner contour to an outer contour, both of which can be made in any shape and are fully animatable: 	
Matte Composite	<p>The new Matte Composite node allows you to create composite of several mattes by adding, subtracting or intersecting them together.</p> 	Premium
Colour Selector	<p>The new Colour Selector node allows you to only render specific colours from the input drawing.</p>	Premium
Matte Ports	<p>Every effect with a matte port will have their matte input port at the far left of their node, with a mask icon  to indicate the port's function.</p> 	Premium

Feature	Description	Edition
	<p>Every effect with a matte input port can have the matte inverted, making the transparent areas of the matte drawings act as the matte instead. You can quickly invert the matte of a node by double-clicking on its matte icon . When a node's matte is inverted, the matte icon will also appear inverted .</p>  <p>Normal matte Inverted matte</p> <p>Nodes that do not require a matte, but can use a matte, will have their matte input port hidden by default. If you drag a cable near the left edge of nodes with optional matte ports, the matte port will appear.</p>  <div style="border: 1px solid green; padding: 10px; margin-top: 10px;"> <p> NOTE</p> <p>An Invert Matte parameter has been added to the following nodes:</p> <ul style="list-style-type: none"> • Blur-Box • Blur-Directional • Blur-Gaussian • Blur-Radial • Blur-Radial-Zoom • Brightness-Contrast • Colour-Card • Element • Gradient • Grain • Hue-Saturation • Median • Turbulent Noise </div>	

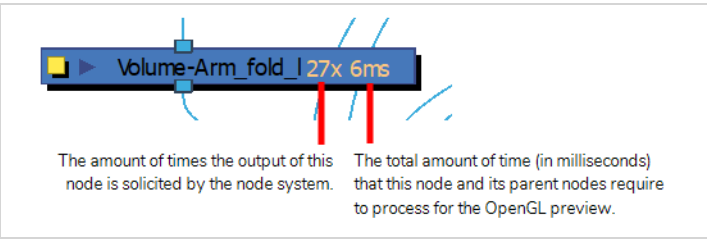
Feature	Description	Edition
Matte Port for Element Nodes	<p>A matte port has been added to Element node, allowing you to cut out parts of the node's output image without using a Cutter node.</p>  <div data-bbox="386 703 1291 903" style="border: 1px solid green; padding: 5px;"> <p> NOTE</p> <p>The matte port is not visible by default. To make it appear, you must bring a cable near the left end of a node, at which point the matte port will appear. It will remain visible if a matte connection is made.</p> </div>	All
New blending options	New options were added to the Blending and Composite-Generic nodes which allow to obtain results more similar to the blending modes in Adobe Photoshop. Those options are prefixed with the term "BETA".	Premium

3D

Feature	Description	Edition
Support for animated Alembic files	Animated Alembic files can be imported in a scene. The animation will be visible in Harmony, allowing animators to base their animation around it	Premium

Performance

Feature	Description	
OpenGL Caching	The new OpenGL-Cache-Lock node caches the OpenGL preview of the elements connected to it, and only regenerates this preview when one of its elements it manipulated or changed. When several OpenGL-Cache-Lock nodes are used on separate elements of a scene, such as characters, backgrounds or even parts of a rig, they are cached separately. Hence, Harmony will only need to regenerate the cache of elements that are being	Premium

Feature	Description	
	<p>manipulated, and will be able to re-use the cache of unchanged elements to generate the preview. This can significantly enhance the performance of Harmony when working on a heavy scene.</p>	
OpenGL Bypass	<p>The new OpenGL Bypass node can be used to optimize the OpenGL preview by only displaying elements that are necessary for the animator in the OpenGL preview, all the while displaying all the elements and rendering all the effects in the final render. Nodes connected to the left input port of the OpenGL Bypass node are displayed in the OpenGL preview, and nodes connected to its right input port appear in the final render.</p>	Premium
OpenGL preview optimizations	<p>The following improvements have been made on the way Harmony previews a scene in OpenGL:</p> <ul style="list-style-type: none"> • Fixed performance issues when making large selections with the Transform tool. • Fixed performance issues when the Xsheet view is in the workspace and has shared functions. 	All
Render preview optimization	<p>Frames rendered for render preview are temporarily cached so that they are not regenerated when switching between frames unless a change requires to generate a new render.</p>	All
OpenGL debugging in Node view	<p>When the Debug option of the Help top menu is enabled, the Node view now displays information about how many times each node is solicited for the OpenGL preview and how much time it takes to process the node and its parents. This can help identify problem areas in node systems that impact application performance.</p>  <p>The amount of times the output of this node is solicited by the node system. The total amount of time (in milliseconds) that this node and its parent nodes require to process for the OpenGL preview.</p>	Premium

User Interface

Feature	Description	Edition
Retina and High	Harmony supports Retina display on macOS workstation as well as High DPI	All

Feature	Description	Edition
DPI support	monitors on Windows workstation with a scaling factor of up to 200%.	

Multimedia

Feature	Description	Edition
Export in Windows Media Video on Windows	On Windows only, Harmony can now export in Windows Media Video format. This can be used as an alternative to exporting in QuickTime movie format, which requires Apple QuickTime to be installed.	All
Removed QuickTime dependency for audio on Windows	Audio support on Windows now relies on native Windows libraries instead of QuickTime.	All

Networking

Feature	Description	Edition
WebCC	<p>The following security enhancements were implemented:</p> <ul style="list-style-type: none"> Users are now required to have a strong password to access WebCC. The password must be at least 8 characters long, contain at least one digit or non-alphabetical character, and contain at least one capital letter that is not the first character of the password. Users who do not have administrative privileges must be assigned a scene before they can export or re-import it. It is possible to only allow specific users to access specific environment. 	Advanced, Premium
Asset Remapping	<p>Asset remapping through the relink.xml configuration file now supports the following options and features:</p> <ul style="list-style-type: none"> The root attribute allows you to set a directory from which to apply a remapping rule and to remap assets while preserving their folder hierarchy. The filter attribute allows you to apply a rule only if the path to an asset matches a regex pattern. The allowRemapExisting attribute allows you to apply a rule on an asset even if the asset can be found in its original location. 	Advanced, Premium

Feature	Description	Edition
	<ul style="list-style-type: none"> The allowRemapInScene attribute allows you to apply a rule on assets within the scene's directory. The variables <code>%SCENE_FOLDER%</code>, <code>%JOB_FOLDER%</code>, <code>%ENV_FOLDER%</code>, <code>%SCENE%</code>, <code>%JOB%</code> and <code>%ENV%</code> can be used in the value, root and filter attributes of a remapping rule. They contain, respectively, the path to the scene, the path to its job and the path to its environment, the name of the scene, the name of its job and the name of its environment. 	

Scripting

Feature	Description	Edition
Display Scriptable Node Attributes	When you enable Publish Attribute Mode in the Node view, the scriptable attribute names of each attribute for a node will display in the Layer Properties dialog for that node, allowing you to easily write scripts that read from or update the attributes of nodes in a scene.	Premium

Command Line Tools

Feature	Description	Edition
Pix2vec	<p>The following features have been added to Pix2vec:</p> <ul style="list-style-type: none"> It is now possible to vectorize drawings with a transparent (rather than opaque white) background using the <code>-vectorize_alpha</code> or <code>-use_alpha</code> parameter. Very thin lines that get eroded during the vectorization of the line art can now be included in the colour art using the <code>-support_thin_lines</code> parameter. When vectorizing a Photoshop Document (<code>.psd</code>), you can specify which layer in the document you want to vectorize with the <code>-layer</code> parameter. When doing red/green/blue (RGB) keying, the <code>-rgb_alpha_texture</code> parameter will vectorize red, green and blue lines with their texture instead of in solid vector shapes. The <code>-rgb_separate</code> parameter, when used with <code>-2pass</code>, will separate the red, green and blue colour zones from the black zones instead of making them overlap. 	Advanced, Premium
utransform	<p>The following features have been added to utransform:</p> <ul style="list-style-type: none"> When processing a vector file, you can replace colours with a specific colour ID with a different colour ID using the <code>-change_colour_ids</code> parameter. This parameter works with a JSON file which allows you to list the ID of each colour to replace followed by the 	All

Feature	Description	Edition
	<p>ID of the colour to replace them with.</p> <ul style="list-style-type: none"> Using the -bitmapartonly parameter, you can convert the bitmap art layer in a Toon Boom Vector Graphic (. tvg) drawing into a regular bitmap file. The -premultiply parameter allows you to indicate the premultiplication mode of a regular bitmap used as the input image, or to set the premultiplication mode of the output image when converting a Toon Boom Bitmap to a regular bitmap. 	
dblock	<p>The dblock utility now has the following options to manage database locks:</p> <ul style="list-style-type: none"> The -t parameter will list all locked tables on the database server. The -u parameter will list all opened tables on the database server. The -x parameter, followed by the path to a database (.db) file, will release the locks on the specified table. 	Advanced, Premium
tbprocess	<p>The parameter -sleep was added to specify how often to check the queue for batch processing jobs. This parameter must be followed by an amount of seconds, and this is the amount of the seconds tbprocess will wait between each check. By default, tbprocess checks the queue every sixty (60) seconds. Using this parameter to check the queue more often can be useful if you are just launching tbprocess manually to test if it is processing your jobs.</p>	Advanced, Premium
dbu	<p>The dbu utility has been made for flexible and smarter.</p> <ul style="list-style-type: none"> The -update and -delete options can now work with the -search option to work on records obtained by the search results. As a result, you no longer need to specify a record number, provided that your -search query returns records. If the search query returns multiple records, the -update or -delete operation will work on all matching records. <p>To preserve backward compatibility, you must follow -update and -delete with record number 0 if you want dbu to work on search results instead of a specific record number, like so:</p> <pre>> dbu -delete 0 -se 'UserName:jdoe' /USA_DB/users/user.db</pre> <p>This will delete all records with the username jdoe.</p> <ul style="list-style-type: none"> The -f parameter has been added. When used in combination with -append or -update, you can specify each field followed by their value inline instead of specifying them through standard input. Each field must be separated from their value by a colon, and each field and value pair must be separated by a comma, like so: <pre>> dbu -update <record number> -f 'FirstName:john,LastName:doe' /USA_DB/users/user.db</pre> <ul style="list-style-type: none"> dbu can now process multiple commands in the same run, allowing you to perform large batch operations without the overhead of running the utility once for each step. 	Advanced, Premium

Feature	Description	Edition
	<p>To do this, you must launch dbu with the -m parameter, followed by the path to the database to edit:</p> <pre data-bbox="418 365 846 394">> dbu -m /USA_DB/users/user.db</pre> <p>Once launched, dbu can receive the commands add, update, delete or delete all. Each command must be preceded with ### and a space, and followed by its parameters, like so:</p> <pre data-bbox="378 548 1318 856">### add UserName:jdoe FirstName:john LastName:doe ID:50 ### update <record number> Type:9 ### delete <record number> ### delete all</pre> <p>This mode is designed to take scripts piped to it. If you run it without piping a script to it, you will be prompted to enter the commands in the terminal. When you're done, in the Windows command prompt, you can terminate the prompt by pressing Ctrl + Z and pressing Enter. In Bash, you can press Ctrl + D.</p>	
<p>GNU/Linux Installer</p>	<p>The GNU/Linux install script has been enhanced significantly. Among other things:</p> <ul data-bbox="347 1142 1318 1772" style="list-style-type: none"> • It is possible to install Harmony interactively on machines that have the whiptail command line utility. • All component parameters can be used individually. The installer only installs daemon scripts and licensing utilities if the installation of Harmony binaries has been selected. • The installer attempts to stop running daemons before overwriting them, and launches enabled daemons after the installation is over. • Desktop shortcuts point to the full path to their respective executables, no longer relying on the \$PATH environment variable to launch applications. • Shortcuts to Configuration Editor, License Wizard and Service Launcher are now added to the other desktop shortcuts. • An uninstall script has been added. It can be used with the same parameters as the install script, and will revert the effect of the install script for that parameter. It can also be launched interactively on machines that have the whiptail command line utility. • The -openh264 parameter will download and install the Cisco OpenH264 library in the Harmony installation directory during the installation. 	<p>Advanced, Premium</p>

Enhancements

Enhancement	Edition
The Reset Zoom keyboard shortcut can now be used in the Timeline view	All
The colour list will now automatically scroll when attempting to reorder colour swatches below or above visible colour swatches.	All
Moving the Timeline cursor now sets the frame selection to the current frame.	All

Bug Fixes

- Fixed layout and size issues when launching side applications in Retina on macOS or High DPI in Windows:
 - Harmony will scale its own user interface for high resolution display.
 - All other applications will be scaled passively by the operating system.
- Fixed issue where hiding a subnode in Harmony would cause all its children to be invisible when rendered with Autodesk Maya.
- Fixed issue where linking to a multi-layer .psd file would prompt to import layers separately.
- Fixed issue where Render Preview would not update when moving a camera peg.
- Fixed "Copy palettes and update existing colours" option of Paste Special which require closing and reopening the scene to update colours.
- Fixed "Copy palettes and merge colours. Add new colours only" option of Paste Special which did not add new colours.
- Fixed the P shortcut to add a control point to the 3D path of a 3D subnode animation.
- Fixed issue where palettes in Colour-Override layer properties were reported missing even if they were available.
- Fixed issue where Harmony Server scenes would refresh the entire render of a Preview Render node every time the selection is changed.
- Fixed issue where it was possible to overwrite an existing palette by creating a new palette with the same name and location in Advanced Palette List mode.
- Fixed memory leak when rendering in video format on Windows.
- Fixed crash when renaming linked drawing layers or timing layers in the Timeline view.
- Fixed issue where importing Flash assets would cause a drawing cut by a mask to be merged with the following layer, even if that other layer was not linked to the mask.

- Fixed missing file when attempting to export movie files that are bigger than 4 gigabytes, which was first found to occur when attempting to export in 4K resolution with the BlackMagic codec at 10 bit colour depth.
- Fixed error message when adding a RenderMayaBatch node to the Node view.
- Fixed issue with export layout where each dimension of exported layout images had one extra pixel.
- Fixed crash when pasting artwork with grouped lines.
- Fixed issue with the Select Tool pivot does not stay in position with zooming in or out.
- Fixed crash when launching on macOS with the locale set to Korean.
- Fixed issue where lines got flattened when using the Select by Colour option of the Select Tool on scanned drawings.
- Fixed issue where edge of drawing would be cropped out when vectorizing a bitmap layer into a vector layer.
- Fixed issue where desktop shortcuts on GNU/Linux would rely on the system PATH environment variable, making them launch the same version of Harmony when several versions were installed.
- Fixed crash when importing and vectorizing images in Black and White in Spanish or Japanese.
- Fixed issue where dragging and dropping exposure in the middle of another exposure in the Timeline would override subsequent exposure.
- Fixed issue where dragging and dropping exposure in an empty area of the Timeline would cause loss of timing.
- Fixed crash when using the tvg2xml command line utility.
- Fixed issue where syncing layers would remove Transformation-Switch node.
- Fixed issue where default QuickTime export settings on GNU/Linux would cause movie file to have no audio.
- Fixed issue where using the D disable layers shortcut when making a selection in the Camera view would not work if layers were collapsed or not listed in the Timeline view.
- Fixed issue where Cutter and Eraser tool options were not applied when using their temporary tool override keyboard shortcuts.
- Fixed issue where pencil textures were not cloned along with the palette file when using the Palette Operations dialogue to clone a pencil texture palette.
- Fixed issue where exporting OpenGL frames into a movie file on Linux would result in a corrupted file when there was no movement or drawing change.
- Fixed issue where colour art was not automatically created when using the Line Building mode of the Pencil Tool with the Automatically Create Colour Art option enabled.
- Fixed issue where the Use Current Frame as Drawing Name option did not work if the Hold value was set to anything but 1.
- Fixed issue where line thickness of a pencil line with a thickness of 0 could not be adjusted.
- Fixed issue where moving a selection of curve or envelope deformation points and their offset point would make the

offset point move faster vertically than the other points.