

Liberty Version 7.0 Release Notes

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This document describes the latest enhancements to Chyron's Liberty® Paint and Animation software. Version 7.0 adds power to the Liberty Paint and Animation high-performance software that is already a favorite of the industry's top digital video and film artists. Liberty 7.0, in both 32-bit and 64-bit color depths, is available for the SGI® and Windows NT® platforms.

Support has been added for Liberty on Chyron's Duet graphics platform (both standard and hi-definition), including single-frame and real-time video show, and for Liberty on SGI's Visual NT (320 and 540) workstations, including video grab, show, and real-time show (with real-time video streaming using disk arrays). Support has also been added for SCSI DDR interfaces for Liberty NT; Sierra's next-generation HDTV DDR (HD1.5+) under IRIX®; Medea's newly introduced VideoRaid SCSI; and powerful interfaces to Chyron's Aprisa® DDR and Still Store (on your local Aprisa system, or remotely via Ethernet).

"Liberty's added ability to support Chyron's Duet platform and other Chyron and third party products further extends the reach of Liberty in the network environment," commented Hayes Stamper, Chyron Product Manager. "Liberty is a proven performer, and the latest enhancements make it an even more essential component of any state-of-the-art graphics suite."

Text creation has been streamlined with new built-in TrueType® font conversion (Liberty NT), which gives Liberty easy access to a virtually unlimited number of fonts. In addition, the Text panel has been enhanced for news graphics (including the ability to type text into existing templates, preserving parameters such as font, size and position). Keyboard mappings have also been added for Turkish fonts.

New graphics features include an Apply Vortex function; an enhanced Shape tool to create a variety of star shapes; Layer menu enhancements; animation of Dither and Color Matrix tools; new 3:2 Pulldown options; Cut and Paste of Clipboard images with Alpha (Liberty NT); Liberty NT plug-in improvements; and configurable Aspect Ratio Correction for the canvas display. In addition, audio can now be input from movie files on the animation timeline, images can be de-interlaced during grabs from video boards such as O2 and Octane video, and the alpha of cut-outs can be browsed in the Layers and Undo menus.

File management capability has been expanded with File Manager enhancements; a modified Save button to save TIFF files by default; the ability to save GIF animation files for use on World Wide Web pages; the ability to save compressed TIFF files (Packbits and LZW); speed control of preview files under IRIX; and improved file size, date, and file type information displayed when browsing Chyron iNFiT!® family systems running Version 11.00B (or later) software.

In addition to the above enhancements, further improvements to stability have been completed, resulting in a substantial number of bug fixes relative to the previous version, V6.5 (released in October, 1998).

Liberty V7.0 is described in detail in the following sections.

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4. Add Grab, Show, and Browse of frame buffers on Aprisa Still Store.
5. Add Support of SCSI DDR interfaces for Liberty NT.
6. Add Support of next generation Sierra HDTV DDR (HD1.5+) under IRIX.
7. Add improved Aspect Ratio Correction for canvas display.
8. Added de-interlacing for grab from Video Boards.
9. Add support of Windows NT system cursors for improved performance.

New Paint/Animation Features

10. Text Enhancements
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13. Add new Vortex option to Apply tool.
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17. Layers menu enhancements.
18. Added Alpha browse capability to Layers and Undo menus.
19. Liberty NT Plug-in improvements.
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21. Add new menu for speed control of preview files under IRIX.
22. Allow input of audio from movie files on timeline.

File Manager Enhancements

23. Modify "Save" button to Save TIFF files by default.
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25. Enhancements for browsing remote systems via FTP.
26. Display improved file size, date, and file type information when browsing Infinit systems.
27. Changed Imagestor labels on various FTP related menus.
28. Make filename padding controls separate for Infinit files (as opposed to Imagestor/Aprisa files).
29. Add support for Quantel VPB file format.
30. Other File Manager enhancements.
31. Support of additional OMF file formats, for compatibility with Avid editing systems.
32. Add read and write of GIF animation files, for use on World Wide Web pages.

Other Enhancements

33. Improve background rendering.
34. Add additional documents to the Liberty Help popup.
35. Move 64 bit Related Configuration Controls to their own panel.
36. Add buttons to optionally disable hardware acceleration of 2D layers, 3D layers, and imaging effects.
37. Created Demo Version of Liberty NT.
38. For Liberty NT, change executable names of Paint and Paint 64.
39. Add new option for Tracing User Input in a Shell Window, for debug purposes.
40. Bug fixes to Liberty V6.5.

Platform/Video Support

1. Add Support for Liberty on Duet, including single-frame and real-time Video Show.

Liberty V7.0 runs on all Duet systems, both standard and hi-definition, assuming the proper graphics (GL) card is installed. Supported graphics cards include the following:

- Diamond Fire GL card (PCI versions).
- Intergraph Intense 3D Pro GL card (PCI versions).

On systems with the Diamond Fire GL card, it is important to turn Custom Cursors OFF to obtain the best performance. Please see section 9. below for further details.

Liberty V7.0 supports video input and output on the Duet platform, including Single Frame Grab, Single Frame Show, and Real-time Show.

Note: As of the time of the Liberty V7.0 release, video grab was not supported by the Duet drivers.

To configure video input and output on the Duet platform, select “Duet Video” in the “Hardware Options” section of the Options Management panel in the Configuration environment. Then proceed to the Video Configuration panel, and select the “Video” toggle button. Click in the window to the right of the “Type” label until the word “Duet” appears in the window. Then press the green “Config” button. The message “Done Initializing VTR’s” then appears in the prompt window.

To do a single frame grab from Duet video, use the Grab button in the Transfer panel in Paint (make sure “Video To Disk” is turned off in the Grab popup). Each press of the Grab button will grab a single frame of video to the Canvas.

To do a single frame show to Duet video, use the Show button in the Transfer panel in Paint. Go into the Show popup (use the corner button), and enable “NonRealtime Show”. Exit the popup and press the main “Show” button to do a single frame show.

To start real-time show to Duet video, use the Show button in the Transfer panel in Paint. Go into the Show popup (use the corner button), and enable “Realtime Show” (also, ensure that “Disk to Video” is turned off). Exit the popup and press the main “Show” button. This will enable real-time show, meaning that all changes to the canvas will appear on the video monitor. To turn off real-time show, just press the “Show” button again to turn it off.

The Option Management Panel is shown in Figure 1. below. The Video Configuration Panel is shown in Figure 2. below.

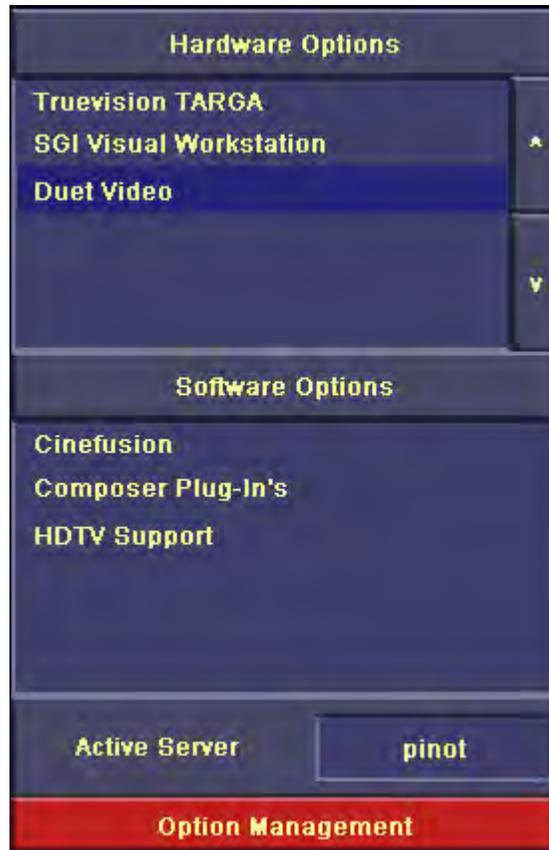


Figure 1. Configuration Environment Option Management Panel, with Duet Video Selection



Figure 2. Video Configuration Panel, set up for Duet Video I/O.

2. Add Support of SGI Visual NT Workstation, including Video I/O.

Liberty V7.0 runs well on the SGI Visual Workstation models, including the 320 and 540. Liberty V7.0 contains an important fix for wire-frame colors on these systems. In addition, Liberty V7.0 allows the user to use Windows System cursors (rather than Liberty's custom cursors), which enhances performance on the 320 and 540.

On the SGI Visual Workstation models, it is important to turn Custom Cursors OFF to obtain the best performance. Please see section 9. below for further details.

Liberty V7.0 also supports video I/O on the 320/540, including Grab, Show, Real-time Show, and Video Streaming on and off disk arrays.

To configure video input and output on the SGI 320/540 platforms, select "SGI Visual Workstation" in the "Hardware Options" section of the Options Management panel in the Configuration environment. Then proceed to the Video Configuration panel, and select the "Video" toggle button. Click in the window to the right of the "Type" label until the proper option appears for your hardware configuration. Choose one of the following:

- sgi Composite (composite video I/O on SGI 320 and 540)
- sgi S-Video (S-video I/O on SGI 320 and 540)
- sgi SDI (Serial Digital 601 video I/O on SGI 540)
- sgi SDI Dual Link (Serial Digital 601 dual stream video I/O on SGI 540)

Then press the green "Config" button. The message "Done Initializing VTR's" then appears in the prompt window.

To do a single frame grab from 320/540 video, use the Grab button in the Transfer panel in Paint (make sure "Video To Disk" is turned off in the Grab popup). Each press of the Grab button will grab a single frame of video to the Canvas.

To do a single frame show to 320/540 video, use the Show button in the Transfer panel in Paint. Go into the Show popup (use the corner button), and enable "NonRealtime Show". Exit the popup and press the main "Show" button to do a single frame show of the canvas to video.

To start real-time show to 320/540 video, use the Show button in the Transfer panel in Paint. Go into the Show popup (use the corner button), and enable "Realtime Show" (also, ensure that "Disk to Video" is turned off). Exit the popup and press the main "Show" button. This will enable real-time show, meaning that all changes to the canvas will appear on the video monitor. To turn off real-time show, just press the "Show" button again to turn it off.

Liberty also allows you to stream incoming video to disk in real-time, to RAW YUV Clip files. Likewise, RAW YUV Clip files can be streamed from disk out to video in real-time (both these assume you are using a disk array with sufficient bandwidth to support real-time transfer rates). Once a RAW YUV Clip file is on disk, the user can work with it in Liberty just like any other file format. Likewise, the user can render RAW YUV files to disk, frame by frame using Liberty's animation environment, or the VTR panel in Paint. The user can then stream the rendered clip file(s) to video in real-time.

For more details on Grabs, Shows, and Video Streaming, please refer to the Liberty User's Manual in the section on "Grab and Show Functions" (section 4.10).

3. Add Support of Aprisa DDR (on local system, and remotely via Ethernet).

Liberty V7.0 provides an interface to the Aprisa 200/250/300/VRS series of DDRs, via Ethernet. The user can do transport control, render clips, and grab frames from clips from within Liberty. In addition, the user can browse clips on the Aprisa.

In general, the Aprisa is set-up and controlled like other DDR's within Liberty. The user configures the Aprisa through the Video Configuration panel in the Configuration environment. Once this is complete, the user can play, stop, jog, shuttle, cue, get timecode, and grab frames using the VTR panel (in Paint or Animation). In addition, the user can set-up to render frames to the Aprisa using the Target VTR set-up panel. Since much of this works the same as with other supported DDR's in Liberty, details will not be repeated here. The following sections describe controls that are unique to the Aprisa.

Controls were added to configure the Aprisa DDR. In addition, since the Aprisa is clip based, controls were added to browse clips, and to set-up clips for grab and render. This is described in the following sections.

a. Configuration of the Aprisa DDR

To configure this DDR, go to the Video Configuration panel in the Configuration environment, and select "Chyron Aprisa" in the scrolling list (note that you may need to scroll down once to get there). Next, press on the "Control" button under the scrolling list. Press on the window to the right of the "Type" label until it reads "Ethernet". Then enter the network hostname (or IP address) of the Aprisa in the window to the right of the "Hostname" label. Next, press on the "Video" button under the scrolling list, and press on the window to the right of the "Type" label until it reads "Ethernet". Then press the green "Config" button to configure the DDR. You should see a "Done Initializing VTRs" message in the prompt window.

The Video Configuration Panel is shown in Figure 5. below.



Figure 5. Video Configuration Panel with Aprisa DDR set-ups.

b. Browsing clips on the Aprisa DDR

To set up browsing, press the corner button of the FTP button in the Transfer panel in Paint. The resulting FTP popup is shown in Figure 6. below.



Figure 6. FTP Popup, set-up to browse Aprisa DDR in G/CLIPS directory.

In the FTP popup, enter the node name and path of the Aprisa DDR in the “Remote system” (left hand) section of the menu (the path usually contains a drive letter and one or two directory levels, such as “/G/CLIPS”). Then, enter the host name of the Aprisa DDR in the “System with Still Store/Clip Database” (right hand) section of the menu. Also, be sure that the “Aprisa DDR” button is highlighted. The FTP popup also contains fields for user name and password. The default user name and password (guest, anonymous) should work in most cases.

Once the FTP popup has been set-up, you can browse clips on the Aprisa DDR by pressing the main FTP button in the Transfer panel (in Paint). The clips will appear as numbered AVI files with full-color thumbnails (with filename “clip_number.AVI”). As with the Aprisa Still Store, the database information can be viewed by turning off the Browse button, and turning on the “List database data” button in the Browse popup (in the full-screen File Manager menu).

For Aprisa clips, the FTP button is for browsing only. To grab frames from a clip, refer to the following section.

c. Transport control and Grab from Aprisa DDR.

Transport control (stop, play, cue, etc) and Frame Grab are done from the VTR Panel in the Paint environment. Once the Aprisa DDR has been configured (section a. above), go into the Source VTR set-up menu (use the corner button to the left of the “Source” label), and assign the VTR labeled “Chyron Aprisa” as the current VTR (press on its button and it highlights). The VTR panel is shown in Figure 7. below. The upper left half of the Source VTR set-up menu, with Aprisa DDR selected, is shown in Figure 8. below.



Figure 7. VTR Panel (in the Paint Environment)

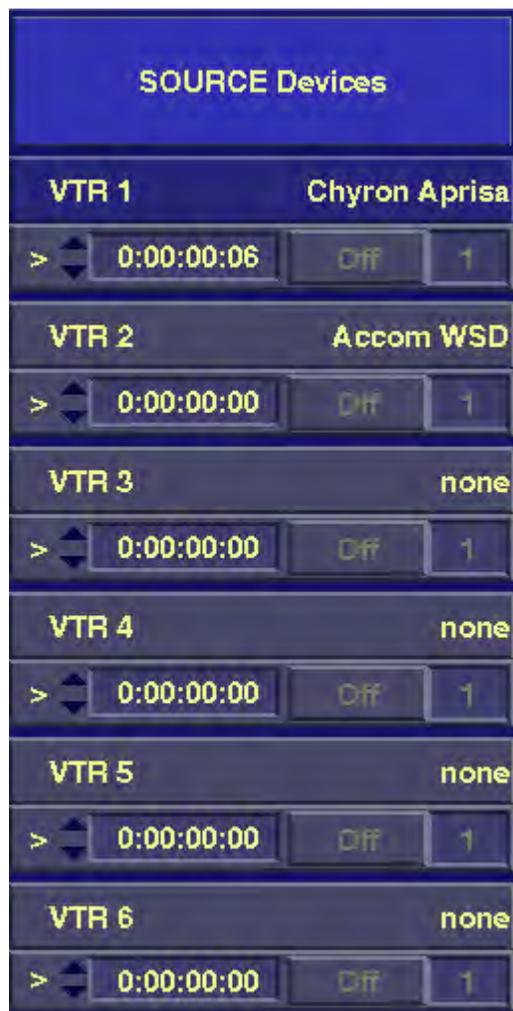


Figure 8. Upper left half of VTR set-up menu, with Aprisa DDR selected as VTR #1.

To specify which Aprisa channel and clip to work on, use the Grab popup in the VTR panel (accessed via the corner button of Grab). In this popup, use the following controls under “Aprisa options”:

- Channel, to set the current channel (options are A, B, and ALL).
- Clip ID, to set the current clip ID. You can browse the Aprisa (section b. above) to see which clip ID you want to assign. Also, use the left arrow button “<” to update the “Clip ID” value with the ID of the clip currently loaded to the selected Channel on the Aprisa.
- “Load clip to ch” loads the above clip to the above channel.
- Drive, to specify which drive letter contains the clips on the Aprisa (usually, you can leave this blank and the default drive will be utilized).

The Grab popup, with Aprisa controls, is shown in Figure 9. below.

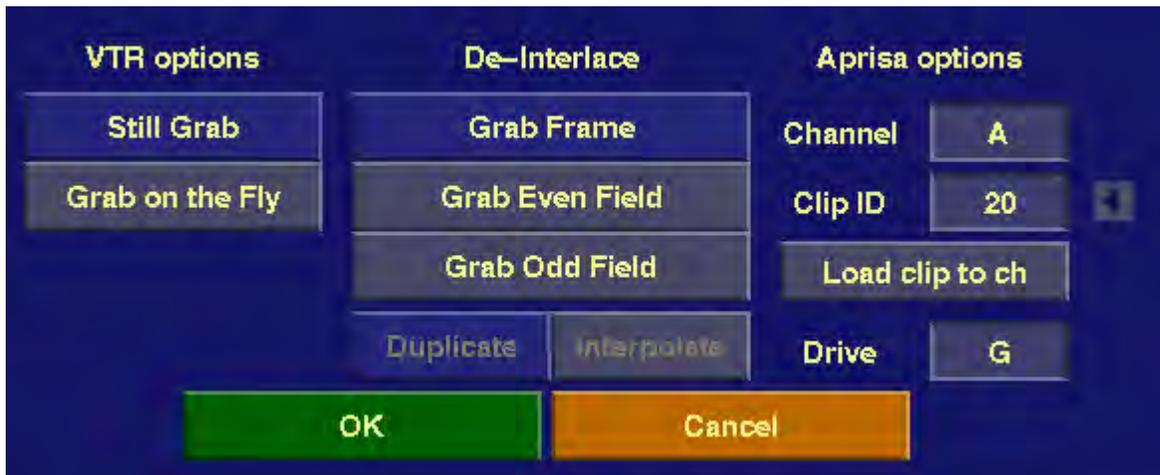


Figure 9. Grab popup, with Aprisa controls in right hand column.

After performing the above set-up steps, you can then Play, Cue, Stop, Shuttle, and Jog the specified channel on the Aprisa, using the corresponding buttons in the VTR panel. You can also grab the current timecode/frame number from the Aprisa, using the “>” button next to the “Source” label.

After specifying a clip ID in the Grab popup, you can grab frames from that clip using the “Grab” button in the VTR panel. Liberty will grab frames using the Source timecode/frame number (below the “Source” label in the VTR panel).

Note that you can also do transport control using the VTR panel in the Animation Environment (shown in Figure 10. below). A Grab button has been added to this panel, so that you can specify a channel/clip ID and grab frames manually within the Animation environment. Of course, you can also grab frames in an animation layer by using a Filmstrip actor assigned to the appropriate Source VTR (set this up in the Source VTR Set-up menu).



Figure 10. Animation VTR panel (upper left corner of menus) with new Grab button.

d. Rendering clips to the Aprisa DDR

To set-up the Aprisa as the target output device for Animation Renders, click on the “Tar” button in the Animation VTR panel (see Figure 10. above), then press on the “Setup” button to bring up the Target VTR set-up panel. Select “Chyron Aprisa” as the current VTR (by pressing on the corresponding button). When the Aprisa is the current VTR, a new Aprisa set-up menu is displayed in the top left corner of the screen. This menu contains the following buttons:

- Clip ID Specifies the ID of the clip to render to.
 - Key ID Specifies the ID of a key clip to render the alpha channel to (optional).
 - Event ID Specifies the ID of an Event to associate with the clip and key clip (optional).
- The above ID's must be new (in other words, clips/events with these ID's can not already exist on the Aprisa). Wildcards (*) can also be utilized. In this case, the Aprisa will choose the next available ID's. These ID's will appear in Liberty's Aprisa set-up menu after the render completes.*
- Drive An optional drive letter to store the clip on the Aprisa (the default is used if blank).
 - Compression Specifies the type of compression to utilized (clicking on the list toggles through the available choices).
 - Stamp frame The frame number to use for the thumbnail (between 0 and the last frame number of the render).
 - Des, F1, F2, F3, F4, F5, F6, F7, F8 User specified information to be entered in the Aprisa database for the specified clip/key clip.

The upper left portion of the target VTR set-up menu, with the Aprisa DDR selected and the Aprisa set-up parameters described above, is shown in Figure 11. below.



Figure 11. Upper left portion of Target VTR set-up menu, and Aprisa set-up controls.

Before rendering, select either “Frames” (for frame rendering), or “Fields” with “Odd field first” selected (for field rendering), in the Run popup.

Once the above set-up is complete, doing a “Run” with the “Record” button selected will render the animation to the Aprisa.

Note also that when rendering to the Aprisa, the “In” timecode must always be set to zero. This is because the Aprisa only supports render to new clips starting at frame 0.

4. Add Grab, Show, and Browse of frame buffers in Aprisa Still Store.

Liberty V7.0 adds the capability of browsing, recalling, and saving directly from/to the frame buffers on the Aprisa Still Store (including the Program, Preview, and Virtual channels). This is in addition to the ability to browse, recall, and save stills on disk, as supported in Liberty V6.5.

The interface to the Aprisa frame buffers works with a remote Aprisa system (over Ethernet), or with Liberty running on the same system as the Aprisa Still Store software. In either case, the Aprisa Still Store software must be running for the interface to work.

To access the Aprisa Still Store frame buffers within Liberty, select “Chyron Aprisa Still Store” in the Hardware Options section of the Options Management panel (in the Configuration environment). In addition, in the Video Configuration panel, choose one of the six VTR’s, and select “none” in the VTR list. Next, press on the “Control” button under the VTR list. Press on the window to the right of the “Type” label until it reads “none”. Next, press on the “Video” button under the VTR list, and press on the window to the right of the “Type” label until it reads “Chyron Aprisa Still Store”. Then enter the network hostname (or IP address) of the Aprisa in the window to the right of the “Address” label. Then press the green “Config” button to configure the Aprisa Still Store. You should see a “Done Initializing VTRs” message in the prompt window. The Options Management panel, with Aprisa Still Store selected, is shown in Figure 11a. below. The Video Configuration panel, with correct settings for Aprisa Still Store, is shown in Figure 11b. below.



Figure 11a. Option Management panel, with Chyron Aprisa Still Store selected.



Figure 11b. Video Configuration panel set up for Aprisa Still Store

Once the Aprisa Still Store has been configured, as described above, the Grab and Show buttons in the Transfer panel (in Paint) may be used to grab and show images from/to the frame buffers in the Aprisa Still Store. Before doing this, use the Grab popup to select which frame buffer to grab from (Program 1, Preview 1, Virtual 1, etc). Likewise, use the Show popup to select which frame buffer to show to. Note that some of the buttons in these pop-ups may be disabled depending on your hardware configuration (for example, for a 1-channel Aprisa, only Program 1, Preview 1, and the Virtual channels are enabled). The Aprisa Still Store Grab popup is shown in Figure 11c. below. The Aprisa Still Store Show popup is shown in Figure 11d. below



Figure 11c. Aprisa Still Store Grab popup.



Figure 11d. Aprisa Still Store Show popup.

The user can also browse the Aprisa frame buffers, and copy images between them and Liberty's Canvas, Temp layers, and Mask layers. To do this, select "Browse" in the Aprisa Grab and Show pop-ups, then press the Grab or Show button to browse. A full-screen browse menu will appear, displaying the Aprisa frame buffers (up to 3 Program channels, up to 3 Preview channels, and 5 Virtual channels, depending on hardware configuration). In addition, Liberty's canvas is displayed at the bottom of the menu. To browse Liberty's Temps and/or Masks at the bottom of the menu, toggle the pink button labeled "Canvas" at the top of the menu. When there are more than six temps and/or masks, sliders at the bottom of the screen allow the user to scroll through the temps/masks. In addition, the alpha (transparency) of the browsers may be displayed by selecting the "Alpha" button at the top of the menu.

When browsing in "Grab" mode (entered through the Grab button), press on any of the Aprisa frame buffers to select it. Then, at the bottom of the menu, press on the Liberty Canvas, or one of the Temps or Masks, to copy the selected frame buffer to the canvas, temp, or mask.

When browsing in "Show" mode (entered through the Show button), press on the Liberty Canvas, or one of the Temps or Masks, to select it. Then press on one of the Aprisa frame buffers to copy the selected canvas, temp or mask to the selected frame buffer.

You can also toggle between "Grab" and "Show" modes from the browse menu itself. Just press on the button in the upper right corner of the menu (the one labeled "Grab from..." or "Show to...").

The Aprisa frame buffer browse menu is shown in Figure 11e. below.



Figure 11e. Browsing Aprisa Frame buffers in Grab mode, with Liberty temp layers at bottom.

5. Add Support of SCSI DDR interfaces for Liberty NT.

Liberty V7.0 supports interfaces to the Sierra Quickframe/Diskovery, Accom WSD/Xtreme/2Xtreme, and ProntoVideo DDR's, through both Ethernet and SCSI. Previously, Liberty V6.5 did not support the SCSI interfaces under Windows NT.

Using the Ethernet interface allows a DDR to be shared between workstations on a network (in general, only one workstation can use the DDR at a given time, however). Using the SCSI interface, on the other hand, attaches a DDR to a specific workstation. The SCSI interface will normally result in faster transfers, however.

To configure a SCSI DDR in Liberty NT, go to the Video Configuration panel in the Configuration environment, and select the correct DDR type in the scrolling list. Next, press on the "Control" button under the scrolling list. Press on the window to the right of the "Type" label until it reads "SCSI". Then enter the following in the window to the right of the "SCSI dev" label:

```
\\.\scsiX\devY
```

where X is the SCSI bus number and Y is the SCSI device number. Next, press on the "Video" button under the scrolling list, and repeat the same process (selecting a "Type" of SCSI and entering the "SCSI dev" path as described above). After setting video and control for the DDR, press the green Config button to configure the DDR with those settings. The message "Done Initializing VTR's" should then appear in the prompt window.

The Video Configuration Panel is shown in Figure 12. below.

For complete DDR set-up information, please refer to the Liberty Technical Reference Manual.



Figure 12. Video Configuration Panel, set up for interface to a DDR over SCSI in Liberty NT.

6. Add Support of next generation Sierra HDTV DDR (HD1.5 Plus) under IRIX.

Liberty V7.0 supports the next generation of Sierra HTDV DDR, the HD1.5 Plus. To configure this DDR, go to the Video Configuration panel in the Configuration environment, and select “SDL HD 1.5 +” in the scrolling list. Next, press on the “Control” button under the scrolling list. Press on the window to the right of the “Type” label until it reads “SCSI”. Then enter the following in the window to the right of the “SCSI dev” label:

```
/dev/scsi/scXdYl0
```

where X is the SCSI bus number and Y is the SCSI device number. Next, press on the “Video” button under the scrolling list, and repeat the same process (selecting a “Type” of SCSI and entering the “SCSI dev” path as described above). After setting video and control for the DDR, press the green Config button to configure the DDR with those settings. The message “Done Initializing VTR’s” should then appear in the prompt window.

Note that to configure previous models of the Sierra HDTV DDR (the HD1.5), the user should follow the same procedure as above, except that a DDR type of “SDL QuickFrame/Diskcovery” should be selected in the scrolling list (rather than “SDL HD 1.5 +”).

The Video Configuration Panel is shown in Figure 13. below.

For all types of Sierra HDTV DDR’s, the canvas resolution should be set to 1920 x 1080.



Figure 13. Video Configuration panel, set up to interface with Sierra HD 1.5+ DDR over SCSI.

7. Add improved for Canvas Display and Aspect Ratio Correction.

Liberty V7.0 allows the canvas to be displayed at any size or aspect ratio on the computer monitor. This is useful for aspect ratio correction (for example, to give the canvas display the same aspect ratio as the video output). It also can be useful to scale the canvas display to a better size for viewing. For example, a (720x486) canvas can be displayed at (938x704), which is both 4:3 aspect ratio, and is scaled up to fit exactly within the canvas menu area (given a 1280x1024 screen resolution).

Along with the above enhancement, the Canvas Configuration panel and the Default Resolutions popup have been re-structured in Liberty V7.0.

Before covering the specific changes, we should review the methods for aspect correction within Liberty. Aspect correction is important when working with 601 video, since it utilizes rectangular pixels, while computer systems utilize square pixels. Video devices using 601 NTSC typically have a resolution of 720 x 486 (in rectangular pixels). Inside Liberty, this is equivalent to a resolution of 720 x 540 (in square pixels). Video devices using 601 PAL typically have a resolution of 720 x 576 (in rectangular pixels). Inside Liberty, this is again equivalent to a resolution of 720 x 540 (in square pixels).

Liberty provides three main approaches for handling this, depending on which hardware platform Liberty is running on, and on user preference. These approaches are defined as follows:

a. Aspect Correct the Canvas Resolution

In this approach, the actual canvas resolution is re-scaled to make it a 4:3 aspect ratio (in square pixels). Thus, for 601 NTSC (video resolution of 720x486), the canvas would be set to (720x540), which is 4:3 in square pixels. When the canvas size is set in this manner, images must be scaled up horizontally when inputting from the video device. They must also be scaled back down when outputting to the video device (Liberty does this re-scaling automatically). On most platforms, this is done in software, which allows for single frame grab and show only (no real-time show). On the SGI O2 platform, however, the re-scaling is done in hardware, which provides real-time show capability (in addition to single frame grab and show). This approach is shown in Figure 14. below.

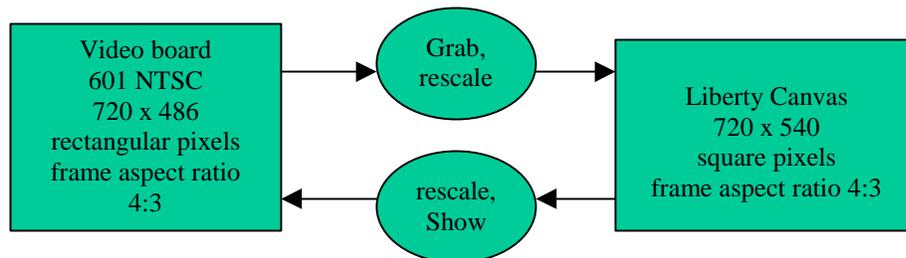


Figure 14. 601 NTSC video I/O, with aspect corrected canvas and re-scaling on video input/output.

Another disadvantage of this approach (re-scaling video during input and output), is that images must be filtered when they are re-scaled. This can introduce minor artifacts (blurring if interpolation is on, or aliasing if interpolation is off). Another critical factor is that images must always be de-interlaced during input (using Liberty's de-interlacing controls in the Grab popup or in the Filmstrip actor in Animation). Otherwise, the fields will get filtered together when the image is re-scaled during the grab, which introduces major artifacts.

A slightly alternate approach is to utilize a canvas resolution of 648x486, which is also 4:3 aspect ratio. In this case, video gets scaled horizontally (from/to 720x486) during input and output. This eliminates the problem with interlacing mentioned above. Most artists don't like this approach, however, since the number of pixels per scanline actually gets reduced when input into Liberty.

b. Aspect Correct the Canvas Display

In this approach, the user sets the canvas resolution to match the number of scanlines and pixels of the video device (for example, 720x486 for 601 NTSC). The display of the canvas on the computer monitor is then re-scaled to provide 4:3 aspect ratio (for example, the canvas is displayed as a 720x540 image on the computer monitor for 601 NTSC). In addition, any symmetric shapes (such as circles) are aspect corrected for the display resolution (so that they are really circles on the aspect corrected canvas display and on the video output). This approach is shown in Figure 15. below.

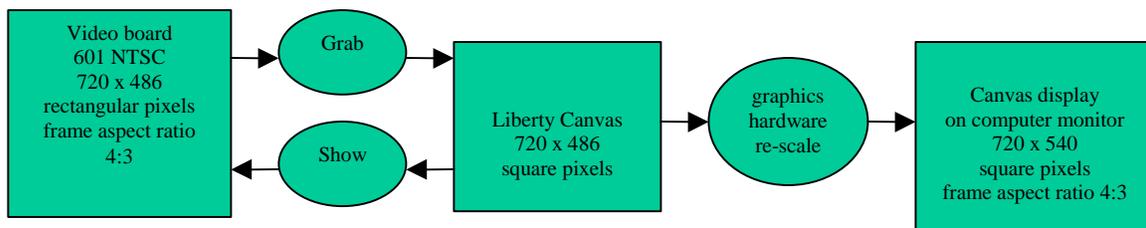


Figure 15. Aspect correction applied to the canvas display only.

This approach has the advantage that the actual imagery is never re-scaled. Only the canvas display is re-scaled to 540 scanlines, not the canvas image itself. Thus, there are no concerns of introducing aliasing artifacts into the imagery itself, nor are there problems with filtering interlaced scanlines together (of course, the canvas display may have filtering artifacts, but the internal canvas image will be unaffected). In addition, this approach is compatible with real-time show in most cases since the canvas is the same resolution as the video device (although, see the note about SGI Impact and Octane in the paragraph below).

Unfortunately, this approach only works on certain systems, as it requires hardware support of Fractional Zoom in OpenGL. It currently works well on the SGI O2 platform. It works on the SGI 320 and 540 platform, and on windows NT systems using the Diamond Fire and Oxygen graphics cards, but there may be artifacts visible on the screen due to the poor filtering done by these cards. It does NOT work well on NT systems with Intergraph or Symmetric Glyder graphics cards, due to poor performance of fractional zoom on those cards.

In addition, this approach does NOT work with real-time show for SGI Impact or Octane systems, since real-time show (video out) on those systems comes from the end of the graphics pipeline. If fractional zoom is enabled in this case, the image going to video out will be scaled incorrectly.

c. Aspect Correct the Computer Monitor Image

This approach is only supported on SGI Impact and Octane systems. It is the only approach that will work with real-time show (video out) on those systems. This approach is similar to approach b. described above, EXCEPT that the entire computer monitor image is aspect corrected to simulate the rectangular pixels of 601 video. This works with real-time show since the correction is applied after the video out comes off of the graphics pipeline, but before the image is displayed on the computer monitor. So, the user sets the canvas to the same resolution as the video output (720x486), and Liberty adjusts the computer monitor image so that the canvas display appears to have 4:3 aspect ratio. In addition, any symmetric shapes (such as circles) are aspect corrected for the display resolution (so that they are really circles on the computer monitor and on the video output). This approach is shown in Figure 16. below.

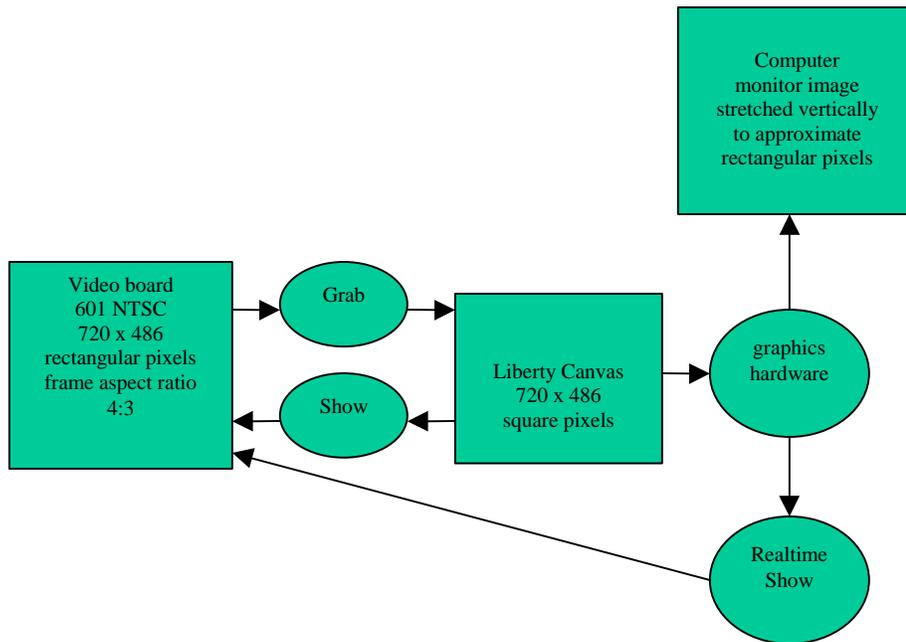


Figure 16. Aspect correction applied to computer monitor, as done on SGI Impact and Octane.

This approach has similar advantages to approach b. above, in that the actual imagery is not rescaled (only the computer monitor display is).

d. No Aspect Correction

Of course, the user can always ignore the issue of aspect correction entirely, and just work with a canvas resolution the same as the video device resolution (for example, 720x486 for NTSC, with no aspect correction). This works fine when doing non-geometric operations such as color correction. It may lead to trouble, however, if the artist is creating graphics content. For example, circles created in Liberty in this mode will not be circles in 601 video output (they will be ovals due to the differing pixel size).

Of course, if 601 video I/O is not an issue, aspect ratio correction probably is not a concern. For 720p and 1080i HDTV resolutions, Film resolutions, and other work such as creating World Wide Web content, aspect correction is not necessary.

Based on the above concepts, the following section describes the new Canvas Configuration controls. The new Canvas Configuration panel (in the Configuration environment) has the following buttons:

- Canvas Resolution Width and Height Allows the user to enter the actual size of the canvas.

- Display Resolution Width and Height Allows the user to enter the size of the canvas display on the computer monitor. This can be significantly different than the canvas resolution if needed. For example, with a canvas resolution of 720x576 (601 PAL), the canvas display could be scaled up to 1024x576 (which is 16:9 Hi-def).

- Frame Aspect Ratio This describes the width-to-height aspect ratio of the Canvas Display on the computer monitor. For example, if the canvas display is 720x540, the frame aspect ratio will read width = 4, height = 3. The user can also modify these fields. For example, if the canvas display is set to 720x486, entering width = 4 and height = 3 for the frame aspect ratio will change the canvas display to 720x540.

The new Canvas Configuration panel is shown in Figure 17. below.

Canvas Resolution		
720	486	
Width	Height	
Display Resolution		
720	540	
Width	Height	
Frame Aspect Ratio		
4	3	
Width	Height	
Defaults		
NTSC 30 fr/s	PAL 25 fr/s	FILM 24 fr/s
DPI	100	Dropfr
Canvas Configuration		

Figure 17. Enhanced Canvas Configuration panel.

The following describes the new Default Resolutions popup (accessed through the “Defaults” button in the Canvas Configuration panel). The left hand portion of the new Default Resolutions popup is shown in Figure 18. below.

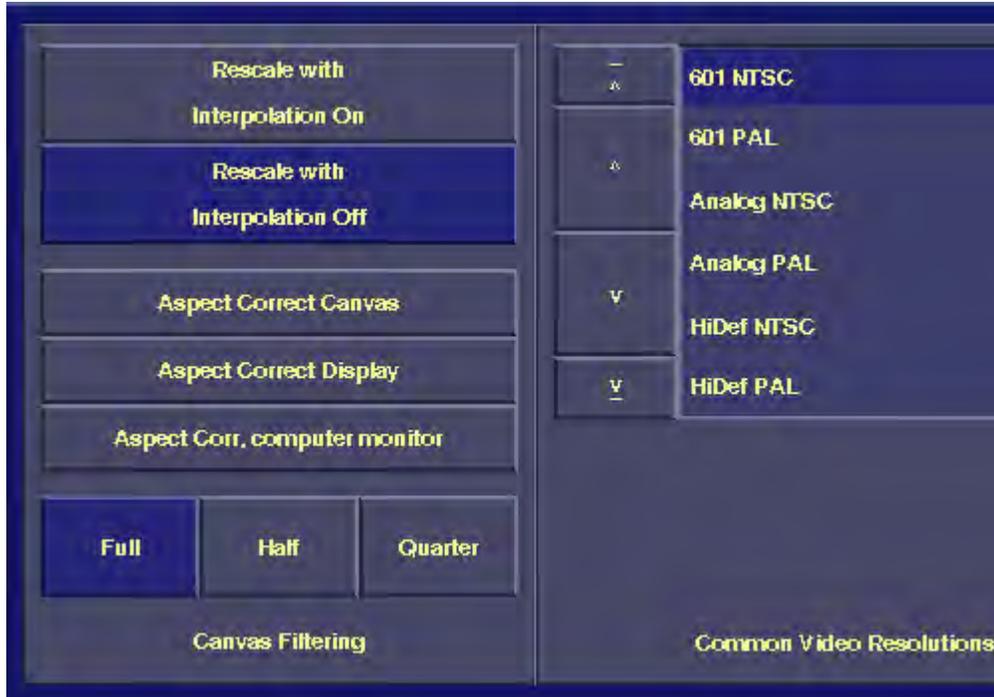


Figure 18.
Left half of Default Resolutions popup, with new Aspect Correction controls and Video Resolutions.

The new Default Resolutions popup contains three scrolling windows, for selecting common pre-defined resolutions for Video, Film, and Other uses respectively. The up and down arrows scroll the window up and down. Clicking on a given resolution in one of the windows changes the canvas resolution accordingly.

In the left hand column of the Default Resolutions popup are the following additional controls:

- **Rescale with Interpolation On/Rescale with Interpolation Off**

For cases where images must be re-scaled during transfer between canvas and video, these buttons control whether interpolation (smoothing) is done during the re-scale. If “Rescale with Interpolation On” is selected, the filtering will have a slight softening effect. If “Rescale with Interpolation Off” is selected, the filtering will not soften the image, but slight aliasing artifacts may be introduced.

This applies only to cases where the video device resolution differs from the canvas resolution (as described in section a. of the Aspect Ratio Correction section above).

- **Aspect Correct Canvas**

Selecting this button causes the canvas resolution (of the current default resolution) to be re-scaled to a 4:3 aspect ratio, as described in section a. of the Aspect Ratio Correction section above. For example, if “601 NTSC” is the current default resolution, pressing “Aspect Correct Canvas” will set the canvas resolution to (720x540). Turning “Aspect Correct Canvas” back off will set the canvas resolution back to (720x486). In both cases, the display resolution will match the canvas resolution.

This button only applies to the 601 NTSC and PAL default Video resolutions. It is disabled otherwise.

- **Aspect Correct Display**

Selecting this button causes the display resolution (of the current default resolution) to be re-scaled to a 4:3 aspect ratio, as described in section b. of the Aspect Ratio Correction section above. For example, if “601 NTSC” is the current default resolution, pressing “Aspect Correct Display” will set the canvas resolution to (720x486) and the display resolution to (720x540). Turning “Aspect Correct Display” back off will set the display resolution back to (720x486), which matches the canvas resolution.

This button only applies to the 601 NTSC and PAL default Video resolutions. It is disabled otherwise.

Notes:

As stated earlier, rescaling the canvas display only works on certain hardware platforms. It does NOT currently work well on NT systems with Intergraph or Symmetric Glyder cards, due to poor performance of fractional zoom on those cards. It is also incompatible with real-time video show on SGI Impact and Octane systems.

On some graphics cards, the card can not support the exact required display resolution. If this occurs, Liberty selects the closest display resolution that will work. For example, on the SGI O2 system, if the user requests a canvas resolution of (720x486) and a display resolution of (720x540), the following warning dialog will appear when leaving the Configuration environment:

“Warning: Your system does not appear to support the requested canvas display size.
The canvas display size has been adjusted to 720 x 539”.

The canvas display will be re-scaled as specified, and the user can proceed from there.

- **Aspect Correct Computer Monitor**

This button sets the canvas and display resolutions to the same values, but enables re-scale of the computer monitor image to 4:3 aspect ratio, as described in section c. of the Aspect Ratio Correction section above. In addition, symmetrical shapes created within Liberty are re-scaled to have correct aspect ratio for 601 NTSC/PAL devices.

This is the only aspect correction method compatible with real-time show on the SGI Impact and Octane platforms (in fact, re-scaling of the computer monitor image *only* works on the SGI Impact and Octane platforms)

On the SGI Impact and Octane, re-scaling of the computer monitor image works as follows: After the “Aspect Correct Computer Monitor” button is first turned on, the computer monitor image will adjust when the user leaves the Configuration environment (this may result in the computer monitor briefly flashing to black). The computer monitor remains re-scaled until the user turns the “Aspect Correct Computer Monitor” button back off, or selects a non 601/NTSC/PAL resolution (the actual monitor adjustment will not occur until the user leaves the Configuration environment). In addition, the monitor aspect correction will be turned off when the user exits Liberty (again, this results in the monitor briefly flashing to black). The monitor aspect correction will be turned back on again next time Liberty is started up.

This button only applies to standard definition 601 NTSC and PAL Video resolutions. It is disabled otherwise.

Note that this button replaces the “4:3 Aspect” button formerly in the Paint environment in Liberty V6.5. The “Aspect Correct Computer Monitor” button serves the same purpose that the “4:3 Aspect” button did in V6.5.

Note also that this button may be useful on platforms other than the Impact and Octane. Even though the computer monitor will not be aspect corrected on non Impact/Octane platforms, shapes will still be aspect corrected. Thus, the user’s output would still be correct on the video output to 601. For example, for 601 NTSC, the user would run at a canvas resolution of 720x486, and turn on the “Aspect Correct Computer Monitor” button. The aspect ratio on the computer would not look correct, but the aspect ratio on the 601 video output monitor would (including symmetrical shapes).

- **Full, Half, and Quarter buttons**

Setting these uses the full specified resolution, half of the specified resolution, or one quarter of the specified resolution respectively.

The following shows which video resolutions to utilize for what video devices:

<u>Device</u>	<u>Standard</u>	<u>Resolution</u>
<i>Impact Video,</i> <i>Octane Video,</i> <i>O2 Video (digital),</i> <i>SGI 540 Video (digital),</i> <i>Chyron Duet Video (standard def.),</i> <i>Galileo Video (digital)</i> <i>DDR's (standard def.).</i>	NTSC	Use "601 NTSC" default resolution
	PAL	Use "601 PAL" default resolution
<i>O2 Video (analog),</i> <i>SGI 320 and 540 (analog),</i> <i>Galileo Video (analog)</i>	NTSC	Use "Analog NTSC" default res.
	PAL	Use "Analog PAL" default res.
<i>Hi Def. DDR's,</i> <i>Chyron Duet (hi-def).</i>	1080i	Use "HiDef 1080" default res.
	720p	Use "HiDef 720" default res.
<i>Centaur/Cindy</i>	NTSC	Enter 659 for canvas width and display width Enter 484 for canvas height and display height
	PAL	Enter 780 for canvas width and display width Enter 584 for canvas height and display height
<i>Avion</i>	NTSC	Enter 756 for canvas width and display width Enter 486 for canvas height and display height
<i>Film resolutions</i>		<i>Use any of the "Common Film" default resolutions as needed.</i>

Note also that for streaming video onto a disk array, and streaming video from a disk array out to video, the Raw YUV clip file format must be used (through the Target VTR set-up menu). Raw YUV files will use the resolutions for Impact/Octane/O2 video, as specified above.

8. Added de-interlacing for grab from Video Boards

The capability to de-interlace frames grabbed from video I/O boards was added in Liberty V6.5. Previously, the Grab button in the Transfer panel always grabbed full frames. It now can also grab either the even or the odd field. This is controlled by the settings in the Grab popup in the VTR panel .

In the Grab popup, turn on the “Grab Frame” button to grab a full frame. Turn on the “Grab Even Field” button to grab the even field of the frame. Turn on the “Grab Odd Field” button to grab the odd field of the frame. Use the Duplicate/Interpolate buttons to control whether scanlines from the field are duplicated or interpolated to create the alternate fields when de-interlacing.

Note that the de-interlace settings in the grab popup continue to affect Grabs done in the VTR panel (from a DDR or VTR), as they did in V6.5. Thus, these settings now affect grabs from both video I/O boards, DDR's, and VTR's. The grab popup is shown in Figure 19. below.

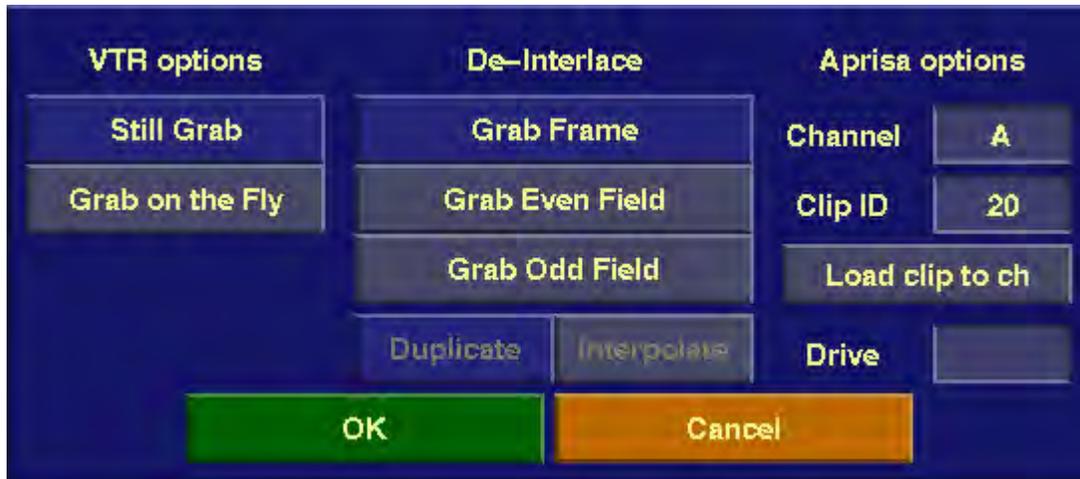


Figure 19. VTR Panel Grab popup.

9. Add support of Windows NT system cursors for improved performance.

Liberty V7.0 allows the user to utilize any of the system cursors provided by Windows. This is in addition to the set of Liberty custom cursors provided in Liberty V6.5.

To use Custom Cursors, bring up the Cursor panel in the Configuration environment, and turn the “Custom Cursors” button on. Once the user has turned Custom Cursors on, the user can then select from among the various custom cursors by pressing the arrows for “Standard Cursor”, “Dead Cursor”, “Busy Cursor”, and “Pan Cursor”. This assigns the cursors for normal operation, and the cursors to be used for inactive buttons, as a busy signal, and when panning the canvas respectively.

To use windows system cursors, turn the “Custom Cursors” button off, then select from among the various system cursors by pressing the arrow buttons as described above.

Note that for performance reasons, “Custom Cursors” should always be TURNED OFF on the following types of systems:

- SGI 320 and 540 systems (SGI's Windows NT Visual Workstations).
- Any Windows NT system using the Diamond Fire GL card.

The Cursor panel is shown in Figure 20. below.

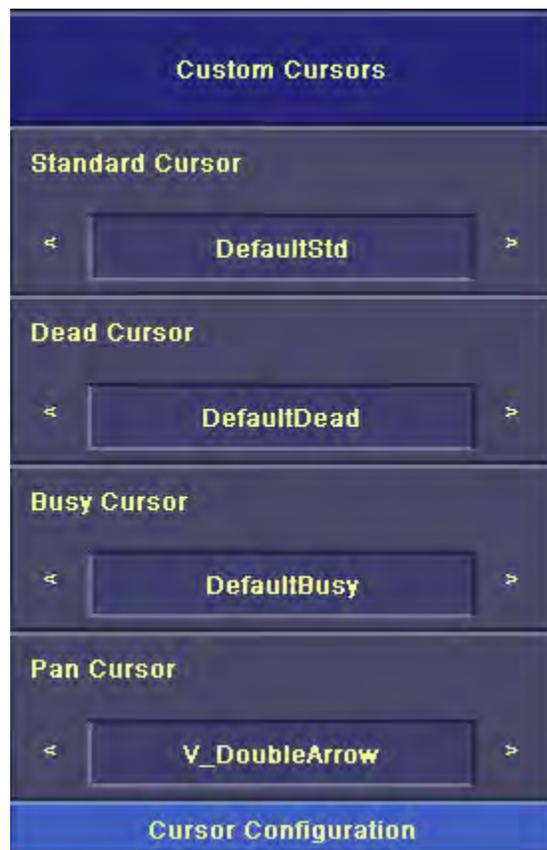


Figure 20. Cursor Configuration Panel, with new Custom Cursors on/off button.

New Paint/Animation Features

10. Text Enhancements

A number of bug fixes and enhancements were made to the Text panel. The bug fixes are covered in the final section of this document. The enhancements are described as follows:

- a. With Liberty V7.0, you can now set up Text buffers and use them as templates, preserving Text parameters (such as position, font, sizing, kerning, leading, and transformations) when new text content is entered. To replace text in an existing buffer while preserving its parameters, select the characters on the first line that you want to replace, then type in the new characters. Liberty will delete the old (selected) characters before entering the new ones, but the parameters of the line will remain unchanged. Repeat this procedure for each line that you want to change. This procedure works for groups of characters other than lines as well (for example, there may be two groups of characters on a line, each with a different font; you can select and replace each group separately while preserving its parameters).
- b. Separate portions of text can now be selected if the Control key is held down (for example, select one group of characters with the pen, then select another group of characters; if the Control key is held down while selecting the second group, both groups will remain selected).
- c. When the cursor is at the beginning of a Text line, pressing "Enter" now creates a new empty line and moves the remaining lines (including the current line) down. Previously, the current line was split after the first character, leaving the first character on the new line and the rest of the characters on the next line.
- d. Doing a Text Fill to the Mask now obeys the Alpha Slider.
- e. When rendering Text (Outline or Fill) to the Mask, the outline/fill now inverts the existing Mask if the mask is on and the Invert ("inv") prefix button is on.
- f. Hot keys have been added for kerning and leading. These work with the four arrow keys when the control key is held down:
 - To kern the current character left, press control + left arrow.
 - To kern the current character right, press control + right arrow.
 - To decrease the leading of all text, press control + up arrow.
 - To increase the leading of all text, press control + down arrow.

Note that these hot keys also work when a portion of text is selected (for example, pressing control + left arrow kerns all selected characters left by one increment, while pressing control + down arrow increases leading of all selected lines by one increment).

Also note that kerning/leading only works with the group of four arrow keys directly to the right of the right-hand control and shift keys on the keyboard. It does not work with the arrow keys in the numeric keypad.

11. Add built-in conversion of TrueType fonts in Liberty.

Liberty V7.0 contains an internal True Type font converter (on both the NT and SGI platforms). When the user recalls a font from the Text menu, the full-screen file menu appears. When the user goes to a directory containing TrueType fonts, Liberty will prompt the user "Convert True Type Fonts?". If the user answers "Yes", Liberty will convert each TrueType font in the directory to Liberty format (if there are a number of fonts in the directory, this may take a while). If the user answers "No" to the prompt, Liberty will ignore the TrueType fonts in the directory (leaving them unconverted and unusable in Liberty). Once Liberty has converted the fonts, they will be displayed in the directory. They can be browsed and recalled into the Text panel from this point on (the user will not be re-prompted when entering the same directory, as Liberty has already converted the fonts there).

12. Add keyboard mappings for Turkish fonts.

Liberty V7.0 adds support for Turkish TrueType fonts, and keyboard mappings using the Turkish-F standard.

Before a Turkish TrueType font can be used in Liberty, the user must convert it to Liberty's font format. This is done using a new utility, TurkFont, which will be provided on the Liberty V7.0 installation CD. The utility is run as follows from a DOS command prompt window (or shell window under IRIX):

```
TurkFont true_type_font_name.ttf
```

This converts the font to a Liberty (.fo) font file that can be read into Liberty from the Text panel. Once the font is read in, Liberty will obey the Turkish-F keyboard mapping when the font is selected. There are four keyboard states, including normal, shift (with the shift key down), alt-gr (with the right hand alt key down), and shift-alt-gr (with the right hand alt key and shift key both down). To use the accent keys, first type the accent, then type the letter you want to apply it to. For details on the Turkish-F keyboard mapping, with diagrams of the four keyboard states, see:

http://msdn.microsoft.com/library/books/techlang/devintl/d3/s25b8_kk.htm

13. Add new Vortex option to Apply tool.

A new Vortex option was added to the Apply tool (in the Tools panel in Paint). Vortex Apply, which complements the existing Linear, Circular, and Radial options, creates spiral color gradations. When the Direction (Clock) button is at 0, Vortex has the same effect as Radial Apply. Rotating the Direction button from zero gives greater and greater spiral effects. See Figure 21. below for the new Apply popup. See Figure 22. below for an example of Vortex Apply.



Figure 21. Apply Popup, with new Vortex option.

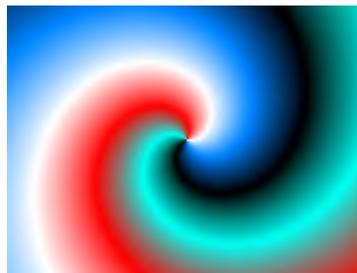


Figure 22. Example of Vortex Apply result (with angle of 60 degrees).

14. Enhanced Shape tool to create a variety of star shapes.

In Liberty V7.0, users can now create a variety of star shapes using the new Star popup (brought up using the Star corner button). The popup contains the following the following two sliders:

- # of points Allows the user to select the number of outer points on the star, from three up to 100. The default is 5.
- Inner radius Allows the user to adjust the “sharpness” of the star’s points (that is, the distance from the inner points to the outer points. The default is 0.4.

Note that the user can create star shapes (by dragging on the canvas) while the star popup is up, allowing experimentation. Once the star popup OK button is pressed, subsequent stars created will use the popup’s settings.

The red reset button resets the Star popup to its defaults.

The new Shape menu, with Star corner button, is shown in figure 23. below.

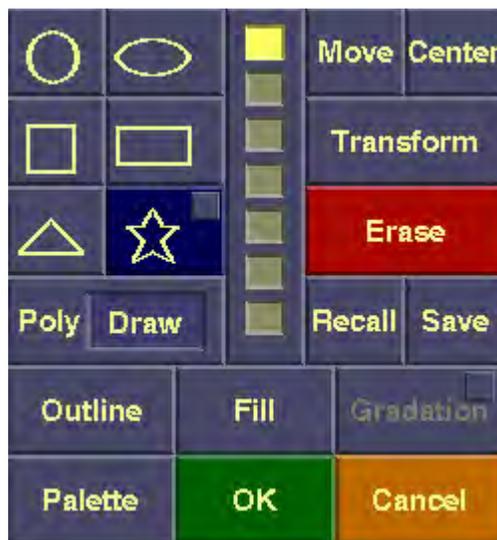


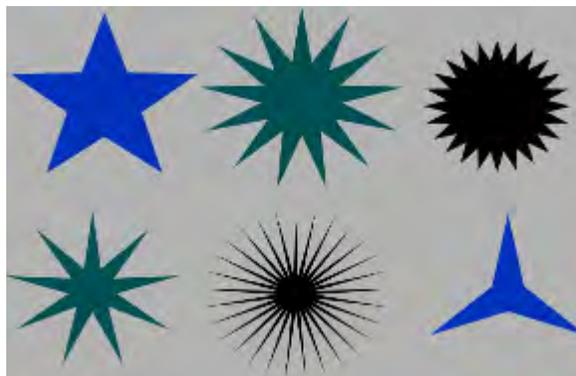
Figure 23. Shape menu, with Star corner button.

The Star popup is shown in figure 24. below.



Figure 24. Star Settings popup

Figure 25. below shows several star shapes created using the new tool:



15. Add Dither and Color Matrix tools to Mask and Shape Actors in Animation.

The Dither and Color Matrix tools, from the Tools panel, have been added to the Mask and Shape actors in Animation. This allows these tools to be animated (using the corresponding Dither or Color Matrix settings in each key-frame). The key-frame controls are shown in figures 26. and 27. below.



Figure 26. Key-frame controls for Color Matrix effect (in Mask and Shape actor).



Figure 27. Key-frame controls for Dither effect (in Mask and Shape actor).

16. Add new 3:2 Pulldown options.

3:2 Pulldown allows the user to convert input material from film to video timing when recalling it using the Filmstrip Actor in Animation. Two new options for 3:2 Pulldown were added to the Extract popup in the Filmstrip Actor Edit menu. This provides a total of four options for 3:2 Pulldown, labeled “3:2 field 1”, “2:3 field 1”, “3:2 field 2”, and 2:3 field 2” (the Extract popup is shown in Figure 28 below).

The de-interlacing options in the Extract popup (off, use odd, use even, Duplicate, and Interpolate) remain unchanged. These buttons are used for de-interlacing incoming video frames.



Figure 28. Filmstrip Actor Extract menu, with four options for 3:2 Pulldown.

The effect of the various 3:2 Pulldown settings is explained as follows. Given four frames of film input, these need to be converted to 5 frames of video. This converts the input material (24 frames/second) to the correct speed for video (30 frames/second). There are four possible ways in which this could be done. Using the “3:2 field 1” setting, the first film frame (“A”) is used for the first three fields of video. The second film frame (“B”) is used for the fourth and fifth fields of video. This process repeats, as shown in figure 29. below:

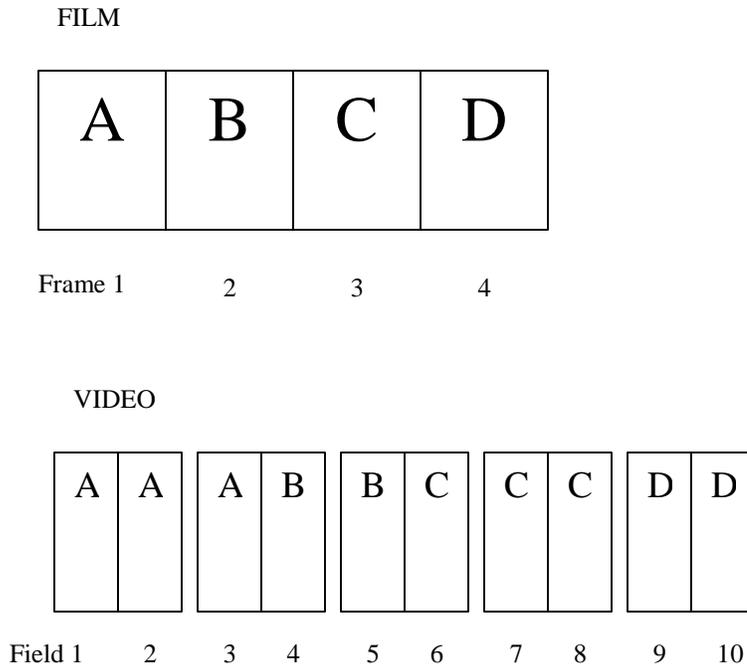
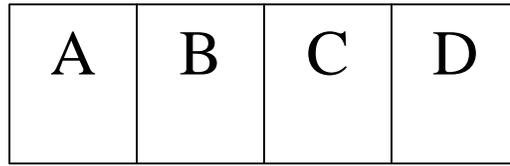


Figure 29. – Diagram of “3:2 Field 1” setting when converting Film to Video using a Filmstrip actor.

Field ordering in the above video frames is determined by the “Even field first” and “Odd field first” settings in the Run popup (accessed via the corner button of “Run”). For example, when “Even field first” is selected, video fields 3 and 4 above would be stored with field 3 in the even scanlines of the image, and field 4 in the odd scanlines of the image (the top scanline is numbered zero (even), the second from the top is numbered one (odd), the third from the top is numbered two (even), and so on). If “Odd field first” is selected, field 3 would appear in the odd scanlines of the image, and field 4 in the even scanlines of the image.

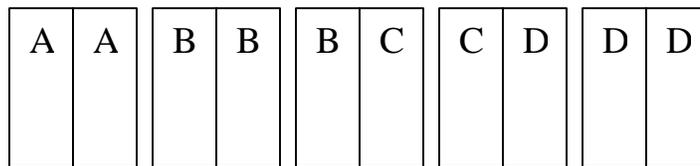
Using the “2:3 field 1” setting, the first film frame (“A”) is used for the first two fields of video. The second film frame (“B”) is used for the following three fields of video. This process repeats, as shown in figure 30. below:

FILM



Frame 1 2 3 4

VIDEO



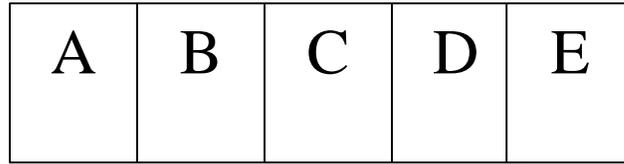
Field 1 2 3 4 5 6 7 8 9 10

Figure 30. – Diagram of “2:3 field 1” setting when converting Film to Video using a Filmstrip actor.

Field ordering in the above video frames is determined by the “Even field first” and “Odd field first” settings in the Run popup (accessed via the corner button of “Run”). For example, when “Even field first” is selected, video fields 5 and 6 above would be stored with field 5 in the even scanlines of the image, and field 6 in the odd scanlines of the image (the top scanline is numbered zero (even), the second from the top is numbered one (odd), the third from the top is numbered two (even), and so on). If “Odd field first” is selected, field 5 would appear in the odd scanlines of the image, and field 6 in the even scanlines.

Using the “3:2 field 2” setting, the first film frame (“A”) is used for the first three fields of video. The second film frame (“B”) is used for the following two fields of video. The first “A” starts in the *second* field of the first frame of video output, however (thus, the results are the same as for “3:2 field 1”, except that the entire output sequence is shifted right by one field). This process repeats, as shown in figure 31. below:

FILM



Frame 1 2 3 4 5

VIDEO

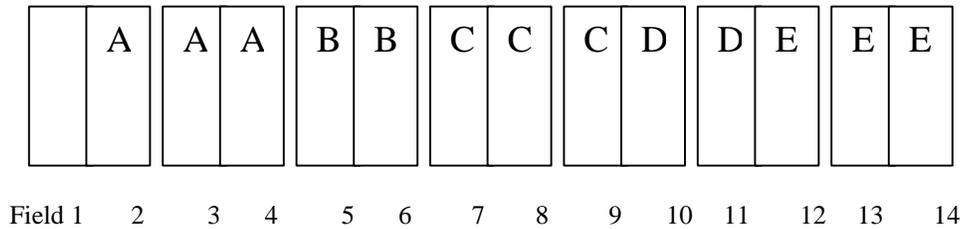
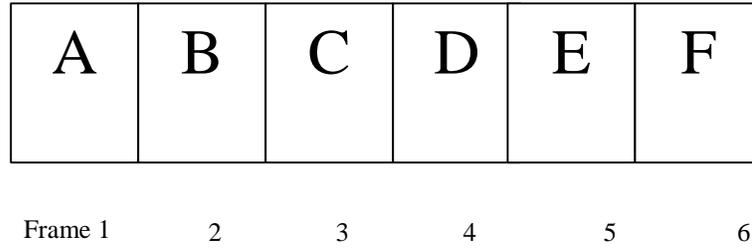


Figure 31. – Diagram of “3:2 field 2” setting when converting Film to Video using a Filmstrip actor.

Field ordering in the above video frames is determined by the “Even field first” and “Odd field first” settings in the Run popup (accessed via the corner button of “Run”). For example, when “Even field first” is selected, video fields 9 and 10 above would be stored with field 9 in the even scanlines of the image, and field 10 in the odd scanlines of the image (the top scanline is numbered zero (even), the second from the top is numbered one (odd), the third from the top is numbered two (even), and so on). If “Odd field first” is selected, field 9 would appear in the odd scanlines of the image, and field 10 in the even scanlines.

Using the “2:3 field 2” setting, the first film frame (“A”) is used for the first two fields of video. The second film frame (“B”) is used for the following three fields of video. The first “A” starts in the *second* field of the first frame of video output, however (thus, the results are the same as for “2:3 field 1”, except that the entire output sequence is shifted right by one field). This process repeats, as shown in figure 32. below:

FILM



VIDEO

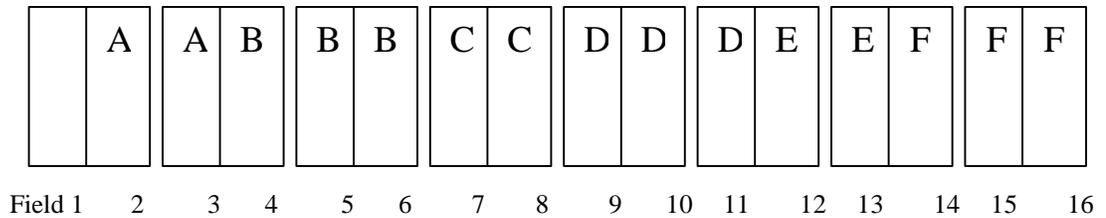


Figure 32. – Diagram of “2:3 field 2” setting when converting Film to Video using a Filmstrip actor.

Field ordering in the above video frames is determined by the “Even field first” and “Odd field first” settings in the Run popup (accessed via the corner button of “Run”). For example, when “Even field first” is selected, video fields 3 and 4 above would be stored with field 3 in the even scanlines of the image, and field 4 in the odd scanlines of the image (the top scanline is numbered zero (even), the second from the top is numbered one (odd), the third from the top is numbered two (even), and so on). If “Odd field first” is selected, field 3 would appear in the odd scanlines of the image, and field 4 in the even scanlines.

17. Layers menu enhancements.

Liberty contains several minor enhancements in the Layers menu in Paint. In addition, the function buttons in the Layers menu have been re-arranged. The controls in the new Layers menu are shown below in Figure 33.



Figure 33. Portion of Layers menu with new "All On" and "Center All" buttons.

- a. Add button to Center all Layers (in Layers menu).

This new button (in red) centers all the active layers on the canvas. The user is first prompted with a confirmation popup.

- b. Add "All On" button in Layers menu.

This new button turns on all RAM (fast) Temps as layers. It complements the existing "All Off" button, which turned off all active layers.

- c. Allow selection of layers outside of the canvas with the cursor.

This change allows the user to move off-canvas layers with the cursor. This allows users to drag such layers back on the canvas, assuming they know where the layers are (this is necessary since off canvas layers are not visible).

18. Added Alpha browse capability to Layers and Undo menus.

In Liberty V7.0, “Alpha” buttons were added to the Layers menu, the Undo browse menu, and the Temp/Mask browse menu. This allows the user to browse the alpha of the corresponding images (in black and white). When the “Alpha” button is turned off, images are browsed in full color. When the “Alpha” button is turned on, the alpha of each image is browsed in black and white. This is similar to the “Alpha” button that already existed in the full-screen File Manager menu for browsing there.

The Layers menu, with “Alpha” button, is shown in Figure 34. below. The Undo Browse menu, with “Alpha” button, is shown in Figure 35. Below.

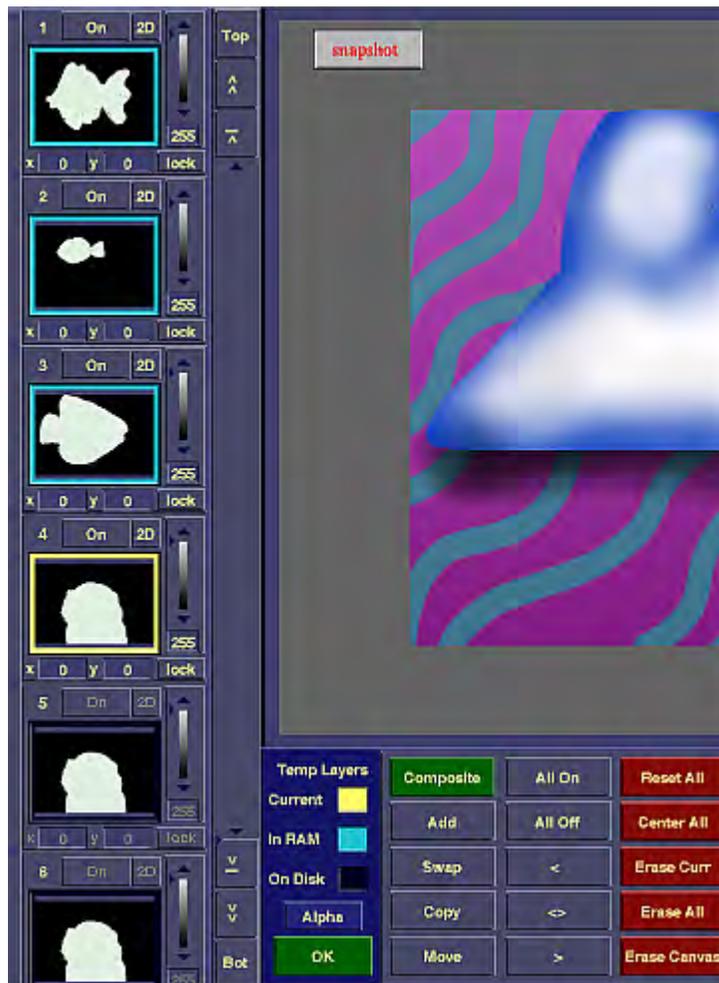


Figure 34. Layers menu, with new Alpha button (above “OK”) to display alpha of thumbnails.



Figure 35. Right portion of Undo Browse menu, with new Alpha button to display alpha of thumbnails.

19. Liberty NT Plug-in Improvements.

- a. Enable masks for NT plug-ins.

In Paint, in Liberty NT, Photoshop plug-ins now obey the Mask (when on). In Liberty NT's Plug-in Actor, the "Use Mask", "Invert", and "Inplace" buttons, along with the Mask filename window, have been activated, allowing the user to use masks with plug-ins in Liberty NT Animation (as you always could in Liberty SGI). The Plug-in Actor edit menu, with mask-related buttons, is shown in Figure 36. below.

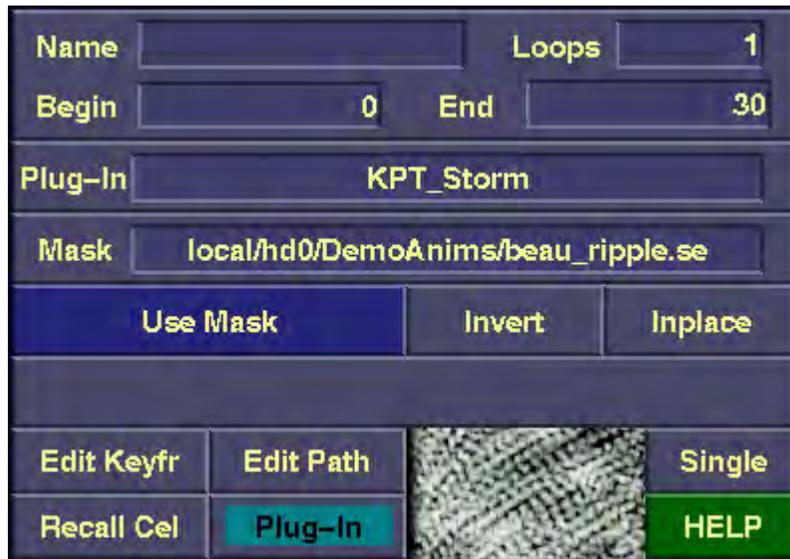


Figure 36. Plug-in Actor edit menu, with Mask , Use Mask, Invert, and Inplace buttons.

- b. Enable Photoshop plug-ins for Liberty 64 NT

In Liberty V7.0 NT, Photoshop plug-ins now work in Liberty 64/Paint 64. They previously only worked in Liberty 32/Paint 32.

- c. Enhanced Plug-in button in Liberty NT

Liberty NT's Plug-in button (in the Tools panel in Paint) has been enhanced as follows: Pressing the corner button brings up the popup for the current plug-in. Pressing the main button applies the current plug-in with the previous settings (if they exist; otherwise, it brings up the popup). Pressing the text window brings up a popup allowing the user to change the plug-in type (selecting from the available plug-ins).

These changes make the plug-in button consistent with the way it works in Liberty SGI. They also allow the user to apply the plug-in with the previous settings, which was previously not possible in Liberty NT. The Tools panel, with Plug-In button, is shown in Figure 37. below.



Figure 37. Tools panel with Plug-in button (including corner button and text window).

- d. Add support for additional Photoshop plug-ins.

Liberty V7.0 now supports the new Kai Power Tools (KPT) 5 plug-ins. This is in addition to the previous plug-ins supported in Liberty V6.5 (including KPT 3, Paint Alchemy, Type Caster, and Terrazo from Xaos Tools, and DigiEffects' AgedFilm).

20. Add Cut and Paste of Clipboard images with Alpha.

The Cut button (in the Transfer panel in Paint) now has the following three modes in Liberty NT:

- Temp Cuts the canvas to the current Temp.
- Clipboard Cuts the canvas to the Windows Clipboard as an RGB image.
- Clipboard with Alpha. Cuts the canvas to the Windows Clipboard as an RGBA image.

The “Clipboard with Alpha” mode is new. The other two modes were available in Liberty V6.5 NT.

These modes are selected by pressing on the Cut button’s text inset window. This brings up the Clipboard mode popup shown in Figure 38. below.



Figure 38. Clipboard mode popup, with new “Clipbrd with alpha” option.

Once the user has selected a clipboard mode, the main Cut button will then function in the selected mode (for example, cutting an RGBA image to the Clipboard, if “Clipbrd with alpha” mode was selected). Note also that the control-C keyboard shortcut cuts the canvas to the clipboard in RGB mode. The control-X keyboard shortcut cuts the canvas to the clipboard in RGB mode, then erases the canvas. The control-A keyboard shortcut cuts the canvas to the clipboard in RGBA mode, and the control-B keyboard shortcut cuts the canvas to the clipboard in RGBA mode, then erases the canvas.

In addition to the above change, Liberty’s Paste button (when in Clipboard mode), can now paste either RGB or RGBA data from the Clipboard to the canvas. The control-V keyboard shortcut also pastes the contents of the Clipboard (RGB or RGBA) to the canvas.

These changes allow RGBA images to be exchanged with other windows programs via the Windows clipboard.

Some applications (such as Liberty) use images with pre-multiplied alpha. Other applications (such as the Aprisa 100 Still Store and Photoshop) use images with non-pre-multiplied alpha. To allow clipboard exchange between both types of programs, a new button was added to the “Save File options” popup in the Configuration environment (access by pressing the “Save-as Set-up” button in the Directory Management panel in Config). When the “Clipboard has Pre-multiplied Alpha” button in the “Save File options” popup is on, the clipboard will be treated as if it has pre-multiplied alpha for cut and paste. When this button is off, the clipboard will be treated as if it has non-pre-multiplied alpha. Of course, when cutting and pasting RGB images to/from the clipboard, this button has no effect. The “Save File options” popup is shown in Figure 39. below.

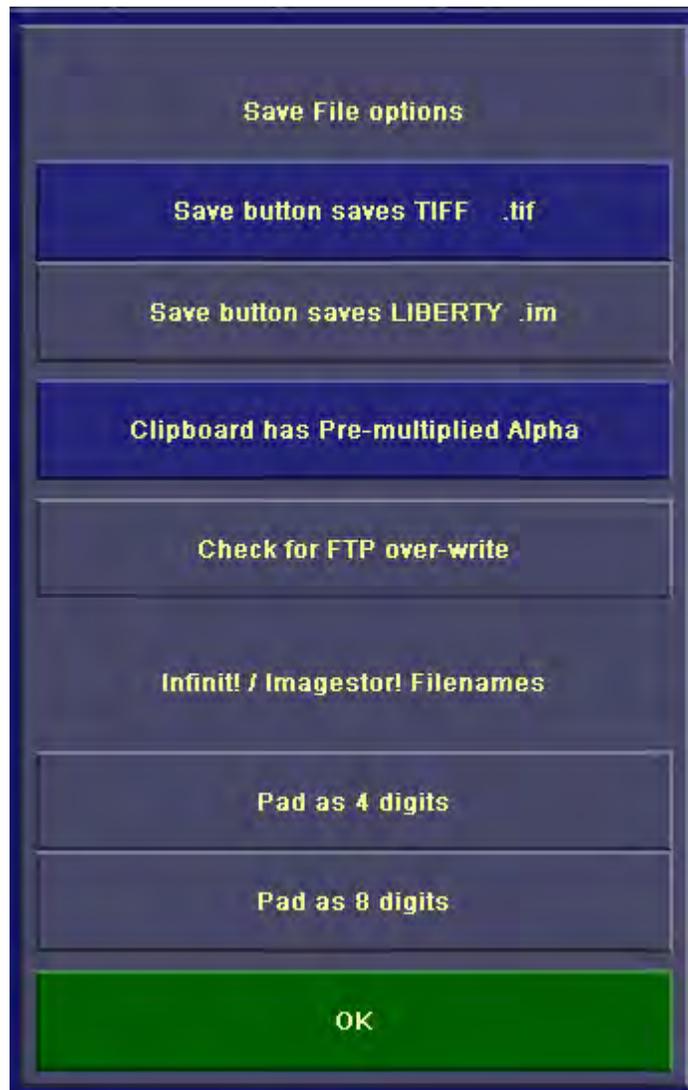


Figure 39. Save File Options popup, with “Clipboard has Pre-Multiplied Alpha” button

21. Add new menu for speed control of preview files.

A new Speed Control slider was added to the Show popup in the Transfer Panel in Paint, allowing the user to control the speed that Preview files are played back. When the menu is in “Preview Show” mode (to playback previously rendered preview (.prv) files), the slider allows the user to slow down playback. A setting of 100 plays back files at full speed, while settings less than 100 playback slower (for example, a setting of 50 plays back at half speed).

The left portion of the Show popup, with the Preview Show button and the new Speed Control slider to the left, are shown in Figure 40. below. Note also that the slider does not affect the other Show modes (Realtime Show and Non Realtime Show). The slider is therefore disabled in those modes.

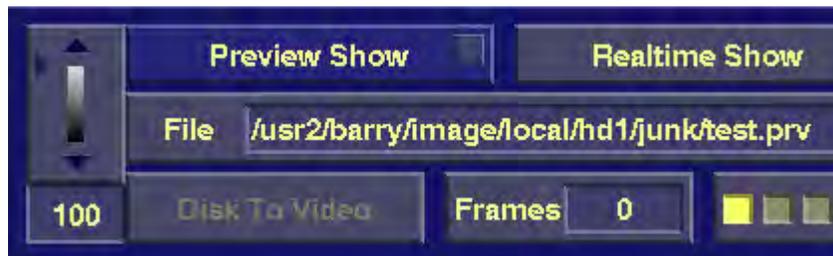


Figure 40. Show popup, with new Preview Show Speed Control slider.

22. Allow input of audio from movie files on timeline.

In Liberty V7.0, the user can now input audio from movie files (such as Quicktime and AVI) to the Animation timeline. This is done using the Filmstrip actor along with one of the six source disk paths.

Filmstrip actors can be used to input either audio or image data from a movie file, not both (thus, to input both audio and image data from the same movie file, two Filmstrip actors must be used, one for audio and one for image data).

To input from a movie file in Animation, add a Filmstrip actor to the timeline, select one of the six source disk paths in the Filmstrip actor edit menu, and assign the movie file to the disk path in the Source VTR Set-up menu. To input Audio, press the disk path's "Src" button (immediately to the right of the frame/timecode window) two times, changing it to "Audio". To Input image data, leave the "Src" button set to "Off" or "Canvas" (these both have the same effect).

In addition to the above change, Audio can now be snap rendered on the timeline in Liberty NT (that is, if one or more actors with audio exist on the timeline, doing a snap render will play the proper audio snip at that point). This capability previously only worked in Liberty SGI/IRIX.

File Manager Enhancements

23. Modify “Save” button to Save TIFF files by default.

In previous versions, the “Save File” button (Transfer panel in Paint) always saved Liberty’s native image file format (.im). The “Save File As” button was used for saving other (non-Liberty) file formats.

In Liberty V7.0, the Save button can optionally be set-up to save TIFF files, rather than Liberty .im files. This option is provided since the TIFF format is compatible with many other applications on the NT platform (and other platforms).

In the “Save File options” popup in the Configuration environment (use the “Save-as Set-up” button in the Directory Management panel), two new buttons were added:

- “Save button saves TIFF .tif”
- “Save button saves LIBERTY .im”

When “Save button saves TIFF .tif” is turned on, the “Save File” button will save TIFF files from then on. When “Save button saves LIBERTY .im” is turned on, the “Save File” button will save Liberty .im files from then on. For the NT platform, the default is TIFF, while for the SGI/IRIX platform, the default will remain Liberty .im. The “Save File Options” popup is shown in Figure 41. below.



Figure 41. Save File options popup, with "Save button saves TIFF" and .im buttons.

When the “Save File” button is configured to save TIFF files (as described above), the type of TIFF files saved is controlled by the TIFF set-up menu in the “Save File As” popup (the same controls used for saving TIFF files using the “Save File As” button).

When saving TIFF files, if the file being saved is a cut-out, and if the “Shrinkwrap” button is on, an X,Y offset position will be saved to the TIFF file (assuming the offset is non-zero). This allows Liberty (and other applications) to recall the file to the correct X,Y position.

TIFF files saved using the “Save File” button will always save with pre-multiplied alpha. TIFF files saved using the “Save File As” button will save with pre-multiplied alpha when the “Pre-mult Alpha” button (in the “Save File As” popup) is on. They will save with non-pre-multiplied alpha when the “Pre-mult Alpha” button is off. TIFF files saved with pre-multiplied alpha will be saved with a special flag in the header. This flag (the “Extra Samples” flag) tells other applications that the alpha is pre-multiplied in the file.

Since the “Save File” button can now be set up to save TIFF files, the capability to save Liberty .im files has been added to the “Save File As” button. In the “Save File As” popup, a button for “Liberty .im” has been added. When this button is enabled, the “Save File As” button will save Liberty .im files. The “Save File As” popup is shown in Figure 42. below.



Figure 42. Save File As popup, with Liberty .im file type selected.

Note that in the “Save File As” popup, the Compress, Pre-mult Alpha, Setup, FTP, Orientation, and Mirror buttons will be de-activated when the file type is set to Liberty .im. Liberty .im files are always compressed and always have pre-multiplied alpha. In addition, FTP, Orientation, and Mirror are not currently supported for Liberty .im files.

24. Add the ability to save Compressed TIFF files (Packbits and LZW).

Liberty V7.0 allows TIFF files to be saved with the following types of compression:

- Packbits (moderate run-length compression).
- LZW (high compression).
- Uncompressed.

In Liberty V6.5, TIFF files could only be saved as Uncompressed.

The compression types are selected in the Save File As Set-up menu for TIFF (accessed via the Set-up button in the Save File As popup, when TIFF is the selected file type). The new set-up menu, with compression buttons, is shown in Figure 43. below.



Figure 43. TIFF Save-as Set-up menu, with new Compression options on the left.

In addition to the above enhancement, the TIFF library version was upgraded to V3.4 level in Liberty SGI/IRIX. It was already at V3.4 level for Liberty NT.

25. Enhancements for browsing remote systems via FTP.

When browsing remote systems via FTP, Liberty now identifies directories with the directory folder icon. Previously, directories and files looked the same in the browse menu when using FTP.

In addition to the above, when browsing still store systems via FTP, Liberty now always displays each numbered still separately. Before, if the "Filmstrip" button in the "Sort" popup was on, Liberty would group all the numbered stills into one filmstrip browse icon. This didn't make sense for still stores, since in that case numbered files represent individual stills, not numbered frames in a filmstrip.

In Liberty V7.0, browsing displays numbered files separately if the node field for "System with Still Store/Clip Database" is filled in on the FTP popup. If this field is blank, the "Filmstrip" button in the "Sort" popup controls whether numbered files are grouped or not, as in previous versions.

In addition to the above, browsing directories on the Aprisa Still Store has been speeded up significantly.

26. Add improved file size, date, and file type information when browsing Infit systems (Infit V11.0B s/w).

When browsing Infit systems, with version 11.0B software or higher, the size and date will now appear in Liberty's full-screen File Manager menu, when the Browse button is off and the Browse popup is set to "List size (KB) and date". In addition, improved file type information will be shown in Liberty's full-screen File Manager menu, when the Browse button is off and the Browse popup is set to "List image file format". This will show types of all files in a given Infit directory, including non-image files such as text files. This will allow the user to better determine which files are images files that could be recalled into Liberty. In addition, additional descriptive information may be viewed when the Browse button is off and the Browse popup is set to "List database data"

27. Changed Imagestor labels on various FTP related menus.

Several “Imagestor” labels in Liberty’s FTP menus were changed to more generic names, since these menus can be used with other types of systems (such as the Aprisa still store and DDR). These changes are as follows:

In the FTP popup (Transfer panel in Paint), the right hand set of controls is now labeled “System with Still Store/Clip Database” (rather than “Imagestor! system”), since these controls refer to any system containing a database of clips or stills. The FTP popup is shown in Figure 44. below.



Figure 44. FTP popup, with re-named labels for stills/clips.

In the Imagestor! Save-as Set-up menu, the third column of controls from the left is now labeled “still store database”, rather than “Imagestor!”, since these controls refer to any system where the database of stills is stored. The Imagestor! Save-as Set-up menu is shown in Figure 45. below.

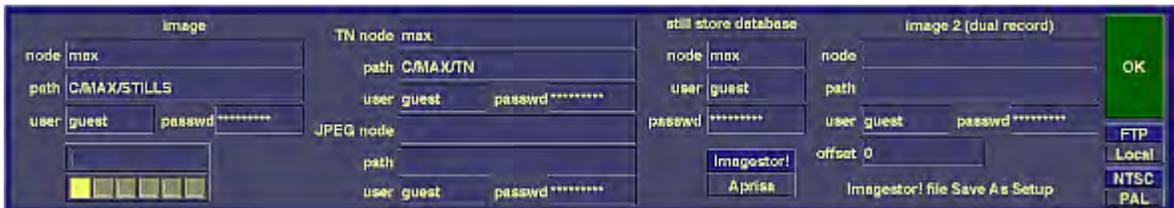


Figure 45. Imgstor! Save-as set-up menu.

In the Browse popup (full screen File Manger menu), the bottom button has been re-labeled “List database data” (rather than “Imagestor! data”), since turning on this button will list database data from any still or clip store being browsed. The Browse popup is shown in Figure 46. below.

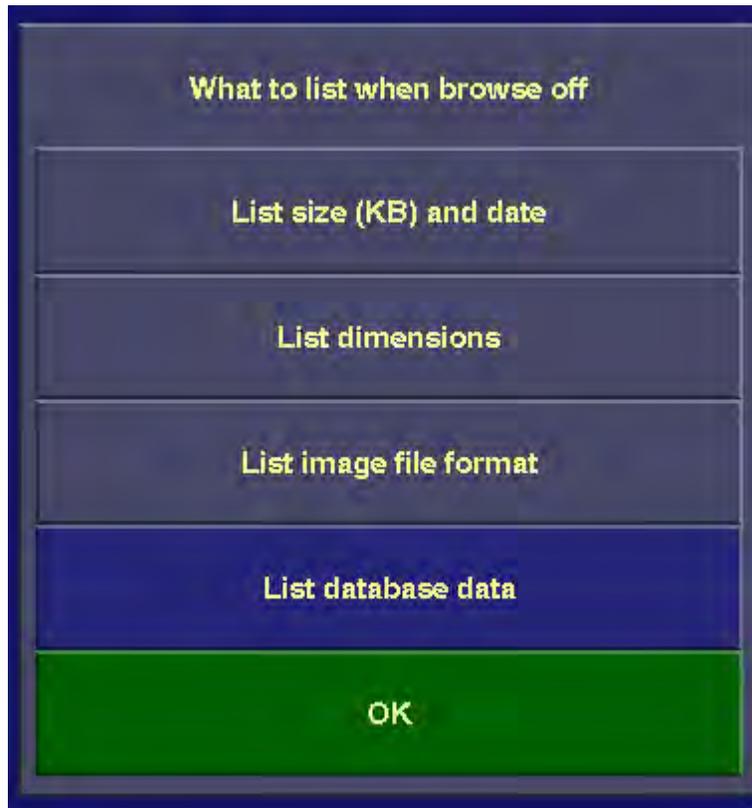


Figure 46. File Manager Browse popup, with re-labeled control for database data.

In addition, in the Sort popup (full screen File Manger menu), the second column of controls from the left has been re-labeled “Database data”, rather than “Imagestor! files”. The Sort popup is shown in Figure 47. below.



Figure 47. Left portion of Sort popup, with re-labeled controls for Database data.

In addition to the above, the “Imagestor” button in Save File As popup has been re-labeled “ImageStor/Aprisa”, since the corresponding file type is used for both Imagestor and Aprisa.

Also, in file type label window of the “Save File As” button, the file type “Aprisa 100” appears if the file type is Imagestor/Aprisa and FTP is set-up for Aprisa. The file type “Imagestor” appears if file type is Imagestor/Aprisa and FTP is set-up for Imagestor.

Also, in the File Manager menu, the file type for Imagestor/Aprisa files is now displayed as either “Imagestor” or “Aprisa”, depending on what type of device is being browsed over FTP. For files on a local disk, the file type is displayed as “Imagestor/Aprisa”.

28. Make filename padding separate for Infinit files (as opposed to Imagestor/Aprisa files).

As an option, Liberty pads numeric Infinit, Imagestor, and Aprisa filenames to either 4 or 8 digits, depending on the settings in the Save-as Set-up menu (accessed through the Directory Management panel in the Configuration environment). Liberty V7.0 provides separate padding controls in this menu for Infinit files (as opposed to Imagestor and Aprisa files). This enhancement was made since some facilities utilize 4 digits for Infinit files, and 8 digits for Imagestor/Aprisa files. See Figure 41. above for the new Save-as Set-up menu.

29. Add support for Quantel VPB file format.

Support for Quantel’s native VPB file format has been added in Liberty V7.0. This file format (containing a header and YUV data with optional key channel and thumbnail) is utilized on Quantel systems such as the Paintbox.

Liberty’s File Manager will browse VPB files (using the embedded thumbnail if it exists), and recall them. In addition, Quantel VPB files can be saved from the “Save File As” menu. In the “Save File As” popup, set the file type to “Quantel VPB”. Then use the “Setup” button to choose what data format to save (“Save YUV” or “Save YUV + Key”).

The “Save File As” popup is shown in Figure 48. below. The Quantel VPB Setup menu is shown in Figure 49.



Figure 48. Save File As menu, with Quantel VPB file type selected.



Figure 49. Quantel VPB Save As Set-up menu, with controls to enable/disable saving a Key channel.

30. Other File Manager enhancements.

- a. Add "tooltips style" display of full file/path names in recall menu when cursor passes over the corresponding buttons.

Due to the limited size of the File Recall and Save menus in Paint, long filenames and extensions often get clipped. In Liberty V7.0, as the user moves the cursor over this menu, the full name and extension of each file name will be displayed (as the cursor moves over it). This makes it easy to tell which file is which, even when the filenames are long. The same thing works in the directory path window as well. An example of a long filename being displayed is shown in Figure 50. below (the first name in the second column, "Nightly_news_Y1.im", is being displayed in full as the cursor moves over it).



Figure 50. Recall menu with a long filename being displayed.

- b. Fix file/directory shortcuts for Liberty NT.

Liberty NT can now correctly follow file and directory shortcuts in the File Manager, recall and save menus. Shortcuts are represented as ".lnk" files in the directory listing. Pressing on a .lnk file selects the corresponding actual file or directory (for example, pressing on a directory shortcut changes to the actual directory pointed to by the shortcut).

Note that when Windows NT encounters an invalid shortcut (where the actual file or directory pointed to no longer exists), it will search for the file/directory. This means that switching to a directory with invalid shortcuts may be very slow. To correct this, just delete any invalid shortcuts from the given directory.

- c. Correctly handle files/directories encountered at the wrong level in non-path mode.

In previous versions of Liberty, when the Recall or Save menu was in non-path mode, the user could only recall files at the bottom ("File") level. Recalling a file at any other level resulted in an error, which was frustrating since files are often placed at different levels in the directory hierarchy. In Liberty V7.0, this has been corrected. When a file is accessed in the "Host", "Disk", or "Dir" level, the menu automatically switches to path mode, and the file is correctly recalled.

A similar change was made for directories recalled at the “File” level. In this case, Liberty switches to path mode, and correctly switches to the given directory.

- d. Add busy cursor for recall/save of large files.

In Liberty V7.0, Liberty displays a busy cursor (% complete indicator) when recalling or saving large image files. This provides a cue that processing is occurring when recalling/saving large files, as this sometimes takes several seconds to complete.

- e. Improve assignment of file extensions in VTR set-up menu

In the Disk Paths in the Target VTR set-up menu, when the user changes the file type, the extension in the file name is now changed accordingly. This prevents problems when the file name is entered, followed by the file type. Previously, the extension would be incorrect in this case.

- f. Make TIFF RGBA the default format in the “Save File As” menu.

The default file type in the “Save File As” menu is now TIFF RGBA for Liberty NT (it was formerly SGI RGB).

- g. Add file path elevator popup.

A new file path elevator popup was added to the File Recall, Save, and Full Screen File Manager menus, allowing the user to view all paths in the path elevator at once, and to select any of those paths. In addition, the same popup displays the five most recently used file paths, and allows selection of those. This allows users to quickly identify and select file paths when working in the recall, save, and file manager menus.

The file path elevator popup is accessed using a new button in the recall, save, and file manager menus, labeled “>”. This button brings up the file path elevator popup, displaying the paths in the six path elevators in the section labeled “Path Elevators”, and displaying the five most recently used paths in the section labeled “Recent Paths”. Pressing a button in the “Path Elevators” section switches to that elevator level and brings up the corresponding path. Pressing a button in the “Recent Paths” section brings up that path in the current elevator level.

The Recall/Save menu, with new “>” path elevator button, is shown in Figure 51. below. The path elevator popup is shown in Figure 52. below.

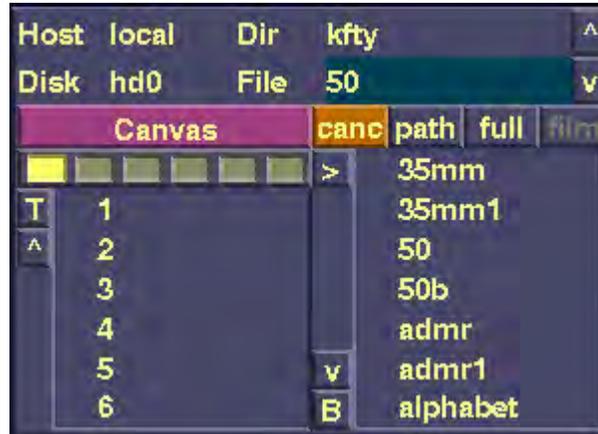


Figure 51. Recall/Save menu with new “>” button (to the right of path elevator).



Figure 52. Path Elevator Popup, with “Path Elevators” and “Recent Paths” sections.

31. Support of additional OMF file formats, for compatibility with Avid editing systems.

Liberty V7.0 adds support for eight additional OMF file types. These formats encode frames in TIFF format using JPEG compression, and are compatible with older Avid editing systems. The formats include: AVR2, AVR3, AVR3e, AVR4, AVR4e, AVR5, AVR5e, AVR6e, AVR12, AVR25, AVR26, AVR27, AVR70, AVR71, AVR75, and AVR77.

The OMF Save-as Set-up menu has been modified to add these new formats. This menu is accessed through the Save File As popup in Paint, or through the Target VTR File Types menu (accessed through the File Type button in the Target VTR panel), when the selected file type is "Avid OMF".

In addition to the sixteen new file types, an OMF version indicator was added to the OMF Save-as Set-up menu. This indicates that the AVR file types use the older V 1.X OMF toolkit, while the other types use the newer V2.X OMF toolkit (which might not be compatible with older Avid systems).

The OMF Save-as Set-up menu is shown in Figure 52 B. below.



Figure 52 B. OMF Save-as Set-up Menu, with new AVR file types.

32. Add read and write of GIF animation files, for use on World Wide Web pages.

Liberty V7.0 allows the user to render to GIF animation files, which are compatible with the World Wide Web, and can be played on web pages. It also allows the user to read frames from GIF animation files (so that animation clips downloaded from web pages can be utilized within Liberty).

To render to a GIF animation file, set up a Target Disk path (in the Target VTR Set-up menu) and select a file type of "GIF Animation" (under "Clip File Formats"). Use the set-up menu to set the following parameters:

- "Use Local Color Table" When on, a different color table is generated for each frame. When off, the same global color table is utilized for all frames. The local color table option is required when different frames feature different sets of colors. If all frames have similar colors, however, using a global color table may result in cleaner animations.
- "Looping On" When on, the animation loops when played on a web page.
- "Loops" When "Looping On" is enabled, controls the number of loops when played on a web page. Use "0" to loop forever.
- "Delay Time" The amount of delay (in 1/100 th of a second increments) between frames, when displayed on a web page.
- "Disposal" What happens when a web page is done displaying a frame. The following two options are currently useful:
 - "None" Leaves the element in place.
 - "Restore to BG" Restores the background color underneath.

Note that the GIF Save As Set-up menu in Paint (accessed through the Save File As popup) also contains parameters that affect how GIF animation files render. Be sure to set the Transparency, Interlace, and Color Depth parameters properly in this menu.

The right-hand portion of the Target VTR File Types menu, with GIF Animation file type, is shown in Figure 52 C. below. The GIF Animation set-up menu is shown in Figure 52 D. below.



Figure 52 C. Right-hand portion of Target VTR File Types menu, with GIF Animation File Type.



Figure 52 D. GIF Animation Set-up Menu.

To recall frames from a GIF animation file, go into the Source VTR Set-up menu, and assign the file to a source disk path. Frames can then be read in one-by-one using the Grab button in the VTR panel, or using a Filmstrip actor in Animation.

In addition to the above changes, Liberty now updates the Paint Palette when GIF files are recalled. This allows the user to see exactly which palette colors a GIF file contains. The user can then work with those palette colors to create additional elements.

To prevent update of the Paint Palette when recalling GIF files, turn on "Ignore Palette" in the Recall popup (this will also prevent the Paint Palette from updating when Liberty .im files are recalled).

Other Enhancements

33. Improve background rendering.

In Liberty V7.0, it is no longer necessary to exit Liberty before starting background renders from the Background Rendering Menu (corner button of “Record”). Previously, it was necessary to exit in order to save any settings in the Target VTR panel or animation menus. Now, these settings are automatically saved when the user starts background render(s) from the Background Rendering Menu.

Note that it is still necessary to exit Liberty to save settings prior to starting background renders from a command prompt (shell window).

34. Add Liberty V7.0 release notes to Liberty Help popup. Add font conversion utilities document to Liberty Help popup (IRIX only).

All Liberty documentation, including this document, is accessible through the Help popup (use the corner button of the green Help button in the Paint, Animation, and Configuration environments). For this to work, the Adobe Acrobat reader (available free of charge at www.adobe.com) must be installed (for the Tips and Techniques, a web browser must also be installed, as these are in HTML format).

In addition to the V7.0 release notes, the Font Conversion Utilities document was also added to the Help popup for V7.0 (this applies to Liberty on SGI IRIX systems only).

The Help popup, including button for Liberty V7.0 Release Notes, is shown in Figure 53. below.



Figure 53. Help popup, with new buttons for Liberty V7.0 Release Notes, and Font Conversion Utilities.

35. Move 64 bit Related Configuration controls to their own panel

In Liberty 64, the 64-bit Color Range Display Mode controls, along with the 32/64 bit message buttons, were moved to their own Configuration panel (called “64 Bit”, and identified with a purple bar). The 64-bit Color Range Display Mode buttons control how the 64-bit canvas is displayed on the 32-bit computer screen. The 32/64 bit message buttons control whether sliders display with a range of (0..255) or (0..65535) (regardless of the setting of this button, Liberty still uses the full range of (0..65535) internally; the button just affects how the range is displayed to the user).

The new 64-bit panel is shown in Figure 54. below.

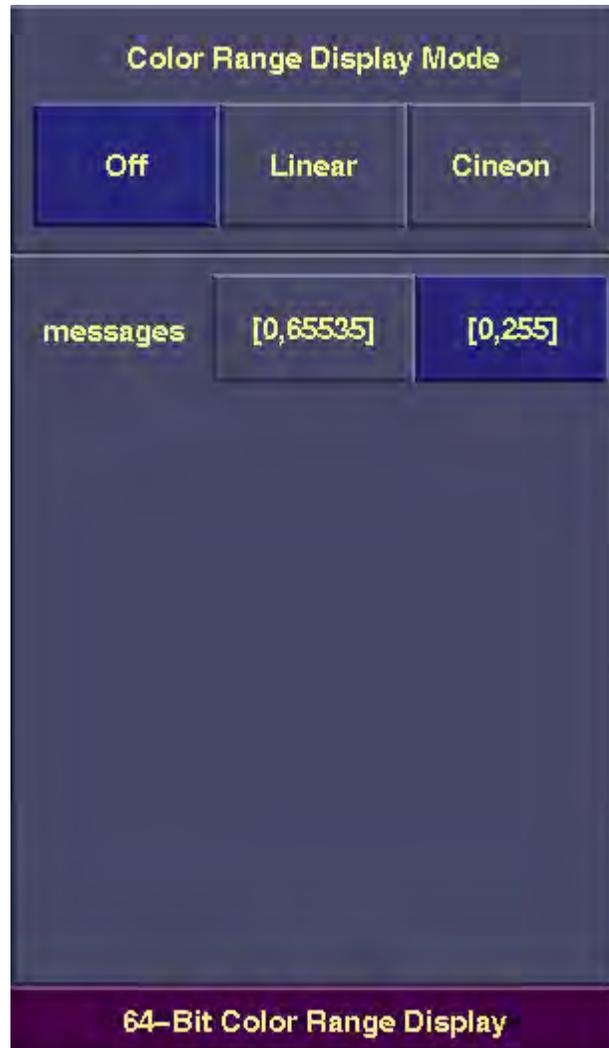


Figure 54. 64-Bit Color Range Display panel in Configuration Environment (Liberty 64 only).

36. Add buttons to optionally disable hardware acceleration of 2D layers, 3D layers, and imaging effects.

In Liberty V7.0, a new “Preview Set-up” panel was added to the Configuration environment. This panel allows the user to disable hardware-accelerated previews on the SGI O2, Impact, and Octane platforms. Users will not normally need to use this panel, as the hardware-accelerated previews perform well in most cases (and the panel defaults to enabling hardware-accelerated previews). The user might want to use this panel, however, if they have broken hardware. For example, if the user’s Texture memory card is broken, hardware-accelerated 3D paste/layers previews will not work. In this case, the user could use the “Preview Set-up” panel to disable hardware-accelerated previews for 3D paste/layers. This would allow them to continue to use their system, with 3D paste/layers functioning correctly (but not hardware accelerated).

Another reason to disable hardware-accelerated previews is as follows: the hardware accelerated previews often do not exactly match the final result, since the final result is always done in software. This is especially true when doing Image Tools previews on images with a lot of transparency. Although the difference between preview and final result is usually very subtle, purists may want an exact match. In this case, the user can disable hardware-accelerated previews (for Image Tools, for example).

The “Preview Set-up” panel contains three text windows, labeled “Double Buffering”, “3D Warp/Distort”, and “Image Tools”. These windows all default to a setting of “fast (h/w)”. To disable hardware-accelerated previews of Paste and Layers, change the settings for both “Double Buffering” and “3D Warp/Distort” from “fast (h/w)” to “normal (s/w)” (by clicking on the corresponding text windows). This applies to SGI O2, Impact, and Octane systems only. To disable hardware accelerated previews of Image Tools in the Tools Panel in Paint, change the setting for “Image Tools” from “fast (h/w)” to “normal (s/w)” (by clicking on the corresponding text window). This applies to Impact and Octane systems only. Clicking any of the text windows again re-enables hardware previews (resetting the windows to “fast (h/w)”).

The buttons in the “Preview Set-up” panel are shown in Figure 55. below.



Figure 55. Buttons for disabling hardware-accelerated previews.

37. Built Demo version of Liberty NT.

With Liberty V7.0, a demo version of the software is available. This version disables all video input/output interfaces, and prevents image files from being saved (actually, a checkerboard pattern is written into the files when they are saved). In addition, licensing is disabled in the demo version.

The demo version can be distributed on CD or on the web, allowing users to easily load and evaluate the software without obtaining a license. Chyron Sales/Marketing will be setting this up sometime in the near future.

The executable name of the demo version under IRIX is "demo32" (located in the sys directory). For Windows NT, the executable name of the demo version is "Demo32.exe" (again, located in the sys directory).

38. For Liberty NT, change executable names of Paint and Paint 64.

For Liberty NT, the executable for Liberty Paint was changed from "LibP32.exe" to "Paint32.exe". The executable for Liberty Paint 64 was changed from "LibP64.exe" to "Paint64.exe". These files are located in the "sys" directory.

The executable names should not matter to most users, as Liberty is usually started from the icons on the desktop under Windows NT.

39. Add new option for Tracing User Input in a Shell Window, for debug purposes.

Liberty V7.0 supports a new command line option, -T, which traces all user mouse, pen, and keyboard input in the shell window. All user operations are logged in the shell window, which can be useful for debug purposes, and in troubleshooting problems with Customer Service or Engineering.

To use the above option, start Liberty from a Unix shell window for IRIX, or a Command Prompt window for NT, as follows:

Liberty32 -T (Liberty 32 for IRIX)

Lib32.exe -T (Liberty 32 for NT)

This results in output similar to the following:

```
TRACE user: B_BRIZESl x6553 y21447 p0
TRACE user: B_BRAIRtxt x25807 y27068 p0
TRACE user: B_PAL x2661 y25670 p0
TRACE user: B_PAINT p0
```

This shows Liberty's internal name for each button pressed, along with the x,y position, and pressure value.

40. Bug fixes to Liberty V6.5:

The following Liberty V6.5 bugs have been corrected in Liberty V7.0.

Text Panel Fixes:

- a. In Text, fix crash when deleting the last character on a line (using the Del key).
- b. Fixed problems with justified text (Right, Center, and Justify) when characters are added or deleted from the longest line. The text wasn't refreshing properly, and the justification point was shifting.
- c. Fix problems with alignment when a file is recalled with right, justify, or center alignment, or when switching to an elevator level with right, justify, or center alignment.
- d. Fix refresh problems and maintain right/center alignment when selected characters are erased (using the Erase button).
- e. Fixed right/center alignment problems when the last character on a line is deleted.
- f. Fixed problems with right/center alignment with characters are deleted, kerned, or re-sized.
- g. Fix problem of Move being left in an inconsistent state if Move was on when characters were entered, or if Move was on when the font Set button was used.
- h. Ensure mask browse icon in buffers menu gets updated after applying Text to the mask.
- i. Ensure canvas browse icon in buffers menu gets updated after outlining text on canvas.
- j. Fix problems with text outlining not showing up when Layers are enabled on Impact, Octane, and O2 systems.
- k. Fix problem of Text bounding box being too large in the X direction when in Justify alignment mode.
- l. Fix problem of text bounding box disappearing and of characters not being able to be selected when a blank line is entered in a Text buffer in Right, Center, or Justify alignment mode.
- m. Fix problem of a character remaining displayed as selected after the backspace key is used to join two text lines (when the first character on the line being joined was selected).
- n. Make the up and down arrows behave properly for Text in Right and Center alignment mode.
- o. Fix crash when doing Transform Character when the current line/character are empty.
- p. Fix crash when copying from an elevator with 2 or more blank lines at the end.
- q. Ensure that when backspacing to join the current line to the previous one, the cursor stays positioned at the start of the current line if the previous line was blank.
- r. Maintain right and center alignment when text font is changed.
- s. Fix memory leak when erasing all selected characters on a line.
- t. Fix memory leak when recalling text (.tx) files.
- u. Fix rare crash when the last line in a buffer is deleted.
- v. Speed up kerning of selected characters.

Paint Environment Fixes:

- a. Fix intermittent problem of painting macros failing.
- b. Fix crash if "fill to alpha" preview is done after "fill to mask" preview.
- c. Fix crash when applying plug-ins to cutout images in Liberty NT.
- d. Fix problem of Paste Shadow failing when Mask is on.
- e. Fix problem of not being able to enter text into the Filter menu's slider window.
- f. Remove binding of "/" key to "Canvas Drag" (pan) button, as this was confusing, and panning should be done with the Alt key.
- g. Fix problem of color mixer being the wrong size after the screen resolution is changed.
- h. Fix problem of plug-ins being applied to the temp being limited to the bounds of the canvas.
- i. Fix canvas panning with Alt key when in very high canvas resolution and zoomed out.
- j. Don't bind the single-quote (') key to the Pick button. This was too easy to hit accidentally when hitting the Enter key.
- k. Fix crash when the user switches temps between the initial placement of Tile positions and subsequent use of the main Tile button.

- l. Don't change cut and paste button modes when cutting and pasting using the control keys (for example, pasting with control-V should not change the mode of the Paste button to "clipboard).
- m. Fix Paste Paint with Alpha pressure not working in Liberty 64.
- n. Fix problem with wrong palette being used after switching from Config to Paint when Buffers menu is up.
- o. Fix problems with linear apply and gradated rectangle mask when a negative number is entered into the direction (clock) button (through the keyboard).
- p. Make all paste previews default to final+alpha when starting Liberty and no projects/paste file exists.

Curve/Shape Fixes:

- a. Combine upper and lower shapes menus into one menu, to fix refresh problems (for example, when Grid popup is brought up and down). Same for upper and lower Curve menus.
- b. When the user presses the Shape Polygon type window (Add, Delete, etc), turn on the main Poly button if it's not already on.
- c. Don't set the orientation menu in Rotation mode every time it's brought up for shapes. Use the previous menu orientation mode.
- d. Fix crash when Curve/Shape is on, Paint mode panel is brought up, and Curve/Shape panel is turned off.

Animation Fixes:

- a. In Animation, add code to ensure that Filmstrip actors (using the "File" window) are checked by the "Check" button.
- b. Fix bug with Mask actor edit menu disappearing when Hue-Tint is selected.
- c. Fix crash when peek rendering plug-ins in Liberty NT Animation.
- d. Fix problem of pressure tables not being initialized when Paint is turned on after a write-on actor is utilized.
- e. Center the NT movie player window on the canvas.
- f. Fix problems with background renders in Liberty NT when the pathname has spaces in it.
- g. Show output messages from Liberty NT background window in the same console window as Liberty (foreground).
- h. Add support of missing audio sampling rates to Audio actor, and handle unsupported audio rates better.
- i. Fix Liberty NT crash when storyboard path is not found.
- j. Fix color table actor crash when the assigned file was different than the canvas size.
- k. Fix problems with brush gap in write-on actor, when gap settings are small.
- l. Make animation Preview popup default to Render.
- m. Fix storyboard crash due to compression string writing off the end (Liberty NT only).
- n. Fix problem with color interpolation in Tint-Hue Mask and Shape actors in Liberty 64.

VTR Menu Fixes:

- a. Fix problem with the Animation VTR "Tar" button not being turned off when the Paint Source Set-up menu is used (this resulted in an inconsistent menu state where source mode was active but the Animation "Tar" button was still highlighted).
- b. Improve positioning of VTR set-up menus for different screen resolutions (code was previously hard coded for 1280x1024 screen resolution).
- c. Fix hangs when rendering to DDR's over Ethernet in Liberty IRIX.
- d. Improve code to interface to Sierra DDR's over Ethernet.
- e. Fix problem of single frame show failing when using Galileo video board.

- f. Fix time-code inconsistencies between various time-code, increment, decrement, and cue buttons in VTR panel and VTR set-up menus in both Paint and Animation.
- g. Fix problem of image re-scale crashing in close when an error occurred in open.
- h. Fix crash in real-time show when painting onto a temp (and off the edge of the canvas).

File Menu Fixes:

- a. Fix problem of the re-scale setting getting re-set to "No Scaling" whenever the "Save File As" popup is cancelled.
- b. Fix problem of the re-scale on/off setting not getting restored when changed and the "Save File As" popup is subsequently cancelled.
- c. Fix rare crash when a file or directory is not found.
- d. Fix problems with display of directory free space indicator in full-screen File Manager menu.
- e. For remote FTP file save/recall, fix problem with hostnames that start with a digit.
- f. Allow read of Targa files written by Lyric (which have no color table, but have the color table size fields set in the header).
- g. Fix problem of full screen file menu colored dots not appearing in 1280x1024 mode in Liberty NT.
- h. Fix hang on some systems when saving Imagestor files when hostnames in the set-up menu are blank.
- i. Only connect with Aprisa still store when the user is actually first using it. Previously, the code would try to connect upon entering Paint, whenever there was an Aprisa FTP target defined in the Imagestor save-as set-up menu. This caused a temporary hang and an error message if the Aprisa 100 software was not running at the time or the Aprisa was off the network.
- j. Fix problem of not being able to enter a full path when browsing over FTP in Liberty NT.
- k. Speed up multiple file deletions in full-screen file manager (only update file manager menus after all files are deleted).
- l. Fix small problem with final pad byte(s) not being written to BMP files. This caused Liberty BMP files to not be readable in certain other applications.
- m. Fix problems reading movie files with a non-zero xy offset.
- n. Prevent canvas from being shrink-wrapped when saving Photoshop layers files, as this causes problems with the layer positions.
- o. Make the extension of undo mask files .se (not .im) so the files will browse correctly in alpha only mode. Same for disk mask files in the "cels" directory.
- p. Fix problems with local files getting deleted when "FTP" is off for target disk paths, but "local" is off in the Save File As popup.
- q. Prevent bogus error message when deleting multiple files in the File Manager when Browse is off.
- r. Position the FTP menu above the prompt window, so Help messages can be seen.
- s. Eliminate redundant refreshes in File Manager menu.
- t. Make alpha of browse images completely opaque when saving file formats without alpha.
- u. Prevent File Manager "Select" and "All" buttons from selecting directories (they should only select files).
- v. Ensure Windows sockets is properly opened and closed when talking to Aprisa Still Store.
- w. Remove the 2 GB upper limit on the size of Preview (.prv) files.
- x. Fix hangs when browsing Aprisa Still Store over Ethernet in Liberty IRIX.
- y. Fix problems with FTP getting hung after a permissions error occurs, when browsing a system using FTP.
- z. Fix potential problem of some file formats not being recognized in Liberty NT (due to byte swapping problem).
- aa. Fix rare crash when reading directory entries under IRIX.
- bb. Fix frames-per-second field for PAL in OMF files.
- cc. Improve product identifier fields written to OMF files.
- dd. Clear "free space" indicator when browsing over FTP, since this indicator doesn't work over FTP.
- ee. Ensure SGI RGB files written by Liberty NT have correct (MSB first) byte ordering.
- ff. Fix crash when saving color mapped (i.e. GIF) files with Re-scale or Orientation enabled.

Configuration Environment Fixes:

- a. Fix problem with menu states not being saved (to database files) when Liberty NT is exited.
- b. Fix problem with saving the paint elevator to the database file on exit
- c. Fix problem of the "DOCS" directory not being initialized properly in the User Setup popup in Config.
- d. When user the OK's the User Setup popup, don't require the Image, Plug-in, or Docs directories to have write permission. Liberty doesn't write to the Plug-in or Docs directories, and the Image directory could be read-only in some cases (for example, it could be on a CDROM).
- e. Fix problem of User Setup popup error messages not printing out correctly in the prompt window.
- f. Fix problems when using numeric IP address (rather than host name) in DDR Config menu in Liberty NT.
- g. Fix problem with Directory Create/Delete/Rename, when the directory name is typed in, and OK is pressed before the Enter key.
- h. Fix problem of not being able to delete the Tablet Config panel with a double click (on the bottom bar of the panel).
- i. Fix crashes when using Directory related buttons in Config.
- j. Fix problem of Config directory buttons being activated when their popups are up (enabling the user to press the buttons again and cause problems).
- k. Print warning message when user tries to use Dropframe in PAL or Film mode.
- l. Fix problem of not being able to change menu Config settings (for example, Bevel), after Liberty is started when there is no database in the projects directory.

Motion Tracking/Stabilization Fixes:

- a. Fix crash in Liberty NT when Motion Tracking is started without an output file assigned.
- b. Fix crash when processing Motion Tracking in Liberty NT.
- c. Fix crash when a stabilization render is terminated, and then snap rendered again.

Layers Fixes:

- a. Prevent redundant refreshes when turning on layers.
- b. Fix problem of 3D layers not re-loading to texture memory when the user selects a new layer while painting.
- c. Fix crash in Liberty NT when painting to a layer when the mask is on.
- d. Fix problem of 3D layers still refreshing on the canvas after they are moved off the canvas.
- e. In Liberty 64, print layer opacity message with range of (0,255) or (0,65535), depending on the setting of the corresponding button in the 64 bit panel in Config. The message previously always printed in the range (0,65535).
- f. Fix various problems when painting to layers and selecting a new layer that is 3D (either selecting with the control key or by changing temps). This crashed on NT (with the control key), and painting wasn't correct for 3D layers (when changing temps). Also, improved efficiency of selecting a new layer with the control key.
- g. When painting to layers and a new layer is selected with the control key down, prevent that layer from accidentally being moved. Selecting a layer with the pen, with the control keyboard down, selects the layer without moving it. This works whether or not Paint is on.
- h. Fix one line of garbage appearing at top of 2D layers on O2, Impact, and Octane when zoomed out.
- i. Fix problem of 3D layer refreshing as 2D after Text or Shapes utilized.

Fixes for Aspect Ratio Correction:

- a. Apply Aspect Correction to fonts.
- b. Apply aspect correction in Paste Distort calculations, so symmetric objects remain so when rotated in Transform mode. Likewise, fix aspect correction when transforming Shapes and Text.
- c. Fix problems with grid (x,y) offsets when aspect correction is on. Also fix problems with creating grid from mask when aspect correction is on.
- d. Fix problems with aspect correction and direction (clock) button.
- e. Apply aspect correction to linear apply and gradated rectangle mask.
- f. Fix problems with rotation of curves when aspect correction is on.

Other Fixes:

- a. Position Calculator in lower-left corner of menu (not upper-left), so that the extended portion is not clipped by canvas.
- b. Disable other buttons when calculator menu is up, to prevent menu hangs in this case.
- c. Correctly highlight calculator Timecode button when calculator is brought up.
- d. Fix crash when outputting certain error messages to the console window for Liberty NT.
- e. Make menu font loading error messages always print out, even in release builds. Also, for IRIX, always print the name of the menu font loaded by Liberty (since for IRIX the user can select the menu font utilized by setting the "LIBERTY_FONT" environment variable).
- f. Fix problem of not allowing IRIX user ID's greater than 65535.
- g. Fix problem with pressing "No" in confirmation popup causing a crash (during Login confirmation popups).
- h. Make older Wacom tablets (without orientation data) work in Liberty NT.
- i. Correct problems supporting new Wacom Intuos tablets in Liberty IRIX (Liberty V6.5 was OK for NT).
- j. Fix problem with error message appearing in prompt window after exiting calculator menu (was a problem in NT only).